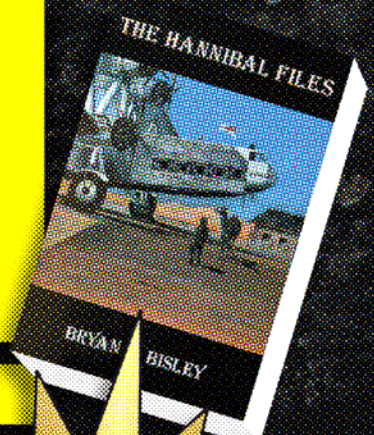
Contesting Guide 2002 - Rules for all RSGB HF/VHF Contests

RadCom

www.rsgb.org

0102



OUT NOW!

£3.95 Vol 78 No1 ♦ January 2002 The Radio Society of Great Britain Members' Magazine

Antennas - New Regular Column for Antenna Experimenters

The New Foundation Licence - What it's all About

Cave Rescue Communications Problems Solved by Radio Amateurs

WATERS & STANTON

- e-mail: sales@wsplc.com
- on-line catalogue: www.wspl
- freephone orders: 08000 73 7

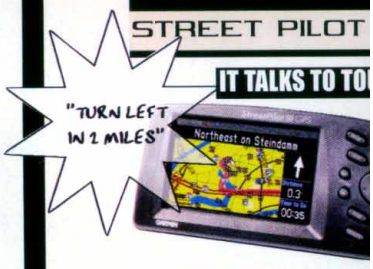
NEW FROM ICOM

IC-756 PRO II

The new IC-756PRO II will be arriving shortly. This is an updated version of the IC-756 transceiver, and although it offers the same band coverage and output power, extensive use of DSP circuitry has dramatically improved the bandwidth options. We have not got the full spec yet, so phone for latest info and price which will be around £2500.

NEW FROM GARM

STREET PILOT



It talks to you and is supplied with street mapping, 32Mb storage card and card for quick PC programming. Examples of are: "turn left 2 miles," "take 2nd left at roundabout", "house number 17 is on yo "turn right in 300ft." These are in stock Price £799

YAESU

FT-1000MP Mk-V 200W HF All Mode £2899

3 YEARS FREE WARRANTY — Plus £8.00 Carr.

SPECIAL OFFER FROM W&S.

Your choice of one **FREE** accessory this month only.

Either:

FREE MD100A8X BASE MIC. or
FREE SP8 EXTERNAL SPEAKERS or
FREE TCXO-6 TCXO UNIT or
FREE FILTER

PHONE FOR FULL DETAILS

FT-847 160m - 70cm All Mode £1199

3 YEARS FREE WARRANTY — Plus £8.00 Carr.

1.8 to 440MHz, this all-in-one station offers unbeatable value. 100W on HF plus 6m, and 50W on 2m and 70cms. You get genuine RF clipping on SSB for up to 6dB gain and there are 4 separate antenna sockets

£50 HEIL VOUCHER

ACCESSORIES FOR FT-847			
FC-20 ATU	£219 B	MD-100ABX Mic	£110 B
SP-8 Speaker	£139 B	YF-115C Collins	£99 B
FVS-1A Vce synth	£38 B	YF-115S Collins	£99 B

FT-840 HF TRANSCEIVER £475

SAVE — Plus £6.00 Carr.

100W 160-10m, USB,LSB,CW,AM, Memories, VFO A/B
Noise blanker , IF shift, Reverse CW, FM option, No internal ATU

FT- 920AF HF 160m-6m-100w £1099

Plus £8.00 Carr.

100 Watts from 1.8 to 54MHZ with dual VFO controls. Features DSP, Shuttle-jog, Internal ATU, 100 memories and built-in message keyer. Supplied with FREE FM unit.

FT-817 160m - 70cms 5W Portable £799

Plus £8.00 Carr.

FT-817 is an incredible design feat by Yaesu, and world reviews agree that there has never been anything like it. It's not expensive either. So why not get out in the fresh air, or put one in the car, and put the fun back into your radio.
FREE NiCads & AC charger

NEW MINI MATCHING PS-817

£19.95

Plus £2.00 Carr.

KENWOOD

TS-2000 160m - 70cms+23cms option £1695

3 YEARS FREE WARRANTY — Plus £8.00 Carr.

+£100 HEIL VOUCHER

The amazing TS-2000 offers coverage from HF to UHF. And you can go right up to 23cms with the optional module Monitor the DX cluster whilst working other DX, optimise your satellite contacts, enjoy the benefit of built-in ATU. It's all there in one very compact box. Colour brochures available on request.

TS-570DG 160 - 10m All Mode £849

3 YEARS FREE WARRANTY — Plus £8.00 Carr.

Possibly the best value in budget class HF radios. 100 Watts out on all HF bands with DSP and variable CW filtering. Lovely large dial and built-in memory keyer. We even give you a built-in ATU. Great value!

TS-570 ACCESSORIES			
VS-3 Voice synth	£45 A	MC-80 Desk mic	£72 B
DRU-3A Recording	£99 B	PS-33 Power supply	£199 C
HS-5 H'phones	£52 B	SP-23 Speaker	£68 B
MC-90 Desk mic	£187 B	CW Filters each	£61 B
		SSB 1.8kHz	£61.95B

10M OR 15M WHIPS £19.95

SUPER VALUE — Plus £2.00 Carr.

100W 10m & 15m Mobile Whips
with magnetic mount +
Built-in impedance transformer.

Just over 1m long, complete with magnetic base, shock spring, 5m coax cable with PL-259 and built-in impedance transformer for 1:1 VSWR. Centred on 28.5MHz or 21.250MHz, this is an absolute bargain! Get ready for the Autumn and Winter DX.

SGC SG-2020 HF TRANSCEIVER £599

Plus £2.00 Carr.

0 - 20 Watts Output
SSB CW AM Data
RF & VOGAD Processing
Variable Selectivity (100HZ)

Ideal for QRP, but with VOGAD and RF speech processing it can sound like 100 Watts! Very low current (4A max) makes it ideal for portable work. Variable selectivity down to 100Hz means no extra filters to purchase.

- NEW SG-2020 ADSP now available £799 carriage £8.00
- SG-237 mini auto coupler ideal for SG-2020 £369

ICOM

IC-746 160m - 2m All-mode

3 YEARS FREE WARRANTY

SPECIAL OFFER

ACCESSORIES			
FL-100 CW	£59 B	RS-746 Software	
FL-101 CW	£84 B	SM-8 Mic	
FL-103 SSB	£59 B	SM-20 Mic	
FL-223 SSB	£59 B	SP-21 Speaker	
		UT-102 Voice Synth	

IC-756PRO 1.8 - 52MHz 100W

3 YEARS FREE WARRANTY

LAST FEW AT £500 OFF LIS

IC-756PRO ACCESSORIES			
CT-17 RS-232	£99 B	SP-20 Speaker	
SM-8 Base mic	£129 B	SP-21 Speaker	
SM-20 Base mic	£144 B	UT-102 Voice synth	
		PS-85 Power supp	

IC-706MkIIG 160m - 70cm All Mode

3 YEARS FREE WARRANTY

The IC-706MkIIG is the latest sion of this popular HF/VHF/ It has more features but in th size.

£50 HEIL V

IC-706IIG ACCESSORIES			
AT-180 Auto ATU	£379 B	FL-223 SSB 1.8kHz	
FL-100 500Hz CW	£59 B	DC Lead (spare)	
FL-232 350Hz CW	£59 B	3.5m sep cable	
FL-103 SSB 2.8KHz	£59 B	5m sep. cable	
		Others: please phor	

HS-706 NEW HEIL HANDS-FREE HEADSET.

SAVE £900

This single piece headphone with boom microphone, from true hands-free operation using VOX. Wired for IC-706 (all m PTT switch. Built-in amplifier means no more low audio fr models! All this for just £59.95 B

IC-718 100W HF

SAVE £150

If you are looking for a ra gree, but without a high this may the one for you. bands plus wideband rec notch, dual vfo, swr mete options including DSP &

LIMITED SPECIAL OFFE

MFJ PRODUCT CATALOGUE THOUSAND PRODUCTS FROM MFJ/ MIRAGE/ VECTRONICS/HYGAIN + AMERITRON PHONE OR SEND LARGE SAE FOR F

HEAD OFFICE
22 MAIN RD, HOCKLEY, ESSEX, SS5 4QS ENQUIRIES: 01702 206835/204965 FAX: 01702 205843
MIDLANDS + NORTH SHOP
BENTLEY BRIDGE, CHESTERFIELD RD, MATLOCK, DERBYSHIRE, DE43 5LE ENQUIRIES: 01629 582380 FAX: 01629 580020
SCOTLAND + BORDERS SHOP
20, WOODSIDE WAY, GLENROTHES, FIFE KY7 5DF ENQUIRIES: 01592 756962 FAX: 01592 610451

YAESU

FT-1500M 2M FM Mobile — £159 Plus £8.00 Carr.

SPECIAL OFFER
SAVE £70

Small, compact yet built like a Battleship! Should last for years. Look at the Price!

KENWOOD

TM-D700E 2m + 70cm FM — £449 Plus £8.00 Carr.

Large detached screen and APRS, make this a firm favourite. 50W on 2m and 35W on 70cms. Features 200 memos, CTCSS, Band Scope, built-in TNC, DX cluster monitor, alphanumeric etc.

TM-G707E 2m + 70cm FM — £289 Plus £8.00 Carr.

If you are looking for simplicity and low cost, here's the answer. 2m &70cms with detachable front panel and "Easy operation mode." GREAT!

TM-V7E 2m + 70cm FM — £359 Plus £8.00 Carr.

A lovely cool blue display, easy with 50/35W output. 50W/35W p;us 280 memos and five storable operating profiles.

ICOM

IC-207H 2m + 70cm FM — £279 Plus £8.00 Carr.

A great budget class radio for VHF & UHF use.

IC-2800H 2m + 70cm FM — £419 Plus £8.00 Carr.

Large colour display with video input, and airband rx. 50W/35W and remote head unit.

IC-2100H 2M FM Mobile — £229 Plus £8.00 Carr.

Rugged design with switched receive filters 12.5/25kHz

IC-910 2m + 70cm All Mode — £1299 Plus £8.00 Carr.

Icom's new dual band all-mode base station radio with 23cms option.

YAESU

FT-7100 2m/70cm Mobile — £399 Plus £8.00 Carr.

NEW

Just arrived is this new dual band radio that has extended rx. Power is 50/35W.

Features dual in-band reception and detachable display (requires YSK-7100).

FT-41R 70cm — CLEARANCE PRICE — £99 Plus £6.00 Carr.

LAST FEW

* 430 - 440MHz FM
* Two independent VFOs
* 151 channels or 75 Alphanumeric
* 7 channel steps
* 4 power levels
* 1.5W 4 x AA cells (FNA-14)
* 3.5W @ 9.6V DC (FNB-38)
* Alphanumeric
* DTMF
* CTCSS (optional)

KENWOOD

TH-D7E 2m + 70cm — £299 Plus £8.00 Carr.

DATA COMMUNICATOR

One of the most successful handhelds over the past few years. It has a built-in TNC for Packet use. You can also use it for APRS operation in conjunction with an external GPS unit. Plus NMEA, 200 memos, and up to 5W output.

TH-F7E 2m + 70cm — £269 Plus £8.00 Carr.

NEW

WITH EXTRA WIDE RX COVERAGE

FREE BT-13

Up to 6W out with Li-ion battery and "scanner" style coverage from 100kHz to 1300MHz including SSB on receive! This is a great radio to have at all times when you are on your travels.

SELECTION FROM SECOND HAND LIST

HF Transceivers		Station Accessories	
IC-725	£399.00	PK-232MBX	£185.00
QRP-Plus	£249.00	PK-900	£299.00
TS-850S	£699.00	ALS-600XCE	£899.00
MX-3.5S	£149.00	Explorer	£499.00
TS-120S	£295.00	AMT-3	£50.00
VHF/UHF Base/Mobile Transceiver		FAX-1	£125.00
AR-446	£199.00	NTR-1	£99.00
2001 x3	£145.00	KPC-3+	£109.00
DR-110E	£125.00	MFJ-1274	£100.00
DR-M06SX	£159.00	MFJ-1276	£99.00
FT-225RD	£499.00	MFJ-1278BX	£225.00
FT-290R II	£249.00	MFJ-1610	£4.00
FT-690R II	£299.00	MML-144-30-LS	£69.00
VHF/UHF Hand Held Transceiver		KX-2	£59.00
DJ-480	£99.00	KX-3	£59.00
IC-M11	£199.00	2600HA	£79.00
TH-D7E	£249.00	3000A +	£289.00
C-108	£89.00	Micro-RF	£69.00
Shortwave Receivers		Mini-Scout	£129.00
HF-225 x2	£249.00	Pico-2	£149.00
WA-8000	£199.00	PowerClear	£199.00
Scanners Hand Held		DSP-59+	£149.00
DJ-X1	£99.00	FL-2025	£99.00
R-11	£199.00	G-650C	£389.00
		Miscellaneous	
		AE-2850	£50.00
		GPS-3000	£89.00

3 MONTHS PARTS + LABOUR GUARANTEE.
PLEASE RING BEFORE SENDING AN ORDER.

ADI

ADI AT-600 2m/70cms — £179 Plus £6.00 Carr.

HOCKLEY WAREHOUSE EXCLUSIVE

* Dual Band 2m/70cms
* Up to 5 Watts out
* Airband Receive
* Nicad Pack * CTCSS
* Hod Charger

You won't find better value than this. Limited stocks

ADI AT-201 — £99 Plus £6.00 Carr.

* 2m Handy
* 2.5W, 5W (13.5V)
* 1750Hz & CTCSS
* Wideband receive
* Drycell case
* Batteries not included
* Full keypad

Higher power than most palm sized models. Fully illuminated keypad for ease of frequency entry. Channel or frequency readout.

ADI AT-147 2m 50W — £199 Plus £8.00 Carr.

With Airband Receive

2m FM mobile transceiver. Three power levels 50,10,5W. Displays frequency or channel numbers, and offers Airband AM receive

YAESU VX5R BLACK OR SILVER FINISH — £269 Plus £6.00 Carr.

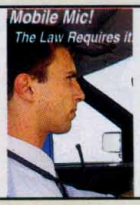
Tiny but incredibly rugged, the VX-5R provides transceiver capability on three amateur bands (50/144/430MHz) and almost continuous reception from 500kHz up to 999MHz.

YAESU VX1R 2m/70cm Handheld — £145 Plus £6.00 Carr.

Ultra-wide frequency coverage which includes VHF and UHF TV audio, AM broadcast, FM broadcast and AM airband.

LINEAR AMP UK

HANDS FREE MOBILE MICS — £44.95 Plus £8.00 Carr.



MOBILITE MOBILE MICS

Available for most radios. Includes boom mic and PTT/LOCK switch for gear change. Specify radio when ordering

LINEAR AMPLIFIERS

CHALLENGER II	HF LINEAR AMP10-160m	£2095	D
EXPLORER	HF LINEAR AMP10-160m	£1595	D
PIONEAR-572H	HF LINEAR AMP10-160m	£1295	D
RANGER-811H	HF LINEAR AMP10-160m	£895	D
HUNTER	HF LINEAR AMP10-160m	£1195	D
HUNTER-6	6m LINEAR AMP 50-54MHZ 800W OUT	£895	D
DISCOVERY-2	2m LINEAR AMP 400-1000W OUT	£1395	D
DISCOVERY-6	6m LINEAR AMP 50-54MHz 400-1000W OUT	£1395	D

HORA

HORA C-408 70cm — £49 Plus £6.00 Carr.

HOCKLEY ONLY

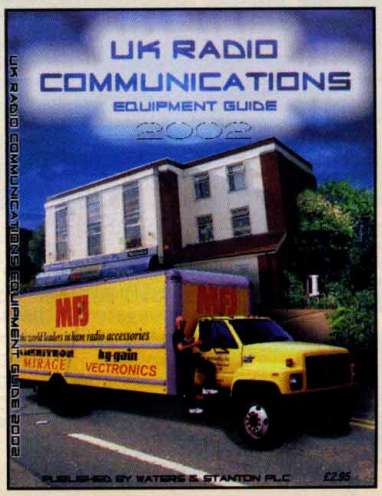
230mW
CTCSS
Digital Display

Very much underrated handy. Covers the full 70cm band. Wideband receive possible. Very compact fits into top pocket. Ideal for use at rallies. Only uses 2x AA batteries (not included).

SPECIAL OFFER

CARRIAGE CHARGE CODES:
A=£2, B=£6, C=8 Others: phone

NEW AND EVEN BIGGER



New 2002 Catalogue
336 pages
£2.95
carr. £1.25

VISA MasterCard

The foremost guide to amateur radio products from the latest transceivers to the smallest of accessories. Full colour pages with comprehensive specifications, there is nothing else like it in the world! There is also some editorial and reviews. Three times the size of many magazines, yet it costs no more.

INCLUDES MONEY SAVING VOUCHERS

WATERS & STANTON

MasterCard VISA

CUSTOMER SERVICE
THE ONLY THING WE **WON'T** DISCOUNT

Get in Front with HUSTLER — NUMBER 1 IN THE USA

5BTV

£199.95
Carr. £8.00

4BTV

£159.95
Carr. £8.00

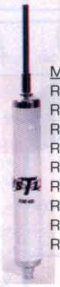
HUSTLER®

BASE ANTENNAS

Spec	5BTV	4-BTV
Bands	5	4
Coverage	80m-10m	40m-10m
Bandwidth 10-40m	Full	Full
Bandwidth 80m	100kHz	N/A
Resonance	1.15:1	1.15:1
Power	1kW CW	1kW CW
Traps	1" forms	1" forms
Tubing	1.25"	1.25"
Bracket size	1.75"	1.75"
Height	25ft 1" (7.64m)	21ft 5" (6.52m)
Weight	17lbs. (7.7kg)	15lbs (6.8kg)
Wind (112kph)	13kg	-

"I worked my first ZL while actually on the move using a Hustler whip" - Peter Waters G3OJV. Customers are also telling us how pleased they are with the base verticals. Check the prices!

Mobile Antennas



Model	Band	Bandwidth	Price
RM-10	10m	150-250kHz	£19.95 B
RM-11	11m	150-250kHz	£19.95 B
RM-12	12m	90-120kHz	£19.95 B
RM-15	15m	100-150kHz	£19.95 B
RM-17	17m	120-150kHz	£22.95 B
RM-20	20m	80-100kHz	£22.95 B
RM-30	30m	50-60kHz	£25.95 B
RM-40	40m	40-50kHz	£25.95 B
RM-80	80m	25-30kHz	£29.95 B

Model	Band	Bandwidth	Price
RM-10-S	10m	250-400kHz	£24.95 C
RM-15-S	15m	150-200kHz	£25.95 C
RM-20-S	20m	100-150kHz	£29.95 C
RM-40-S	40m	50-80kHz	£35.95 C
RM-80-S	80m	50-60kHz	£49.95 C

Lower mast sections

MO-1	54" (FOLD @ 22")	£31.95 C
MO-2	54" (FOLD @ 27")	£31.95 C
MO-3	54" (NON FOLD)	£25.95 C
MO-4	27" (NON FOLD)	£21.95 C

WATSON

CAPTURE THAT FREQUENCY!

Supplied with telescopic antenna and AC battery charger. If you are within 200 ft or so of the hand-held, you should be able to read off the frequency. Note it down and enter it in your scanner. It's that simple and it's pocket sized.

Each counter is supplied with internal Ni-Cad pack, AC charger and whip antenna.

Hunter	10MHz - 3GHz	£59.95 B
FC-130	1MHz - 3GHz	£79.95 B
S. Hunter	10Hz - 3GHz	£149.95 B
S. Searcher	10MHz - 3GHz	£99.95 B

SPY CATCHERS

Zoom into any FM transmission between 30MHz and 900MHz and monitor the audio. It takes a fraction of a second. The WR-5001 comprises a complete receiver with auto tuning, skip button, squelch adjustment and built-in speaker. The WR-5002 is similar, but adds an auto-hold control and a bargraph signal meter. It also adds a CI-V port for reaction tuning Icom and AOR receivers fitted with this feature. These monitor receivers are designed for nearfiled use and the range is from a few hundred metres to around 1km, depending on frequency and power of the transmitter.

WR-5001 £99.95 WR-5002 £159.95

CUSHCRAFT
COMMUNICATIONS ANTENNAS

HF Horizontal Beams + Dipoles

When you buy an HF Yagi, you want quality and realistic performance. You also want to know you can get spares. We offer a wide choice with guaranteed spares availability.

COUNT ON US!

MA5B	10-20m (5 band) 3 el 2.7m radius 1.2kW	£299.95 C
X-7	10-20m 7 el. 12.5 - 13dBi 2kW 6.09m radius	£669.95 D
X-740	40m add on kit for X-7	£269.95 C
A4-S	10-20m 4 el. 8.9dBi 2kW 5.49m radius	£529.95 D
A-744	Gives 40m or 30m operation from A-4S	£149.95 C
A3-S	10-20m 3 el. 8dBi 2kW 4.72m radius	£459.95 D
A-743	Gives 40m or 30m operation from A3-S	£149.95 C
A3-WS	12 & 17m 3 el. 8dBi 2kW 4.4m radius	£349.95 D
A-103	Gives 30m operation from A3-WS	£149.95 C
D-3	10-20m dipole element 7.86m 2kW	£219.95 C
D-3W	12, 17, 30m 17m dipole element10.37m 2kW	£219.95 C
D-4	10-40m dipole element 10.92m 2kW	£299.95 C
D-40	40m dipole element 12.88m 2kW	£259.95 C
XM-240	40m 2 el. 6dBi 7.3m radius 2kW	£699.95 C
Ten-3	10m 3 el 8dBi 3m radius 2kW	£189.95 C
ASL-2010	13.5-32MHz 8 el. log periodic6.4dBd 5.86m radius	£749.95 D

The Mini-Beam For Small Gardens

Cushcraft MA5B

The best 3 element mini beam you will ever find. 2 element gain on 10, 15 & 20m, and dipole performance on 12m and 17m. Up to 25dB F/B ratio, it accepts 1.2kW yet has a boom length of only 2.2m and element length of just 5.2m Turning radius is 2.7m. Uses a single feeder, this really works the DX. Get one up before winter!£299.95 C

Cushcraft Verticals

R8 (Illustrated), covers 8 bands from 6m - 40m, stands 8.7m high and requires no radials. You can feed it with 1.5kW and typical VSWR is around 1.2:1 £469.95 C

R8-GK Optional guy kit for R8 **£49.95 B**

R-6000 6 band 6m-20m that requires no radials and handles 1.5kW. Stands just 5.8m high and was chosen for the RSGB GB4FUN vehicle antenna. It works!! £329.95 C

NEW MA5V VERTICAL 20-10m **£229.95 C** NOW IN STOCK

WATSON

WEP-300B Earpieces £2.95 Plus £2.00 Carr.

