January 1979

radio communication

journal of the Radio Society of Great Britain

1978 AGM PRESENTATIONS

The President, Dr D. S. Evans, G3RPE, presenting awards at the 52nd AGM of the RSGB on 2 December 1978

Top, l to r: the Colonel Thomas Rose Bowl to Mr A. J. Slater, G3FXB, who also received the G2QI Cup Winner's Cup and the Braaten Trophy; the Raynet Trophy to Mr. D. F. Digby, G8DHQ; the NFD Shield to Glenrothes & D ARC, shared jointly with the Channel Contest Group (**Centre,** left).

Centre: 2nd from l, Fraser Shepherd Prize to Mr S. J. W. Freeman, G3LQR; r, 1930 Committee Cup to Mr S. P. Taylor, G4EDG.

Bottom, l to r: Scottish NFD Trophy (token presentation) to Glenrothes & D ARC; Metcalfe Trophy to Mr R. Treacher, BRS32525; Houston-Fergus Trophy to Mr D. Handscombe, G4BWP, and Mr J. Wayman, G4DRS.

(More photographs and report on page 48)









Catronics

AMATEUR RADIO BULK BUYING GROUP

CATRONICS FOR FREQUENCY COUNTERS AND COUNTER ICs

In addition to our popular 250MHz and 500MHz counters we have produced **a new 200MHz counter kit** specially for home constructors.

Our new **K200** counter although small, is a no compromise design. It offers:

- ★ **A full 8 digit LED display**
- ★ **A frequency range of 10Hz to 200MHz**
- ★ **An accuracy of 10Hz at 30MHz, 50Hz at 150MHz in normal home environments**
- ★ **5/6 volt operation from batteries or mains PSU**
- ★ **Power consumption of only 1W maximum**
- ★ **A crystal oscillator at 5MHz which doesn't need any special setting up equipment**
- ★ **Small size 4" × 2" × 1"**
- ★ **Uses only 4 i.c.s**
- ★ **Assembly time of about 2 hours**
- ★ **Full illustrated assembly instructions**

The K200 consists of 2 PCB assemblies, one being the complete input and counter unit, the other, the display unit. Both units are available in kit or assembled/tested module form.

Prices:		
	input/counter kit	**£59.00 inc VAT**
	input/counter module	**£68.50 inc VAT**
	display kit	**£12.96 inc VAT**
	display kit module	**£16.64 inc VAT ADD 75p post**

THIS COMPLEMENTS OUR

DFM5, A 250MHz, 7 DIGIT MAINS/12V HIGH QUALITY Frequency Counter AND **DFM500**. Absolute value. A real 500MHz (try some of the others actually at this frequency). Both available now with better than 1 in 10^9 reference oscillators as /S models.

Prices:			
	DFM5	**£148.50 inc VAT**	
	DFM5/S	**£191.70 inc VAT**	
	DFM500	**£177.12 inc VAT**	
	DFM500/S	**£220.86 inc VAT**	**ADD £3.00 Securior Delivery**

TELETEXT DECODERS

Catronics offer the widest range of Decoders (both kit and ready-built) for CEEFAX and ORACLE. Prices start at **£144.50**—send sae for details.

40 WATT 2M P.A. KIT WITH FULL GUARANTEE ON TRANSISTOR

Our 40W PA kit for FM/CW now comes complete with an attractive metal case **£19.50 + 65p p&p inc. VAT, full guarantee on the Transistor, EVEN IF IT HAS BEEN SOLDERED**. PA Transistors 2N6084 are available separately at the very competitive price of **£10.79 + 86p** VAT = **£11.65**. You are wasting money if you buy these elsewhere because:

- Our prices are lower
- Our Kit transistors are fully guaranteed
- We know our products because we build, test and use them.

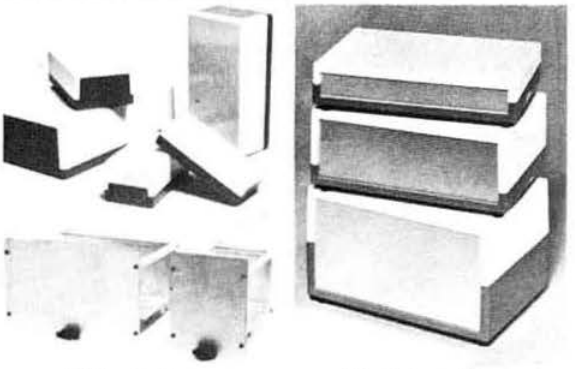
NEW PLESSEY FM I.C.

SL6640—IF limiting preamplifier, main limiting amplifier, quad detector, squelch, DC audio gain and audio output stage all in one 18-pin package—**£4.85.**

EX-STOCK DELIVERY OF MICROWAVE MODULES

70cm 100W Linear Amplifier, 12V operation, fully protected **£247.50.**
Also converters and transverters:
Converters: 144/28, **£20.25**; 144/28LO, **£22.50**; 144/2, **£20.25**; 144/4, **£20.25**; 432/28S, **£29.90**; 432/144S, **£29.90**; 1296/28, **£31.50**; 1296/144, **£31.50.**
Preamp, 144MHz, **£14.63.**
Varactor: 1296MHz, **£33.75.**
SSB Transverters: 432/28-S, **£133.88**; 432/144, **£149.62**; 432/144-R, **£169.88**; 144/28, **£88.88.**

Discount Prices on VERO CABINETS



All Plastic Range			Metal fronted Range		
Code No	Size (mm)	Price	Code No	Size (mm)	Price
65-2514F	100 × 50 × 25	**£1.70**	75-1237J	85 × 40 × 154	**£2.67**
65-2516G	100 × 50 × 40	**£1.91**	75-1238D	85 × 60 × 154	**£2.91**
65-2518H	120 × 65 × 40	**£2.15**	75-1239K	85 × 80 × 154	**£3.47**
65-2520J	150 × 80 × 50	**£2.45**	75-1411D	205 × 140 × 75	**£4.06**
65-2522K	188 × 110 × 60	**£3.25**	75-1412K	205 × 140 × 110	**£5.27**
			75-1410J	205 × 140 × 40	**£3.64**

Aluminium top panel—65-3851A (120 × 65 × 40)	**£3.31**
Sloping front panel—75-1798K (171 × 121 × 75/37.5)	**£4.30**
Sloping front panel—65-2523E (220 × 174 × 100/52)	**£6.70**

19"Card Frame/case System

Card Frame/case	71-3841-L	**£20.91 + £1.25 p & p**
Pair end plates	71-3842-F	**84p**
8" Module	71-3843-A	**£4.04**
4" Module	71-3844-G	**£3.08**
Veroboard	09-3979-K	**£1.40**
2" Front Panel	71-3845-B	**£1.03**
1" Front Panel	71-3846-H	**98p**
Veroboards (less Connector)	09-1034-F	**£1.33**
Plain Board (less Connector)	09-1040-J	**90p**
D.I.P. Board (less Connector)	10-1041-J	**£3.60**
Connector, plug, 31 way	17-0267-H	**98p**
Connector, socket, 31 way	17-0268-C	**£1.07**
VQ D.I.P. Board	01-0044-C	**£1.12**

All prices include VAT but please add minimum of 30p for post and packing. Data—Catalogue available at 45p + large (A4) 18½p SAE.

DEPT. 901, COMMUNICATIONS HOUSE, 20 WALLINGTON SQUARE, WALLINGTON, SURREY SM6 8RG
Tel: 01-669 6700 Open 9am to 5.30pm Mon to Fri, 9am to 1pm Sat. Closed for lunch 12.45 to 1.45pm

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PAUL
G3VJF

ICOM®

ABOUT 12½ kHz SPACING . . . ***As stated in previous adverts the ICOM range of 2M FM transceivers can be modified for 12½ kHz spacing. THIS DOES NOT MEAN THAT WE THINK THAT THIS IS A GOOD IDEA . . It may well mean good business for the trade as conversion of all 2M rigs could cost the country's amateurs over £100,000, but remember adoption of 12½ kHz spacing will result in reduced range on FM. Is it worth the sacrifice and expense to gain a few extra channels we don't really need, with the possibility that someone may decide that we can manage with one Megahertz instead of two?***

THE LEADER BASE STATION

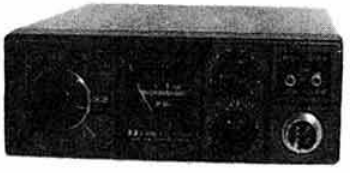
IC-211E

Fast becoming one of the most popular base station rigs because of its superb performance and advanced technology, the IC-211E leads the field in 2M base stations. With a full synthesizer which employs state of the art technology it provides all you want for full coverage on FM USB, LSB or CW on 2 metres with that extra bit of quality for which ICOM are so renowned, plus the chance to use the latest digital technology and even drive it from your home computer if you wish!
Less VAT = £496 With VAT = £558

THE MOBILES

The IC-245E is probably the only multi-mode mobile on the market. Of course, it can also be used as a base station, and many own one for just this purpose. It employs all the same technology as the IC-211E, and is in fact virtually the same electronically with the exceptions that it only operates on USB, FM and CW and does not have VOX and sidetone or full seven digit readout. As with the 211 you have access, via a multi-way plug on the back, to the LSI synthesizer for connection of a keypad, computer or other bit of home-brewed logic.
Less VAT = £368 With VAT = £414

IC-245E



IC-240

The IC-240 is still going strong and will be around for some time yet despite the increasing number of rigs coming on to the market with microprocessors. Most owners find that 22 channels are ample for mobile use and we have had a case where a more complicated rig with 400 × 5 kHz channels was traded in, brand new, for a 240 because the latter was so much easier to use on the move. This is still one of the most popular mobiles on the market and has earned itself a very high reputation for quality and reliability. Thousands have been sold as you can tell by just listening on your local repeater for a few minutes. You get automatic tone burst, low or high power, and reverse repeat available from switches on the front panel.
Less VAT = £176 With VAT = £198

IC-280E

As usual, ICOM have kept ahead with technology and have produced their revolutionary new IC-280E which uses a microprocessor to produce frequencies throughout the 2m band at the ideal 25kHz spacing required today. The IC-280 has the ideal advantage of being separable into two parts for easy mounting into today's cars which so often forget to leave space for a rig. The removable front panel, with all controls, is only 3" deep and will fit in any convenient spot—in the glove pocket, on the dash or even on the sun visor! The main part of the set can be mounted anywhere within 4 feet—or even further in many cases—under the passenger's seat is quite handy! Display is of frequency on an LED readout and there are three memories for your favourite channels. These are not cleared when the set is switched off as long as it is left connected to the car battery.
Less VAT = £248 With VAT = £279

AGENTS (PHONE FIRST—All evenings and weekends only, except Norfolk and Burnley)
Scotland—Jack GM8GEC (031-665 2420) **Norfolk**—Ted G3FEW (05088 632)
Wales—Tony GW3FKO (0222 702982) **Burnley**—(0282 38481)
North West—Gordon G3LEQ (Knutsford (0565) 4040) **Yorkshire**—Peter G3TPX (022678 2517)

H.P. TERMS AVAILABLE

FOR ALL MAIL ORDERS AND SALES DURING BUSINESS HOURS

YOUR SOLE AUTHORISED UK IMPORTER FOR ICOM

Access

THANET ELECTRONICS

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

Access

THE FABULOUS ICOM IC-701!

the systems approach!

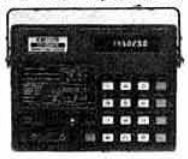
Designed for the connoisseur, the ICOM IC-701 HF transceiver brings the latest digital technology to Amateur Radio. Study a few more of the vast list of features offered with the IC-701 . . .

TWO VFO'S BUILT-IN
The second VFO, which is an optional tack-on with most other transceivers, is an integral feature in every **IC-701**. Now you can work those Yanks on 40 and 80 metres!

OPTICALLY COUPLED VFO
A VFO with **no** variable capacitors! Made under arrangement with Collins Radio, the **IC-701** maximises digital readout with positively no time lag or backlash in display stability, even when using 100Hz steps. The **IC-701**'s free wheeling dial is instantly co-ordinated with the high speed, computer controlled six digit readout using an optical chopper. There is absolutely **NO** mechanical connection between the smooth bearing mounted flywheel knob and the two dual-tracking VFOs.

COMPUTER COMPATIBLE INTERFACE
External microprocessor control from a PIA interface is possible via the 24-pin accessory socket on the rear panel of the **IC-701**. The **IC-701** can even be interconnected with the companion 2 metre **IC-211** to track frequencies for Oscar work.

REMOTE CONTROL FACILITY
The **IC-701** can be remotely controlled via the new optional **RM-3** computerised remote controller. This unit includes scan, duplex, memory and tone functions plus a touch-tone pad with digital readout. You can select frequencies and automatically change bands with this CPU controlled accessory.



CONTINUOUS OPERATION
The **IC-701** features continuous operation with a full 200w pep or 200w CW input on **all bands** and **all modes**. No need to worry about timing key-down operations as the **IC-701** is designed to handle the maximum power continuously! If the heat sink starts to warm-up a built-in fan automatically switches on. If a temperature danger point should ever be reached the fan doubles its speed and the digital display flashes to tell you to quit transmitting!

NO TUNING NECESSARY
Just select the required band and frequency and start transmitting!

ALL SOLID STATE
While the others are still fooling around with valves, **ICOM** have produced a solid-state HF transceiver including protected transistors in the final.

CROSS MODULATION MINIMISED
Cross modulation – a fact of life with some rigs – is minimised with the double balanced Schottky diode mixer used for both transmit and receive.

SMALL ENOUGH FOR MOBILE
The **IC-701** is extremely compact with dimensions 111 by 241 by 311mm (HWL) and weighs only 7·3kg. No more need to struggle with heavy rigs impossible to mount under-dash!

FULL METERING
The front panel meter includes swr, power, ALC, compression and collector voltage/current measurement.

DESKTOP MICROPHONE AS STANDARD
A high-quality condenser electret desk microphone is included as standard equipment with your new **ICOM IC-701**.

VARIABLE POWER OUTPUT
In CW and RTTY modes power output can be continuously varied from zero to maximum 200 watts input. SSB output can easily be adjusted for novice use.

IDEAL FOR THE CW AND RTTY BUFF
The **IC-701** includes narrow CW filter as standard plus semi-break-in and sidetone facilities. The **IC-701** has switching to select either narrow or wide RTTY shift rates.

THANET TECHNICAL BACK-UP
Your new **IC-701** from THANET comes complete with the THANET one year warranty plus technical and spares support. THANET staff have been factory briefed on the service and alignment procedures.

PLUS–

- ★ **Separate front-end RF stages using dual gate MOSFETs for each band, providing optimum performance.**
- ★ **Diode matrix to define band edge parameters.**
- ★ **Operation on all bands 1·8 thru 30MHz including WWV.**
- ★ **Modes include USB, LSB, CW, CW-N (narrow), RTTY.**
- ★ **Unique ICOM bandpass tuning.**
- ★ **VOX, Semibreak in CW, RIT, AGC, effective noise blanker.**
- ★ **Built-in speech processor using advanced circuitry.**
- ★ **All filters built-in.**
- ★ **Automatic front panel light dimming to suit ambient light conditions.**
- ★ **Separate VCOs for each band to reduce spurious and birdies.**
- ★ **Receive triple conversion.**
- ★ **Built-in DC power supply, external AC PSU with speaker.**
- ★ **Full line of matching accessories to come.**
- ★ **Internal speaker.**

COMPARE THE IC-701 WITH THE OTHERS–and see how many extras you don't have to buy!

Complete with AC PSU as shown £999 inc VAT
IC-701 alone £855 inc VAT

THE ULTIMATE! IC-701 state of the art
THANET ELECTRONICS for ICOM

P.M. ELECTRONIC SERVICES

PROFESSIONAL

★ COMPLETE CRYSTAL SERVICE ★

AMATEUR

VAT—PRICES EXCLUDE VAT; FOR YOUR CONVENIENCE THE VAT INCLUSIVE PRICE IS SHOWN IN BRACKETS
OVERSEAS ORDERS (Inc. Eire and Channel Isles) NO VAT CHARGEABLE.

2M TX & RX CRYSTAL AVAILABILITY & PRICE CHART

CRYSTAL FREQUENCY RANGE USE (TX or and HOLDER OUTPUT FREQUENCY	4MHz TX HC6/U	8MHz TX HC18/U	8MHz TX HC6/U	10MHz RX HC6/U	11MHz RX HC6/U	12MHz TX HC25/U	14MHz RX HC25/U	18MHz TX HC25/U	35MHz TX HC6 & 25U	44MHz RX HC6/U	44MHz RX HC25/U	45MHz TX HC6 & 25U	52MHz RX HC25/U	72MHz TX HC25/U
144.030	e	e	e	e	e	e	e	e	e	e	e	e	e	e
144.4 (433.2)	a	e	a	e	e	b	e	e	e	e	e	e	e	e
144.480	e	e	e	e	e	e	e	e	e	e	e	e	e	e
144.800	d	e	e	e	e	d	e	e	e	d	d	e	e	e
144.850	e	e	e	e	e	e	e	e	e	e	e	e	e	e
145.000/R0T	a	b	a	c	c	a	a	a	b	a	a	b	c	e
145.025/R1T	a	b	a	e	e	a	e	a	e	e	e	e	e	e
145.050/R2T	a	b	a	e	e	a	e	a	e	e	e	e	e	e
145.075/R3T	a	b	a	e	e	a	e	a	e	e	e	e	e	e
145.100/R4T	a	b	a	e	e	a	e	a	e	e	e	e	e	e
145.125/R5T	a	b	a	e	e	a	e	a	e	e	e	e	e	e
145.150/R6T	a	b	a	e	e	a	e	a	e	e	e	e	e	e
145.175/R7T	a	b	a	e	e	a	e	a	e	e	e	e	e	e
145.200/R8T	a	b	a	e	e	a	a	a	e	a	a	e	c	e
145.300/S12	e	e	e	e	e	e	e	e	e	e	e	e	e	e
145.350/S14	e	e	c	e	e	c	c	c	e	c	c	e	e	e
145.400/S16	e	e	e	e	e	e	e	e	e	e	e	e	e	e
145.425/S17	e	e	e	e	e	e	e	e	e	e	e	e	e	e
145.450/S18	e	e	e	e	e	e	e	e	e	e	e	e	e	e
145.475/S19	e	e	e	e	e	e	e	e	e	e	e	e	e	e
145.500/S20	a	b	a	c	c	a	a	a	b	a	a	b	c	e
145.525/S21	a	b	a	c	c	a	a	a	e	a	a	e	c	e
145.550/S22	a	b	a	c	c	a	a	a	e	a	a	e	c	e
145.575/S23	a	b	a	c	c	a	a	a	e	a	a	e	c	e
145.600/R0R	a	b	a	c	c	a	a	a	e	a	a	e	c	e
145.625/R1R	e	e	e	e	e	e	a	e	e	a	a	e	c	e
145.650/R2R	e	e	e	c	e	e	a	e	e	a	a	e	c	e
145.675/R3R	e	e	e	c	c	e	a	e	e	a	a	e	c	e
145.700/R4R	e	e	e	c	c	e	a	e	e	a	a	e	c	e
145.725/R5R	e	e	e	c	c	e	a	e	e	a	a	e	c	e
145.750/R6R	e	e	e	c	c	e	a	e	e	a	a	e	c	e
145.775/R7R	e	e	e	c	c	e	a	e	e	a	a	e	c	e
145/800/R8R	a	b	a	c	c	a	a	a	e	a	a	e	c	e
145.950/S38	a	e	a	a	e	e	e	e	e	a	e	e	e	e

Prices: (a) **£1.95** (£2.19), (b) **£2.32** (£2.61), (c) **£2.80** (£3.15) (d) and (e) **£3.20** (£3.60)
AVAILABILITY: (a), (b), (c) and (d) stock items normally available by return (we have over 5000 items in stock). (e) Four weeks normally but it is quite possible we could supply from stock. **N.B.** Frequencies as listed above but in alternative holders and/or no stock loadings 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 EQUIPMENTS

With the ever-increasing popularity of Japanese equipments we have further expanded our range of stock crystals. We can now supply for **YAESU** FT2F, FT2FB, 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.

YAESU FT221 CRYSTALS NOW IN STOCK, ALL AT **£2.80** (£3.15). All popular channels—For repeater use advise xtal frequency required as earlier models have different shift xtals to later FT221R. We can also supply the crystal to give NORMAL "tune to RX" working as FT221R. For 70cm we can supply the 1.6MHz shift xtal for direct use with a **MICROWAVE MODULES** MMT432/144 which we can supply for **£151.00** (£168.88). **SPECIAL OFFER:** If ordered with transverter 70cm shift crystal **FREE!!**

BURNS ELECTRONICS

We are the Northern Appointed Agents for **BURNS KITS** etc. and can supply many of their products from stock.

MODULAR COMMUNICATIONS SYSTEMS

For the RTTY enthusiast we can recommend and supply the **"MCS"** range of products. This includes terminal units. AFS keyers, magnet drivers for TTL interface, telegraph distortion measuring adaptor. RTTY audio processor, power units, etc. For the CW man we have the **"MCS"** CW filter which gives three stages of active filtering. Please send S.A.E. for full details of the **"MCS"** range.

ANZAC MD-108 DOUBLE BALANCED MIXER

5-500MHz supplied with full details for only **£5.95** (£6.43).

CRYSTALS FOR THE BRITISH 70CM CHANNELS

Due to the much higher multiplication involved (3 times that on 2m) all our stock 70cm crystals are to much closer tolerances than our standard amateur range.
We are stocking the following channels RB0 (434·60/433·00), RB2 (434·65/433·05), RB4 (434·70/433·10), RB6 (434·75/433·15), SU8 (433·20), RB10 (434·85/433·25), RB14 (434·95/433·35), SU18 (433·45) and SU20 (433·50)—TX and RX for use with: PYE UHF Westminster (W15U), UHF Cambridge (U10B), Pocketfone (PF1) and STORNO CQL/CQM 662 all at **£2.32** (£2.61). For the U450L Base Station we have the TX crystals for all the above channels **£2.32** (£2.61). The RX crystals for the U450L Base Station, together with the TX and RX crystals for the remaining SU channels (SU12—433·30-RTTY, SU16-433·40 and SU22-433·56) for all the above equipments are available at **£3.20** (£3.60) to amateur spec or **£4.20** (£4.72) to same spec as stock items. Delivery approx. 4 weeks.

4m CRYSTALS FOR 70·26MHz—HC6/U

TX8·7825MHz and RX6·7466MHz or 29·7800MHz **£2.32** (£2.61).
10·245MHz "ALTERNATIVE" I.F. CRYSTALS—£2.32 (£2.61). For use in Pye and other equipment with 10·7MHz and 455kHz I.F.s to get rid of the "birdy" just above 145·0MHz. In HC6/U, HC18/U and HC25/U.
CRYSTAL SOCKETS—HC6/U. HC13/U and HC25/U (Low loss) 16p each (18p). **10p** P. & P. per order (P. & P. free if ordered with crystals).

CONVERTER/TRANSVERTER CRYSTALS—HC18/U

All at **£3.00** (£3.37), 38·6666MHz (144/28), 42MHz (70/28), 58MHz (144/28), 70MHz (144/4), 71MHz (144/2), 95MHz (342/52), 96MHz (1,296/432/144), 101MHz (432/28), 101·50MHz (434/28), 105·6666MHz (1,296/28) and 116MHz (144/28).

CRYSTALS MANUFACTURED TO YOUR SPECIFIC REQUIREMENTS

Prices shown are for one off to our amateur specs; closer tolerances are available. Please send us details of your requirements.

A Low frequency fundamentals:

Adj. tol.±50ppm	Temp. tol.±100ppm 0 to 70°C.
6·0 to 19·999 kHz, **£28.12** (£31.63)	80 to 99·999 kHz, **£7.30** (£8.21)
20 to 29·999 kHz, **£17.75** (£19.97)	100 to 149·99 kHz, **£6.68** (£7.51)
30 to 59·999 kHz, **£15.51** (£17.45)	150 to 499·99 kHz, **£6.20** (£6.97)
60 to 79·999 kHz, **£12.41** (£13.96)	500 to 799·99 kHz, **£7.30** (£8.21)

B Mid frequencies:

Adj. tol.±30ppm	Temp. tol.±30ppm 0 to 60°C
800 to 999·9 kHz Fundamental	**£9.50** (£10.69)
1·0 to 1·4999MHz Fundamental	**£9.40** (£10.57)
*1·5 to 1·9999 MHz Fundamental	**£3.95** (£4.44)
*2·0 to 20·999 MHz Fundamental	**£3.36** (£3.78)
21 to 24·999 MHz Fundamental	**£6.48** (£7.29)
25 to 27·99 MHz Fundamental	**£8.90** (£10.01)
28 to 30 MHz Fundamental	**£9.68** (£10.89)
*15 to 20·9999 MHz 3rd Overtone	**£3.95** (£4.44)
*21 to 63 MHz 3rd Overtone	**£3.36** (£3.78)
*60 to 62·999 MHz 5th Overtone	**£3.95** (£4.44)
*63 to 105 MHz 5th Overtone	**£3.36** (£3.78)

C High frequencies:

Adj. tol.±20ppm	Temp. tol.±30ppm—10 to 60°C.
105 to 180 MHz. **£6.48** (£7.29)	180 to 250 MHz, **£10.54** (£11.86)

Delivery* normally 4/6 weeks—all other frequencies 6/8 weeks.
Holders all low frequencies are in HE13/U or similar—otherwise supplies in HC6/U, HC18/U and HC25/U are available at frequencies above 4MHz. HC17/U (same pins as FT243) available at **25p** (28p) extra on above prices.
Unless otherwise specified, fundamentals will be supplied to 30pf circuit conditions and overtones to series resonance.

TEST EQUIPMENT FREQUENCY STANDARD CRYSTALS

100kHz in HC13/U and 455kHz in HC6/U, **£2.95** (£3.19).
1MHz and 5MHz in HC6/U and 10MHz and 10·7MHz in HC6/U and HC25/U, **£2.80** (£3.02).

CRYSTALS FOR PROFESSIONAL USE

We can supply crystals to most commercial and MIL specifications, with an express service for that urgent order. Please send S.A.E. for details or telephone between 4.30—7pm and ask for Mr. Norcliffe.

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We can supply crystals for commercial use, e.g. TV or computer crystals, etc. at very competitive prices. Please let us know your requirements

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

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

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South Midlands

WISHING ALL OUR READERS

WHY BUY YOUR YAESU MUSEN FROM SMC?

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Whatever the reason; heartfelt thanks to all our customers for making us, SMC, the biggest, and we sincerely hope, the very best in the business.

THE NEW FT7B

THE MAXIMUM PERFORMANCE FOR THOSE ON THE MOVE

With the HF bands in such fine condition, mobile operation is most tempting. Yaesu are proud to announce a brother to the FT7—the FT7B.

All basic functions of the famous FT7 are retained. The combination of Mosfet RF and Schottky diode mixer is complemented with a 20dB attenuator. Selectable side-bands remain, now supplemented with AM. The semi-break-in with side tone CW facility is of course retained but for reception, an audio peak filter is a big plus. 80–10m as before, but 10 metres is expanded to be capable of the full 2MHz operation. An Analogue scale, to 1kHz, plus an optional digital readout unit that can be conveniently sited above the transceiver, on the dash or the steering column. Powers' FT7; 10W out or 100W out with the FL110 linear (sited anywhere in the car), FT7B 50W out (A3j-A1 100W PIP A3, (F2, F3) 25Win).

With the competition eliminated the choice between models is yours.

FT7 Transceiver 10W out....£318 (+12½%)
FP4 PSU 4A DC 12V.....£35 (+8%)
FL110 Linear 200W PIP.....£130 (+12½%)

FT7B Transceiver 100W PIP ...£375 (+12½%)
YC7B Readout remote dig .....£61 (+8%)
FP12 PSU 12A DC 12V .....£67 (+8%)

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A VERY HAPPY NEW YEAR

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ON THE MOVE WITH MFJ—'THE MODERN ATU PEOPLE'

Ten to One-Sixty, with 12 position switched inductor, this 7 tuner range is equally at home in the car, caravan, under canvas or in a hotel (Prices + VAT 12½% POST FREE WORLDWIDE)

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900 Two variable capacitors SO239 Coax and random wire, 200W RF
5" × 2" × 6" **£36.75**

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943 2 Var. Caps. 4: balun, 300W R.F. Coax, random and balanced feeds SO239
7" × 2" × 6" **£51.50**

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945 As 943 plus SWR and Wattmeter 30 and 300 W FSD Flat response
7" × 2" × 6" **£58.75**

RANDOM WIRE TUNER MFJ16010
16010 Toroidal inductor, one capacitor Random Wire Tuner SO239's, 200W RF
2½" × 3½" × 4" **£29.50**

TUNER WITH BALUN MFJ901
901 As 900 but with 4:1 balun, 200W RF Coax, random and balanced feeds, SO239
5" × 2" × 6" **£44.25**

TUNER WITH SWITCH MFJ944
944 As 943 plus 6 position switch to; 2 Coax Direct or through, Random, Balun, Load, 7" × 2" × 6" **£58.75**

DE LUXE TUNER MFJ941B
941B As 943 plus features of 944 and 945 ie switch, SWR/Wattmeter, balun etc. etc., 7" × 2" × 6" c/w mounting bracket. . **£66.15**

SMC HF12

12 channel, FM, monitor receiver ideal for professional, SWL, repeater, check, raynet, net and even the XYL. Tiny 2½" × 1½" × 4½" and light 8oz, yet sensitive, double superhet with 12kHz IF bandwidth. Any 4MHz segment between 130 and 170MHz may be covered.
c/w Mains charger, earpiece, wire antenna, case etc, etc.
+ VAT 12½% UK. WORLD WIDE POST FREE

HF12 No xtals c/w Accessories. **£49.95**
HF12A12 Amateur Band 145MHz fitted; S(20,21,22,23,) R(0,1,2,3,4,5,6,7) **£69.95**
HF12M9 Marine Band. 156MHz fitted; 16,6,8,10,67,00, M, 12,14. **£66.67**

PEAK READING WATTMETER FS60*M
Power RMS & PEP Flat Response VSWR 1 3: 1, 6½", 2½", 4½".

FS601MP	1·8-30MHz	20 & 200W	**£40.00**
FS601MO	1·8-30MHz	200 & 2KW	**£40.00**
FS602M	50-150MHz	20 & 200W	**£40.00**
FS603M	430-440MHz	5 & 20W	**£40.00**

FR HEAD/REMOTE INDICATOR FS711
Directional coupler 3" × 2½" × 1½"
Illuminated Indicator 5" × 2½" × 1½"
VSWR 1-3:1 ±3%, Power +10%

FS711H	2-30MHz	20 & 200W	**£28.00**
FS711V	50-150MHz	20 & 200W	**£28.00**
FS711U	430-440MHz	5 & 20W	**£28.00**

PEAK READING WATTMETER FS 500
Peak reading Flat response
Power RMS and PEP ±7%
SWR Measurement 1-5:1
Size 8" × 4" × 5½"

FS500H	1·8-60MHz	20 & 200KW	**£59.00**
FS500V	50-150MHz	20 & 200W	**£59.00**

KLM PA15-160BL

The KLM range of solid state, no tune broadband, VHF & UHF linear amplifiers, are justifiably famous. It has recently been improved by adding an extra 30% cooling area (whilst maintaining the same low 2½" profile), providing circuit breaker and reverse polarity protection, offering the choice of RF sensing or remote hard switching; proffering adjustable hang time for SSB operation and adding automatic over temperature cut out with warning leds.

PA15/160BL. 2M. 15W max drive. 160W output **£178.50** (+VAT 12½%)

GET AHEAD GET A HANSEN

A full range of 14 purpose designed accurate SWR-Wattmeters: PEP Meters, Auto SWR meters, Mobile Types-RMS meters for HF, VHF and UHF. (Add VAT 8% THIS MONTH POST FREE)

FLAT RESPONSE METER FS30*M
RF power + 10% FSD
SWR Measurements 1-3:1 ±3%
Size 6½", 2½", 4½"

FS301MP	2-30MHz	20 & 200W	**£27.00**
FS301MO	2-30MHz	200 & 2KW	**£27.00**
FS302M	50-150MHz	20 & 200W	**£27.00**

PEAK READING AUTO SWR FS700
Peak reading Flat response
Automatic SWR, 1-4:1 & 1-20:1
Power RMS and PEP. Size 8" × 4" × 5½"

FS700H	1·8-60MHz	15, 150 & 1·5KW	**£68.00**
FS700V	50-150MHz	15 & 150W	**£68.00**

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BARCLAYCARD VISA

HYGAIN FOR THE LONGEST FROM THE BIGGEST RANGE

35-acres of meticulously instrumented antenna range allows testing of full sized prototypes and the plotting of the actual performance characteristics of a design before production.

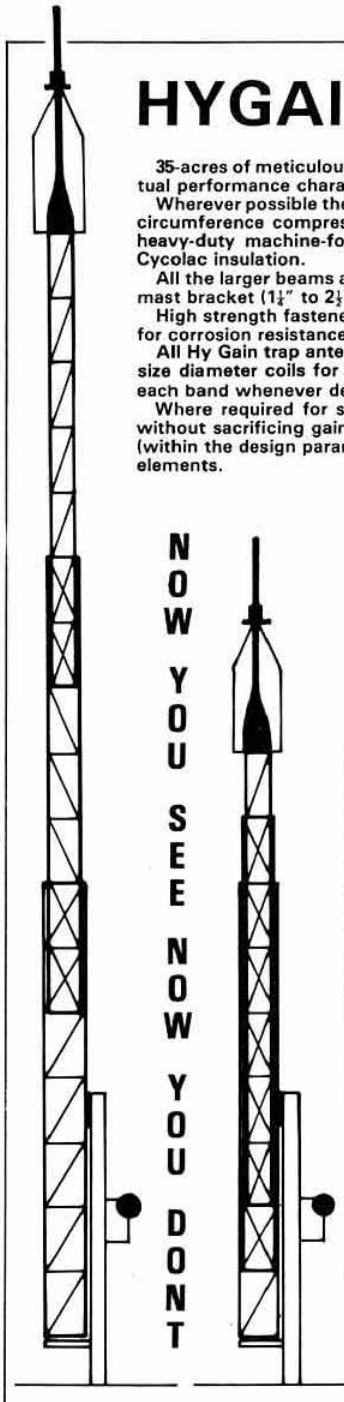
Wherever possible they are constructed of high strength aircraft quality taper-swaged aluminium tubing, with full circircumference compression clamps for the greatest mechanical and electrical efficiency. For extra strength, special heavy-duty machine-formed aluminium element-to-boom brackets are used on all beams along with high impact Cycolac insulation.

All the larger beams and quad antennas are supplied with the remarkably strong tilt-head; a cast aluminium boom to mast bracket (1¼" to 2½") which allows for easy tilting for installation, maintenance and tuning.

High strength fasteners are used throughout the antennas and all steel parts are Iridite treated to MIL specifications for corrosion resistance.

All Hy Gain trap antennas use specially developed Hy-Q traps for superior performance using precision wound oversize diameter coils for exceptional accuracy and consistent performance characteristics. A separate trap is used for each band whenever design permits.

Where required for superior performance a Beta Match system is used resulting in the optimum energy transfer without sacrificing gain or pattern control. This advanced design also permits maximum gain and front to back ratio (within the design parameters), a 50 ohm nominal feedpoint and positive DC Grounding without detuning any parasitic elements.



NOW YOU SEE NOW YOU DONT

HYGAIN PRICES

+ VAT (H, 12½%: L, 8%)
+ CARRIAGE (B, BRS: P, POST)

12AVQ	10 – 20m.	Trapped vertical self supporting	14'H	£37.50	HSB	£2.00
14AVQ/WB	10 – 40m.	Trapped vertical self supporting	18'H	£52.50	HSB	£2.00
18AVT/WB	10 – 80m.	Trapped vertical self supporting	25'H	£76.00	HSB	£2.25
14RMQ		Roof mounting kit for 12, 14 & 18 AV's		£19.50	HSP	£1.50
18V	10 – 80m.	Loaded vertical self supporting	19'H	£27.80	HSB	£2.00
18HT	10 – 80m.	HyTower self supporting "stubbed"	50'H	£225.00	H B	£3/11D
103BA	10m.	3 element yagi 17.0'LE	8'B	£51.00	HSB	£2.50
105BA	10m.	5 element yagi 18.5'LE	24'B	£92.00	H B	£3/8D
153BA	15m.	3 element yagi 23.0'LE	12'B	£62.75	H B	£3.00
155BA	15m.	5 element yagi 24.5'LE	26'B	£117.50	H B	£3/8D
203BA	20m.	3 element yagi 35.0'LE	16'B	£117.50	H B	£3/6D
204BA	20m.	4 element yagi 36.5'LE	26'B	£155.00	H B	£3/8D
205BA	20m.	5 element yagi 36.5'LE	34'B	£205.00	H B	£4/9D
402BA	40m.	2 element yagi 43.0'LE	16'B	£158.00	H B	£4.00
DB10 – 15A	10 – 15m.	3 element yagi 23.0'LE	13'B	£115.00	H B	£3.50
TH2MK3	10 – 20m.	2 element yagi 27.3'LE	6'B	£109.75	H B	£3.50
TH3JNR	10 – 20m.	3 ele 600W yagi 24.2'LE	12'B	£113.50	H B	£3.50
TH3MK3	10 – 20m.	3 element yagi 27.0'LE	14'B	£157.00	H B	£4.00
TH6DXX	10 – 20m.	6 element (total) 31.1'LE	24'B	£205.00	H B	£3/8D
HY QUAD	10 – 20m.	2 element quad 13.5'TR	8'B	£169.00	H B	£4.50
BN86	3 – 30MHz Balun ferrite 1:1 with U bolt			£13.50	HSP	£0.60
LA1	Lightning arrestor gas filled, bulkhead mount			£27.35	LSP	£0.40
LA2	Lightning arrestor spark disharge, In line '239			£3.45	LSP	£0.30
415	Bumper strap, stainless steel band c/w base			£10.80	LSP	£0.75
499	Body mount, hemispherical chromed (3½" dia.)			£10.80	LSP	£0.60
511	Spring, heavy duty chrome plated (4½" 3lbs)			£8.85	LSP	£0.75
417	Spring, medium duty chrome plated (4½" 2lbs)			£8.20	LSP	£0.75

NEW

WHAT IS IT?
Answers on a postcard to:-
Spot the 30' Versatower (10' Sections) Competition
"Itsouroil"
P.O. Box 49
Aberdeen.

VERSATOWER 30', 10' SECTIONS

SMC and Strumech have combined to produce a telescopic and luffing tower of low section length, capable of supporting a HF beam or several VHF Ants. The head unit accepts 2" tube and provides for a rotator Operation is easy with single winch system.
P30 Post mount **£229.00** BP30 Base Plate **£254.00**
(Excluding VAT and Carr). Write for full details.

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BARCLAYCARD VISA

WATERS & STANTON ELECTRONICS

FDK MULTI 800D-25 WATTS

now includes remote frequency control microphone at no extra charge!

THE MOST ADVANCED FM RIG!

£289 inc. VAT (Remote display **£19.95**)

Over 25 watts of high quality FM output at your finger tips. Consider its features and learn why more people are trading up to the 800D. ★ Frequency control is electronic from the centre master control—no rotating dial switches to wear out. ★ Remote frequency control is available from the new "up/down" microphone buttons. ★ Bright LED readout gives true frequency display in 5kHz steps. ★ True frequency counter reads both transmit and receive frequencies in use. ★ Instant normal or reverse repeater operation—no returning! ★ Xtal controlled tone-burst. ★ Variable power control 1 watt to 25 watts (30 watts typical). ★ Dual non-volatile memory that lasts even with power off! ★ 144-148MHz coverage for 70cms transverting. ★ Additional programmable frequency shifts. ★ Simple auto-scan modification available. ★ Remote digital "head-up" display for dash board mounting. ★ Plug-in modular construction for ease of servicing. ★ Solid block power module... There are cheaper rigs available, but is that really what you want?... Send an SAE for the answer!

FDK PALM II

2M FM

SIZE: 6" × 2½" × 1¾"

WEIGHT: 1lb 3oz

COMPARE ITS VALUE
COMPARE ITS FEATURES

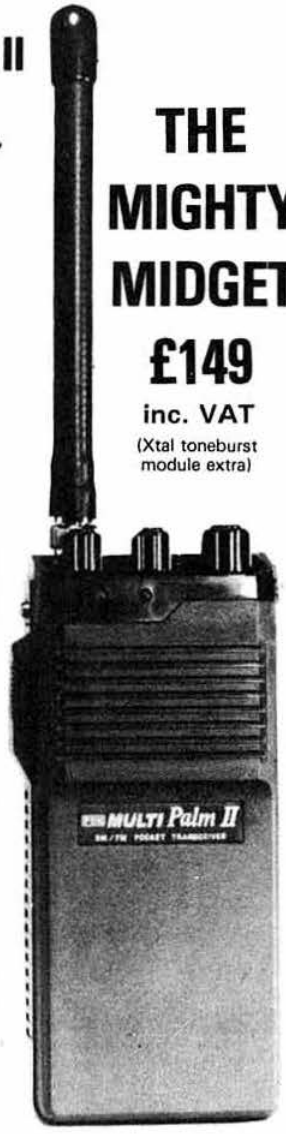
- ★ **Smallest hand-held available**
- ★ **Over one watt output**
- ★ **AC charger included**
- ★ **6 channel capability**
- ★ **Simplex or ± 600kHz switch**
- ★ **BNC aerial socket**
- ★ **Flexible whip supplied**
- ★ **S0/20/22 supplied**
- ★ **Extra channels cost £2.50!**
- ★ **Xtal controlled tone-burst**
- ★ **Ni-cad battery pack supplied**
- ★ **High quality condenser microphone**

THE MIGHTY MIDGET

£149

inc. VAT

(Xtal toneburst module extra)



OH THOSE MICROPHONES!

Rigs may improve and get more sophisticated but oh those microphones!—when a £160 mobile has the same microphone as its £1,000 big brother then its time to think again. With the Adonis AM502 we think we have the answer. Superbly constructed with a built-in condenser insert, this microphone works with any rig irrespective of impedance or sensitivity. Electronic touch to talk and switchable compressor the AM502 will enable you to at last sit at your operating desk and do justice to that beautiful new rig. At £39 it is not cheap but then quality never is!

FDK 70 cm FM!

MULTI U-11 OF COURSE

£299 inc. VAT (fitted 10 channels)

IN STOCK NOW

Now's the chance to join the fun on 70cms. With the ever-growing number of 70cms repeaters coming on the air, it makes sense to consider 70cms as the ideal mobile band. Good strong signals (aided of course by the U-11 hot front end and 12 watts output) no QRM and a lot of new friends to meet. The U-11 has lead the way from the start and is now regarded as THE rig for 70cms. We can supply the U-11 fitted with all of the following channels:
RB0, RB2, RB4, RB6, RB10, RB14, SU8, SU16, SU18, SU20 at **£5.90 per channel.**

NEWS CORNER

We are pleased to advise you that we are now appointed agents in the South for Hillomasts and can supply any of the amateur models. For further information and prices on these pneumatic aerials, please send SAE. Incidentially, for any item advertised in this magazine—if you are considering H.P. drop us a line—our terms are very competitive.

Have you heard about the FDK700E with 25kHz channels, 25 watts and only **£229?** Delivery January.

Peter de G30JV

WATERS & STANTON ELECTRONICS

TM56B AMATEUR/MARINE VHF MONITOR RECEIVER

230V AV
12V DC
10 channels fitted
12 channels + 4 autoscans

A PLEASURE TO OWN
Tune into the exciting world of amateur radio with this advanced monitor receiver. Listen to your local amateur radio stations both fixed and mobile, direct or through your local repeaters. From the comfort of your fireside chair, using the built-in 230 volt. AC power supply, this receiver will open up the whole new world of VHF Amateur Radio for you. Alternatively the necessary hardware supplied enables you to power the TM56B from your car radio battery for true mobile operation.

GREAT VALUE
Little wonder that the first two shipments of these beautifully engineered receivers were sold out within weeks of the advertisements appearing. We really are amazed at their superb performance at such a low price.

SOUND DESIGN
The design is well and truly tried and tested, and the circuitry is almost identical to the receiver section of the FDK mobile transceivers. Both sensitivity and selectivity leave nothing to be desired and the auto-scan enables the popular calling channels to be continually monitored for activity.

NO HIDDEN EXTRAS
The receiver is supplied complete with all leads, circuit diagram, crystals for channels S0, 20, 21, 22, 23, R3, 4, 5, 6, and 7 plus space for a further 6 channels, making 16 in all. An additional matching desk top aerial is also available at £2.50 extra.

£104 including delivery and VAT. (Marine £113)

2m SSB/CW PORTABLE

MIZUHO 2M SSB HANDHELD

MIZUHO SB-2M—ONLY FROM SELECTED DEALERS

We are pleased to announce that we are stocking the dandy little MIZUHO SB2M SSB 2m hand-held. This is a real winner and its internal construction is superior to its competitors—so much room—so neat—and its performance is quite delightful. Never heard of MIZUHO—well until now this Japanese firm have specialised in QRP HF equipment but their first VHF product is really something. Of course, you won't find it on every dealers shelf. MIZUHO are pretty particular who handles their products—we pride ourselves in being selected as one of their distributors. Space here is somewhat limited to give full information, but if 2m SSB from the office, on country walks, on the tops of mountains, etc. appeals to you and **£165** inc. VAT is not too much for you perhaps you had better send us an S.A.E.

FITTED 144·20—144·40 Extra ranges £3.00 and complete with English Handbook.

FDK

Multi-2700 Mk II
Now lowest priced all-mode rig

IN STOCK NOW

SO WHERE'S THE CATCH!
Well, putting it bluntly, there is no catch. Believe it or not we are offering you a bargain! We've simple gambled on buying a very large shipment to get even better terms from Japan and the saving is being used to offset falling exchange rates. If, however, you are still not convinced, then send us the appropriate additional money for one of the other rigs which are just as good as the M2700—or for 7p. we'll send you a brochure on the Multi 2700.

ALL MODES—ALL OCCASIONS
All modes are provided AM FM SSB and CW. For SSB operation VOX is included and for CW, fast break-in is provided with completely adjustable side tone. The 2700 can be used at home with its internal 230v AC PSU or taken out to the local high spot and run from 12v DC. This really has to be the QSO machine that you will never tire of.

BEAUTIFUL TO OPERATE—BEAUTIFUL TO HEAR
The transmitted audio quality of the 2700 is second to none. Its crisp, clear, quality effects the manufacturer's knowledge that a clean signal sells more products! The Optimised 16·9MHz 8-pole crystal filter gives clean SSB signals and good selectivity. On FM, direct modulation of the VCO gives smooth but penetrating audio. Typical power output is 16 watts but the flip of a switch and you have 1 watt on all modes. (An internal adjustment permits the power to be adjusted from approx 1 watt to 6 watts for driving linears or transverters.) The Multi-2700 has a built-in receiver RF pre-amp—no problems here with a deaf receiver.

DUAL VFO CONTROL
Until you have handled the Multi-2700 you cannot appreciate the advantages of dual vfo control. the conventional analogue VFO with its dual speed silky smooth feel, permits accurate tuning on all modes with 1kHz readout. It also covers a complete 1MHz segment at a time resulting in minimum band switching. The flip of a switch and you have full synthesized control of your transceiver. The bright LED display allows the transceiver to be immediately set to any 2 metre channel. A VXO control ensures the synthesizer can be used equally well on SSB, CW or FM. The versatility of dual vfo control is quite amazing. For example: use the analogue vfo at the SSB end of the band and the synthesizer on the FM channels; set the synthesizer to the "sked" frequency and continue normal operation of the analogue VFO; set analogue VFO to DX frequency whilst continuing normal tuning of the adjacent frequencies on the analogue VFO—the combinations are endless. repeater shifts are completely taken care of. The Multi-2700 has +/−600kHz shifts and 1·6MHz for 70cms operation.

ITS VERSATILITY IS ENDLESS
Inter-continental contacts are possible via OSCAR. Press the OSCAR button on the front panel and you bring in the 28MHz downlink receiver converter to enable true transceive operation through the satellite. An audio SPEECH PROCESSOR can be switched in to permit extra punch, the amount of compression being adjustable to suit the operator. RIT operates on all modes and both VFO's. A NOISE BLANKER is included for really excellent suppression of ignition pulses. The receiver section covers 143 to 149MHz (Tx covers 144 146MHz ±1·6MHz shift only). Apart from the 2 existing repeater offsets one further shift may be programmed. AGC control is continuously variable, as is the VOX DELAY and ANT-VOX etc. All pre-set controls are easily reached through the top hatch of the transceiver. Separate centre zero and rx S-metres are provided. We could go on but if you have read this far perhaps it is time you sent off for the 4-page brochure giving full details of this beautiful transceiver at the really competitive price, **£499 inc VAT and Securicor delivery.**

THE COMPLETE HAM RADIO CENTRE

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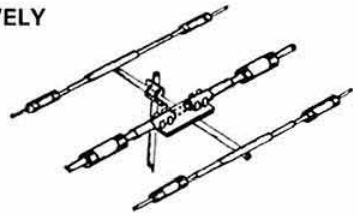
WATERS & STANTON ELECTRONICS

NEW!

MOSLEY MINI-BEAM **10–15–20M**

EXCLUSIVELY FROM US



NOW IN STOCK

PRICE 600 watt £
2k watt £

FIELD TEST RESULTS

Forward Gain:	
28MHz and 21MHz	5dB
14MHz	4dB
Front to Back Ratio:	15dB
S.W.R. at Resonance	1·5:1
Max. Element Length	21ft
Boom Length	6ft
Turning Radius	11ft
Wind Load	60lbs
Weight	17lbs

NAGAI 2200 LINEAR £481 inc. VAT

★ 230v AC
★ 4CX-350F tube
★ Receiver pre-amp
★ 10–13 watts drive
★ SWR meter built-in
★ 500W PEP input
★ 400W FM/CW input
★ Fan cooled
★ 12v DC output
★ Covers 144–146MHz

Den Tron MLA 2500
160–10m. 2kW PEP
£695 inc. VAT
In Stock Now

★ 1kW DC continuous
★ ALC circuit
★ 3 speed cooling
★ Military specifications
★ 234v./117v. AC
★ 2 of EIMAC 8875 tubes
★ R.F. Wattmeter RMS/PEP
★ Size 5¼" × 14" × 14"
★ Weight 47lb.
★ Ideal for SSTV/RTTY
★ 3rd order down 30dB +
★ 40 watts drive for 1kW

Den Tron Military MT 3000A
160–10m. 3kW
£275 inc. VAT
In Stock Now

★ Antenna selector (5)
★ Exciter dummy load (250W)
★ 3kW continuous
★ 3 core balun
★ Tuner by-pass switch
★ Compact 5¼" × 14" × 14"
★ Watt meter 200W/2kW
★ Forward/Reverse Watts
★ Matches any antenna
★ Military construction

DenTron JR MONITOR
160–10m
300W
£59 inc. VAT & delivery
IN STOCK NOW!

★ Continuous 1·8–30mHz
★ Forward reading RF indicator
★ Built-in balun
★ Mobile mount
★ 50 or 75 unbalanced
★ 75–600ohm balanced
★ Random wire
★ Ceramic 1,000 volt capacitors
★ Ideal for FT101 etc.
★ Ideal for HF mobiles!

New! DENTRON 160–10M Super Tuner Plus

NEW!
FDK 700E
2m TRANSCEIVER
25 & 12½kHz
CHANNELS
25 Watts
The Price?
£229 inc. VAT

HERE'S OUR NEW SUPER COMPACT 80/40 1kW ANTENNA—EL40X

Only 70ft long and can be accommodated in a 50ft garden. 15 to 20ft above the ground and you'll work Europe with S9 plus reports even further if you try hard enough. Put it up higher or use as an inverted 'V' with a special inverted 'V' mounting kit supplied and you have got yourself a real DX antenna. Just 35ft either side of centre the inverted 'V' arms can be accommodated almost anywhere.

This superbly built Japanese antenna comes complete with high quality balun transformer for 50ohm coax, clear vinyl covered multi-stranded copper wire of extremely heavy duty, weather sealed traps that are virtually impossible to burn out and all the ancillary hardware, including inverted 'V' mounting kit. For quality and performance, this is it!