SCOOP

Over-the-ear earpiece, popular for security and emergency use. Its low cost and firm mounting even in arduous conditions make this a popular item. fitted with 3.5mm jack plug.

WSA-1 PSK-31 Adaptor £39.95 Plus £6.00 Carr.

All you need to connect up to your sound card and run PSK-31. Includes CD software.

YS-130 Rotator £79.95 Plus £8.00 Carr.

Ideal for medium sized VHF antenna systems, the YS-150 is a good quality Japanese manufactured product. It is supplied with control box with rotary direction setting, plus upper and lower in-line mast clamps.

WSMA-450 2m/70cm £12.95 Plus £2.00 Carr.

Extremely low profile SMA antenna with transmit (Tx) capability on two bands as well as useful wideband reception across the VHF and UHF spectrum. Ideal for use with covert transceivers/scanners. and for shirt pocket use.

WDB-32 BNC VERSION £12.95 A

MASPRO VHF/UHF YAGIS

These high quality Yagis are made in Japan and superbly engineered. Features folded dipole, balun transformer, waterproof box and SO-239. You won't find anything better on the market.

Take a look at our prices!

144-WH5	2m 5 el. 6.6dBd 0.93m	£26.95 B
144-WH8	2m 8 el. 8.6dBd 1.79m	£37.95 B
144-WH10	2m 10 el 9.7dBd 2.3m	£41.95 B
435-WH8	70cms 8 el. 8.6dBd 0.8m	£29.95 B
435-WH12	70cms 12 el. 12.8dBd 1.51m	£35.95 B
435-WH15	70cms 15 el. 14.2dBd 2.19m	£41.95 B

To compare with dBi figures, add 2.4dB

WATSON

QS-112 Speaker Mic £16.95 Plus £2.00 Carr.

Combined speaker-mic. with PTT switch. Models for Yaesu, Kenwood, Icom, Alinco and Motorola.

SPM-102 Speaker Mic £9.95 Plus £2.00 Carr.

Incredible value!

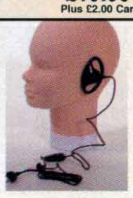
Has 4-way 3.5mm plug for VX-1, VX-5, FT-50 and IQ-7E Handies

Limited stocks.

WM-308 Base Mic £59.95 Plus £6.00 Carr.

The perfect answer for a high quality base microphone. Built-in pre-amp powered from rig or 2 x AA, electronic PTT and FM/SSB response switch. Includes lead with 8-pin plug. The plug needs to be wired for your radio. We can do this but phone for quote.

WCT-321 Lapel Talker £19.95 Plus £2.00 Carr.



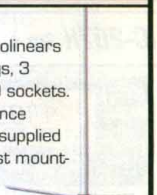
The elegant way of personal communications. Earpiece with combined lapel hanging mic and PTT. Models to suit most radios. State: Kenwood, Yaesu or Icom when ordering

Avair VSWR Power Meters

Great value and great performance. There's one just right for you.

AV-200 1.8 - 200MHz 5/20/200/400W £49.95 B
AV-400 140 - 525MHz 5/20/200/400W £49.95 B
AV-600 1.8 -525MHz 5/20/200/400W £59.95 B
All fitted with SO-239, PEP/RMS readings, 3W for FSD approx. AV-600 has dual sensors.

Base VHF/UHF Verticals



2m / 70cm fibre glass colinears with stainless steel fittings, 3 short radials and SO-239 sockets. These are high performance antennas, pre-tuned and supplied with all hardware for mast mounting.

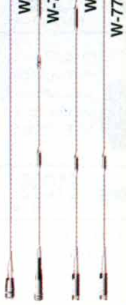
Dual Band 2m/70cms

W-30	3/6dB 1.15m long	£39.95 C
W-50	4.5/7.2dB 1.8m long	£49.95 C
W-300	6.5/9dB 3.1m long	£59.95 C

Triple band 6m/2m/70cms

W-2000	0/6/9dB 2.5m long	£69.95 C

Great Value Mobile Whips



W-285 2m 5/8th whip with PL-259 base £14.95 B

W-7900 2m/70cm 5 & 7.5dB length 1.58m £32.95 B

W-627 6m / 2m / 70cm 2 / 4.5 7.2dB length 1.6m £34.95 B

W-770HB 2m/70cm whip 3dB / 5.5dB length 1.1m £24.95 B

ALL WITH TILTOVER BASES.

RSGB Matters

RADIO SOCIETY OF GREAT BRITAIN

THE NATIONAL SOCIETY WHICH REPRESENTS UK RADIO AMATEURS

Founded in 1913 incorporated 1926
Limited by guarantee
Member society of the International Amateur Radio Union
Patron: HRH Prince Philip, Duke of Edinburgh, KG, KT

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 Subscriptions Department from which full details of Society services may also be obtained.

General Manager and Company Secretary:
Peter Kirby, MIMgt, MISM, G0TWW

Honorary Treasurer:
Ken Ashcroft, FCA, FCMA, G3MSW

BOARD OF THE SOCIETY
PRESIDENT:
R C Whelan, BSc, MSc, PhD, G3PJT

MEMBERS
G L Adams, G3LEQ
G W Dover, BSc, Dip Ed, G4AFJ
R M Page-Jones, CEng, MIEE, G3JWI
F C Handscombe, G4BWP
E F Taylor, G3SQX
R J Constantine, G3UGF

REGIONAL MANAGERS
K A Wilson, M1CNY
G M Darby, G7GJU
E A Cabban, GW0ETU
S N Lloyd Hughes, GW0NVN
J D Smith, MI0AEX
R E Piper, G3MEH
M J Salmon, G3XVV

Details of the Society's volunteer officers can be found in the RSGB Yearbook 2002

HEADQUARTERS AND REGISTERED OFFICE
Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE

Tel: 0870 904 7373

Fax: 0870 904 7374

All calls to the RSGB are charged at National Rate

QSL Bureau address:
PO Box 1773, Potters Bar, Herts EN6 3EP

E-mail addresses:
sales@rsgb.org.uk (books, filters, membership & general enquiries)
GB2RS@rsgb.org.uk (GB2RS and club news items)
RadCom@rsgb.org.uk (news items, feature submissions, etc)
AR.Dept@rsgb.org.uk (Morse tests, beacons, repeaters, GB calls, licensing)
IOTA.HQ@rsgb.org.uk (Islands On The Air)
GM.Dept@rsgb.org.uk (managenal)

Website: www.rsgb.org

WebPlus: Members-only web site **www.rsgb.org/membersonly** Use your callsign in lower case as the user name and your membership number (see *RadCom* address label) as the password.

RSGB BOARD AND REGIONAL MANAGERS' ELECTIONS

THE RESULT OF the RSGB Board Election for 2002 - 2004 is as follows:

Fred Handscombe, G4BWP: 567 votes;
John Butcher, G3LAS: 529 votes;
Peter Maile, MI0BME: 238 votes;
Edwin Taylor, G3SQX: 582 votes;
Richard Constantine, G3UGF: 652 votes;
Robin Page-Jones, G3JWI: 687 votes.

Fred Handscombe, G4BWP; Edwin Taylor, G3SQX; Richard Constantine, G3UGF; and Robin Page-Jones, G3JWI, are therefore elected to the Board.

The result of the Regional Managers' election in Region 6 (North Wales) is as follows:

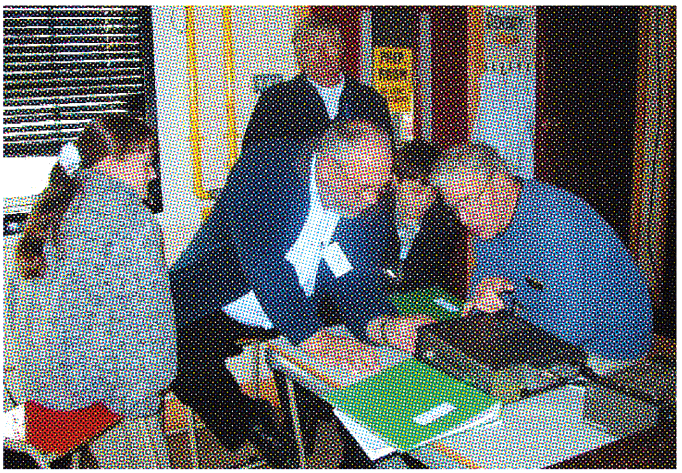
Patrick Allely, GW3KJW: 28 votes;
Liz Cabban, GW0ETU: 36 votes.

Liz Cabban, GW0ETU, is therefore elected as RSGB Regional Manager for Region 6 (North Wales).

RSGB WITHDRAWS FROM ORGANISING TRADE SHOWS

WITH THE continuing success of the RSGB Regional organisation it is becoming possible for the RSGB to have a presence at an increasing number of amateur radio events, rallies and trade shows around the country. In view of this enhanced activity, the RSGB has decided that it will no longer itself organise amateur radio trade shows. The RSGB believes that there is a need for more convention-style meetings where radio amateurs can discuss new techniques and other innovations in seminar-like events and that such events represent a better use of the RSGB's resources.

FOUNDATION LICENCE GETS UNDER WAY



A 'hands-on' demonstration of amateur radio in action is part of the Foundation course. Here, students at Colchester listen to the HF bands.

AROUND 40 Class B radio amateurs made history on 7 November, when they became the first to take their Morse Assessments at RSGB headquarters in Potters Bar. A properly-completed Morse Assessment allows Full or Intermediate Class B amateurs who have been licensed for more than a year to operate on the HF bands, by taking out a Foundation Licence when they become available on 1 January. It was hoped that at least two Morse Assessment sessions could be held in each RSGB Region before the end of December 2001 in order to get as many Class B licensees who wanted to take the assessment through the system in time for them to go on the HF bands from 1 January.

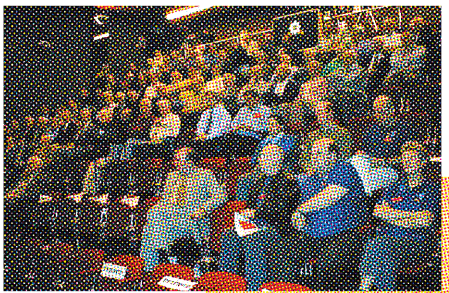
One of the first full Foundation Licence pilot courses was run by Colchester Radio Amateurs on 10 / 11 November. Lead Instructor Frank Howe, G3FIJ, and his team saw 14 out of the 15 candidates successfully complete the course. Further details on page 46.

RSGB AGM HELD ON 1 DECEMBER

THE SOCIETY'S Annual General Meeting was held at Strathclyde Fire Brigade headquarters, Bothwell Road, Hamilton, in Scotland on Saturday 1 December.

110 members attended the AGM, with more arriving for the afternoon Open Forum session.

A report will be published in *RadCom* in due course, meanwhile here are a couple of pictures taken on 1 December.



Members filled the lecture theatre at the Strathclyde Fire Brigade HQ.

On the top table: Honorary Treasurer Ken Ashcroft, G3MSW; President Don Beattie, G3BJ, and General Manager Peter Kirby, G0TWW.

M3 PREFIX FOR FOUNDATION LICENCE

HOLDERS OF THE new Foundation Licence, which comes into effect on 1 January 2002, are being issued callsigns with the prefix **M3** (MM3 for Scotland, MW3 for Wales etc), rather than M2 as had previously been expected.

See pages 45 - 48 for how you can become involved with promoting amateur radio via the Foundation Licence, and for information on HF band operating for new and potential Foundation Licensees.

RSGB SURVEY RESULTS

IN JULY 2001 *RadCom* included a questionnaire form. We had a superb response, with over 5200 replies: around 20% of the membership. Because of this massive response, the results have taken longer than anticipated to analyse, but an article on the results of the survey is now scheduled to be published in *RadCom* next month.

VIDEOLOGIC DRX-601ES COMPETITION

A FINAL REMINDER that there's still time to enter the RSGB VideoLogic DRX-601ES competition and win one of these great Digital Radio Tuners, as reviewed in the October *RadCom*. Full details of the competition can be found on page 45 of the November issue. The closing date for entries is **Wednesday 2 January 2002**. Good luck!

AROS TALKS AT LOCAL RADIO CLUBS

THE AROS Coordinator, Barry Scarisbrick, G4ACK, will be giving a presentations on the work of the RSGB Amateur Radio Observation Service (AROS) at the **Silverthorn Radio Club** on **18 January.** For further details contact David, G0KHC, on tel: 0208 504 2831.

CLUBS OFFERING FOUNDATION LICENCE COURSES (details as of 29 November 2001)

Club	Contact	Tel:	E-mail:
Banff and Buchan ARC	Stephen Roberts, GM4HWS		
Barry ARS	Richard Mortimore, GW4BVJ	01656 658830	richard@gw4bvj.com
Burnham Beeches RC (Berkshire)	Bryan Sheppard, G4CVF	01895 271107	ham@g4cvf.demon.co.uk
Bury St Edmunds ARC	George Woods, G3LPT	01359 259518	
Cambridge & DARC	Ron Huntsman, G3KBR	01223 501 712	HuntsmanRA@classicfm.net
Cambridge University Wireless Soc	Martin Atherton, G3ZAY		soc-cuws-committee@lists.cam.ac.uk
Carrickfergus ARG	John Branagh, GI3YRL	028 93367208	jh.branagh@ulst.ac.uk
Cheltenham ARA	Derek Thom, G3NKS	01242 241099	cara@g3nks.demon.co.uk
Cockenzie & Port Seton ARC	Bob Glasgow, GM4UYZ	01875 811723	bob.gm4uyz@btinternet.com
Cornish Radio Club	Mrs C K Hammett	01726 882 758	
Coventry ARS	John Beech, G8SEQ	024 76273190	
Dundee ARC	Macdonald Black, GM0PIV		
Dunoon & DARS	A B Horton, GM0BUL	01369 840217	
Falkirk Radio Club	Ken Elliott, GM4NTX		gm4ntx@nfld.totalserve.co.uk
Farnborough & DARS	Norman Vickerstaff, G0VYR	01483 835320	
Felixstowe & DARS	Paul Whiting, G4YQC	01394 273507	
Finningley ARS (South Yorks)	E Prince, G3KPU	01302 840 166	
Foyle and DARC (Co Londonderry)	Ronnie Kilgore, GI0WYO	02871 342636	ronniekilgore@aol.com
Goole R & Electronics Society	Richard Sugden, G0GLZ	01405 769894	Richard.Sugden@tesco.net
Greater Peterborough ARC	Tracey Ralph, M1DZF	01733 753477	M1DZF@aol.com
Guilford & DARS	Roger Taylor, G4HZA	01483 210246	rogeratwork@mail.com
Halkyn & DARS (Flintshire)	Edwin Hewins, GW3GSJ	01352 780 334	
Harlow & DARS	Len Brackstone, G7UFF	01279 832700	
Harrogate Ladies' College	Richard Horton, G3XWH	-	(internal candidates only)
Hastings Electronics & Radio Club	R C Gornall	01424 444466	
Hornsea ARC	Duncan Heathershaw, G3TLI	01964 532588	duncanheathershaw@lineone.net
Horsham ARC	A Watt, G3ZBU	01403 253432	(eves/weekends)
Houghton ARC (Tyne & Wear)	Foster Aungles, G0ABF	0191 5844673	foster@g0abf.freeserve.co.uk
Itchen Valley ARC (Hants)	Sheila Williams, G0VNI	023 8081 3827	
Leicester RS & Computer Club	S P Hey, G3HYH	0116 224 2598	
Lincoln Short Wave Club	Pam Rose, G4STO	01427 788356	
Livingston & DARS	W Jenkins, MM0WKJ	0131 475 7242	
Lothians RS (Edinburgh)	Tommy Menzies, GM1GEQ	0131 445 3928	
Lowestoft District and Pye ARC	Phil Holden, G0JSG	01502 585448	phillip.holden@virgin.net
Meirion ARS (Dolgellau)	Gervase Chavasse, GW4URJ	01341 421028	
Mid Cheshire ARS	Niall Reilly, G0VOK	01606 871413	niall@g0vok.freeserve.co.uk
Mid Glamorgan ARG	M Carey, GW4VSE	01656 734 668	
Mid Lanark ARS	Elvin Bailey, GM8BBA	01698 748616	elvin8bba@blueyonder.co.uk
Moray Firth ARS (Banffshire)	Geoff Crowley, M5AHO	01542 882818	
Norfolk ARC	Mark Tuttle, G0TMT	01603 890600	g0tmt@aol.com
Northampton RC	Norman Millar, G0GBZ	01327 349188	NorthamptonRadioClub@hotmail.com
North Cheshire RC	Jill Gourley, G0OZJ	0161 485 5036	JillGourle@aol.com
North Wakefield RC	Ken Baker, G3SPX	01924 824451	mail@nwrc.org
North Wales Radio Club	Tony Chalk, MW0BXJ	01492 530954	anthony_chalk@thefreeinternet.co.uk
Otley ARS	Jack Worsnop, G0SNV	01274 636197	jack.worsnop@ycl.co.uk
Oxford & DARS	Ray Goff, G4FON	07884 183580	
Paisley (YMCA) ARC	Jim Stirling, GM3UWX		gm3uwx@hotmail.com
Poole RS	Phil Mayer, G0KKL	01202 700 903	
Portland ARC (Dorset)	Kerry Morris, G1WIK	01305 788591	kerry-g1wik@portland-amateur-radio-club.org.uk
Preston ARS	Eric Eastwood, G1WCJ	01772 686708	
Preston Community School ARC	Craig Douglas, G0HDJ	01935 471131	
RAF Waddington ARC	Robert Pickles, G3VCA	01522 528708	
Rochdale & DARS	Dave Carden, G3RIK		dave.carden@mbc.co.uk
Rugby ATS	Tony Humphries, G0OLS	01455 552519	Thumph3426@aol.com
Salop ARS (Shrewsbury)	Les Evans, M0BAV	01743 450457	
Sandwell ARC (West Midlands)	Martin Prestidge, G2BXP	0121 552 4902	
Scunthorpe Steel ARC	Kevin Bellamy, M5MAQ	01724 872042	
Shirehampton ARC (nr Bristol)	Ron Ford, G4GTD	0117 9856253	
Silverthorn Radio Club (London)	Andrew Mowbray, G0LWS		g0lws@ic24.net
Solihull ARS	P Gaskin, G8AYY	0121 783 2996	
South Bristol ARC	S G Nash, G0UQT	01275 392 398	
South Derbyshire & Ashby Woulds ARG	B Walley,G7EHU	01283 760 822	
South Dorset RS	Robert Hodges, G0RYL	01305 820 400	
South Tyneside ARS	Allan Dodds, M0HGV	07831 279886	allan@marystruck.com
Southdown ARS (East Sussex)	Ian Waterhouse, M1APT		ian@m1apt.freeserve.co.uk
Spalding and DARS	John Hill, G4NBR		
Stockport Radio Society	B Naylor, G3SHF	01625 850 088	
Stratford RS (Stratford-upon-Avon)	John Harris, G8HJS	01789 295257	John.Harris57@btinternet.com
Stratford-upon-Avon & DRS	David Jones, G6FEO	01926 642858	G6FEO@cwcom.net
Strathmore ARC (Tayside)	G Scattergood, MM0BSX	01307 468 824	
Telford and DARS	Mike Street, G3JKX	01952 299677	mstreet@g3jkx.freeserve.co.uk
Thornton Cleveleys ARS	C Webb, G4FWM	01253 876 313	
Verulam ARC (St Albans)	Ralph Nash, G1BSZ		G1BSZ@aol.com
Warrington ARC	John Riley, G0RPG	01925 762722	john.riley17@btinternet.com
Waterside ARC (Southampton)	Tony Horton, G0LKG	023 80844316	
Welland Valley ARS	Simon Day, G8PAN	01858 432109	
West Manchester RC	Les Jackson, G4HZJ	01942 870634	g4hzj@btinternet.com
Widnes and Runcorn ARC	Martin Trust, G4LUQ	01928 714843	FamilyTus@aol.com
York ARS	Keith Cass, G3WVO	0904 422084	keith-g3wvo@supanet.com

ICOM ML&S

the very BEST EQUIPMENT brought to you by Martin Lynch & Sons

We have for January *only* a few **IC-746** radios at **£1159.00**

Icom IC-910H

STANDARD UNIT *ONLY* **£1299.00**
OR NO DEPOSIT
36 payments of
£48.28

The LATEST VHF/UHF all mode radio from Icom. Features include 100 Watts on VHF, 75 Watts on UHF, True Dual Receive with independent volume and squelch for each receiver, Data sockets for simultaneous two band 9600 Packet operation, Electronic keyer built in and CTCSS encoder.

OPTIONS AVAILABLE 1296MHz, DSP units, TCXO, Voice Synthesizer, TCXO, Narrow CW filters.

Icom IC-746

THIS RADIO *ONLY* **£1159.00**
OR NO DEPOSIT
36 payments of
£42.14

Features
- *100 watts HF*
- *100 watts 50mHz*
- *100 watts 144mHz*
- *Internal ATU for HF & 50 mHz*
- *DSP noise reduction*
- *Large clear display*
- *Twin Pass Band Tuning*
- *Supplied with Microphone DC lead and 2 Year Icom Warranty*

Icom IC-775 DSP

NEW PRICE ~~£2995.00~~
CALL FOR DEAL!!
USED IC775's
FROM £1495

The Icom IC775DSP the Flagship 200 Watt transceiver has established itself as a very popular TOP CLASS RADIO, we have used examples from £1495.00. New price is £2995.00 but give us a call if you want a *good 'ol Lynch Deal.*

Icom IC-R3

The LATEST scanner from Icom offering audio and Visual scanning facilities. Listening to your local repeater or watching *'Crossroads'*. *IT DOES THE LOT!*

COMPLETE WITH LITHIUM ION BATTERY *ONLY* **£449.00**
OR £45.00 DEPOSIT
9 payments of
£45.00

Icom IC-718

FREE DSP THIS MONTH *ONLY* **£699.00**
OR NO DEPOSIT
36 payments of
£25.98

This is Icom's entry level HF transceiver with options for DSP and CW or SSB Filter. Offering 100 Watts on all the HF bands at only £699.00. We are offering FREE DSP for this month only.

Icom IC-756 Pro-MK2

DEPOSITS BEING TAKEN NOW

The new Icom flagship has all the features of the IC-756 Pro plus -
- *Improved Receiver*
- *Digital Voice Storage*
- *32 bit DSP Processing*
- *24 bit AD-DA converter*
- *Plus much more!*

By the time you read this advert we should have our first shipment the new Icom IC-756 Pro Mk2 at **£2495**

Icom IC-756 Pro

ONLY **£1899**
NO DEPOSIT
48 payments of
£56.18

We still have some of the original **IC756 Pros** but be quick as they are going fast at £1899

Icom IC-706

AVAILABLE AT *ONLY* **£999.00**
OR NO DEPOSIT
36 payments of
£36.32

One of the finest mobiles, offering HF/6/2&70 with all mode operation and DSP.