THE COMPLETE HAM RADIO CENTRE

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AMATEUR ELECTRONICS UK

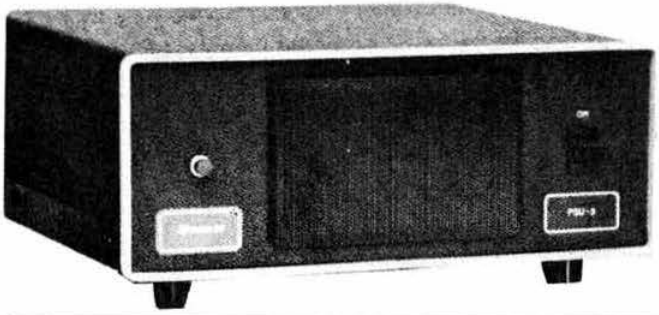
NEW! ADVANCED TECHNOLOGY from SWAN ELECTRONICS

100MX—THE DE-LUXE MOBILE RIG WITH ALL THE EXTRAS

Solid state HF transceiver. 100 watt PEP and CW output, 80M-10M. Broadband design featuring noise blanker, VOX, 25KHz calibrator, CW sidetone, semi-break in CW, RIT, built-in speaker. Ultra stable PTO frequency source. Operates directly on 11 to 15 VDC, USB, LSB, CW operation. 9MHz 8 pole crystal IF filter.

ST-3
Antenna tuner with 200 watt PEP rating. 18 position inductive selector switch. Simultaneous reading forward and reflected power meters. Match balanced or unbalanced antennas with 4 position antenna selector switch. Matches 100 MX.

PSU-5
115/230 VAC power supply compatible with all SWAN solid state HF transceivers.



OTHER NEW MODELS

350B
Full 300 watt PEP input in a 80-10 meter HF transceiver. Complete with built-in AC power supply, 25KHz calibrator, 80 or 100Hz CW audio filter, and speaker. USB, LSB, or CW.

350D
Digital readout 80-10 meter HF transceiver. Selectable CW audio filter of 80 or 100 Hz, CW side tone, built in AC supply, USB, LSB, or CW. 300 watts PEP input.

HF700S
HF transceiver with a full 700 watt input on SSB. 80M-10M coverage with up to 10 channels for MARS operation with optional S10-X plug-in crystal controlled oscillator. Selectable 80-100Hz CW filter. VOX with optional VX-4 plug-in accessory.

SEE FACING PAGE FOR DETAILS OF FULL LITERATURE

BRANCH: AMATEUR ELECTRONICS, UK—COASTAL, CLIFTONVILLE, KENT, KEN McINNES, G3FTE, THANET (0843) 291297. 9 a.m.-10.30 p.m.

BRANCH: AMATEUR ELECTRONICS UK-SCOTLAND, 287 MAIN STREET, WISHAW, LANARKSHIRE, GORDON McCALLUM, GM3UCI. TELEPHONE WISHAW 71382. (EVENINGS CARLUKE 70914)

AGENT: WALES & WEST—ROSS CLARE, GW3NWS, CAERLEON, NEWPORT. (CAERLEON 422232)—ONLY 20 MINUTES OVER THE SEVERN BRIDGE.

G3FIK

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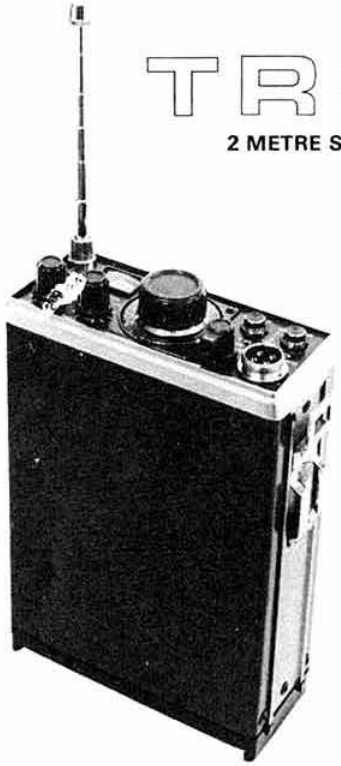
TRIO

TR2300

2 METRE SYNTHESIZER PORTABLE



Trio once again lead the field with the introduction of the new TR2300 2 metre FM portable. Following the established TR2200 line, the all new 2300 combines all the virtues of small size, ease of use and rugged go-anywhere construction but introduces for the first time, full band coverage in 25kHz steps from the same advanced synthesiser used in the TR7500. The synthesiser provides 80 FM channels from 144-146MHz together with 600kHz repeater shift, and a single auxiliary channel which can be crystal controlled to your favourite net frequency.

Automatic tone burst is provided for repeater operation and all in all, the TR2300 looks like being the new definitive 2 metre FM portable.

Although not so obvious from the photo, the TR2300 is actually smaller than the existing TR2200 and is a totally new design with an improved specification. The high sensitivity receiver section uses a combination of effective RF filters providing optimum cross modulation rejection across the entire band. An extra low profile speaker uses a samarium cobalt magnet to reduce equipment size whilst improving speaker efficiency and clarity of reproduction.

Switchable dial illumination is provided so as to ease dial readout in dimly lit situations.

Needless to say, in line with Trio advance planning, the TR2300 will allow for incorporation of the new IARU region 1 adoption of 12·5kHz FM channels as this is gradually introduced.

Once again, Trio sensible design, attention to detail and care in providing equipment designed specifically for the user, rather than hand-me-down Japanese designs, is reflected in the TR2300—why settle for anything less!

Price—a shade over £210 including VAT.

TS120V

MULTUM IN PARVO

We introduce yet another exciting innovation from Trio in the new TS120V HF transceiver. Equally at home in mobile or home station situations, the TS120V packs more features into a small package than any other comparable model.

Measuring only 9½" × 3¾" × 9¼"—which is about the size of a packet of cornflakes, the TS120V can best be described as a miniature TS820. The rig covers all bands 80-10 metres—and all of 10 metres 28-30 MHz so it's ideal for transverter driving, has digital readout built in, vox, break-in CW, RIT, noise blanker and the unique Trio passband tuning system used in the 820. The power output is 10W and a matching linear will be along shortly.

The TS120V is clearly a winner for mobile operation but is equally attractive at home and is perfect for the VHF/UHF enthusiast who requires a high performance I.F. system for his transverters.

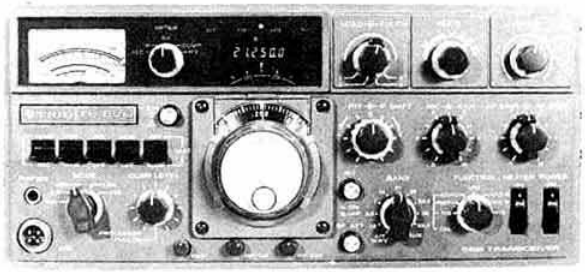
The transceiver is based on an advanced PLL system and the digital readout gives you the *correct* operating frequency at all times unlike many other rigs. Remember my previous comments about Trio attention to detail!

For ease of operation, the TS120V is unsurpassed; simply select the band required, tune the VFO to the frequency you want and there you are: no preselector or PA tuning to worry about, and a distinct safety feature for the mobile operator.

We at Matlock, have all fallen in love with the TS120V and we feel sure that you will too. At it's projected price of around **£425** including V.A.T. (and including digital readout, vox, etc) we have no doubt that this transceiver will be another winner from Trio. See it soon.

TS820

THE WORLD'S MOST POPULAR HF TRANSCEIVER



The TS820 is the most used and most sought after transceiver in the amateur radio world today. It's combination of sheer performance, unique features, full band coverage and TRIO engineering excellence make it the finest HF machine you have ever handled.

Try it out for yourself—but at an approved dealer who can offer the factory backed service and informed advice.

FOR A FULL CATALOGUE SIMPLY SEND 40P IN STAMPS TO MATLOCK

AR240

FULL COVERAGE 144-148MHz

CHANNEL SPACING 5kHz

FULLY SYNTHESIZED

+600 and −600kHz SHIFTS

1750Hz TONEBURST

1½ WATT OUTPUT

SURELY THE MOST AMAZING HAND-HELD TRANSCEIVER YET!

The AR240 is a truly staggering rig. In a small hand-held unit, you have a fully synthesised 2 metre FM transceiver covering 144-148MHz in 5kHz steps. Frequency selection is by direct reading top mounted decade switches giving instant access to any frequency in the tuning range. Power output is over 1W and the receiver sensitivity is not only excellent, it's maintained across the full tuning range by automatic voltage controlled tracking. Both up and down 600kHz repeater shifts are built in as is a 1750Hz tone burst.

What more could you ask for in a hand held?

HC1400

Microprocessor control for you fortunate folk who understand the buzzwords. The HC1400 has an amazing array of features including coverage from 144-148MHz in 5kHz steps, digital readout of frequency, selectable channel step increments both from the single knob front panel control and from the optional up/down microphone, high power transmitter giving 25-30W output and a very sensitive receiver. Additional features include three memories for storing any frequencies within the tuning range for instant recall and also for programming repeater shifts up to 4MHz wide. Normal 600kHz repeater and reverse repeater shifts are provided as is the automatic tone burst. Too much to talk about in a short ad. It's top quality, certainly; top value, undoubtedly, at **£255** including vat.

Remote frequency display and remote control microphone available as options.

LS707

RANDOM RAMBLINGS

By the time you read this, we will once again have in stock most of the goodies from our news sheet of September 78, including the top value 12V 3·5A mains power unit at around **£17**, the little 50MHz counter/digital readout at around **£38**, and the toolkits and chassis punch sets. We sold out of these items so fast last time that we have ordered much larger quantities, but if there's a rush at Christmas, they may have gone already . . . .

As you can see, we are constantly introducing interesting new equipment and you can be sure that they are all backed by our special brand of service. Many people in this game *talk* about service, but we have consistently proved that our customers receive our utmost attention to their needs (sorry, can't supply blondes for 10 bob) and we honestly believe that our after-sales service is of the highest standard available today—that's why TRIO asked us to be their UK distributors.

At last—and those of you who know the background will understand . . . . The LS707 is the first complete multimode station for 70cm, covering 430-440MHz in 10 1MHz bands. Full vfo control giving readout to 1kHz and all mode facilities FM/USB/LSB/CW and AM. It also has all the facilities that you would expect in a transceiver, VOX, calibrator, S and centre meter etc. etc. Again it's too much to talk about in a brief ad. so why not ask for more details or come along and try it out in comfort. The price is high but so is the quality, and you will be impressed by the LS707—the only 70cm multimode.

OFFICIAL TRIO DISTRIBUTORS

I would refer you to the TRIO announcement in the November and December issues of RadCom on this subject and I repeat below the official TRIO factory-backed organisation for the UK.

SOLE IMPORTER AND DISTRIBUTOR

Lowe Electronics Ltd, 119 Cavendish Road, Matlock, Derbyshire. Telephone No. Matlock (0629) 2817 or 2430

AGENTS

JOHN G3JYG 16 Harvard Road, Ringmer, LEWES, Sussex. Telephone No. Ringmer 812071

SIM GM3SAN 19 Ellismuir Road, Baillieston, NR GLASGOW. Telephone No. 041-771 0364

AUTHORISED DEALERS

Yorkshire: Leeds Amateur Radio, 27 Cookridge Street, LEEDS LE2 3AG. Telephone No. 0532 452657

Birmingham: Ward Electronics, Soho House, 362-364 Soho Road, BIRMINGHAM B21 9QL. Telephone No. 021-554 0708

South London: Communications House, 20 Wallington Square, WALLINGTON SM6 8RG. Telephone No. 01-669 6700

North London: Radio Shack Ltd, 188 Broadhurst Gardens, LONDON NW6 3AY. Telephone No. 01-624 7174

Lancashire: Stephens-James Ltd, 47 Warrington Road, LEIGH, Lancs. Telephone No. 0942 676790

Wales: M.R.S. Communications Ltd, 76/78 Park Road, Whitchurch, CARDIFF. Telephone No. Cardiff 616936/7

Wiltshire: Pace Electronics, 9 Lime Kiln, Wootton Bassett, Nr Swindon. Telephone Nos. Charles (0793) 850056. Phil (0793) 771153

Other firms offering Trio products are not officially authorised Trio dealers and Trio equipment purchased from these companies is not backed by the Trio service and spares organisation in the UK

YAESU MUSEN

A VERY HAPPY NEW YEAR

FT901

TO HEAR IS TO BE CONVERTED

Full size digital plus clear analogue frequency display and memory circuitry provide the ultimate in versatility and operating efficiency. The "calibratable" readout allows you to set the exact CW transmit frequency (no more falling out of the bottom end of the band) and when used in conjunction with the audio peak filter provides measurement of the incoming signals frequency directly (without looking for near non-existant zero beat). The velvety smooth tuning dial action provides great setting accuracy whilst the phase locked loop local oscillator unsurpassed stability. The memory unit can store (at the press of a button) any transmit, receive, or transceive frequency, thus permitting (in any segment), split operation for DX or 10 metre repeater use.

10–160 metres. Some transceivers have WWV reception but no 160 capabilities, others have 160 but no WWV, CB, or crystal calibrator. Some offer selectable sideband but no AM. CW is often provided as an afterthought, probably no FSK and almost definitely no FM (Tx *and* Rx). All these features, including an advanced noise blanker, are standard equipment on the DM, not costly extras.

The FT901 is a complex instrument but the internal layout is clear and straightforward, computer style plug in circuit boards being used throughout. By substitution and extenda board tests, valuable service time is saved in unsoldering components from deep inside the chassis. This approach also reduces point to point (rats nest) wiring and results in a clean compact unit with high component density.

CW was just not an afterthought on the 901. For instance the internal Curtis ic keyer (designed for amateur radio applications) is powered directly by the set and provides immunity to RF interference and false keying through contact bounce.

Ergonomics or Human engineering is often neglected in design. On the 901, knobs are positioned logically and push buttons with LED indicators are used where necessary.

The in-built R.F. speech processor with front panel level control increases average talk power (by filling "holes" in your voice pattern) by about 6dB without audible harmonic distortion.

Purity of emission is important both legally and ethically. Out of band spuri interfere with other services and can cause TVI. Equally important is your reputation amongst other amateurs, which will deteriorate quickly if you transmit distortion products across the band. The FT901 includes a built-in low pass filter, toroidal output circuitry and R.F. negative feedback on the 6146B PA's for a spurious free output signal.

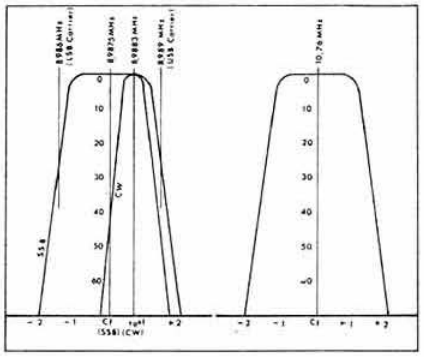
For /A, /P, or /M the '901 is surely the ultimate station in one box, with provision for operating from a variety of voltages. 100–234V AC (50/60Hz) and 12V DC with inbuilt invertor.

Accessories include: the FV901DM external VFO (synthesized 100 Hz step, spin and 3-speed electronic tune + auto search with 40 memory channels), the FC901 antenna tuner/power meter, the SP901 speakers, the YO901 monitorscope (with or without panoramic adaptor facilities) and the FTV901 transvertor which provides 4, 2, and 70 cms extension (with repeater shift) for your FT901DM.

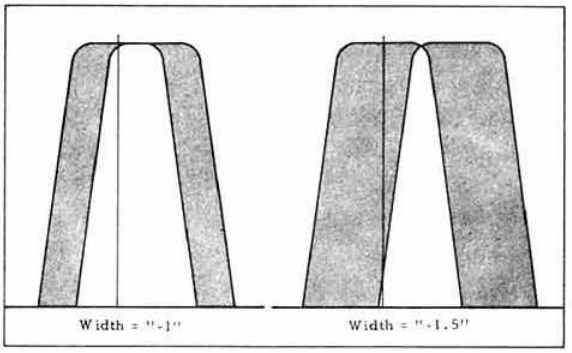
YAESU MUSEN

TO ALL RADIO AMATEURS

Filtering is the heart of a receiver. In addition to numerous band stop filters, crystal filters of 600Hz*, 2·4kHz 6·0kHz* and 12kHz define the IF bandwidth. This is only part of the story. By a mixing process two crystal filters' passbands' overlap by a desired amount to provide selectivity continuously variable from the normal 2·4kHz right down to 300Hz without even having the CW Filter installed!



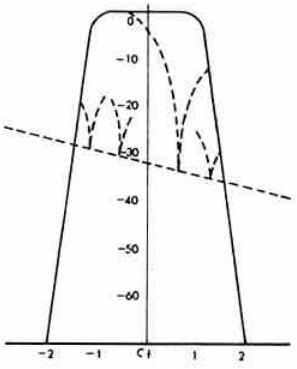
9MHz SSB, CW FILTERS. 10·7MHz 2·4kHz FILTER



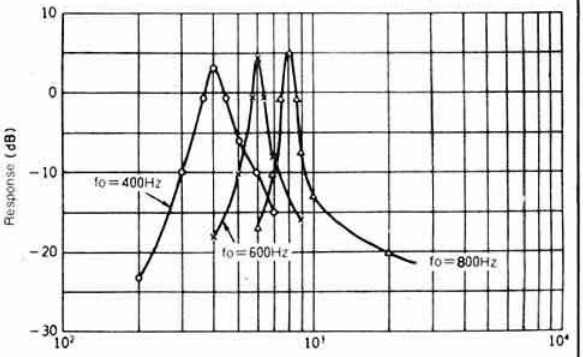
VARIABLE IF BANDWIDTH

Do not be fooled by other systems such as IF shift (N.B. this 'width' system also moves the centre frequency) which only move the passband and cannot change the bandwidth. (Known in the trade as "QSY into the QRM" devices).

Rejection Tune. A tunable notch for removing unwanted narrow signals from the IF passband.
Audio Peak Filter A.P.F. A razor sharp filter without ringing which produces a dramatic increase in signal to noise ratio and QRM rejection on CW.



REJECTION TUNING ACTION



AFP ACTION (Hz)

DEEP QRM? THE FT901 DIGS THEM OUT!

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Tape/film library
Contact membership services officer at RSGB HQ

RADIO SOCIETY OF GREAT BRITAIN

35 Doughty Street, London WC1N 2AE
Telephone 01-837 8688

Founded 1913
Incorporated 1926

Member society, International Amateur Radio Union

PATRON: HRH The Prince Philip, Duke of Edinburgh, KG

The national society representing all UK radio amateurs

Membership is open to all those with an active interest in radio experimentation and communication as a hobby. Applications for membership should be made to the general manager, from whom full details of Society services may also be obtained.

GENERAL MANAGER AND SECRETARY
D. A. Evans, G3OUF

EDITOR
A. W. Hutchinson

ANNUAL SUBSCRIPTION RATES

UK corporate: £8, including VAT **Overseas: £8.**

Associates under 18: £3. **Students aged 18 to 21: £4.50.**
(Student applications should give the member's age at last renewal date and include evidence of student status)

Affiliated societies: £6.50 (including *Radio Communication);*
£3.25 (excluding *Radio Communication).*

RSGB NEWS BULLETIN SERVICE

The RSGB news bulletin, callsign GB2RS, is broadcast every Sunday morning on hf and vhf, giving almost complete coverage of the British Isles. Its main purpose is to provide an outlet for amateur radio news items and announcements which, by virtue of their topicality or urgency, cannot wait for the next issue of *Radio Communication.*

The bulletin is prepared early on Thursday morning, and news items, marked "GB2RS news" should reach RSGB HQ by first post that day (telephoned items can also be accepted until 10am). No guarantee can be given of inclusion in part or whole of any item submitted and, once broadcast, items are not usually repeated.

SCHEDULE

Time	MHz	Location and coverage (hf) or beam heading (vhf) of station
0930	3·65	G2MI, Bromley, Kent (SE England)
1000	3·65	G8ML, Cheltenham (SW England)
	144·50	G3FZL, London
1015	3·65	GI3GAL, Belfast (N Ireland)
1030	3·65	G2CVV, Derby (N Midlands)
	144·50	GM3UAG, Ellon, Aberdeenshire (SW)
	144·50	G3PWJ, Brierley Hill (NW)
1045	144·50	G8LIC, Middlesbrough (NW)
	144·50	G3FZL, London
	144·50	G3SMT, Stockport (NNW)
1100	3·65	G5VO, Bridlington (NE England)
1115	3·65	G3LEQ, Knutsford (NW England)
	144·50	GI3TLT, Bangor, Co Down (N)
1130	3·65	GM3TCW, Wishaw, Lanarkshire (S Scotland)
1145	3·65	GM3HGA, Aberdeen (NE Scotland)

An rtty news bulletin, callsign GB2ATG, is also transmitted every Sunday at 1200 and 1900 on 3·590MHz and at 1230 and 1245 on 144·6MHz. This bulletin carries items of interest to rtty enthusiasts.

RSGB QSL BUREAU

E. G. Allen, G3DRN,
30 Bodnant Gardens, London SW20 0UD

A message from the Society's President

As your 45th President I am very conscious of the great honour and responsibility entrusted to me for the next 12 months.

September will see the opening of WARC 1979, a conference that could affect the future of amateur radio as we know it today. We can all assist those representing us at Geneva by using the frequencies allocated to us responsibly at all times.

Over the past few years considerable progress has been made in improving the services offered to members by RSGB headquarters, a trend that I wish to see continued in 1979.

On behalf of the staff at headquarters, I would like to take this opportunity of thanking the many members who have given their time, advice and assistance to the benefit of the Society during the past 12 months—to you all, may I add my personal thanks and may we look forward to another successful year.

John Bazley, G3HCT

QTC

amateur radio news

The EI-GI Convention, Ballymascanlon, Eire

An event of significance took place over the weekend 14-15 October: this was the first EI-GI convention since the troubles began several years ago. Despite some initial apprehension by some people (although absolutely none by others) the convention was a great success. There was, perhaps, a certain inevitability in this, in that the organizing was in the hands of Mr B. Patterson, a past-President of both the Irish Radio Transmitting Society and RGSB.

The Irish society was represented by its president, Mr Sean Nolan, EI7CD. The guest of honour was Mr Tom Fitzpatrick, the Secretary of State at the Eire Dept of Posts and Telegraphs. In a speech at the convention dinner, Mr Fitzpatrick announced the introduction of an EI vhf-only licence. This would, of course, facilitate in principle G8---s being able to obtain a reciprocal licence, a facility not hitherto available.

The RSGB was represented by the President, Dr Dain Evans, G3RPE; the general manager, Mr David Evans, G3OUF; and Mr W. McGonigle, GI3GXP, Zone F Council member. On the Sunday, both G3RPE and G3OUF contributed to the extensive lecture programme with talks on microwaves and repeaters.

The 1978 convention proved to be a most happy event, and arrangements are now being made for a similar event in 1979.

Raynet and repeaters in action

On 18 November, West Midlands Raynet under the leadership of the county controller Alan Dennis, G3CNV, was called to provide emergency communications for the ambulances of the Red Cross and St John Ambulance Brigade.

Working round the clock and making full use of the Birmingham repeater, GB3BN, over 50 members of Raynet and other amateurs have subsequently assisted the emergency services answering 999 calls.

G3CNV wishes to thank the hundreds of amateurs who have stood by on GB3BN to allow a clear channel for the traffic.

Special event callsigns

Special event callsigns with the prefix GB2, GB3 or GB8 plus two- or three-letter calls are available by applying to the membership services officer at RSGB headquarters.

At least one month's notice prior to the event is required in order that the Society and the Home Office can process the necessary licence.

Once a callsign has been allocated to a specific group or event, it is not re-issued elsewhere. This has been made necessary by the confusion caused in handling the QSL cards when the same callsign is used for more than one event.

Isle of Man millenium 1979

It is expected that operation from the Isle of Man during the period 0001bst 30 June 1979 to 2359bst 8 July 1979 will be very popular. This is the period of the special GT prefix authorized by the Home Office to celebrate the Isle of Man millenium.

Purely with the intention of trying to ascertain the extent of possible operation during this period, the Isle of Man ARS asks those proposing to visit the island to advise the club secretary, Colin Matthewman, GD4FWQ, 20 Terence Avenue, Douglas (Tel (0624) 22295) of their intentions. The IoM ARS will be happy to give advice and help to those proposing to operate from the island.

The G3PAO Memorial Lecture

The Verulam ARC will be holding the 1979 G3PAO Memorial Lecture in the Ex-Civil Defence Hall, Chequers Street Car Park, St Albans, Herts, on Thursday 25 January at 7.30 for 8pm. This event is held to remember the former club chairman and founder member, George Slaughter, who passed away in 1977.

The lecture, entitled "EME transmissions", will be delivered by Peter Blair, G3LTF, and will be illustrated with slides and tape recordings. All aspects of radio communication by reflecting signals from the surface of the moon will be covered, from the beginning up to the present day, including possibilities for the future.

All licensed amateurs, short wave listeners and other interested parties are invited to attend. Further details may be obtained from G4DUS, QTHR, tel Rickmansworth 77616.

COUNCIL ELECTION RESULTS

The result of the ballot to fill five vacancies on Council from 1 January 1979 was as follows:

Ordinary members

	Votes
R. Bellerby, G3ZYE	1,916
K. A. M. Fisher, G3WSN	1,162
T. I. Lundegard, G3GJW	1,214
C. J. Morcom, G3VEH	1,172
G. M. C. Stone, G3FZL	2,275
C. J. Thomas, G3PSM	1,658

Zone D

L. Hawkyard, G5HD	261
W. A. Scarr, G2WS	198

Zone G

F. Hall, GM8BZX	120
G. I. Knight, GM8FFX	161

Total number of votes accepted	3,453
Late votes not accepted	77
Spoilt votes	62

Messrs **R. Bellerby, L. Hawkyard, G. I. Knight, G. M. C. Stone** and **C. J. Thomas** were accordingly elected to serve on Council for the three years 1979-81.

In addition, **Mr D. J. Andrews, G3MXJ**, was returned unopposed as Zone C Council member.

No nomination having been received for Zone E, the 1979 Council, for the second year running, will have to consider co-opting a member to fill this vacancy.

Regional representative, Region 17

Following the election of Mr L. Hawkyard, G5HD, to Council, nominations are invited to fill the office of Region 17 representative.

Not later than 15 February 1979 any five corporate members resident in Region 17 (Isle of Wight, Channel Islands, Dorset, Hampshire and Wiltshire) may nominate any other qualified corporate member resident in the region for the office by delivering their nominations in writing, together with the written consent of the nominee to accept office if elected, to the general manager at RSGB headquarters. Each such nominator shall be debarred from nominating any other person for this election.

In the event of more than one person being nominated, a ballot will be conducted, details of which will be published in the April issue of *Radio Communication*.

Stolen equipment

On 19 October, from a car at Moorside School, Swinton: a Trio 2200GX, serial No 730267. Information to Mr J. T. Parish, tel 061736 8407, or to Greater Manchester Police, Salford Division, tel 061736 5877.

From the St Lawrence Hospital Radio Club, Bodmin, (reported 11 November): KW204 transmitter, Eddystone EA12 receiver, KW antenna tuning unit and a Bandchecker. Information to Bodmin Police, tel 0208 2262.

Can you help?

K. V. Gopalakrishnan, VU2WG, Chempal, Ambellur, PO Kanjiramattom PIN 682315, India, is trying to obtain a circuit diagram of the BC348Q receiver.

Mr J. Ferguson, 16 Erracht Road, Inverness IV2 4RE, would like to hear from Gaelic-speaking amateurs wishing to have QSOs in that language.

SOCIETY AWARDS

Council has approved the following awards for 1978:

Calcutta Key, for outstanding service to international friendship, to W. Nietyksza, SP5FM;

Courtenay Price Trophy, for outstanding technical development in the field of amateur radio during the year, to the University of Surrey AMSAT telecommand centre;

Founders Trophy, for services to the Society, to G. R. Jessop, G6JP;

Norman Keith Adams Prize, for the most original article contributed to *Radio Communication* during the year, to B. Chambers, G8AGN, for "Microwave path checking" in February 1978;

Ostermeyer Trophy, for the most meritorious description of a piece of home constructed radio or electronic equipment published in *Radio Communication* during the year to A. J. Wade, G4AJW, for "Power supply and control circuits for a 4CX250B amplifier" in October 1977;

ROTAB Cup, for outstanding and consistent dx work, to A. E. J. Cooper, G5VT;

Wortley Talbot Trophy, for outstanding experimental work in the field of amateur radio, to "Dud" Charman, G6CJ, for the many years of experiment and entertainment with his "antenna circus";

Louis Varney Cup, for advances in space communication, to P. Gowen, G3IOR.

1977 AGM ballot

The result of the ballot called for at the 1977 RSGB AGM was:

For the motion	829 votes
Against the motion	93 votes
Spoilt and late papers	4

A plea from the QSL Bureau manager

May I, first of all, thank all those members who have supported the Society's QSL Bureau during 1978.

Many oversized cards are still being received, a large proportion being in respect of special event stations, whose organizers really should not need reminding of the few simple rules concerning the QSL Bureau. Most of the cards supplied by local authorities and business houses are also too large, and, while I realize financial considerations are involved, a little prior discussion would ensure that their cards are delivered without being folded.

Many members are still not sorting their cards alphabetically by prefix when sending them to the QSL Bureau. As it can take up to three hours to open one mail delivery and remove the cards, it will be appreciated that this sorting will greatly assist their handling.

Your kind attention to these points will result in a more efficient and quicker handling of cards, which can only be to our mutual benefit.

G3DRN

RSGB REGION 9 LECTURE

"WARC 79"

by

R. J. Hughes, G3GVV

chairman, IARU Working Group

2pm 11 February 1979

Priory School, Exeter

Talk-in on GB3EX (RB0) and G4ARE (S22)
Further details from Muriel Jefford, tel 03954 3735

A 7MHz vertical antenna

by J. BAZLEY, G3HCT*

EFFECTIVE antennas for dx working on 3·5 and 7MHz have always posed problems, except for those few amateurs in the UK who can support (physically and financially) a Yagi or quad on 7MHz and perhaps a full size ground plane on 3·5MHz. The 7MHz band, particularly, is excellent for dx, if only the broadcast and commercial interference could be cleared. This can, of course, be reduced with a beam antenna, and having listened on that band with that type of facility one can really appreciate the dx possibilities.

During the past five or six years the author has spent quite a lot of time trying out various antenna systems to improve his station performance, particularly on 7MHz. The result is a simple antenna with gain, front-to-back ratio, low angle radiation that does not require a vast steel tower to support it, and is cheap to make and easy to maintain. Before describing it in detail, the author's comments on various other antennas tested may be of interest.

Early versions

1. An Inverted-V. The centre was 45ft above ground, supported by a wooden flag pole. This worked reasonably well on local, UK, European and eastern USA directions, but to VK and ZL—particularly on the long path—it was relatively poor.

2. Ground plane. This was erected alongside the wooden pole with about 60ft of radials buried just below the lawn surface, and in this case the position was reversed. The long haul capability was very much improved but the short skip signal strengths were considerably down on the inverted-V.

3. A trap inverted-V. Designed to cover both 3·5 and 7MHz, this was installed in a similar way to antenna 1, with very little difference in performance apart from the advantage of being usable on two bands.

4. A combination of 2 and 3. See Fig 1. With the support pole being 45ft long, the top section of the antenna was folded over. The results were surprisingly good, for it worked well on both bands and seemed to be effective for both long- and short-haul QSOs.

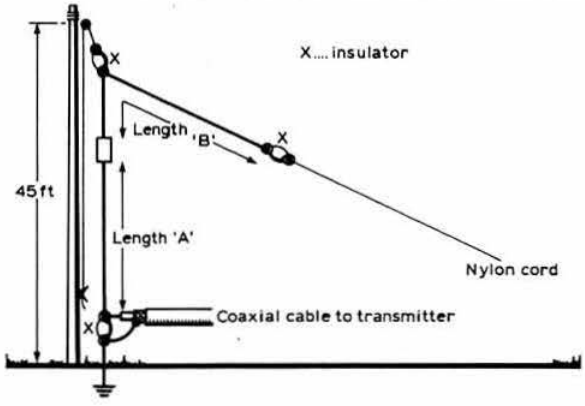

Fig 1. Antenna No 4, trap vertical. Frequencies 7·025MHz, 3·525MHz. Length "A" 33ft (10·058m), "B" 29ft 3in (8·915m)

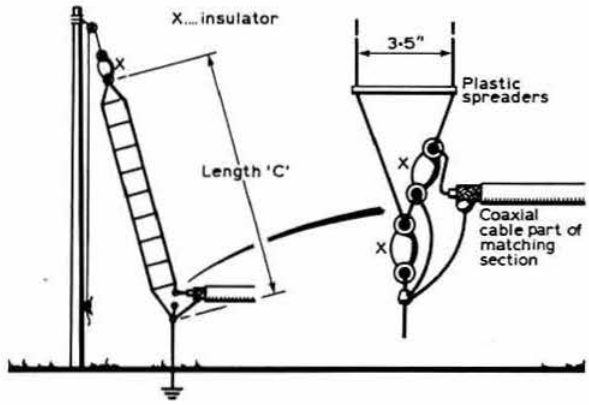

Fig 2. Antenna No 5. Length "C" 34ft (10·36m)

This antenna was in use very successfully for several years until the author constructed an rf bridge capable of measuring radiation resistance and reactance. Measuring this trap vertical showed that the resistance was 60Ω on 7MHz, and 65Ω on 3·5MHz, which in both cases gave a reasonable match to the feedline. However, according to the *Handbook* the radiation resistance of this antenna should be 35Ω, the difference of course being the earth loss; therefore, nearly 50 per cent of the energy being fed into the antenna was being "lost". Obviously the solution lay in increasing the antenna radiation resistance so that the ground loss represented a smaller percentage of the total.

5. A ground plane antenna was then constructed with a folded vertical radiator using 14swg wire and 3½in spacing, as shown in Fig 2.

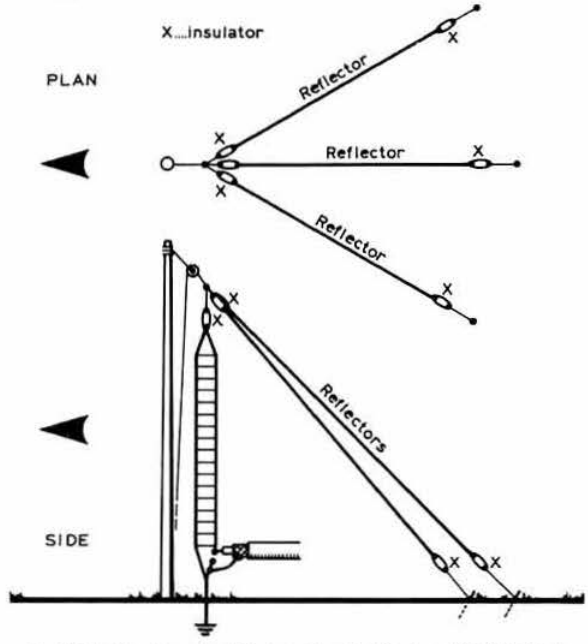

Fig 3. The final version (6). Length of reflectors 71ft (21·64m)

*Brooklands, Ullenhall, Solihull, W. Midlands B95 5NW

Now, according to "the book", the radiation resistance was multiplied by a factor of four—folded dipole with equal-size elements—so the measurement should be $4 \times 35\Omega$ *plus* the 25Ω ground loss to give a figure of 165Ω. The bridge gave a figure of 170Ω. This meant that the ground loss was only 15 per cent of the total, against the original of nearly 50 per cent, which was quite a big saving.

Results certainly seemed to be much better, but it was very difficult to be objective when the original antennas were not available to obtain an instant comparison. Looking over the reports in the log book showed a definite improvement on both receiving and transmitting signal reports.

Competition

At this point a local amateur erected a two-element Yagi at 60ft for 7MHz. In an attempt to equalize the "opposition", the author decided to erect two verticals spaced $\lambda/4$ apart and fed 90° out of phase. After a lot of trouble these did perform equally as well as the Yagi in the preferred direction. Then the Yagi was moved to 120ft above ground, and this gave it a 2–3 S-unit advantage over the phased verticals.

Consideration was given to erecting a four-element phased array, but in view of the trouble in getting two elements to function correctly, and ignoring the comments from a very tolerant xyl who was beginning to object to the increasing area of aluminium wire "growing" on the lawn, the idea was dropped.

The final version (6)

The folded ground plane was again installed and, in desperation to try to regain some of the old front-to-back ratio that the author had been used to with the phased vertical array, three reflectors were installed sloping down from the top of the pole towards the ground as shown in Fig 3. Results far exceeded expectations—if anything, the front-to-back ratio was better than with the phased array and, when compared with the Yagi at 120ft, on average the new antenna was between $\frac{1}{2}$ and 1S-unit down. This was without doubt the best antenna the author has used on 7MHz.

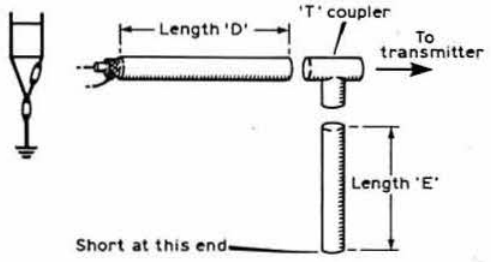

Fig 4. Matching network for antennas 5 and 6. Seal all joints with self-amalgamating tape

Coaxial cable used	Length "D"	Length "E"
50Ω RG8U	16ft 2in	9ft 3in
75Ω RG11U, solid inner	14ft 7in	11ft 10in
75Ω TV cable, semi air-spaced	19ft	15ft 5in

Details of the construction, matching networks and dimensions are shown in Figs 3 and 4. The matching network shown will give a reasonable swr for both antennas 5 and 6. If lack of space does not allow erection of reflectors, the folded radiator (5) is well worthwhile.

The author would appreciate hearing from other users of the antenna and the results obtained. □

oscar news

DX aids

A new addition to the range offered by Bill Johnston, N5KR, is the computer-generated azimuthal equidistant (great circle) maps. A programme recently completed by N5KR enables a map of this type based on any location in the world to be generated. The cost of a map is $5 post paid by surface mail world-wide or $6.50 by air mail.

In addition to the satellite orbital prediction print-out previously referred to in *Radio Communication*, N5KR offers a variety of print-out material, including beam heading charts. This print-out is custom made by the computer for an exact location. It gives the great circle bearing in degrees from a location to each of 660 distant locations. Also shown are the distances and return bearings. The cost of a set of these charts is $1 post paid by surface mail world-wide, or $2 by air mail.

Perpetual print-outs are now available for RS1/2. Due to the higher orbit they are visible for a longer period on each pass and the print-out is 15 per cent longer (and heavier). Consequently the postage charge is higher. The total charge for an RS1/2 print-out is $4.50 by 4th class mail, world-wide, and $6.50 by air mail, world-wide.

Enquiries should be directed to W. D. Johnston, N5KR, 1808 Pomona Drive, Las Cruces, New Mexico 88001, USA.

NEW PRODUCTS

FT101 accessory

A further accessory for the FT101 is now available from Holdings Ltd. It is a repeater shift attachment which plugs in to the range 10D socket on the crystal bank and diode switches two crystals 600kHz apart. This enables an FT101 which has been converted to fm to be used through the standard IARU repeaters when driving a 144MHz transverter.

The repeater shift attachment

The UK price for the repeater shift module with crystal is £10 plus p&p. Further details can be obtained from: Holdings Ltd, 39/41 Mincing Lane, Blackburn BB2 2AF. Tel: 0254 59595/6.

technical topics

Pat Hawker, G3VA

UNTIL recently, if anyone had asked me who was responsible for the development of the two-element hf close-spaced Yagi array, I would have replied that presumably its development could be traced back directly to the late Professor Yagi or his student-associate Uda. In fact, as I discovered by accident recently, the correct answer is probably "Walter Van Roberts, W3CHO", and his ideas were the outcome of the work of Dr George Brown of RCA, who is more widely recognized as the father of vertically-polarized directional mf broadcast antennas.

The Roberts/Brown/Yagi array

The case for Roberts rests on a 41-year-old issue of *Radio* (January 1938) a, then, highly-regarded American west coast amateur radio magazine. This has a featured article, "The compact uni-directional array", by Van Roberts, the opening paragraph of which runs as follows:

"While the title of this article is too brief to indicate it, the antenna system to be described is believed to be not only just about the easiest rotatable beam to construct, but also the one that probably gives more power gain and useful directivity 'per unit of building trouble' than any of the more complicated structures. To be specific, the system may be adjusted to put out a signal equivalent to that from a simple dipole using 3·6 times as much power; in other words, the power gain of the system is about 5·5dB. Furthermore, at a sacrifice of less than 1dB in gain, the system may be adjusted to have a signal in the backward direction that is about 17dB 'down' with respect to the forward signal."

A series of statements, it may be observed with respect and humility, that have stood the test of 41 years! Hardly a word would need to be changed today, and the figures only slightly.

His basic ideas and his calculated performance figures, as he acknowledged, were derived from a portion (pages 103-8) of the paper "Directional antennas" by G. H. Brown (*Proc IRE* January 1937), a classic paper which has often been referred to in *TT* in connection with phased verticals. Neither Brown nor Roberts makes any reference to Yagi who had, some 10 years earlier, described directional arrays using parasitic elements. By 1937 this was a widely accepted form of array, but—to the best of my belief—normally with the reflector spaced exactly $\lambda/4$ from the driven element. In the mid-'thirties quite a few amateurs had developed Yagi antennas, usually vertically polarized, but based solidly on the idea that the correct spacing of the elements was $\lambda/4$.

The tremendous importance of the Brown/Roberts contribution was that they destroyed for ever this myth of $\lambda/4$ spacing, and so made possible a far more practical form of horizontal array. A single quotation from Brown shows this with devastating clarity: "In the case of a single parasitic reflector, it is found that the mysterious something that is supposed to happen when the spacing is one-quarter wavelength fails to materialize. Close spacings are found to be desirable in both the transmitting and receiving case." Brown also showed that it makes relatively little difference whether the parasitic element is used as a reflector or as a director.

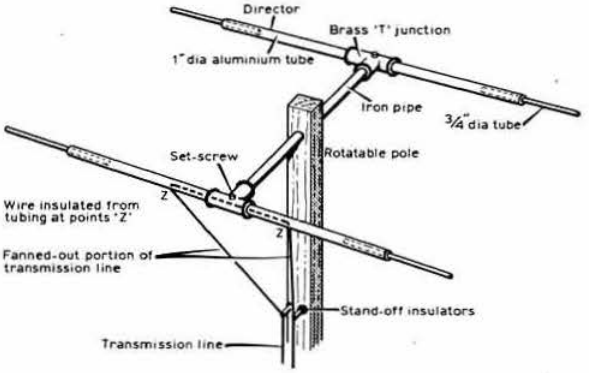

Fig 1. The W3CHO compact, unidirectional array as described in "Radio" in January 1938. Was this the first close-spaced plumber's delight rotary Yagi?

Early in 1937 Roberts took the Brown monopoles; turned them into horizontal dipole elements using aluminium tubular elements, and put up on his house a rotatable two-element 14MHz beam with $\lambda/10$ spacing, fed with open-wire line and a simple matching section. It was a basic, practical design that could hardly be improved upon today. With 25W carrier input he was soon achieving his first European contacts.

Without having undertaken a detailed search of the literature, I am in no position to state *positively* that W3CHO was the first person ever to publish details of a close-spaced uni-directional rotary "Yagi" array. The circumstantial evidence, however, makes this a strong possibility. Roberts worked in the patent department of RCA and would have been well aware of Brown's work in advance of the *Proc IRE* publication. *Radio* was then at the height of its fame as the great rival of *QST*, with a reputation for being first with important technical developments.

So, without diminishing in any respect the work of Yagi and Uda, why not also just for once pay the credit long overdue to Walter Van Roberts, W3CHO (or perhaps someone who may have just pipped him to the post in some other magazine), for what has proved to be one of the most important developments ever made in the design of antennas for amateur radio; still, 41 years later, one of the best possible approaches in terms of results per unit of building cost and trouble. It will be observed, from Fig 1, that Van Roberts immediately recognized that it was unnecessary to insulate the elements and so, it would seem, may have to be credited also with developing the "plumber's delight" form of beam construction.

The switchable bi-square antenna

When the UA3IAR switchable quad was published in *TT* (October 1978 *et seq*) Eric McFarland, G3GMM, was firmly convinced that somewhere, sometime he had seen a description of a similar looking arrangement. After a search through his information store, he ultimately found what he was looking for: "A full coverage bi-square beam" in an early *Radio Antenna Handbook* (2nd edition, published in February 1938 at the incredible price of 75 cents). As may be seen from Fig 2, this looks, at first glance, the spitting image of the UA3IAR arrangement.

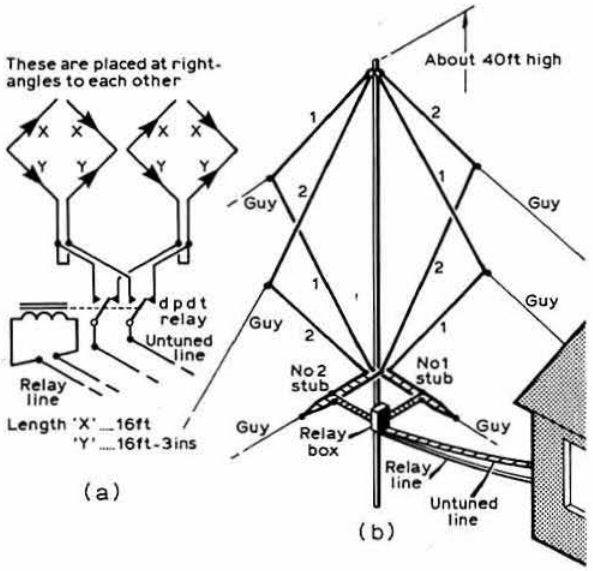

Fig 2. The switched dual bi-square antenna that looks like the UA3IAR but is a very different beast. The matching stubs are quarter-wave

However, a closer scrutiny will reveal a number of important differences: each loop is operated independently and each constitutes an "open" loop (no electrical join at the top) with a perimeter of 2λ, or double the size of the UA3IAR loops. And then again, whereas this bi-square system is essentially bi-directional (the two loops providing coverage of all four quadrants), the UA3IAR, despite its possibly modest power gain, is a true uni-directional beam array.

So, despite the remarkable resemblance, the Russian antenna is by no means just a revival of a 40-year-old design, though I share with G3GMM the view that many excellent systems have been invented in the past and then discarded and forgotten in the search for "progress", and then may suddenly reappear. They say a lot of people re-invented the wheel.

But what of this switched bi-square buried away in the old handbooks? It would seem, if you are prepared to accept its bi-directional characteristics, to have attractions of its own, particularly for 21MHz and above, where the support mast need not be more than about 30ft high. This form of 2λ loop gives a modest but useful power gain (and is claimed to provide good low-angle vertical directivity). Equally interesting is that, unlike the UA3IAR, the radiation resistance is high, leading not only to good bandwidth, but also making the construction and adjustment less critical, and with fewer worries about the efficiency of the insulators. The low-loss open line and stub matching transmission line techniques were deservedly popular at the time when the system was first published, but could easily be replaced by coaxial cable if you must.

There is also another reason for drawing attention to the bi-square loop: by incorporating a means of remotely connecting or disconnecting the vertices of the UA3IAR half-loops, it might prove relatively easy to develop a two- or multi-band system which would be a combination of switchable quad and bi-square techniques. This is a suggestion only, as no attempt has been made to test out the idea in practice.

The zig-zag sloper again

In *TT* (April 1978, page 327) brief reference was made to the 1·8MHz zig-zag sloper antenna used by Bob Eldridge, VE7BS. The basic idea of this type of antenna is to use a long dipole or end-fed wire with the two end sections forming vertical elements arranged so that the current flowing in the same direction in each vertical section makes them function as a pair of phased verticals, although not requiring any ground radials to achieve the impedance match.

The VE7BS zig-zag sloper was for top band dx operation, and consisted of two 70ft vertical sections and a centre-fed 130ft sloping section, thus looking to the transmitter much like a common or garden half-wave dipole. For 1·8MHz such an antenna needs high masts and a fair amount of space.

Ray Fowell, G4GMX, has recently been trying a variation of this antenna, but scaled down for 7MHz. This has been proved to work well not only on 7MHz but also 21MHz in a very cramped location and with the two low points only a few feet above ground: see Fig 3.

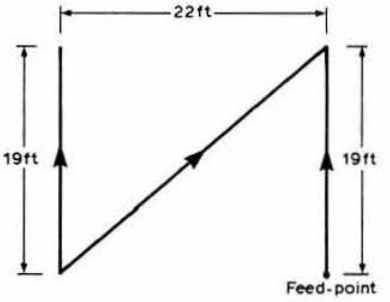

Fig 3. G4GMX's compact zig-zag sloper antenna for 7 and 21MHz

On 7MHz this configuration represents a half-wave element, as in the VE7BS antenna, but voltage-fed from the base of the appropriate vertical element by means of a standard "L" matching network (one inductor, one capacitor). On 21MHz the antenna forms a 3λ/2 system, the phasing in the elements, together with their spacing, being such as to give the antenna good broadside directivity.

Ray Fowell (13 Cromwell Road, Rugby CV22 5LP) would be interested to hear from readers having views on such zig-zag sloper antennas.

Superdirective receiving arrays

In *TT* June 1978, the fundamental limitations involved in reducing the size of antennas were discussed; it was then indicated that miniaturizing an antenna imposes limitations on coupling efficiency and bandwidth.

There is a further important aspect to this general question: for many years it has been recognized that conventional array design practices do not result in arrays that, for a given size, provide the maximum possible theoretical gain. Any attempt to achieve maximum gain results in impossibly narrow bandwidth and impracticable mechanical tolerances, and has given rise to the term "superdirectivity" representing the missing directive gain of practical designs. There is a considerable body of published material relating to this "superdirectivity", although most writers have concluded by emphasizing that this is unlikely ever to be achieved in practice. Although the term "superdirectivity" turns up from time to time in amateur journals, it has had little impact on practical work.

However, recent work in the USA suggests that the concept of superdirectivity could, in fact, be usefully applied to compact *receiving* arrays in those cases where it is meaningful to think in terms of directivity gain, without relating this to efficiency and, hence, power gain.

Power gain can be defined as the product of directive gain times antenna efficiency. For *reception* at mf or hf, where external noise is dominant, antenna *efficiency* may be of only secondary importance; although directive gain is still valuable in order to reduce the strength of interfering signals coming from directions other than that of the wanted signals. A well-known example of such thinking is the compact mf frame antenna, which is often hopelessly inefficient as a transmitting antenna and yet can be extremely useful as a directional receiving antenna.

In a recent article "Superdirective receiving arrays" by E. H. Newman, J. H. Richmond and C. H. Walter *(IEEE Trans on Ant & Prop* Vol AP-26, No 5, September 1978, pp629-635) it is shown that superdirective principles can be usefully applied to compact hf receiving arrays, with experimental results (at 750MHz) in reasonably good agreement with theoretical predictions, although it is indicated that further work could be usefully carried out.

The key to this new breakthrough into superdirectivity is the introduction into the design procedures of a tolerance constraint. What this seems to mean in practice is that instead of designing for the absolutely highest possible directivity (leading to impossibly low tolerances) the designer accepts some trade-offs between the various factors, including array size, directive gain, snr, efficiency, bandwidth, tolerances and far field patterns. The sort of results that seem to be feasible are directive gains of the order of 14dB with four close-spaced elements, and over 20dB with 10 close-spaced elements: the close spacing means that boom length is short and the whole array occupies very little space.

It is, however, important to keep firmly in mind that these are directive receiving gains *not* power gains.

Sunspot cycles and flu?

In recent years there have been many attempts (some with a surprising degree of statistical success) to correlate sunspot activity with a wide range of terrestrial events: earthquakes, weather (and the associated tree-growth rings) and even stock exchange prices.

But surely one of the most curious, yet intriguing, such studies is that reported in *Nature* (14 September 1978) by R. E. Hope-Simpson of the Epidemiological Research Unit. For he appears to have found a remarkable correlation since 1917 between sunspot maxima and type A epidemic influenza. So watch out for the appearance of a new flu bug over the next couple of years!