Have a trade in? We pay **TOP MONEY**
– call the sales desk or EMAIL your request to: sales@hamradio.co.uk

APR 19.9% ML&S is a licenced credit broker.
Finance offered subject to status. Full written details on request.

ML&S martin lynch & sons
Suppliers of Communications Equipment

tel: 0208 566 1120
fax: 0208 566 1207
website: www.hamradio.co.uk
email: sales@hamradio.co.uk EO&E

128, 140-142 NORTHFIELD AVENUE • EALING • LONDON W13 9SB

Front Cover:

Developed by radio amateurs for essential rescue communications work underground, the 'HeyPhone' has now replaced the 'Molefone' after 15 years of sterling service. See Mike Bedford's article on page 16.

Radio Communication

Editor
Steve Telenius-Lowe, G4JVG

Technical Editor
George Brown, M5ACN

Technical Illustrator
Cover Design
Bob Ryan, 2E1EKS

Advertising Design
Annie McVicar

Secretarial
Lynn Wortley

All contributions and correspondence concerning the content of *RadCom* should be posted to:

The Editor
Radio Communication
Lambda House, Cranborne Road
Potters Bar, Herts EN6 3JE

Tel: 0870 904 7373

Fax: 0870 904 7374

E-mail: radcom@rsgb.org.uk

ADVERTISING
All display and classified advertising enquiries (excepting Members' Ads) should be sent to:

Janice Forde
Advertising Sales, RSGB
Lambda House, Cranborne Road
Potters Bar, Herts EN6 3JE

Tel: 0870 904 7377
(advertising ONLY)

Fax: 0870 904 7378
(advertising ONLY)

E-mail: adsales@rsgb.org.uk

RadCom is published by the Radio Society of Great Britain as its official journal on the first day of the relevant month and is sent free and post paid to all members of the Society.

Closing date for contributions, unless otherwise notified, is five weeks prior to publication date.

All material in RadCom is subject to editing for length, clarity, style, punctuation, grammar, legality and taste.

No responsibility can be assumed for the return of unsolicited material (if in doubt, call us first!)

Filmset by JJ Typographics Ltd, Southend, Essex.

Printed by Southernprint (Web Offset) Ltd, Poole, Dorset.

RSGB MEMBERSHIP - Annual Rates

Home Corporate	**£40.50**
Overseas Corporate	**£40.50**
Corporate (Senior Citizens)	**£31.50**
(Applications should provide proof of age at last renewal date)	
Corporate (50 years membership)	**50% DISCOUNT**
Corporate (60 years membership)	**FREE**
Family member	**£16.50**
(Must reside with existing member. Does not include RadCom)	
Student Members	**£26.50**
(Applications should include evidence of full-time student status)	
HamClub (under 18)	**£16.50**
Affiliated Societies (UK or Overseas)	**£40.50**

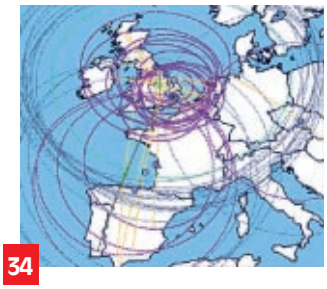
Subscriptions include VAT where applicable.
Special arrangements exist for blind and disabled persons.
Details and membership application forms are available from RSGB HQ.

RadCom This Month
January 2002

News and Reports

Technical Features

Down To Earth - Amateur Radio From The Ground Up


34

Reviews


39

Regulars

RadCom NEWS

New Internet Gateway

A NEW 2m Internet gateway has been set up at the station of Terry Giles, G4CDY in Purley, Surrey. It is on 145.2875MHz and uses 'I-Link' software. Further information is available at www.g4cdy.co.uk/

Ian Abel, G3ZHI, reports that you can now "just dial 888" on IRLP to call the McMurdo base in Antarctica, where there are about 20 amateurs. The link goes out on a local UHF simplex channel around the American base. For more information on IRLP and Internet linking see Ian's website at www.qsl.net/g3zhi

CQ World Wide Logs Update

LAST MONTH we reported on page 11 that *CQ* had announced that it was only accepting logs for the *CQ* World Wide contests sent by e-mail, and not on disks or paper logs sent through the postal service. Rich Moseson, W2VU, the editor of *CQ* magazine, has now written to say: "*CQ* has never said it would not accept logs by mail. We asked contest participants to submit their logs by e-mail if at all possible, as 90% already do. Logs received by mail will be accepted, but held unopened until we are reasonably well-assured that we may open them safely. The spate of recent reports of cross-contamination of mail that has been on the same sorting equipment as contaminated mail has made our concern even greater. Paper logs may also be faxed to us at 001 516 681 2926." Roger Western, G3SXW (QTHR), has offered to e-mail *CQ* World Wide contest logs from any UK operators who do not themselves have any access to e-mail.

ALEX Anderson, MBE, GM4VIR, became a silent key on 11 November. Alex received his MBE on behalf of all members of Raynet who assisted at Lockerbie when PanAm flight 103 crashed there on 21 December 1988.

HF Remote Station

DAVE GOULD, G3UEG, has received a Notice of Variation (NoV) as a Special Research Permit to set up an HF station that is remotely controlled over the telephone network. The NoV was issued after 16 months of liaison between the RSGB Licensing Advisory Committee and the RA and was finally approved after a site inspection.

Dave's system is based on a Kachina 505DSP transceiver and Kachina's own specially-designed remote control system. The ability to operate remotely will provide many benefits, including the use of more effective antennas where planning restrictions or garden size limit what can be done at home. It could also be used to put antennas away from sources of man-made noise or to get away from EMC problems. It is hoped that a more detailed description of the system and experience in use will appear in *RadCom* in due course. Meanwhile, anyone interested can contact Dave by e-mail: david.gould@btinternet.com

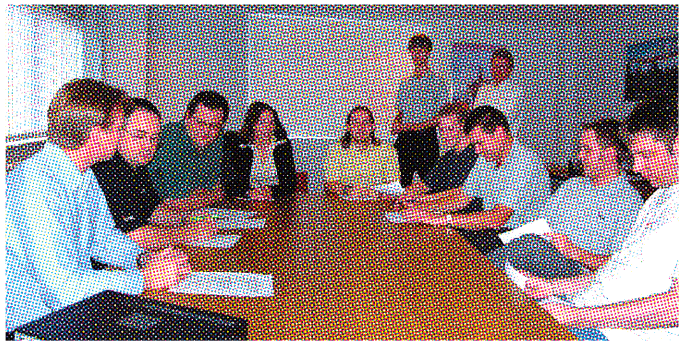
SWBC News

THE BRITISH DX Club (BDXC-UK) is a leading club of short-wave broadcast DX enthusiasts. The club's list of DX and media broadcasts has now been fully updated on the BDXC-UK website for the winter schedule period. Also new on the website are copies of exclusive East African DX Reports from Kenya. Both the DX programme list and the East Africa Reports can be found on the 'Articles' page of the BDXC-UK website at: www.bdxc.org.uk

Russians to Keep Morse Requirement

THE RUSSIAN Federation has told the ITU that it considers there are good reasons for the Amateur Service to continue with Morse code as a licence requirement for operation below 30MHz. It therefore intends to make no change to its domestic licence conditions whatever the outcome of the 2003 World Radio Conference.

Icom Holds RAE Course



Icom (UK) staff hard at the study.

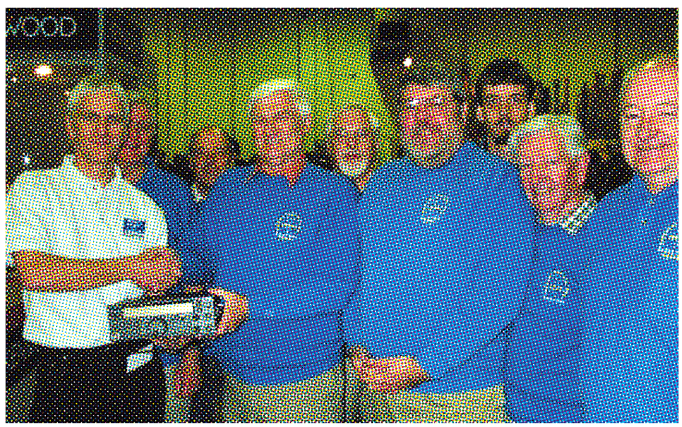
ICOM (UK) Ltd held an RAE course for members of its staff between September and December. Run by two members of staff who already hold amateur licences, the course aims to increase the knowledge base of the staff in basic electronic principles and radio theory, and to give them greater confidence in communicating with their customers on a general technical level. The RSGB provided copies of the *RAE Manual* for the Icom students who took the RAE on 3 December.

Dave Stockley, Chairman of Icom (UK), said that the company presently has 14 licensed staff and the course should lead to the Icom (UK) club callsign, G4ICM, getting more of an airing. The founder of Icom, Mr Inoue, JA3FA, is a well-respected amateur in Japan.

STELAR RAE 'Crash Course' for Teachers

FOR SEVERAL YEARS, teachers who wished to take up amateur radio as a tool for teaching in their schools have been given the opportunity to take a STELAR 'crash course'. These intensive courses are supported by the RA and the RSGB and enable teachers to prepare for the RAE in a matter of days rather than the usual months. A new crash course for teachers will be held **from 2 to 4 April 2002** at the RA Training Centre at Whyteleafe, South Croydon, Surrey. It is available to teachers who work in schools where there is no amateur radio activity at present, where there is radio equipment but no-one to operate it, or where a licensed member of staff is about to leave. The course is free of charge and includes tuition, course materials and books, and accommodation and meals.

Further details can be found on the RSGB website: go to www.rsgb.org/news/index.htm then follow the 'Youth' and 'STELAR' links. Alternatively, contact Esde Tyler, G0AEC (QTHR); e-mail: esde@etyler.freeserve.co.uk, or the STELAR chairman, Anthony Vinters, G0WFG (QTHR); e-mail: Tony@g0wfg.demon.co.uk



To affirm its continued sponsorship of the Scarborough Special Events Group, David Wilkins, G5HY, of Kenwood (UK) presents a TS-570DG HF rig to members of the group.

Welcome to PIARA

THE IARU has announced that the Pitcairn Island Amateur Radio Association (PIARA) has been admitted as an IARU member with effect from 16 November. The President of PIARA is Tom Christian, VP6TC, and the Association has 10 members, representing the entire population of resident amateur operators on the island.

● A MULTINATIONAL DXpedition to Ducie Island, one of the four islands of the Pitcairn group, was called off after heavy seas caused unacceptable delays to the schedule. Following the acceptance of PIARA as an IARU member society, Ducie Island became the newest DXCC entity and the DXpedition was scheduled to take to the airwaves at midnight on 16 November.

77-Year Old Solo Sailor

DAVID CLARK, KB6TAM, has, at the age of 77, become the oldest person to sail solo around the world. He completed his circumnavigation by arriving in the Bahamas in November, two years after leaving Fort Lauderdale, Florida. David has been using amateur radio to keep in touch with family and friends during his epic journey and was a regular check-in on the 14313kHz 'Seafarer's Net'.

Afghanistan Back on the Air

FOLLOWING THE FALL of Kabul and other Taleban-held cities in Afghanistan, the Islamic Republic of Afghanistan government (which is still recognised by the United Nations) has issued a club licence, YA5T. The club callsign is being operated by Peter Casier, ON6TT; Mats Persson, SM7PKK; Robert Kasca, S53R; and Mark Demeuleneere, ON4WW, who are in Afghanistan working for the UN World Food Programme. The ARRL DXCC Desk reports that it has already received acceptable documentation for YA5T and has approved it for DXCC credit.

Cockenzie and Port Seton ARC Have Raised Nearly £7000

Kind-Hearted Club Presents Big Cheque to its Adopted Charity

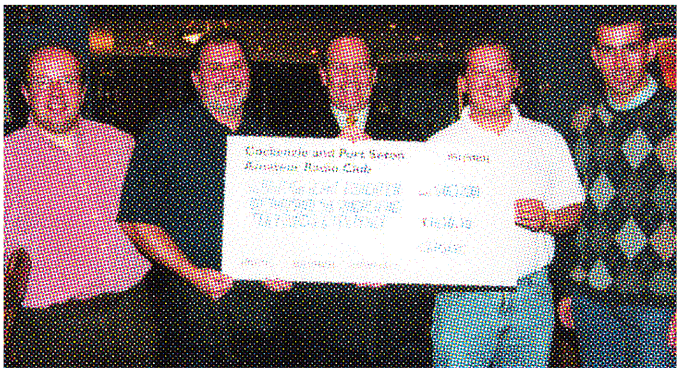
MEMBERS OF the Cockenzie and Port Seton Amateur Radio Club recently presented a 'big cheque' to their adopted charity, the British Heart Foundation.

The cheque was presented to Iain Lowis, the Director for Scotland of the British Heart Foundation, by members of the club at a recent meeting.

The sum of £1610.10 was the largest raised by the club since its inception in 1993. The money was raised over the course of the year, primarily from the club's annual junk night and other small club events. It brings to a total of £6920.10 the amount raised for the the club's favourite charity.

Club secretary, Bob Glasgow, GM4UYZ (pictured above, second from left), said, "I think it is a tremendous achievement for a 'wee' club, which has a totally unofficial structure which includes no subscriptions. It certainly is important to show what can be done through our hobby to help others and at the same time help to advertise the 'good' of amateur radio."

More news of the fund-raising activities of radio clubs can be found in this month's Club News on pages 80 / 81.

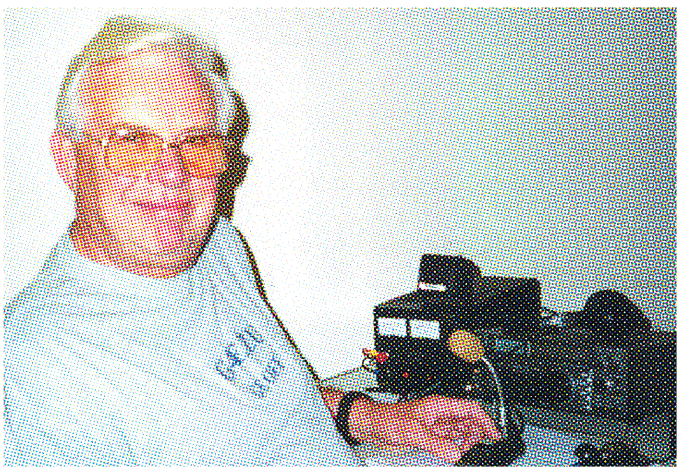


John Innes, GM7OLQ; Bob Glasgow, GM4UYZ; Iain Lowis, Director for Scotland of the British Heart Foundation; Cambell Stevenson, MM0DXC; and Colin Smith, GM0CLN, at the recent presentation.

International Museums Weekend 2002

FOLLOWING THE highly-successful National Museums Weekend in June last year, it has been decided that the event will be run again in June 2002. However, the event has now become an international one, and will therefore be known as the 'International Museums Weekend 2002'. IMW2002 will take place over the weekend of **15 / 16 June**. Clubs and individuals are welcome to take part from stations set up at their local museums. Information on NMW2001 can be found on the Internet at www.qsl.net/m1byt/ and details of the forthcoming IMW2002 can be found at www.imw.f2s.com/ or by contacting the organiser, Harry, M1BYT, tel: 0113 2866 897 or e-mail: harry_m1byt@ntlworld.com

New WACRAL President



Dr Geoff Peterson, G4EZU, the new President of WACRAL.

DR W G PETERSON, BSc Lon, FRSC, C Chem, G4EZU, has been appointed as President of WACRAL, the World Association of Christian Radio Amateurs and Listeners. Introduced in his early years to a crystal set and the hobby of radio by his grandfather, Geoff progressed to radio and radar instructing in the RAF as a National Serviceman, a career within the chemical industry, and later, teaching. In the hobby he has enjoyed instructing students for the Novice RAE. Together with his wife Jenny, for the past 10 years he has been responsible for organising WACRAL's Annual Conference whilst enjoying his other hobbies of sailing and skiing.

ML&S martin lynch & sons

Suppliers of Communications Equipment

128, 140-142 NORTHFIELD AVENUE • EALING • LONDON W13 9SB

CALL US 6 DAYS A WEEK • MON-SAT 9.30-5.30

0208 566 1120

fax: 0208 566 1207
website: www.hamradio.co.uk
email: sales@hamradio.co.uk

DONT FORGET! MORSE TESTS AVAILABLE ON THE LAST SAT OF EACH MONTH

YAESU FR1000MP MK5

Yaesu's Flagship radio still our number one selling radio among the discerning DXers.

ML&S £2899
NOTHING to pay for 6 Months!
36 * £125.86

YAESU QUADRA VL1000

The ultimate add on for your station. Offering 1000 Watts of effortless RF on HF and six metres this amplifier is a delight to use.

ML&S £3999
NOTHING to pay for 6 Months!
36 * £173.62

YAESU FT847

At only £1149.00 this is still the best selling multiband base radio offering HF/6/2 and 70cms plus still the only radio to offer all mode four metre operation.

RRP £1699 **ML&S £1149**
NOTHING to pay for 6 Months!
36 * £49.88

ICOM IC910H

The LATEST VHF/UHF multimode. Features include 100W on VHF, 75W on UHF and true dual receive. Options available 1296mhz, DSP units, TCXO, Voice Synthesiser, TCXO, Narrow CW filters.

ML&S £1299 STD UNIT
NOTHING to pay for 6 Months!
36 * £56.39

ICOM IC746

This radio still ticks along as a great shack in a box giving 100 Watts HF/six and 2 metres.

ML&S £1159
NOTHING to pay for 6 Months!
ZERO DEPOSIT 48 * £34.29

YAESU FTV1000

Yaesu's new 200 Watt six metre transverter for the FT1000MP Mk5 at only -

ML&S £799
NOTHING to pay for 6 Months!
ZERO DEPOSIT 36 * £34.68

YAESU FT840 FM

An excellent basic radio offering top notch performance at a budget price.

RRP £799 **ML&S £599**
NOTHING to pay for 6 Months!
ZERO DEPOSIT 36 * £26.00

YAESU FT817

This is a radio that every radio ham should own. As well as being an excellent portable radio this makes an ideal second receiver for the shack. Supplied as a package at only £850.00 you are ready to sample the delights of QRP operation.

FT817 PACKAGE
- Nicads
- Charger
- Charger Case
- Protective Case
- Miracle Whip
- VHF/UHF rubber helical

ML&S £850
NOTHING to pay for 6 Months!
ZERO DEPOSIT 36 * £36.90

YAESU VR-5000

The new desktop scanner from Yaesu all bands and all mode with a host of features.

ML&S £599
NOTHING to pay for 6 Months!
ZERO DEPOSIT 36 * £26.00

ICOM IC718

this is Icom's entry level HF radio. offering 100W HF CW/AM/SSB and DSP. The performance is staggering for a budget radio! Only £699.00 with DSP

ML&S £699
NOTHING to pay for 6 Months!
ZERO DEPOSIT 36 * £30.34

YAESU FT920AF

A top grade starter radio HF and 6 metres with internal ATU

RRP ~~£1499~~ **ML&S £1099**
NOTHING to pay for 6 Months!
ZERO DEPOSIT 36 * £47.71

YAESU FT100D

following on from the FT100 the D version offers a few extras and improved HF performance.Auto repeater shift on VHF & UHF plus an easy menu system make this the most popular HF mobile radio.

RRP £1299 CALL FOR **ML&S BEST PRICE!**
NOTHING to pay for 6 Months!
ZERO DEPOSIT 36 * £36.54

YAESU VX5RS

Our best selling hand held ever with free SU1 and Case giving 5 Watts on 2/70 & 6metres. With built in wide band receiver (inc AM & WFM) this is a scanner and a hand held.

RRP £339 **ML&S £269**
ZERO DEPOSIT!
36 * £11.67

YAESU VX1R

still the smallest handheld around with built in scanner offering up to 1 Watt on 2 & 70 and Lithium ion battery that last for ages this is the ultimate pocket radio at only:

ML&S £159
ZERO DEPOSIT!
36 * £6.90

ICOM IC775 DSP

This is the Icom Flagship and still a very popular choice with the daytime net guys. TX audio is first class and despite being a top grade radio the uncluttered controls and simple display make it a delight to own.

USED EXAMPLES FROM £1395!

Have a trade in? We pay TOP MONEY

call the sales desk or EMAIL your request. sales@hamradio.co.uk

MFJ PRODUCTS IN STOCK

MFJ 949 our No 1 selling manual	£149.95
MFJ 969 our No 1 selling manual	£189.95
MFJ 945 "Mobile ATU"	£109.95
MFJ 269 Antenna Analyser	£329.95

FINANCE EXAMPLE **TS870s at £1399.00**

Payment illustration: Zero deposit: If paid within 6 months, no interest charges or 36 payments of £60.73
• *Total amount payable:* £2186.28

APR 26.9% ML&S is a licenced credit broker. Finance offered subject to status. Full written details on request. E&OE

SGC SMART TUNERS

we have the full range of these unique tuners in stock with an SG230 and 20 foot of wire you are ready to operate top band to ten. The SGC tuners start at £259.00 with different types to suit specific needs. Give us a call with your requirements.

SAMLEX SEC1223

Back in stock! The best selling original 23 amp switch mode power supply Only £99.95 accept no substitute!!!!!!

CUSHCRAFT PRODUCTS IN STOCK

Cushcraft A3S	at £459.00
Cushcraft R8	at £469.00
Cushcraft MA-5B	at £299.00

The BEST RADIO EQUIPMENT at the

NEW YEAR NEW GEAR!

Martin, Chris and the gang wish all 33,000 of our customers a very HAPPY and PROSPEROUS New Year

SEE OUR UNIQUE
- Lynchline Auctions!
- Latest News!
- Forums!
- Subscribe to our Newsletter!

Check out our new shopping basket on our website - www.hamradio.co.uk

KENWOOD TS2000

ALSO AVAILABLE: 23cm version £1999

Offering all bands 1.8 to 23cms *(23 cms optional)* Built in DX cluster monitor and auto QSY plus dual speed packet modem make this radio stand out. Excellent Kenwood build quality and reliability - a radio that is going to be around for a long time.

ML&S £1699
NOTHING to pay for 6 Months!
36 * £73.76

KENWOOD TS570DGE

this is a first class radio that has no competition in its price bracket. Offering 100 Watts HF and built in ATU. A good choice for your first HF station but equally at home in the experienced operators shack.