Low-noise crystal oscillator

Jan M. Noeding, LA8AK, points out that when attempting to modify a transistorized fm or a.m. transmitter for cw operation, it may be found that the noise sidebands are causing poor tone signals. He comments:

"When I constructed the beacon stations LA3UHF and LA3VHF, I tried several oscillator circuits, but all except one proved too bad to use on the air. The exception was the DJ2LR circuit (*TT* February 1976, p124) which proved very much better than any of the others. My version, incorporating an ic voltage regulator, is shown in Fig 4. In reducing oscillator noise

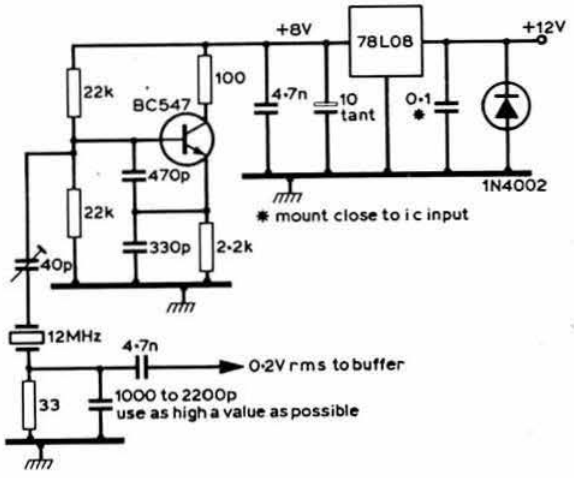

Fig 4. LA8AK's version of the DJ2LR extremely-low-noise crystal oscillator used to achieve good cw note on Norwegian vhf and uhf beacon transmitters

it is important that the supply voltage should be very "clean". The use of subminiature ic voltage regulators is quite practical; voltage and load regulation are good, and current waste is substantially lower than for zener diodes, while the price is only just slightly more than for a 400mW zener diode. I have not attempted to solve the problem of incorporating crystal switching."

555 duty cycle control

Astable oscillators based on the 555 timer ic turn up in many amateur radio applications. The conventional arrangement, however, has an "on" time for more than 50 per cent of the total time. Various techniques have been used to overcome this restriction but most of them tend to introduce problems of their own. Now in *Electronic Design* 20, 27 September, 1978, Thomas M. Farr comes up with a simple but ingenious idea. His circuit achieves full control over the duty cycle by adding a single diode across the discharge and trigger pins and replacing the usual fixed charging resistors with a potentiometer: Fig 5.

Varying the potentiometer causes the duty cycle to go virtually from 0 to 100 per cent without affecting the output frequency. In some cases, very high duty cycles (below 5 per

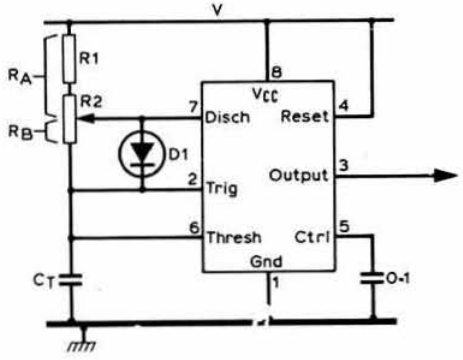

Fig 5. The duty cycle of a 555 astable oscillator can be varied in this arrangement virtually from 0 to 100 per cent

cent or above 95 per cent) may cause slight shifts of frequency. R_A's low limit should not be less than 100Ω; this keeps current in the 555's discharge transistor within makers' specifications, while not placing any severe limitations on the duty cycle.

Inductive ignition lead sets

The detailed article by Dennis Morris, G3AYJ, "Suppression of vehicle interference for mobile radio operation" (*Radio Communication* May 1976, pages 336-43) has rightfully become established as *the* reference for amateurs wishing to operate a sensitive receiver in a vehicle. There is still very little that could or need be added to what G3AYJ wrote then. However, there is a useful supplementary point of information.

G3AYJ included a diagram (reproduced in Fig 6) which provided a comparison of suppressor impedance values; this shows that an inductively-wound cable can be significantly more effective than the conventional resistive cable, particularly in the vhf range, G3AYJ wrote:

"The inductively-wound distribution cable and the suppressed distributor rotor arm used on some European production vehicles are worthy of mention. The inductively-wound resistive distribution cable is characterized by its low resistance (200-1,000Ω/ft) and by its high impedance at frequencies of 30-300MHz (Fig 6). The cable has therefore found use where vhf and uhf communication equipment is carried on the vehicle as well as being extensively employed to meet legislative limits. Its low resistance is usually a disadvantage for suppression of interference at frequencies in the long and medium wave and hf bands, where it is necessary to introduce some additional impedance in the form of composite carbon suppressor units at the sparking plugs and distributor ht outlets. The suppressed distributor rotor arm has an inductively-wound resistor mounted in the rotor moulding so that it is electrically in series with each distributor spark gap in turn during rotation. The suppressed rotor arm is used in conjunction with resistive cables to obtain improved suppression of vhf and hf interference emanating from the ignition distributor. However, *neither is generally available in the UK* (my italics)."

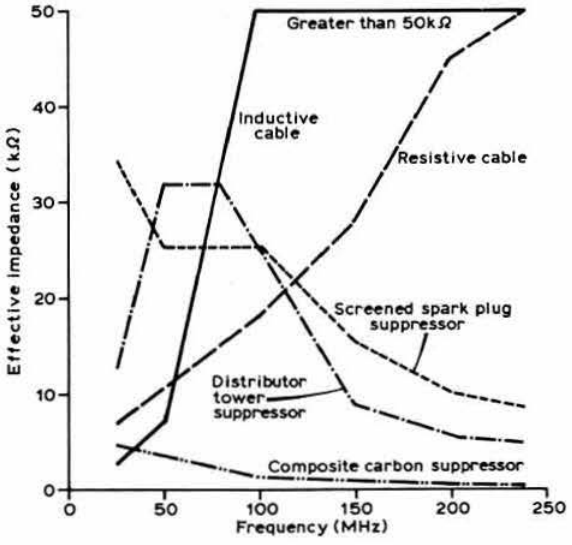

Fig 6. Comparison of suppressor impedance values reproduced from G3AYJ's 1976 article on vehicle interference suppression

Peter Wallis, G3YJI, was sufficiently intrigued to ascertain from G3AYJ some time ago that this form of inductive cable was manufactured mainly in France, under the brand name of Bougichord, and was normally supplied in complete boxed sets of cables for specific vehicles.

Recently, G3YJI spotted an advertisement offering a basically similar product in the UK. The manufacturer is Sureparts (MAS Manufacturing Ltd, 43 Dudley Street, Luton LU2 0NP) and the ignition lead sets are distributed through local stockists. For example, G3YJI found that a lead set for a BL Maxi is retailed at about £3.95 plus VAT (£4.27). He feels that other readers may be interested to learn that this form of suppression aid is now available in the UK.

Cow-power at SM4AQL

Over the years a number of "alternative technology" ideas (windmills, water wheels, etc) for generating power for amateur radio stations have been noted in this column. A. W. Tomalin, G3PTB, takes us into pastures new by drawing attention to the ambitious, partly home-built, system that keeps Lars-Erik Johansson, SM4AQL, on the air. He uses throughput from the herd of 50 Friesian cows and 40 heifers on his farm at Tappgarden, near Borlange, Sweden.

A methane digester produces electricity from cow manure, not only as an economical and fully independent source of power, but also to reduce the considerable problem of manure disposal on an all grass farm, where the cattle are normally inside the barn throughout the year. All electrical parts of the system were designed by SM4AQL. He began to build it in the autumn of 1975 and the first manure was pumped into the digester 18 months later. It is a relatively large-scale operation, as the following notes indicate, and apparently his entire farm, as well as his amateur station, now runs off cow-power electricity, generated from methane gas.

According to a report in *The Furrow* (November/December 1978, house journal of John Deere Company) the slurry falls through the slatted barn floor into a channel which has a natural incline to a slurry collection tank. This is big enough to hold a 30-day supply. Water is mixed in and it is held at a temperature of 5°C. Every day 880 gallons (4,000 litres) is pumped through heat exchangers into the digester while at the same time a similar quantity is pumped out. There are three tanks in the reactor holding a total of 22,000 gallons of slurry, and it takes four hours each day to pump in the day's supply. Slurry spends about three weeks in the digester before it is pumped out into a collection tank as non-smell exhausted manure that forms a fertiliser for the fields. About 70 cubic metres of methane gas is produced each day.

G3PTB is not sure whether this information should be in *"Month on the (odiferous) air"*. Personally I have the feeling that readers may complain that this month, more than ever, *TT* is full of "bull". But it shows what can be done with even the least promising of materials; in this case, unusually, "Brains baffle bull. . .".

Apropos the Franklin

When ssb/cw transceivers became popular a new form of perpetual motion began to make itself evident: the slow progression of contacts up or down the bands as the vfo at each end was reset slightly on each over, automatically resulting in the stations following each other along the band. The introduction of various forms of receiver-incremental-tuning (rit)

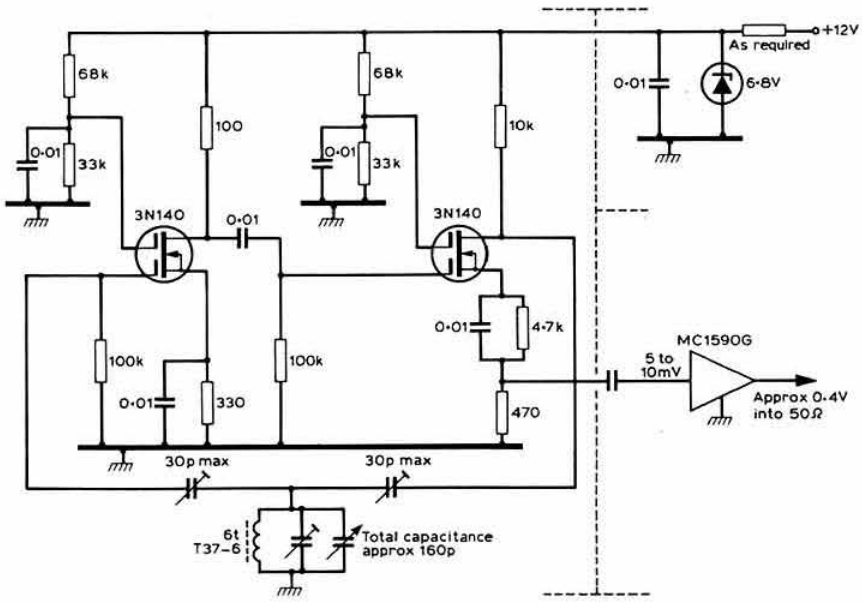

Fig 7. G3WSL's 28MHz Franklin oscillator which drifts about 1Hz/s and which can be stabilized with the "huff and puff" system

helped to reduce the problem to manageable proportions, although not to eliminate it entirely. For example, Stan Garner, G3WSL, writes:

"My favourite band is 21MHz. I use 9MHz for the station i.f. and prefer 30MHz for the vfo, rather than 12MHz. I have tried various forms of synthesized vfo, from premixing to the use of a phase-locked-loop system, but have always hankered for a straight vfo that would work well at a fundamental frequency up to 30MHz. When information about solid-state Franklin vfos began appearing in *TT*, I built one, if only to say I had tried most oscillators. The results have been interesting, indeed good enough to use on the air. The Franklin drifts approximately 1Hz/s after only 2min switch-on, and this is fine for short, rubber-stamp cw contacts but requires renetting fairly frequently during longer rag-chews (I have no rit and dare not touch the tuning knob too heavily while working real dx).

"I would like to improve the short-term stability but it all seems to run so cool that I doubt if a mixture of positive and negative coefficient capacitors will do the trick. Perhaps I should have changed the zener for a voltage regulator.

"However, in the outcome I built PA0KSB's 'huff and puff' stabilizer (*TT* April 1978). Now after 1min, the frequency remains steady within about 10Hz over the next 9min while the dc control voltage goes from 1·5V to 10V. On reaching 10V, the system relaxes its grip. By winding back the voltage to 1·5V I found that the 'huff and puff' stabilizer had restrained a drift of some 770Hz."

The circuit used by G3WSL is shown in Fig 7, but some of the component values represent "to hand" rather than theory, and the 30pF trimmers represent an excessive maximum capacitance, being adjusted for the minimum value which gives steady oscillation.

G3WSL raises an interesting question as to the noise performance of the Franklin, wondering whether the use of two rather than one active device may increase this (I think not, but am open to correction). He has also built a 16MHz version (for 7MHz) using the same circuit values but with two 40673 devices and a CA3028 amplifier; it has roughly similar drift performance.

It has been suggested that the Franklin is not a good circuit to use with bipolar transistors, with their high internal capacitances and low impedances more suited to colpitts type oscillators having high swamping capacitances. This may well be true, and field-effect devices should be used for Franklin oscillators.

Desoldering ic devices

In *TT* (October 1976, page 762) attention was drawn to a desoldering aid for ic devices using a technique originated by F8CV/F9BL. This consists of a stainless steel hypodermic needle (with point ground down to avoid risk of scratches) forming a thin tube with diameter sufficient to fit over the ic leads. The procedure recommended is to heat and liquify the solder fastening an individual ic pin, using a soldering iron, and then, when the solder is molten, the hollow needle is gently introduced while turning it gently between the fingers, until the ic lead is separated from the solder by the wall of the needle. The soldering iron is removed and, since the solder will not "take" to the stainless steel as it cools, the needle can afterwards be withdrawn so that the lead is left free. The process is repeated for all soldered ic leads and the device can then be removed from the printed circuit board.

At the time, I pointed out that *Radio-REF* did not make clear the size of needle used, etc.

Brian Castle, G4DYF, has recently tried out this technique and can vouch for its effectiveness. He has also found that in order to find a needle with an internal diameter sufficiently large to fit over a typical ic lead, it needs to be the type normally used in medical practice for drawing up the contents of a phial into a syringe before an injection is made using a finer needle. While by devious means he was able to obtain a couple of used needles (it is against the rules for these to be handed out by friendly nurses) he reports that suitable needles are known as Leni Sabie, size 21G by 1½in, 40mms 8/10. □

Preliminary results of a six-year study of the lower troposphere over southern England in terms of radio refractive index and potential refractive index

by R. G. FLAVELL, FRMetS, G3LTP

PART 2. THE RESULTS OF THE SURVEY

Reference atmosphere

Data for the whole of the six years, taken as a single sample, yield arithmetic mean values which constitute a reference atmosphere in terms of rri and pri, as shown in Table 1. Only the heights for the 950, 900, 800 and 750mb levels have been interpolated. All the remaining data are arithmetic means of the full sample.

Table 1. Reference atmosphere for southern England

Pressure	999[a]	950	900	850	800	750	700
Height asl (m)	144	570*	1,000*	1,468	1,940*	2,450*	3,017
Height above station (m)	0	426*	856*	1,324	1,796*	2,306*	2,873
K	321	310	303	295	287	280	275
N	320	299	281	263	245	228	213

[a] Mean ground level pressure at Crawley.
* Height determined by linear interpolation against log p.

Table 2 gives the corresponding average gradients of K and N between adjacent pressure levels (which are approximately 0·5km apart). To accord with common practice the N gradients have been calculated in units of N per km. The table shows that the N gradient changes rapidly with height; it is important, therefore, for authors to specify what their interpretation of "initial gradient" has been when citing values, particularly when these are likely to be used for comparison purposes. Thus, here, the initial gradient, taken over the first interval of 426m has averaged −50 N/km. When taken over the first kilometre, however, the average gradient was −44 N/km. The latter practice is in quite common use, yet it may not always be realized that an average figure obtained over a lesser interval may be very much higher.

Table 2. Average gradients between adjacent pressure levels

Pressure interval	999[a] to 950	950 to 900	900 to 850	850 to 800	800 to 750	750 to 700
K per 100mb	−22·4[b]	−14·0	−16·0	−16·0	−14·0	−10·0
N per km	−50·0[c]	−41·9	−38·5	−38·1	−33·3	−26·5

[a] Mean ground level pressure at Crawley.
[b] The mean lapse for the bottom 100mb interpolated from Table 1 is −18·2K/100mb.
[c] The mean lapse for the first kilometre above the ground, interpolated from Table 1 is −44 N/km.

There is no precedent for expressing pri gradients, so far as is known. The unit adopted here, K per 100mb, relates to a pressure level which, at low levels in the atmosphere, is not far removed from a height interval of 1km.

Table 3. Seasonal variation of rri, N
Crawley. Six years combined data, 1972 to 1977

Half-month period		Sfc N	Sfc P	950 N	900 N	850 N	850 H	800 N	750 N	700 N	700 H
JAN	A	318	1,001	297	278	260	1,465	244	227	213	3,001
	B	314	995	296	278	261	1,407	244	228	213	2,929
FEB	C	313	991	296	278	261	1,381	245	228	214	2,909
	D	315	1,002	294	276	259	1,468	244	228	213	2,995
MAR	E	313	999	294	276	259	1,444	243	227	213	2,966
	F	313	1,000	294	276	259	1,455	243	228	213	2,984
APRIL	G	312	997	294	277	262	1,434	245	229	214	2,958
	H	313	1,002	294	278	261	1,480	244	227	212	3,014
MAY	J	316	997	297	280	263	1,443	246	229	214	2,979
	K	319	1,000	298	281	262	1,483	244	228	213	3,035
JUNE	L	321	1,001	300	282	263	1,497	245	228	213	3,059
	M	326	1,001	304	285	265	1,510	247	230	213	3,091
JULY	N	330	1,001	306	287	267	1,513	247	230	213	3,098
	P	331	1,000	308	288	269	1,503	249	231	214	3,096
AUG	Q	331	1,001	307	288	268	1,519	248	229	213	3,102
	R	330	1,001	306	287	266	1,518	246	228	212	3,098
SEPT	S	327	1,000	305	285	265	1,495	246	229	213	3,067
	T	327	999	304	284	265	1,479	246	228	213	3,041
OCT	U	323	997	302	282	262	1,455	244	227	213	3,014
	V	323	1,000	300	280	260	1,475	244	227	212	3,030
NOV	W	320	998	299	281	262	1,448	245	228	213	2,990
	X	315	998	295	277	260	1,439	243	227	213	2,968
DEC	Y	316	998	296	278	261	1,441	244	227	213	2,973
	Z	318	1,002	296	278	261	1,469	243	227	212	3,006
Overall six-year mean		320	999	299	281	263	1,468	245	228	213	3,015

Table 4. Seasonal variation of pri, K
Crawley. Six years combined data, 1972 to 1977

Half-month period		Sfc K	Sfc P	950 K	900 K	850 K	850 H	800 K	750 K	700 K	700 H
JAN	A	318	1,001	308	300	292	1,465	286	279	275	3,001
	B	315	995	307	300	293	1,407	286	280	275	2,929
FEB	C	315	991	307	300	293	1,381	287	280	276	2,909
	D	315	1,002	305	298	291	1,468	286	280	275	2,995
MAR	E	313	999	305	298	291	1,444	285	279	275	2,966
	F	313	1,000	305	298	291	1,455	285	280	275	2,984
APRIL	G	313	997	305	299	294	1,434	287	281	276	2,958
	H	313	1,002	305	300	293	1,480	286	279	273	3,014
MAY	J	317	997	308	302	295	1,443	288	281	276	2,979
	K	319	1,000	309	303	294	1,483	286	280	274	3,035
JUNE	L	321	1,001	311	304	295	1,497	287	280	274	3,059
	M	326	1,001	315	307	298	1,510	290	282	275	3,091
JULY	N	330	1,001	317	309	300	1,513	290	282	275	3,098
	P	331	1,000	320	311	302	1,503	292	283	276	3,096
AUG	Q	331	1,001	318	310	301	1,519	291	281	274	3,102
	R	330	1,001	317	309	299	1,518	289	280	273	3,098
SEPT	S	327	1,000	316	307	298	1,495	289	281	274	3,067
	T	327	999	315	306	298	1,479	288	280	274	3,041
OCT	U	324	997	313	304	294	1,455	286	279	274	3,014
	V	323	1,000	311	302	292	1,475	286	279	273	3,030
NOV	W	321	998	310	303	294	1,448	287	280	274	2,990
	X	316	998	306	299	292	1,439	285	279	275	2,968
DEC	Y	317	998	307	300	293	1,441	286	279	274	2,973
	Z	318	1,002	307	300	293	1,469	285	279	273	3,006
Overall six-year mean		321	999	310	303	295	1,468	287	280	275	3,017

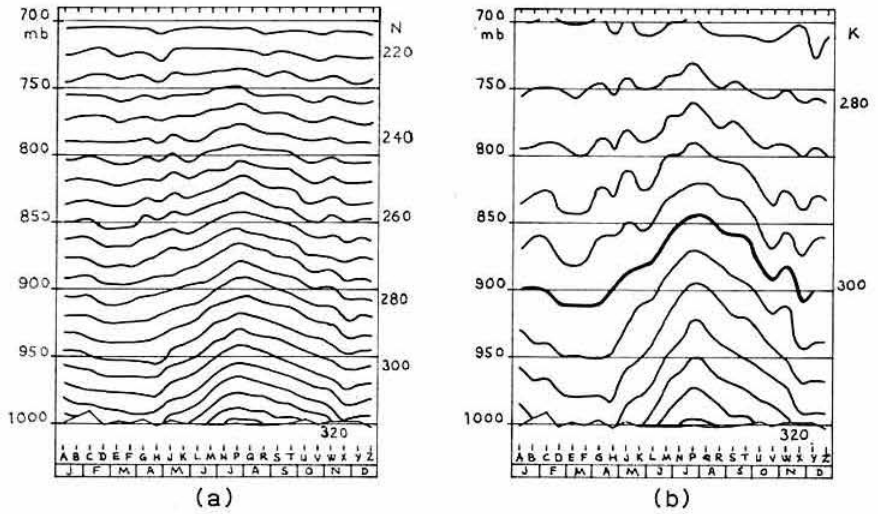

Fig 4. (a) Seasonal variation of rri, N. Crawley data, 1972–77 inclusive. (b) Seasonal variation of pri, K. Crawley data 1972–77 inclusive

Seasonal variation

Table 3 shows arithmetic mean values, taken over the six years 1972 to 1977 inclusive, for rri, N, surface pressure in millibars and heights, in metres, for the 850mb and 700mb surfaces.

For these studies the year has been divided into 24 periods, lettered consecutively A to Z, omitting I and O, based on monthly intervals. The first period of each month covers the first 15 days (thus, at 30 soundings per year for six years, the sample sizes of periods A, C, E etc are 180 in each case). The second period of each month covers the remainder, which may be 13 or 14 days in February and 15 or 16 days in respect of the rest of the year.

The information given in Table 3 is shown graphically in Fig 4a, where isopleths at five-unit spacings of N have been interpolated. Heights asl corresponding to the various pressure levels are shown for each period in the table. Table 4 and Fig 4b provide the same type of information in terms of pri, K. The increased emphasis placed on change is a notable feature of the diagram. The reduction in the number of isopleths makes a much clearer presentation and this is typical of the use of pri generally.

The underlying waves within the overall pattern of Fig 4b are not without significance (they will also be found on Fig 4a, now that attention has been drawn to them). Waves of various periods appear throughout the analysis, not only in the mean values, but in the standard deviations as well. They are almost certainly connected with real periodic motions in the atmosphere which have not yet been identified. In view of the connections between the K patterns and vertical motion in the atmosphere, demonstrated earlier, these waves may well merit closer attention.

Tables and graphs similar to these have been prepared for each year of the survey. They also include standard deviations, as do the half-monthly tables which summarize the twice-daily data. The whole of the six-year period has been drawn up in the form of a continuous time section of which Fig 3 forms a part.

1 6 86 264 489 343 161 75 21 8 1 1 = 1456

Number of cases

Crawley data 1972-1973

Surface refractivity N or K (Mean P_0=1000mb)	Approx ΔN / km	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-80
	ΔK / km	−5 to −1	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54
<300		0	1	5	0	0	0	0	0	0	0	0	0
300-304		1	4	36	14	3	1	0	1	0	0	0	0
305-309		0	0	21	66	20	8	1	0	0	0	0	0
310-314		0	1	18	123	123	41	8	3	0	0	0	0
315-319		0	0	2	33	131	52	23	8	0	0	0	0
320-324		0	0	1	20	135	54	26	15	5	0	0	0
325-329		0	0	0	5	40	69	27	9	4	0	0	0
330-334		0	0	2	2	27	68	36	16	6	1	0	0
335-339		0	0	0	0	7	28	20	8	2	3	1	0
340-344		0	0	1	1	2	16	12	5	0	1	0	0
345-349		0	0	0	0	1	4	7	6	4	2	0	1
>350		0	0	0	0	0	2	1	4	0	1	0	0

Number of cases 0 100 200 300 400

6 60 116 317 249 256 154 158 69 38 25 8 = 1456

Fig 5. Distributions of 1,456 values of surface refractivity, Ns, and a like number of refractive index lapse rates measured over the first kilometre. Crawley data, 1972-73

Surface refractivity vs lapse rate

Most propagation engineers seem to believe that there is a well-marked correspondence between a surface value of refractivity and the gradient, or lapse rate, in the atmosphere above. The first two years of the data have been analysed in terms of their units to see if their belief appears to be justified.

In all, 1,456 cases were examined, separated into blocks of five N-units width in the case of surface refractivity (known as Ns) and in 5 N/km blocks in the case of lapse rate. The figures were based on a comparison of values at ground level and at 1km above, on each sounding. The results are shown in Fig 5, together with histograms which show the distributions of each of the two parameters over the period concerned. The mode in

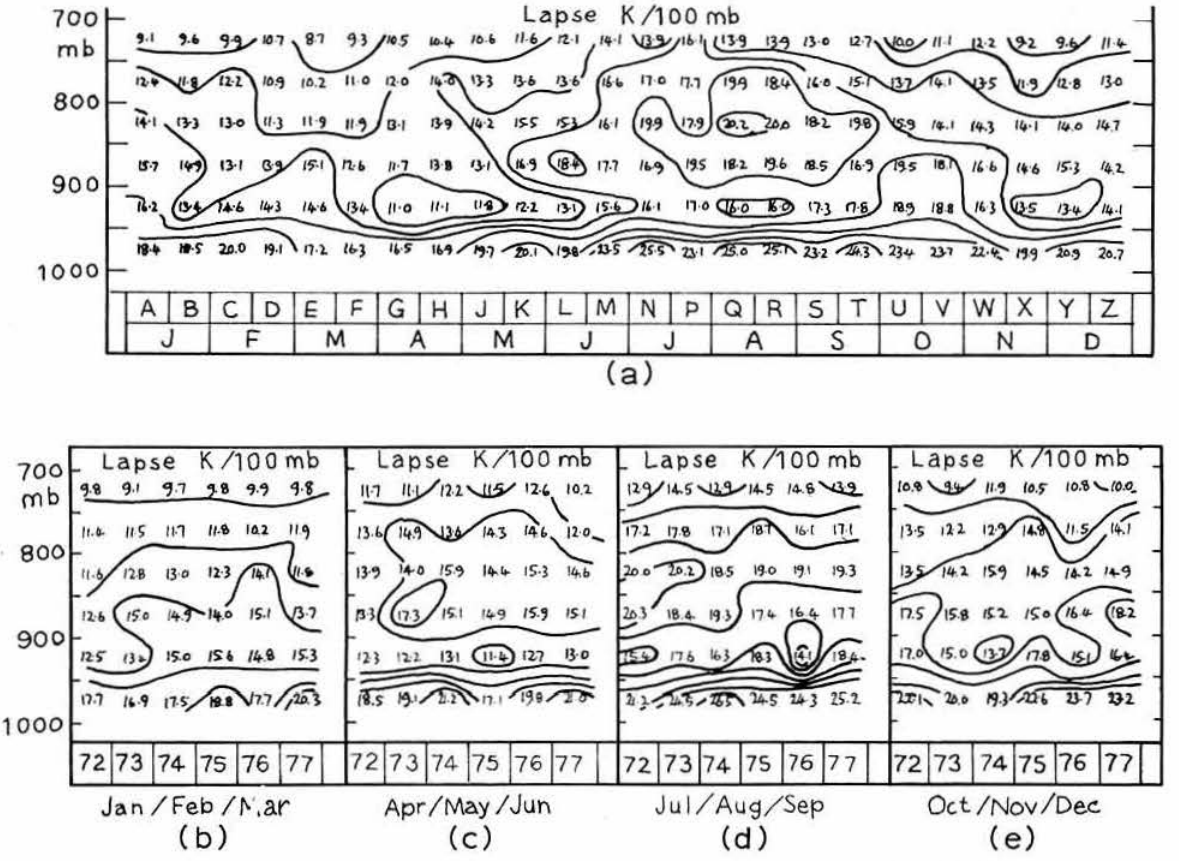

Fig 6. (a) Seasonal and (b-e) annual changes by season in pri lapse rate at various pressure levels above Crawley. Ordinate: pressure (mb) (700mb represents a height of approximately 3km)

terms of lapse rate is the block 40–44 ΔN/km (corresponding to −40 to −44 N/km gradient). The corresponding values of surface refractivities have extended over a range of nearly 50 N-units. It is suggested, therefore, that, for individual cases and for small samples, Ns can be a very unreliable guide to the gradient of refractive index immediately above.

Because the mean surface pressure at Crawley during 1972 to 1973 happened to be 1,000mb, where N = K by definition, the surface refractivity values may be taken to apply equally well to either unit.

Seasonal and annual changes in gradient

In radio propagation studies it is change of refractive index rather than the absolute value which is of chief importance. A separate study has been made, therefore, of changes in average gradient over the 24 periods into which the year has been divided for the purposes of this survey. The result of combining the figures for 1972 to 1977 inclusive appears in Fig 6(a).

When the exponential terms which would have been introduced if refractive index changes were examined in terms of height instead of pressure are not present to obscure the results, a systematic sequence of changes over the year is revealed. (The term lapse has been used deliberately here to avoid the use of all-negative numbers. A lapse of 9·1 is a gradient of −9·1K/100mb). It can be seen that intervals of half a month produce significant and consistent changes in the pattern of gradients throughout the year. Fig 6(a) also provides a welcome reassurance about the quality of the reduced data. It needs to be emphasized that there is no connection whatsoever between the rows and columns of figures other than that provided by the atmosphere itself.

The remaining four figures, 6(b) to 6(e), show how the lapse rate distributions vary from one year to the next. For this purpose, for brevity, the data for each year has been taken three months at a time, in periods which roughly correspond to the four seasons.

Six years is too short a period to reveal either the presence or absence of long-term trends. There are significant differences between seasons and between years, however, and it is hoped that the appearance of these records will prompt an early comparison with vhf/uhf signal records for southern England, collected already over a comparable period.

Conclusion

The results presented here have been but a sample of what is available from a long-term study of refractive index. Analysis of the data will continue and it is hoped to publish further, more-detailed, aspects of the work in the near future. □

4-2-70

Graham Knight, GM8FFX*

Moonbounce experiments

Following the recent issue of a special high-power permit to use cw on 432MHz, the Oxford University Group, using the callsign of Charles Suckling, G3WDG, have been testing their system on transmit. Comparisons have now been made between the original array of four 27-el quad-loop Yagis and a new 20ft dish. The amplifier used for the tests was built by Chris Lancaster, G8HDR, and uses a pair of 4CX250B valves in the well-known K2RIW configuration. These amplifiers are very popular with many moonbounce operators in America, and are extremely efficient; the unit at Oxford is delivering nearly 700W output for 1kW input. The quad-loop array was the first to be "echo-tested", with fairly weak return signals being copied from about one hour after moonrise through to moonset. Further tests were carried out at night when the Faraday rotation was at a minimum, and the moon was at the closest point in its orbit—this gave a 1dB advantage over the average value of path loss.

A 1·3dB noise figure preamplifier using an NE645 transistor was mounted, along with the changeover relays, right at the power divider for the four antennas. The transverter was a Microwave Modules MM432/28MHz with the receiver audio output being fed via an audio filter. After experimenting with various audio filters the Oxford Group has now settled on a variable bandwidth and variable frequency type made to a design by DJ6HP which was described in "Technical Topics" *Radio Communication* April 1974. The echoes were not really strong enough to copy complete morse characters reflected back from the moon, and a special test system was adopted. On the suggestion of eme expert Peter Blair, G3LTF, it was decided to transmit a 2½s dash and then listen for the echo by slowly tuning the receiver over 100 to 200Hz around the expected frequency. This is not exactly the same as the transmitted frequency due to the Doppler shift arising from the earth-to-moon motion. The shift may be up to 1kHz above or below the transmit frequency, high at moonrise when a point on the earth is moving relatively towards the moon and low at moonset when the same point is moving away from the moon. Charles Suckling has written a computer program to calculate the amount of Doppler shift for different periods. The shift in frequency on tuning the receiver helps considerably when listening for weak echoes with a narrow-band filter. The echoes are quite easy to hear as the ear is more sensitive to a changing note than a fixed one.

Exact measurements of the strength of the echoes were not made, but they were roughly 1 to 2dB above noise in the 100Hz bandwidth system in use at Oxford. These tests imply that the four-Yagi array has a gain of about 24dBi, or about 19dBi per loop-Yagi. This figure is consistent with the sun noise measurement tests carried out earlier by the group. G3WDG believes that this is the first time echoes have been received on 432MHz using just four Yagis; it is only the high gain of the G3JVL loop-Yagi which made this possible.

Echo tests have also been made using a 20ft dish antenna, with even better results. Since the gain of the dish is about 2dB up on the four loop-Yagi array, this gives a 4dB gain during echo testing. The tests with the dish were carried out in daylight at a time when the moon was in a less favourable position. G3WDG and G3YGF have constructed a servo-controlled polarization rotation mechanism which rotates the dipoles in the dish feed. A similar system has been in use on G3LTF's eme dish for some time. The mechanism can change polarization by 180° in less than 1s and is, therefore, ideal for echo testing during daylight periods when the changes in polarity on return signals can be a serious problem. This was demonstrated in a satisfying manner during the initial tests with the new dish antenna, when Faraday rotation was causing the horizontally polarized transmissions to come back from the moon vertically polarized. Nothing at all could be heard without the polarization rotation device, but good echoes were obtained as soon as it was brought into the system. It is also very useful for peaking signals on receive, and removes all the "chance" aspect of moonbounce operation associated with linearly-polarized arrays. Very often signals are received on or near vertical polarization, which would be lost on a fixed array.

Now that echoes have been received the Oxford group is ready for cw schedules and it is hoped that the first eme contacts will take place soon. Good eme signals were received from W1JR calling LU3AAT on 19 November but at this time the transmit amplifier was incomplete. On 26 November two contacts were made, with ZE5JJ at 0910gmt and F9FT at 0925gmt, both signals being easily copied at Oxford, as were their own echoes.

Tropospheric openings

The good tropospheric dx conditions which occurred during the first two weeks of November were briefly mentioned in last month's *4-2-70*. Steve White, G3ZVW, in London, has sent in a very detailed telex message listing the stations worked on 144MHz during this period of very foggy weather which, along with the dx, was associated with a large area of high pressure which had a front extending from Dover to Salonika. G3ZVW, using 100W from QTH square ZL40a, worked more than 70 German stations, including DL7PO(GM37f) and OE2CAL/P/2 in GH16c. Another very detailed telex covering the same period has been sent in by G3YDX who used 10W from locator AL33g to work HB9AMO/P(DG13b), HG6KVB/P(KH01g), HG7KLF/6(JH10j), DM2CSJ/P (FK18h), DM2QXN(GK33f), OE2CAL/P/2, and numerous German stations. G3YDX reminds us of the superiority of cw during pile-ups, as the Hungarian stations were having difficulty making out the callsigns on ssb but replied straight away to cw calls.

John Heys, G3BDQ, at Hastings, also stayed on cw during the lift and he worked DM2CSJ/P, this time in FM79h square, DM2ARE, DM2BYE(HM53a), three Hungarian stations and OE9PMJ/P in EH39c. RSGB member Bernard Jouaux, F6BPH, in DI12f, worked RB5MKZ in Privolye, Ukraine, at 1315gmt on 10 November. G3VYF was another station working the German and Hungarian stations, as well as OK1IBI in GK53 square. G3VYF also worked SP1KIZ in IO44a for country number 27 on 144MHz since March 1978. G3VYF is now using a NAG144 linear and an F9FT antenna, and has worked more than 100 QTHs on 144MHz in the last eight months.

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Clive Morton, G4CMV, in Leeds, worked his share of the above dx and DM4PSN(GK07c), OE2CAL/P/2, HB9MY (EH63j) and LX1DB(DJ32b). The station in Luxembourg was G4CMV's country number 29 on 144MHz. Simon Freeman, G3LQR, at Woodbridge, worked many stations on 144MHz during the openings and received a 599 report from HG5KDQ in JH35c who could also hear Simon on 432MHz. G3LQR worked HB9AEN/P in DG73b on 432MHz to bring his total QTH squares on that band to 103.

Transatlantic 50MHz tests

"Late news" last month and GB2RS both gave the news that the BBC television sound transmitted on 41·4MHz had been received by stations on the east coast of the USA. Further news has been received that the same transmission has been received at strength nine in Texas by a member of SMIRK (the Six Metre International Radio Club). Ed Tilton, W1HDQ, has received good signals from the Gibraltar beacon ZB2BL in Connecticut. ZB2BL himself has had a 50MHz QSO with PY1RO and is now busy improving his receive set-up to attempt further contacts.

Dave Sumner, K1ZZ, of the ARRL, has written to say that there is a large group of amateurs in the USA interested in 50MHz transatlantic propagation tests. These amateurs are keen 50MHz enthusiasts who use large high-gain antennas and high power, and are prepared to run regular transmitting tests beamed to the UK. The group on the east coast is led by VE1ASJ, WB2RLK/VE1 and K1ZFE, and the group in Oklahoma and Texas by K5ZMS. Some British amateurs already have beam antennas for 50MHz, and several have receive converters which already cover this band of frequencies. If you would like to participate in transatlantic 50MHz tests please contact the RSGB vhf manager, Ian White, 83 Portway, Didcot, Oxfordshire.

If there is sufficient response from the UK and European stations, proper schedules and crossband 28MHz frequencies will be arranged by the vhf manager. Alec Allan, GM3ZBE, near Aberdeen, is the latest person to put up a full-size 50MHz four-element beam in anticipation of having crossband contacts during the upswing in Solar Cycle 21. GM3ZBE would also like to hear from any American or Canadian stations equipped for 70MHz reception—as Alec says, "We know it is possible to have transatlantic contacts on 50MHz, who knows whether the muf ever reaches 70MHz even for just a few minutes per solar cycle?"

The World Data Centre at Boulder, Colorado, has recently announced two new predictions for the maximum of Cycle 21. One based on the work of Messrs McNish and Lincoln gives an earlier and lower sunspot number than that of Sargent and Ohl. The results of both forecasters suggest that the smoothed sunspot number will be 150 at maximum in November 1979.

Transequatorial 144MHz dx

On 5 November, 1978, SV1DH in Athens copied signals from the ZS6DN beacon 7,100km away in Pretoria, South Africa. The signals were readable for a period of 10min between 1715gmt and 1725gmt and averaged T2. This is probably the longest distance over which 144MHz signals have ever been copied and opens the way for attempts at contacts previously thought impossible.

The te openings between Rhodesia, Athens and Cyprus continued in September and October. The previous report in the August *4–2–70* caused a flurry of letters from correspondents researching the transequatorial mode. Because of this interest all received reports of reception of the ZE2JV 144MHz beacon are detailed below.

Date	Heard by	Time gmt	Report
15 September	5B4WR	1748–1753	T1
15 September	SV1AB	1801 briefly	T1
16 September	SV1DH	1715–1820	T3
17 September	5B4AZ	1728 briefly	T1
18 September	5B4AZ	1718–1720	T1
19 September	5B4AZ	1735–1740	T1
20 September	5B4AZ	1730–1740	T1
20 September	SV1DH	1730–1740	T1
1 October	5B4WR	1748–1756	T1
2 October	5B4AZ	1704–1711	T1
10 October	5B4AZ	1720–1855	T1/3
11 October	5B4WR	1733–1810	T2
14 October	5B4WR	1715–1720	T1
15 October	SV1DH	1800–1820	T3
15 October	5B4WR	1826–1829	T3
16 October	5B4WR	1700–1812	T1/2
17 October	5B4WR	1613–1730	T2
17 October	SV1DH	1740–1800	T2
18 October	5B4WR	1622–1645	T1
19 October	5B4WR	1745–1759	T2
19 October	SV1AB	1754–1759	T2
19 October	SV1DH	1754–1759	T2

The ZE2JV beacon has changed frequency to 144·160MHz and transmits 50W to an 11-element Yagi antenna. Breaks are made in the beacon transmissions to allow any station copying to call ZE2JV himself. Ray Cracknell then switches off the beacon and calls the station on a 200W rig. A solid contact took place between SV1DH and ZE2JV on 15 October using this break-in procedure.

Ray Cracknell, ZE2JV, and Roland Whiting, 5B4WR, are RSGB members who have been conducting experiments into transequatorial propagation for more than 20 years. They and their "new" recruits are to be congratulated on these latest achievements, proving once again that amateurs discover, record and utilize rare propagation phenomena.

(See "Transequatorial dx contacts on 144MHz" by DJ3KR, *Radio Communication* December 1978.—*Ed*)

Amplitude modulation

The item headed amplitude modulation in the November issue of *Radio Communication* has generated some correspondence. The letters reveal that a.m. is still very much alive and that activity is not solely in central Scotland. G8MBB, G8IZM, G4DAL, G8KED and G3XEN also operate on 145·8MHz; in fact, G3XEN, from Lancaster, maintains a continuous watch on 145·8MHz 24h a day. Cumbria Raynet mentions the fact that 145·8MHz is the national Raynet inter-group common frequency.

Norman Fitch, G3FPK, views the operation of stations above 145·8MHz with concern, and points out that the top 200kHz of the 144MHz band has been internationally agreed for space communication use by amateurs. He finds that the new USSR radio sputniks are very sensitive—being designed for use by Russian amateurs running less than 5W. Tests by Pat Gowen, G3IOR, have shown that good signals can be obtained through the RS1 satellite by stations running 100mW.

It is a fact that the Russian satellites are being switched off by high input signals from repeaters and other amateur stations when they pass over western Europe. The problem will be further compounded by the launch in May of the first AMSAT Phase 3 satellite, which will have a downlink frequency in the section 145·810MHz to 145·990MHz. As our European

neighbours have agreed to change the frequencies of the R8 and R9 repeaters, it seems reasonable to expect UK stations still using 145·800MHz and above to move to an appropriate frequency which complies with the band plan.

Auroral reports

The following are the latest dates which can be added to the calendar printed in September's *4-2-70* : radio events occurred on 13,18,19,22,23,26,29 and 30 October and on 10,12,13,24,25 and 26 November. Visual displays occurred on 2,19,22,25,26 and 27 October and on 2,3,10,20,21,24,25 and 26 November. Many good visual auroras were observed in November, with the display on the night of 25 November being particularly brilliant. A letter from observers at St Andrew's University describes how the major visual display started with an arc about 60° high at 1720gmt. A number of bright rays and curtains were observed with red patches at each end of the arc, within a few minutes the arc had increased in height with "fingers" forming a diffuse surface overhead. The aurora quietened down at about 1815gmt, forming an arc approximately 60° high in the north. The arc then lowered to about 40° and was quiescent until 1845gmt when a double arc formed and more rays were seen. By 1930 this activity had died down to a glow over the northern horizon.

It is interesting to co-relate the above visual information with the radio event which occurred on the same day. The radio aurora started at 1315gmt and continued until 1830gmt, with GM4BYF in Edinburgh working 55 stations and GM8NCM in Kirkcaldy contacting 75 stations. Their best dx being GJ3YHU(YJ70G), DB9YJ(EM73a), DM2BYE(HM53a), F1KBF(BI01j), F1CYB(BH20h), F9GW(DJ16a), G4CUS(AK03j), and many LA and SM stations. GM4CXP, operating from YR80j, worked DL7PO (GM37f) and many south coast G stations. G8BKF writes from Telford in Shropshire to say he was ready for the aurora, thanks to keeping his auroral warning calendar up to date with the information given in *4-2-70* and on the GB2RS news broadcasts. G8BKF worked nine stations, including two in Northern Ireland. GM8NGG reports that the heavy snow falling at Inverness obviously did not affect auroral contacts, as he worked many stations using just a barefoot FT221R. Other stations worked during this major event were OH0JN(JU70d), RQ2LTN(LQ10f), RR2TEJ(NT71e), UC2APO(NN08e) and UP2BBC (LP07j). During the 25 November event G3OSS was heard by GM3JFG on 432MHz although no two-way contact took place; however, a QSO was completed on this band by G3OSS and G3WOH in Liverpool.

"Newcomer's guide to fm"

The UK FM Group (London) has produced a booklet entitled *A newcomer's guide to fm simplex and repeater operation on two metres.* The writer, Antony Askew, G4BPC, a committee member of the UK FM Group (London), has compiled a very comprehensive guide which covers all the aspects of fm operation.

The many newcomers to fm who are perplexed by the use of channel numbers will be pleased by the inclusion of a frequency to channel conversion table. The band plan approved at Hungary is published, along with a glossary of terms in common usage on the vhf bands. The booklet spells out the different techniques required for simplex and repeater operation in a very clear and easy-to-understand way. Helpful advice is also given about tonebursts, deviation, bandwidth, and on erecting a suitable antenna.

A large section of the book is concerned with operating techniques, and the advice given is correct and cannot be faulted. The author regrets that so many fm operators still use 144·480MHz, and he also takes a responsible attitude to those operators who wrongly operate simplex on R0 and on other repeater and beacon frequencies.

The UK FM Group (London) booklet gives very good advice and complements rather than competes with the G8AUU/G3UHK *International VHF FM Repeater Guide.* The *Newcomer's Guide* costs 40p to callers at RSGB headquarters, and is obtainable for 50p by post from Mrs Pat Spenceley, G8LZA, QTHR. Other repeater groups producing newsletters should consider missing a few issues and sending out this excellent booklet instead. It is sufficient to say that if all the present and prospective fm amateurs read and observed the guidelines outlined in this booklet, operating standards on and above 145MHz would be greatly improved.

Emergency use of GB3BM and GB3CB

During the recent strike of ambulance drivers in the Midlands, both the vhf repeater GB3BM and the uhf repeater GB3CB were being used to assist in the passing of emergency traffic. Several Raynet groups around Birmingham were called in to provide communications to assist the St John Ambulance Brigade and the Red Cross to deal with incidents where danger to life was involved. Council member Tom Douglas, G3BA, and repeater group chairman Hayden Bate, G8AMD, both helped in the organization of the amateur groups who gave assistance over several 24-hour periods. The fact that amateurs and their repeaters were being used to help in the emergency received national coverage in the press, and on radio and television.

New repeaters

Licences have been issued to the following 144MHz repeater groups: GB3AR, GB3CF, GB3FR, GB3MN, GB3NI, GB3PR, GB3SC, GB3SR, GB3TR, GB3WH and GB3WT. Applications for 144MHz repeaters for GB3AS, GB3HI, GB3HS and GB3NB are receiving the attention of the VHF Committee and its Repeater Working Group. GB3NI, GB3SR, GB3WH and GB3WT are now operational.

Dennis Mason, G3NNQ, the secretary of the Fenland, Lincolnshire Repeater Group, informs *4-2-70* that the project is nearing completion. All the transmit and receive equipment has been constructed and tested, with the exception of the cavity filters. Dennis would like to hear from anyone who can assist in helping to complete the Fenland repeater; he can be contacted at 2 Mayfair Gardens, Spilsby Road, Boston, Lincolnshire.

Thanks to the efforts of G8GON and G4GUN, the 432MHz repeater GB3EX on RB0 is now on the air serving the Exeter and Exmouth communities. Based on a Pye U450, the repeater runs 5W to a pair of sleeved colinear antennas. The antennas are sufficiently spaced to give a large amount of isolation between the transmitter and receiver so that only a single cavity filter is used in the installation. Further details about this latest uhf repeater can be obtained from the Exeter ARS.

Repeater user's code

Letters have been received from members suggesting that a repeater user's code be published in *4-2-70*. Many individual fm groups have published codes in their newsletters—the code of operation printed below has been prepared by the UK FM Group (Western).

1. Repeaters (particularly on 144MHz) serve to improve mobile communications, and base stations should refrain from using them when mobile stations call in.
2. Ensure that your rig is equipped with at least two fm simplex working channels, and QSY to these if direct communication is possible. Always check that the simplex frequency of your choice is clear before making the change.
3. Keep all QSOs as short as possible and never allow yourself to "time out". A repeater is like a shared telephone line and others have an equal right of use.
4. Do not use the repeater as a crutch for poorly-maintained equipment. Have pride in your rig and take particular care with the deviation setting.
5. Never tune up your rig on a repeater input frequency—dummy load or not.
6. Do not operate on repeater input/output frequencies or in reverse repeater mode on any channels where there is an existing repeater in service. Please do not use any repeater input frequencies for simplex working at any time.
7. Do not over identify—time is valuable. "From G2XYZ . . ." is sufficient after the first link-up.
8. Do not use special repeater facilities such as high/low frequency sensing and over deviation indication in order to carry out adjustments to your rig when there are other stations calling.

Finally—please be tolerant of those who are using the repeater for the first time. Others will follow your good example and hopefully will enjoy using repeaters.

Firsts and farthests

Can anybody better the claim by Roger Taylor, G4BEL, to have been the first station to contact DM on 432MHz. The G4BEL claim is as follows: 5 October 1972, callsign DM2BCD, time 1950gmt.

On 144MHz Colin Squires, G3XCS, of Saltash in Cornwall, is fairly sure that he was the first UK station to have a direct contact with Morocco when he contacted CN8CC on 4 June 1978 at 1945gmt. Colin also thinks it may be the first UK to Africa contact on 144MHz, although it is possible that in the distant past someone somewhere may have worked, say, FA on 144MHz to establish an earlier first. All claims for firsts and farthests to G5UM, QTHR.

The 25th Supreme Award

Congratulations are in order to Ernest Ashby, of Knottingley in West Yorkshire, who has submitted two Seniors and one 1,296MHz Standard to gain Supreme Award No 25. Ernie is, of course, very well known as an excellent cw operator on the vhf bands, and it is therefore no surprise to note that almost all the QSL cards were gained for A1 operation.

There is quite a battle going on among certain Class B operators to be the first G8 to win a Supreme Award. At the moment Tony Oakley, G8IWA, of Hull, seems to be the closest to making a little bit of history.

White Cliffs of Dover Award

An award of special interest to vhf operators has just been issued by the Dover YMCA ARC. The White Cliffs of Dover Diploma will be awarded to stations submitting log copies of eight contacts with Dover club members. Well-known vhf operator and repeater builder, Ken Crouch, G8KEN, hopes the award will stimulate vhf ssb and simplex fm contacts. The award, finished in copper-plate writing, is available for two ircs or 50p from the Dover YMCA ARC, Godwynne Road, Dover, Kent.

Introducing the 4-2-70 Squares Award

The 4-2-70 Squares Award is a new award to be introduced by the VHF Committee. It is designed to give everyone who is active on vhf/uhf an interest and aim in their day-to-day operation in the vhf/uhf spectrum. It is totally unlike the Four Metres and Down Award which has top limits—once an operator has reached the Supreme Award level his/her interest, activity and QSLing tend to diminish. With the 4-2-70 Squares Award, interest is likely to be maintained, for it is unlikely that a station will ever work *all* QTH squares.

It is planned that this new award will eventually supersede the present Four Metres and Down Award. First introduced in 1961, the FMD Award requirements do not match present-day activity and the high use of ssb on all the bands.

The proposed new certificate itself is somewhat different from the FMD one; it utilizes the QTH locator map of Europe as a background. Only one certificate will be issued per band, and any updates will be made by the addition of a sticker. Thus the member will receive the certificate plus one sticker with his initial claim.

The requirements for obtaining the 4-2-70 Squares Award are as follows:

1. All claims must be fully supported by QSL cards bearing QTH locator details.
2. All contacts must be made after 31 December 1978.
3. Eligible countries are those listed on the claim form available from the vhf awards manager.
4. Stations are eligible for awards in the following categories:
  (a) Fixed stations.
  (b) Alternative address (stroke A) stations, any address.
  (c) Portable stations, any location.
  (d) Mobile stations, any location.