ML&S £849
NOTHING to pay for 6 Months!
ZERO DEPOSIT 36 * £36.86

KENWOOD TMD700E

LOWEST UK PRICE!

With packet cluster monitor and APRS built in this is fast becoming THE mobile radio for VHF/UHF in car operation.

ML&S £359.95
ZERO DEPOSIT!
36 * £13.09

If you require the B2000 or 23cms **CALL FOR A PRICE PACKAGE**

KENWOOD B2000

all the features of the TS2000 but no knobs. This radio is controlled via your PC or the Head of a TMD700E *(Upgrade will be required on early versions of the TMD700E)*

ML&S £1599
NOTHING to pay for 6 Months!
ZERO DEPOSIT 36 * £69.42

KENWOOD TS870S

The original DSP radio still very popular and very reliable offering 100 Watts and built in ATU

ML&S £1395
NOTHING to pay for 6 Months!
ZERO DEPOSIT 36 * £60.56

KENWOOD TMG707

A simple twin band VHF radio with a large display and speech option make this an ideal choice for people with eyesight problems.

ML&S £299
NOTHING to pay for 6 Months!
ZERO DEPOSIT 36 * £12.98

ICOM IC706 MK2G

The original mobile multiband radio. Now the 3rd variant offering HF/6/2&70 with DSP and detachable head. Icom certainly got this radio spot on with features and performance.

ML&S £949
NOTHING to pay for 6 Months!
ZERO DEPOSIT 36 * £41.20

KENWOOD TS50S

this is the original HF mobile radio still selling at only £599.00 - an absolute BARGAIN

ML&S £599
NOTHING to pay for 6 Months!
ZERO DEPOSIT 36 * £26.00

KENWOOD THD7E

The Packet handheld that every one wants.

ML&S £299
ZERO DEPOSIT!
36 * £12.98

'This is set to put Icom back on TOP of the DXers CHOICE'

DEPOSITS BEING TAKEN NOW

USED EXAMPLES FROM £1399!

We have a selection of used original *IC756 Pros* being sold in anticipation of the NEW Mark 2 - FROM £1395 *LAST FEW!*

ICOM IC756 Pro Mk2

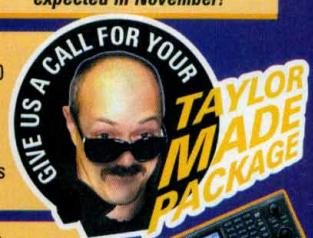
YES, THE SECRET IS OUT - the *IC756 Pro* has been improved. The new model will be called the *IC756 Pro Mk2* and *IC7500* in some countries. Estimated price to be about **£2495.00** offering:

- *Improved Twin Pass Band Tuning*
- *Better strong signal handling*
- *Extra display modes*
- *Digital Voice storage*

Orders are being taken for the new model with first shipments expected in November!

MYDEL MULTITRAP
At 66 ft long covering 80/40/20/15&10 mtr this ever popular antenna is back in stock at **£79.00**

THE MYDEL MEGA TRAP
at 104 ft long cover 160/80&40 metres at only **£99.00**



BARGAIN basement

PLEASE NOTE: Payment by Cheque, Cash or Credit card *ONLY* can be accepted for these bargains.

Icom706 Mk 2	*used examples from* - £599
FT1000mp	*used examples from* - £1399
FT1000mp Mk v	*used examples from* - £2000
Icom 746	*used examples from* - £799
Icom 756 Pro	*used examples from* - £1495
Kenwood TS-850	*used examples from* - £595
Kenwood TS-570.s	*used examples from* - £599
Yaesu FT-840,s	*used examples from* - £399

Icom 746 *USED EXAMPLES FROM* £799!

Yaesu 840 *USED EXAMPLES FROM* £599!

Yaesu VX-5R *ONLY* £269!

BARGAIN corner

PLEASE NOTE: Payment by Cheque, Cash or Credit card *ONLY* can be accepted for these bargains.

The very latest TMD-700 *from* Kenwood	*only* £359.95
Yaesu FT-8100	*at only* £299.00
Yaesu VX1R	*at only* £150.00
Yaesu VX5R	*at only* £269.00
Icom ICR3E	*at only* £399.00
Kenwood TS-2000X	*UNPRINTABLE!!!*
Flat Screen LCD Monitor *for an uncluttered desktop*	*at only* £299.00
Yaesu FT-1500	*at only* £159.00

Icom ICR3E *ONLY* £399!

Yaesu VX-1R *ONLY* £150!

MD200A8X

The new "Old Style" microphone from Yaesu. The audio is very punchy with top class clarity. A superb match for any Yaesu Base radio. This microphone has room for a second insert which is switchable.

INTRODUCTORY PRICE ONLY £249.95 *DELIVERED TO YOUR DOOR.*

IN STOCK ONLY £129.95

NEW MIRACLE ANTENNA HAS JUST *ARRIVED!*

This antenna has been designed with the FT-817 in mind and is a 55 inch whip with a tuning box at the base. The performance is staggering and it will work with any radio from 3.5 - 460mHz to 150Mhz (5W max). It even works without a counter poise. Call for full details!

BEST PRICES at ML&S - *where else!*

www.nevada.co.uk

Nevada®

023 9231

more than

• Unit 1 • Fitzherbert Spur • Farlington • Portsmouth • PO6 1TT • e-mail: info@nevada.co.uk • w

...ORDER ONLINE...ORDER BY PHONE...ORDER BY FAX...ORDER BY POST...OR COME

Nevada £50 voucher

FOUNDATION LICENCE HOLDER

VALID ON ANY **HF TRANSCEIVER** purchase this month from Nevada

We would like to WELCOME the FOUNDATION LICENCE HOLDERS to HF RADIO with a little help from NEVADA Use the voucher above for a £50 DISCOUNT on any brand of HF RADIO purchased from us this month.

BUY NOW! INTEREST FREE! over 3 months with our unique CHEQUESPREAD credit scheme

PALSTAR AT1500 HI-POWER HF ANTENNA TUNER
1.5kW • 1.8-30MHz
£369

SGC SG-230 AUTO ATU
• 1.8 - 30MHz • 200W PEP
£359.95 P&P £10 | 3 CHEQUES OF £123.31
PAY BY CHEQUESPREAD INTEREST FREE

PALSTAR WM150 HF + VHF HIGH POWER METER
• 1.8-150MHz
• 330W
• 3kW
£369

WORLDSPACE DIGITAL SATELLITE RADIO

£149 P&P £10 | 3 CHEQUES OF £53.00
PAY BY CHEQUESPREAD INTEREST FREE

PALSTAR PS-50
50A heavy duty supply + meters
13.8V DC • 40/50A
~~£169~~ £149

PALSTAR PS-30
• 3-15V adjustable
• 25/30A max
• Voltage and current meters
£99

DSP 599ZX V5
• Filters QRM
• Eliminates heterodynes
£359.95

GRUNDIG SATELIT 800
The ULTIMATE SW RADIO

• 100-30,000kHz (0.1-30MHz) for AM
~~£599~~ £549 P&P £10 | 3 CHEQUES OF £186.33
PAY BY CHEQUESPREAD INTEREST FREE

ICOM IC-756 PRO MK II
COMING SOON!
Icoms latest SUPER rig
£2495 P&P £10 | 3 CHEQUES OF £835.00
PAY BY CHEQUESPREAD INTEREST FREE

ICOM IC-706 MK IIG

• 100W HF/6 + 50W • 2M + 20W 70cms
~~£1299~~ £995 | 3 CHEQUES OF £335.00
PAY BY CHEQUESPREAD INTEREST FREE

ICOM IC-910
1.2GHZ & DSP OPTIONAL

• VHF/UHF All mode TX
• Suitable for DX'ing or Satellite
• 100W 2mtr/ 75W 70cm • Full Duplex
~~£1399~~ £1299 | 3 CHEQUES OF £436.33
PAY BY CHEQUESPREAD INTEREST FREE

ICOM IC-718

• 100W HF Transceiver • Built in keyer
• General coverage RX
£159.95 P&P £10 | 3 CHEQUES OF £56.65
PAY BY CHEQUESPREAD INTEREST FREE

ICOM IC-R75
PRICE MATCH

• 0.03 -60MHz • PC control capability
• Twin PBT built-in • Synchronous AM detection
£699 P&P £10 | 3 CHEQUES OF £236.33
PAY BY CHEQUESPREAD INTEREST FREE

ALINCO DX-70TH
BUY NOW! INTEREST FREE!

• 100W HF+100W 6 mtrs
• LSB, USB, CW, AM & FM
• Wide range RX 150kHz-54MHz
• CW+SSB narrow filters fitted
• 100 memory ch
£699 P&P £10 | 3 CHEQUES OF £236.33
PAY BY CHEQUESPREAD INTEREST FREE

TRADE IN!
and pay the rest over 3 months INTEREST FREE with CHEQUESPREAD

DJ-596 DUAL BAND HANDHELD

• VHF/UHF TX/RX inc crossband split op
• 100 memory ch, any mix of VHF/UHF
• Alphanumeric channel labels
£199 P&P £10 | 3 CHEQUES OF £69.66
PAY BY CHEQUESPREAD INTEREST FREE

ALINCO DR-135E
BUY NOW! INTEREST FREE!

• 50/10/5W output
• 100 memory ch
• 144-146MHz (RX 118-170MHz) Airband RX with NEW 8.33 steps
• Built-in CTCSS sub tones
£235.95 P&P £10 | 3 CHEQUES OF £81.98
PAY BY CHEQUESPREAD INTEREST FREE

ALINCO DJ-195E
LARGE RANGE OF ACCESSORIES AVAILABLE

• 2 mtr (144-146MHz)
• Wide RX possible (typ 135-173MHz)
• Up to 5W output (0.8W low power)
• 40 memory ch+1 call channel
£159.95 P&P £10 | 3 CHEQUES OF £56.65
PAY BY CHEQUESPREAD INTEREST FREE

ICOM IC-R8500
PRICE MATCH

IN STOCK! Covering 100kHz - 2GHz & lots of features including computer control.
~~£1349~~ £1249 | 3 CHEQUES OF £419.66
PAY BY CHEQUESPREAD INTEREST FREE

FT 1000MP MK V
NOW WITH FREE RADIO EQUIPMENT SEE LIST BELOW

HF 200W All mode transceiver (Our boss's favourite rig)
£2899 P&P £10 | 3 CHEQUES OF £969.66
PAY BY CHEQUESPREAD INTEREST FREE

YAESU FTV1000
TRADE IN BEST PRICES

6 mtr Transverter for Yaesu FT1000MP MkV
• 200W output • RX pre-amps
• Fully interfaces with Mk V and Quadra amplifier
£799 P&P £10 | 3 CHEQUES OF £269.66
PAY BY CHEQUESPREAD INTEREST FREE

YAESU FT-847

All mode DSP Transceiver 70cm - Top Band
~~£1699~~ £1199 | 3 CHEQUES OF £403.00
PAY BY CHEQUESPREAD INTEREST FREE

YAESU FT-817
IN STOCK!

• HF/6/2/70 cms • Transportable with wide RX
• Supplied c/w Nicads, Charger, antenna & mic
£799 P&P £10 | 3 CHEQUES OF £269.66
PAY BY CHEQUESPREAD INTEREST FREE

YAESU FRG-100
FREE MAINS PSU

Solid coverage from 50kHz to 30MHz with all mode reception of AM, SSB and CW.
~~£499~~ £399 | 3 CHEQUES OF £136.33
PAY BY CHEQUESPREAD INTEREST FREE

FT-1000MP MkV FREE RADIO ACCS..CHOOSE ONE:

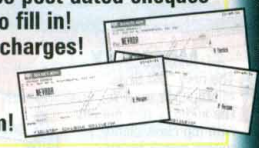
MD-100A8X base mic..SP-8 ex loudspeaker..TCXO UNIT..2.0kHz SSB NARROW FI COLLINS 500Hz CW FILTER..OR - £100 OFF MD-200A8X DLX BASE MIC OR - £2

NEW OPENING HOURS
MONDAY - FRIDAY 9.30 - 5.30
CLOSED ALL DAY SATURDAY

CHEQUESPREAD INTEREST FREE!

- Simply divide the price *(including carriage)* into 3 equal payments.
- Write 3 cheques dated in consecutive months starting with today's date.
- Write your telephone number, cheque card number and expiry date on the back of each cheque.
- Post them to us, enclosing your name & address & we will (subject to status) send your goods immediately.

- **Pay by three post dated cheques**
- **No forms to fill in!**
- **No hidden charges!**
- **No hassle!**
- **No catch!**
- **No problem!**



CHEQUESPREAD prices quoted include postage & packing CHEQUESPREAD minimum order: £99

ALL GOODS SHIPPED FOR 24 HR DELIVERY P&P: £10 (UK Mainland) unless otherwise stated E&OE

ULTRA-FAST DELIVERY | NO CREDIT CARD SURCHARGES | FRIENDLY ADVICE | TECHNICAL SUPPORT | HUGE STOCKS AT OUR SUPERSTORE | NEVADA IS A MAJOR IMPORTER | WE ARE MAJOR DISTRIBUTORS

.....LARGE STOCKS.....FAST DELIVERY..... EXPERT ADVICE.....

3090
n a radio store

24hr shopping
NEVADA ONLINE STORE
www.nevada.co.uk
.....the site you can TRUST.....

ebsite: www.nevada.co.uk • fax: 023 9231 3091
AND SEE US AT OUR RADIO SUPERSTORE...

KENWOOD TS-570 DGE
100W HF radio with a superb DSP RX.
~~£999.95~~ **£849** | 3 CHEQUES OF **£286.33**
PAY BY CHEQUESPREAD INTEREST FREE

IN STOCK!

KENWOOD TS-2000
DC to Daylight! HF to 1200MHz (1200MHz optional)
£1699 P&P £10 | 3 CHEQUES OF **£569.66**
PAY BY CHEQUESPREAD INTEREST FREE

IN STOCK!

KENWOOD THF7E
- Dual band 144/430 TX
- 5W RF output
- Wideband (100kHz - 1300MHz) RX
- Multimode reception AM/FM/CW/SSB

£289 P&P £10 | 3 CHEQUES OF **£99.66**
PAY BY CHEQUESPREAD INTEREST FREE

TRADE IN BEST PRICES

YAESU VX-5R
- 50-144-430MHz
- Wide Band Receiver
- Ultra Rugged Construction

~~£359~~ **£269** | 3 CHEQUES OF **£93.00**
PAY BY CHEQUESPREAD INTEREST FREE

NEW HIGH POWER TUNER

PALSTAR AT1500 CV
CERAMIC Roller Inductor for high reliability
*1.5kW *1.8 - 30 MHz
*Built in 4:1 Balun
*6 Position Ant Switch
*Large Vernier Dials
*X Needle SWR/Pwr Mtr

£369 P&P £10 | 3 CHEQUES OF **£126.33**
PAY BY CHEQUESPREAD INTEREST FREE

TER..250Hz CW NARROW FILTER
O OFF FTV-1000 6M TRANSVERTER

MINI 2000
LOW PROFILE 3 BAND MINI BEAM
£229.95 | P&P £15

ZX YAGI
LOW COST MULTIBAND VERTICALS
Two lightweight multiband verticals that really work. Each is supplied with a set of 3 wire radials. These may be laid out or bent to suit your location. Power handling approx 500W.
P&P £10
GP3.....**£69.95** 10/15/20M, 3.9 mtrs
GP3W....**£69.95** 12/17/30M, 5 mtrs

USED EQUIPMENT
BUY WITH CONFIDENCE!
All safety tested & guaranteed for 3 months

HF TRANSCEIVERS

ICOM IC706 MkII	HF/6M/2M TRANSCEIVER.....695
ICOM IC746	HF/6M/2M TRANSCEIVER.....899
KENWOOD TS570DG	100W HF TX + DSP 649
KENWOOD TS-850S	100W HF TRANSCEIVER.....699
KENWOOD TS-950S	HF BASE STATION 999
YAESU FT747GX	100W HF TRANSCEIVER+FM 325
YAESU FT900	100W HF MOBILE BASE.....599
YAESU FT920	HF/6M 100W TRANSCEIVER ..899

VHF/UHF TRANSCEIVERS

ALINCO ALM-203E	HANDIE 2M 75
ALINCO DR-135	2M MOBILE TRANSCEIVER.....179
ALINCO DR MO6	10W 6M MOBILE TX 99
ICOM IC271E	2M MULTIMODE BASE.....299
ICOM ICT41E+ACCS	70CM HANDIE+VHF RX 99
ICOM IC-T8E	6M/2M/70CM HANDIE TX 229
KENWOOD TM-231E	2M MOBILE TRANSCEIVER.....119
TRIO TR-9000	2M MULTIMODE MOBILE.....249
YAESU FT-2600M	2M MOBILE TRANSCEIVER.....129
YAESU FT2700RH	2M/70CM MOBILE TX 199
YAESU FT-3000M	2M HI POWER MOBILE 159
YAESU FT411	FM HANDIE - BOXED 125
YAESU FT726R	2M/70CM MULTIMODE BASE 399
YAESU FT-8100	2M/70CM MOBILE TX 259
YAESU FTL2014	VHF PMR TRANSCEIVER.....75

AMPLIFIERS

TOKYO HL100B	100W AMP 21 - 28MHZ 129
TOKYO SAGRA 600	2M 700WAMP 2X4CX250R 799

SCANNERS & RECEIVERS

AOR AR1000	HANDHELD SCANNER 99
AOR AR5000+3	WIDEBAND RECEIVER 1299
ICOM PCR-1000	COMPUTER BASED RX.....259
BEARCAT UBC220XLT	HANDHELD SCANNER 110
REALISTIC PRO 2026	MOBILE SCANNING RX 125
YAESU VR500	HANDHELD SCANNER 159
YUPITERU MVT7000	HANDHELD SCANNER 129
YUPITERU MVT7100	HANDHELD SCANNER 149

ACCESSORIES

AMDAT ADC60	FREQ STANDARD CLOCK UNIT ..99
DAIWA PS304 II	24/30A POWER SUPPLY 89
DAIWA RS40X	35/40 AMP POWER SUPPLY....125
ERA MICROREADERRTTY/CW	READER 99
DRAE 12/24	24 AMP POWER SUPPLY 79
ICOM BC-135	BASE CHARGER R3 ETC.....29.95
ICOM SM8	BASE MIC 89
KENWOOD IF-232C	COMPUTER INTERFACE 49
KENWOOD SO2 TCXO	UNIT FOR TS-950 65
KENWOOD VS2	VOICE BOARD 40
KONTRONICS KPC-2	PACKET TNC 49
PALSTAR PS30M	25/30A PSU 69
TONO Q-550	TERMINAL UNIT.....125
WATSON W420	118-530MHZ SWR/PWR METER....49
YAESU FIF232 CVAN	COMPUTER INTERFACE (FT736R) 79

NEW ITEMS ARRIVING DAILY - CALL

HEIL HS-706
Specifically designed for the IC-706, this new Heil headset features a new high gain f.e.t. mic producing extremely articulate audio which will make your IC-706 come alive.
£59.95 | P&P £7.50

HEIL PRO-SET
PRO SET 4
For contesters & DX'ers who want to cut through the pile ups. Using hc4 insert.
PRO SET 5
A fuller range insert for rag chewers who want quality with clarity. Hc5 insert.
£129.95 | P&P £7.50

DAIWA
Please add £6 p&p (uk mainland)
SWR/POWER METERS

CN801H	1.8 - 200MHZ 2KW £109.95
CN801V	140 - 525MHZ 200W £119.95
CN101L	1.8 - 150MHZ 1.5KW £59.95
CN103LN	140 - 525MHZ 200W £65.95

NEVADA is proud to support the new Foundation Licence - but did you know:

- We also support and sponsor many Dxpeditions around the world
- All the Nevada sales Staff are active licenced Amateurs of many years experience – able to give "hands on" impartial advice to the newcomer or seasoned Dxer
- Mike G3SED our boss is one of the UK's leading Dxers and a member of the team that organised the *D68C* and *9M0C* 'world record beating' Dxpeditions.
- Mike is also on the committee of Chiltern DX Club *(The UK DX Foundation)* - who sponsor many worldwide Dxpeditions
- We are constantly seeking new products to manufacture with our partners under the trade marked brand names - *Trident, Palstar, Scanmaster and Drae*
- Our Distribution Division supply over 500 of the UK's largest Radio dealers.
- With over 32 Years in the business we have the "clout" to give you *first class service*, with *expert advice* and *the best possible prices*

CALL US NOW - we're waiting to help!

POWER SOLUTIONS FROM MAHA energy
£89.95 | P&P £8.50

Sometimes we find a product range which is so USEFUL - we just have to tell everybody about it.....

MH-C777 plus
UNIVERSAL CHARGER AND ANALYSER
- Charge almost any Lithium Ion, NiMH, and NiCad battery packs for your ham radios, scanners, PMR 446, cellular phones, digital cameras, camcorders.
- Analyse & condition battery packs and display capacity
- Display digital voltage, time and capacity
- Lightweight international 80-240V AC mains adaptor
- Car kit for charging from cigarette lighter
- Charge AA, AAA, C, D battery cells using optional holders. Battery holders...*£2 each*

buy online at our secure website
www.mahaenergy.co.uk

MH-C204F Plus
3 HOUR INTELLIGENT CHARGER
for 4 AA/AAA cells
- Rapid charge 2 or 4 AA/AA NiCD/NiMH batteries
- Rejuvenate and restore dead batteries
- Can be used on a 12V power supply
- Supplied with set of 4 AA 1600 mAH NIMH High Power Batteries, UK AC Adaptor, Car Cigar Adaptor Kit

MH-FNB72
YAESU FT817 - HEAVY DUTY BATTERY PACK
- Ultra high capacity 9.6V 1700 mAH
- Includes special 3 hour rapid charge cable for use with MH-C777

£59.95 | P&P £2.75

MH-DPB140LI POWEREX LITHIUM ION POWERBANK
High capacity Lithium Ion external battery pack for Digital Cameras
- The PowerEx PowerBank pack includes a handy belt pouch to carry the main battery, a UK mains charger, A Car cigar adaptor lead for re-charging in the car, and a selection of camera adaptor leads.
- Shoot up to 2 or 3 times more photo per recharge than with the internal battery
- Compatible with Nikon Coolpix 995, 880, 885, 775, Olympus E-10, E-100, HP Photosmart 618, 912, and Minolta Dimage 5, 7.

Shoot up to 2 or 3 times more pix PER RECHARGE THAN WITH THE INTERNAL BATTERY

£69.95 | P&P £6.50

MH-DPB180M POWEREX NIMH POWERBANK
Digital Camera External Battery Pack
- A complete solution this Powerbank battery system includes, 1,800 mAH Battery Pack, 4 hour Mains quick charger, Car cigar adaptor charger, Universal Camera cable and carrying case. Compatible with most leading brands of camera.