The following categories, intended to mark successful vhf/uhf achievement, are available:

Category	Requirement
70MHz/20/4	20 QTH squares including 4 countries
70MHz/25/6	25 QTH squares including 6 countries
70MHz/30/8	30 QTH squares including 8 countries
70MHz/35/10	35 QTH squares including 10 countries
144MHz/40/10	40 QTH squares including 10 countries
144MHz/60/15	60 QTH squares including 15 countries
144MHz/80/18	80 QTH squares including 18 countries
144MHz/100/20	100 QTH squares including 20 countries
432MHz/30/6	30 QTH squares including 6 countries
432MHz/40/10	40 QTH squares including 10 countries
432MHz/50/13	50 QTH squares including 13 countries
432MHz/60/15	60 QTH squares including 15 countries

Claim forms for the above award can be obtained from the RSGB vhf/uhf awards manager, Mr J. Hum, G5UM, 27 Ingarsby Lane, Houghton-on-the-Hill, Leicester.

Finally

Thanks for all the mail, telephone calls and telex messages. Send in your news items by telephoning the *4-2-70* answering machine at 0224 780347, by telex to "739169 MANPOW G RADIO", or by post to PO Box 49, Aberdeen. □

microwaves

Charles Suckling, G3WDG *

Station news

There has been a good response to the request for more information concerning activity on the lower microwave bands.

GM3YDN (Crosshill, Ayr) has written to say that he has now been active on 1·3GHz for about eight months. His equipment initially consisted of a high-level 2C39 mixer with about 3W output, but most of this was lost in the long coaxial run to the antenna. GM3YDN has overcome this problem by going over to a masthead-mounted varactor tripler fed with 432MHz from the shack, to ensure that all the valuable 1·3GHz rf is radiated; his antenna is a 6ft dish.

He has been conducting tests over a badly-obstructed 35km path to GM3KJF, who is using a single loop-Yagi antenna at 50ft agl. Signals are regularly Q5, but plans are in hand to improve the equipment at both ends of the path, by the use of a larger dish at GM3YDN and four loop-Yagis at GM3KJF.

Another station fairly new to 1·3GHz is G8LEF (Huddersfield). His original equipment consisted of two cascaded varactor multipliers from 144MHz, and a Microwave Modules converter. The only non-line-of-sight contacts were G3LQR, G4BYV and SM6ESG. These were enough to provide the incentive to improve the equipment, which now consists of the MMV1296 tripler modified to act as mixer; 9W drive at 384MHz and 400mW of 144MHz ssb produce about 2W p.e.p. at 1,296MHz. This is amplified to 40W by a 2C39BA in a square cavity, which proved much more efficient than the plate-line version tried first. The cavity in use is similar to that described in the G3LTF/G3WDG design (*Radio Communication* January 1976), but does not use a sliding grid tray. The dimensions of G8LEF's cavity are 3in by 3in by 0·75in, and it is tuned in the same way as the G3LTF/G3WDG design.

On the receive side, G8LEF uses two BFR90 preamplifiers ahead of the converter, and has recently added an interdigital filter between the preamps and the converter to reject noise on the image frequency. This has led to a marked improvement in performance.

With this equipment G8LEF worked PA2HJS, DK2VO, DJ5BV, DC6OT, DK1ZD and DC8BB during the early November lift, to bring his QTH-square total to 20. He is planning to become active soon on 2·3GHz, but in the meantime is very keen for skeds on 1·3GHz.

Operating news

Pressure on space has held over a report of some interesting tests carried out on 10 and 11 September between the Isle of Man, N Wales and Scotland. GM3FYB travelled to GD with equipment for 2·3 and 3·4GHz, and despite very bad weather conditions was able to make contacts with GM8CSE/P (near Lockerbie) on 2·3GHz over a 127km path, and with GW4BRS/P (Great Orme, Gwynedd) on 3·4GHz. Signal levels were 5 6/8 on 2·3GHz and 5 9+ on 3·4GHz.

More recently, conditions in early November were very good for G3LQR (Suffolk). A large number of PA and DL stations were worked on 1·3GHz, including DL8SF in DJ square, which brought Simon's QTH-square total to 51. No new stations were worked on 2·3GHz, although G3LQR was heard by DL7YCA in Berlin. Simon's most rewarding contact during the period was on 11 November with DC8QS/P (DM77h) on 3·4GHz at a distance of 400km, which looks like a new European record.

DC8QS was using 600mW of ssb from a BXY27 varactor mixer (driven with 144MHz ssb and 2W at 3,312MHz) into a small horn antenna. G3LQR's equipment for 3·4GHz consists of a 1·5ft dish with a log-periodic feed fed with 750mW from a varactor tripler, and an interdigital converter using a BAT10 diode as the mixer. G4BYV is reported to be building for 3·4GHz, and Simon hopes to get his first G contact soon.

Moving up in frequency to 10GHz, the tropo-scatter tests between G3YGF/A and G3JVL are continuing on a nightly basis. On 11 November a big enhancement in signals was noticed above the usual 1–2dB level, with signals reaching 20dB over noise, which made an hour-long rag-chew possible on ssb.

The usual rapid flutter typical of scatter propagation was hardly evident, being replaced by much slower fading; the fact that this lift coincided with good conditions on the lower bands is probably no coincidence. Two days later a second lift occurred, during which a most peculiar effect was noticed by G3JVL; the signal could be detected over a 40° range of beam headings, instead of the usual few degrees (as had been the case two nights before). This was not noticed at G3YGF/A, where the take-off is much clearer, and G3JVL concludes that the effect must have been due to the nearby hills. Clearly there is still much to be learned about this sort of propagation.

October 1978 1·3/2·3GHz Contest

Conditions were very good indeed for this contest. G3XDY reports that the Martlesham club worked 57 stations on 1·3GHz, out of which 23 were Gs, the remainder being 20 PA0s, 8 DLs, 3 ONs, 2 GWs and OK1AIY/P (QTH square HK). The latter station was contacted direct on 1·3GHz at a distance of just over 1,000km. Two other contacts were made over 600km, DJ8XO (FN) and DK0CO/P (FL). On 2·3GHz, 10 contacts were made; six PA0s plus G3LQR, G4ALE/P, G4DDC/P and G4BYV. G3XDY remarks that some of the PA0s on 2·3GHz were very strong indeed—the S-meter on the FT220R was hard against the end-stop a lot of the time. He also notes that all but one of the Dutch stations were using ssb.

The same technique as used by GM3YDN on 1·3GHz is employed by G3XDY in his 2·3GHz station, ie feeding a lower frequency up the coaxial cable to a masthead varactor multiplier. In this case, 20W of 1,152MHz are generated at ground level, and 7W reaches the multiplier after travelling through 100ft of FHJ-4 cable. This produces a useful 3·5W of 2,304MHz straight into the 44-el loop-Yagi. The preamps are also mounted at the antenna, eliminating feedline losses on receive.

BRS34348 (Chatham) was also fully occupied during the contest, listening on 1·3GHz. Using a 4ft dish at 16ft agl and a 27-el loop-Yagi at 24ft he received 36 stations. His best dx was G4ERX/P (Devon) at 320km. He also heard G2AKQ (Ringwood) making his first PA0 contact and PE0MAR (the strongest signal from the Continent) working his 65th station from his lighthouse QTH.

*Physical Chemistry Laboratory, South Parks Road, Oxford OX1 3QZ.

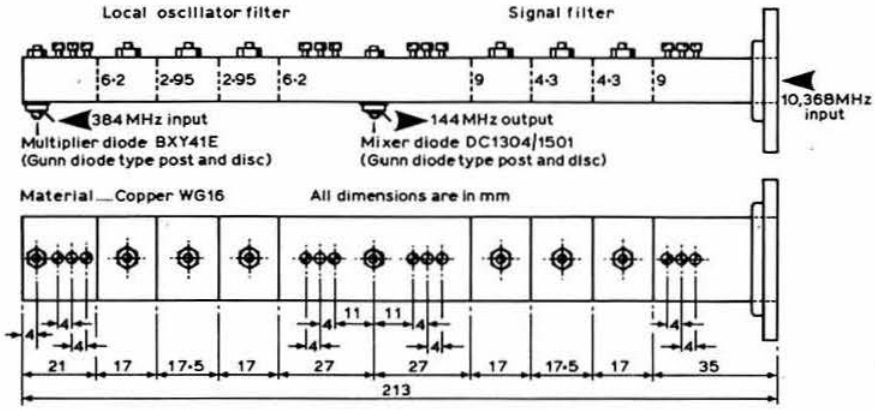


Fig 1. The G3JVL image-recovery mixer

Feedback on the G3JVL loop-Yagi antenna

G3UBX has supplied some interesting measurements of antenna gains carried out by his local contest group. Three antennas were compared, a 15/15 Jaybeam, a commerical loop-Yagi and a home-built loop-Yagi. No attempts were made to measure absolute gains, but comparative results over a 20km obstructed path suggested that the loop-Yagis were 1dB worse than the 15/15, which G3UBX finds surprising. The gain of the Jaybeam is quoted by G3UBX as 17dBi, suggesting a gain of 16dBi for the loop-Yagis.

This figure seems very low in the face of a large amount of other evidence. Measurements of sun noise and eme echoes by the G3OUR group using four loop-Yagis on 432MHz (see *4-2-70* this month) suggest a gain of 24-25dBi for the array. In addition G3XDY has measured a gain of 24dB relative to a dipole using four Yagis on 1·3GHz. Assuming a stacking gain of about 5dB for four Yagis, this would indicate a gain of 19-20dBi for one antenna. Sun noise measurements on single loop-Yagis on 432MHz and 1·3GHz also confirm this figure.

These figures would seem to suggest that the antennas tested by G3UBX had in some way deteriorated in performance. They had been used for a number of contests, and were well weathered. G3JVL has demonstrated that bent loops or loops out of alignment do seriously affect the gain, as does corrosion, particularly of the driven element. Thus it would seem to be well worth while to ensure that loop-Yagis which are subjected to hard use are well maintained, otherwise optimum results may not be obtained.

Another point made by G3XDY is that the side lobes of his array of four, stacked at the recommended 27in, were greater than 10dB down on the main beam, ie acceptable performance. This is in contrast to the G3OUR 432MHz array which had bad side lobes. The reason for this is still not clear, so it seems that while 27in gives good results at 1·3GHz, three times this (81in) is not correct for 432MHz. The writer would be pleased to receive any further comments on the results obtained with stacked loop-Yagis.

The G3JVL image-recovery mixer/transmit converter for 10GHz

Readers will no doubt be aware of the regular tropo-scatter tests being carried out between Oxford and Hayling Island. G3JVL has supplied details of the mixer which is in use by both stations as a receive and transmit converter.

The unit consists of a mixer diode mounted between two filters, one on the local oscillator frequency (10,224MHz), the other on the signal frequency (10,368MHz). The local oscillator filter is designed for maximum rejection of local oscillator noise, and is therefore a very narrow band device, while the signal filter is designed primarily for low loss, and is therefore somewhat broader. The construction of these filters was described in detail in "Microwaves" (October 1977), so is not reproduced here in full detail. The relevant dimensions, ie the spacing and diameter of the iris holes are given here in Fig 1.

Both the multiplier and mixer diodes are mounted using Gunn diode type posts and discs, as described in *Radio Communication* (June 1978, p493). The matching into the multiplier diode can be the same as that described in "Microwaves" (March 1976). The diode requires, typically, 0·5-1W drive at 384MHz. G3JVL has an alternative matching network which allows the use of a lower drive level, and this will be published in due course.

The mixer diode is a GaAs Schottky barrier type, of AEI manufacture. Devices of the same type by other manufacturers are probably also satisfactory. The 144MHz i.f. output is fed by a suitable matching network to a low-noise preamplifier. The matching will depend on the exact diode current used, and is best set up using an automatic noise figure meter.

The tuning up procedure of the mixer unit needs to be done carefully if optimum results are to be achieved. Initially monitor the mixer diode current with 384MHz drive applied to the multiplier diode, and maximize this by using the local oscillator filter tuning screws and the tuning screws between the multiplier diode and the filter. Next, remove the 384MHz drive and apply rf at 10,368MHz to the input of the receiver. Tune the signal filter and all the rest of the matching screws for maximum current, reducing the rf input as necessary to keep the mixer current at the required 1·5mA. Finally, re-apply local oscillator drive and optimize all tuning and matching adjustments for best signal-to-noise ratio using either a weak-signal source or, preferably, an automatic noise figure meter.

When optimized, the noise figure should be around 7dB, allowing for a 1·5dB noise figure i.f. preamplifier. This is a very good performance indeed, and will only be bettered by the use of an rf preamplifier.

G3YGF has demonstrated the efficiency of this design as a transmit converter, by feeding a few milliwatts of 144MHz ssb into the mixer diode. About 1mW p.e.p. output at 10,368MHz can be achieved, which is adequate for local contacts or for driving a twt amplifier. □

the month on the air

John Allaway, G3FKM *

WHETHER 1979 sees the peak of sunspot Cycle 21 or not, it will most certainly see another event of great importance to the readers of *MOTA*—namely, the World Administrative Radio Conference, which is now less than eight months away. National administrations will already have prepared their positions and submitted them to ITU for circulation, and later discussion at WARC, but there is still time for behaviour on our bands to influence the outcome of the conference as far as the amateur radio service is concerned. ARRL is one of the organizations which is concerned by some of the behaviour which surrounds the appearance of some of the rarer expeditions. Is making that contact so important that the reaction of non-amateur listeners (of whom there are many) does not matter?

With the deterioration of the postal delivery service it would be very much appreciated if readers would send in their contributions a little before the deadline dates for 1979 listed below, late items can always be added if received on the last day. Deadline dates for the year are as follows: February (6 January), March (2 February), April (10 March), May (3 April), June (7 May), July (2 June), August (30 June), September (10 August), October (7 September), November (5 October), and December (2 November).

DX news

To celebrate the 150th anniversary of the University of Cape Town, the local branch of SARL will operate a special station, ZS1UCT, during the period 17 February to 4 March. It will be active on weekdays from 0700 to 1000 and 1500 to 2000, and on Saturdays and Sundays from 0600 to 2000. Frequencies will be near 7,050, 14,210, 21,200, 28,580 and 145,500kHz. Special QSLs will be issued.

Laurence Howell, G4DMA, arrived on Adelaide Is in Antarctica on 6 October. He is with the British Antarctic Survey, will be there for two years or so, and will be working as radio operator. He hopes to be very active on the hf bands on both cw and ssb using his VP8SB call.

Peter Hicks, G4DVP, was formerly VS9MPH and says that he still has his logs and QSLs available for those still needing a confirmation from him for a contact when he was at Gan—please QSL via the bureau or to the address in "QTH Corner" with sae or ircs. Peter points out that the VS9M prefix was used by RAF personnel and that it has not been used since March 1976.

Denis Campbell, GI3TAC, is radio and electronics officer aboard the cable ship *Mercury*. He is signing /VP9 while the ship is alongside at Bermuda and will use /MM when at sea. He keeps a daily schedule with his father, GI3OLJ, between 1100 and 1200 on 21,077 or 28,077kHz.

*10 Knightlow Road, Birmingham B17 8QB.

Tony De Prato, WA4JQS, of Somerset, Ky, and his wife Cathy, WA4BSF, use this impressive array of equipment on all bands 1·8 to 144MHz. Tony is a member of RSGB

N4OW reports, via G3BDS, that his other callsign 7X2NN is being pirated. The pirate is asking for QSLs via N4OW's old call K4DAS.

LA5HE has supplied information concerning the Norwegian Polar Institute expedition to Norwegian possessions in Antarctica this winter. One party will be based on Bouvet Is and LA1VC will be with it. He will be on the air as 3Y1VC from approximately 1 January until 2 March. Equipment will consist of an IC701 and an Atlas 210 as back-up. The Dentron company in the USA has generously provided an MLA2500 linear amplifier with an MT3000A antenna tuning unit. Antennas will be a 12AVQ vertical and long wires. The operator's name is John and he will be on the hf bands as much as possible—especially on cw. The expedition ship left Bergen on 16 November, and the crew was flying to Cape Town to join it in mid-December. According to *West Coast DX Bulletin* LA5DQ will also be making the trip and may operate as 3Y5DQ, both from Bouvet and also from Queen Maud Land.

VK5CCT makes occasional visits to the Cocos Keeling Is and sometimes appears on the air as VK9CCT. He keeps in touch with VK5QX and his equipment consists of an FT301 and dipole antennas.

VR0M has been worked on 14MHz ssb and says that he is located on Malden Is in the Southern Line Is. He gives his name as Travis, but there is some doubt about his authenticity.

A station with the callsign HV2VO, located at Castel Gondolfo, south of Rome, may be active by now. The operator is Ed, LU9LAZ, who was also VU2SX. His location appears to be outside Vatican territory.

I2FGT is expected to be on the air again this month from Somalia as 6O1FG. This time he may use cw, and may also be able to work stations not on his own frequency.

FR7ZL may be leaving Glorioso Is due to ill health. However, his place may be taken by FR7AI who was on Tromelin Is at the time of writing. FR7AI/T has been heard and worked between 1600 and 1700 on 14,105kHz or later near 14,005kHz.

A7XAH is sometimes to be found around 14,270kHz at 1400, and also in the Arabian net at 0700 on Fridays on 14,250kHz. QSLs go to DJ9ZB.

Anyone still needing a QSL for a contact with ZM7AH several years ago is advised to apply to Jim Henderson, WB7UJR, 13490 Mt Hood, Reno, Nev, 89506, USA. Jim is anxious to clear up any outstanding requests before he closes his logs.

RF6F was active during the CQ WW DX contests and was a group from UK5MAF on a visit to Georgia (UG6).

Those working for 28MHz WAZ might like to look for JT1BG who has been reported on or near 28,650kHz at 0845 by *DX'press*. QSLs should be sent via I8YGZ.

KA1MI and KA1NC are both located on Minami Torishima Is, and the first mentioned is often to be found on Mondays, Wednesdays and Fridays on 21,375kHz—presumably in the mornings.

Foreign amateurs in El Salvador have been issued with new callsigns incorporating the YS9 prefix. Recent operation by YS9RVE was by WA0JYJ.

It seems that 9Q5JH is genuine. The operator's name is Julian and he also uses the call 9Q5ITU. According to *DX'press* he comes from Holland and often works to a list made by K1VSK in the 14,245—14,155kHz area.

VP8PL (S Georgia) is due to leave at the end of this month. At present he is sometimes heard on 14,025kHz around 0200. The southern summer changeover of weather station crews also means that FB8ZM is leaving Amsterdam Is, and it is understood that there is no amateur among the new arrivals.

Dxpeditions

In a bulletin from the YASME Foundation, Iris and Lloyd Colvin report that their KG4KG operation was from the location of a family living on the Guantanamo Bay base and that they very much enjoyed their stay. They operated from the KG4AN NARS station location, but used their own equipment. It seems that licences are issued by the US Navy and that they were permitted to use any Region 2 frequency and were not restricted to those used by USA amateurs. About 7,500 stations were contacted during the two weeks, and 122 countries worked on all bands 3·5 to 28MHz. The expedition will continue for about six months. Iris and Lloyd ask that contacts be limited to one per band per mode.

The expedition to Beata Is (off the Dominican Republic) will take place between 25 and 28 January. Its callsign will be HI1RCD, and a special postage stamp will be issued to mark the event.

HB9AJU sorting out the dx. Although holding no official position he has given invaluable help to IARU activities in Geneva over a long period

IARU REGION 1 HF BAND PLAN

BAND		TYPE OF EMISSION
3·5-3·6MHz		cw [2]
3·6	±20kHz	rtty[1]
3·6-3·8		cw and phone [2,3]
7-7·04MHz		cw
7·04	±5kHz	rtty [1]
7·04-7·1		cw and phone
14-14·1MHz		cw
14·09	±10kHz	rtty [1]
14·1-14·35		cw and phone
21-21·15MHz		cw
21·1	±20kHz	rtty [1]
21·15-21·45		cw and phone
28-28·2MHz		cw
28·1	±50kHz	rtty [1]
28·2-29·7		cw and phone

Notes

[1] For rtty, recommended section of operation shared with cw.
[2] 3,500 to 3,510 and 3,790 to 3,800 reserved for intercontinental working.
[3] 3,635 to 3,650 is used by USSR stations for intercontinental working.
[4] For sstv, recommended operating frequencies are: 3,735, 7,040, 14,230, 21,340, 28,680, all ±5kHz.
[5] For beacons, 28·2 to 28·3MHz is recommended.
[6] For the downlink of amateur satellites, 29·4 to 29·55MHz is recommended.

VE3FXT is expected to be in southern Africa at the present time. He has mentioned operating from several of the homeland areas, including Vandaland. All QSLs should be sent to Box 89, Lynden, Ontario, L0R 1T0, Canada. S8ABC is also hoping to visit these areas soon.

Contests

The 1979 French Contest

0000 27 January to 2400 28 January (CW).
0000 24 February to 2400 25 February (Phone).

Single operators may only operate for 36 hours. Exchanges consist of RS/T plus serial QSO number (from 001). Contacts should be made with Francophone countries—the 95 French departments; DA1 and DA2 stations using /FFA (French forces in Germany) and all DUF countries; the nine Belgian provinces; DA2/FBA stations; the 23 Swiss cantons; and LX, OD, HH, VE2, 4U, 3B, 9Q, 9U and 9X. Contacts with the same continent count three points and with other continents 10. The multiplier is one (per band) for each of the above-listed units contacted. Send logs and summary sheet (with multiplier list for each band) to: REF French Contest, Sq Trudaine 2, 75009 Paris, France. In the 1978 contest UK scores were (cw) **G3ESF**(122,892 points), **GM5AXY** (5,700), G3OUR (4,263), and G2BJY (2,553); in the phone section G6UW collected 342,906 points and G3UAS 10,701.

The CQ WW DX 160 Contest

2200 26 January to 1600 28 January.

CW only. Exchanges consist of RST and serial number (starting from 001). Contacts with own country count two points, with other countries five points, and with the USA and Canada 10 points. The multiplier is one for each USA state, Canadian province and DXCC country contacted (Note: W and VE do not count as countries). Logs must be mailed before 28 February to: CQ 160 Contest, 14 Vanderventer Avenue, Port

QTH CORNER

C5ABT	via OZ6MI, P. M. Andersen, Box 73, DK-5800, Nyborg, Denmark.
EP2BQ	via ZL2TX, N. A. T. Hardy, PO Box 118, Featherston, New Zealand.
H4AR	via WA6AHF, R. L. Hughes, 17494 Via Alamitos, San Lorenzo, Cal, 94580, USA.
HH2DX	via W4ORT, G. Warner, 1045 Le Brun Dr, Jacksonville, Fla, 32205, USA.
HK0COP	W9UCW, B. Boothe, RFD 1, Bell Rd, Minoshka, Ill, 60447, USA.
J3ABF	via K7MKS, J. Sloss, 4732 119th Av SE, Bellevue, Wash, 98006, USA.
N0TG/KP1	(see W0RJU/KP1)
PA0IWH/S2	(now) W. Bolkensteyn, paus Leonstraat 14, Haarlem, Netherlands.
S8GEH	WA4HNL, J. Levine, 1340 Nerine Circle, Dunwoody, Ga, 30338, USA.
VP2VEO	C. Thompson, RR1, Box 41-M, Trivoli, Ill, 61569, USA.
VP8SB	via G3ZMF, 10 Meadow Walk, Tadworth, Surrey KT20 7UG.
ex-VS9MPH	P. Hicks, Flight Simulator, RAF Binbrook, Lincoln LN3 6HF.
W6QL/6Y5	via YASME Foundation, PO Box 2025, Castro Valley, Cal, 94546, USA.
W0RJU/KP1	R. Rowe, N0TG, 3237 Connecticut Dr, St Charles, Mo, 63301, USA.
ZS1UCT	SARL QSL Bureau, PO Box 3037, Capt Town 8000, Rep of South Africa.
3Y1VC, **3Y5DQ**	via LA5NM, M. Bjerrang, Box 210, 9401 Harstad, Norway.
3Y0BZ	via VE7ZQ, 2648 East 6th Av, Vancouver, BC, V5M 1R3, Canada.
9L1KB	WB4WHE, Dr D. Chaffin, Rte 6, Brickwood Lane, Servierville, Tenn, 37562, USA.
9Q5ITU, **9Q5JH**	via K1VSK, D. Berger, 25 Scarborough Rd, Cumberland, RI, 02864, USA.

RSGB QSL Bureau, G3DRN,
30 Bodnant Gardens, London SW20 0UD.

Washington, LI, NY, 11050, USA. G3FKM has a small supply of log and summary sheets.

In the 1978 contest British scores were as follows: **GD4BEG** (102,753), **G3YMC** (4,277) and **GW3GWX** (455); **GD4BEG** was world third score. In the multi-operator category **G3WPF/A** scored 63,840 points, **GM4GRC** 44,319, GM3IGW 40,796, G4BPO 27,559 and GU3HFN 17,420; in this section G3WPF/A and GM4GRC were listed world seventh and tenth respectively. Note that this year checking will be strict and that three additional contacts will be deducted from the score for each duplicate, false, or unverifiable contact removed from the log by the adjudicators.

The Yugoslavian 80 Metre CW Contest
2100 13 January to 2100 14 January.
Exchange RST plus QSO number (from 001). Contacts with stations in own country count one point, in same continent two, and in other continents five. QSOs with YU stations count 10 points. The multiplier is total of DXCC countries and YU prefixes worked. Include summary sheet and usual signed declaration and send entries before 1 March to: YU DX Club of SRJ, PO Box 48, 11001 Belgrade, Yugoslavia.

The 1979 ARRL International DX Competition
0000 3 March to 2359 4 March (Phone).
0000 17 March to 2359 18 March (CW).
This popular contest has been reduced to 48 hours for each section. Entries may be single-operator (a) high band—14,21 and 28MHz, (b) low band—1·8, 3·5 and 7MHz, or (c) all-band. Multi-operator entries may be multi-band single or multi-transmitter. Exchanges consist of RS/T plus a figure indicating transmitter input power. Stations in the USA and Canada will indicate their state/province. A station may be worked on each band for credit. The final score is total QSO points multiplied by the total of multipliers from each band added together. Each contact counts three points. (Note that only the 48 contiguous USA states are to be worked). A small supply of summary and log sheets is available from G3FKM (large sase please). Entries must reach ARRL, 225 Main St, Newington, Conn, 06111, USA, before 16 April 1979.

October *QST* contained the results of the **1978 ARRL DX Competitions.** Scores of UK entrants were as follows:

CW SECTION
Single-operator scores

All band		High band		Low band	
G3FXB	2,425,848	**G3MZV**	333,060	**GI3IVJ**	223,626
G3MXJ	2,369,664	G5CES	243,960	**G4AMT**	85,698
GD5CAA	1,591,968	**GI4BBV**	249,630	G3TXF	70,380
G2QT	1,048,944	G5CEY	198,162	**GM6RV**	46,458
G3ESF	457,410	**GM3LYY**	122,200		
G3APN	58,776	G3NKS	70,917		
G2AJB	48,180	GM4CXM	58,656		
G5CF	30,267	G3FAS	46,431		
		G6NK	35,712		
		G3YBH	25,596		
		G8DI	5,925		
		G3IRM	480		

Multi-operator, single-transmitter
G3OUR 1,084,194 **GU3HFN** 400,500

PHONE SECTION
Single-operator scores

All band		High band		Low band	
G2QT	1,019,466	**G3ZQW**	2,516,976	**G4AMT**	92,232
G4BWP	810,075	G4CLK	462,090	**GI3IVJ**	42,408
G5CFJ	4,650	G4CVZ	412,125		
		G3VAO	230,160		
		G3CAZ	222,723		
		GI4BBV	214,380		
		GW4BNJ	136,500		
		G3YBH	122,232		
		G5CP	64,500		
		G5CES	63,900		
		G3NT	33,075		
		GU3HFN	29,682		
		G4FFY	28,710		

Multi-operator, single-transmitter
G4ANT 2,411,808 G3OUR 2,057,475

The 1979 Guglielmo Marconi International Contest
0000 13 January to 2400 14 January (cw).
0000 27 January to 2400 28 January (phone).
Sponsored by ARI to note WARC 1979 and to "remember the international amateur friendship and solidarity under the leadership of IARU". The contest will cover all bands 3·5 to 28MHz, and there will be single-operator single- and multi-band and multi-operator multi-band (single-transmitter) sections. Participants should exchange RS/T plus ITU zone (UK is in Zone 27), and contacts count as follows: with stations in the same continent in different countries—one point on 7, 14 and 21MHz, and two points on 3·5 and 28MHz. With stations in different continents points scored are two and five respectively. Contacts with stations in one's own country may be made for multiplier purposes only. The final score is the total of QSO points multiplied by the sum of ITU zones and "special locations" contacted on each band. Special locations are those associated with Marconi and are as follows: D4, CT1, CT3, CN8, EA7 (Cadiz), EI, F, FC, G (London), G (Flatholm Is), G (Isle of Wight), GI, GM, HB, HV, I4 (Bologna), I5, I (Rome), IY4FGM, IP1TTM, IT9, IS0, JA, LU (Buenos Aires), ON, PY (Rio), SM (Stockholm), SM1 (Gotland), UA1 (Leningrad), VE1, VO1, VO2, VK2 (Sydney), VP9, W1 (Mass), W2 (NY), W2 (NJ), W0 (Mo), W9 (Ill), VU, ZB2, YU2 and 5A (Tripoli).

Logs should indicate date, time, band, station worked, number sent, number received, if multiplier, and points claimed. Indicate multipliers the first time they are worked. Note that it is permitted to work stations in the "special locations"

in one's own country. Separate logs should be used (with 40 QSOs per sheet) for each band, and entrants should complete a summary sheet showing all scoring information, category of entry, entrant's name and address, and a signed declaration that all contest rules and regulations for amateur radio in the country of operation have been observed. All entries must arrive by 15 May (for the phone section) and 30 May (for the cw section) at the following address: G. Marconi Contest Committee, c/o G. Nucciotti, I8KDB, ARI Awards & Contests Manager, Via Francanzano 31, 80127 Napoli, Italy. Please indicate "phone" or "cw" on the outside of the envelope. Certificates will be issued to first-place winners in each country (call area in W, VE, VK, JA and ZL) provided that the entrant has operated for at least 16 hours (single-operator) or 36 hours (multi-operator).

The AGCW-DL QRP Winter Contest
1500 20 January to 1500 21 January
CW only—all bands, 1·8 to 28MHz.

Full details of this event may be obtained by sending an sase to N. A. Phelps, G4HJA, Fair Haven, Station Road, Patney, Devizes, Wilts SN10 3RD.

Bob Treacher (BRS32525) has supplied the results of the **1978 Helvetia XXII** contest. British scores were as follows: **G4CVZ** (4,347), HB9XJ/G5 (3,436), G3YBH (3,312), G3XFW (1,938), G3UAS (1,782), G3SNN (1,566), G3TKX (1,428), G3LDJ (1,035), G4GOY (1,008) and G4AEM (900). Bob is to be congratulated on winning the certificate awarded to the leading European listener entrant.

Awards

The Society's leaflet *RSGB HF Certificates & Awards* has recently been updated. Both this and the *Countries List* may be obtained by sending 25p to RSGB HQ. Certificates available to hf amateurs include the following:

The Commonwealth DX Certificate (CDXC)
Available to licensed amateurs who can produce evidence of having made two-way communication with at least 50 Commonwealth call areas on 14MHz and, in addition, at least 50 on other bands. In the case of the latter, a call area may only be claimed once irrespective of band. The certificate is free to RSGB members (who may, if they wish, purchase the CDXC lapel badge for £2) but non-members must enclose 50p or six ircs with their applications.

The British Commonwealth Radio Transmission Award (BCRTA)
For contacting 50 Commonwealth call areas. A five-band endorsement is available.

The Worked British Commonwealth Certificate (WBC)
For confirmed two-way contact with at least one British Commonwealth station in each of the five IARU continental areas (North and South America count as one area).

The British Commonwealth Radio Reception Award (BCRRA)
Available to those who do not hold a transmitting licence who have confirmation of reception of at least 50 Commonwealth call areas. A five-band endorsement is available.

The DX Listeners' Century Award (DXLCA)
For listeners who have confirmation of reception of at least 100 countries on the RSGB *Countries List*. Endorsements are available for each 25 countries heard, and a five-band endorsement is issued.

The IARU Region 1 Award
Commencing on 1 January 1979 this award will be available in three classes: Class 3 for confirmed contacts with 20 member countries; Class 2 for those who have worked 35, and Class 1 for those with confirmed contacts with all member countries. The award may be endorsed for all cw, all ssb, all rtty, or mixed modes, and proof of membership of RSGB is required from UK applicants. Members of IARU Region 1 are as follows: Algeria, Austria, Belgium, Bulgaria, Botswana, Bahrain, Cyprus, Czechoslovakia, Denmark, FR Germany, German DR, Gibraltar, Faeroe Is, Finland, France, Ghana, Greece, Hungary, Iceland, Ireland, Israel, Italy, Ivory Coast, Jordan, Kenya, Lebanon, Liberia, Luxembourg, Malta, Mauritius, Monaco, Netherlands, Nigeria, Norway, Oman, Poland, Portugal, Rhodesia, Romania, Sierra Leone, S Africa, Spain, Sweden, Switzerland, UK, USSR, Yugoslavia and Zambia.

Contacts must have been made since November 1945, and UK applicants must submit QSL cards to the Society's awards manager. The award is free to RSGB members but costs 35p, US $1, or eight ircs to others. Applicants from outside Britain should submit a list of QSLs held certified by their awards manager. Applications should be sent to: C. R. Emary, G5GH, "Westbury End", Finmere, Buckingham.

The White Cliffs of Dover Award
From the Dover YMCA ARC for those who contact eight (for European applicants) or five (for others) members. A log copy and two ircs (or 50p) should be sent to: Awards manager, Dover YMCA ARC, The YMCA, Godwynne Road, Dover, Kent.

Awards applications

Readers are reminded that the Society's awards manager is G5GH (C. Emary, Westbury End, Finmere, Buckingham) and that all queries should be directed to him. He has asked for it to be pointed out that many national societies change their awards managers annually, and also for readers to note that when applying for RSGB awards *proof of Society membership must be enclosed.*

Band reports

The monthly "bulletin" from G8KG reads as follows: "HF band conditions were good in the early part of November, with WWV giving high solar flux figures coupled with a low Ap index, but, later, a combination of falling flux and several periods of magnetic disturbance and auroral conditions resulted in a rather disappointing month. Unfortunately for those taking part, one of the disturbances played havoc with the first day of the CQ WW CW Contest.

The provisional Zurich number for November was not available at the time of writing but is likely to be around 100 or more, which would result in a three-month mean value of about 120 centred on October. In reaching this value in 28 months from the minimum, Cycle 21 is running about four months behind Cycle 19 but is six months ahead of Cycle 18, and nearly a year ahead of Cycle 20 which only just reached the 120 mark at its two peaks.

If this position is maintained it looks as if the smoothed sunspot maximum will probably be in the overlap region between the most optimistic forecast of 206 (+ or − 42) (see *Technical Topics,* September 1978) and the most recent forecast by NOAA Boulder of 149 (+ or − 35) based on data up to September. This would suggest a maximum in the 12 month mean of about 170 probably occurring late in 1979 or

early in 1980. The equivalent *mean* 2,800MHz solar flux would be around 215, in which case daily peaks of 300 or more may occur in the months surrounding the maximum. It should, however, be noted that up to the 28th month the rise of Cycle 20 was, if anything, slightly ahead of that of Cycle 18 but the three-month mean then fell steeply for several months and the lost ground was never recovered.

Many thanks to the following for logs: G2AMV, G2HKU, G3HB, G5JL, G3KSH, GM3LYY, G4EHQ, G4FMO, BRSs 17567 and 31301.

Stations listed in italics were using cw.

3·5MHz. 0000 AP2KS, WA1VHZ/C6A, HH2T. **0200** *PJ9,* YV. **0300** *EP, HH.* **0700** *CN8AD, HC2SL,* N0TG/KP1, *OX3WO, WA1RFM/VP9, ZL3s GQ, IS.* **1700** *ZL3GQ.* **2100** K0AX/DU2, JAs 5CPL, 6IEF, 6LCJ. **2200** AP2KS, EP2SL, *OY.* **2300** EP2TY.

7MHz. 0100 *W0RJU/KP1.* **0700** *JA, W0RJU/KP1, TG7AA, W6-W7.* **0800** *CM, JA, VP1, ZL3HI/C.* **0900** *HH, HI, KH6, N5VV* (N Mex), *VK, XE.* **1000** *JA, UA0.* **1300** *VP2M, 6Y5.* **2000** *EP2IA, UA9-UA0.* **2200** *VU2BK.* **2300** *J3AAG, KP4RF, 3V8AN* (?).

14MHz.0000 CR9AJ, HK0BKX, 4S7EA. **0700** *KJ6BZ.* **0800** AH2AB, CR9AJ, DU1REX, JA, KC6GF, *W5JW/KX6,* KX6LR, VK2AGT (L Howe Is), ZL3HI/C. **0900** A35WL, *H4AR,* JA, KC4AAA, KL7, VS5XU, VS6, ZL. **1000** 5W1BP. **1100** AP2TN, J28AZ, YB0WR. **1200** VK0JC. **1500** YI1BGD. **1600** FB8ZM. **1700** FH8CL, FR7BT. **1900** FK8CU, OX3PK. **2000** N0TG/KP1, SU1MA, VP8NO. **2100** FG0DWT/FS, *HF0P0L* (S Shetlands), KL7, S8GEH, ZD9GH (QSL to ZS1Z), 9Q5JH. **2200** *HH2CQ, WA7JRL/SU, 9M2DW.* **2300** D4CBS, HS1ABD, TI5DWL, VK6, ZS2MI.

21MHz. 0700 JA. **0800** KL7, VK, ZL. **0900** D4CBS, K5FSS/DU2, FK8CR, JA, KA1NC, VK, VS6, ZL, ZL3HI/C. **1000** *JT1AN.* **1100** H44LW. **1200** TJ2P. **1300** 4S7. **1400** N0TG/KP1. **1600** *FY7BH,* W6-W7. **1800** KH6CF, KX6BQ, VP1BK, VR3AK, ZL3HI/C. **1900** FP8, FR7, WB5WIC/3D6. **2000** KG4KG, KL7, W6-W7. **2100** ZD7SD.

28MHz. 0700 *A9XC,* HS1ABD. **0800** JA, ZL, *3B8MS, 5B4CY.* **0900** JA, UA0, VS6. **1000** WB9EWZ/KG6, ZL. **1100** KA1NC, P29. **1200** A9X-BD, *KC4,* KV4KV, VK. **1300** N0TG/KP1, *ST0RK,* 5H3BP. **1400** XT2AT. **1500** HR2HH, *SU1MI,* VP1HH, W1-W0, ZF2BC. **1600** D68AD, KL7FCH, N0TG/KP1, *PJ8NUT* (QSL W3NUT), XE, *W6QL/6Y5.* **1700** FO8DO, *HH,* VE6-VE7, W7ZQ (Wyo), 3B8CI. **1800** KH6s BI, *HC, JW,* VP2MBD, *ZL3GQ.* **1900** KH6WF, W7ADO (Mont), YS9RVE.

Many thanks to the following for items extracted: *CQ Magazine* **(W1WY),** the *Ex-G Radio Club Magazine* **(W3HQO),** *DX News Sheet* **(Geoff Watts),** *Long Skip* **(VE1AL/3),** the *West Coast DX Bulletin* **(WA6AUD),** and *DX'press* **(PA0TO).**

Please send all items for **March** issue **to reach G3FKM** no later than **2 February,** and for **April** by **10 March.** □

HF propagation study

Predicted hpfs (MHz × 10) for January 1979

GMT =	00	02	04	06	08	10	12	14	16	18	20	22	24
Aden	194	173	167	268	501	488	454	418	379	277	196	180	194
Ascension	255	252	196	162	318	462	463	416	415	387	313	280	255
Bahrain	162	154	144	265	486	465	455	435	351	243	150	155	162
Bangkok	124	128	124	218	458	464	455	451	310	190	133	128	124
Barbados	213	204	169	149	157	234	472	462	416	416	335	258	213
Bermuda	194	187	148	159	158	171	412	506	506	435	313	241	194
Bogota	206	195	159	154	153	173	448	506	417	407	337	253	206
Buenos Aires	233	242	195	148	205	380	420	437	437	406	313	277	233
Cape Town	266	243	185	183	369	395	402	390	379	350	290	266	266
Colombo	147	147	136	267	460	470	449	397	342	230	145	145	147
Cyprus	157	145	136	215	450	474	451	441	359	251	153	147	157
Dakar	255	252	196	162	318	462	463	416	415	387	313	280	255
Denver	182	169	158	168	168	168	169	291	458	362	242	194	182
Fairbanks	182	181	199	197	182	208	190	178	185	196	150	172	182
Falklands	238	242	195	148	241	361	365	383	401	399	313	277	238
Gibraltar	130	117	106	93	191	318	328	322	299	238	167	139	130
Hong Kong	102	108	122	172	403	368	317	219	183	161	125	120	102
Honolulu	182	176	192	192	176	149	139	128	120	232	161	166	182
Iceland	98	105	102	102	105	242	355	360	317	188	120	111	98
Jamaica	194	183	145	155	152	167	364	483	474	434	313	238	194
Lagos	263	247	192	172	390	464	463	416	415	362	299	277	263
Las Palmas	201	200	159	130	233	431	456	422	409	350	266	223	201
Lima	219	218	177	149	162	214	460	483	460	428	326	265	219
Los Angeles	182	169	192	169	159	154	148	172	409	350	218	187	182
Malta	138	129	117	119	293	383	374	373	328	225	153	135	138
Mauritius	219	185	177	266	395	402	402	371	370	290	232	208	219
Mexico	182	181	147	158	162	157	163	434	484	409	265	216	182
Moscow	101	96	102	112	303	409	421	397	290	182	117	106	101
Nairobi	234	194	177	242	478	477	463	437	401	309	243	223	234
New Delhi	129	135	124	244	463	437	411	337	253	154	136	135	129
New York	182	180	148	157	158	168	315	481	505	409	276	218	182
Osaka	130	159	157	138	327	308	196	144	136	130	125	145	130
Perth	144	144	135	267	361	348	319	317	315	224	143	144	144
Rio de Janeiro	238	242	195	148	225	436	460	439	437	399	313	277	238
Salisbury	249	218	183	218	369	418	436	422	411	326	268	246	249
Seychelles	202	176	169	266	437	439	426	412	362	289	220	196	202
Singapore	129	135	124	244	442	448	420	392	318	197	136	135	129
Suva (s)	176	192	202	186	183	338	406	356	266	138	143	172	176
Suva (l)	266	255	196	172	296	295	294	244	230	268	296	284	266
Sydney (s)	102	108	122	172	351	318	315	324	284	171	125	120	102
Sydney (l)	219	219	180	147	169	276	265	225	202	221	258	265	219
Teheran	147	147	136	267	506	507	483	455	333	213	144	145	147
Vancouver	182	169	181	192	174	173	163	158	244	277	172	166	182
Wellington (s)	147	169	167	147	313	305	323	293	239	148	130	153	147
Wellington (l)	243	248	196	149	256	258	233	209	208	246	253	261	243

Bands recommended are those between hpf and half hpf.

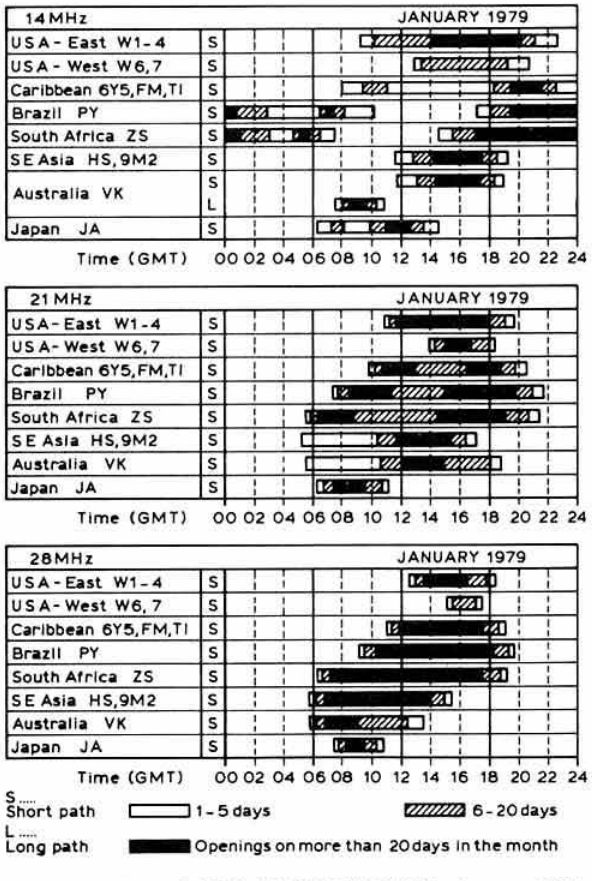
Propagation predictions

Good conditions will continue on the higher frequencies during the month, and on **28** and **21MHz** traffic will be possible to all continents. Both bands will close about 2000gmt but as the days lengthen towards the end of the month they will remain open longer.

The **14MHz** band will remain open for dx traffic for much of the day, and conditions on **7** and **3·5MHz** will vary little from those in December.

The provisional sunspot number for October 1978 from the Swiss Federal Observatory was 122·8. Activity during the month was at a high level and the highest daily number recorded was 170 on 14 October.

The predicted smoothed sunspot numbers for February, March and April 1979 are 132, 136 and 139 respectively.



swl news

Bob Treacher, BRS32525 *

QSLing techniques

Geoff Smith, A9XBD, is a very welcome first-time contributor to this page. Being a rare dx station, Geoff gets more than his fair share of QSLs; both from the stations he works and from swls. In particular, Geoff mentions BRS32388 who sent a full-page report plus a graph to show varying signal strengths over a 15min period. Much work must have gone into preparing such a useful report, and Geoff acknowledged it by QSLing direct even though ircs were not enclosed. This shows that if a report is useful the dx station will bend over backwards to provide the QSL. On the other hand, Geoff mentions another swl from Nottingham whose report covered a QSO which Geoff did not even make. How on earth does such a report deserve a QSL in return?

On the question of ircs it is pointed out that from the Middle East, two ircs will cover surface mail only, while an airmail reply requires four. It is also extremely important to send a self-addressed envelope as well as making the report useful. If all these points are met, A9XBD is a 100 per cent QSLer, and I am sure that this would apply to the vast majority of dx stations.

On the same topic, Ted Allen, G3DRN, the RSGB's QSL Bureau manager, says many listeners enquire of him why their QSL returns are poor. Ted's friendly advice is also "make the report useful". Concentrate on stations with weak signals, those who seem to be having difficulty in making a QSO, and those testing new antennas. On the 1·8, 3·5 and 7MHz bands the rules are a little different. The report has to be useful, of course, but your scribe has found swl reports for lower frequency dx QSOs are more appreciated, especially those around the "grey-line time". For example, last season KH6XX was heard working ZL2BT at 1650 on 3·5MHz, and in such circumstances a report to either station would be considered useful.

Your scribe hopes that this information will be useful to all those newer members who may wonder what QSLing is all about, and perhaps to some others who have been swls for a few years and who still do not "follow the rules".

DX news

There has been much comment concerning the CQ WW SSB event. Although there was only a brief mention in the November column, many reporters added a number of new countries to their scores by monitoring the bands during the contest. Ian Marquis gained PJ8CO, RF6F (UF6), VP2DAO; David Hawes, A9191, managed 10 new countries on 1·8MHz, VS6EZ, HS1ABD, KL7MF and FG0EID/FS7 on 28MHz, and ZL3HI/C on 14MHz.

Outside the contest, conditions also seem to have been good. Robert Small, A8841, has added W1XK/PJ7 on 3·5MHz, and FB8ZM, FH8YL, ST0RK and 5W1BR on 14MHz. Dave Whitaker, BRS25429, reports UM8MAO on 7MHz ssb, JT1BG and FO8DO on 28MHz and VR1AY on 14MHz for country No 323 all-time. Ken Bone, BRS34658, has added C6ANX, FO8FG and VR6TC, all on 14MHz. Dave Stewart, BRS40293, provided an interesting list of stations heard, and mentions that YU9 is being used in Yugoslavia to commemorate the 8th Mediterranean Games this year. Bob Griffiths, BRS41021, is a new reporter and uses an Eddystone EA12 as the main receiver, but he also has an AR88D, two Heath receivers and an Eddystone 620. He mentions T2O (ex VR8O), AH2AB, FK8CR (via W7OK) and VR3AK (via KH6AHZ).

Turning to QSL returns, Dave Whitaker mentions VP2MT on 1·8MHz, ZF1SV on 7MHz and PY0RO (St Peter & Paul Rocks) on 14MHz for No 305 all-time. Robert Small has received HZ1BS/8Z4 via DJ9ZB, KC6GF and S8ABC.

Neville Spry also mentions HZ1BS/8Z4 for a new confirmation to take him to 321 confirmed from 349 heard. He mentions that he will not be able to contribute to this piece so readily in the future, and would like to pass on, through your scribe, the best of dx and good listening to all his fellow swls.

Ken Steele, BRS36883, reports meeting a number of friends at the Leicester exhibition, and being pleased to have heard VP8PU in the Falkland Islands and a great number of stations in JA, VK and ZL.

1978 HF countries table

Station	28	21	14	7	3·5	1·8	Total	Mode
BRS25429	180	192	225	99	112	19	827	ssb
BRS17567	201	222	242	51	81	6	803	ssb/cw
A8841	139	172	229	80	86	0	706	ssb/cw
BRS39965	160	173	189	63	62	19	666	ssb/cw
A9191	127	140	162	46	58	10	623	ssb
BRS35943	127	128	165	74	111	4	609	ssb
A9140	118	145	145	92	76	22	598	ssb/cw
BRS29641	127	138	171	74	72	4	586	ssb
BRS34740	97	120	139	68	52	9	485	ssb
BRS35454	106	109	147	46	66	6	481	ssb/cw
BRS38518	113	112	129	50	46	3	453	ssb
BRS32286	121	100	116	35	56	0	428	ssb
BRS40154	64	110	175	22	12	1	384	ssb
BRS37782	74	98	114	26	33	8	353	ssb
BRS20185	81	83	117	21	42	2	346	ssb
BRS34658	35	83	115	39	57	4	333	ssb
ARS39018	38	82	111	28	44	3	303	ssb
A9107	43	60	92	20	44	6	265	ssb
BRS39162	60	73	71	18	25	7	254	ssb
BRS27421	0	0	136	46	42	1	225	ssb
ARS39720	35	58	80	17	20	0	210	ssb
ARS38532	69	44	53	17	9	9	192	ssb
ARS38280	46	61	52	12	4	2	177	ssb
BRS18529	6	35	81	3	30	4	159	ssb
BRS26120	37	58	46	6	10	1	158	ssb
ARS37620	4	35	105	5	5	0	154	ssb

LF dx

A reminder to those who may not have experienced real dx on the lower frequency bands. The months of January and February are the best months for dx on 1·8, 3·5 and 7MHz. Under good propagation conditions dx can be copied in G-land up to 1000 in the morning and as early as 1430 in the afternoon. On 3·5MHz especially, the top 10kHz of the band are usually extremely busy with dx (and should **not** be used for local inter-G QSOs). Any reports of real dx on these bands will be included in the March issue. For those who catch the "3·5MHz bug"—see if you can log 100 different countries on the band between 1 and 31 January. It is possible.

Finale

Letters are also acknowledged from BRSs 20185, 37782, 40615 and 39099.

Comments and the final figures for the 1978 Countries Table should reach your scribe by 19 January 1979. □

*79 Granby Road, Eltham, London SE9 1EH.

The 1978 AGM

The fifty-second AGM of the RSGB took place at the Institution of Electrical Engineers, Savoy Place, London, on Saturday 2 December.

The meeting was opened at 2pm, with 117 members present. In the chair was the President, Dr Dain Evans, G3RPE; supported by the immediate past-President Lord Wallace of Coslany; the President-elect, John Bazley, G3HCT; the hon treasurer, David Cornish, G3COR; and the secretary/general manager, David Evans, G3OUF. Mr Wright of Edward Moore and Son, the Society's auditors, was also present for part of the meeting.

Formal agenda items

The meeting approved the minutes of the 51st AGM and then considered the accounts for the year ended 30 June 1978.

In introducing the accounts, the hon treasurer warned that the Society could not expect a similarly large surplus at the end of this financial year although the current budget indicated that a modest surplus might be achieved. The President replied to a written request from G8HVV for information concerning repeater expenses. G6JP considered that the accounts should truly reflect the gross turnover of the Society, and to do this some modification of the information concerning publications sales might be necessary.

The President then announced the names of the successful candidates in the election for the 1979 Council, together with Dennis J. Andrews, G3MXJ, who had been returned unopposed. The President expressed appreciation of the long and valuable service as a Council member by Bill Scarr, G2WS, who would be retiring at the end of the year.

Council was authorized to fix the remuneration of the Society's auditors for the ensuing year and the meeting moved to the last agenda item.

A call for volunteers to act as scrutineers at the election for the 1980 Council was fulfilled. Several members, including G4FSG and G3TJA, expressed their appreciation of the new timing of the AGM, and G8FRB suggested that it should be held away from London.

The Founders' Trophy, which is awarded annually for services to the Society, was presented by the President to George Jessop, G6JP. The 1978 Marconi Award was presented by Mr George Millington, MA, BSc, FIEE, on behalf of the Marconi Company, the recipient being the President.

The President then announced that Lord Wallace of Coslany had accepted election as an honorary member of the Society. The President reminded members that, as George Wallace MP, the immediate past-President had worked actively on behalf of the Society for many years. The introduction of reciprocal licensing was largely due to his efforts. the formal meeting ended at 3pm and was immediately followed by the commencement of the informal session.

Informal discussion

The President opened the discussion by highlighting relevant points in connection with the Society's present activities. On a national basis the strengthening of the headquarters staff had been achieved satisfactorily and the committees of Council continue to perform an invaluable function. The introduction of a membership services officer had permitted improvement in this aspect of the Society's work. Matters which would require careful consideration in the future included the questions of tvi and planning permission. Overshadowing most domestic issues was the rapid approach of WARC 79.

Mr G. R. Jessop, G6JP, (l) and Lord Wallace of Coslany in happy mood after receiving their presentations

Mr G. Millington (l) presenting the Marconi Medal to Dr D. S. Evans, G3RPE

Internationally, the President stated that during his visits overseas, notably to Hungary, Norway, West Germany and the USA, he had been greatly impressed by the standing in which RSGB was held abroad.

G3AAJ asked for the Society's reaction to the proposed PAVE PAWS megawatt radar. The telecommunications liaison officer replied that this question had been considered and the Society was in touch with ARRL.

G8HWO asked for a repeat of the result of the 1977 AGM poll which was given as—FOR 829; AGAINST 93; SPOILT VOTES 4.

G3YXZ asked that appreciation of the services of G8HVV in the repeater field should be recorded.

G6JP suggested that consideration should be given to the basis of election for Council members, as some zones were extremely large. He also suggested that regular information should appear concerning the work of the Society's committees.

G3RYF pointed out the increasing amount of activity on 27MHz and asked for details of the Society's proposed future action. Reference was made to the statement on 27MHz activity which has already appeared twice in *Radio Communication*.

G8HVV stated that there were now 104 repeater licences in existence and asked that the thanks of the users to the President, general manager and telecommunications liaison officer should be recorded.

G2YS asked for the *Call Book* to show who were RSGB members.

G3NPE asked that no change should be made to the present content of *Radio Communication*.

G3OJI offered his thanks for the weekly Council report and asked for clarification on the use of the segment 145·8–146MHz. This matter was dealt with by G3BA, and a short article had been written for the journal.

G2AMV replied to a question from G4AFM concerning the GB2RS News broadcasts.

G4APG wished to know the cost of the 1977 AGM poll; this was stated to be £1,200.

The meeting broke for tea at this point and reconvened at 4.20pm.

G3COR dealt with several matters concerning the Society's financial position. The Lambda debenture stock is to be redeemed. The subscription had remained at £8 since 1 January 1976 and the time was approaching when it was necessary to restore the purchasing power of the subscription, and a rise to £10 pa might be appropriate in 1980. He pointed out the time lag in receiving subscription income, and that the Society should not rely on income from related activities. Serious consideration as to the suitability of the present headquarters for the future must be given.

GM8FXX asked for an estimate of the cost of waived subscriptions; this was stated to be £3,000 per annum. The President stated that the Society had no intention of introducing a means test when waivers were requested but relied on the discretion of the person concerned.

The Marconi Medal awarded to G3RPE

(All AGM photographs by Mrs Pam Evans)

G8FRB expressed his thanks to Lord Wallace of Coslany for his interest and assistance in the affairs of the Society.

G8HHO asked for information concerning the headquarters station. The general manager replied that recently both Lowe Electronics and South Midland Communications had donated equipment to the Society which had been greatly appreciated.

G8KMG asked when the identity cards would be available, and was advised by the general manager that the equipment would be at the VHF Convention and the Alexandra Palace exhibition. A number of members, several unidentified, took part in a discussion concerning the wording of the identity cards. G3OHX objected to the issue of the cards, saying that a licence document should be sufficient.

On behalf of the M & R Committee, G2AMV mentioned the possibility of a badge of a different colour following a membership of 15 years. The silence that greeted this proposal was deafening!

G6JP said that due to late delivery of *Radio Communication,* ballot papers had not been received by a small number of members. It was pointed out that the cost of a separate mailing would be in the region of £1,500.

G3GC asked for earlier publication of the AGM minutes, and this was agreed.

G3HFO approved the candidates' statements for the Council election and asked that this practice be continued.

There being no further business from the floor of the meeting, the presentation of the awards and trophies then took place.

The meeting closed at 5.30pm.

This brief report is primarily intended for those members unable to attend the AGM. It is an informal account in advance of the minutes of the meeting, and in no way is it a formal record of the occasion.

G2BVN

Memorial to G2UJ

The official opening of GB3WHA, the 432·81MHz beacon at Crowborough, Sussex, was an important occasion for the West Kent ARS because, although this beacon is adjacent to GB3SX 70MHz and GB3SX 28MHz, the 432MHz callsign is GB3WHA. These letters are the initials of the late Bert Allen, MBE, G2UJ, a founder member and former president of the West Kent ARS, a former Council member of the RSGB, and well known for his contributions to the world of radio. The tradition of the West Kent ARS owes a lot to Bert Allen, as he was its president from the inaugural meeting in April 1948 until his death in October 1972.

The official opening ceremony took place in the presence of members of the West Kent ARS and visitors. These included founder members Frank Barnard, G4FB, and Reg Freeman, G3AXV. Also present was Alan Taylor, G3DME, the GB3SX beacon keeper. The guest of honour was Mrs Audrey Allen, widow of Bert Allen, who switched on the memorial beacon in his memory.

Mrs Allen said that her husband would have enormously enjoyed the idea of a beacon, it was the kindest thing anyone could have hit on. Bert Allen, of course, played a leading part in the installation of GB3VHF at Wrotham.

Mrs Audrey Allen switching on GB3WHA as a memorial to her late husband. L to r: Neville Bean, G8NOB; Mathew Newlands, G4FYG; David Lurcook, G4ERW; Keith Smith, G3TLB; Alan Taylor, G3DME; David Rumens, G4BOO; Mrs Audrey Allen; Hugh Richards, president; Frank Barnard, G4FB; Reg Freeman, G3AXV; and Peter Reeve, G4GTN. *Photo:* A. Nevison, BRS39210.

council proceedings

A brief report of the Council meeting held on 22 September 1978

Present: Dr D. S. Evans (President, in the chair), Dr E. J. Allaway, Messrs J. Anthony, J. Bazley, P. F. D. Cornish, T. P. Douglas, F. D. Hall, W. F. McGonigle, B. O'Brien, W. Scarr, R. F. Stevens (members of Council), D. A. Evans (general manager/secretary), A. W. Hutchinson (editor).

The President raised the question of the Zone G vacancy, arising from Mr Allan's recent resignation. It was noted that Mr F. Hall, GM8BZX, had been runner-up in the previous Council election for Zone G, and it was agreed that Mr Hall be co-opted on to Council for the remainder of the year. Mr Hall joined the meeting and was welcomed by the President and introduced to members of Council and staff.

Apologies for absence were received from Lord Wallace and Messrs D. H. Adams, D. J. Andrews, P. Balestrini, C. H. Parsons, G. M. C. Stone and C. J. Thomas.

Financial report

The honorary treasurer circulated the final draft of the Society's balance sheet and the consolidated income and expenditure account for the year ended 30 June 1978. He reported that the audit had been completed without qualification; this had been achieved by improved records at HQ and total co-operation with the auditors. Mr Cornish said that a great deal of praise was due to the general manager and other staff at headquarters who had worked extremely hard to ensure a successful audit.

The President thanked Mr Cornish and his "team" for their great assistance.

The President remarked that the F & S Committee was discussing an increase of subscription. The treasurer said that some analysis work should be done to determine costs attributed to membership before consideration be made.

Mr Cornish said that in his opinion the auditors were highly professional and that a resolution should be put to the AGM for their reappointment; Council agreed to this.

General manager's report

This was circulated to Council. It gave details of:

(a) the amount of work involved on financial matters before and during the audit;

(b) rearrangement of offices and storage space; and

(c) increased time spent on general membership work since Mr Hawkins had joined the staff.

Review of committee business

Education

Mr Anthony reported on the arrangements for the Derby RAE centre and the programme for the 1979 Science Museum lectures.

Finance & Staff

Dr Allaway referred to the financial report and thanked the treasurer and general manager for the considerable amount of work they had undertaken to ensure such a satisfactory set of results.

Committee, HF

The latest minutes had been dealt with at the previous meeting of Council.

HF Contests

No comment in the absence of Mr Andrews.

IARU

Mr Stevens spoke of a working group for promoting amateur radio in developing countries, which had been set up at the IARU Region 1 Conference. He suggested that RSGB should participate in this working group and proposed that Dr Allaway be nominated the RSGB representative. This proposal was carried unanimously.

Mobile & Exhibition

It was noted that arrangements for the Leicester exhibition had been finalized.

A recommendation to book Woburn for a 1979 rally was approved by Council.

Microwave

Mr Anthony reported on a long and rewarding discussion which had taken place between the committee and Dr Ken Smith, G3JIX. It was felt that the exchange of ideas between the Society, universities and local amateurs could only be beneficial.

Raynet

It was noted that Raynet had decided to lower the membership age to 14; at present insurance cover applied only to ages between 18 and 70 and an appropriate statement would be published later. (*See* "Raynet" *column in this issue*)

Council approved the award of the Raynet trophy to Mr D. F. Digby, G8DHQ.

VHF

Mr Douglas spoke of the latest position of the vhf Phase 2 and uhf Phase 3 repeaters.

The question of a possible separate mobile column for hf/vhf was discussed.

VHF Contests

No comment.

Interference

No comment.

Membership & Representation

Recommendations for Official Regional Meetings to be held in Regions 1 and 2 were approved.

Mr F. Hall was co-opted on to the committee.

Mr O'Brien reported on the response received from newsreaders following circulation of the new draft proposals for GB2RS news broadcasts. Mr Stevens proposed the acceptance of the recommendations as supplied to Council, with the precise frequencies for the transmissions being defined in the light of further information on other news services. The proposal was approved unanimously.

Mr Stevens added his thanks to G3BA and G2AMV for their work, which had resulted in most sensible documentation.

Propagation Studies

No comment.

Technical & Publications

No comment.

Telecommunications Liaison

Mr O'Brien asked the position regarding signing "/P" or "/A" over the air, in view of the requirements to give the full address.

Mr Stevens replied that the situation was fully realized but that the licence stated the importance of positive identity and location of stations to enable the source of possible interference to be pin-pointed within a very short time. The matter had been raised with the Home Office.

Correspondence

Considerable discussion took place on a letter from the Warrington & District ARC, requesting the Society's approval on a planned dxpedition to the Isle of Man during its millenium anniversary. Council was unwilling to support this venture as it was felt that it was the prerogative of the IoM amateurs to initiate activities regarding use of the GT prefix during the celebrations, and the Society had no wish to set a precedent in giving its official support to such ventures.

1979 President

Mr O'Brien proposed that Mr J. Bazley, G3HCT, be elected President for 1979. This was seconded by Mr Stevens and approved unanimously by Council.

Looking ahead

13 January—RSGB Presidential Installation, Executive Suite, Warwickshire County Cricket Club, Edgbaston, Birmingham.

27-28 February—Conference on "Advances in hf communications", IEE, Savoy Place, London.

10 March—RSGB National VHF Convention, The Winning Post, Twickenham, Middx.

22 April—NRSA Radio & Electronics Exhibition, Belle Vue, Manchester.

11-12 May—RSGB Amateur Radio Exhibition, Alexandra Palace, London.

15 September—RSGB HF Convention, Birmingham.

22 September—Scottish VHF Convention, Dundee Technical College, Dundee.

raynet

M.G. Barker, G8CAC*

This month it falls to me as chairman to write the first column of the New Year. May I, on behalf of the Raynet Committee, wish all Raynet members belated compliments of the season and thank them for all their good work during 1978, and hope that we can continue to count upon their services during the forthcoming year.

We now have a problem—whether to look back in detail over the events of last year or forward to the possible happenings of the coming year. How we attended, in whatever form, many shows, fetes and major amateur exhibitions and rallies; how we held the first Raynet get-together at Leicester. No doubt we will continue to attend these numerous shows and exhibitions during the coming year.

Hopefully we will not be called upon to perform the task we have all been training hard for over the years—a major incident! With the worst of the winter still ahead of us we must expect some call on our services, whether it be deep snow in Scotland or the West Country, high tides and the resulting flooding in East Anglia and the Thames estuary, or severe storm damage anywhere. Have **you** checked over your vehicle, rig and recommended contents—if we are called upon, it is bound to be at 3am, not the best of times to be searching for maps, torch, message pads, etc.

Frequencies

Last year the Raynet Committee met with the VHF Committee to discuss frequencies for Raynet use. These frequencies have been published several times since, but we now have a problem with 145·800MHz. It was agreed that this frequency would be shared with the amateur satellite services. However, with the launch of a Russian satellite using 145·8MHz as the edge of the up-link, we now have to ask controllers to keep in mind the orbiting times when their groups use this frequency. Should the group continue to use 145·8MHz as its main frequency? Maybe it should consider a change.

Publicity

The column writer is always asking for up-to-date information on group activities so that he can keep the column topical. We also welcome all forms of photographic material, including 35mm slides, as we are hoping to complete a tape/slide lecture for the Society's use, as well as for use at the various displays we mount during the year. We are hoping to have up-to-date news items included in GB3RS, so please keep us informed. Communication is the name of our business.

Inter-group co-operation/liaison

From our mailbag recently it is good to see that group controllers are getting together and that some very useful exchanges of ideas and operating have taken place, as well as agreement on groups co-operating on exercises as well as planning procedures to be adopted during a major incident.

Raynet gatherings

We are planning to hold several informal gatherings for **all** Raynet personnel. To date it appears that they will be in the Midlands, West Country and south coast areas. At present no definite dates and locations have been decided upon, but controllers will be kept informed, and it will be generally announced in GB3RS and in this column.

Insurance

The Society has been asked to re-arrange insurance cover for Raynet members to meet the current Home Office licence conditions, ie 14 years upwards. This change will be notified to controllers via the news broadcasts, and by post as well as in this column for all members. We would like to remind all members that Raynet insurance is only against personal accident and third party claims.

Hon registrations secretary: Mrs L. A. Crane, "Greta Woods", Bromley Road, Ardleigh, Colchester, Essex.

*3 Burley Close, Desford, Leicester LE9 9HX.

At the Norfolk and NE Suffolk Raynet 25th anniversary supper, Mr P. Balestrini, G3BPT, presented Mr D. F. Willies, G3HRK, the area controller, with an RSGB award for 25 years' service with the group. G3HRK is seen here (l) in conversation with G3NTV (centre) and G3BPT (Photo: G8ONG).

The Future?

Even as this column is being written Raynet is being used in the Midlands. Hopefully a full report will be published shortly but it brings to light a use of Raynet that could well cause many of our members to think very deeply. By helping maintain radio communication between the St John Ambulance Brigade and Red Cross ambulances and their headquarters we could be accused of a form of strike breaking. What should our members do when faced with the decision of performing a public service or supporting their union beliefs! We realise that politics should not come, or be allowed to come, into amateur radio, but there are times when it must. The decision must rest with the individual but it is a matter that ought to be brought to our members attention. It is a situation that could and probably will occur again.

your opinion

BAND PLANNING

The Editor
Radio Communication

Sir—I write in support of the letter from GM4DTH, in the July issue, for an a.m. calling and possible working frequencies in the 144MHz band.

Has it already been forgotten that just five or six years ago about 95 per cent of 144MHz activity used a.m. FM has not just been invented by the Japanese; both modes have their good and bad points. Why then is a.m. ignored in the band plan?

I believe it is time the RSGB made a move to amend the 144MHz band plan to include a.m. allocations. I cannot credit there is less interest in a.m. than in modes such as eme and random meteor scatter which already have defined frequencies.

R. G. Brown, G8CXV

Sir—First, I would like to thank the RSGB and the Home Office for granting the many special GB prefixes for the period of the 21st JOTA. This was the first time that the Ormskirk ARC has put on a JOTA station—GB2MS; it was a great success, especially with the many visitors to the station and the local press. This must go a long way to improving the "radio ham" image to the general public, as well as encouraging more potential radio amateurs with a Scouting background.

Unfortunately, the 7MHz ssb RSGB contest ruined many a QSO, due to the over-enthusiastic contestants. Please let us have contests restricted to certain frequencies in the amateur bands, and let the proper QSOs continue without unnecessary interference.

P. J. Kay, G4GCB
Hon sec, Ormskirk ARC

Sir—There appears to be a plan afoot to build a repeater with an input frequency of 145·0MHz. The RSGB and the repeater group in question do not seem to have bothered to ask the amateur radio fraternity as a whole if they want a repeater on a frequency long used for normal simplex operating. If the plan to use this frequency goes ahead what are those of us who do not fancy having lightning "Hello, its not raining here also, good-bye" type contacts supposed to do? Throw many pounds worth of crystals away? Those members of the brains trust concerned with this project have no mandate to decide on behalf of others what frequencies we can use.

All right, so the RSGB has some grand plan, also drawn up without consultation; such plans are not sacred and should serve and not enslave. Historically, 145·0MHz has long been a simplex frequency, once it was the calling frequency—I do wish somebody would make their minds up.

Listening around, there seems to be a lot of opposition to this ill-conceived plan; some people have stated that they will not be harassed off 145·0MHz by these underhand dictatorial tactics. I fear that many people may just sit back and moan, instead of doing something constructive like writing to the RSGB, the Society's VHF Committee or the Repeater Working Group (c/o G8AMD). Whatever the course of action, those who object should do something.

I. Newbold, G8KSZ

Sir—I am rather puzzled, and disturbed, by two items in your November issue:
(a) the recommendation, "approved by Raynet and VHF committees" of 145·800MHz for Raynet use (p965);
(b) the reported increasing use of a.m. by Scottish stations on 145·800MHz and above (p945).

In the July issue our President reported on the IARU Region 1 Conference held in April of this year at which the RSGB/IARU band plan was discussed and adopted. In this plan the satellite service was to be given 145·800/146·000MHz and, to allow for this, as a temporary measure until WARC 79, the fm repeater channels on 145·800 and 145·825MHz were to be phased out to leave this area free for satellites.

I am surprised therefore that the VHF Committee approves the use of 145·800 for fm working in Great Britain when our Society has made an international agreement to the contrary!

So far as our Scottish friends are concerned I would imagine that most of them are unaware of the consequences of operating in this part of the spectrum. The Russian satellites are now up and use 145·880-145·920MHz as the input of uplink frequencies. Mainly because most Russian amateurs are restricted to 5W on 144MHz, the satellite receivers have been designed to operate the transponders with an erp of 10 (yes, 10) watts. Any more power than this cuts off the transponder and no one can then operate through it for the rest of the orbit. We shall be most unpopular in IARU Region 1 if we are the cause of this, albeit all done unwittingly. Perhaps we should publicise this a little more.

It is appreciated that band planning is a voluntary measure, never fully liked or successful. However, if our national society representatives enter into an international agreement, we, as members, should give them our support and fulfil the commitments.

J. A. Ward, G4JJ

At the Council meeting held on 16 November the points raised by G4JJ were discussed. It was agreed that 145·8MHz should not appear in the band plan as a frequency recommended for Raynet use. The emergency communications officer, G3BPT, stated that, in any case, use of this channel was decreasing. Concerning (b), it is hoped that all users will observe the band plan, which is intended to cater for all modes of operation. Unfortunately, severe interference has been caused to the Soviet RS satellite transponders.

G2BVN

TVI
The Editor
Radio Communication
Sir—It was with no little surprise that I read the statement by Mr Jobson, G3HLF, (October 1978) to the effect that with a properly planned and engineered station tvi is "unlikely". This directly contradicts the experience of myself and every amateur I know who has tried to operate full power on the hf bands in an area of high density housing. Before taking out a second mortgage to purchase his gleeming oriental transceiver, the newly-licensed suburban G4 would do well to consider the following bitter truths:
(1) Few people outside the amateur radio fraternity regard an hf array as a thing of beauty. The erection of one is likely to be regarded by your neighbours as an opening act of war.
(2) There is so much inferior domestic radio equipment about that however well planned and engineered your station, interference to some local tv and hi-fi is a virtual certainty. Sometimes, particularly with hi-fi, even the PO cannot effect a cure.
(3) Calm, understanding, and a spirit of live and let live are among the attributes least likely to be displayed by the average man when you interfere with "Match of the Day". Dealing with the problem by disparaging remarks about the circuitry of his beloved box can be dangerous to your health.
(4) Few of your neighbours can be expected to possess a sound knowledge of radio theory, eg the old lady who remains convinced that my antenna radiates interference 24 hours a day irrespective of whether or not my equipment is switched on.
(5) It is an education to discover the number of ways in which an irate neighbour can make your life not worth living.

The fact that the activities of the amateur are perfectly legal is something calculated to infuriate rather than placate an affected neighbour. There remains a certain moral force in his argument that "my grottbox Mk 2 worked perfectly well before you came along". It is hardly surprising that hundreds of amateurs all over the country choose to stay QRT in the evening in order to remain at peace with their fellow men rather than adopt the "transmit and be damned" approach advocated by G3HLF. Mr Jobson may be prepared to live in a state of seige for the sake of his hobby, but how do his xyl and kids feel about it?

P. J. S. Bysshe, G3WYK

EQUIPMENT COSTS
The Editor,
Radio Communication
Sir—I have been somewhat amused by several letters giving the idea that everyone is making a fortune out of selling amateur radio gear, and that the ARRA has a monopoly.

The ARRA certainly has not got a monopoly, as many retailers such as ourselves have never even been asked to join, and, as the advertising columns prove quite well, anyone can sell amateur radio gear—although whether they can give the grade of after sales service that is demanded is another matter.

If anyone thinks there is a fortune being made in retailing amateur radio gear I would respectfully suggest that "they put their money where their mouth is", take a second mortgage on their house, and go into business. I would advise them, though, that even our well-established company would not pay its way if it were not for the photographic and hi-fi departments.

Harry Leeming,
technical director,
Holdings Photo Audio Centre

DXCC STATUS
The Editor
Radio Comunication
Sir—Having completed an interesting contact with VE3FXT (H5FXT and others), I am prompted to write on the subject of DXCC country status; VE3FXT having expressed a view which I find attractive. In a world where 4U1UN, 4U1ITU, FO0XC and others count as "countries", and places like H5 with half a million people do not, it seems appropriate to accept the concept of "DX identity". Places such as those above would not have to pretend to be countries but could be counted for awards which accepted separate "DX identity".

VE3FXT suggested that one reason for giving a place the distinction of "DX identity" might be whether the local administration issued its own postage stamps which are accepted by the Universal Postal Union. He also pointed out that H5 did issue such stamps.

R. Hughes, G4DZI

Mobile rallies calendar

8 April—White Rose Mobile Rally, Lawnswood School, Leeds 16. Details from G4DZI, QTHR.
29 April—Southend & D RS Mobile Rally, Fitzwymarc School, Hockley Road, Rayleigh, Essex. Details from M. Daniels, G8KLD, 25 Sweyne Avenue, Southend, Essex SS2 6JQ.
3 June—East Suffolk Wireless Revival, near Ipswich, Suffolk. Details from G4CVB, QTHR.
17 June—Plymouth Mobile Rally, Plymouth, Devon. Details from G4GWJ, via RSGB HQ.
17 June—*HMS Mercury* Mobile Rally, *HMS Mercury,* near Petersfield, Hants.
1 July—Upton Mobile Rally, Upton-on-Severn, Worcs.
5 August—RSGB National Mobile Rally, Woburn Park, Beds. Details from G3MVV, QTHR.

RSGB SLOW MORSE PRACTICE TRANSMISSIONS

Alterations and additions to this list should be sent to the organizer, Mr M. A. C. MacBrayne, G3KGU, 25 Purlieu Way, Theydon Bois, Essex.

Clock time	Callsign	MHz	Mode	Town
Sundays				
0915	G3LEQ	144·250 145·550 slant polarized to WNW 1·950 29·250	A1/A3J F2/F3 A2/A3 F2/F3	Knutsford, Cheshire
1015	G3CGD	1·875	A1/A3	Cheltenham, Glos
1030	G3OHM/A	144·180	A1/A3J	Birmingham
1030	G3NPB	1·875	A1	St Ives, Cornwall
1100	G2FXA	1·900	A1/A3	Stockton-on-Tees
1130	G3BLS	1·920	A1/A3	Osney, Oxford
1200	G3HVI	144·750*	A2/A3	Stoke-on-Trent, Staffs
1230	GU4CHY	144·500 to north	A1/A3J	St Peter Port, CI
1800	GM4HIG	144·250 vertically	A1/A3J	Aberdeen
1800	G3WNR	144·750*	A1/F3	South Shields, T & W
1815	G3LEQ	144·250 145·250 slant polarized to WNW 1·950	A1/A3J F2/F3 A2/A3	Knutsford, Cheshire
1815	G4DVZ	1·915	A1/A3J	Leeds, Yorks
1830	GM4HIG	3·550	A1/A3J	Aberdeen
1930	G3LDW	144·160*	A1/A3J	Birmingham
2030	G3ZDW	144·220 horizontal, omni-direct	A1/A3J	Swinderby, Lincs
Mondays				
1135	G3RAF	1·810 3·550 144·025*	A2 A2 A2	Locking, Avon
1830	G3VBI	1·910	A1/A3	Goole, South Humberside
1830	G3LR G3NCZ	145·525	F2	Accrington, Lancs Blackburn, Lancs
1830	G3ZQS G4CGT	1·930 145·525	A1/A3J (usb) F2	Darwen, Lancs
1900	G3ZRZ	1·975	A1/A3	Blackpool, Lancs
1900	G4FKZ	3·575	A1/A3	Chedderton, Lancs
1900	G4BNV	144·170 horizontally to south-west	A1/A3J	Ottery St Mary, Devon
1930	G3RAF	1·810 3·550 144·025*	A2 A2 A2	Locking, Avon
1930	GI3SXG	144·101	A1/A3J	Newtownards, Co Down
2000	G3XWZ	1·910	A1/A3J	Mansfield, Notts
2000	GM4ELV	3·570		Arrochar, S/Clyde
2030	G3ASR/A	1·875 144·175 omni-direct (lsb) vertical	A1/A3J A1/A3J	Harrow, Middlesex
2030	G3YMJ	1·975	A1/A3J	Harlow, Essex
2130	G3LQI	145·300	F2/F3	Lancing, Sussex
Tuesdays				
1135	G3RAF	1·810 3·550 144·025*	A2 A2 A2	Locking, Avon
1830	G4BNA	3·590	A1	Swindon, Wilts
1830	G3LR G3NCZ	145·525	F2	Accrington, Lancs Blackburn, Lancs
1830	G3ZQS G4CGT	1·930 145·525	A1/A3J (usb) F2	Darwen, Lancs
1900	G4RS	3·565 144·110 to NNE	A1/A3J A1/A3J	Catterick, N Yorks
1930	G3RAF	1·810 3·550 144·025*	A2 A2 A2	Locking, Avon
1930	G3ZYY	145·550 vertically to E	F2/F3	Saltash, Cornwall
2000	G3IQF	1·875	A1/A3	Marlow, Bucks
2000	G4EZA	145·525 omni-direct vertical	F2/F3	Colchester, Essex
2030	G3IRM	1·975	A1/A3	Bury St Edmunds, Suffolk
2030	G4FFC	145·575 to south	F2/F3	Pertenhall, Beds
2030	G3OHM/A	144·180	A1/A3J	Birmingham
2030	G3KGU	1·915	A1/A3	Theydon Bois Essex
2200	G3AWL	144·110 to south	A1/A3J	Peterlee, Co Durham

Clock time	Callsign	MHz	Mode	Town
Wednesdays				
1135	G3RAF	1·810 3·550 144·025*	A2 A2 A2	Locking, Avon
1830	G3LR G3NCZ	145·525	F2	Accrington, Lancs Blackburn, Lancs
1830	G3ZQS G4CGT	1·930 145·525	A1/A3J (usb) F2	Darwen, Lancs
1900	G3ULY	1·826	A1/A3J	Culgaith, Cumbria
1900	G4FKZ	3·575	A1/A3	Chadderton, Lancs
1930	G3RAF	1·810 3·550 144·025*	A2 A2 A2	Locking, Avon
1930	G3ZYY	145·550 vertically to E	F2/F3	Saltash, Cornwall
2000	G8QU	1·970	A1	London N22
2000	G3SWP	144·200*	A2/A3J	Doncaster, South Yorks
2000	GM4DSZ	144·230 to south-south-west	A1/A3J	Aberdeen
2015	G3WVJ	1·845	A1/A3	Staines, Middlesex
2100	G3HVI	144·750*	A2/A3	Stoke-on-Trent, Staffs
2130	G3VWL	144·160	A1/A3J	Worthing, Sussex
Thursdays				
1135	G3RAF	1·810 3·550 144·025*	A2 A2 A2	Locking, Avon
1830	G4BNA	3·590	A1	Swindon, Wilts
1830	G3NC	1·968	A1	Swindon, Wilts
1830	G3LR G3NCZ	145·525	F2	Accrington, Lancs Blackburn, Lancs
1830	G3ZQS G4CGT	1·930 145·525	A1/A3J (usb) F 2	Darwen, Lancs
1900	G3BLS	1·920	A1/A3	Osney, Oxford
1900	G3ZRZ	1·975	A1/A3	Blackpool, Lancs
1900	G4RS	3·565 144·110 to NNE	A1/A3J A1/A3J	Catterick, N Yorks
1930	G3RAF	1·810 3·550 144·025*	A2 A2 A2	Locking, Avon
1930 (1st and 3rd month only.)	G3ASR/A	1·875 144·175 omni-direct vertical	A1 A1/A3J (lsb)	Harrow, Middlesex
1930	G3ZYY	145·550 vertically to E	F2/F3	Saltash, Cornwall
2030	G3ZDW	144·220 horizontal, omni-direct	A1/A3J	Swinderby, Lincs
2130	G3LQI	145·300	F2/F3	Lancing, Sussex
Fridays				
1135	G3RAF	1·810 3·550 144·025*	A2 A2 A2	Locking, Avon
1830	G4CRI	3·525	A1	Helston, Cornwall
1830	G3LR G3NCZ	145·525	F2	Accrington, Lancs Blackburn, Lancs
1830	G3ZQS G4CGT	1·930 145·525	A1/A3J (usb) F2	Darwen, Lancs
1900	G3NPB	1·875	A1	St Ives, Cornwall
1900	GU4CHY	144·500 to north	A1/A3J	St Peter Port, CI
1900	G4FKZ	3·575	A1/A3	Chadderton, Lancs
1930	G3PQF	144·360 to north-east	F2/F3	Farnborough, Hants
2030	G3ZDW	144·220 horizontal, omni-direct	A1/A3J	Swinderby, Lincs
2130	G3VWL	144·160	A1/A3J	Worthing, Sussex
2200	G3AWL	144·110 to south	A1/A3J	Peterlee, Co Durham
Saturdays				
0915	G3LEQ	144·250 145·550 slant polarized to WNW 1·950	A1/A3J F2/F3 A2/A3	Knutsford, Cheshire
0930	G2FNK	1·930	A1/A3J	Staines, Middlesex
1135	G3RAF	1·810 3·550 144·025*	A2 A2 A2	Locking, Avon

* Omni-directional

General rules for vhf/uhf/shf contests 1979

The rules governing all RSGB vhf/uhf/shf contests to be held in 1979 will be selected from the following general rules, which will be referred to by number. Supplementary rules will be added for the more complex events such as VHF NFD.

Please read these rules carefully

Cover and summary sheets and up to 10 log sheets can be obtained from the contest adjudicator. If you are entering a contest it is only necessary to tick the bottom of the cover sheet (Form 427) and enclose an sae. All stationery is A4 size (30 by 21cm); envelopes which will hold flat sheets will carry far more than those which require the sheets to be folded. Larger quantities of log sheets may be purchased from RSGB Publications (Sales).

1. Date and time: see individual contest details.

2. All entries must be sent to the adjudicator at the address given with the rules for the contest.

3. All operators must be members of the RSGB or have a membership application in progress.

4. Sections:
(a) There are two sections:
Section S — Single-operator station.*
Section M — All other stations.
(b) All classes of stations with no separate sections.
(c) Fixed stations only.
(d) Portable stations only.

*Stations operated by a single person, with no assistance during the contest, using privately-owned equipment and antennas, and operated from any location.

All equipment, including antennas, for portable and temporary stations must be set up on the site during the 24 hours preceeding the contest, or during the contest itself. This does not apply to storage of equipment, or to its prior installation more than 1km away from the contest operating position.

Portable stations may be required to provide proof of permission to use a site.

5. Locations:
(a) Entrants may not change the location of their stations during the contest.
(b) Entrants may change the location of their stations during the contest on one occasion provided that only the highest scoring contact with a given station is claimed in the event of a repeat contact. Repeat contacts must be clearly marked as such in the contest log.

6. Modes:
(a) Contacts may be made on all permitted modes.
(b) Entrants may transmit only A1 (cw) or F1 (fsk) and contact only other stations transmitting these modes.

7. Scoring system:
(a) Contacts made between the distances shown in the table will score as indicated. Contacts on borders between scoring rings score *low*.

Km	Points	Km	Points
0-50	1	250-300	11
50-100	3	300-350	13
100-150	5	350-400	15
150-200	7	400-450	17
200-250	9	and pro rata	

Note that, (i) all radial rings are 50km wide, (ii) all possible scores are odd numbers.
(b) Contacts will be scored at one point/kilometre.

8. Awards. In each section there will be an award to the highest scoring station. An award will also be made to the runner-up in each section in which there are 10 or more entries. Additional awards will be made when appropriate.

9. Cross-band contacts:
(a) Cross-band contacts do not count for points.
(b) Half points may be claimed by both stations for a cross-band contact if two-way communication cannot be established on the same band.

10. Repeat contacts:
(a) Only one scoring contact may be made with a given station on each band covered by the contest (ie callsigns that are fixed, /A, /P or /M, or the same set of equipment used under a different callsign all count as one station). If a station that has moved location is contacted a second time, only the higher scoring contact may be claimed. Serial numbers start at 001 and advance by one for each contact.
(b) One contact may be made with a given station (as defined in 10a) during each activity period. Only three out of seven activity periods will count towards the final score. However, all available logs should be sent to the adjudicator for the purpose of checking. To be eligible for an award an entrant must take part in a minimum of three activity periods. Serial numbers start at 001 for each activity period and advance by one for each contact.

11. Contest exchange. The contest exchange shall consist of:
(a) Both callsigns, RS or RST report followed by serial number, both QTH locator (the standard five-symbol location system) and QTH.
(b) Both callsigns, RS or RST report followed by serial number, and QTH locator (the standard five-symbol location system).

For stations operating within Great Britain the QTH must be given as a point identifiable on the Ordnance Survey Route Planning Map (Scale 1:62,500) or as a direction and distance up to 25km from such a point, to the nearest kilometre. For a station operating from outside Great Britain, the QTH must be readily identifiable.

No points will be lost if an entrant is unable to obtain a serial number or complete location information from a station not taking part in the contest. But the receiving operator must obtain enough information to be able to calculate the claimed distance score.

12. Log keeping. Entrants must keep their own log records in accordance with licence requirements. The logs for contest entries must be made out on current RSGB contest log sheets or if computer readout sheets are to be submitted these must be cut to A4 size format.
(a) Date/time (gmt).
(b) Callsign of station worked.
(c) My report on his signals and serial number sent.
(d) His report on my signals and serial number received.
(e) QTH locator received.
(f) QTH received (where appropriate).
(g) Points claimed.

13. A station must operate within the terms of his/her licence.

14. A station may not engage in more than one contact concurrently.

15. Stations using telephony in the recognized cw sub-bands 70·025-70·15MHz, 144·0-144·15MHz, 432·0-432·15MHz and 1,296·0-1,296·15MHz, or transmitting on beacon frequencies, are liable to disqualification. Entrants should observe the provisions of the IARU/RSGB band plans.

16. Stations that persistently overmodulate, radiate poor quality signals, or otherwise contravene the code of practice for vhf/uhf contest operation (see p55), are liable to disqualification or loss of points.

17. Special event callsigns (eg GB) may not be used.

18. Contacts made via a repeater or man-made satellite will not count for points.

19. Proof of contact may be required.

20. Entries:
(a) All entries must be accompanied by an RSGB vhf/uhf contest cover sheet (Form 427) for each band used. The cover sheet must be correctly made out and the declaration signed. In multiband contests entrants must also complete a multiband summary sheet (Form 4422).
(b) All entries must be postmarked not more than 15 days after the end of the contest.
(c) All entries become the property of the RSGB and will not be returned.
(d) Gross errors in log keeping render the entrant liable to disqualification.

21. Failure to comply with any of the rules given for a particular contest may result in disqualification.

22. The ruling of the Council of the RSGB shall be final in all cases of dispute.

General rules for RSGB hf contests 1979

The general rules for all RSGB hf contests are given below. For each contest throughout the year a specific set of rules will be published which must be read in conjunction with the general rules.

1. Entrants must operate in accordance with the terms of their licences.

2. Only one contact on each band may be claimed with a specific station whether fixed, portable, mobile or alternative address. Duplicate contacts must be logged and clearly marked as duplicates without claim for points. Proof of contact may be required.

3. Unless otherwise stated, only single-operator entries will be accepted. A single-operator station is one manned by an individual operator who receives no assistance whatsoever during the contest period.

4. When multi-operator entries are specifically allowed, such entries will be accepted only if:
(a) the declaration is signed by only one operator who will be regarded as the entrant, and
(b) the operator's callsign is given for each contact.

5. Operators of stations located within the British Isles, ie within the call areas G, GD, GI, GJ, GM, GU and GW, must be fully paid-up members of the RSGB.

6. A contact consists of an exchange and an acknowledgement of an RS report on telephony or of an RST report on telegraphy, and a three-figure serial number commencing with 001 and increasing by one for each successive contact throughout the contest period, irrespective of the band or mode in use. Serial numbers, when sent, must be recorded from non-competing stations.

7. Entries must be clearly written or typed on one side only of RSGB hf contest log sheets (Form HFC1) or international A4 size paper using blue or black ink. *Separate log sheets must be used for each band.* Logs must be kept and entries submitted in gmt.

8. Each entry must include a cover/summary sheet (eg Form HFC2) incorporating a signed declaration.

9. Entries must be addressed to the adjudicator, whose address will appear in the specific rules for each contest, with the name of the contest marked in the top left-hand corner. All entries must be postmarked not later than 15 days following the contest. If acknowledgement of receipt is required, British Isles entrants should include a stamped addressed postcard which will be returned to the sender. Overseas entries will not normally be acknowledged.

10. All entries become the property of the RSGB. In the event of any dispute, the ruling of the Council of the RSGB shall be final.

11. For scoring purposes, aeronautical mobile and maritime mobile stations will count only as the minimum score of the particular contest and not for any bonus or multiplier. Entries from GB stations, aeronautical mobile and maritime mobile stations will not be accepted.

12. Awards are made at the discretion of the Council of the RSGB and may consist of trophies, plaques or certificates. When possible, awards are presented at the RSGB AGM following the contest.

13. Certificates of merit are normally sent to the three leading stations in each section of a contest.

14. Entrants may be disqualified for failure to observe the general rules or the specific rules.

15. Points are deducted for errors in the logs. For unmarked duplicate contacts for which points have been claimed, additional penalty points may be deducted (eg five times the claimed score for the contact).

16. Small quantities of RSGB hf contest log sheets (Form HFC1) and cover/summary sheets (Form HFC2) may be obtained from RSGB HQ on receipt of a large stamped addressed envelope. Larger quantities may be purchased.

Code of practice for vhf/uhf contest operation

1. Obtain permission from the landowner or agent before using the site, and check that this permission includes right of access. Portable stations should observe the Country Code.
2. Take all possible steps to ensure that a site is not going to be used by some other group or club. If it is, come to an amicable agreement *before* the event. Groups are advised to select possible alternative sites.
3. *All transmitters* generate unwanted signals; it is the level of these signals that matters. In operation from a good site, levels of spurious radiation which may be acceptable from the home station may well be found excessive by nearby stations (up to 25 miles or even further).
4. Similarly, *all receivers* are prone to have spurious responses or to generate spurious signals in the presence of one or more strong signals, even if the incoming signals are of good quality. Such spurious responses may mislead an operator into believing that the incoming signal is at fault, when in fact the fault lies in his own receiver.
5. If at all possible, critically test both receiver and transmitter for these undesirable characteristics, preferably by air test with a near neighbour before the contest. In the case of transmitters, aim to keep all in-amateur-band spurious radiations, including noise modulation, to a level of −90dB relative to the wanted signal. Similarly, every effort should be made to ensure that the receiver has an adequate dynamic range.
6. Above all, be gentlemanly at all times. Be helpful and *inform all stations* apparently radiating unwanted signals at troublesome levels—having first checked your own receiver! If asked to close down by a government or Post Office official, do so at once without objectionable behaviour. If the site owner requests your station to close down, accede to his request without hostility.

General rules for RSGB hf receiving contests 1979

1. To claim points, a station may be logged once only on each band whether fixed, portable, mobile, or alternative address.

2. A receiving station log must show in columns: date/time (gmt), callsign of station heard, report and serial number sent by station heard, callsign of station being worked, bonus points, total points. The band in use must be shown at the top of each log sheet.

3. In the column headed "Station being worked" the same callsign may only appear once in every six contacts logged unless otherwise stated in the specific rules for a contest.

4. A cover/summary sheet (eg Form HFC2) must be submitted with the logs. The signed declaration must include the words "I certify that I do not hold a transmitting licence".

5. The following rules from the transmitting general rules also apply to receiving contests: 3,5,7,9,10,11,12,13,14,15 and 16.

General rules for listeners' vhf/uhf contests 1979

1. The following rules from the general rules for vhf/uhf contests published in this issue shall apply: 1, 2, 4b, 5a, 7a, 10a, 18, 20, 21, 22.

2. Listeners' contests are open to all non-licensed members of the RSGB. Only the entrant may operate the receiving station.

3. Logs must show in columns: (a) date/time (gmt), (b) callsign of station heard, (c) my report on his signals, (d) report and serial number sent by station heard, (e) callsign of station being worked, (f) QTH locator given by station heard, (g) QTH given by station heard, (h) points claimed.

On 144MHz the callsign in column (e) may occur only once in every 20 contacts logged. CQ and test calls do not count for points and should not be logged. If both sides of a QSO can be heard, both can be claimed for points.

The Hanson Trophy will be awarded to the entrants with the highest aggregate score in all the swl contests between 3 March and 2 September 1979.

Code letters for use in RSGB contests

County/ Region	Letters
Alderney	ALD
Antrim	ATM
Armagh	ARM
Avon	AVN
Bedfordshire	BFD
Berkshire	BRK
Borders	BDS
Buckinghamshire	BKS
Cambridgeshire	CBE
Central	CTR
Cheshire	CHS
Cleveland	CVE
Clwyd	CWD
Cornwall	CNL
Cumbria	CBA
Derbyshire	DYS
Devon	DVN
Dorset	DOR
Down	DWN
Dumfries & Galloway	DGL
Durham	DHM
Dyfed	DFD
Essex	ESX
Fermanagh	FMH
Fife	FFE
Mid Glamorgan	GNM
South Glamorgan	GNS
West Glamorgan	GNW
Gloucestershire	GLR
Grampian	GRN
Guernsey	GUR
Gwent	GWT
Gwynedd	GDD
Hampshire	HPH
Hereford & Worcester	HWR
Hertfordshire	HFD
Highlands	HLD
Humberside	HBS
Isle of Man	IOM
Isles of Scilly	IOS
Isle of Wight	IOW
Jersey	JER
Kent	KNT
Lancashire	LNH
Leicestershire	LEC
Lincolnshire	LCN
Greater London	LDN
Londonderry	LDR
Lothian	LTH
Greater Manchester	MCH
Merseyside	MSY
Norfolk	NOR
Northamptonshire	NHM
Northumberland	NLD
Nottinghamshire	NOT
Orkney	OKE
Oxfordshire	OFE
Powys	PWS
Salop	SLP
Sark	SRK
Shetland	SLD
Somerset	SOM
Staffordshire	SFD
Strathclyde	SCD
Suffolk	SFK
Surrey	SRY
East Sussex	SXE
West Sussex	SXW
Tayside	TYS
Tyne & Wear	TWR
Tyrone	TYR
Warwickshire	WKS
Western Isles	WIL
West Midlands	WMD
Wiltshire	WLT
North Yorkshire	YSN
South Yorkshire	YSS
West Yorkshire	YSW

contest news

432/1,296/2,304MHz Open Contest results

Exceptional conditions prevailed during most of the 24 hours of this contest. The result was a good entry with many Continental contacts, including OK on 1·3GHz.

Entrants who omitted to read the rules complained of the lack of multipliers for the shf bands, other comments confirmed the committee's intention to experiment with a 1·3GHz contest "standing on its own feet".

Winners certificates go to the leaders in both 2·3GHz sections, and to winners and runners-up in the 1·3GHz and 432MHz fixed and portable sections.

G5HD

432MHz FIXED STATION SECTION

Posn	Callsign	Points	QSOs	QRA	Best dx	Km
1	G3NNG	53,475	201	ZL23	OZ9FW	938
2	G8AZA	29,595	71	ZO69	OK1AIB/P	1,146
3	G8IWA	12,181	39	ZN18	OK1AIB/P	1,149
4	G3VJG	10,599	66	ZL40	ON5VU	430
5	G4EDR	10,349	25	ZO69	OK1AIB/P	
6	G8IEM	7,419	42	ZK05	PA0CKV/P	445
7	G8MKN	6,860	53	AL31	F9FT/P	438
8	G8KAX	6,551	46	AL32	PA0NYM/P	391
9	G5UM	6,476	46	ZM35	DK8EZ	530
10	G3BPM	6,429	48	ZL48	F9FT/P	455
11	G8FUL	6,107	42	ZL58	PA0EZ	408
12	G8DLX	5,053	35	ZM54	F6CJL/P	439
13	G3VCT	4,332	26	ZL37	PA0NYM/P	450
14	G8DAB	4,207	39	ZL57	F1EFD	350
15	G3COJ	2,250	10	ZL37	PA0HLM/P	375
16	G8HGN	2,186	13	AL31	F1EBN/P	373
17	G8ART	1,255	7	ZM45	ON6UG/A	475

432MHz PORTABLE SECTION

Posn	Callsign	Points	QSOs	QRA	Best dx	Km
1	G4BPO	95,381	309	AM67	DM2BYE	901
2	G8PUB	59,547	158	XK30	OZ3TZ/A	989
3	G8EAH	46,377	137	ZO77	OK1KIR/P	1,015
4	GW4BRA	39,964	179	YN75	F9FT/P	716
5	G3AKF	37,720	199	ZL45	OZ9PZ/A	857
6	GW6UQ	36,481	175	YN75	DC8BB	780
7	GW4ASR	28,335	88	YM55	DM2BYE	1,170
8	G3NYY	23,535	103	AL76	DC8JO/P	486
9	G4ALE	22,835	136	ZL60	GM3HAM/P	538
10	G4ARD	16,423	108	ZL18	OZ9PZ/P	762
11	HP9BPQ	11,877	44	DG41	OK1KKL/P	815
12	G8LM	2,815	20	ZM36	F1ANH/P	370

1,296MHz FIXED STATION SECTION

Posn	Callsign	Points	QSOs	QRA	Best dx	Km
1-	G3JXN	3,654	33	ZL39	PA0EZ	380
2	G3TDG	3,369	33	AL51	GW4AJW/P	337
3	G3FZL	2,306	23	ZL50	PA0HLM/P	321
4	G3VCT	2,107	25	ZL37	PE0MAR/P	325
5	G8DAB	1,870	20	ZL57	PA0HLM/P	381
6	G3FYX	1,716	10	YL38	PA0HLM/P	485
7	G3COJ	1,511	15	ZL37	PA0HLM/P	374
8	G3SPJ	1,473	17	AL41	GW4AJW/P	275
9	G8ACJ	1,245	7	ZL68	G4DDC/P	69
10	G3XWZ	1,075	10	ZN64	PE0DOL/P	385
11	G8ART	558	7	ZM45	G4ALE/P	141
12	G8IEM	431	4	ZK05	G4ERX/P	214
13	G8CTT	279	10	AL41	G8DDC/P	68

1,296MHz PORTABLE SECTION

Posn	Callsign	Points	QSOs	QRA	Best dx	Km
1	G3XDY	15,333	58	AM67	OK1AIY/P	1,002
2	GW4AJW	8,336	48	YN75	PE0MAR/P	505
3	G3SBV	6,498	51	ZL60	PA0EX	350
4	G4ALE	6,363	50	ZL60	PA0VTW	447
5	G4ERX	6,329	26	XK30	PA0HLM/P	625
6	G4DDC	5,966	47	ZL18	PA0NYM/P	440
7	GW4CBW	5,907	35	YN75	PE0MAR/P	489
8	G3ULT	4,852	33	ZL54	PA0EZ	456
9	G3PQY	3,809	12	ZO77	OK1KIR/P	1,015
10	GJ8EZA	2,476	11	YJ69	G8DKK	319
11	G3LCH	2,165	15	ZN71	PE0MAR/P	412

2,304MHz PORTABLE SECTION

Posn	Callsign	Points	QSOs	QRA	Best dx	Km
1	G3XDY	1,660	11	AM67	PA0NYM/P	322
2	G4ALE/P	1,581	8	ZL60	PA0EZ	385
3	G4EEE	1,387	8	ZL54	PA0HLM/P	436
4	G4DDC	887	7	ZL18	PA0MAR/P	315

2,304MHz FIXED STATION SECTION

1	G8ACE	248	4	ZL73	G4DDC/P	105

144/432MHz and SWL Contest rules

1600-1600gmt* 3-4 March 1979

There are four sections: 1. 144MHz Single-operator
2. 144MHz Multi-operator
3. 144/432MHz Single-operator
4. 144/432MHz Multi-operator

Note: Stations operating in Section 4 may use separate callsigns for each band and operate simultaneously.

The following multipliers will apply: 144MHz × 1, 432MHz × 5.

All entries and check logs to: VHF Contests Committee, c/o Mr W. McClintock, G3VPK, Maple Leaf, Gt Braxted, Witham, Essex CM8 3EJ.

The following general rules, published in this issue of *Radio Communication,* will apply: 1, 2, 3, 5a, 6a, 7a, 8, 9a, 10a, 11a, 12-22.

*Single-operator stations, as defined in rule 4, must break for six consecutive hours.

October 70MHz Fixed Contest results

Conditions for the contest were reported as average, fair and poor. Activity seemed to be slightly lower than last year and the number of entries was down by five. Some comments were received again about the length of the contest: these have been noted and it would appear that a six-hour event would be more popular. GU3HFN again managed to maintain a notable lead over the field.

Congratulations and certificates go to the winner and the runner-up. Thanks also to G3BTO and G3WTD for their check logs.