£59.95 | P&P £6.50

WE PURCHASE YOUR OLD KIT | EFFICIENT ORDER PROCESSING | SAME DAY DISPATCH | 24 HR WEBSITE SHOPPING | WE ARE ALL RADIO ENTHUSIASTS | CHEQUESPREAD OVER 3 MONTHS | NEVADA - OVER 32 YEARS OF SERVICE

...USE YOUR CREDIT CARD FOR SAME DAY DESPATCH...

The 'HeyPhone' to the Rescue

By Mike Bedford, G4AEE *

After 15 years of yeoman service, the 'Molefone', caving's standard transceiver, was approaching the end of its useful life. This is the story of its replacement - the 'HeyPhone'.

THROUGHOUT THE UK, a band of enthusiasts spends its weekends squirming around in horrible, dark muddy holes in the ground. This, at least, is the public perception of the sport of caving or potholing. As someone who finds a fascination in that mysterious world below the ground, though, I'd be inclined to use rather different language. I'd be more likely to come out with clichés such as "caverns measureless to man" and talk about a personal voyage of discovery. I would enthuse over the beauty of pure white straw stalactites and the awesome grandeur of thundering subterranean waterfalls. I might even tell tales of exploration and heroism, and bandy around names such as that of the Victorian cave explorer, Edouard Martel. But, despite my enthusiasm over this world of darkness, I would have to admit to the commonly-held view that potholing is dangerous, or at least potentially so, to those who are inexperienced, careless or plain unlucky. And when accidents happen, members of the volunteer cave rescue teams are called out to help those who are lost, cut off by rising water, have fallen, or are the victims of some other catastrophe.

RESCUE COMMUNICATIONS

NOT ALL CAVING trips are as quick or as easy as a jaunt into a tourist cave. Some cave systems contain tens of kilometres of passages, progress is often barred by vertical pitches which have to be abseiled down, and even horizontal motion can be a mixture of crawling and squeezing rather than walking. It's not surprising, therefore, that it can often take rescuers many hours to reach a casualty, and even longer to return to the surface with the hapless caver strapped on a stretcher.

Traditionally, therefore, the rescue team could be out of contact with the surface controller for hours on end. And if additional equipment or personnel were required, the only option would be to send a 'runner' back to the surface. This delay could easily cost lives. Cave rescue made a giant leap forward, therefore, when the 'Molefone' was introduced in the early 80s. Developed by Bob Mackin of Lancaster University, a member of the Cave Rescue Organisation in Clapham, North Yorkshire, it revolutionised cave rescue. Operating at a low frequency of 87kHz in order to penetrate the rock and employing the principle of induction rather than radiation to avoid the need for huge antennas, the Molefone allowed underground rescue teams to talk directly to rescuers above ground. Operating in the inductive near field doesn't provide long range communication, as the signal strength decays with the cube of the distance. However, it does penetrate limestone to a depth of a few hundred metres which is perfectly adequate for most British caves. There are undoubtedly people walking around today who owe their survival to the Molefone.

* 4 Holme Houses, Oakworth, Keighley BD22 0QY.

A HeyPhone in use on the surface above Carlswalk Caverns in Derbyshire.

NEEDED – A NEW CAVE RADIO

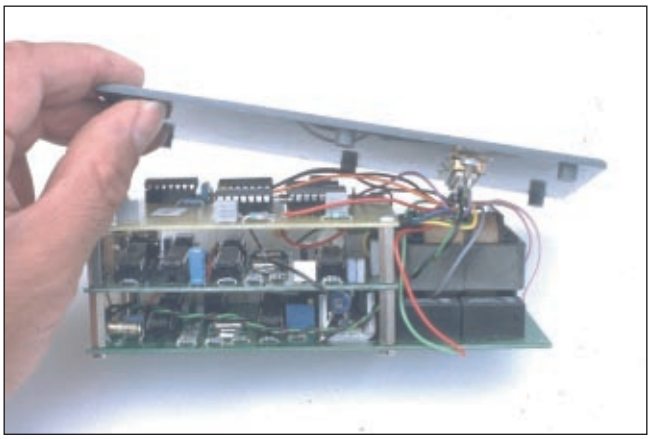
BUT TIME MOVES ON and, a couple of years ago, the British Cave Rescue Council (BCRC) recognised that they had a problem. Although the Molefone had done sterling service, 15 years is a long time to expect electronic equipment to survive in what must be one of the most hostile of environments. Being dragged along cave floors, being subjected to the occasional dunking, being dropped and generally abused for this length of time had taken its toll on the Molefones and the BCRC's member teams were starting to report failures.

To make matters worse, repair was difficult, if not impossible, because the PCBs had been potted in epoxy resin to improve their immunity to physical shock and some of the components were obsolete. It looked as if the Molefone was coming to the end of its useful life.

RADIO AMATEURS TO THE RESCUE

WITH A LOSS of communications capability looking ever

The sealed bottom box contains the electronics, all connections being made via a single 25-way D-type connector to the top box, which contains damage-prone components.



The electronics is fitted on three circuit boards - the transmitter, the receiver and the control circuitry.

more likely, the BCRC used a field meeting, organised jointly with the Cave Radio & Electronics Group (CREG) of the British Cave Research Association (BCRA), to set up a project team to develop a new radio. A key player in that team was John Hey, G3TDZ, who had been developing cave radio equipment for a number of years and the decision was eventually made to base the new radio on one of John's designs. See the separate box, *Technical Details*, for more information on the circuit. But the design of a rescue radio involves much more than electronic engineering. It's a tribute to Bob Mackin that Molefones had proved so reliable over such a long period of time. Needless to say, therefore, an important element of the new radio was cave-proofing to ensure that they'd be equally reliable. Specifically, rescue radios must be protected against mechanical shock and wet conditions, and they must also be immune from misuse by rescue team members, many of whom are not communications specialists.

The mechanical design was undertaken by Brian Jopling, 'Jopo', a member of the South Wales Cave Rescue Organisation and the BCRC's Equipment Officer. The novel design incorporates a two-part box. The main transceiver box contains the majority of the electronics, basically three PCBs – a transmitter board, a receiver board and a control board. The box is sealed against the ingress of water and all the connections to panel components – switches, indicators and connectors – terminate in a 25-way D-type plug. The D-type mates with a connector in a 'top box' containing all the panel-mounted components and which attaches to the transceiver box.

This approach allows the moisture-sensitive electronics to be housed in a box which is almost devoid of holes. Furthermore, it allows the top box to be removed so that the damage-prone switches and connectors can be replaced without interfering with the main transceiver. This, in turn, means that basic maintenance can be carried out by the rescue teams' own personnel, who need only minimal expertise in electronic construction. For additional protection, it is recommended that the cave radio, together with the battery, microphone and antennas are carried in a tough, yellow, waterproof carrying case manufactured by Peli Products and called a 'Pelicase'.

A MAMMOTH TASK

DESIGNING A RADIO is one thing, turning that design into working units is another. This is especially true when we bear in mind that the UK's rescue teams wanted a grand total of 66 transceivers, yet commercial manufacture would have priced them beyond the reach of some teams, all of which operate as charities.

Fortunately for the BCRC, though, the completion of the design coincided with John Hey's retirement. With the time on his hands to contemplate such an endeavour, John volunteered to undertake the electronic construction himself. And, at the time of writing, that mammoth task – which involved populating almost 200 PCBs with around £7000 worth of components – is just about complete. But it wasn't just the populating of the circuit boards – that special two-part box wasn't an off-the-shelf component and the tooling costs would have made commercial manufacture too expensive. So, as John was poring over a hot soldering iron, Jopo set to work with a band saw, table saw, vertical router, bench drill, lathe, heat gun and many square metres of heavy-gauge PVC sheeting. His task was to make the 66 enclosures and – as he received the electronics from John – to put the boards in the boxes and carry out the final touches to the construction.

THE BIG DAY

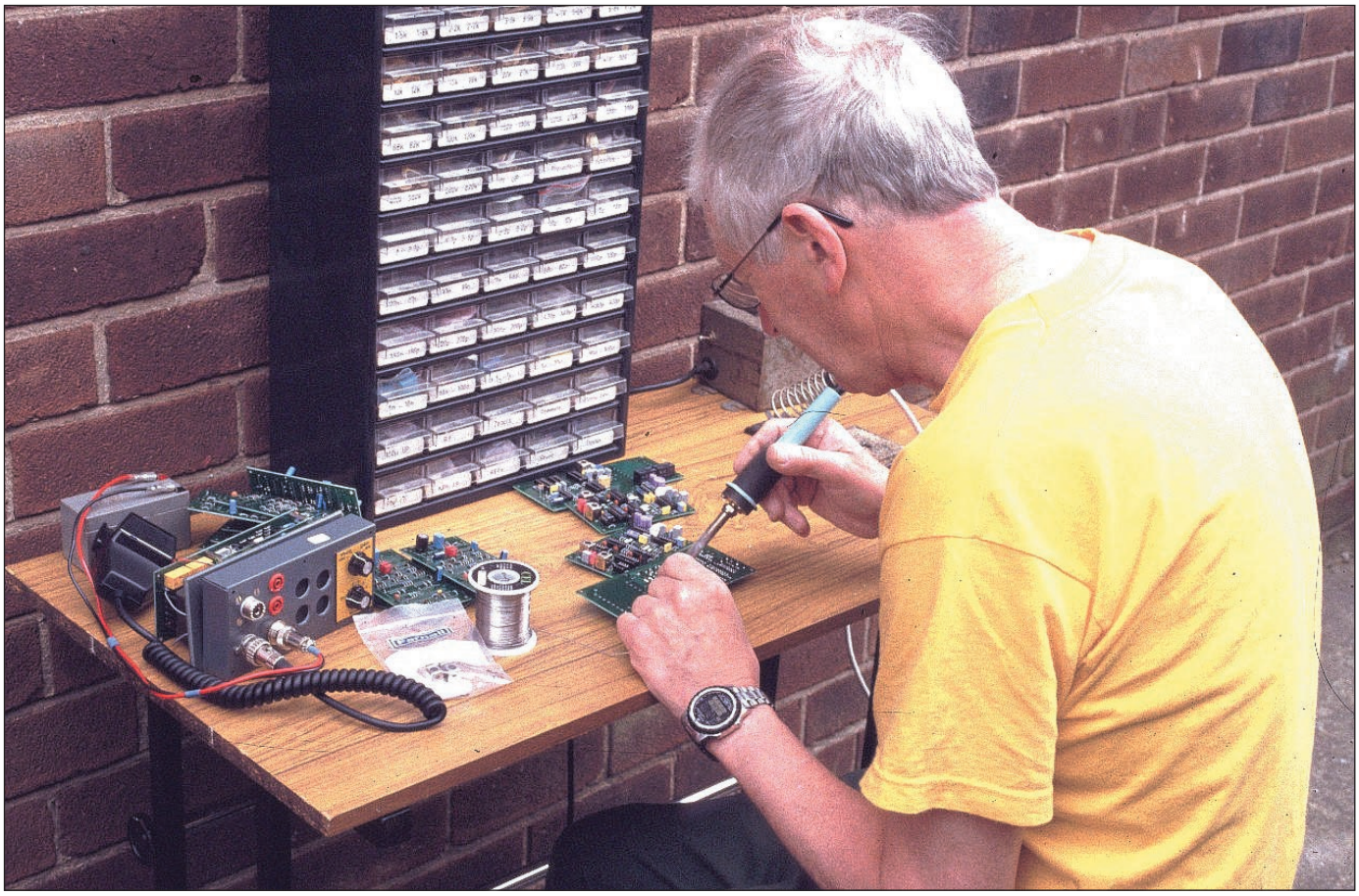
SUNDAY 1 APRIL was a fine spring day at the Derbyshire Constabulary HQ in Ripley. This was the day of the BCRC's AGM, and it was also the day that representatives of many of the rescue teams would take delivery of their new cave radios. There were also surprises in store for John Hey, who was representing CREG at the meeting. For a start, it transpired that, as an acknowledgement of John's work in both designing and building the radios, the BCRC had decided to call their new radio the 'HeyPhone'. And then, as the meeting drew to a close, to underline further the BCRC's appreciation of John's efforts, BCRC Chairman Bill Whitehouse presented him with an inscribed glass plaque.

TECHNICAL DETAILS

Because this is a combined technical *and* news feature, a few words about the circuit are appropriate. The electronic design is similar to the one described previously by John Hey, G3TDZ, in *RadCom* [1], with a few additional features requested by the rescue teams. To cut a long story short, this is an SSB transceiver operating at 87kHz for compatibility with the Molefone. SSB modulation and demodulation rely on an active phasing network, and the receiver is a direct-conversion design. The transmitter power output is in the region of 10W.

The Molefone used a multi-turn loop both for transmitting and receiving. The pair of loops can be thought of as analogous to a transformer, albeit one with a huge separation between the primary and secondary windings. This, of course, is quite different from the operation of a conventional (ie non-inductive) radio system.

Although the new rescue radio will operate with loops, the primary method of operation uses earth electrodes instead, a technique which provides a much greater range and less directionality. This is similar to the baseband earth-current systems which were used during WW1 and, subsequently, by non-licensed amateur experimenters. However, it would be wrong to assume that the mode of operation is purely conduction; the actual mechanism appears to be a combination of conduction, the near induction and electrostatic fields, and perhaps even some radiation. Whatever the exact mechanism, though, results have been impressive. In early tests at Peak Cavern in Derbyshire a range of 800 metres was achieved through solid rock.



John Hey, G3TDZ, working on a HeyPhone in his workshop. John has built 66 units, involving the population of almost 200 PCBs with £7000-worth of components.

The well-being of a cave radio is seldom in the mind of a caver hanging on a rope, so it needs to be robust. Chris Trayner, G4OKW, demonstrates.

THE TRUE SPRIT OF AMATEUR RADIO

IN AN ERA of mobile phones and pervasive communication, the worth and fascination of amateur radio is lost on many members of the public. It's refreshing to see, therefore, how radio amateurs within CREG, and John Hey in particular, have made a major contribution to public safety. Admittedly, the HeyPhone does not actually operate on an amateur band, but it was designed and built primarily by radio amateurs and this is something of which we can feel justifiably proud. This is amateur radio in the purest sense of the phrase. There is no equipment available off the shelf which would do this job and, as charitable organisations, the rescue teams couldn't contemplate having equipment professionally designed and manufactured. The only option, therefore, was an amateur project, and those involved responded magnificently to the challenge.

It would be nice to conclude by telling the story of someone whose life had been saved by rescuers using the HeyPhone. However, since caves and potholes tend to lie on footpaths, and these have been closed by the foot and mouth epidemic, few people have ventured underground this year so people have not needed rescuing. I'm certainly not looking forward to a time when people once again get into difficulties underground – after all, surely it's better for all concerned if people take care and accidents don't happen? However, as and when the countryside reopens, underground accidents *will* happen – there's nothing surer. And, when that 999 call comes in, we have every confidence that technology will be at hand to make the task of the rescue teams just that little bit easier.

INTRODUCING CREG

SO, THE UK's rescue teams have a new radio which, we hope, will provide reliable service for many years to come. This doesn't mean that there's nothing left to be done, though. Ideas currently being discussed include wind-up power supplies for use in long rescues, low data rates for use when speech communication is difficult, and methods of overcoming other effects which make communication difficult in some caves.

Want to play a part in this exciting and unusual sphere of research? If so, why don't you make contact with Rob Gill, G8DSU, who is CREG's first point of contact? You can write to him at 61 Deep Cross Gardens, Twickenham, Middlesex TW1 4QZ or e-mail him at creg@bcra.org.uk You might also like to look at the CREG website at www.bcra.org.uk/creg/

REFERENCE

[1] 'Cave Radio - the Story so Far', *RadCom*, 76, No 7, July 2000, pp15-18. ♦

"Miracle Whip, Sir?"

Yes! Now you operate your new portable with real freedom!

The Miracle Whip is a completely self-contained, all-band 50 inch telescoping whip antenna with integrated tuner for receiving and transmitting that mounts right on your radio. ***The Miracle Whip*** liberates your rig from coax, cables, mounts, tripods and trees, and gives you remarkable performance - including DX - from desktop to picnic table, and can even do it without a ground. Now that's portable!

Imagine - finally you can take your go-anywhere rig anywhere you go - the garden, camping, hiking, travelling on business or vacation, or over to a friend's - and operate with total freedom. ***The Miracle Whip*** means you're on the air instantly, and working HF and V/UHF anywhere, anytime.

The Miracle Whip doesn't really perform miracles, but its performance is truly remarkable. You can work a DX SSB or CW station oversees on 10, 15 or 20, check in to the local forty-metre net, zip up to two meters or 432 for a chat with the boys, check six for openings, catch the last bit of the football game on MW, and wrap up the evening with the BBC World News - all on the same, super-portable antenna.

The Miracle Whip is perfect for any shack and any rig - for emergencies, testing, field days, cottage, camping, canoeing, fishing - the list goes on. Wherever your big antenna won't go, a ***Miracle Whip*** can put you on the air.

It's a superb SWL and scanning antenna too. ***Miracle*** antenna's C-VAT technology reduces broadband noise while permitting sensitive, tuned reception over a wide range without retuning. Got a portable! Then get portable! Get a ***Miracle Whip*** and get on the air - from anywhere - ***TODAY!***

Take a peek inside.....

...satisfaction guaranteed!

A posting from the **YAHOO FT-817 NEWS GROUP**

Subject: Miracle Whip

Last night I worked stations from the east coast to the west coast on 20,15 and 10 meters. This was all from the kitchen table.

Only conterpoise was the power supply. Great thing is it is very small and light weight. I for one do not want to walk around with a MP-1 and conterpoise wires trailing behind me and a MP-1 wound mot fit on the kitchen table! In fact it is much lighter then my ATX antenna.

73 Bill W9WCR

RRP

£129.95

P&P £4.00

Sole UK Importer: ML&S **Martin Lynch & Sons**

ML&S martin lynch & sons

Suppliers of Communications Equipment

phone

0208 566 1120

website

www.hamradio.co.uk

128, 140-142 Northfield Avenue • Ealing • London W13 9SB email: sales@hamradio.co.uk fax: 0208 566 1207

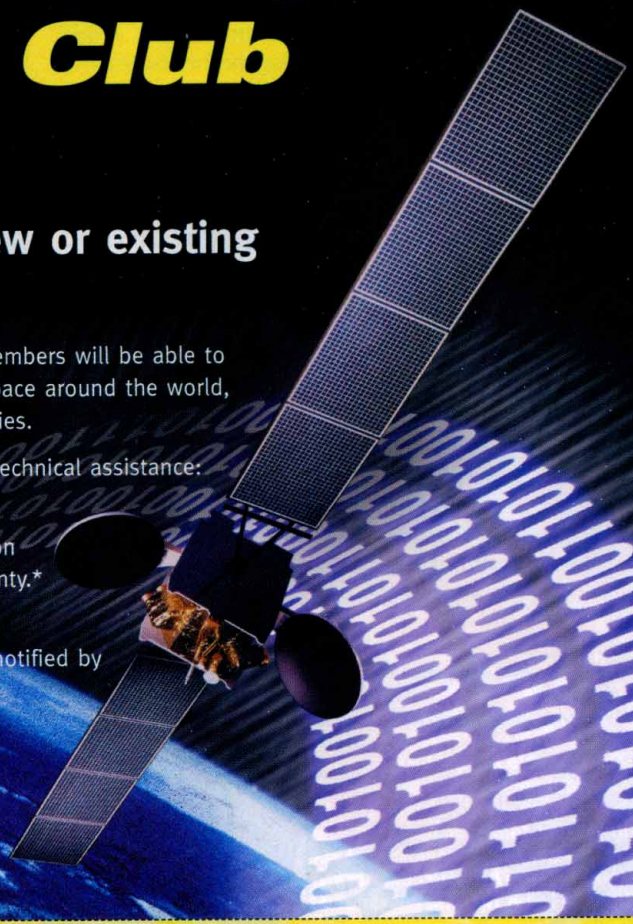
The WorldSpace Global Club

This is an important notice for all new or existing WorldSpace listeners:

We are pleased to announce the launch of the **WorldSpace Global Club**. Members will be able to receive a regular newsletter including all the new developments in WorldSpace around the world, new stations that have joined the WorldSpace line up and many other stories.

The **WorldSpace Global Club** also offers members the following important technical assistance:

- **CONFIRM YOUR WARRANTY**
  Your prompt return of this card confirms your rights to the protection available under the terms and conditions of your WorldSpace warranty.*
- **REGISTER YOUR PURCHACE**
  Returning this card is your only way to guarantee that you will be notified by WorldSpace of any issues that arise concerning this product.
- **PROTECT YOUR PRODUCT**
  We will keep the model number and date of purchase of your WorldSpace product on file to help you refer to this information in the even of an insurance claim such as theft or loss.



* This does not affect your statutory rights.

Post application to: FREEPOST WorldSpace UK Ltd.

Receiver Serial ID Number

Date of purchase (Day, Month, Year) Place of purchase

Name:

Mailing address:

City State/Province

Zip/Potal code: Country

Phone E-mail _____

Including yourself, how many people are currently living in your household? _____ What is preferred language? _____

What is your occupation?
☐ Self Employed/Owner ☐ Professional/Technical ☐ Clerical/Service Worker ☐ Middle Management
☐ Upper Management ☐ Labourer/Tradesman ☐ Sales/Marketing ☐ Retired
☐ Student ☐ Military ☐ Homemaker ☐ Other _____

Where did you hear about ***WorldSpace***? ☐ Television ☐ Radio ☐ Website ☐ Magazine ☐ Friend ☐ Expo or show ☐ Other _____

Do you have any ***WorldSpace*** accessories? ☐ Yagi antenna ☐ Cable extension ☐ Low noise amplifier ☐ No ☐ Other _____

Do you have a computer? ☐ Yes ☐ No Do you have an internet connection? ☐ Yes ☐ No

Do you have any ***WorldSpace*** Direct Media products? ☐ PC Adaptor Kit ☐ PC Card ☐ No

Thank you for filling out this questionnaire. Your answers are important to us.
Please check here ☐ if you would prefer not to learn more about ***WorldSpace*** or obtain new product and service updates from ***WorldSpace***.

Data Protection Act: Occasionally we may make sufficient information available to other companies who have products and services which may be of interest to you.
If you would prefer not to receive such offers please tick the box ☐.

Putting the (GB4)FUN

by Project Coordinator, Mike Dennison, G3XDV*

IN ORDER TO be more pro-active in promoting amateur radio, it has for a long time been the ambition of the Society to be able to take the hobby direct to the general public. The classic method - setting up a special event station in a school or at an exhibition - was prone to difficulties. For instance, it would be impossible to optimise anything in advance, it all had to be improvised on the day. Borrowed items of equipment would be incompatible with each other. EMC could pose major problems both on transmit and receive. Worse, it was all too easy for untrained demonstrators to concentrate on the operating and ignore the visitors.