G4BEL

Posn	Callsign	Points	QSOs	QRA	Best dx	Km	Ant
1	GU3HFN	525	43	YJ48	GM3YOR	730	4/4-el
2	G4AEQ	435	56	YN48	GU3HFN	470	10-el
3	G3UKV	401	60	YM28	GM3YOR	371	4-el
4	G3RDQ	386	60	ZL74	GM3WOJ	459	4-el
5	G4AGE	323	51	ZN64	GU3HFN	410	4-el
6	G3SPJ	321	63	AL41	GM3WOJ	469	9-el
7	G3RSI	303	65	ZL57	GM3WOJ	460	8-el
8	GD2HDZ	297	29	XO68	G3DAH	485	4-el
9	G3BOC	282	37	YM16	GU3HFN	—	4-el
10	G3JYP	267	33	YO38	—	—	—
11	G8GP	261	55	ZL50	GM3WOJ	485	3-el
12	G3IGQ	260	59	ZL68	G3JYP	—	4/4-el
13	G3PWK	254	42	AM42	GD2HDZ	375	4-el
14	G4ENB	253	59	ZL08	GD2HDZ	372	4-el
15	G4APL	242	52	ZL60	GD2HDZ	440	4-el
16	G4GRG	236	40	ZM31	GU3HFN	385	4-el
17	G3OUL	232	34	YN46	GU3HFN	440	6-el
18	GW3ITZ	231	31	YN66	GU3HFN	425	4-el
19	G3UUT	228	44	AM61	GD2HDZ	381	4-el
20	G3LVP	213	45	AL33	GU3HFN	324	4-el
21	G4CGS	193	27	ZN11	—	—	3-el
22	G3TAL	174	32	ZK14	G4AEQ	312	4-el
23	G5UM	137	31	ZM35	G3JYP	220	4-el
24	GM3YOR	104	12	YO65	GU3HFN	730	4-el
25	G4FKI	59	27	AL31	G3UKV	210	4-el
26	G5DF	52	7	ZO51	G3SPJ	370	4-el
27	G3ZOD	4	2	YN50	G3UKV	79	Dipole

1978 Listeners' VHF/UHF Championship

The total number of logs received during 1978 was considerably less than in previous years. As can be seen from the table, the 144MHz band proved most popular and was also the most rewarding.

Congratulations go once again to Ron Thomas, RS15822, for his determined effort throughout the year: the presentation of the Hanson Trophy will be made at the 1979 VHF Convention

Posn	Callsign	March		April		VHF	NFD	Aug	Sept	Total
		144	432	432	70	144	432	70	144	
1	BRS15822	468	70	44	—	489	39	127	866	2,103
2	BRS8677	—	—	—	—	—	—	—	1,474	1,474
3	BRS33823	—	—	57	106	118	64	80	346	771
4	BRS34740	—	—	—	—	496	—	224	—	720
5	BRS32525	—	—	—	—	695	—	—	—	695
6	BRS34310	371	15	—	—	257	—	—	—	643
7	BRS9090	—	—	110	—	401	—	—	—	511
8	BRS20323	127	—	—	—	—	—	—	266	393
9	BRS38937	—	—	—	4	144	—	—	—	148

First 1·8MHz Contest 1979 rules

Stations intending to participate in this contest are asked to note *the earlier start and finish time.*

1. The general rules for RSGB hf contests, published in this issue of *Radio Communication,* will apply.
2. When: 2000gmt Saturday 10 February to 0100gmt Sunday 11 February 1979.
3. Eligible entrants: all radio amateurs licensed to use 1·8MHz. Single-operator stations only may enter.
4. Sections
   (a) British Isles stations—RSGB members only.
   (b) Overseas stations (including EI).
5. Contacts: CW (A1) only in the 1·8–2MHz band. County/region code letters, as published in this issue of *Radio Communication,* must be sent after the RST plus serial number group; eg for a contact from Kent—599001 KNT.
6. Scoring:
   (a) British Isles section. Three points for each contact, with a bonus of five points for the first contact with each new British Isles county/region, and for the first contact with each new country outside the British Isles.
   (b) Overseas section. Three points for each contact with a station in the British Isles (not EI), with a bonus of five points for the first contact with each new county/region.
7. Logs: column 5 to be headed "Code rcvd". Entries must be addressed to the RSGB HF Contests Committee, c/o R. S. Unsworth, 105 Clarendon Road, Hazel Grove, Stockport, Cheshire SK7 4NS, and to be postmarked not later than Monday 26 February 1979.
8. Awards:
   (a) The Somerset Trophy will be awarded to the winning station, and certificates of merit will be sent to second and third-placed entrants. The Maitland Trophy will be awarded to the Scottish entrant with the highest aggregate number of points in this contest combined with the Second 1·8MHz Contest 1978.
   (b) A certificate of merit will be awarded to the highest-placed entrant whose 18th birthday falls on or after 12 February 1979. Entrants wishing to compete for this award should state their date of birth on the cover sheet, and write clearly "Under 18" at the **top** of the cover sheet. Entries will only be eligible for this award where operation has taken place under the entrant's own callsign, and from the "main address" as stated on the station licence.

BARTG Spring RTTY Contest 1979 rules

When. 0200gmt 24 March until 0200gmt 26 March 1979.
The total contest period is 48 hours but not more than 30 hours of operation is permitted. Times spent in listening count as operating time. The 18 hour non-operating period can be taken at any time during the contest, but off periods may not be less than three hours at a time. Times on and off the air must be summarized on the log and score sheets.
Who. There will be separate categories for single operators, multi-operator stations and short wave listeners.
Bands. 3·5, 7, 14, 21 and 28MHz amateur bands.
Stations. Stations may not be contacted more than once on any one band, but additional contacts may be made with the same station if a different band is used.
Country status. ARRL *Countries List* and, in addition, each W/K, VE/VO and VK call area will be counted as a separate country. (But W/K, VE/VO and VK counted once only for QCA purposes).
Messages. Messages exchanged will consist of:
   (a) Time gmt. This must consist of a full four-figure group. The use of the expression "Same" and "Same as yours" will not be acceptable.
   (b) RST and message number. The message number must consist of a three-figure group starting with 001 for the first contact made.
Points
   (a) All two-way rtty contacts with stations within one's own country will earn **2** points.
   (b) All two-way rtty contacts with stations outside one's own country will earn **10** points.
   (c) All stations will receive a bonus of 200 points per country worked including their own. *Note:* Any one country may be counted again if worked on another band, but continents are counted once only.
   (d) Proof of contact will be required in cases where the station worked does not appear on any other contest logs received or the station worked does not submit a check log.
Scoring
   (a) Two-way exchange points times total countries worked.
   (b) Total country points times 200 multiplied by number of continents worked.
   (c) Add (a) and (b) together to obtain your final score.
   Sample score:

Exchange points (302) × countries (10)	= 3,020
Country points (10) × 200 × continents (3)	= 6,000
(a) and (b) added together to give a score of	9,020 points

Logs and score sheets. A separate sheet for each band and indicate all rest periods. Logs to contain: date, time gmt, callsign of station worked, RST report and message number as sent, RST report and message number as received, exchange points claimed. The summary sheet should show the full scoring, the times off the air and, in the case of multi-operator stations, the names and callsigns of all operators involved with the operation of the station.
All logs must be received by 31 May 1979 in order to qualify.
Send your contest log or check log to: Ted Double, 89 Linden Gardens, Enfield, Middlesex, EN1 4DX.
The judges decision will be final and no correspondence can be entered into in respect of incorrect or late entries, and all logs will remain the property of the British Amateur Radio Teleprinter Group.
Certificates will be awarded to: The leading stations in each of the three classes, the top stations in each continent and each W/K, VE/VO and VK call area.
Additional notes.
(a) If a contestant manages to contact 25 or more different countries on two-way rtty during the contest, a claim may be made for the Quarter Century Award issued by the British Amateur Radio Teleprinter Group

and for which a charge of US $3 or 15 ircs is made. Make your claim at the same time as you send in your log. Holders of existing QCA awards will automatically have any new countries added to their records.

However, in view of the high volume of work which the contest manager has to deal with, it will not be possible to prepare and send out new awards or up-date existing awards until the final results of the contest have been evaluated and despatched.

(b) If any contestant manages to contact stations on two-way rtty with all six continents, and the BARTG contest manager receives a contest or check log from all of the operators in those six continents, a claim may be made for the WAC Award issued by the *RTTY Journal*. The necessary information will be sent on to the *RTTY Journal* which will issue the WAC Award free of charge.

BARTG VHF RTTY Contest 1978 results

This contest attracted a somewhat smaller entry than last year, partly due, perhaps, to a clash of dates with other contests. In particular, the Continental entry was much reduced, although the UK section was well supported.

Conditions were generally commented on as fair on the Saturday, but below average on the Sunday morning. Several stations commented on the lack of activity on the Sunday morning, although the leading stations were still able to make significant numbers of contacts. Apart from entrants, 60 UK stations appeared in the logs of entrants.

Other comments from logs: "Complete lack of ON and PA0 stations—almost locals to us"—*G4BPO/P*. "Good tv programmes on the Saturday, so stations in Germany with tvi problems were not on the band"—*DC3OZ*. "Next year, 1,296MHz?"—*G8BIS*. "How about adding to the information exchange the operator's names? Would make the QSOs that bit more personal"—*G8IZU*.

UNITED KINGDOM SECTION

		144MHz			432MHz			Total
Posn	Station	QSOs	Points	km	QSOs	Points	km	points
1	GW3UUP/P	41	343	304	3	66	304	409
2	G4BPO/P	42	356	616	4	44	304	400
3	G4FRJ	41	247	472	—	—	—	247
4	G4BP/P	22	220	654	2	24	275	244
5	G3PLX	34	216	398	—	—	—	216
6	G3VPC	27	183	412	—	—	—	183
7	G3ZRS	24	181	320	—	—	—	181
8	G8MWU	36	180	370	—	—	—	180
9	G3RED	22	130	246	—	—	—	130
10	G8DVR	18	129	294	—	—	—	129
11	G8IZU	23	97	190	—	—	—	97
12	G8LWY	19	83	325	—	—	—	83
13	G8BIS	24	77	275	3	5	95	82
14	G8INP	16	70	230	—	—	—	70
15	G3OZF	13	69	281	—	—	—	69
16	GW8BXQ	6	66	427	—	—	—	66
17	G4EWK	16	64	225	—	—	—	64
18	G4GTH	12	62	384	—	—	—	62
19	G8GOJ	15	43	263	—	—	—	43
20	G8MDP	9	27	186	—	—	—	27
21	G3YKB	6	18	275	—	—	—	18
22	GI8HXY	2	8	120	1	6	70	14
23	GI8DMX	1	3	70	1	6	70	9
		EUROPEAN SECTION						
1	DC3OZ	20	86	258	—	—	—	86
2	DL8VX	12	48	270	—	—	—	48
3	DJ1QT	2	38	616	—	—	—	38

Entries from the following stations were, regrettably, disallowed, because of incomplete log information: G2AOF—47 points claimed; F6BOM—310 points claimed; F6EMT—59 points claimed.

Check logs from G8CDW and DKIAQ are gratefully acknowledged.

BATC International ATV Contest 1978 results

UK results

Posn	Callsign	Points	QRA	QSOs	Best dx	Km
1	G8TDQ	2,249	ZL60E	17	F1BJB	225
2	G8GLQ/A	1,707	YL49G	12	G8IWX	188
3	GW8OOJ/P	1,215	YL25J	13	G8IWX	233
4	G4CRJ	1,176	ZL38B	10	F1BJB	265
5	G8GKG	305	AL41F	10	G4CRJ	,36
6	G8CTT	172	AL41J	7	G4CRJ	45
						(Receiving only)
7	G4AKG	116	ZL50E	4	G4CRJ	34

The organizer proposes a UK-only contest early this summer, and the international contest is expected to take place again this year.

G3VZV

Region 1 (RSGB) VHF Contest results

Section	Ht Mult	4m ×3	2m	70cm ×4	23cm	Total	Region 1 QSOs 4	2	70cm	23cm
1. Multi-operator										
Liverpool & D	1·8		1,477	2,285		3,762	44	19		
Ainsdale	2·0	886	2,000	660		3,546	10 33	14		
Chester	1·2		1,762	1,474		3,236	51	26		
Isle of Man	1·4		2,653			2,653	23			
Wirral	1·1	330	1,176	496		2,002	5 71	10		
2. Single operator										
GD2HDZ	1·8	336		1,182	1,226	2,744	5	3	0	
G8GTP	1·8		338	808		1,146	18	11		
G4HAO	2·0		928			928	17			
G3ZOD	2·0	178	200	462		840	4 15	11		
G3SMM	2·0	44	320	158		522	2 14	7		
3. Outside region										
G8LKR	2·0		860			860	29			
G3NYY/P	1·6		304	380		684	13	6		
G8OCT	1·6		450			450	20			
G8NLH/P	1·0		416			416	34			
G4DLB/P	1·4		319			319	15			
G8BKR	1·8		213	104		317	8	1		
G8KAX	2·0		240			240	7			

Region 1 entries in HF NFD were again up in number despite our fb 1978 summer. Stockport RS recorded the highest score ever made by a Region 1 group to regain the RR's Cup; Leyland Hundred "A" being left with top score on 160 and 80m to win the other hf trophies.

For VHF NFD we have a brand-new award, the G2AMV Quarter-Century Trophy, presented by Basil O'Brien, for the best score by a Region 1 group in this event. To complete the double, Stockport have also "lifted" this one.

The 1978 VHF Contest took place in a howling gale, for which no responsibility can be accepted. Some very creditable British Isles dx was worked, but even our worthy RR could not extend the range beyond Galway. For the first time we had a fair entry of 70cm logs, including two in Section 3, and more 4m logs from single ops than from the clubs. However, a very solitary item on 23cm from GD2HDZ showed what could be done there. On 2m, 71 stations were recorded. Our grateful thanks to you all for being on, plus a special one to the stalwarts who put some activity on the other not-so-popular bands. Without your entries and interest there would not be any contest at all.

Contests calendar

13-14 January	1979 Guglielmo Marconi International (CW)
14 January	Affiliated Societies (*Rules in December issue*)
21 January	70MHz CW (*Rules in November issue*)
21 January	AGCW-DL QRP Winter (*Rules in January issue*)
27-28 January	1979 Guglielmo Marconi International (Phone)
4 February	432MHz Fixed (*Rules in December issue*)
10-11 February	1st 1·8MHz (*Rules in January issue*)
3-4 March	144/432MHz and SWL (*Rules in January issue*)
10-11 March	Commonwealth (*Rules in December issue*)
7 April	1,296MHz Open
8 April	Low Power
8 April	432MHz Open and SWL
22 April	144MHz CW
29 April	70MHz Open
5-6 May	432/1,296/2,304MHz
6 May	Region Round-up CW
20 May	Region Round-up SSB
26-27 May	144MHz Portable
9-10 June	NFD
16-17 June	Microwave
23-24 June	Summer 1·8MHz
7-8 July	VHF NFD
15 July	3·5MHz Field Day
29 July	144MHz QRP
11-12 August	European Meteor Scatter
18-19 August	70MHz Open
1-2 September	144MHz Open and SWL
1-2 September	SSB Field Day
October-November	432/1,296MHz Cumulative
6-7 October	432/1,296/2,304MHz
13-14 October	21/28MHz
20-21 October	7MHz Phone
21 October	70MHz Fixed
3-4 November	144MHz CW
3-4 November	7MHz CW
10-11 November	2nd 1·8MHz
2 December	144MHz Fixed

RSGB AREA REPRESENTATIVES

Region 1

G. L. Adams, G3LEQ, 2 Ash Grove, Knutsford, Cheshire WA16 8BB. *(Mid-Cheshire)*

J. K. Birch, G2FOS, 19 Lloyd Drive, Greasby, Upton, Wirral, Merseyside. *(Wirral)*

C. Cartmel, G4EST, 31 Redvers Drive, Liverpool L9 8BS. *(Liverpool & District)*

J. Heywood, G8BHQ, 9 Kenilworth Drive, Hazel Grove, Stockport, Cheshire SK7 5LE. *(Stockport)*

J. M. Horrocks, G8GTP, 17 Wood Grove, Whitefields, Nr Manchester M25 7ST. *(Gtr Manchester—NW)*

N. Horrocks, G2CUZ, 34 Sandbrook Road, Ainsdale, Southport PR8 3JE. *(Southport & District)*

G. Lancefield, G3DWQ, 191 Higher Walton Road, Walton-le-Dale, Preston, Lancs. *(Preston)*

A. B. Langfield, G3IOA, 201 St Marys Road, Moston, Manchester M10 0BN. *(Gtr Manchester—NE)*

G. W. Perkins, G3VIJ, 35 Kingstown Road, Carlisle, Cumberland. *(N Cumbria—north of line between Kirkby Stephen and Silloth)*

Region 2

D. B. Appleby, G8FUW, "Hillcrest", Bingley Road, Menston, Nr Ilkley, Yorks LS29 6AY. *(Otley)*

K. R. Cass, G3WVO, 4 Heworth Village, York. *(York)*

K. M. Cleary, G4ATZ, 3 Mallinson Oval, Harrogate, North Yorks HG2 9HH. *(Harrogate & District)*

J. Clegg, G3FQH, 8 Hillside, Leak Hall Lake, Denby Dale, Nr Huddersfield HD8 8QZ. *(Area of Kirklees)*

I. R. Firth, G3WWF, 6 Eastfield Drive, Woodlesford, Leeds LS26 8SQ. *(Wakefield & District)*

P. Gilson, G3WSZ, 22 Carr Manor Place, Leeds LS17 5DL. *(Leeds)*

J. R. Simpson, G3CAA, 30 Meadow Drive, East Ayton, Scarborough, North Yorks YO13 9EZ. *(Scarborough)*

Region 3

W. F. M. Hahn, G3UOL, 91 The Chesils, Styvechale, Coventry, West Midlands CV3 5BE. *(Coventry)*

S. H. Jesson, G4CNY, 181 Kings Acre Road, Hereford, Herefords. *(Hereford area)*

P. A. Miles, G3KDB, 28 Scotch Orchard, Lichfield, Staffs WS13 6DE. *(Lichfield, Cannock, Aldridge & Sutton Coldfield)*

Region 4

I. R. Brothwell, G4EAN, 56 Arnot Hill Road, Arnold, Nottingham NG5 6LQ. *(Nottingham)*

N. J. H. Grassby, G4CPY, 22 St Cuthberts Avenue, Great Glen, Leics LE8 0EJ. *(Leicestershire)*

M. Shardlow, G3SZJ, 19 Portreath Drive, Darley Abbey, Derby DE3 2RJ. *(Derby)*

Region 5

L. Critchley, G3EEL, 36 Waterloo Road, Peterborough, Cambs. *(Peterborough & District)*

S. J. Purser, G8GHZ, "Chimney End", Shutlanger Road, Stoke Bruerne, Towcester, Northants NN12 7SB. *(Northamptonshire)*

Region 6

C. Sharpe, G2HIF, 20 Harcourt Road, Wantage, Oxon OX12 7DQ. *(Harwell)*

C. F. H. Young, G4CCC, 18 Wincroft Road, Caversham, Reading, Berks RG4 7HH. *(Berkshire)*

Region 7

C. Cluer, G4AVV, 24 Patterson Road, Upper Norwood, London SE19 2LD. *(Norwood & South London)*

R. S. Hewes, G3TDR, 24 Brightside Avenue, Laleham, Staines, Middx. *(West area of Region 7)*

D. N. Jones, G8IMX, 9 Elsenwood Drive, Camberley, Surrey. *(Farnborough)*

K. Korndorffer, G2DMR, 19 Park Rd, Banstead, Surrey. *(NW Region 7)*

Region 8

T. M. Allen, G4ETU, 2 Hillside, West Stoke, Chichester, West Sussex PO18 9BL. *(Chichester & District)*

D. Buckley, G3VLX, 16 Wood Ride, Petts Wood, Orpington, Kent BR5 1PX. *(London boroughs of Greenwich, Bromley & Bexley)*

K. A. Crouch, G8KEN, 14 Victoria Road, Capel, Folkestone, Kent CT18 7HB. *(SE Kent)*

M. Dennison, G3XDV, 5 Lambs Walk, Whitstable, Kent CT5 4PJ. *(Canterbury, Herne Bay, Whitstable)*

J. C. Greenhow, G3PEY, 19 Dorset Road, Tunbridge Wells, Kent. *(Tunbridge Wells & District)*

R. A. Harvey, G3YHM, 26 Birkdale Road, Durrington, Worthing, Sussex. *(Worthing, Brighton)*

P. F. Jobson, G3HLF, 41 The Avenue, Gravesend, Kent. *(NW Kent)*

M. B. Welling, G3ZFE, 29 Hawkstown Crescent, Hailsham, Sussex BN27 1JA. *(Eastbourne, Hastings & District)*

Region 9

B. H. Body, G8JML, "Penolver", Scarsewater, Higher St Clement, Truro, Cornwall TR1 1TA. *(Cornwall, West)*

W. J. Colclough, G3XC, "Highview", Indian Queens, St Columb, Cornwall. *(Cornwall, East)*

H. G. Hughes, G4CG, "Crinnis", High Wall, Stickle Path, Barnstaple, North Devon. *(North Devon)*

L. H. Webber, G3GDW, 43 Lime Tree Walk, Newton Abbot, Devon TQ12 4LF. *(Torbay)*

Region 10

T. J. Brooke, GW3GHC, "Pentire", Castleton, Cardiff, South Wales CF3 8UR. *(Cardiff & District)*

P. A. Jones, GW4HAT, 6 Gwelfor, Killay, Swansea, Glam SA2 7NX. *(Swansea)*

Region 12

I. Coulson, GM8KIE, 11 Redcliffs, Kingoodie, Invergowrie by Dundee, Scotland DD2 5DL. *(Tayside area)*

G. W. A. Pople, GM4DKL, 25 Cromarty Drive, Milton, Kildary, Rossshire IV18 0PY. *(Highlands)*

A. J. Wills, GM8KMO, 23b South Guildry Street, Elgin, Morayshire. *(Grampian)*

Region 13

D. W. Dalrymple, GM3OLK, 27 Hazel Place, Leslie, Fife KY6 3LW. *(Central Fife area)*

J. McVicar, GM8GEC, 31 Lochend Road North, Musselburgh, Midlothian. *(Lothian)*

Region 14

J. G. Gaughan, GM4FEO, 9 Guy Mannering Road, Helensburgh, Dunbartonshire. *(Helensburgh)*

T. P. Hughes, GM3EDZ, 38 Ibrox Terrace, Glasgow G51 2TB. *(Glasgow)*

D. H. Plumridge, GM3KMG, 7 Waterside Gardens, Hamilton, Lanarkshire ML3 7PY. *(Airdrie, Coatbridge, Hamilton & Motherwell)*

Region 15

J. T. Barnes, GI3USS, 95 Crawfordsburn Road, Bangor, Co Down, N. Ireland. *(Belfast)*

R. Montgomery, GI4GDV, 11 Limehurst Way, Low Road, Lisburn, Co Antrim BT27 4YF. *(Lisburn)*

Region 16

M. J. Coan, G4EOL, 22 Longe Road, Old Catton, Norfolk NR6 7JD *(Norwich)*

M. A. Lawrence, G8DNO, 83 Laburnum Drive, Chelmsford, Essex. *(Chelmsford)*

Region 17

P. G. Brooker, G3WXC, 107 Venner Avenue, Northwood, Cowes, Isle of Wight PO31 8AG. *(Isle of Wight)*

G. D. Cole, G4EMN, 6 St Anthonys Road, Bournemouth BH2 6PD. *(Bournemouth & Christchurch)*

J. R. Compton, G4COM, "Aysgarth", Beech Corner, Snakemoor Lane, Durley, Southampton, Hants SO3 2AR. *(Southampton)*

W. James, G6XM, 8 Bydemill Gardens, Highworth, Swindon, Wilts. *(Swindon)*

F. B. Le Cocq, GJ8PKU, "Les Cailloux", Green Road, St Clement, Jersey, CI. *(Jersey)*

J. E. Martin, GU3YIZ, "Bonne Chance", Marais Lane, Vale, Guernsey, CI. *(Guernsey)*

D. I. Mason, G3ZPR, 26 Upton Road, Fleetsbridge, Poole, Dorset BH17 7AH. *(Poole)*

P. J. Sterry, G3CBU, "Ashley", Orchard Road, Salisbury Gardens, Basingstoke, Hants. *(Basingstoke district)*

G. M. Taylor, G8HVY, 159 Littlemoor Road, Preston, Weymouth, Dorset DT3 6AF. *(Weymouth, Dorchester & Portland)*

Region 18

E. F. Shield, G8GVN, 14 Wellwood Street, Amble, Morpeth, Northumberland NE65 0EL. *(Northumberland)*

Region 19

W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London W3 8LB. *(Acton, Brentford & Chiswick)*

L. D. E. Light, G3KDL, 22 Chippenham Avenue, Wembley, Middx HA9 6NQ. *(Harrow, Middx)*

B. H. J. Pickford, G4DUS, 130 The Drive, Rickmansworth, Herts WD3 4DP. *(St Albans)*

A. Smith, G4FAI, 1 Tash Place, London N11 1PA. *(Cheshunt)*

T. J. Tugwell, G8KMV, 11 The Dell, Stevenage, Herts SG1 1PH. *(Stevenage)*

Region 20

R. H. G. Crabb, G4GHI, Wickham Farm, Marston Magna, Yeovil, Somerset BA22 8DT. *(SE Somerset)*

E. A. Perkins, G3MA, 40 Calton Road, Gloucester, Glos GL1 5DY. *(Gloucester)*

J. Thorn, G3PQE, 43 Hill Road, Weston-super-Mare, Avon BS23 2RY. *(Woodspring, South Avon)*

club news

RSGB affiliated societies and clubs, and RSGB groups, are invited to submit items for inclusion in "Club News" to their regional representatives (not direct to the editor).

Items of news and dates of forthcoming events should reach RRs by 19 January for the March issue.

Club secretaries are QTHR unless otherwise stated.

REGION 1—RR W. M. Furness, G3SMM, 16 Coniston Avenue, Sale, Cheshire M33 3GT.

Ainsdale (AARC)—Thursdays, fortnightly; 11, 25 January, 1, 15 February. Ainsdale Scout HQ. Full details from G2CUZ.

Blackburn (East Lancs ARC)—First Thursday in each month, 7.30pm. YMCA, Blackburn. Sec G4DGR.

Blackpool (B&DARS)—First Monday in each month. Phone G5ND (Blackpool 64508) for details of venue.

Bolton (B&DARS)—New QTH! The society now meets at the Horwich Leisure Centre, Victoria Road, Horwich, Bolton. Main meetings on first Wednesdays in each month, with informal meetings on third Wednesdays, 8pm. Hon sec G4FSN.

Bolton (Edbro Radio Club)—New club! Details from the sec c/o Edbro Ltd, Lever Street, Bolton.

Bury (BRS)—Second Tuesday in each month, main meeting; 9 January ("TVI and the amateur" by G2BTO), 13 February ("SL600 chip series" by G4CLF), 8pm. Mosses Community Centre, Cecil Street, Bury. Large RAE class now running in conjunction with Bury College of Further Education. Further details of club activities from G4FQE, tel Rochdale 32730. (The club continues to grow in numbers of licensees and swls).

Carlisle (C&DARS)—Mondays, 7.30pm. Currock House, Lediard Avenue, Currock, Carlisle. A very full programme of lectures and demonstrations has been arranged for the coming months. Full details from G8DVD.

Chester (C&DARS)-Tuesdays, 8pm, except for first Tuesday in the month. YMCA Chester. Further details from the ASR. G3PYU.

Douglas (IoMARS)—Mondays fortnightly. "Keppel Hotel". Cregny-Baa, Nr Onchan. Sec GD4FWQ, tel Douglas 22295.

Eccles (E&DARC)—Tuesdays, 8.30pm. "White Swan", Worsley Road, Swinton. CW class each week. Sec Chris Harrison, G8KRG, tel 061-789 3538.

Leyland (LHARG)—Second Monday in each month, 7.30pm. "Rose & Crown", Ulnes Walton, Leyland. Details from G3XII.

Liverpool (L&DARS)—Tuesdays, 8pm. Conservative Association Rooms, Church Road, Wavertree. Sec G4EST.

Liverpool (North Liverpool RC)—For details of meetings please contact R. Porter, G3VXK, 11 Cranmore Avenue, Crosby, Liverpool L23 0QD; tel 051-928 1610.

Liverpool University (UoLARS)—Meetings each lunchtime. Membership open to Polytechnic members and associated colleges. Shack in the Reilly Building, open anytime. Prospective members should contact Geoff Plucknett, G4FKA, UoL, 2 Bedford Street North, Liverpool L7 7BD.

Macclesfield (M&DRS)—Second Tuesday in each month, 8pm. "The Old Millstone", Waters Green, Macclesfield. For details of programme, etc, contact Julian Wanden, G8ATI, tel Macclesfield 20661.

Manchester (M&DARS)—Wednesdays, 7.30pm. 203 Droylsden Road, Newton Heath. Club call G3HOX is active on hf and vhf; Sec G8IYX.

Manchester (South Manchester RC)—5 January ("A new year mystery lecture" by R. Parkinson, G3FNM), 12 January (Discussion evening, shack operation and formulation of club project), 19 January ("Recent developments in two-way commercial radio" by T. G. Bennett, G4EGA, Motorola Ltd), 26 January ("An electronic keyer with memory" by T. Winter, G4AOK), 2 February ("Quartz crystals" by N. L. Tomlinson, G3HNT, Salford Electrical Instruments), 9 February ("Safety in the home", films, by Mr G. Sutcliffe), 16 February ("Displays" by J. W. Selwood, G8KGM), 23 February ("Getting going on rtty" by G3SMM), 8pm. Sale Moore Community Centre, Norris Road, Sale. Mondays (Informal), 8pm. Same venue. Sec W. L. Seddon, G3VIW, tel 061-973 3355. Visitors always welcome.

Manchester (UMISTRS)—Wednesday afternoons, cw classes if required; Thursday evenings. The radio shack. UMIST Union bar. Prospective members please contact M. P. Doig, G4CQZ,UMIST RS, UMIST Union, PO Box 88, Sackville Street, Manchester M60 1QD. G3CXX/G8FOT active on 1·8/144MHz and, in the near future, on 432MHz/1·3GHz.

North Western Repeater Group—Informal meetings on the third Thursday in each month, 8pm. "Globe Club", Willows Lane, Accrington, Lancs. Details from sec G3RXH.

Ormskirk (OARC)—Wednesdays, 8pm. 17 January (AGM). Members' QTHs. For details please contact G3SZV; or sec G4GCB, tel Burscough 892416. Talk-in on 144MHz. Club interests include hf, vhf, uhf, rtty, atv, QRP and contests.

Preston (PARS)—Thursdays, fortnightly; 11, 25 January, 8, 22 February, 8pm. "Windsor Castle", St Paul's Square, Preston. Sec George Loades, G3PVD.

Salford (Dial House RS)—Wednesdays, 5.30—9.30pm. Dial House, 21 Chapel Street, Salford, Lancs. Net channel 145·25MHz fm—the club station G3WDH monitors this frequency every club night for any other station. Details from sec G8JCL, c/o M43 at above address.

Stockport (SRS)—Second and fourth Wednesdays in each month; please note 6 January (Dinner dance); 10 January (Slide show), 24 January (Brains trust), 14 February (Talk by G3NOM), 28 February, 8pm. Blossoms Hotel, Buxton Road, Stockport. Sec G3FYE. Visitors always welcome.

Thornton Cleveleys (TCARS)—First and third Wednesdays in each month, 8pm; morse practice from 7.30pm. St John Ambulance Hall, Fleetwood Road North (next to "Gardner's Arms"), Thornton. Details from sec G8MKQ.

UK FM Group (Western)—First Thursday in each month, 8.30pm. "Legh Arms", Knutsford. Hon sec G3LEQ.

Warrington (W&DARS)—Tuesdays, 7.45pm. Grappenhall Community Centre, Bellhouse Lane, Grappenhall, Warrington. Sec G3MMD, tel Lymm 3533.

Wigan (Douglas Valley ARS)— First and third Thursdays in each month. Shevington Conservative Club, Shevington, Wigan. Details from G8KKP, tel Wigan 56318.

Winsford (Mid-Cheshire ARC)—Wednesdays. RAE class 7pm to 8pm. Morse class every third Wednesday. Technical Activities Centre, rear of Verdin Building, Verdin Comprehensive School, Grange Lane, Winsford. Net nights 1·8MHz Monday, 8pm; 144MHz (fm) Tuesdays. Hon sec G3JWK.

Wirral (WARS) First and third Wednesdays in each month, 7.45pm. Sports and Recreation Centre, Grange Road West, Claughton, Birkenhead. Sec G3DLF.

Wirral (W&DARC)—Second and fourth Wednesdays in each month, 8pm. Sports Concourse, West Kirby, Wirral. Hon sec Malcolm Mackintosh, G8NMG, tel 051-334 1027.

RR1 wishes to thank all members in Region 1 who attended the "WARC 79" lecture, given in October 1978 by G3HCT and G3FKM, and also those who attended the regional meeting on 19 November 1978; thanks are due to the Society's President and to G2AMV, for providing headquarter's representation.

RR1 wishes all amateurs and swls in Region 1 a peaceful and prosperous 1979.

Region 1 (RSGB) 1978 trophy winners

HF/NFD	RR's Cup	Stockport RS
	G3LWQ Rosebowl 80m FD Trophy	Leyland Hundred "A"
VHF/NFD	G2AMV Trophy	Stockport RS
VHF Contest	Section 1, G2CIP Shield	Liverpool & D ARS
	Section 2, G3SMM Shield	GD2HDZ
	Section 3, certificate	G8LKR

REGION 2—RR D. S. Smith, "Red Roof", Goathland, Whitby, North Yorks YO22 5AN.

Barnsley (B&DARS)—A letter from the sec, G3LRP, states that this old-established club has been formally wound-up, due to apathy and lack of support.

Bradford (UBARS)—Thursdays, 7.30pm. N10, Main Building. Sec G8GOV, 30 Moorfield Drive, Baildon, Shipley, West Yorks. Net frequency 145·275.

Denby Dale (DD&DARS)—Wednesdays, 7.30pm. Pie Hall, Denby Dale. Sec G3FGH. Visitors always welcome.

Goole (G&DARS)—Fridays, 7.30pm (during school term only). Goole Grammar School. Details from chairman G3VBI.
Halifax (Northern Heights ARS)—Second and fourth Tuesdays in each month, 7.45pm. New venue, HQ Bradford Sub Aqua Club, Mountain, Nr Queensbury. Sec G3UII.
Harrogate (Harrogate & Knaresborough RS)—A letter from the sec, G2CAS, indicated that a resolution to wind up the society would be submitted to an extraordinary general meeting in December, and that it would probably be carried. No further information was available at time of going to press. Sec J. Douglas, 15 Pannal Ash Drive, Harrogate HG2 0JA.
Hornsea (HARS)—Wednesdays, 8pm. Rear of "Victoria Hotel", Hornsea (facing Hornsea Mere). Note new sec Bob Murden, G4BHF, 93 Gillshill Road, Hull, Yorks HU8 0JL. Club net Tuesdays 8pm, S21 (145·525MHz fm).
Hull (H&DARS)—Fridays, 8pm. Community Centre, Fountain Road, Hull. Sec Mrs H. Rodmell, 7 Weelsby Way, Tranby Park, Hessle.
Hull (HUR&ES)—Fridays, 1pm. Room 313B, Union Building, All amateurs invited. Enquiries to G4FVP.
Leeds (White Rose RS)—Wednesdays, 7pm. (Lectures start 8pm). The Moortown Rugby Football Club, Moss Valley, Alwoodley, Leeds 17. Sec G4DZI.
Leeds (LUUARS)—Tuesdays, 8pm. Union Annexe (second floor), Woodhouse Lane. All new students welcome. Sec G4CNG, QTHR, or at "E" block, Lupton Flats, Alma Road, Leeds 6, during term.
Otley (OR&ES)—Tuesdays, 8pm. 14 Back of Court House Street, Otley. Advance notice of Northern Mobile Rally, 20 May 1979, Victoria Park Hall, Keighley, Yorks. Sec G8DFZ.
Scarborough (SARS)—Mondays, 7.30pm. Scarborough Technical College, Scalby Road, Scarborough. Note new sec G4EDR.
Sheffield (SARS)—Third Monday in each month, 8pm. "Sheaf House Hotel", Bramell Lane, Sheffield. Note new sec G4APV, 321 Fulwood Road, Sheffield S10. Visitors and swls particularly welcome.
Wakefield (W&DARS)—16 January (On the air), 30 January ("Op amps", a demonstration by G4BLE), 13 February (RSGB RR G4DAX), 27 February ("Oscar" by G4JJ), 13 March (To be arranged), 27 March (Quiz), 10 April ("Repeaters States-side" by G4AAQ), 7.30pm. New HQ: "Holmfield House", Thornes Park, Wakefield.
York (YARS)—Fridays (except third in each month), 7.30pm. United Services Club, 61 Micklegate, York. Sec G3WVO, QTHR.

A number of the region's ARs, and some affiliated society representatives, joined RR2 at an informal meeting and buffet held by the Membership & Representation Committee in Newcastle-Upon-Tyne on 18 November. Everyone present enjoyed the opportunity to air their views and obtain answers.

WAMRAC (World Association of Methodist Radio Amateurs & Clubs) held its 1978 conference weekend in Whitby on 6-8 October. Visiting them on the Saturday evening, RR2 was made very welcome and met visitors from as far away as the USA.

Council has given permission for an ORM to be held in the region, the first for some years, on 29 July 1979. More details later.

REGION 3—RR H. S. Pinchin, G3VPE, 61 Cole Bank Road, Hall Green, Birmingham B28 8EZ.

Birmingham (Midland ARS)—9 January, 6 February, 6 March (Construction and club station), 7pm. Brasshouse Centre, off Broad Street, Birmingham. 23 January, 27 February, 8pm. Room 110/118, University of Aston, Gosta Green, Birmingham. Sec G8BHE.
Birmingham (Slade RS)—Alternate Fridays commencing 19 January, 8pm. The Committee Room, Church House, Erdington, Birmingham. Sec G4FGF.
Birmingham (South Birmingham RS)—Thursdays (HF night on the air), Fridays (Construction and morse classes), 7.30pm. 10 January (Surplus sale), 7 February ("RTTY" by David Smith, G8JIM), 7 March, 8pm. Hampstead House, Fairfax Road, West Heath, Birmingham B31 3QY. Sec G4GZI.
Birmingham (University of Birmingham ARS)—Tuesdays during term, RAE and morse class fortnightly, 7pm. Students' Union (above stage). Club stations G3IUB and G8IUB. Sec G8HTH.
Bromsgrove (B&DARC)—9 February, 9 March (AGM), 8pm. Avoncroft Art Centre, Bromsgrove. Sec G4GBE.
Burton-on-Trent (BonT&DARS)—Wednesdays, 8pm. Stapenhill Institute, Main Street, Stapenhill, Burton-on-Trent. Sec G3ACR.
Cannock Chase (CCARS)—1 February ("RSGB" by Henry Pinchin, G3VPE), 1 March, 8pm. "Lynwood", Old Penkridge Road, Cannock. Other Thursdays, 8pm. "Acorn" public house (rear room), Town Centre, Cannock. Annual dinner to be arranged in February—see sec. Sec G8FWZ. Visitors welcome.
Coventry (CARS)—Fridays, 8pm. Baden Powell House, 121 St Nicholas Street, Radford, Coventry. Sec Dave Parker, G8OMB, 41 Brookdale Road, Nuneaton CV10 0BL. Visitors welcome.
Coventry Technical College (CTCARS)—Mondays and Thursdays, 7pm. Winfray Annexe of the college. Sec G8ISJ.
Coventry (University of Warwick ARS)—Wednesdays during term, 7pm. Cryfield Farm, University of Warwick. Talk-in on S20, or contact G4BXI or G4DCW, Hurst Flat 40, Cryfield Village, University of Warwick.
Dudley (DARC)—Second and fourth Tuesdays in each month, 7.45pm. Central Library, Dudley. Sec Norman Rock, 28 Conway Close, High Acres, Kingswinford, Brierley 5ill DY6 8PT.
Hereford (H=RS)—First and third Fridays in each month, 8pm. Civil Defence HQ, Gaol Street, Hereford. Sec G4CNY.
Lichfield (Chad RC)—Alternate Wednesdays, commencing 17 January, 8pm. The Naval Club, Burton Old Road, Lichfield. Sec G4ESK.
Lichfield (LARS)—First Monday and third Tuesday in each month, 8pm. "Swan" (bar), Lichfield. Sec Ted Bowen, RS33003, tel Ibstock (0530) 60396.
Mid-Warwickshire (MWARS)—First and third Mondays in each month, 8pm. 61 Emscote Road, Warwick. Sec G8CXL.
Redditch (RRC)—Second and fourth Thursdays in each month, 8pm. WRVS Centre, Salop Road, Redditch. Sec G3EVT.
Rugby (RATS)—Wednesdays, 7.30pm. Cricket pavilion entrance to B Building, Rugby Radio Station, A5 trunk road, Hillmorton, Rugby. Sec G4ECO.
Shrewsbury (Salop ARS)—Thursdays, 7.30pm. "Albert Hotel", Smithfield Road, Shrewsbury. Sec G3UDA. New members welcome.
Solihull (SARS)—16 January ("Early history of amateur radio in the Midlands" by Fred Ward, G2CVV), 20 February (Surplus sale), 7.30pm. The Manor House, High Street, Solihull. Morse classes available. Sec G4BBT. New members and visitors welcome.
Stoke-on-Trent (North Staffs ARS)—First and third Mondays in each month (Lectures, etc), other Mondays (Natternights, Raynet and club station, G4BEM), 7.30pm. Harold Clowes Community Centre, off Dawlish Road, Bentilee, Stoke-on-Trent. Sec S. Capper, G8ORU, 24 Tregew Place, Silverdale, Newcastle, Staffs ST5 6PG. New members welcome.
Stoke-on-Trent (SonTARS)—Thursdays, 7.30pm. 2a Racecourse Road, Oakhill, Stoke-on-Trent. Sec G4CWN.
Stourbridge (StARS)—First Tuesday in each month (Informal), 9.30pm. "Bird in Hand" public house, Hagley Road, Oldswinford, Stourbridge. 15 January ("USA and Canada expedition" by Gordon Meddings, G4DGM, and Mike Smith, G4BTE), 5 February (Constructional evening), 19 February (Annual constructors' contest), 7.45pm. Library, Longlands School, Brook Street, Stourbridge. Sec G4IP.
Stratford-upon-Avon (SuponA&DARC)—Every third Friday, commencing 19 January, 7.30pm. The Clubroom, Swimming Pool, Bridgefoot, Stratford. Sec G4EXR, tel Stratford 5638, weekends only. New members welcome.
Sutton Coldfield (SCRS)—Second and fourth Mondays in each month, 7.30pm. Central Youth HQ, Clifton Road, Sutton Coldfield. Sec G8KRW.
Tamworth (TARS)—Second and fourth Mondays in each month. Indoor Sports Centre, Corporation Street, Tamworth. Sec G4EUF. New members welcome.
Telford (T&DARS)—Wednesdays, 7.30pm. Phoenix Centre, Webb Crescent, Dawley. Sec G8MXS, tel Much Wenlock 357. Visitors welcome.
Walsall (WARC)—10 January ("Slow scan tv" by David Probert, G8PLP), 24 January (Night on the air), 7, 21 February, 7 March, 8pm. Forest Community Centre, Forest School, Hawbush Road, Leamore, Walsall. Sec G8KML.
Willenhall (W&DARS)—Alternate Wednesdays commencing 17 January. Little London Community Centre, Bloxwich Road South, Willenhall. Sec M. P. Batchelor, 19 Newlands Close, Willenhall, West Midlands WV13 2DQ. New members welcome.
Wolverhampton (WARS)—8 January ("Amateur colour tv" by Arthur Bevington, G5KS), 15 January (Natternight), 22 January (Club project, capacitance meter, continued), 5 February (Colour slides by Ernest Gardner, G6GR), 12 February (Natternight), 19 February (Demonstration of useful aids for servicing equipment), 26 February (Natternight), 5 March (Surplus sale), 12 March (Natternight), 8pm. Neachells Cottage, Danescourt Road, Stockwell End, Tettenhall, Wolverhampton WV9 9PH. Sec G8EDG.
Worcester (W&DARC)—8 January, ("Logic circuits" by Eric Hibbett, G8LAY), 20 January (Annual dinner—see sec), 5 February ("Using transistors" by David Yates, G3PGQ), 5 March, 8pm. "Old Pheasant", New Street, Worcester. Sec G4EKG, tel Evesham (0386) 41105. New members and visitors welcome.

REGION 4—RR *(Post vacant)*

Derby (D&DARS)— 10 January ("The year in retrospect", slides), 17 January (RSGB tape/slide lecture), 24 January (Film show), 31 January (Social natternight), 7 February (Bring and buy sale), 14 February (Night on the air), 21 February (Cheese and wine party), 28 February (Film show), 3 March (Annual dinner and dance), 7.30pm. Morse classes Tuesdays and Fridays, 7pm, when arranged. 119 Green Lane, Derby. Sec Jenny Shardlow, G4EYM.

Derby (NHARG)—Fridays, 7.30pm. Nunsfield House, Boulton Lane, Alvaston, Derby. Sec Ian Cage, G4CTZ.

Glenfield (Leicestershire Raynet Group)— Monthly. County Hall, Glenfield. Further details from M. G. Barker, G8CAC.

Grimsby (GARC)—First and third Thursdays in each month, 8pm. Alexandra Club, Cleethorpes.

Leicester (LRS)—Mondays, 7.30pm. Club House, Gilross Estate Cottage, off Groby Road, Leicester.

Leicester (LPARS)—Mondays, Wednesdays, Thursdays and Fridays, lunchtime during term. Leicester Polytechnic. Sec R. Newstead, G3CWI, 24 Richmond Road, Leicester.

Lincoln (LSWC)—Second and fourth Wednesdays in each month. Lincoln Corporation Social Club, Waterside South, Lincoln. Sec R. Shaw, G3VRD.

Mansfield (MARS)—First Friday in each month, 7.30pm. "New Inn", Westgate, Mansfield.

Matlock (Derwent Valley ARS)—First Monday in each month, 7.30pm. "The Royal Oak", Tansley, Nr Matlock. Guest speakers each month.

Melton Mowbray (MMARS)—19 January (Construction competition), 16 February ("RTTY" by P. Hodson, G8RBY), 7.30pm. St John Ambulance Hall, Asfordby Hill, Melton Mowbray. Sec Richard Winters, G3NVK. Top band net Sundays 11.15am, 1,950kHz.

Nottingham (ARCON)—Thursdays, 7.30pm. Sherwood Community Centre, Mansfield Road, Nottingham. Sec M. Shaw, G4EKW.

Nottingham (Trent Polytechnic RS)—Wednesdays. Newton Building, Room 105. Further information from the chairman Paul Robinson, via Students' Union, Trent Polytechnic.

Nottingham University (NURC)—Tuesdays. Contact R. Dixon, G4BVY, c/o Students' Union, Nottingham University.

Scunthorpe (SARC)—Tuesdays, 7.30pm. The Hobbies Centre, Franklyn Crescent, Scunthorpe. Sec J. Stace, G4FUH.

REGION 5—RR R. E. G. Kendall, G8BNE, 19 Willow Green, Needingworth, St Ives, Cambridge.

Following information is latest received.

Bedford (B&DARC)—Wednesdays, 8pm. Ravensden. Sec G4FFC.

Cambridge (C&DARC)—Fridays, 7.30pm. Air Training HQ, Newmarket Road. Sec G4BAO.

Cambridge (CUWS)—Tuesdays fortnightly during full term. Details from sec G8KTJ, Queens' College.

Corby (CARG)—Fridays, 7.30pm. Hightrees Scout Centre, The Nook, Corby. Sec G8MLA.

Dunstable (DDRC)—Fridays, 8pm. Chews House, 77 High Street South. Sec G3HJF.

March (M&DRAS)—Tuesdays, 7.30pm. 2 Grays Lane. Sec G8GNE.

Northampton (NRC)—Thursdays, 8pm. Kingsthorpe Community Centre, Thornton Park, Kingsthorpe. Details from G8LHR, 6 Stonelea Road, Sywell, Northampton.

Peterborough (GPARC)—Fourth Thursday in each month, 7.30pm. Southfields Junior School, Stanground, Peterborough. Sec G4FDF.

Peterborough (PR&ES)—Third Friday in each month, 7.30pm. Scout Hut, Occupation Road, Peterborough. Sec G3EEL.

Shefford (S&DARS)—Thursdays, 8pm. Church Hall. Sec G8HHO.

REGION 6—RR F. S. G. Rose, G2DRT, 84 Cock Lane, High Wycombe, Bucks HP13 7EA.

Banbury (BARS)—First Friday in each month, 7.30pm. The General Foods Sports and Social Club, Spriceball Park, Banbury. Sec S. L. Terry, G8OCT, tel Banbury 4769.

Bracknell (BARC)—Mondays, 8pm. Coopers Hill Centre (adjacent to station). For meeting details please contact sec D. Williams, G4CVN, tel Windsor 56096.

Burnham Beeches (BBRC)—First Monday in each month, 8pm. Hedgerley Scout HQ. Sec Peter Flynn, tel Farnham Common 2609.

Harwell (Atomic Energy Research Establishment RC)—Fridays, lunchtime. The Shack, AERE Harwell, Didcot, Berks. For further meeting details contact sec G8DVK.

High Wycombe (Chiltern ARC)—31 January (AGM), 28 February (Junk sale), 28 March (Construction contest), 8pm. John Hawkins Ltd, Victoria Street, off Oxford Road (A40), High Wycombe. For further details contact sec G4FRL,tel Kingston Blount 52006.

Maidenhead (M&DARS)—For meeting details please contact G3ZLO, tel Bourne End 21684.

Milton Keynes (MKARS)—For meeting details please contact G3ZPA, tel Shenley Church End 310.

Newbury (N&DARS)—Second Tuesday in each month. Newbury Technical College. Details from sec G8LTD, tel Newbury 46078.

Oxford (O&DARS)—Second and fourth Wednesdays in each calendar month, 7.30pm. Civil Service Social Club, Marston Road, Oxford. Sec G4BHR.

Oxford University (OURS)—Please contact sec M. Evans, G8LTE, Worcester College, Oxford, for meeting details.

Reading (RARC)—Details from sec Chris Young, G4CCC.

A happy and QRM-free New Year, to all.

REGION 7—RR D. A. G. Pedder, G3LFX, 97 Elgar Avenue, Tolworth, Surbiton, Surrey KT5 9JS.

Following information is latest received.

Addiscombe (AARC)—Tuesdays, 9.15pm. "Spreadeagle", Portland Road, South Norwood. Sec G3SJX.

Ashford (Echelford ARS)—Second Monday and last Thursday in each month, 7.30 for 8pm. The Hall, St Martin's Court, Kingston Crescent, Ashford, Middx. Sec G3TDR, tel Staines 56513.

Bexley Heath (North Kent RS)—8pm. St Mary's Institute, 2 North Cray Road, Bexley. Sec G3VFD.

Coulsdon (CATS)—Sec G8KDQ.

Cray Valley (CVRS)—18 January (Natternight), 1 February (Ladies night and slide show), 15 February (Natternight), 1 March (Surplus sale), 8pm. Christchurch Centre, High Street, Eltham, London SE9. Sec G4FUG.

Croydon (Surrey Radio Contact Club)—7.30pm. TS Terra Nova, 34 The Waldrons, Croydon. Sec G4FFY.

Crystal Palace (CP&DRS)—8pm. Emmanuel Church Hall, Barry Road, London SE22. Sec G3FZL, tel 01-699 6940.

Guildford (G&DRS)—Model Engineers HQ, Stoke Park, Guildford. Sec G4BHQ, tel Guildford 76375.

Guildford (University of Surrey E&ARS)—Informal meetings, lunchtimes during term. Lower Bar, Union House, G8AHK is active on vhf, and G3IGO on hf. Skeds and QSOs always welcome. Sec G8MIO, tel Guildford 71281.

Kingston (K&DARS)—8.15pm. Berrylands Scouts and Guides HQ, Stirling Walk, Raeburn Avenue, Surbiton. Sec G4APG, tel 01-399 8113.

New Cross (Clifton ARS)—Fridays, 8pm. 225 New Cross Road, London SE14. Details from R. A. Hinton, 42 Sutcliffe Road, Welling.

Redhill (Reigate ATS)—Third Tuesday in each month, 8pm. Constitutional Centre, Warwick Road, Redhill. First Tuesday in each month (Natternight). "Marquis of Granby", Hooley Lane, Redhill. Sec G3XSZ.