What if it were possible to eliminate all of these by having a mobile shack, fully set up in advance and manned by a trained recruiter? In the past, all sorts of vehicles were looked at, especially buses, but it was found that anything available cheaply would require a huge investment to bring it up to the required standard, and to convert it into a demonstration vehicle. The idea was abandoned, although the thought "wouldn't it be nice if . . ." never quite went away.

HOORAY FOR THE RA

THE IDEA OF directly targeting schools with a mobile shack came up during one of the regular series of meetings between RSGB General Manager Peter Kirby, G0TWW, and David Hendon, Chief Executive of the Radiocommunications Agency (RA) in late 1999. A few months later, the RA said that they were about to decommission one of their monitoring vehicles. Would this be the sort of thing that would interest us if it could be donated? Certainly it would!

Those of you with long memories (or *RadCom Archives on CD-ROM*) may recall an article in June 1992 about the RA Monitoring Station at Baldock. Part of this described the mobile monitoring stations, each of which was equipped with built-in generator, pump-up mast, heating and work bench. These vehicles are used for carrying out surveys and investigations, such as the one currently in progress to plot field strengths of mobile phone masts (see www.radio.gov.uk). At a handing over ceremony at Baldock in 2001, the RA's Director of Customer Services, Barry Maxwell, presented Peter Kirby with the keys to a Mercedes 6.5 tonne box van that would become the RSGB's mobile shack.

The RA actively supports the recruitment of young people into amateur radio, particularly because our hobby involves self-training in communications and electronics which could ultimately be of economic benefit to the country.

MAKING IT FUN

WHEN THE VEHICLE arrived at RSGB HQ, the staff immediately christened it 'the battle wagon', mainly due to its formidable appearance, resembling the anonymous vehicles used to transport prisoners. Even after a complete respray (funded by HSBC), something had to be done to improve its image. *RadCom's* illustrator Bob Ryan provided the answer by designing some friendly lettering, stripes and a cartoon character beckoning "Step into Amateur Radio". The 'battle wagon' was transformed into GB4FUN.

The inside of GB4FUN was almost perfect, though the pump-up mast had been removed. The generator was wired to no less than 30 'mains' socket outlets, there was a 2m wide operating bench and the walls were covered with rough carpeting which was ideal for sticking up posters with Velcro™ tape. The 'mod cons' included two extractor fans, holes for cables, a heater, fluorescent lighting, and fire extinguishers.

Outside, there were brackets that would take antenna stub masts, and stairs to the specially strengthened roof which sported a fold-down handrail. Access was through doors at the side and rear, perfect for the sort of walk-through exhibition we wanted at public events.

WITH A LITTLE HELP FROM OUR FRIENDS

HAVING GOT THE basic vehicle, what was needed next was an amateur radio station. Waters & Stanton plc kindly offered not only to provide equipment, but also to install it. A meeting was held at RSGB HQ to discuss what sort of thing was needed.

GB4FUN was taken to Hockley, and returned a week later fully equipped with a 400W HF station, and gear for 6m to 70cm,

Before painting, it looked formidable - not at all what was wanted.

The roof showing the handrail, the R-6000 vertical atop the telescopic mast, the 7MHz whip (centre) and the VHF / UHF collinear (front nearside).

plus an HF receiver. The antennas were a mobile whip for 7MHz which works really well in the centre of the 3.5m (12ft) high roof, an R-6000 20 - 6m vertical, a 2m / 70cm collinear and a 2m / 70cm mobile whip.

All of this gear had been securely bolted to the bench to avoid it sliding off when travelling, and of course to increase security when members of the public were on board. Accessories included power units, SWR bridges, antenna switches, loudspeakers and a clock.

The R-6000 was set up to be installed atop the 7.6m (25ft) Tennamast telescopic wind-up mast which had been welded to the rear of the vehicle. With a little practice, it was found easy to set up all of the antennas and get the station on the air in less than 30 minutes. **Table 1** shows a complete list of sponsors.

FIRST OUTINGS

IT WAS IMPORTANT to test GB4FUN at an early stage so that any teething troubles showed up well before it was used in ear-

* *c/o RSGB HQ.*

into Amateur Radio

Radiocommunications Agency
Waters & Stanton plc
HSBC
Tennamast (Scotland)
Kenwood (UK)

Table 1: GB4FUN's major sponsors.

nest. The Stevenage and Shefford radio clubs volunteered to take it to the Bedfordshire Steam & Country Fayre to enhance their own display, and two members of staff were drafted in to assist. The feedback from this was invaluable.

Next, the vehicle went to the Leicester Show and was parked in a prominent position just outside the entrance. Murmurings of "RSGB" and "GB for fun" came from the queue as members recognised it from *RadCom*. There was keen interest from visitors, some of whom left their details for use when GB4FUN was ready to tour the country. The most common question concerned the identity of the HF vertical, plainly a good advertisement for the R-6000. Some were concerned at the cost to members, and were surprised to hear how much had been funded from sponsorship.

OFF THE ROAD

ALTHOUGH THE VEHICLE was generally in good condition, the two outings had revealed a few faults, not the least being an unreliable compressor that was essential for the pneumatic suspension.

On return from Leicester, an appointment was made to get the faults fixed in time for GB4FUN's next bookings, the HF Convention and the W&S @ Jaycee Open Day. These plans had to be scrapped when it was discovered that the replacement compressor had to be shipped from Germany. Our apologies to Jaycee and to all those who traveled to Glenrothes to see GB4FUN.

By the time this is published, Scottish members will have had a second chance to view the vehicle at the Society's AGM in Hamilton.

One of the things learned from the Leicester Show was that the access steps were fine for healthy adults, but not at all suitable for elderly, infirm or young people. This is plainly something that needs fixing. A number of other safety-related modifications are also being carried out.

The main part of the shack: IC-746, Linear Amp UK Hunter linear, FT-840 and accessories. The VHF / UHF station, a Kenwood TM-D700 is mounted on the wall just outside the picture.

THE NEXT STEP

AMSAT-UK HAS suggested a satellite station, probably using Oscar 40, and other sponsors are being approached to fund a computer, a soldering / construction station, cassette players and other items.

A new range of posters and leaflets is being designed so that the magic of amateur radio can be explained to children of all ages, and to the general public.

GB4FUN has two principle agendas. One is to visit schools and the other is to display at major public events, such as county shows, steam rallies and air shows. These require different strategies.

The likely scenario for a school visit would be to set up early in the day, give a short talk inside the school, then visit GB4FUN in groups of a dozen or so for an on-air demonstration. This could be followed by an informal visit, perhaps during lunch, to listen to receivers or build a small project. The internal layout of GB4FUN is designed so that the radio operator can face his audience whilst operating - something often ignored by special event stations.

The procedure at public events will be rather different. Visitors will walk through the vehicle, past the special event operator, to view displays and posters. The operator will not directly address the public. Instead a second person will give a commentary on the on-air activity, and answer any questions, whilst others stand outside encouraging people into the vehicle. Local radio clubs will be invited to help at these events.

Many invitations have already been received from members associated with schools and youth organisations, and we will try to visit as many of these as possible. In addition, a database of public events has been compiled.

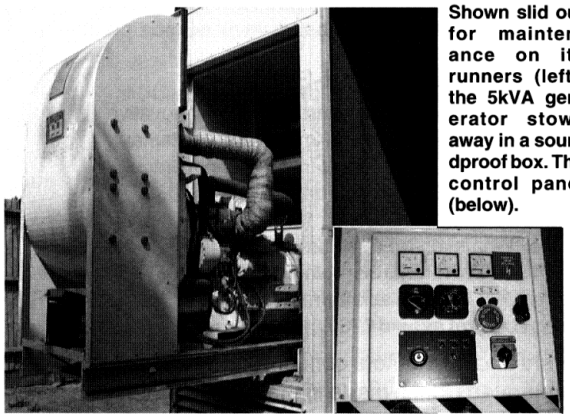
In order to make the most efficient use of resources, visits to events and schools will be grouped into geographical areas. From time to time the GB4FUN schedule will published in *RadCom* and on the RSGB web site. Members and clubs will be invited to make suggestions as to how to fill any gaps in the schedule. it is hoped that Clubs will take advantage when gb4fun is in their area and provide volunteers to man the project.

SPONSORS

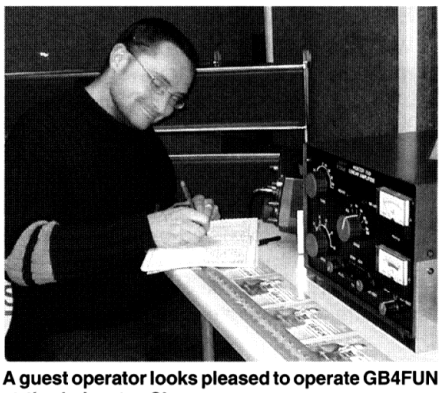
ALTHOUGH MUCH OF the project has already been funded by the generosity of sponsors, more sponsorship is needed to ensure the success of the project. If you feel you would like to help, please send a donation to RSGB HQ, marked "GB4FUN Project". Details of all sponsors (unless anonymity is requested) will be published in *RadCom* and on the RSGB web site.

If you have a connection with a school or youth project, and would like GB4FUN to visit some time in 2002, please contact us at HQ by letter or e-mail gb4fun@rsgb.org.uk

With your help, we can use GB4FUN to fulfil the vision of more than a decade ago - to be pro-active in recruiting more people, especially young people, into amateur radio. ♦



Shown slid out for maintenance on its runners (left), the 5kVA generator stows away in a soundproof box. The control panel (below).



A guest operator looks pleased to operate GB4FUN at the Leicester Show.

product news

GREENWELD CATALOGUE

A NEW Greenweld catalogue is now out. Containing tools, kits, experimental projects (build your own generator!), robots, multimeters, inverters, model-making materials, books, surplus items, component packs.

The catalogue is available free of charge simply by sending your name and address to Greenweld by post, phone, fax, or e-mail:

Greenweld Ltd, Unit 24, Horndon Industrial Park, West Horndon, Brentwood, Essex CM13 3XD; tel: 01277 811042; fax: 01277 812419; e-mail: service@greenweld.co.uk; website: www.greenweld.co.uk

ICOM IC-756PROII

THE LATEST **Icom HF/6m transceiver** is, as the name suggests, a development of the IC-756PRO. The changes include improved receiver performance (wider dynamic range, reduction of third order distortion); selectable filter shape (digital IF filter shape selectable from 'soft' or 'sharp'); one-touch record/playback of the digital voice recorder; increased performance on datamodes including PSK, and many other improvements. Of course, the 32-bit floating point DSP, 4.9in colour TFT and all the other features of the original '756PRO are retained.

The MkII version is available at about £2495 from all major UK amateur radio dealers.

RADIO AMATEURS 'SPICE' UP HOMEBREW

THE NEW ***B² Spice AD* version 4 circuit simulation software** replaces the well-known and widely used *B² Spice 2000*. Users can design analogue and digital circuits quickly and easily and the new version supports the design of RF circuits for the first time. This is of major interest to radio amateurs and professionals alike. The software is straightforward to use and comes complete with a model library of over 8000 parts: there's even a wide selection of valves to choose from. It comes with a comprehensive 400-page user manual with clear tutorials, backed up by free unlimited technical support. Minimum PC specifications are 486 or later processor, 32MB RAM minimum, Windows 95, 98, ME, 2000, XP or NT 3.51 or later recommended.

B² Spice AD version 4 carries an unconditional 30-day evaluation: if for any reason a user is dissatisfied they may return it within 30 days for a complete refund, no questions asked. The price is £229 plus VAT but there is a special introductory offer and **until 31 January** only it is being offered to RSGB members at 25% off. See the advertisement on page 73 of this issue of *RadCom* for further details.

RD Research, tel: 01603 872331; website: www.spice-software.com

TOP-OF-THE-RANGE RECEIVER

IF YOU'RE EITHER very wealthy, or just *must* have the absolute best, the **Ten-Tec RX-340 professional DSP HF communications receiver** might be what you're looking for. With a price tag a fraction under £4000, the RX-340 won't be for everyone, but no-one ever said that quality comes cheap. However, modern DSP techniques have brought the cost of this professional-standard communications receiver down to the top-end of the amateur market. The RX-340 is available from **Waters & Stanton plc** and further details and specifications can be found on their website.

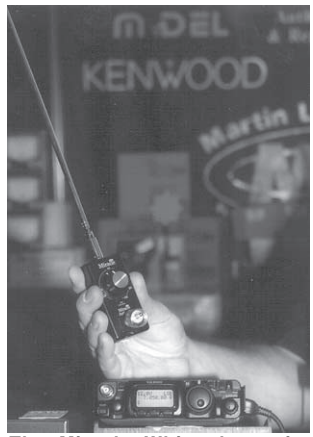
SINGLE-BAND MOBILE WHIPS

WATERS & STANTON are selling **single-band magnetic-mounted mobile whips**. Standing just over 1.2m long, models are available for 10m and 15m and will handle up to 200 watts. The whip is fibreglass, mounted on a shock spring and excellent VSWR is achieved by the use of a built-in matching transformer. The antennas are ideal for those who want to sample mobile DX operation with the minimum of fuss. 5m of cable is provided, terminated in a PL-259 plug. The antennas were originally made to sell at well above the current price of £19.95.

Waters & Stanton plc, 22 Main Road, Hockley, Essex SS5 4QS; tel: 01702 206835; fax: 01702 205843; e-mail: sales@wsplc.com; website: www.wsplc.com

THE MIRACLE WHIP

DESIGNED FOR THE Yaesu FT-817, but perfect for any rig, the **'Miracle Whip'** is a completely self-contained 50in-long telescopic whip antenna with integrated tuner for receiving and transmitting that mounts right on your radio. The Miracle Whip liberates your portable rig from coax, cables, mounts, tripods and trees, and gives you remarkable performance - including DX - from desktop to picnic table, and can even do it without a ground. The Miracle Whip covers 3.5 - 450MHz (with no gaps!) with a typical SWR of 1.5:1 or better, and handles 5 watts of power. On receive it covers 600kHz to 460MHz, making it an ideal all-band antenna for scanner users too. Weighing just 9oz the Miracle Whip provides the ultimate in portability for hikers, campers, cyclists and mountaineers.



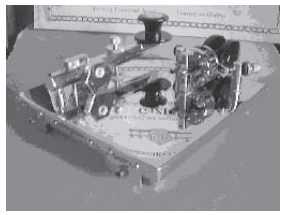
The Miracle Whip shown in comparison with the tiny FT-817.

The Miracle Whip is available exclusively from Martin Lynch & Sons Ltd at an RRP of £129.95 plus £5.00 P&P.

ML&S, 128, 140 - 142 Northfield Avenue, Ealing, London W13 9SB; tel: 0208 566 1120; fax: 0208 566 1207; e-mail: sales@hamradio.co.uk; website: www.hamradio.co.uk

LUXURY DUAL KEY

DESIGNED FOR THE radio ham who has everything, the **G4ZPY Paddle Keys International 'Millennium Duo'** is two Morse keys on the same base: a VHS twin paddle key and a 'straight' key. The straight key has a gold half Sovereign inlaid in the knob. Both keys are mounted on a 6in square by 3/8in thick base made of solid brass. The entire assembly has been 24ct gold plated and weighs approximately 2kg. Each key has been numbered on a special small plaque. The price for this beautifully-engineered piece of equipment is £560.00 plus P&P.



G4ZPY Paddle Keys International, 41 Mill Dam Lane, Burscough, Ormskirk L40 7YG; tel / fax: 01704 894299; e-mail: g4zpy@lineone.net; website: http://website.lineone.net/~g4zpy/index.htm

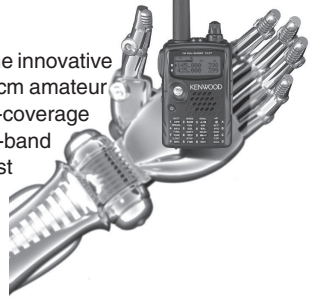
NEW ALINCO 70cm HANDHELD

THE NEW **Alinco DJ-S40 UHF transceiver** covering the 70cm amateur band has recently been released. Weighing only 100g, the DJ-S40 is small enough to fit in the pocket. It covers 430 - 434.785MHz at 500mW power and with tuning steps of 5, 10, 12.5, 15, 20, 25, 30, 50kHz. It has 100 memories; VFO and memory modes; battery save function, auto power off and has many additional features including a theft alarm, 38 CTCSS tones, 100 memories and clone facility. The set sells for £99.95.

Nevada, Unit 1, Fitzherbert Spur, Farlington, Portsmouth PO6 1TT; tel: 023 9231 3090; fax: 023 9231 3091; website: www.nevada.co.uk

KENWOOD TH-F7E

KENWOOD'S LATEST **dualband handheld** is the innovative new **TH-F7E**. Apart from covering the 2m and 70cm amateur bands at up to 5W output, it has a built-in general-coverage receiver from 0.1 - 1300MHz with wide and narrow-band FM, AM and SSB / CW detectors. It was first reported in the 'Whatever Next' column in the November 2001 *RadCom* and further details can be found there. The TH-F7E is available from major UK amateur radio dealers at around £269.



Note: Product News is compiled from press releases sent in by the manufacturers and distributors concerned. Details are published in good faith, but *RadCom* cannot be held responsible for false or exaggerated claims made in the source material.

KENWOOD

Christmas Future.
Christmas Present.

Progress is palm-sized: Kenwood's new FM Dual Bander (144/430MHz) offers dual-channel RX capability and prime performance in a superbly compact design.

■ Receives 2 frequencies simultaneously, even on the same band ■ 0.1~1300MHz RX (B band) ■ FM/FM-W/FM-N/AM plus SSB/CW receive ■ Bar antenna for receiving AM broadcasts ■ Special information memory channel RX mode (10 channels) ■ 1200/9600bps packet compatible (ext. TNC) ■ 434 memory channels, multiple scan functions ■ 16-key pad plus multi-scroll key for easy operation ■ 7.4V 1550mAh lithium-ion battery (std.) for 5W output and extended operation ■ Built-in charging circuitry for battery recharge while the unit operates from a DC supply ■ Tough construction: meets MIL-STD 810 C/D/E standards for resistance to vibration, shock, humidity and light rain ■ Larger frequency display for single-band use ■ Automatic simplex checker ■ Battery indicator ■ Internal VOX ■ MCP software (Free download from Kenwood website)

144/430MHz FM DUAL BANDER

TH-F7E

Available from all Official Kenwood Amateur Radio Dealers.
For full details of our Dealer network and all Kenwood Amateur products contact your local Dealer or Kenwood Electronics UK. 01923 655284. e-mail: comms@kenwood-electronics.co.uk

ICOM

IC-756PROII

IC-756PROII HF/50MHz All-mode Transceiver - The Next Generation!

The IC-756PRO achieved a fantastic reputation among enthusiasts by offering a wide selection of features including 32-bit floating point DSP, 24 bit AD/DA converter, 4.9 inch colour TFT display, Twin PBT, dual-watch function etc. Now its direct successor, the IC-756PROII, is here and contains all of the great features that made the original so popular... and a lot more besides, just look at the list:

- Improved Receiver Performance
- Selectable Filter Shape
- One-Touch Record/Playback button
- External Control Function
- Increased Performance of SSB Data Mode
- USB Standard in CW Mode
- Changed Keyboard Lettering and Color
- Improved Readability
- Increase in Noise Blanker Performance
- 8 New Screen layouts with 7 font styles
- SSB/CW Synchronous Shift Function
- ...and *soooooooo* much more!!!

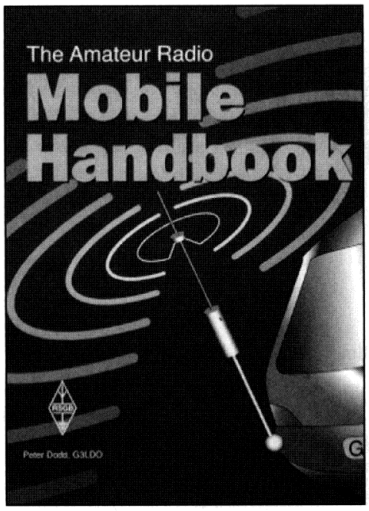
Happy Christmas from everybody at Icom UK

And the first 500 customers worldwide, who purchase a IC-756PROII, will each receive a limited edition, prestige log book personalized by "Mr. Icom" - Tokuzo Inoue!

Icom (UK) Ltd. Sea Street, Herne Bay, Kent CT6 8LD. Telephone: 01227 741741. Fax: 01227 741742.
e-mail: info@icomuk.co.uk ...or visit our website: www.icomuk.co.uk

Count on us!

Book Review



THE AMATEUR RADIO MOBILE HANDBOOK
by Peter Dodd, G3LDO

THIS NEW VOLUME is dedicated to the art and craft of amateur radio mobile operation.

'Mobile' is used to encompass operation from a road vehicle (including a mountain bicycle), from a boat, and as a pedestrian. The author opens the book by defining when to use the mobile suffix (/M), the maritime mobile suffix (/MM) and the portable (or 'temporary location') suffix (/P), aided by extracts for the *Terms, Provisions and Limitations Booklet BR68*, produced by the Radiocommunications Agency.

Safety aspects are covered at an early stage, the author warning that safety is, unfortunately, not at the top of the list for every mobile radio installation.

Advice is given about HF and VHF operation. When is it safe to operate on the move, and when should you be stationary? Using repeaters and the Automatic Packet (Position) Reporting System (APRS) are also covered.

Four chapters are dedicated to the details of installation of equipment, antennas and antenna supports, including kite and balloon supports. Different antennas and loading systems are first described, both at HF and VHF / UHF. Then, several means of antenna mounting are described, including the magnetic mount, through-panel mounting, the chassis bracket, roof-rack support, hatchback mount, and bull-bar support. Have you thought about using a kite or balloon as your antenna support when out in the open country? Some practical pointers are given for doing just this, with safety being uppermost as usual.

For a complete change, the next two chapters cover bicycle HF mobile and ship-borne maritime mobile operation. Three descriptions of bike-mobile systems are given. Although not mentioned, it would seem that the information given here is also applicable to motorcycle-mobile systems. Installation advice is given for systems aboard boats, for those who combine amateur radio with river, canal or lake trips (/M) or with sea-going (/MM) activities.

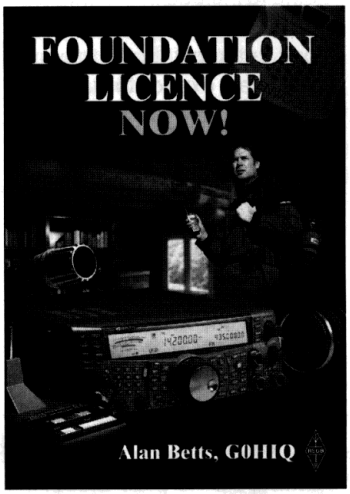
The next chapter describes some of the author's antenna activities based around the car as an antenna support. These include the review of a commercial multi-band vertical, the construction of a mobile Directional-Discontinuity Ring Radiator (DDRR), and the evaluation of the G2AJV toroidal antenna.

The book concludes with 'walkabout-mobile' systems. These are more sophisticated than the simple hand-held and 'rubber duck' approach, acknowledging the fact that small radios need the largest and most efficient antennas possible, and not the small antennas with which they are most often associated. Classified as 'back-packing' systems, and powered by sealed lead-acid batteries, they use antennas which would put some mobile versions to shame.

A 'Resources' section itemises suppliers of some of the materials and equipment mentioned in the book, and there is a list of the HF, VHF and UHF voice repeaters in the UK.

The book is copiously illustrated, and is a good reference volume for anyone contemplating mobile operation or wishing to improve an existing system.

The Amateur Radio Mobile Handbook, *RSGB*
ISBN 1-872309-77-1
Members' price £11.89
Non-members' price £13.99.



FOUNDATION LICENCE NOW!
by Alan Betts, G0HIQ

THIS NEW RSGB publication, subtitled *The Foundation Amateur Radio Licence Students' Manual*, is perhaps best thought of as 'the *RAE Manual* for the Foundation Licence'.

In it, Alan Betts has covered everything a complete beginner would need to know in order to get up to the level required to take out a Foundation Licence.

It starts with a chapter answering the question "what is amateur radio?" and explaining why it is necessary to complete a training course before being allowed on the air.

Although only a slim volume, *Foundation Licence Now!* packs in an awful lot of information. After the introductory chapter, Alan Betts describes the training course, including the syllabus, and the relevance of Morse code.

Other chapters cover materials and information (essential reading material for potential Foundation Licensees), licence conditions, technical basics (Ohm's law, units and symbols etc), transmitters, receivers, feeders and antennas, propagation, operating practices and procedures, electromagnetic compatibility (including, importantly, how to solve basic EMC problems), and safety considerations. Two further sections explain exactly what the licence schedule means, and what will be required of the candidate in the Morse Assessment.

Foundation Licence Now! is written in an easy-to-understand style that is guaranteed *not* to put off absolute beginners. Well illustrated with photographs, diagrams and explanatory cartoons, the book looks friendly and accessible.

As a radio amateur of around 30 years' standing, I found this little book to be really excellent. It is *exactly* the sort of publication that I wish had existed when, as a 15-year old schoolboy, I was starting to become interested in amateur radio. That's not to say it is written specifically for schoolchildren. It is accessible for schoolchildren, but is equally suitable for adults

This book is not intended for existing radio amateurs. Rather it is for the general public; indeed for anyone who wants to discover what amateur radio is all about. But the general public is - generally - unlikely to be aware of its existence. So it is worth while for *every* radio amateur to buy a copy - at £3.39 for RSGB members it is not exactly going to break the bank! - so that when your work mates ask "how far can you get with your radio?", when you are asked "what is that aerial for?" by your neighbour, or when your childrens' or grandchildrens' school friends ask "what do you do with that radio?" you can answer by giving them a copy of *Foundation Licence Now!*

Foundation Licence Now!, *RSGB*
ISBN 1-872309-80-1
Members' price £3.39
Non-members' price £3.99.

WHATEVER NEXT

STEVE WHITE, G3ZVW
31 Amberley Road, London N13 4BH.
e-mail: steve.white@rsgb.org.uk

IN JANUARY last year I brought you news of the 'TiVo' and 'Replay TV', tapeless video machines that record (or buffer) TV programmes onto a hard disk in MPEG2 format. Of course, in the 12 months that have elapsed, the price of hard disks has fallen and the capacity has increased. The result of this is that the latest TiVo models can record up to 60 hours worth of TV, depending on the quality you choose (a year ago 30 hours was the maximum).

Depending on which Internet site you visit, it seems that either:

(a) all Replay TV models have been discontinued, or

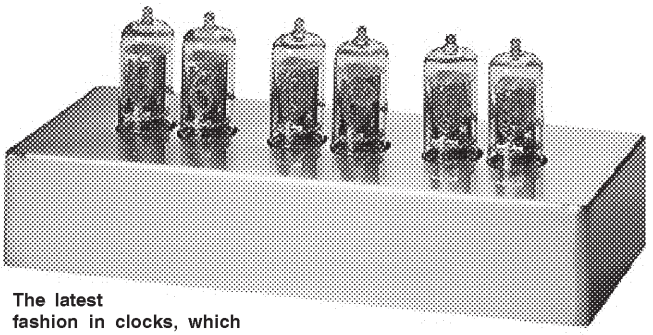
(b) that Replay TV is coming back to the market with a new model that can record up to 320 hours of TV.

PARALLEL DEVELOPMENTS

I AM RELIABLY informed that buffering to disk is exactly the kind of technology that is going to be included in the next generation of decoders for digital terrestrial television in the UK (ITV Digital, formerly ONdigital).

Whether these decoders are going to include the features of the latest Replay TV model I don't yet know, but if they do, users can expect to have the facility to connect directly to a computer network, send recorded programmes over the Internet or to another Replay TV unit in the same house, download digital photos and display them on the TV as a slide show, etc.

Naturally, if these devices are going to become available for digital terrestrial TV, there's every reason to believe that they will also be produced for the digital satellite market.



The latest fashion in clocks, which uses Nixie tubes to display the time.

FASHIONABLE 'VALVES'

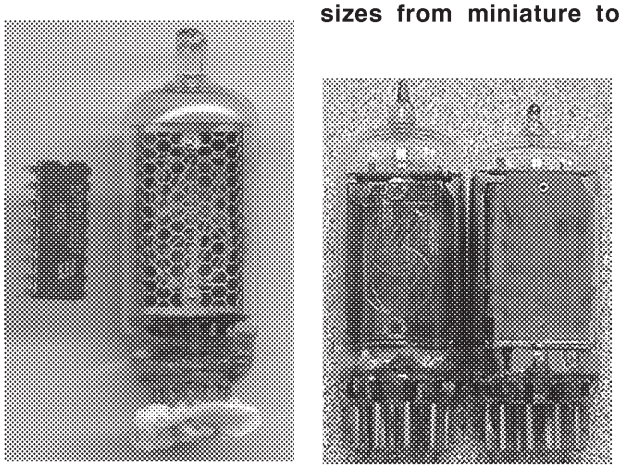
I REMEMBER the first frequency counter I ever saw. To the schoolboy I was at the time it truly was a thing of wonder, the numbers rippling back and forth inside the Nixie tubes (see panel below) that formed the display. I don't remember the make or model at all, but the year would have been in the early 1960s. I remember how, in the 1970s, the coming of LED displays, small as the original ones were, led to the earlier generation of equipment appearing on the surplus market in large quantities - indeed I remember seeing lots of it at rallies. By the 1980s, equipment with LED displays

NIXIE TUBES - A BRIEF HISTORY LESSON

NIXIE TUBE displays first became available in the 1950s. They consist of a neon-filled glass envelope with a single anode made from a fine mesh, plus a number of wire cathodes, each cathode being bent into the shape of what is required to be displayed. Typically this means 11 cathodes, these being the numbers 0 - 9 plus a decimal point, but tubes were also made that could display letters and symbols. By placing a high voltage on the anode and earthing one of the cathodes, that cathode would glow orange in colour. Tubes were built in single- and multi-digit versions, end- and side-view versions, and in various sizes from miniature to enormous. The photos below show some examples.

One item of radio equipment that I have been able to discover which used Nixie tube displays was the Drake DSR-1 (see photo below). This frequency-synthesised general coverage receiver was introduced in 1971. Being a commercial-grade product, I doubt it would have found its way into many shacks.

Although 'numeric neon displays' or 'gas-filled discharge devices', as they should really be called, are practically always termed 'Nixie tubes', the word Nixie is actually a trademark of the Burroughs Corporation. Finally, it is worth pointing out that although many Nixies look like 'valves' (in the English sense of the word), they aren't actually thermionic.



Examples of Nixie tubes, as they are commonly known.

The Drake DSR-1 was introduced in 1971, right at the end of the time that Nixie tubes were being incorporated into new designs.

was being replaced wholesale by equipment with liquid crystal displays. It seems a long time ago indeed that anything employing a Nixie tube was built commercially, but what's this I see, a brand new digital clock (see photo left) with a Nixie tube display?

The clock in question is available from Ocean, a catalogue company which specialises in fashionable items, but when I researched it I also found it in other places on the Internet.

Designing such a clock, combining modern and not-so-modern components, would have been an interesting exercise, so it doesn't surprise me at all that someone has done it. What does surprise me is that it is possible to get hold of Nixie tubes in commercial quantities. Surely these things aren't still being made?

NEW CPU

THOSE OF YOU who are using AMD processors in your personal computers might like to know that the Athlon / Duron series are about to be superseded by a new CPU - the K8. Introduction of this processor, originally unveiled early last year, has been delayed a few times. It is now due to start shipping in the second half of 2002.

Nicknamed 'Hammer', it features true 64-bit processing, but will be fully compatible with all current 32-bit software. The Hammer will come in two variations; the ClawHammer, aimed primarily at home systems, and the SledgeHammer, aimed at the multi-processor server market. CPU speeds are not yet certain.

The production process for the Hammer will be 0.13 micron, silicon on insulator (SOI) (see panel above), with the size of the actual die being 105 sq mm (about half the size of the current Intel P4, although that is set to shrink). The wafer on which the chips are created is also set to increase in size, from 8in diameter to 12in. The smaller die and larger wafer bring significant cost savings to the production process, which either filter-through to the price that end users pay, increase the manufacturers' margins, or a bit of each.

SILICON ON INSULATOR (SOI)

Licensed from IBM Microelectronics, the SOI technology that will be used by AMD adds a layer of oxide between silicon layers, gating previously lost energy. Proponents of this process technology believe that reclaimed energy adds performance to transistors while consuming less power, which is particularly important for portable computers.

SOI technology aims to squeeze more life out of the CMOS process, with the promise of 20 - 30% performance gains. However, Intel Corporation, usually a front-runner of process technologies, has been sceptical about this, saying publicly that the power advantages achieved through SOI diminish as process geometries shrink.

GM-900 UPDATE

PA3FZN HAS told me about modifications to the microphone of the Motorola GM-900 that potential amateur users would find useful, but first, a word of caution. There are three models of hand microphone that are likely to be found with the GM900 – the GMN6146C, HMN1056D and HMN3596A. Only the HMN3596A (shown below) is suitable for modification, because it uses discrete as well as SMD components. The HMN1056D cannot be opened without damaging it, and the GMN6146C uses only SMD components, which makes it difficult to modify. The GMN6146C is the later version.

The problem identified was that the transmitted audio was low in level and sounded very 'nasal'. After investigation it appeared that the problem lay in the microphone gain and its acoustic coupling.

The Motorola HMN3596A, a microphone that can benefit from modification.

The following modifications were undertaken (regrettably no illustrations were available).

1. The 10nF coupling capacitor that sits in the audio line was increased to 0.22µF.

2. The 560Ω emitter ballast resistor had 22Ω placed in series across it, to increase the gain of the pre-amp.

3. The rubber funnel made the audio sound restricted and somewhat nasal, so the microphone insert was removed from the funnel and placed directly against the microphone grille. This was achieved by mounting the capsule on two stiff wire stilts. This improved the audio quality markedly.

PA3FZN provides a couple of other comments on Motorola microphones.

"All these hand microphones have a hook switch facility built in. When the mic is resting in its hook, a contact is made between the ring and button on the rear of the mic. When resting, the set will only respond to selective calling. When lifted from its hook, the set can go into non-selective mode. This is a programmable option within the set.

"The mic audio line is superimposed on the PTT line. The action of the PTT only works when the DC levels of the PTT change from 6V to around 2.5V. Be advised that when the PTT / mic line is shorted to *ground*, this will function as a remote switch-off and the set is then placed into standby."

The pinout of the connector is shown in **Table 1**. ♦

1	OPT SW B+
2	SPKR- / KEY LOAD
3	MON / BUSY / KID
4	GND
5	MIC / ON-OFF
6	PTT / BUS- / WE
7	AUX / BUS+ / KEYFAIL
8	SPKR+ / HANDSET AUDIO

Table 1: Pinout of the GM900 microphone socket.

WWW.

Nixie clock: http:// www.oceancatalogue.com
AMD 'Hammer': http://news.zdnet.co.uk/story/0,,s2086030,00.html

If there is an item of new technology you would like to know more about - or one that you know about and think ought to be mentioned here - drop a line to the author, or e-mail him at the address at the start of the feature.

Newcomers' News

*News and Comment from and for Amateur Radio's Newcomers. Compiled by Steve Hartley, G0FUW **

SEASON's Greetings to one and all! Another year has passed and another new amateur radio licence is about to be launched. Keep a look out for the new Foundation Licensees, and for those readers who are about to receive their new callsigns, a hearty well done and I look forward to hearing about your successes on the air.

NOVICE AWARD

ONE NEWCOMER who has had a great time since receiving his licence is Graham Stone, 2E1STO. You may have read about his achievements under 'VHF Awards' on page 6 of the December 2001 *RadCom*, but in case you missed it he has just claimed awards for 20 countries and 25 squares worked, mainly on 50MHz.

Graham was first made aware of NRAE courses being run at his local college by John Adlington, M0DVT (then M1DVT), whom he had known for some years. John had assisted in a previous course held there and took Graham and another interested party to the college to sign up for the next course.

Unfortunately, they were told that unless there was sufficient interest, the college would not be holding the course. No other potential students could be found and there were no other courses being run in the city at that time. Thankfully John stepped into the breach and ran the course himself. Graham duly passed the exam and got his licence.

Although not too severe, Graham is disabled and can't get out of the house too often, so amateur radio has given him great enjoyment and taken the boredom out of being mostly housebound. He likes the local chat on repeaters and simplex but his main enjoyment has been 50MHz (6m) Single Sideband (SSB). Until recently Graham has been using a Yaesu FT-736R with 10W output and 5-element Moonraker Yagi, but since the new licensing changes he has become the new owner of an Icom IC-746 and is looking forward to working much more with the extra power.

Not content with his achievements so far Graham is hoping to pass his Morse test soon so he can work even more on the High Frequency (HF) bands. Congratulations Graham and I hope you will let us know how you get on with working the rest of the world!

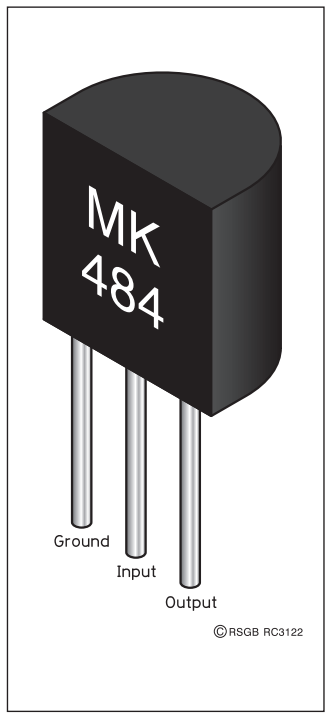
2E1STO in the shack (see 'Novice Award')

RADIO CHIP INFO

THE DEMISE of the old ZN414 tuned radio frequency (TRF) receiver integrated circuit (IC) has had a fair bit of coverage in this column, and in other amateur radio publications. When it seemed that some of the old faithful simple radio designs were doomed, a replacement IC, the MK484, came on the market. Although the chip is a direct replacement for the ZN414 the pins are not the same and some constructors have reported instability problems.

A little while ago Godfrey Manning, G4GLM, kindly provided details of the pin out (see diagram) and John Kelly, G3LMR, sent in a data sheet complete with PCB layout and aerial coil winding details.

The data sheet appears to have originated from ESR Electronic Components, Station Road, Cullercoats, Tyne & Wear NE30 4PQ. I have no further details but I can only believe that ESR can supply the MK484 and the other parts required for the medium-wave radio featured in the *Novice Students Notebook*, which is available from the RSGB Bookshop.



Pin out for the MK484 radio chip (see 'Radio Chip Info')

The MK484 is also available from Kanga Products, Sandford Works, Cobden Street, Long Eaton, Nottingham NG10 1BL.

EXAMS IN 2002

CITY & GUILDS has published the timetable for radio amateur exams for the coming year so out with the new diaries and circle the dates.

Opportunities to sit the **full Radio Amateurs Exam (RAE)** will be on **Monday 20 May** and **Monday 2 December** (subject to confirmation). RSGB satellite exam centres need to have applications by **15 March** and **11 October** respectively. Other centres may have different registration dates, so please check early. The RAE will cost £29 plus any administration fees levied by the exam centre. Our local club charges £2 but many colleges are forced to charge 'commercial' rates and an additional £20 is not uncommon.

The **Novice RAE (NRAE)** will be held on the following **Mondays: 11 March, 10 June, 9 September** and **9 December**. Again the closing dates for applications are about 7 weeks before each exam. The NRAE will cost £14, again plus administration costs.

Subject to some last minute nips and tucks the Foundation courses should be available across the country from 1 January 2002. These exams are being run by the RSGB and are 'on demand'. Tutors will make arrangements as and when required.

WORTH THE WAIT

IN THE DECEMBER column I mentioned about QSL cards not always being sent or returned 100%. Newcomers should also be aware that the bureau sometimes takes a little while to filter cards through the system. As an example, I have just received my latest envelope and one contact could not be found in the logbook.

Most of the cards in the envelope were for contacts in the year 2000 and I assumed this one was too. On closer inspection the year was actually 1990! An archive logbook search revealed that the contact had been made on the date quoted some 11 years earlier. I will never know whether the card had been in the system that long or whether the sender had 'a bit of a backlog' but it was worth the wait! ♦

Spread The Word!

Send your news and colour photos to: Steve Hartley, G0FUW, QTHR.

E-mail: newcomers.radcom@rsgb.org.uk

** 5 Sydenham Buildings, Lower Bristol Road, Bath BA2 3BS.*

Down To Earth

Making the Most of Sporadic E at VHF

by Tim Kirby, G4VXE*

IT IS QUITE well known the Sporadic E 'season' runs from late spring throughout the summer. What is less well known, perhaps, is that there is a secondary Sporadic E season which runs from mid-December until January, making this article particularly timely - Ed.

To the VHF enthusiast, Sporadic E is one of the most exciting forms of propagation that exists. When Sporadic E is about, even an amateur with a simple VHF station - running just a few watts - can suddenly and unexpectedly make contacts of over 2000km. In this article, we'll try to cover some basics about how it works, when it happens and discuss some tricks that you can use to help you make some exciting DX contacts.

WHAT IS SPORADIC E?

SPORADIC E, or Es, as it is often known, is the reflection of VHF signals back towards earth from the E-layer of the ionosphere. The E-layer is located about 100km above the earth's surface, although this may vary slightly as we will see later. Normally, the VHF signals will pass straight through the layer, but during periods of intense ionisation the signals may be reflected back towards the earth.

The Maximum Usable Frequency (MUF) is the highest frequency that will be reflected back towards the earth, rather than passing through the ionosphere and going on into outer space. As the ionisation increases in intensity, so the MUF rises. [The Sporadic E Maximum Usable Frequency must not be confused with the F-layer Maximum Usable Frequency. It is the F-layer MUF that is usually meant when referring to 'MUF'. The Sporadic E MUF is usually much higher in frequency than the F-layer MUF - *Ed.*]

What causes Sporadic E? Many fascinating theories have been proposed over the years and there is generally something compelling in each one. Wind shear over mountain ranges, meteoric dust and thunderstorms have all been discussed as possible causes. Geoff Grayer, G3NAQ, has published some fascinating work in *The VHF / UHF DX Book* [1] which is well worth reading, and also in the American publication *Ham Radio* [2]. Jim Bacon, G3YLA, has also published some most interesting thoughts on why Es occurs [3]. Geoff's and Jim's conclusions are not identical but if you are interested in a more scientific approach than will be provided here, I commend these two authors to you.

However Sporadic E is caused, it is clear that signals are reflected back to earth by the E-layer. Reflective areas move around and we generally refer to those areas as 'clouds'. Clouds will vary in size, but on occasions, areas capable of reflecting the MUF may be only a few tens of metres across. This goes some way to explaining the very selective nature of Es at the higher frequencies - where you can be listening to an amateur across town working someone at S9 and you can't hear a thing! Wait for a moment, though, because in seconds, as the reflective cloud moves, the tables can be turned!

WHICH BANDS DOES IT AFFECT?

THE 28, 50, 70 and 144MHz amateur bands are all commonly affected by Sporadic E. In the USA, where the 220MHz band is allocated, a small number of contacts have been made via Es on that band, however, it is considered extremely rare. It's fair to say that the higher the MUF rises, the less likely it is to continue to rise.

For the amateur, 50MHz contacts via Es will be plentiful. Many observations of Es propagation are noted at 70MHz, although the lack of other countries using that band hinders detailed analysis. By the time we get to the 144MHz band, there are far fewer openings - perhaps a handful of good ones each year - whereas 50MHz may be open almost every day during the Es 'season'.

At HF, 28MHz is a prime band for Sporadic E and many DXers use the Es season as a method of working countries relatively close to home that tend to be difficult to work on 28MHz by 'normal' HF (F-layer) propagation. When the Es MUF is particularly high and the ionisation particularly intense, paths of 300 or 400km are possible on 28MHz. Normally, of course, a signal approaching the ionosphere at such an angle of near vertical incidence would pass straight through. So, as we'll discuss later on, this is a really useful indicator of exciting things about to happen on VHF.

WHEN DOES IT OCCUR?

AS THE NAME suggests, Sporadic E is just that. Sporadic. However, for us in the northern hemisphere, the main season is from early May until the end of August. Certainly, openings will occur outside these times, but they will be less frequent. An urban myth suggests that there will always be a 144MHz opening during the first week of June, but regrettably, life is not that simple!

There is also a secondary peak in Es activity from mid-December to early January, ie about *now*! 144MHz openings during this 'mini-season' are very infrequent, but not impossible - but it is unusual for there not to be some good 50MHz Es openings at this time.

During the 'seasons', it is usual to find that the highest MUFs will occur in the late morning, fall away during the afternoon and reach another peak during the early to middle of the evening.