Sutton & Cheam (S&CARS)—Sutton College of Liberal Arts. Sec G2DMR.

Thames Ditton (Thames Valley ARTS)—Giggs Hill Green Library, Giggs Hill Road, Thames Ditton. Sec G3ZNW.

Wimbledon (W&DRS)—Second and last Fridays in each month, 8pm. St John Ambulance HQ, 124 Kingston Road, Wimbledon SW19. Sec G3XTC, tel 01-644 3698.

REGION 8—RR D. N. T. Williams, G3MDO, "Seletar", New House Lane, Thanington, Canterbury, Kent.

Brighton (B&DRS)—8pm prompt. Catholic Church Hall, Bristol Road, Brighton. Details from N. Hewitt, G8JFT.

Burgess Hill (Mid-Sussex ARS)—7.45pm. Marle Place, Burgess Hill. Details of future events from G3PEQ.

Canterbury (East Kent RS)—First Thursday in each month, 8pm. Details of future events from sec G8GHH.

Chichester (C&DARC)—First Tuesday and third Thursday in each month. Lancastrian Boys School. Details from G4ETU, tel 0243 88069.

Crawley (CARC)—10 January (Informal with G3YVR), 24 January (AGM), 14 February (To be announced). Details of future events from G3MGL, tel 0293 20986.

Dartford (DHDFC)—Second Friday in each month. Scout House, Broomfield, Dartford. Details from Jeanette Maggs, 25 Leybridge Court, Eltham Road, Lee, London SE12.

Dover (South East Kent YMCA ARC)—Wednesdays. Details from G8KEN.
Eastbourne (Southdown ARS)—First Monday in each month; 8 January (Tape recorded lecture "Was Marconi right?" by G3IOR). Details from G8CVV, or pro G3LFZ.
Hastings (HE&RC)—Fridays. 479 Bexhill Road, St Leonards-on-Sea, Sussex. Third Wednesday in each month, 7.30pm. ITT Social Club, Crown House, 57 Marina, St Leonards-on-Sea, Sussex. Details of events from G4FET.
Horsham (HARC)—First Thursday in each month. Parish Rooms, The Causeway, Horsham. Details of future events from A. C. Wadsworth, G3NPF.
Kent Repeater Group—Details of membership from G3XDV, 5 Lambs Walk, Whitstable, Kent.
Maidstone (MYMCAARS)—Fridays, 7.30pm. First and third Fridays in each month devoted to the beginner. Y Sports Centre, Melrose Close, Maidstone. Details of lectures and other events from sec J. A. Hastie, tel Medway 251387.
Medway (MARTS)—Details of events and venue from G4EVY.
Sussex Repeater Group—Information from G8HVV.
Tunbridge Wells (West Kent ARS)—Alternate Fridays. Adult Education Centre, Monson Road, Tunbridge Wells. Informal meetings on Tuesdays following the Fridays. Drill Hall, Victoria Road. Details from Brian Castle, G4DYF.
Worthing (W&DARC)—Tuesdays, 8pm. Adult Education Centre, Union Place, Worthing. Details from G8MSQ.

REGION 9—RR H. W. Leonard, G4UZ, 4 Start Bay Park, Strete, Dartmouyh TQ6 0RY.

Camborne (Cornish RAC)—First Thursday in each month. 1 February ("Ham construction" by G3OCB), 1 March (RSGB contests manager), 7.30pm. SWEB Clubroom, Pool, Camborne. Full details from G3VGO, tel Devoran 864255. Cornish net each weekday 10am on 3·715MHz, and on Sundays 11am on 3·682MHz. Visitors always welcome at club meetings.
Exeter (EARS)—Second Monday in each month, 7.30pm. Community Centre, St Davids Hill, Exeter. Details from G3HMY.
Newquay (N&DARS)—Alternate Wednesdays, 7.45pm. Treviglas School, Newquay. Details from G8GOR, tel Newquay 4168.
North Devon (NDRC)—10 January (Rag chew), 14 February (AGM). Barnstaple. 24 January (Demonstration of home constructed items by members). Bideford. Full details from G4CG.
Plymouth (PRC)—Second Monday in each month, 7.30pm. Whitleigh Methodist Church, Whitleigh, Plymouth. Full details from Len England, 62 Fullerton Road, Milehouse, Plymouth, tel 58841.
Saltash (S&DARC)—First and third Fridays in each month, 7.30pm. Burraton Toc-H Hall, Saltash. Full details from G4GTG, tel Plymouth 771135.
Torbay (TARS)—Fridays, with special meeting on last Saturday in each month. 27 January (Home construction contest), 24 February (G3LHJ's colour slides), 7.30pm. Bath Lane (rear of 94 Belgrave Road), Torquay. Full details from G3UIQ, tel Newton Abbot 3025. Torbay net weekdays 3·756-3·764MHz, Mondays to Fridays 10.30am, Saturdays 9.30am. 144MHz net Mondays on 522 at 8pm. Visitors most welcome.

RR9 would like to wish all in Region 9 a very happy New Year!

REGION 10—RR R. G. Barrett, GW8HEZ, 23 Carshalton Road, Beddau, Pontypridd, Glam.

Following information is latest received.

Barry (BCoERS)—Thursdays, 8pm. Barry Rugby Football Club, Reservoir Road, Barry. Details from sec S. N. Lloyd Hughes, GW8NVN, 1 Min y Mor, Barry.
Blackwood (BARS)—Fridays, 7pm. Oakdale Community Centre, Oakdale, Blackwood, Gwent. Details from GW4BLE, 10 Llanthewy Road, Newport, Gwent.
Bridgend (Glamorgan VHF/UHF Group)—Second Wednesday in each month, 7.30pm. NCB Social Club, Tondu, Bridgend. Details from sec GW4BDV.
Cardiff (CRSGB)—Second Monday in each month, 7.30pm. Pantmawr Inn, Pantmawr Estate, Cardiff. Details from GW3VOW.
Merthyr (Hoover ARS)—Mondays, 7.30pm. Hoover Social Club, Pentrebach, Merthyr. Details from GW3RNC.
Newport (NARC)—Mondays, 7pm. Adult Education Settlement, Brynglas Road, Newport. RAE classes start 11 September at above address. Details from GW8MER.
Pembroke (PRSGBG)—Last Friday in each month, 7.30pm. Defensible Barracks, Pembroke Dock, Dyfed. Details from sec GW3XJQ.
Pontypool (PRSGBG)—Tuesdays, 7pm. Education Settlement, Park Hill Road, Pontypool. Details from GW3JBH.
Port Talbot (British Steel Corporation ARS)—Thursdays, 7.30pm. BSC Sports and Social Club, Margam. Details from GW4ESV.
Rhondda (RARS)—Every other Thursday, 7.20pm. Transport Employees' Club, Porth. Details from GW3PHH.
Sully (S&DSWC)—Mondays fortnightly, 7pm. Sully Bowls and Social Club, 58 South Road, Sully, Cardiff. Details from David Hughes, 13 Nailsea Court, Sully.
Swansea (SARC)—Tuesdays fortnightly, 8pm. West Cross Hotel, West Cross, Swansea. Details from sec GW8CMA.
Swansea (SARS)—Tuesdays fortnightly, 8pm. Sketty Park Sports and Social Club, Anewin Way, Sketty Park, Swansea. Further details from GW4HAT. Intending visitors must contact sec before arrival.
Swansea (University College of Swansea RS)—Mondays, 7.30pm. Room 801, Applied Science Building. Details from sec J. Morris, 1 Hadland Terrace, West Cross, Swansea, tel 68675.

REGION 11—RR P. H. Hudson, "Silhill", Dinas Dinelle, Caernarvon.

Bangor (UNCWARS)—Thursdays, 7.30pm. Small lecture theatre, School of Engineering Science, Dean Street, Bangor. Visitors welcome.
Conway Valley (CVARC)—Second Thursday in each month, 7.45pm; 11 January (Annual hot-pot supper), 8 February (SWL night), 8 March (Amateur radio quiz). The Quaries, Llandulas, Colwyn Bay.
Rhyl (R&DARC)—Fourth Thursday in each month. Ambulance Station, Coast Road, Rhyl. Other Thursdays (On the air on 144·00MHz), 8pm. Newcomers and visitors welcome.

RR11 wishes all members in the region a very happy and prosperous New Year!

REGION 12—RR F. Hall, GM8BZX, 45 Priory Cottages, Lunanhead, Forfar, Angus DD8 3NR.

Aberdeen (ARS)—Fridays, 7.30pm. 80 Guild Street, Aberdeen (next to "Station Hotel" immediately adjacent to railway station). Programme details from sec GM4BKV.
Dundee (Kingsway Technical College ARC)—Tuesdays, 6.30pm; (6.30-7pm, morse practice; 7-8pm, arranged lectures; 8-8.15pm, coffee; 8.15-9pm, any other business and general discussion). Dundee Technical College. Sec GM4FLP.
Elgin (Moray Firth RS)—Wednesdays, 7.30pm; 7 February ("Colour television developments" by GM8LHE), 7 March ("Using Oscar" by GM8AZS). Elgin Technical College. Sec GM8OVN. Non-members are welcome on payment of 50p per meeting donation to the treasurer GM8LHE, with a limit of two meetings before joining the club.
Grampian Repeater Group—The mode of operation of GB3GN has been altered for the winter months to give longer talk times—please do not abuse the extension. Sec GM8HGD.
Invergordon (Easter Ross RC)—Every second Tuesday. 100 High Street, Invergordon. Details from sec GM4DKL.
Inverness (Technical College ARC)—Every second Wednesday, 6.45pm. Room C30. Sec W. Lee, 36 Old Mill Road, Inverness.
Kirkwall—A group of members in Kirkwall, Orkney, have decided to meet on a number of occasions each year, to discuss various aspects of amateur radio. The next meeting is due in February. Information from GM3IBU, tel Kirkwall 3232.
Perth (P&DARG)—Tuesdays, 7pm. Perth Technical College. Sec GM4DQJ. The Perth repeater GB3PR, channel R3, is now licensed, and operation was expected to commence in late December or early January. Coverage reports would be welcome.

RR12 extends best wishes for the festive season to all members in Region 12, and "Lang may your lum reek".

REGION 13—RR A. B. Givens, GM3YOR, 41 Veronica Crescent, Kirkcaldy, Fife KY1 2LH.

Berwick upon Tweed (B&DARS)—This society recently changed its name from Borders ARS to Berwick & District ARS. First and third Fridays in each month, 7.30pm. Roxburgh Hotel, Berwick upon Tweed. Details from G3YOG. (As this club meets within the boundaries of Region 18, future items for club news will be shown in Region 18 news.)

Dunfermline (DARS)—Second Wednesday in each month, 7.30pm. CCTV Studio, Pittencrieff School, Maitland Street, Dunfermline. Details from sec GM3MGX, tel Limekilns 313.
Edinburgh (E&DARC)—Tuesdays, 7.30pm. City Observatory, Calton Hill, Edinburgh. Details from sec GM8MJV, tel 031-663 2033.
Edinburgh (Ferranti Recreation Club AR Section)—Membership is restricted to company personnel. Details from GM8JKG, tel 031-441 5684. Visits by other clubs by prior arrangement.
Edinburgh (GB3ED Repeater Group)—GB3ED is the RSGB community repeater for the City of Edinburgh and surrounding districts. It is intended to promote and encourage the use of fm on the 432MHz band, as well as to act as a community link and calling channel. Details from GM3GBX, tel 031-447 2611.
Edinburgh (Heriot Watt University ARC)—Wednesdays, 2pm. Aerial Laboratory, Top Floor, Mountbatten Building, 31-35 Grassmarket, Edinburgh.
Edinburgh (Leith Nautical College ARC)—First and third Thursdays in each month, 7.30pm. Leith Nautical College, 24 Milton Road East, Edinburgh 15.
Edinburgh (Lothians RS)—Second and fourth Thursdays in each month, 7.30pm. 11 January (Talk by GM3BCD). Riddles Court, High Street, Edinburgh. 25 January ("Black box night" by GM8DOX), 22 February ("Hi-fi" by GM3OWU), 8 March (Talk by GM8ARV). Cannonball House, High Street, Edinburgh. 8 February (GPO Interference Service). Venue to be announced. Details from GM4DIJ, tel 031-337 7311.
Glenrothes (G&DARC)—Third Sunday and every Wednesday in each month, 7.30pm. 21 January (Film and lecture "Fault detection in undersea pipelines" by GM3OPW), 18 February (Lecture "History of the radio receiver" by Roger Shivas), 18 March (Lecture "VMOS transistors" by GM3YBQ). Old Nursery School Building, Provosts Land, Douglas Road, Leslie, Fife. Details from GM4EJI.
St Andrews (University of St Andrews R&ES)—Details from Physics Department, North Haugh, St Andrews.

REGION 14—RR I. L. McKechnie, GM8DOX, 42 Newton Crescent, Dunblane, Perthshire.

Following information is latest received.
Ayr (AARG)—Every second Sunday evening. Community Centre, 24 Wellington Street, Ayr. Details and calendar from GM3THI.
Helensburgh (HARC)—First and third Wednesdays in each month, 7.30pm. Clyde Street School, Helensburgh. Further details from GM4FEO.
Glasgow (West of Scotland ARC)—Fridays, 7.30pm. Robertson Street, Glasgow. Meetings opened by GM3EDZ. Details of events from sec GM8NBG on receipt of a 9p stamp.
Greenock (G&DARC)—Tuesdays and Fridays, 7.30pm. 22 Inverkip Street, Greenock. Details from sec GM3LYI.
Motherwell (Mid-Lanark ARS)—Wrangholm Hall Community Centre, Jerviston Street, Motherwell. Details from sec GM4FKD.
Stevenson (Ardeer RCARS)—Thursdays, 7.30pm. Ardeer Recreation Club, Stevenson, Ayrshire. Details from GM3USL.
Stirlingshire (SARG)—New group! Starting up initially to put a 70cm repeater on the air. Anyone welcome to join including members of the diminished Falkirk & District RC, to enlarge club activities. Details from sec GM3POK, or GM4CXF.

Offer of the use of premises, comprising lecture room, committee room and shared use of a workshop, on any day except Thursday and Saturday. Any interested parties please contact ASTRA Ltd, 49 Almada Street, Hamilton. (Opposite Bell College and court building.)

All secretaries please note that RR14 has an Ansaphone available for their use. Tel Dunblane (0786) 822212.

REGION 15—RR I. J. Kyle, GI8AYZ, 2 Galgorm Gardens, Ballymena, Co Antrim BT42 1BA.

Following information is latest received.
Ballymena (BRC)—Tuesdays, 8pm (RAE and morse classes). 86 Old Cullybackey Road, Ballymena. Fridays (club night); Sundays, 3pm. (special projects). Sec GI4HCN.
Bangor (QUoBRC)—First Friday in each month, 8pm. Sec GI4AAM. New members and visitors especially welcome.
Bagnor (B&DARS)—5 January ("Ships automation" and "144MHz antennas for beginners"), 8pm. Redcliffe Hotel, Bagnor. Sec GI4AAM.
Belfast (BRSGBG)—Third Wednesday in each month. 90 Belmont Road. Full winter programme details from GI3USS.
Belfast (CoBYMCARC)—Tuesdays, 7pm; Saturdays, 2.30pm. Fourth Floor, YMCA, 12 Wellington Place, Belfast. Sec GI8MQR. New members very welcome.
Belfast (QUoBRC)—Tuesdays during term, 8pm. Queen's University, 37 Fitzwilliam Street, Belfast.
Carrickfergus (CYMCARC)—Second Tuesday in each month, 8pm. Carrickfergus YMCA, Lancastrian Street, Carrickfergus. Sec GI4FUE. New members welcome.
Dromore (Lagan Valley ARS)—First Monday and third Tuesday in each month, 8pm. Scout Hall, Mossvale Road, Dromore. Further details from GI4GDV.
Mid-Ulster (MURSGBG)—First Sunday in each month. QTH of GI8JPQ.
North Ulster (NURSGBG)—Plans are in hand to revive this group. All those interested should contact GI3ZX or GI8AYZ.

REGION 16—RR M.S. Appleby, G3ZNU, 45 Cedar Avenue, Kesgrave, Ipswich IP5 7HA.

Bury St Edmunds (BStERS)—Third Tuesday in each month, 7.30pm. Red Cross Headquarters, Mustow House, Eastgate Street, Bury St Edmunds. Details from John Munro, 29 Angel Hill, Bury St Edmunds.
Chelmsford (CARS)—First Tuesday in each month, 7.30pm. Marconi College, Arbour Lane, Chelmsford. Details from R. Brocks, 30 Rowan Drive, Heybridge, Maldon.
Colchester (CRA)—Thursdays, fortnightly; 4, 18 January, 1, 15 February, 7.30pm. Main Block, Colchester Institute, Sheepen Road, Colchester. Details from Frank Howe, G3FIJ.
Felixstowe (FARC)—Tuesdays (Informal). Felixstowe Golf Club. Details from John Hobin, G3XIX.
Great Yarmouth (GYRS)—Last Thursday in each month, 7.30pm. 67 Southdown Road, Great Yarmouth. Details from Tony Besford, G3NHU.
Harlow (H&DRS)—Tuesdays, 8pm. Mark Hall Barn, First Avenue, Harlow. Details from G3WUX.
Haverhill (H&DRS)—Fridays, 7.30pm. Steeple Bumpstead Road, Haverhill. Further details from Chris Kitchener, G8IMI, tel Haverhill 2852, evenings.
Ipswich (IRC)—Second and last Wednesdays in each month, 7.30pm. Morse classes every Wednesday, 7.30pm. Ranelagh Road School, Ipswich. Details from sec Pat Gillen, G4GVW, 37 Lancing Avenue, Ipswich.
Loughton (L&DARS)—Fridays, fortnightly; 12 January ("HF Antennas" part 2 by Martin Railton, G8AB), 26 January (Informal), 9 February (Topic to be arranged), 23 February (Informal). Loughton Hall, Rectory Lane, Loughton. Further details from sec John Ray, G8DZH, tel 01-508 3434, evenings.
Lowestoft (L&DARC)—Fridays, 7.30pm. YMCA, Park Road, Lowestoft. Details from Brian Clay, G8GGJ.
Martlesham (MRS)—First Wednesday in each month; 7 February ("Microprocessors" by Bob Barrett, G3YCY et al), 7 March (Topic to be arranged), 7.30pm. Details from Simon Garrett, G4EVN, PO Research Centre, Martlesham Heath, Ipswich.
Norwich (Norfolk ARC)—Wednesdays, 7.45pm. Crome Community Centre, Telegraph Lane East, Norwich. Details from Peter Forster, G3VWQ.
Southend (S&DRS)—Fortnightly, 8pm. Church Hall, Sir Walter Rayleigh Drive, Essex. Contact sec G3YOA.
Stowmarket (S&DARS)—First Monday in each month, 7.30pm. Red Cross Hall, Stowmarket Railway Station. Details from Ray Preston, G8MYE.
Vange (VARS)—Thursdays, 8pm. Main Hall, Barstable Tenants' Community Association, Long Riding, Basildon. Details from Mrs D. Thompson, 10 Feering Road, Basildon SS14 1TE.

REGION 17—RR L. Hawkyard, G5HD, 100 Shirley High Street, Southampton, Hants.

Basingstoke (BARC)—Third Wednesday in each month, 7.30pm. Chineham House, Popley Way, Basingstoke.
Basingstoke (UK FM Group Southern)—First Wednesday in each month. Chineham House, Popley, Basingstoke. Details from sec Mrs J. Payne, tel Aldershot 26108.

Bournemouth (Wessex ARG) First and third Fridays in each month, 7.30pm. "The Dolphin Hotel" (club room), Holdenhurst Road, Bournemouth. Sec G. Cole, G4EMN, tel Bournemouth 20027.
Chippenham (C&DARC)—Tuesdays, 7.30pm. Sheldon School, Hardenhuish Lane, Chippenham. Sec G8BXG.
Fareham (F&DARC)—Wednesdays, 7.30pm. Porchester Community Centre, Room 9. Sec David James, G8GRV, tel Titchfield (032 94) 45977.
Farnborough (F&DRS)—Second and fourth Wednesdays in each month, 7.30pm. Railway Enthusiasts' Club, Access Road, off Hawley Lane, Farnborough. Sec G3TMQ, 103 Hawley Lane, Farnborough.
Guernsey (GARS)—Tuesdays and Fridays, 8pm. Details from sec GU8ITE, PO Box 100, St Peter Port, Guernsey.
Horndean (H&DARC)—Second Thursday in each month, 7.30pm. 4 January (Talk with slides "South Africa" by G4AMD), February ("SHF techniques" by G8HND). Merchiston Hall, Horndean. Net Sundays, 6.30pm, 21·40MHz. Sec G4CHQ.
Jersey (JARS)—Sundays, 10.30am, and Fridays, 8pm. Le Hocq Tower, St Clement, Jersey. Sec R. H. Ford, "Sanaldi House", Plat Douet Road, Bagot, St Saviour, tel 0534 31131.
Poole (PARS)—Last Friday in each month, 7.30pm. Poole Technical College. Sec J. Worth, G3ZKA.
Portsdown Hill Repeater Group—Activity night on GB3PH (RB2), Mondays, 1930gmt. All stations welcome to the net. Details from G8GNB.
Portsmouth (P&DRC)—Wednesdays, 7.30pm. Portsmouth Community Centre, Malins Road, Buckland, Portsmouth. Sec G3CNO.
Salisbury (SR&ES)—Tuesdays, 7.30pm. Salisbury Activity Centre, Wilton Road. Sec G3FIX.
Southampton University (SUARC)—Tuesday evenings. Also informal meetings every lunchtime in the clubroom, Old Union Building. Sec A. C. Talbot, The Radio Club, JCR Post, The University, Southampton.
Southampton (SRSGBG)—First Monday in each month, Lanchester Building, Southampton University; Wednesdays, the clubroom, Kent Road; both at 7.30pm. AR G4COM.
South Dorset (SDRS)—7.30pm. Lecture Hall, South Dorset Technical College, Newstead Road, Weymouth. Details from sec G3ZGP.
Swindon (SD&ARC)—Alternate Wednesdays, 7.45pm. Clubroom above "Coldharbour" public house, Blunsdon, just north of Swindon. Sec G8KWC.
Winchester (WARC)—First Friday and third Thursday in each month, 7.30pm. "Crown Hotel". Sec Chris Jackson, BRS39944, 69 Buriton Road, Harestock, Winchester.

REGION 18—RR W. Ricalton, G4ADD, 4 South Road, Longhorsley, Morpeth, Northumberland.
Following information is latest received.
Durham (DUARS)—Alternate Wednesdays during term, fortnightly from 1 November 1978. Physics Dept, Durham University. Details from G3ZJY or G4FOP, or A. Jarrett, G4FRZ, Van Mildert College, Durham. External members especially welcome.
Easington (EAR&EC)—Tuesdays and Thursdays, 7.30pm. Easington Village Workmen's Club. RAE and morse tuition if required (the club has a good RAE pass record). ATV can be received on 625 lines. The club is now equipped with an hf transceiver as well as other gear. Sec G4COI.
Great Lumley (GLAR&EC)—Alternate Wednesdays, 7.30pm. Great Lumley Community Centre. Sec G8JLQ. Assistance with RAE and morse if required.
Hartlepool (HRC)—Mondays, 7.30pm. Methodist Church Hall, Grange Road. Sec G3NWU.
Middlesbrough (Post Office ARC)—All amateurs welcome, but first contact sec G8CDP.
Middlesbrough (Teesside Repeater Group)—Last Tuesday in each month, 7.30pm. 196 Marton Road, Middlesbrough, Cleveland. All amateurs and swls invited but first contact sec G8MBK.
Morpeth (Northumbria RC)—Thursdays (Informal). "Queens Head", Morpeth. Sec G8GVN.
Newcastle upon Tyne (Tyne & Wear Repeater Group)—7.30pm. Arts Common Room, Claremont Tower Block, Newcastle University. Sec G4DOB, tel Newcastle 744444.
South Shields (SS&DRS)—Fridays, 7.30pm. Trinity House. Old and new members welcome. Sec G8BQF, 67 Lauderdale Avenue.
Tyneside (TRS)—Mondays, 8pm, The Community Centre, Vine Street, Wallsend. Sec Alex Frazer, 35 Percy Street, Tynemouth.

REGION 19—RR R. J. C. Broadbent, G3AAJ, 94 Herongate Road, Wanstead Park, London E12 5EQ.
Barking (BR&ES)—Mondays (Constructional), Wednesdays (CCTV), Thursdays (Informal), 8pm. Morse classes Tuesdays, 7.30pm. 25 January (AGM), 8 February (Bring and buy). Hon sec G8PUY, 44 St Ann's, Barking, Essex, tel 01-594 6584. (Congratulations on new licence Nick-RR19). All welcome.
Cheshunt (C&DRC)—Wednesdays. Church Room, Church Lane, Wormley, Herts. Hon sec G3OJI.
Chingford (Silverthorn RC)—Fridays, 7.30pm. Friday Hill House, Simmonds Lane, Chingford E4. Sec G4AJA, tel 01-529-2282. All visitors welcome.
Chiswick (Acton, Brentford & Chiswick RC)—Chiswick Trades and Social Club, 66 High Road, Chiswick W4. Hon sec G3GEH, tel 01-992 3778.
Ealing (E&DARS)—Tuesdays, 8pm. Northfields Community Centre, Northfields Road, W13. Sec G8KPN, tel 01-997 5949. All welcome.
East London (ELRSGBG)—Third Sunday in each month, 3pm. 21 January (RTTY and vdus), 18 February (PCB design), 18 March (Metalwork demonstration). Wanstead House, The Green, London E11. (near Wanstead underground). Details and full programme (sase please) from hon sec J. Bundock, G4CJQ, tel 01-524 5416.
Edgware (E&DARS)—Second and fourth Thursdays in each month, 8pm. Watling Community Centre, 145 Orange Hill Road, Burnt Oak, Edgware. Programme includes regular morse code practice classes. Sec G3MNO, tel 01-907 1237.
Harrow Weald (RSH)—Thursdays, 8pm. Harrow Arts Centre, High Road, Harrow Weald. (Bar, car park—park neatly.) Hon sec G4AUF, tel 01-868 5002.
Havering (H&DARC)—Informals at Fairkytes Art Centre, Billet Lane.

Members of the RN ARS who received awards in 1978. L to r: G3LIK, G3HZL, G5IC, G3ZGC, G5IZ

Formals at British Legion, 54 Western Road, Romford, Essex. Full details from hon sec, G8MKN, tel Romford 47339.

Holloway (Grafton RS)—12 January (Open night—pre AGM), 19 January (Audit of books), 26 January (AGM), 2 February ("Receivers" by G3TDR), 9 February ("RF heating—2×4CX250s?" by G8EEI), 11 February (144MHz contest, 0900–1200, fm only, open, listener), 16 February ("PSUs" by G3MCD), 8pm. Holloway Institute, Archway Annexe, Highgate Hill, N19. Details from sec B. Bond, G3ZKE.

Ilford (IRSGBG)—All meetings are informal. 50 Mortlake Road, Ilford, Essex. Sec G3LRE, tel 01-500 7196.

Northolt (British Airways European Division ARS)—First Monday in each month. Trident Club, Western Avenue, Northolt, Middlesex. This club is open to non-BA employees by invitation. Contact G3TLG for details. Civil Aviation Sunday net 1100 - 1200gmt on 3·68MHz, listen for G3NAF or G3BEA.

Shelburne (SRC)—Wednesdays and Thursdays, 7pm. Shelburne Youth Centre, Hornsey Road, London N4.

Southgate (SRC)—Second Thursday in each month; January ("PSUs" by B. Oughton, G4AEZ), February ("Mostly hot air" by Miss Tomlinson), 7.45pm. The Scout Hut, Wilson Street, Winchmore Hill N21. Hon sec J. Fitch, G8EWG, tel 01-440 7353. All welcome.

South Kensington (Baden Powell House Scout ARS)—Third Tuesday in each month, 8pm. Baden Powell House, Queensgate, South Kensington.

Stevenage (S&DARS)—First and third Thursdays in each month; 18 January ("SSTV" by G4BWU), 1 February (Tape/slide on auroa), 15 February ("Raynet" by G8KHI), 8pm. Morse 7.30-8pm. RAE courses are being run by G3SJR and G8HTC. B. A. Dynamics Ltd, Plant B, Staff Canteen. Details from sec T. J. Tugwell, G8KMV, tel 0438 54689.

St Albans (Verulam ARC)—Fourth Thursday in each month; 25 January (The G3PAO memorial lecture "EME transmissions" by P. Blair, G3LTF), 22 February ("Interference, cause/cure" by D. Standley, of the GPO), 7.30pm. Ex Civil Defence Hall, Chequers Street car park, St Albans. Hon sec Brian Pickford, G4DUS, tel Rickmansworth 77616. All welcome.

South West Herts UHF Group—Details of activities and building funding from Peter Marcham, G3YXZ, or Brian Greenoway, G3THQ. No meetings held.

UK FM Group (London)—Second Tuesday in each month; 9 January (Junque sale—superior junk), 3 February (AGM—election of officers), 8pm. Grove Park Hotel, Chiswick W4. Full details from hon sec R. Street, G3TJA, tel 01-998 2672. All welcome.

West Drayton (LT District ARC)—Thursdays, 6pm. DLAA Sports Ground, Park Place, Gunnersbury Avenue, W3. (Bar). Hon sec Ray Bell, G8JEB. Talk-in on G4HIO, 144·250, 2000-2100. This club, with about 30 keen members, requires help from guest speakers—any volunteers?

RR19 requests: would club secs please send club details by the copy deadline if they require this service to continue. I will put what you wish into this feature, but please abbreviate to format, as above copy.

REGION 20—RR G. Mather. G3GKA, 8 Hills Close, Keynsham, Bristol.

Bridgwater (HPSSARS)—First and third Fridays in each month, 7.30pm. YMCA, near St John Ambulance Hall. Hon sec G4ETN.

Bristol (BARC)—Tuesdays, 7.30pm. The University Settlement, Barton Hill, Bristol 5. Sec G8KGE.

Bristol (BRSGBG)—29 January (AGM and bring and buy), 7-9.30pm. Small Lecture Theatre, Queens Buildings, University Walk, Clifton, Bristol 8. Hon sec G4FRG.

Bristol (North Bristol ARC)—Fridays, 7pm. RAE instruction Wednesdays, 7pm. Lockleaze Community Association, Romney Avenue, Lockleaze, Bristol BS7. Hon sec G2BSU.

Bristol (Shirehampton ARC)—Fridays, 7pm. Twyford House, Shirehampton. Hon sec G4GRD. HF and vhf station all modes, lectures and films, df hunts etc, planned for 1979. RAE and morse classes in progress. New members welcome.

Cheltenham (CARA)—First Thursday and third Friday in each month. 1 February (RR20, G3GKA). "The Old Bakery", Chester Walk, Cheltenham. Hon sec G3JJG.

Gloucester (GARS)—First and third Thursdays in each month, 7.30pm. Chequers Bridge Centre, Painswich Road, Gloucester. Hon sec G3MA.

Weston-super-Mare (WsMARS)—Second Monday in each month (except August),7.30pm. Lewis Block,Worle Comprehensive School, Redwing Drive, off Mead Vale, Weston-super-Mare. Hon sec Irvin Barr-Sim, "The Old Dairy", Eastertown, Lympsham, Somerset.

Yate (Y&DARC)—First Friday in each month, 8pm. G3RQN QTH. Further details from G8LGC. All welcome including swls. Local chat channel S24, 2100 Wednesdays and Saturdays.

Yeovil (Y&DARC)—11 January ("Wavemeters and their uses" by G3XFW), 18 January ("A bilateral ssb transciever" by G3DSS), 25 January ("HF ducting" by G3MYM), 8 February ("J-fet operation" by G3MYM), 22 February Special event station G3CMH, to commemorate the 25th anniversary of the first long distance contact in Britain using a transistor transmitter—see p254 of *World at their fingertips* and *RSGB Bulletin* April 1954. p461—full details from G3MYM, QTHR. Hut 101, Houndstone Camp (three miles west of Yeovil off A3088). Hon sec G3NOF. Info at main gate, S20 fm talk-in, club net 10.30am Sundays, 3·660MHz.

obituaries

The Society records with regret the deaths of the following radio amateurs:

Mr J. H. Bateman, G6BX
Jack Bateman died on 8 October 1978, aged 78. A life member of the Society, he had held a full licence for over 50 years and was active on all bands from 1·8 to 144MHz. He was a knowledgeable amateur who tried to keep abreast of the latest developments and many amateurs owe their introduction to the hobby to him. A keen linguist, he could often be heard on the bands conversing with German and French amateurs.

Mr W. J. Butler, G5LJ
Wilf Butler died on 14 November 1978, aged 76. He was originally licensed as 6HV in the early 'twenties, and had been active for over 50 years. He was head of the company which has made the coat and car badges for the RSGB for many years. Wilf was a founder member of the Midland ARS, well known for his generosity and friendliness, and could be depended upon to provide assistance to those in need of it.

Mr V. M. Desmond, G5VM
Victor Desmond died on 8 October 1978 aged 79.

First licensed in 1928, he was closely associated with the work of the Society; particularly in the Midlands, which he represented as district representative for many years. He was a member of the Council of the Society from 1935 to 1937, became Executive Vice-President in 1946 and President in 1948/9. His valuable services were recognized by his being made an honorary member in 1952.

In 1965, together with the late John Clarricoats, G6CL, Leslie Cooper, G5LC, and other well-known amateurs, happily still with us, he was a founder member of the Radio Fraternity Lodge No 8040 of Freemasons.

Mr G. Edwards, G2UX
George Edwards died on 3 November 1978. First licensed in 1927, he joined the army at the outbreak of war and was attached to a unit monitoring signals from enemy-occupied Europe. A keen, highly skilled cw operator, he was active on his favourite 21MHz band until a few days before his death.

Mr N. T. Fudge, G4DLF
Nigel Fudge died on 4 October, 1978, aged 40. Although he had been ill for a year, he still spoke on the air, and later listened. He was a very keen amateur and made many friends through his hobby.

Mr F. Tweedale, G3TBR
Fred Tweedale, who died recently aged 77, was active for many years on 1·8 and 3·5MHz.

Mr G. C. Van Doorn, G4DTN
"Van" Van Doorn, who died on 21 October 1978, was a relative newcomer to the ranks of amateur radio. He was a member of the Manchester ARS.

We have also been advised of the deaths of:
Mr W. M. Begg, RS33879;
Mr G. S. Garfitt, G2CKR, in April 1978;
Mr J. E. Kenny, G2CKL, on 29 July 1978;
Mr P. J. R. Weingaertner, F5PW, on 25 September 1978.

members' ads

These subsidized flat-rate advertisements are accepted as a service to members of the RSGB. They must be submitted on the Members' Ads order form printed in alternate issues of *Radio Communication*, or on a postcard similarly laid out. Each **must** be accompanied by a **recent** *Radio Communication* mailing label addressed to the advertiser, as proof of membership, and a remittance by postal order or cheque for 75p (stamps not accepted). They will not be acknowledged. Those not clearly worded or punctuated will be returned. No correspondence concerning this service can be entered into.

Closing dates in 1979; **25 Jan, 2 Mar, 27 Mar, 27 Apr, 28 May, 21 June, 2 Aug, 30 Aug, 27 Sept, 25 Oct, 22 Nov, 27 Dec.** No guarantee of inclusion in a specific issue can be given, other than the first possible issue after receipt.

Trade or business advertisements, even from members, will not be accepted for Members' Ads but should be submitted as classified or display advertisements in the usual way. Traders who are members must enclose a signed declaration that the items for sale or wanted are part of, or intended for, their own personal amateur station.

The RSGB reserves the right to refuse advertisements, and accepts no responsibility for errors or omissions or for the quality of goods offered for sale. Advertisements may be edited or abbreviated as necessary.

Advertisements for 27MHz equipment will not be accepted.

Post to: MEMBERS' ADS, RSGB, 88 BROOMFIELD ROAD, CHELMSFORD, ESSEX CM1 1SS.

Do not post to RSGB HQ or Advertising Representative

FOR SALE

IC240A, as new, boxed, £155. G8KOP, QTHR. Tel 01-349 1122, days.

Icom IC22A, fitted R3-R7, rev R6 R7, 145, S19-24, £110. G4CMD, QTHR. Tel 01-500 5107, after 7pm; or 01-626 2374, office hours.

NCX5, £130. Sagem electronic printer, £150. Creed 75 rx, £15. QY-3-125, £20 ea. 4ft by 19in rack, £15. 'Scope 2½in, £10. ATU, 1kW, £12. RCA hi-fi amp and preamp, £20. RTTY adapter, £15. B40, £12. 6in edge movement, 1mA, £5. GW3WEQ, QTHR.

18AVT/WB, new, £40 ono. HRO rx, mint, spare valves, £40 ono. Homebrew linear, 80-10, two 4X150As, comp with 1200V psu, £50. Creed 75 printer, ok for rtty, vgc, £25. G3KQR, QTHR. Tel 01-399 1289.

Drake R4B, one owner, mint, incl manual, £200 ono. Addie, G8LT, QTHR. Tel 032 732 321.

Audio Associates PN2 peak notch filter, £20. Stephens James Mk2 swl tuning unit, £15. BC221M, less psu, £10. P. Karagianis, 20 Lea Road, Sonning Common, Nr Reading RG4 9LJ. Tel Kidmore End 2085.

IC240, five months old, £160. IC202, nicads, charger, mobile mount, £150. AR30 rotator, £30. SWR25, £5. B40 rx, 0·64-30MHz, £20. Labgear LG50 cw/a.m. tx, 80-10m, £10. G4FHN, QTHR. Tel Bristol 571212, after 6pm.

Comdel speech processor, mint, £27. Heathkit valve voltmeter, rf probe, perfect, £23. LM7 (BC221) frequency meter, charts, no psu, £10. Marley two-tone oscillator and pulser, mains operated, £8. 4/805s, 230W triodes, £6. RCA filament trsfmr, 2/10V 5A, £4. G5FH, QTHR. Tel 04252 5974.

Trio JR60 rx, 0·5-30MHz plus 136-148MHz, Q-multiplier, comp with handbook, £50 ono. G4GZU, QTHR. Tel Mansfield (0623) 21041.

Drake 2B, 2AQ multiplier, xtal cal, 115V/240V ac line, transformer, manual, orig packing, exc rx, new valves, £80. Ex-WD tx/rx type 34, comp, 6/9MHz, £5. Carr extra. Haines, G3OSH, QTHR. Tel Ilminster 3349.

Xtal controlled 3W tx board, 12ch (STE-Milan), £40; seven xtals, R4-7, S0, S20, S22, £10; matching rx board, a.m., fm, ssb, cw, 28-30MHz, £30. FM discrim board, £3, 28-30MHz converter (Sentinel), £12. G8HSZ, 40 Park House, St Austell, Cornwall. Tel 0726 3647.

Linears: Yaesu Musen FL2500, £150; Trio 911, £160. Buyer collects. G3GNC, QTHR. Tel 061-928 1560.

Joystick system J, up to 500W p.e.p., plenty of dx worked on this fb antenna, indoors and out, as new, cost £45, bargain, £22. G4HAK, 6 Caerleon Close, Sidcup Hill, Sidcup, Kent. Tel 01-302 5052, evenings only please.

Atlas 215X, with noise blanker, deluxe mobile mount, £350. G3USP, QTHR.

Drake 2B rx, Q-mult, spkr, £95 ono. Drake 2A rx, £60 ono. TX, Central Electronics, 20A, ssb, cw, rtty, etc, £45. TW 2m converter, 28-30 i.f., £8. Codar preselector, £7. BC221, charts, £12.50. G3PBQ, QTHR. Tel 021-373 2282, evenings.

Bang & Olufsen Beolab 1700 amplifier, 25W/ch, 4-output ambiophonic, beautiful teak, mint cond, very high-fi!, offers around £150. G4EDZ, QTHR. Tel Knutsford 2362.

Ultra Lion tx/rx, on 2m, 10ch, 25W pa, vgc, fitted S0, S20-22, R4-7, handbook, also separate xtal toneburst, £100 ono. G4ALD, QTHR. Tel Gravesend 69357.

FT221, 144-148MHz xtals fitted, as new, £325; two TR2200Gs, all repeater channels, plus three locals, boxed, £120 ea; or £550 the lot. Tel 01-560 5278.

Trio TS820, fitted cw filter, 12V dc inverter, as new, £625 ono; Sommerkamp FT277 (Yaesu FT101B), exc, £325, or exch for TS700G; both with all accessories and orig packing. G3GHB, QTHR. Tel Inkberrow 792582, evenings or weekends.

Heathkit IO12U 'scope, good wkg cond, £30. Buyer inspect and collect, evenings and weekends. G3ZOM, QTHR.

IC202, ssb/cw, 3W, portable rig, exc cond, £115. GI4HFB, 15 Wandsworth Place, Belfast BT4 3GB.

2m Europa, modified to B spec, needs adjustment, with t/r relay, spare pa, write-up, cables for connection to T4XB, £45 ono. Jaybeam 8/8 slot, £7. G3RWL, QTHR (London area).

Programmable calculator, Commodore PR100, with mains recharger unit, as new, £40. Tel Chestfield, Kent (022779) 3262, evenings.

FT101E, 18 months old, boxed, as new, immac cond, hardly used, £410. Datong audio filter, one year old, perfect, £40. Creed 7B/RP, base, cover, auto-tx, £30. G8NAA. Tel 01-550 3595, evenings.

Marconi IO camera, psu, monitor, comp with cables, plugs, handbook, 405- and 625-line system, £55. Tel 01-590 3993.

TW Phase 2 transverter, incl MMC 144/28 LO, plus all pwr leads for FT200, £30. Creed 7B RP/DC, silencing cover, £10. 70cm cu cavity for 4CX250, as handbook, £15. WG16 4-port switch, £8. G8HCK, QTHR. Tel 0925 813229.

Will exch a Liner 2 for a 70cm fm tx/rx. G8KEH, QTHR.

Trio TR7200G, fitted 13ch, maker's carton, operating manual, perfect cond and performance, demonstration by arrangement, £135, plus carr or collect. G5BM, QTHR. Tel Newent 820960.

Pye tx/rx spares: Cambridge; Ranger, incl many useful components. 8MHz xtals, suitable for 2m. Oscilloscope with 3BP1 tube. Paper tape punched to order (within reason). *Wanted:* info or manual for Friden "Flexowriter" teleprinter. G4GLM, 63 The Drive, Edgware, Middx HA8 8PS. Tel 01-958 5113.

TS700G, all modes, mint, £375. Chart recorder, six speeds, roll or sheet paper, variable sensitivity down to 1mV, as new, £45. H/B dfm, six half-inch digits, 25MHz, £35. Elector circuit. G3OBI, QTHR. Tel 021-357 5126.

Codar CR70A, good cond, £30. PR40 preselector, good cond, £8. Canadian army 19 set, psu, tx needs slight attn, £20 ono. MM 144-28MHz converter, LO, good cond, £12. G4HLU, "Stoneleigh", Ramshorn, Oakamoor, Stoke-on-Trent. Tel 0538 702518.

FR101 digital deluxe rx, FL101 tx, used few hours only, in mint cond, offered comp with matching spkr, separate rf speech processor, £840 ono. G3MSL, QTHR. Tel Fleet 21446, after 6pm or weekends.

SB101, cw filter, HP23, SB600, spare valves and relay; offered straight swop for Eddystone EA12 or KW204 tx, ono. Taylor, 8 Heythrop Drive, Middlesbrough.

IC22A, 10ch, S20, S22-23, R2-8, good cond, £120 ono. Also pair PF1s, modified PP3 batteries, recently overhauled, £25 ono. Prefer buyers collect. G4DVB, QTHR. Tel 0474 66347.

FTDX560 tx/rx, with fan, £225 ono. Uniden 2030 10W mobile tx/rx, 13ch, £110 ono. G4GZZ, QTHR. Tel 021-422 6440.

KW Viceroy ssb/cw tx, with p/p and mic, £40 ono. Delivered 50 miles or collection, otherwise carr extra. Taylor model 68A sig gen, £25 ono. Hitachi cassette recorder, £25 ono. G3MA, QTHR.

KW 2000A, ac psu, handbook, circuit, exc cond, £170. G4CHW, QTHR. Tel Bath 316278.

Microcomputer, 77-68 by Newbear (M6800), psu, manual, morse code self-tutor program incl, £60 ono. Codar AT5, ac psu, press-to-talk switch, manual, £20. Amtron case, 11 by 8 by 6, blue, blank panel, £5. G4DIB, QTHR. Tel 01-467 9033, after 6pm.

Xtals: 45MHz (10·7MHz i.f.), S20, S22, S0, R3, R4, R5, R6; 8MHz tx, S0, S20, S22, R3, R4, R6; all HC6U; £15 the lot, no split. G3WRT, QTHR. Tel 0206 45099.

Yaesu YD844, £12.50. Shure 202, £4.50. Shure CA90, £4.50. Yaesu SP400, £10.50. KW antenna switch, £4.50. CT52 'scope, £27.50. Medco 75Ω lpf, £8.50. Phones 2000Ω, £4.50. Caslon 201 digital clock, 24h, £6.50. Hansen SWR3, £4.50. Yaesu YC305, £50. G3YMS, QTHR.

SAE please for lists of amateur and electronic items, incl: Yaesu FT202R; vdu components; Pocketfone; projector; also map collection; motor accessories. *Wanted:* Datong active antenna; TS700G xtals; full ASCII keyboard. G8IYK, 13 Hodge Bower, Ironbridge, Telford, Salop.

Microwave Modules 432-28 converter; Jaybeam 46-el 70cm beam; offers. G8JDH, QTHR. Tel 01-650 5465, evenings and weekends.

Yaesu FT75, dc psu, mic, xtals for all bands, exc cond, £110 ono; or exch for hf linear, with possible cash adjustment. G3YIQ, QTHR. Tel Worthing (0903) 67232.

MM 5W a.m. 2m tx, £35. RSL 2m tx, 1W fm, £25. RSL 10W pa, £15. RSL psu pcb, £6. Pair PF1s, wkg on SU8, comp, £45. Pair PF1s for spares, SU8 xtals, £14. GU4EON, QTHR. Tel 0481 21591.

Stolle rotator, marked Archerotor, exc cond, in orig box, 50ft cable, £30. 6-el 2m quad (Jaybeam), in box, £11. Homebrew 2m 4CX250B linear, comp with tatty psu, works well, £30. All items carr extra, or collect. G8LKR, QTHR. Tel Hitchin 730550.

Pair USAF field telephones, solid leather case, brand-new, £24. Advance cvt, mains input, 115V output, 400VA, new, £18. Johnson w/spaced variable 1,025pF, 2·5kV wkg, new, £16. "N" plugs, four for £2. Ex-equipment, all plus postage. HRO Coils, spares, sae list. G3GUU, QTHR.

Yaesu FT2 auto 2m fm tx/rx, 8ch, autoscan, fitted S0, S20-24, R6-7, 1W/10W, ac or 12V dc supply, handbook, £120. Parker, G8HNM, 9 Roughmoor Crescent, Taunton, Somerset. Tel Taunton 3635, evenings.

KW2000E tx/rx, ac psu, £275 ono. 40ft Telomast, comp with rigging, £30. G3JXG, QTHR. Tel 0482 709004.

Mains transformer, 1185-0-1185V, 360mA, potted ideal linear, new, boxed, £15, incl p&p. Avometer model 40, similar to model 7, used, bargain, £15. Mic transformer, 600Ω to 50kΩ, new, £3. G3SEF, QTHR. Tel Cheslyn Hay (0922) 415369.

FT200/FP200, exc cond, recently overhauled, all 10m xtals, £280. Pocketfones, brand-new cases and batteries, no xtals, £30 pair. 18AVT/WB, exc cond, erected once only, £50. Liner 2, vgc, mobile mount, mic, halo, £110. G3VPD, QTHR.

Icom xtals, R0, R0 rev, R9 (all pairs). G4BER, QTHR. Tel Chichester (0243) 83898.

Belcom Liner 430, mic, manual, 432·10-432·48MHz, 433·10-433·48MHz, good cond, incl preamp, £150. Carr extra. G8DFZ, QTHR. Tel Otley (Yorks) 3083.

Trio 2200GX, 9ch, comp, charger, nicads, orig packing, £135 ono. Mosley Atlas four-band vertical, 40-10m, £25, plus carr. G3VSD, QTHR.

Prop pitch motor, flexible coupling, Plummer bearing, £11. Prop pitch motor, £8. Precision transducer/indicator, cal 0 360°, £8. G-whip 160m mobile antenna, new, £8. 6146, new, £3. G2DAF tx Mk2, psu, professionally built, £35. Carr by arrangement. G3ZIJ, QTHR. Tel 0632 403706.

Storno Viscount, comp with control box, cables, etc, wkg S20, rx may need preamp, £25. G8OZH, QTHR.

Pye Pocketfones Mk3, rx, tx, SU8, vgc, comp with nicads, £37.50; would prefer exch 500MHz freq meter or aircraft band rx (mains, no ex-WD heavyweights), cash adjustment if necessary, delivery 100 mile radius. Mike Radcliffe. Tel 01-242 8822 ext 239, day; or Watford (Herts) 31641, evenings, weekends.

Codar CR70A gen cov rx, PR30 preselector, both exc cond, £25 the lot. Collect from Bournemouth or Guildford areas. G8PGD, 16 Waterside, Mudeford, Christchurch, Dorset. Tel Christchurch 6594.

KW2000A psu, 12V dc, neg earth, little used, £25. Tel Bromham (Wilts) 289, evenings only.

Pye compact Pocketfone, carrying case, xtalled RB6, toneburst, Pye Pocketfone battery charger, £45. Storno Viscount, fitted 7ch, preamp, £50. *Wanted:* TS520 FT101E. A. P. Brown, G4EZT, QTHR. Tel Maidenhead 30185.

14AVQ/WB, LC80Q enclosed 80m loading coil, superb cond, orig box, data; exch for commercial "induction-balance" type metal detector with data, or commercial vtvm. You collect. G4LJ, 28 Hillcrest, Downham Market, Norfolk. Tel Downham Market 3573.

Oscilloscope, double-beam, Solarscope CD711S, £35 ono. Tape recorder, Fidelity twin-track, vgc, £5. Ant wire, stainless steel or alloy, offers for any length. Winch or guy wire, offers for any length. G3LBS, QTHR. Tel 0564 826072.

G3ZVC ssb tx/rx, XF9B filter, comp lsb, usb xtals, all metal ics, perfect wkg order, gone commercial multi-mode, £55. G8AUN, QTHR. Tel Norwich 42253.

Antenna system comprising 2-el Gem quad, CD44 rotator, both almost new; 40ft 10in triangular dural lattice mast, breaks down to 6ft sections, incl heavy-duty hinged mounting base, 4:1 ratio winch, mast recently overhauled and painted battleship grey, 24ft wooden gin pole against which mast is raised and lowered; quad and mast partially assembled but not installed, buyer disassembles and collects; no part sale; the lot, excl coaxial, ropes and pulley, £175. G3OFK, QTHR. Tel 0734 733674.

High-band portable hand-held fm tx/rx, 4ch, £20. Trio 9R59D, spkr, manual, vgc, £35 ono. 35mm camera, rangefinder, 135mm lens, filter, lens hoods, cases, manual, £35. Phillip Wayer, 124 White Dirt Lane, Catherington, Portsmouth, Hants. Tel Horndean 592687.

Microwave Modules 432/28 transverter, £95; QM70 432 + 434/28 converter, £30; Shure 201 ceramic hand mic, offers; all guaranteed exc wkg order and cond. *Wanted:* Bird Thruline elements. G4JJ, QTHR.

Liner 2, 3N204 preamp, all maker's acc, immac cond, £100; matching 13·8V 4A psu/spkr, £15. Hudson FM20B, 6ch, S20, S22, S24 fitted, preamp, very clean, mic, £35. Prinz T700 a.m./fm stereo tuner, £15. Topham. Tel Guildford 64016, after 6pm.

22in colour crt, tuner, all new components, pcbs, psu, to make comp colour tv set, with circuits and assembly details, cabinet and tube mounting incl; would also make colour vdu(?); the lot for £45. G4EQV, QTHR (near Birmingham). Tel 0564 823406.

KW Vespa, speech processor, mic, property late GM5PV, many copies *T & R, RSGB Bulletins, Radio Communication, SWM, Practical Wireless, Practical Television, Radio Constructor, QST, Wireless World.* Send offers or sae for list. GM3OGJ, QTHR.

Atlas 180, £220. SSM 2m converter, 4-6, £8. SSM hf preamp, relay, £8. KW2000 dc psu, £25. Eddystone slow motion drive 898, £4. G4GXU, QTHR.

Heathkit HW32A 200W ssb tx/rx, for 20m, HP23A ac mains psu, mic, xtal calibrator fitted, comp with mobile mounting bracket, exc cond, £70. G4CMF, QTHR. Tel 01-769 1639.

Yaesu FT227R, 2m, fm, six months old, as new, £190 ono. G8MCG, QTHR. Tel Upminster (Essex) 25577.

DX100 tx, ssb adaptor, exc wkg cond, must be called for, £60. G4GOF, QTHR.

Yaesu FT101B, good cond, £325 ono. SP101B, £12. Good used S72B, £15. GW4BIQ, QTHR. Tel Bishopston (044 128) 3245.

Garex 2m a.m./fm 12V tx/rx, unmodified, manual, £60. Cossor CC701, all transistor tx/rx, modified 2m, copy of manual, £50. Valradio transverter, type C24/200S, 24V dc input, 230/115V ac output, sine wave 50Hz adjustable, 200VA, £60. GW8FVY, QTHR. Tel Buckley 7372.

Hammarlund SP600, £100. R216 19/157MHz, psu, £70. *Wanted:* FT7 or other hf mobile, buy/part exch? G3LST, QTHR. Tel Danbury 3364.

KW2000B, vgc, spare new pa tubes, £240. G4BLI, QTHR. Tel 051 722 9043, after 6pm.

Experimenters T-DEC and NA-DEC, two of ea, comp with 16-pin carrier, good cond, £2 ea (half price), or £7 for all four. G8EDG, QTHR. Tel Wolverhampton 763617.

FT101B, as new, little used, all leads, manual, spare valves, £350. GM3RFA, QTHR. Tel 0397 3833.

Morse perforator and Wheatstone transmitting head, spare tapes, £5. Parmeko C-core transformer, 230V ac, 510-0-510 250mA, 375-0-375 75mA, 6·3V 9A; 5V 3A, 6·3V 2A, etc, £5. Potted transformer, 230V ac, 350-0-350 220mA, 6·7V 5A, 5V 6A, 6·3V 3A, etc, £2. Heavy-duty blower, 250V ac, £1. G3OGP, QTHR. Tel 01-398 3953.

FTDX401, incl mic, £210. HQ1 Minibeam, £50. AR30 rotator (takes HQ1), £25. GM4BOA, QTHR. Tel 03553 2097.

Xtals 18MHz HC25/U, will multiply to RB4 or RB6, £3 ea. 3cm circulators, few only, £15 ea. Tel 0501 30819, evenings only.

SB34 mobile tx/rx, 80-15m, 60W output, solid-state except pa, 220V pu, manuals, 5in by 11in by 9in, slight attention needed, £100. Liner 2, as new cond, £95. Heath HM102 watts swr, £25. Digital clock, 24h, £5. G3UCE, QTHR. Tel Heysham 51760, evenings.

2m fm Standard C146A 2W h/held tx/rx, xtals S0, S20, S22, R5-7, helical antenna, £95; Storno Viscount, 10W, mobile, S0, S20, S22, preamp on rx, control box, cables, circuits, etc, £55; both vgc. Collect. Brownett. Tel Weymouth (03057) 79117.

Yaesu FT-2F vhf fm tx/rx, fitted 12ch, in good cond, £90. 18AVT vertical antenna, £35. Yaesu hf mobile FT-75B, £175. Icom vhf fm tx/rx, £70. GM4AWA, QTHR. Tel Bridge of Earn (0738 81) 2815, evenings or weekends.

Icom 22A, little used, good cond, orig packing, accessories, toneburst, xtals S0, S20-24, R3-7, £130. Bantex 5/8 2m whip, magnetic base, £10. Sell or exch for gen cov or amateur bands rx, with cash adjustment. G8KFJ, 66 Cheviot View, Ponteland, Newcastle Upon Tyne. Tel 0661 72071.

Colour tv receiver, 16in, uhf off air or RGB plus isolating transformer, £85. G8CQE, QTHR. Tel 01-656 5285.

Wilcox Gay vfo, £5. HRO, ten coils, psu, I/s, £15. G3EGT, QTHR. Tel Verwood 2977.

TS520, matching vfo, superb, £400. TR2200 fm tx/rx, S20-24, R5/7, nicads, charger, mic, unused VB2200 amplifier, boxed, £110 comp. Shure 444T mic, mint, £17. OS1 'scope, as new, £40. Letters please. G3MIN, QTHR (Shoreham, Sussex).

Sommerkamp FL200B tx, FR100B rx, matched pair, will operate transceive or separate, rx exc but tx requires attn, £150. G3DJQ (Oxford area). Tel Cumnor 3851.

Yaesu FTDX401, exc cond, regularly serviced by agent, £250 ono. Owner going mobile. G3ZDF, QTHR. Tel Peacehaven 5112, evenings.

Property of deceased enthusiast: Avo 8, case, £40; Telequipment D31, cover, £45; Bradley CT471 multi-range test meter, offers; HRO Senior, six gc coils, manual, £40. G8EWG, QTHR. Tel 01-889 4985, after 7pm.

Range B 9,000-22,000kHz plug-in coil Eddystone 358 rx, offers. DJ0OS, Waldstrasse 57, 4902 Bad Salzuflen, Germany.

Pye Vanguard AM25T, a.m., fm, channels R6, S0, S20, S22, S24, S32, toneburst, mounting rack, long control cable, handbook, comp, in good cond, £60. GM3VCM, QTHR. Tel Rhu (043682) 691.

Tradiper TE-15 gdo, 440kHz-280MHz, £15; Astatic D104 c/w UG8 stand, £30; Shure 444 mic, £15; Multi-meter, ac-dc resistance capacitance, U4315, £20; all in exc cond. Carr extra. G3ZZS, QTHR. Tel Plymouth 707550.

Very special Heath HW32A tx/rx, covers all 20m phone band, also 40m band, manual and modification details, exc cond, £95. HP13A mobile ps, £45. Fixed stn ps, similar HP23 but fully metered, and in-built ls, £50. G3WLX, QTHR. Tel 084 46 643.

KW103 swr and pwr meter, as new, £20. G3VLQ, QTHR. Tel Reading 599591, after 6pm.

KW E-Zee match, £30. G3VLQ, QTHR. Tel Reading 599591, after 6pm.

Standard C146A 2W 5ch h/held tx/rx, nicads, helical, case, etc, one year old, little used, £120 ono. G8NRJ, QTHR. Tel 0502 4122.

Collins KWM2, PM2 psu, Waters noise blanker, Waters Q-mult, channelator, £375. G3WUW, 26 Alexander Road, Thatcham, Berks. Tel 0635 62007.

FT101E, mint cond, all leads, manual, etc, £400. IC202 ssb/cw tx/rx, as new, £135. Storno 2m fm tx, 50W output, £30 ono; Storno 70cm fm tx, 3W output, £15 ono; both 2m/70cm rigs have psus. Buyer collects. G4FAZ, QTHR. Tel 030 57 71053, evenings.

TR7500, little used, £190. PS6 psu, £30. TR3200, fitted SU20, RB0-2-4-6-10-14, £110. VB3200 10W amp, rec pre-amp, £110. Heathkit mains psu, £10. Going QRT. G8JLJ, QTHR. Tel 0908 670511, after 6pm or weekends.

G3ZVC ssb tx/rx board, KVG XF9B filter, wkg, used on 2m, £40. G8KJJ, QTHR. Tel Nottingham 231887, evenings.

Trio TS520, mic, earphones, cw filter, manual, etc, purchased October 1976, hardly used, orig packing case, £360. Collect. Tel Ventnor 853490.

SHF sig gen (Marconi) Sanders 6457 1·2-5GHz, max o/p 100mW from cavity tuned klystron, direct reading 1 per cent frequency scale, int square wave and fm mod plus ext mod i/ps, frequency stability better than 0·02 per cent/°C, manual, £75. Buyer collects. G8KDC. Tel Orpington 22443.

Trio 7200G, 11 xtal channels, S0, S20-24, R3-7; ext VFO-30G; both exc cond, £175. G8MOO, 5 Alderney Road, Slade Green, Erith, Kent.

Trio 7200G, Lowe auto toneburst, S0, S20-23, R3-7, good cond, £125, incl Securicor UK mainland. Weller temp controlled soldering iron, 240V, WP60D, little used, £14. G4CHD, QTHR. Tel Cheltenham 53178.

Yaesu FTDX401, little used, fitted cw filter, handbook, 560W p.e.p., 80-10m, £285. G4BMK, QTHR. Tel 0323 893378.

Pyramid linear, 80/10, 4×6HF5s, £100. Marconi Seaguide rx, EC10, 240 ac or batt, with d/f switching, 150kHz-30MHz, £75. Inoue IC700R rx, a.m., ssb, cw, 12V or ac, 80/10, £75. Panda PRV120 a.m./cw tx, atu, mic, £75. Codar PRV30 preamp, 80/10, mains, £10. All plus carr or collect. G3ABU, QTHR.

Kyokuto 10W 2m synthesized mobile tx/rx, ±600kHz rptr shift, toneburst, 40ch scanner, £250. KP202 2W hand-held, 6ch, five fitted (S0, S20-22, R6), toneburst, helical, BNC socket, nicads, charger, £100. Tel 0462 4231, days; or 0438 64624, evenings.

KW Atlanta tx/rx, 10-80m, psu, Shure mic, £225; Hammarlund HQ170A rx, 1·8-56MHz, £110; HRO rx, seven g/c coils, psu, £30; BC221 freq meter, charts, £20; TW Communicator 4m a.m. tx/rx, £40; MM 432MHz converter, £18; Green 2M-1000 tx, £30; Green 70CM-1000 tripler, not wkg, £15; Taylor valve tester 45A, £10; Triplet sig gen 1632, 0·1-120MHz, £10; Hunts C and R tester CRB, £8; Cossor 'scope 1035, £10; Marconi audio tester TF894, £15; Systron-Donner freq counter 1034, hp prescaler 100MHz, £50; Barograph ML-3, £80; Sunvic temp recorder RPA, £20; lattice tower, 20ft crank-up, £30; all prices ono. Property deceased amateur. Buyers collect (Edgware). A. J. Masson, G3PSP, QTHR. Tel 01-950 6827.

70cm Pye Westminster, W15U boot mount, all solid-state tx/rx, 6ch, fully xtalled RB0, RB2, RB4, RB6, RB10, RB14, control box, mic, handbook, vgc, £110. G4FMK, QTHR. Tel Canvey Island 3805.

USAF OS 8/U portable oscilloscope, in carrying case, £35; antenna noise bridge, RSGB circuit, £14; both guaranteed wkg. USA callbooks 1978, as new, £6.50 ea. G3TJY. Tel 0202 622142.

FR50B, top band, 28-30MHz xtal calibrator, £70. SSM converters, 28-30MHz i.f: 70cm, £15; 2m, £8. G8MIA, QTHR. Tel 0734 475638, after 6.30pm.

Trio 7200G, good cond, four rptr, six simplex, orig accessories, mobile whip, homebrew vfo, £150. Tel Reading 83519.

FT227R (new May 1978), £200. Liner 2, preamp, £95. Akai portable video recorder, camera, zoom lens, extension lead, monitor, uhf tuner, rf converter, psu, £700. G8PLY, "The Naked Eye", Nelson, Lancs. Tel Nelson (0282) 691118.

Heath HW12 80m tx/rx, h/b psu, £60. HRO-MX, some mods, h/b psu, nine coils £30. 15W h/b cw tx, key bk, int psu, £15. Transformers: 425V 200mA, £5; 450V 120mA, £4. G3UFW, QTHR. Tel Romsey 515884.

FT101B, fitted 350Hz cw filter, £350. G4BRF, QTHR. Tel Polperro 72349.

Geloso vfo with 6J5, 6AU6, 6L6, will drive 2/807s and dial, pa output coil (switched), £6.50, plus post. Transformers: 510-0-510 275mA, 375-0-375 83mA, 6·3V 9A, 6·3V 2A (twice), 5V 3A, £6; Gresham 450-0-450 250mA, 0-4-6·3V (4A twice), 0-4-5V 3A, £4. Buyers collect. G2ACB, QTHR. Tel Longworth 820332.

KW Viceroy, £50. Trio JR60 gen cov rx, with 2m, £40. Pye Bantam Hi-band, needs slight attn, charger, no nicads. G4BJP. Tel Simon, Lingfield (0342) 832620.

FRG7 rx, fitted Lee Electronics digital readout, mint cond, hardly used, comp with YS55 headphones, unfitted Amcomm fm detector module, £165. Partridge Joystick vfa antenna, if required, £25. Clarke. Tel Colnbrook (Bucks) 3802, evenings or weekends.

Eddystone EA12, late model (second owner), immac, prof aligned, £130; KW204, late model (sole owner), immac, spare 6146s, £200; handbooks for both; both carr incl. GM3HBT, QTHR. Tel Larkhall 883306, after 6pm.

Siemens Hellschreiber GL, £20. *Wanted:* HRO coils 50kHz-2·05MHz, or comp set with rx, any cond. G5XB, QTHR. Tel 073 525 2195.

Synthesizer pcbs, *Wireless World* design, comp set, unused, data, £6. G8EUE, QTHR. Tel 01-500 4529, evenings.

FT220 2m multimode tx/rx, good order, orig box, house purchase forces sale, hence only £195. G3ZYS (Croydon). Tel 01-684 2483.

IC240, latest model, R0-9, S0, S16-24 programmed in, £150. Nine new unused U11 nicads, £17. In-line vhf pwr/swr meter SO239s, £5. *Wanted:* Trio TR3200 uhf rig, AR33 or AR40 rotator. G8OCC. Tel Steve, Norwich 60421, ext 209.

Trio TR7500 2m fm tx/rx, synthesized 80ch, mint cond, orig packing, handbook, mic, mobile mount, etc, £195. *Hi-fi Sound*, 65 (approx) issues, £5. G8OTH. Tel Avonmouth (0272) 822088.

Liner 2, vgc, £95. Storno CQL662, 6ch, 5W, 70cm, fm, SU8, RB6, RB10, RB14 fitted, toneburst, £85. G8AZU, QTHR. Tel Sunbury 89036.

IC30A 70cm tx/rx, £195. IC22A and rx vfo, £160. FRG7, £130. Microwave Modules converters: 28-30MHz 70cm, £19; 14-16MHz 2m, £12. 70cm Parabeam, £5. Exorciser ram board, 4K 21 L 02, £55. G8INP, QTHR. Tel King's Langley 64172.

2200G, four simplex, five repeater, £130; Liner 2, preamp, £120; both in orig packing, little used, all accessories. HW100 psu, spares (Heath checked), £130. All ovno, plus carr or collect. Consider swop for recent TS700G or similar 2m compact. G3PFR, QTHR (Cheshire). Tel Kingsley 88427, evenings.

'Scope 13A, £25. Frequency meter LM14, 125-20,000kHz, h/book, charts, £18. A/C bridge Belco BR8, new, £20. *Rad Com* '61-'75, £4 per year. *SWM* '61-'74, £4 per year. *R/Cntr, P/TV, PW,* assorted copies, offers. Buyers collect or arrange carr. G4CRM, QTHR. Tel 07014 52442.

FT200B/FP200, mint cond, orig packing, £295. Polar high power 2m transverter, mint, incl new spare valves (QQVO6-40A P/A), £80. Lafayette HA-230 gen cov rx, ideal new swl, £28 ono. 23cm 8/8 Yagi, £5. Blower, £5. G4GED, QTHR. Tel 01-575 1454.

HRO-MX, good clean cond int and ext, fitted new National amateur illuminated S-meter, handbook, full set of nine boxed gc coils, some spare valves, power unit, £35. *Wanted:* HRO orig B/S coils plus h/b 15m. G3JFC, QTHR. Tel Crayford 522489.

WANTED

To borrow or buy, manual for Minimitter tx (M827), postal costs refunded. Please send to: T. Cooper, 3 Summer Avenue, East Molesey, Surrey KT8 9LU.

Handbook and/or circuit diagram for Cossor model 1049 double-beam oscilloscope, loan or will purchase. G8FJF, QTHR.bTel 0424 84375.

Comp QRP cw stn, for GM3 on invalidity pension, locals only. Tel 031-667 1128.

4m Europa or similar transverter. G3WYV, QTHR. Tel Rochdale 42821.

Minimitter tx, not Mercury model, unmoded, wkg properly, reasonable price, cannot collect myself because of weight, willing pay delivered here. G6FU, QTHR.

For the wireless museum: very old rx, tx, valves, components, books, magazines, catalogues, valve-tester, Voight corner-horn, 30-line Baird Televisor, gear for pre-war amateur station; collection arranged. Details please to curator, G3KPO, QTHR. Tel Shanklin (098 386) 2586.

DX100-U, or similar 150W a.m./cw tx, must be vgc. G3NTB, QTHR. Tel Cradley Heath 67606.

FL50B: Kokusai MF455, 10K or 15K; Pye Cambridge 25B or similar. GM8MLH, QTHR. Tel 083 82 304.

RF ammeter, 1½ or 2A. *For sale:* parts for linears and psus, various meters, state wants. Parker, 133 Station Road, Cropston, Leicester LE7 7HH.

Tx/rxs for hf and vhf. Rx for hf: eg Trio, KW, Yaesu, anything considered. Can collect. Tel Bolton 592929.

R599D/(S), will collect if necessary, send details to G8MEO, QTHR. Tel 0532 665568, after 6pm.

Icom IC202E, nicads, charger, in good cond. G8RGQ. Tel 021-459 8312, after 6pm.
Icom IC201 all mode or similar 2m tx/rx. Also recent issues *QST*. 61 The Fairway, Oadby, Leicester.
KW2000 or Heathkit HW101. *For sale:* Star SR550 ham band rx, £40. Atkinson, 17 York Crescent, Alnwick, Northumberland.
Circuit diagram and data if possible for CT436 oscilloscope, made by James Scott, Glasgow, any info will be greatly appreciated, can photocopy and return immediately, will pay expenses. Price, 57 Cobblers Lane, Pontefract, West Yorks. Tel 0977 73674.
Drake R4B, TR3, Yaesu FTDX401B, Heath HA14, damaged or surplus hf band beams, or why? *For sale:* Modular Electronics 2m 40W pa, £30. FT101E, as new, hardly used, offers. DC psu, suit Heath or KW tx/rx, etc. GM3BQA, QTHR. Tel 0620 2519, evenings.
Trio VFO-5D, for service with TS510. James, G3SKK. Tel Formby 70806.
9MHz fm filter. SL1600/600 series ics, or any multimode components. Prescaler ic. Any damaged or non-wkg vhf/uhf tx/rx. G3PYW, QTHR. Tel 0621 56188.
To buy or borrow (against deposit) for copying, circuit or other data for Q-Max Q5/10X rx. GI3NZZ, QTHR. Tel Kilkeel (069 37) 62564.
Minimitter handbook or circuit diagram for 150W a.m./fm/cw tx, 24h loan please. G3RFI, QTHR. Tel Potton 260800.
FLDX400 tx and FRDX400 rx, in exch for my FT101 Mk2 and G-whip. GM3UWO, QTHR.
For club: professional rx, Racal, Collins, scrap Collins, etc; KW Vespa, 2000, 1131, BC610 comp or parts; Heathkit vfo, faulty Heathkit tx/rx, for spares; American Tobe rx, Eddystone rxs, National 1-10; 54+72 harmonic xtals, old *CQs, QSTs;* Manual for Cossor 343 ganging osc; cabinet for 19in by 10½in panel. "Glanyrafon", Bontnewydd, Aberystwyth. Tel 097 421 608.
HF ssb tx/rx, would consider faulty or damaged rig if necessary to keep price down. Also, 14AVQ, TA33, etc, must be low price, would consider faulty, damaged or incomplete. G4CMF, QTHR. Tel 01-769 1639.
A short full-time course to learn morse 12wpm, college or private tuition, can anyone help or advise, fees paid gladly. G8MVN, "Wash Water House", Newbury, Berks. Tel 41613.
KW2000B or similar tx/rx. G3TIE, QTHR. Tel 01-360 3390.

Exch: pair of Italian leather lined "Scarpa Bronzo" walking/climbing boots, size 44/8½, little used; for Datong rf clipper. Avery, G8MGA, 33 Vicarage Close, Weston-super-Mare, Avon. Tel 0934 512698.
7ERP or CON7B. G2FSH, NOT QTHR. Tel Basildon 554693.
VFO, Trio VF30G, in good cond. Cooper. Tel Chapel End (0203) 393035, after 7pm.
CRT 3RP7. Valves, 6F7, 6C5. Ten wire-wound resistors 10W, 20kΩ to 30kΩ. G3AEZ, "Eastfield", Beare Green, Dorking, Surrey. Tel Newdigate (030677) 236.
No12 tx for spares, also atu type F (ZA/0841), atu coupling unit (ZA/0986), dummy antenna (ZA/3252) for 12 set. No33 Mk2, No53 txs. Any parts for Canadian 52 set, particularly antenna leads, spares box items, antenna feed-through insulator NoC2 (ZA/C 00088 or CMC-059) and Robbins-Myers rotary transformer, input 11V/25A, output 1300V/0·12A 156W. R107 rx, spare valves box. AF wattmeter (CT44). RF wattmeter (CT211/CT417). Taylor, G3UCT, 27 Glen Road, Fleet, Hants. Tel Fleet (02514) 6998.
Where can I buy a 2in tuning knob with hollowed-out interior, capable of "enclosing" a 5:1 (approx) S/M drive, the whole being suitable ext front panel use? Completely integrated drive/knob assembly preferred. BRS12234, 16 East Parade, Rhyl, Clwyd.
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WS No19. Also interested in other surplus sets, and BC221, BC654, BC611, valve 5A163K. Good price paid. Baynes. Tel 01-949 2317.
Yaesu FL50B tx. D. Lloyd, G4HJT, 39 High Street, Twerton, Bath, Avon.
Aircraft Radio Museum: A British Aircraft Preservation Council member would like to acquire more equipment for wkg exhibition; German SK, SL, EBL, PIEL 6, etc, and manuals; also Bendix RA10, TA12, TA2, TA6, RCA, ARB. Curator G3TFC, QTHR. Tel 0203 302668.
HF rig, FT101 series or TS520, approx £405. University of Liverpool Amateur Radio Society, c/o D. R. Clark, 44 Jermyn Street, Liverpool 8. Tel 051-727 4029.
Generator, 240V 50Hz, at least 1·5kVA, required by Addiscombe Radio Club. G3SJX, QTHR. Tel 01-656 9054.
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1N4148	75v	10mA	.05
1N4733	5.1v	1 W Zener	.25
1N753A	6.2v	500 mW Zener	.25
1N758A	10v	"	.25
1N759A	12v	"	.25
1N5243	13v	"	.25
1N5244B	14v	"	.25
1N5245B	15v	"	.25

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2N3055	NPN 15A 60v	.50
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4012	.20
4013	.40
4014	.75
4015	.75
4016	.35
4017	.75
4018	.75
4019	.35
4020	.85
4021	.75
4022	.75
4023	.20
4024	.75
4025	.20
4026	1.95
4027	.35
4028	.75
4030	.35
4033	1.50
4034	2.45
4035	.75
4040	.75
4041	.69
4042	.65
4043	.50
4044	.65
4046	1.25
4049	.45
4050	.45
4066	.55
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4082	.30
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7400	.10	7473	.25	74176	.85	74H72	.35
7401	.15	7474	.30	74180	.55	74H101	.75
7402	.15	7475	.35	74181	2.25	74H103	.55
7403	.15	7476	.40	74182	.75	74H106	.95
7404	.10	7480	.55	74190	1.25		
7405	.25	7481	.75	74191	.95	74L00	.25
7406	.25	7483	.75	74192	.75	74L02	.20
7407	.55	7485	.55	74193	.85	74L03	.25
7408	.15	7486	.25	74194	.95	74L04	.30
7409	.15	7489	1.05	74195	.95	74L10	.20
7410	.15	7490	.45	74196	.95	74L20	.35
7411	.25	7491	.70	74197	.95	74L30	.45
7412	.25	7492	.45	74198	1.45	74L47	1.95
7413	.25	7493	.35	74221	1.00	74L51	.45
7414	.75	7494	.75	74367	.75	74L55	.65
7416	.25	7495	.60			74L72	.45
7417	.40	7496	.80	75108A	.35	74L73	.40
7420	.15	74100	1.15	75491	.50	74L74	.45
7426	.25	74107	.25	75492	.50	74L75	.55
7427	.25	74121	.35			74L93	.55
7430	.15	74122	.55			74L123	.85
7432	.20	74123	.35	74H00	.15		
7437	.20	74125	.45	74H01	.20	74S00	.35
7438	.20	74126	.35	74H04	.20	74S02	.35
7440	.20	74132	.75	74H05	.20	74S03	.25
7441	1.15	74141	.90	74H08	.35	74S04	.25
7442	.45	74150	.85	74H10	.35	74S05	.35
7443	.45	74151	.65	74H11	.25	74S08	.35
7444	.45	74153	.75	74H15	.45	74S10	.35
7445	.65	74154	.95	74H20	.25	74S11	.35
7446	.70	74156	.70	74H21	.25	74S20	.25
7447	.70	74157	.65	74H22	.40	74S40	.20
7448	.50	74161	.55	74H30	.20	74S50	.20
7450	.25	74163	.85	74H40	.25	74S51	.25
7451	.25	74164	.60	74H50	.25	74S64	.15
7453	.20	74165	1.10	74H51	.25	74S74	.35
7454	.25	74166	1.25	74H52	.15	74S112	.60
7460	.40	74175	.80	74H53J	.25	74S114	.65
7470	.45			74H55	.20		
7472	.40						

74S133	.40
74S140	.55
74S151	.30
74S153	.35
74S157	.75
74S158	.30
74S194	1.05
74S257 (8123)	1.05
74LS00	.20
74LS01	.20
74LS02	.20
74LS04	.20
74LS05	.25
74LS08	.25
74LS09	.25
74LS10	.25
74LS11	.25
74LS20	.20
74LS21	.25
74LS22	.25
74LS32	.25
74LS37	.25
74LS38	.35
74LS40	.30
74LS42	.65
74LS51	.35
74LS74	.35
74LS86	.35
74LS90	.55
74LS93	.55
74LS107	.40
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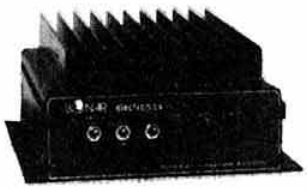

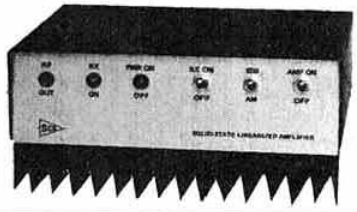

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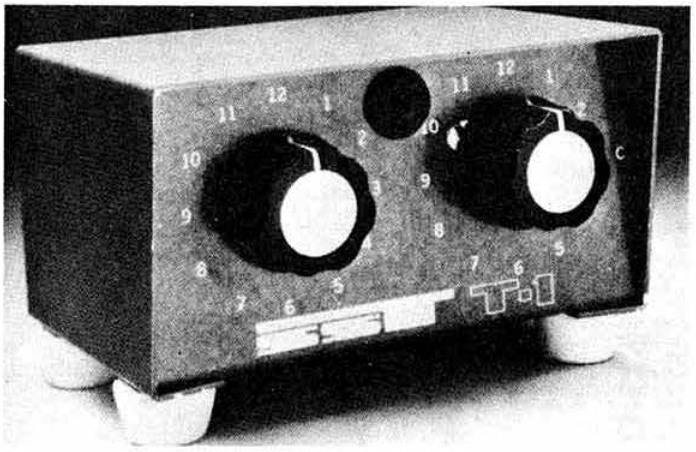
SST T-1 RANDOM WIRE ANTENNA TUNER



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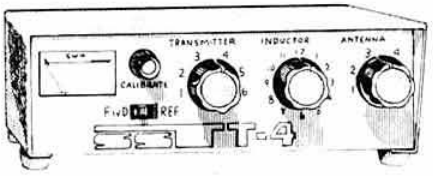

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BARCLAYCARD VISA

STEPHENS-JAMES LTD G3MCN

47 WARRINGTON ROAD, LEIGH, LANCS WN7 3EA TEL 0942-676790

TRIO

TS820 Transceiver	£758.00
TS820S Transceiver	£899.00
R820 Receiver	£841.00
SP820 Speaker	£41.00
TS520S Transceiver	£575.00
SP520	£19.00
SM220 Monitorscope	£251.00
AT200 Antenna Tuner	£99.00
TL922 Linear Amplifier	£826.00
TS120V Mobile Transceiver	£435.00
PS20 AC PSU for TS120V	£66.00
TS700S All mode VHF Transceiver	£637.00
SP70 Speaker	£22.00
TR7101 SSB VHF Transceiver	£189.00
TR7400A 2m FM Transceiver	£365.00
TR7500 2m FM Transceiver	£235.00
TR2300 2m FM Portable Transceiver	£210.00
TR8300 70cm FM Transceiver	£267.00
TR3200 70cm FM Portable Transceiver	£198.00
R300 General coverage Receiver	£185.00

Full range of crystal, microphones, plugs, psu, etc.

YAESU

FRG7 Receiver	£210.50
FRG7000 Receiver	£367.80
YH55 Headphones	£9.85
SP101B Speaker	£19.65

DRAKE

SSR-1 Solid state receiver	£175.00
TV3300 Low Pass Filter	£18.00
MN7 Antenna Matching Unit	£134.50

STE MILAN

AR10 28-30MHz AM-SSB Receiver module	£39.50
AA1 Audio amplifier for AR10	£4.75
AD4 FM Discriminator	£5.00
AR20 FM Crystal controlled receiver module	£50.00
AT23 FM Crystal controlled transmitter	£50.00
AG10 Tone burst unit	£4.50
AL8 10 watt Linear amplifier	£27.00
ARAC 102 2 band Receiver	£100.00
ARAC 170 70cm and 10m Receiver	£127.00
ASAP Stabilised 2½ amp power unit	£40.00
AB40 40 watt Mobile FM amplifier	£55.00

TEK

NEW RANGE. 10-80 Trapped dipole 2kW PEP. Complete, not a kit **£50.00**

ROTATORS

AR40	£53.44	KPR400	£97.00
CD44	£106.87	AR22R	£48.38
HAM2	£145.12	DR7500	£105.75

G-Whip Mobile antenna range

Tribander helical 10-15-20m	£21.15
LF Coils for tribander	£6.17
Telescopic for coils	£2.70
Basemount standard	£3.82
Basemount swivel type	£5.34
Flexiwhip basic 10m	£14.62
Coils for flexi	£6.17

ALDA 103

New model Solid State Transceiver.
250 watts PEP/250 watts CW with built in CW Monitor. 12v DC operation.
80-40-20 metres. 6 Pole crystal filter.
Complete with Microphone and Mobile Bracket
Due to direct importation from USA we can now offer these at **£360.**

SXR30

New model solid state receiver
550KHz to 30MHz £175.00

MICROWAVE MODULES

Transverters

MMT432/28-S	£133.88
MMT432/144-R	£169.88
MMT144/28	£88.88

Converters

MMC144 any IF	£20.25
MMC144/28 LO	£22.50
MMC70/any IF	£20.25
MMC70/28 LO	£22.50
MMA144 Preamp	£14.63
MMC432 any IF	£27.00
MMC1296 any IF	£28.00

Frequency Counters

MMD050/500	£89.00

JAYBEAM

4Y/4M 4 metre 4 element Beam	£12.65
C5-2M Glass-fibre coliner	£30.93
8Y/2M 8 element Yagi	£10.00
5Y/2M 5 Element Yagi	£7.71
PBM10/2m 10 element Parabeam	£25.35
PBM14/2m 14 element Parabeam	£31.43

Full range of antennas for 144MHz, 70cm available with full range of tubing, clamps, etc. SEND SAE for full details.

BARLOW WADLEY

XCR-30 Rx	£150
XCR-30 FM Rx	£170

F.D.K.

TM56B VHF Monitor Receiver	£105.00

STATION ACCESSORIES (including postage)

Single Meter SWR Wall Type	£10.25
Single Meter SWR Desk Type	£10.45
Twin Meter Desk Type	£12.50
2 Way heavy duty Antenna switch	£11.95
3 Way Antenna switch	£6.00
6 Way Antenna switch	£17.25
HyMound Morse Key	£9.30
Hansem FS301 through Line Wattmeter	£33.25
HP3A Low Pass Filter	£3.00
Plastic antenna insulators	23p
Nye King 003 Morse Key	£8.75
Standard type Morse Keys	£3.15

HY-GAIN

12AVQ Vertical 10-15-20m	£39.93
14AVQ/WB Vertical 10-15-20-40m	£56.19
18AVT/WB Vertical 10 through 80m	£81.45
Th3MK3 Triband Beam	£167.62

Carriage **£2.00** on antennas

WESTERN

Alumasts and antennas now in stock.

30ft Alumast	£139.00
DX-32 Two Element Tribander Beam	£67.50

STABILISED POWER SUPPLIES (New Range)

Model 122 0-15V dc 2·5Amp	£13.75
Model 122S 12·6V 2·5Amp	£18.00
Model 125 12V 5Amp	£24.00
Model 153S Dual Meter 0-20V 4Amp	£26.73
Model 156S Twin Meter 0-15V 6Amp	£35.00
Model 1210S Twin Meter 4-20V 10 Amp	£80.00

TECHNICAL ASSOCIATES

We are now acting as sole distributors for the full range of Technical

RX Band Pass filter	£29.75
RX Peak and Notch filter	£29.75
Audio Compressor	£28.75
Preselector MK1 with relay	£29.75
Preselector MK2 for SWL	£26.55
Crystal Calibrator	£21.85
New Model—VHF tunable Pre-Amp	22.50

These prices include VAT and postage.
SAE with all general enquiries please.

SWL TUNING UNITS

MK1 Cover 2-30MHz	£17.50
MK2 Covers 550KHz to 30MHz	£23.50

Designed and manufactured by us. Fifty switchable tunable positions, will match any antenna to your receiver. Now in use in over 40 countries. Ideal for use with QRP transmitters. Price includes VAT and postage on this unit.

SECONDHAND EQUIPMENT

Due to the fact that our secondhand equipment stock changes daily and our adverts are in press weeks before publication we are not publishing a list. A.S.A.E. will bring you an up-to-date list or please phone. Good clean equipment wanted and spot cash will be paid. All secondhand equipment carries a three month guarantee.

Shop Hours Mon to Fri 9.30am to 5.30pm
Saturday 9.30am to 5pm
ACCESS and Barclaycard facilities.
HP terms arranged. Part exchanges always welcome. Good clean equipment bought for cash.
Items sold on a commission basis.
We are located on the A574. Turn at the Greyhound Motel on the A580 (East Lancs Road) and we are about ½-mile on right. No parking problems at any time.

JOHNS RADIO

RACAL EQUIPMENT ALL WITH FULL MANUALS. Receivers RA17 fully checked and tested. Rack mounting with dust covers, **£225.00**—New louvred metal case, **£25.00**—RA98A New and boxed S.S.B. and I.S.B. convertor, **£100.00**—MA.197B (A.T.U.) Selector protector **£35.00**—Matching new louvred case **£15.00**—MA79G. Transmitter drive unit 1·5 to 30MC/S **£175.00**—Matching new case **£25.00**—54 Teleprinter mains **£35.00**—Tape readers type 6S/5 and 6S/6 new or used **£5.00** to **£15.00**—Reperforator 7TR/3 new with spares **£15.00** used **£10.00**—Redifon teleprinter terminal unit, type TT11 fully transistorised 600 ohms audio input. Power input 100 125 volts or 200-250 volts a.c. Contains internal power supply for teleprinter magnet coils. 0 to 100 bauds + unit made to operate Creed 75 teleprinter. Circuit included **£25.00.** Testing **£10.00** Extra. All items ex-works. Carriage extra. S.a.e all enquiries. Phone for appointment for demonstration of any item.

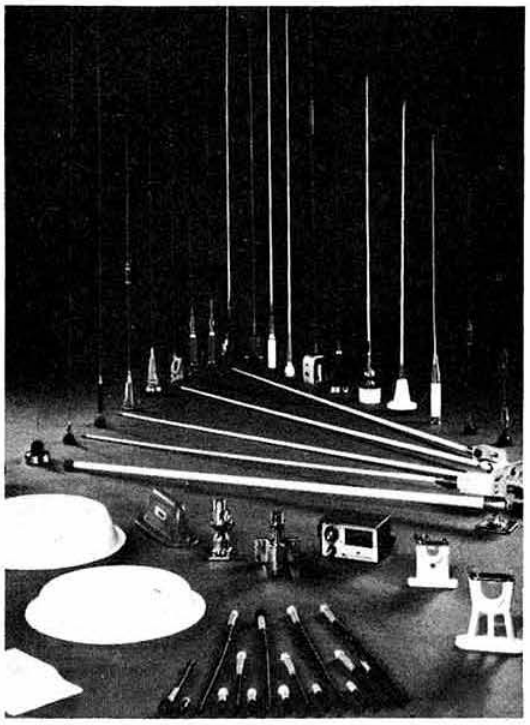
JOHNS RADIO 424 Bradford Rd, Batley, Yorks.
Tel: 0924 478159 (9.30 am to 1 pm)

CONGRATULATIONS!

G2DYM congratulates Dennis Shields, ISWL G-15318 on his success on being the only listener to hear and pass on to the GPO the SOS "Mayday" signals from the stricken Spanish ship "Marbell", EEK, using **the G2DYM anti-TVI Trap Dipole;** and upon the reception given in his honour and presentation of the Pegasus Award of Merit by the Spanish Ambassador, the Marquis de Perinat, at the Spanish Embassy on 25th September.

Full story, copy photographs, etc., as shown on BBC Nationwide, aerial article, full details of the G2DYM "Mayday Cracker" anti-TVI aerial used: 10" x 8", 16p SAE and 50p in stamps.

G2DYM, BEERDOWN, UPLOWMAN, TIVERTON, DEVON



ANTENNA SPECIALISTS UK LIMITED

The widest choice for the discerning amateur

For further information regarding the Antenna Specialists range some of our Amateur stockists are listed below:

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Lee Electronics, London.....01-723 5521
Waters & Stanton, Hockley, Essex.....03 704 6853
Amateur Radio Exchange, London.....01-579 5311
The Amateur Radio Shop, Huddersfield.....0484 20774
C. B. Electronics, Wigan.....0942 216567
Leeds Amateur Radio.....0532 452657
Commercial Communications, Luton.....0582 21884
Electrosearch Ltd, K9 Building, Wapping Road, Bristol.....0272 20483
Catronics Ltd, Wallington, Surrey.....01-669 6700
J. Birkett, 25 The Strait, Lincoln.....Lincoln 20767
Charnwood Communications, 44 Ratby Lane, Markfield, Leicester.....05305 2585
Crayford Electronics, 6 Lovelace Close, West Kingsdown, Kent.....047485 2577
Stephens-James Ltd, 47 Warrington Road, Leigh, Lancs.....0942 676 790
Appleton Woods Ltd, Electronics Division, 313 Heeley Road, Selly Oak, Birmingham.....021-472 7485
Mercia Radiotelephones, 7 Commercial Road, Hereford HR1 2BB.....0432 67864
Amcomm Services, 194A Northolt Road, South Harrow, Middx.....01-864 1106/1

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Bandet Way, Thame Industrial Estate, Thame, Oxon OX9 3SS **Tel: 084 421 3621/2**

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Since AMBIT introduced the "One Stop Technology Shop" to our service, we have been pleased to see just how many users of electronic components appreciate our guarantee to supply goods only from BS9000 approved sources. More than ever, professional and amateur electronics engineers cannot afford to waste time on anything less than perfect pedigree products.

SEE THE AMBIT AD TOO!

CD4000 CMOS

4000	17p	4059	563p	4522	149p
4001	17p	4060	115p	4527	157p
4002	17p	4063	109p	4528	102p
4006	109p	4066	53p	4529	141p
4007	18p	4067	400p	4530	190p
4008	80p	4068	25p	4531	141p
4009	58p	4069	20p	4532	125p
4010	58p	4070	20p	4534	614p
4011	17p	4071	20p	4536	380p
4012	17p	4072	20p	4538	150p
4013	55p	4073	20p	4539	110p
4016	52p	4075	20p	4541	141p
4017	80p	4076	90p	4543	174p
4018	80p	4077	20p	4549	399p
4019	60p	4078	20p	4553	440p
4020	93p	4081	20p	4554	153p
4021	82p	4082	20p	4556	77p
4022	90p	4085	82p	4557	386p
4023	17p	4086	82p	4558	117p
4024	76p	4089	150p	4559	388p
4025	17p	4093	50p	4560	218p
4026	180p	4094	190p	4561	65p
4027	55p	4096	105p	4562	530p
4028	72p	4097	372p	4566	159p
4029	100p	4098	110p	4568	281p
4030	58p	4099	122p	4569	303p
4031	250p	4160	90p	4572	25p
4032	100p	4161	90p	4580	600p
4033	145p	4162	90p	4581	319p
4034	200p	4163	90p	4582	164p
4035	120p	4174	104p	4583	84p
4036	250p	4175	95p	4584	63p
4037	100p	4194	95p	4585	100p
4038	105p	4501	23p		
4039	250p	4502	91p		
4040	83p	4503	69p		
4041	90p	4506	51p		
4042	85p	4507	55p		
4043	85p	4508	248p		
4044	80p	4510	99p		
4045	150p	4511	149p		
4046	130p	4512	98p		
4047	99p	4513	206p		
4048	60p	4514	260p		
4049	55p	4515	300p		
4050	55p	4516	125p		
4051	65p	4517	382p		
4052	65p	4518	103p		
4053	65p	4519	57p		
4054	120p	4520	109p		
4055	135p	4521	236p		

TERMS: CWO p&p., VAT to be added at 8% (inland), pp 25p per order. When ordering from the OSTS and Ambit - a single combined remittance and pp charge is sufficient. Account details OA.

2 Gresham Road, Brentwood, Essex.

Micromarket PRICES SLASHED

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6800P	6.50
6820P	£6
6850P	2.75
6810P	£4
6852	3.65
8080 series	
8080	6.30
8212	2.30
8216	1.95
8224	3.50
8228	4.78
8251	6.25
8255	5.40

MEMORIES

2102	£1.70
2112	£3.40
2513	£7.54
4027	£5.78
2114	£10
2708	£10.55

Development
MEK6800 £220
TK80 £306
AMI, Signetics, TI, Intersil, Harris etc. OA

Voltage Regs

NEW LOW PRICES

7800 series UC TO220 package 1A	all 95p
7900 series UC TO220 package 1A	all £1
78MUC series TO220 package ½A	all 90p
78LCP series TO92 100mA	all 35p
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78MGT2C ½amp adjustable volts	175p
79MGT2C ½amp adjustable volts	175p
723C precision controller	65p

MAINS FILTERS FOR NOISE/RFI etc

1 amp in IEC connector	£4.83
5 amp in 'wire in' case	£3.87
NE550A 73p	

LINEARS non consumer

BIMOS

CA3130E	84p	LM339N	66p	723CN	65p	LM301AH	67p
CA3130T	90p	LM348N	186p	741CH to5	66p	LM301AN	30p
CA3140E	35p	LM3900N	60p	741CN 8dil	27p	LM308H	121p
CA3140T	72p	709HC to5	64p	747CN	70p	LM308N	97p
CA3160E	90p	709PC dil	36p	748CN	36p	LM318H	279p
CA3160T	99p	710HC to5	65p	NE531T	120p	LM318N	224p
		710PC dil	59p	NE531N	105p		

Op amps

OPTO 7 seg displays

0.43" High Efficiency HP:

5082 7650	red CA	233p
5082 7653	red CC	
5082 7660	yellow CA	
5082 7663	yellow CC	
5082 7670	green CA	
5082 7673	green CC	

0.3" Standard HP 147p

5082 7730	red CA
5082 7740	red CC

0.5" Fairchild

FND500	red CC 150p
FND507	red CA 150p

TTL : Standard AND LP Schottky

	'N'	'LSN'		'N'	'LSN'		'N'	'LSN'		'N'	'LSN'		LSN
7400	13	20	7455	35	24	74126	57	44	74185	134		74377	124
7401	13	20	7460	17		74128	74		74188	275		74378	93
7402	14	20	7463			74132	73	78	74190	115	92	74379	130
7403	14	20	7470	28		74133		29	74191			74386	37
7404	14	24	7472	28		74136		40	74192	105	180	74390	140
7405	18	26	7473	32		74138		60	74193	105	180	74395	139
7406	38		7474	27	38	74139		60	74194	105	187	74396	133
7407	38		7475	38	40	74141	56		74195	95	137	74398	180
7408	17	24	7476	37		74142	265		74196	99	110	74399	150
7409	17	24	7478			74143	312		74197	85	110	74445	92
7410	15	24	7480	48		74144	312		74198	150		74447	90
7411	20	24	7481	86		74145	65		74199	160		74490	140
7412	17	24	7482	69		74147	175		74248		90	74668	110
7413	30	52	7483A			74148	109		74249		93	74670	249
7414	51	130	7484	97		74150	99		74251		90	**MISCELLENY**	
7415		24	7485	104	99	74151	64	84	74253		105	NE555 30p	
7416	30		7486		40	74153	64	54	74257		108	NE556 78p	
7417	30		7489	205		74154	96		74258		153	NE558 180p	
7420	16	24	7490	33	90	74155	54	110	74259		420	ICM7217 950p	
7421	29	24	7491	76	110	74156	80	110	74260		153	ICM7208 1495p	
7422	24	24	7492	38	78	74157	67	55	74261		353	ICL7106CP	
7423	27		7493	32	99	74158		60	74266		40	LCD DVM IC	
7425	27		7494	78		74159	210		74273		124	955p	
7426	36	27	7495A	65	99	74160	82	130	74275		312	LCD DVM KIT	
7427	27	29	7496	58	120	74161	92	78	74279		52	2480p	
7428	35	32	7497	185		74162	92	130	74283		120	3½ digit LCD	
7430	17	24	74100	119		74163	92	78	74290		90	display 1150p	
7432	25	24	74104	63		74164	104		74293		95	ICL7107 LED	
7433	40	32	74105	62		74165	105		74295		120	DVM kit 2065p	
7437	40	24	74107	32	38	74166			74298		100	**ICM7216 - 8 digit**	
7438	33	24	74109	63	38	74167	20		74324		157	**10MHz DFM/**	
7440	17	24	74110	54		74168			74325		242	**timer £19.82**	
7441	74		74111	68		74169		200	74326		247	**(for LED C.Cathl**	
7442	70	99	74112	88		74170	230	200	74327		237		
7443	115		74113		38	74172	625		74352		100	**SCALAR ICs**	
7444	112		74114		38	74173	170		74353		100	8629 150MHz	
7445	94		74116	198		74174	87	120	74362		715	divide by 100	
7446	94		74118	83		74175	87	110	74365		49	420p	
7447	82		74119	119		74176	75		74366		49	95H90DC 780p	
7448	56	99	74120	115		74177	78		74367		43	11C90DC 1400p	
7449		99	74121	25		74180	85		74368		49	8618 -new divide	
7450	17		74122	46		74181	165	350	74373		77	by 100 or 10	
7451	17	24	74123	48		74182	160		74374		77	for 120/60MHz	
7453	17		74124			74183		210	74375		60	450p	
7454	17	24	74125	38	44	74184	135						

The ICL7216BIPI is still the cheapest way to make a full 8 digit/ 10MHz frequency counter/timer, and with 10 external components + display - it is also one of the simplest. For £19.82, it takes a lot of beating. The mains filters have been extended now to include a 6amp IEC version at £5.10, and with the amount of electronic noise on the average supply (next door's fridge, for instance) it is a really worthwhile addition to any sensitive equipment. LPSN TTL now includes many more of latest types, all - of course - are absolutely prime first quality types. And don t forget our range of OPTO displays includes Hewlett Package high efficiency 0.43" types in all colours - renowned as the finest quality in the market. For other types of component - discrete LEDs, radio and audio devices, tuner modules, kits etc., see our other advertisement for more details - or send for the AMBIT catalogue system. Part one (45p) includes details of our background 'standard' items, and the new part two includes all the latest introductions and developments, plus a rundown on OSTS.

AMTECH 300

AERIAL TUNER UNIT

OOOOOH. . . . If only this advert were in colour you would be able to see how the beautifully finished two-tone grey case matches Trio and Yaesu gear.

This is not the cheapest A.T.U. around but it is a quality product made in the U.K.

Unlike some units the AMTECH 300 uses w-i-d-e spaced tuning capacitors and covers all bands 160-10 metres.

SO239 connections for transmitter and coax fed aerials are provided while 4mm sockets are used for single wire and earth connections.

Size:—8" × 3½" × 4"

PRICE £37.50 including VAT and carriage

AMCOMM SERVICES

194a NORTHOLT ROAD, SOUTH HARROW, MIDDLESEX.

TELEPHONE 01-864 1166

40MHz Counter
300MHz Prescaler
Rx Digital Readout

DIGITAL FREQUENCY COUNTER Model RQ-3 and it's accessories offer you one of the most versatile combinations available. On it's own the RQ-3 incorporates the following features: Mains operation—40MHz Counting—6 digit accuracy—35mV RMS sensitivity—50KΩ Input impedance—Display of FREQUENCY (MHz), PERIOD (μS), and WAVELENGTH (Metres).
£2 price reduction on complete Kit. Now only **£42.95** + 8%VAT

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Complete Kit **£18.95** + 8% VAT

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Available from Feb '79

CRYSTAL CALIBRATOR Model RQ-1. Outputs on 1MHz, 100kHz and 10kHz either CW or modulated.
Complete Kit only **£12.72** + 8% VAT

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MORSE PRACTICE KIT Model RQ-7. Includes key and all necessary components including case and PCB.
Complete Kit **£9.50** + 12½% VAT

CWO please. All prices include postage to UK and EIRE. All our Kits are of highest quality and we offer a "Helping Hand" service to customers in difficulty. Send for details—postage appreciated.

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YAESU MUSEN EQUIPMENT FROM STOCK WITH SMC 2-YEAR GUARANTEE. EVERY ITEM AVAILABLE OFF THE SHELF.

AMIDON TOROIDAL CORES, FULL RANGE SAE FOR DATA.

W2AU ALUMINIUM QUAD SPIDERS..... Per Pair **£25.00**
W2AU BALUNS with Built-In Lightning Arrester..... **£12.50**
RF2000 SWR/POWER METERS (Large Qty just in)..... **£20.00**
NYE-VIKING MORSE KEYS..... **£8.75**

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Send a SAE or Telephone for current availability

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SAE with all enquiries. All prices post paid & include VAT.

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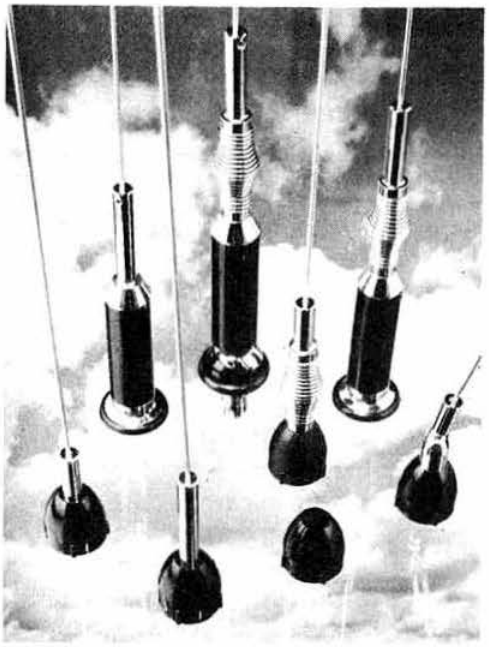

MILES ABOVE THE REST

ASCOT ANTENNAS
The VHF mobile aerial

This is a complete range of mobile antennas and accessories developed and manufactured in the United Kingdom.

All antennae are extremely rugged, designed to withstand extremes of weather using: fine stainless steel whips, A100 nylon bases, chrome-plated brass ferrules, heat-treated silver-plated beryllium copper contacts and buffed/polished stainless steel springs.

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radio communication

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