Multi-hop openings, discussed shortly, appear more likely to occur later in the day. Openings on 50MHz from Europe to the

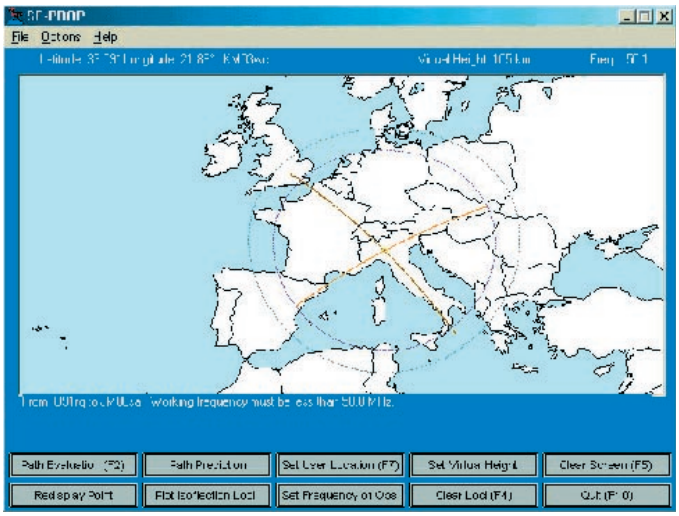


Fig 1: *SE-Prop* display of predicted 50MHz Es propagation from the author's location to south-east Italy when there is known Es from Slovakia to Spain.

*11a Vansittart Road, Windsor, Berkshire SL4 5BZ.

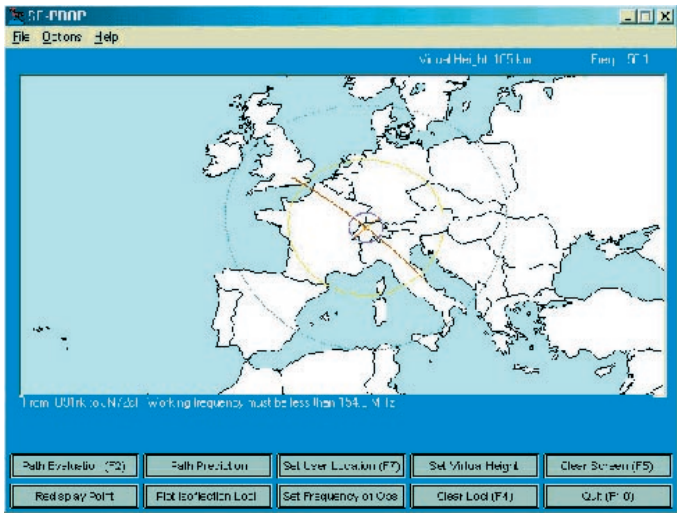


Fig 2: Another example using *SE-Prop*, in this case predicting a possible opening to central Italy when there is an opening from JN48 to JN26.

eastern part of North America generally occur during the mid to late evening in Western Europe, although the author has noted openings at almost all other times of day!

Anecdotal evidence suggests that there are fewer Sporadic E openings towards sunspot maxima, suggesting that a quiet sun is a contributor to good Es conditions. To my knowledge, there is no accepted scientific proof that this is the case, although my own observations do seem to bear it out.

WHERE DO THE OPENINGS OCCUR?

THE BAD NEWS for those of you in Scotland or the north of England, I'm afraid, is that the higher you are in latitude, the less likely you are to see a high MUF by Es. That is not to say it won't happen. It will, but you will have to be more patient. The further south you are, the greater the likelihood of finding an opening. Operators from the Channel Islands for example, have noticed many more openings than those in Southern England. A difference of 60 – 100km can make a marked difference.

Geoff Grayer, G3NAQ, notes in the *VHF/UHF DX Book* [1] that some paths seem to open repeatedly over a short period of time. I have noticed this myself. You may hear nothing from a particular area for several years only to find openings on consecutive days. Is there a residual level of ionisation, which causes this to happen?

WHAT DISTANCES CAN BE COVERED?

ASSUMING THAT the E-layer resides at a height of between 90 and 120km, a theoretical maximum of between 2130 to 2450km exists. However, many contacts of a greater distance have been made. For example, some years ago, I was able to work an EA8 station on 144MHz Es at a distance of 2880km. During that opening, I could also hear EA1 stations around half way from me to the Canaries, which suggested two different reflecting areas. One was perhaps half way from me to EA1 and the second, half way from there to EA8. Multi-hop paths do seem to exist and contacts have been made out to around 3500km.

On 50MHz, during the summer, there is often the opportunity to work into the US. Once again opinions vary on the exact mechanism providing this propagation. The most often suggested method is multiple-hop Es. Some quite remarkable contacts have been made from the Mediterranean and the Middle East into W5 and W7. It is considered that there must have been a multi-hop mechanism in action here. Perhaps because of the lower latitude, the incidence of ionisation is greater and there is a possibility of more reflecting areas being present to sustain the longer path. Perhaps too, this is straying into the realm of 'Equatorial Zone Es' which provides much 50MHz propagation around the magnetic equator.

PUTTING IT ALL INTO PRACTICE

HOW, THEN, can you make the most of the openings that occur? In the 'old' days, monitoring various key frequencies was all you could do - perhaps Band I television, Eastern European radio around 70MHz, Band II radio between 88 and 108MHz and perhaps aircraft navigation beacons around 120MHz. You'd monitor all those and when interesting things started to happen, the DX Telephone Net would spring into action.

Nowadays, the same frequencies are still useful to monitor, but we have a wealth of other useful data available to use. The first is using the *DXCluster* to see what is happening elsewhere. Using the *Cluster*, we can see openings taking place in other parts of Europe, or even the world. These may simply alert us to the fact that a band is open in a particular direction and that we should get on *post haste*!

29MHz FM can be a very useful indicator of good VHF conditions. When the skip distance comes down to 200 - 400km, you can be certain something interesting is going on.

However, there is more interpretation of the information that we can do. What, for example, if an amateur in Slovakia (OM) spots an amateur in the EA3 area of Spain on 50MHz? Assuming that the reflecting area is half way along the path (not necessarily true, of course!) this puts it over the very north-western part of Italy. So, located here in Windsor (IO91 square), I should be able to 'see' that reflecting point. If I point my antenna there, I may find a 50MHz Es opening to the very far south-east of Italy.

How do I know this? Well, there is some handy software that I can use to plot the paths for me. There are a couple of packages that you can use. I found *SE-Prop* by K9SE ideal. **Fig 1** shows what *SE-Prop* displays in this case.

Using the 'Path Evaluation' feature, you can select the two end points of a path. The mid (scatter) point will automatically be displayed for you. You can then use the 'Path Prediction' feature, select the scatter point that you just discovered from the OM / EA3 path, click on your own location and see where the reflected signal goes. Sometimes, it will drop into the sea somewhere useless! Sometimes, you will see that the MUF for that path falls below 50MHz, so won't be particularly useful to you. But other times, you will find that the program predicts a path being available. When that happens, get on the band and look in that direction! You will be surprised how often it works.

Let's take another example. You see a spot on the cluster from a DL in JN48 square of a

37

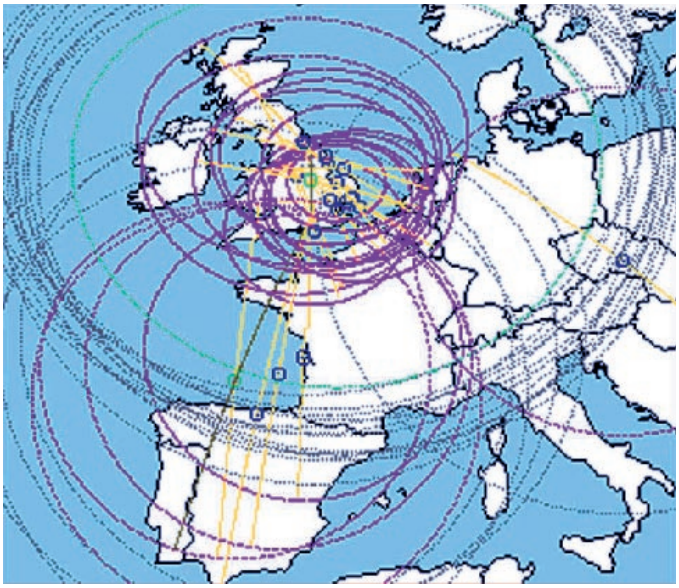


Fig 3: The 50MHz Es opening on 28 July 2001, showing two distinct reflecting areas, one over the east coast of England and the other over the Bay of Biscay.

Down To Earth

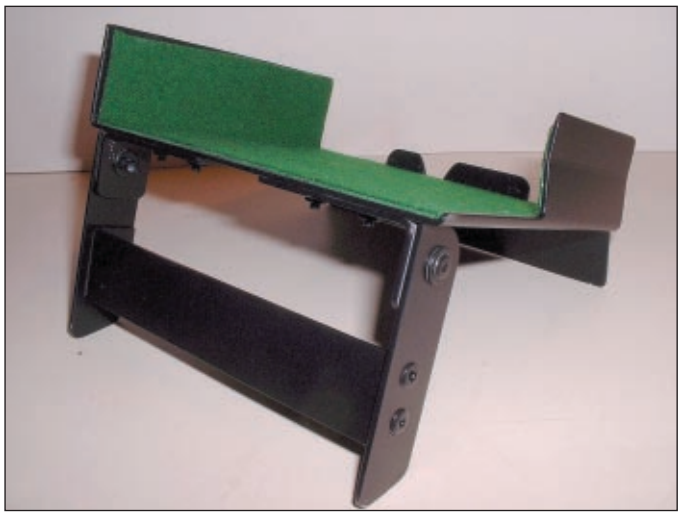
A Stand for the Yaesu FT-817

*Do you find your FT-817 uncomfortable to operate on a flat surface? If so, here is one solution offered by Tony Lifton, G0PEH **

AFTER BECOMING the proud owner of a new Yaesu FT-817 and reading the excellent review of it [1] by Peter Hart, G3SJX, I had to agree with Peter that operating with the rig lying on a flat surface was rather difficult.

I then decided to see if I could set about making a suitable stand whereby I could operate in comfort.

The following is my answer to this problem, and I thought that other owners might want to construct the stand for their FT-817s. With the dimensions modified as appropriate, the stand can be used for any other mobile-sized transceiver being used as a base station.



The finished article.

CONSTRUCTIONAL DETAILS

THE BASIC material is a piece of aluminium 1.6mm in thickness which is cut to the dimensions given in **Fig 1**.

When cut, bend on the lines as shown; note that one side of the resulting channel formed is to allow access to rig sockets for the microphone, key, etc.

You will also notice the bend of 25mm at the rear in the opposite direction; this is to allow space at the rear of the rig for the antenna and key plugs when the rig is tilted up. The next step is to make the front legs to produce the nice tilt that makes operating so much easier.

From the aluminium sheet, cut strips 20mm wide to make the legs, the support bracket, and the spacer bar between the legs. The details are shown in **Fig 2**. Cut to the sizes shown in the drawing.

Now file all edges smooth and finish with fine wet-and-dry, including all flat surfaces at the same time to make a good 'key' for the eventual coat of paint on the stand after assembly.

Assemble the legs to the U-shaped bracket (**Fig 3**) using 1/8in pop-rivets and then fit the spacer bar. It helps if you leave

** Marant Cottage, 70 Scrapsgate, Minster-on-Sea, Sheerness, Kent ME12 2DJ.*

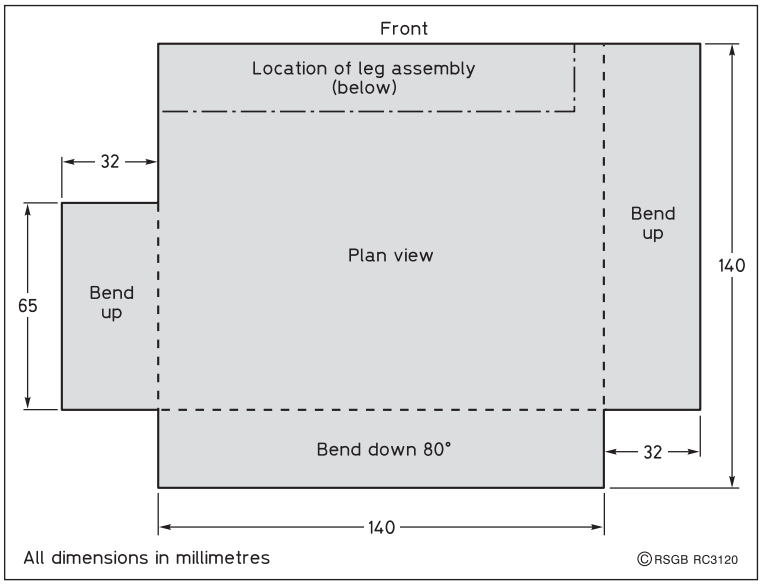


Fig 1: Plan view of the main support. The material is 1.6mm-thick aluminium.

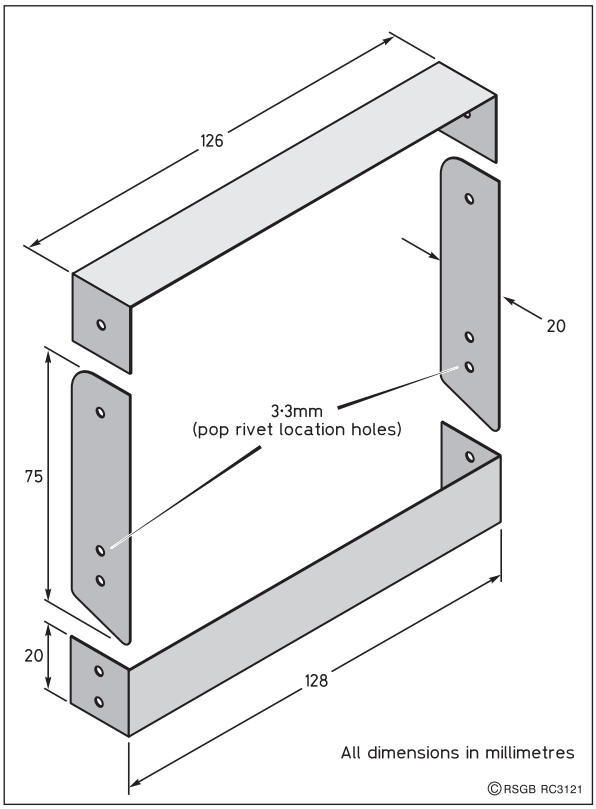


Fig 2: The leg assembly, using 1.6mm-thick aluminium.

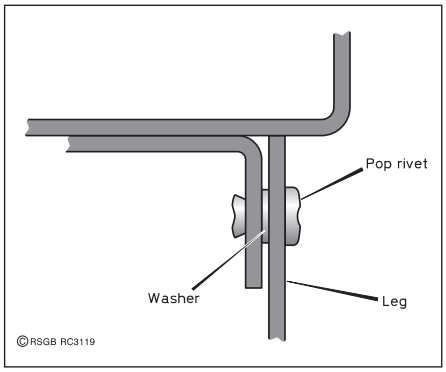


Fig 3: Leg detail (not to scale).

making the bar until the leg assembly is complete; this allows adjustment of size if required.

Fit the leg assembly to the front edge of tthe main body; again I used 1/8in pop-rivets, although you could use small nuts and bolts. Countersink the holes to avoid the heads of rivets or screws touching the bottom of rig. Note that the width is slightly smaller than the stand to allow the square ends of the legs to act as stops when pulled forward to the upright position. The front legs can be hinged backwards for stowing.

Finally, fit a small flat strip about 60mm long to the back edge, allowing 8mm above the main body to act as a stop to the back of the radio. The V-cut in it is to clear a screw in the rear heat sink of the FT-817.

All in place and ready to go: the FT-817 on its stand and fully wired up.

FINAL TOUCHES

TO COMPLETE the stand, give it a coat of paint; I used spray primer and satin black. Cut a piece of felt, or something similar, to the shape of the inside of the stand and glue it into place. It helps if you make a card template and lay it on the chosen material, then use a sharp Stanley knife and cut around the template.

With the legs folded back and the radio in the stand, there is not much increase in the weight or the space taken up. Happy portable QRPing!

REFERENCE

[1] 'The Yaesu FT-817', by Peter Hart, G3SJX, *RadCom*, June 2001, pp41-43, 45. ♦

French station in JN26 on 50MHz. You can tell instantly that that's a very short distance, so the MUF must be pretty high to support that contact. Put the details into *SE-Prop* and it will show you the scatter point and the MUF - in this case around 169MHz! Then use the 'Path Prediction' feature, enter the scatter point, your own location as one end-point and see where the other one goes. In this case, a 144MHz contact looks possible into the I6 area (see **Fig 2**).

That example was, actually, a case of working back to get an interesting result and is probably a little unlikely in practice. However, as you spend more time during openings entering data into the program, you will begin to get a flavour of where the reflective areas are, how they move around and how different paths open and close. It's simply fascinating and becomes rather compulsive!

Finally, **Fig 3** shows what your screen might look like after an opening lasting a while! This is data that I collected on 28 July 2001 - the paths shown were on 50MHz. You can see two distinct reflecting areas, one up the east coast of England and the second over the Bay of Biscay. As time went on, the cloud over England moved from almost directly overhead of JO01 square in a north-easterly direction.

OTHER POINTS OF INTEREST

SOMETIMES, YOU MAY enter the two end points of a path, and the program may report that the distance is beyond the theoretical maximum. In some cases, the program may suggest that you try repeating the calculation with a different height for the E-layer (perhaps altering the height of the layer from 105 to 110km). In other cases, it may simply suggest that the path is multi-hop.

SOFTWARE

ALTHOUGH I have described the use of *SE-Prop*, there are other programs available that work in the same way. If you have a DOS-only machine, you may like to try the *SE-Prop for DOS* program. There is also a very useful command line utility called MUF.EXE, which was written by Mark, G4PCS, which calculates the MUF based on the frequency and end-point locators of a particular path.

It is outside the scope of this article, because the mode of propagation is not commonly noted in the UK, but *SE-Prop* also has features to allow the study of Field Aligned Irregularity (FAI) paths on 144MHz. The serious enthusiast may find this of interest.

CONCLUSION

I HOPE THAT the reader will have enjoyed this introduction to the mechanisms of Sporadic E at VHF. Certainly, for me, it is one of the most fascinating aspects of propagation I know.

Sporadic E is a 'great leveller'. Because of the nature of the propagation, an amateur with a very simple station who is in the right place may make some marvellous contacts. During the RSGB 144MHz Backpackers contests, in the 3-watt class, we have several times made Es contacts with stations in central and eastern Europe. So don't assume that just because you have a small station that you can't enjoy this propagation. You can.

Developing your own ideas and theories about the mechanisms of Sporadic E is at least as interesting as operating in an opening! If I have been able to impart some of my interest and enthusiasm for the subject, I shall be delighted.

Finally, in a research program, dedicated to the memory of Serge Canivenc, F8SH, Jim Bacon, G3YLA, is collecting data of 144MHz Es contacts. If you make (or have made) some contacts, please consider forwarding details to Jim, in order that they may be recorded and analysed, in the hope of finding out more about this fascinating mode of propagation.

FURTHER READING

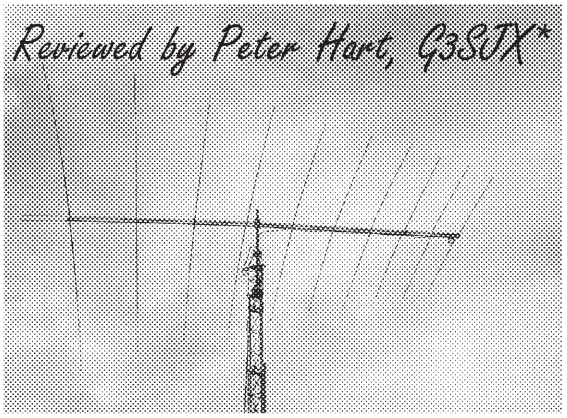
[1] *The VHF / UHF DX Book*, edited by Ian White, G3SEK. (Chapter 2: 'VHF / UHF Propagation' by Geoff Grayer, G3NAQ). Available from RSGB Sales price £15.30 (members).
[2] 'Sporadic E and 50MHz Transatlantic Propagation During 1987' by Dr Geoff Grayer, G3NAQ, *Ham Radio*, July 1988.
[3] 'An Introduction to Sporadic E' by Jim Bacon, BSc, G3YLA, (Parts 1 - 4, *RadCom* May 1989 - August 1989). ♦

WWW.

***SE-Prop* software**	**http://pwl.netcom.com/~wb9qiu**
MUF.EXE	**http://www.dh0ghu.de/download.html**
F8SH challenge	**http://challengef8sh.ifrance.com/challengef8sh/indexen.htm**

THE TENNADYNE T10 LOG PERIODIC HF BEAM ANTENNA

Reviewed by Peter Hart, G3SJX*



THE SERIOUS HF DXer justifiably regards his antennas as the most important part of his station. The so-called 'WARC bands' (10, 18 and 24.9MHz) now carry nearly as much DX traffic as the conventional bands and many DXpeditions make a special effort to activate these bands as much as possible. Although the sunspot maximum has passed we can still expect several years of good conditions before the upper HF bands fall into the doldrums and a good antenna for all five of these higher bands is a priority for many DX chasers.

LPDAs vs YAGIS & QUADS

ALTHOUGH THE TRADITIONAL triband Yagi with parasitic directors and reflectors has been the workhorse of the DX enthusiast for many years now, extending the same performance to cover the WARC bands as well - by adding additional traps and elements on the same boom - is not a simple solution. The bands are too closely-spaced and the spurious reflectors and directors formed from the adjacent bands can result in a disappointing performance.

One solution is to use separate stacked beams for the conventional and the WARC bands. However, the spacing has to be large to avoid serious interaction and degraded performance, the wind loading on the tower and rotator is substantial, and there is little room for other antennas such as VHF beams.

Another solution is to use an inherent wideband structure such as the log-periodic dipole array (LPDA). These have been increasing in popularity over recent years, both as a dedicated beam antenna and as a wideband log-cell feed for parasitic Yagis. The LPDA beam antenna has a number of potential advantages. It is inherently wideband over a wide frequency range, all elements are driven, reducing proximity effects from nearby wires and metal objects which is often a problem with narrow band parasitic Yagis, and there are no traps or loading coils to reduce efficiency and reliability.

Although an optimally-engineered parasitic beam (Yagi, quad etc) is difficult to beat in terms of forward gain from a compact structure, this is frequently not achieved in practice. The performance drops away rapidly when the conditions are less than ideal, and compromises are made by loading, multibanding or coverage of both CW and SSB band sectors. LPDAs, on the other hand, offer a modest gain figure but this is retained over the full bandwidth of the antenna.

The Tennadyne Corporation from Texas specialises in manufacturing LPDA antennas for commercial, military and amateur applications. Their product range includes six HF designs, mostly covering 13 to 33MHz, the smallest having 6 elements on a 12ft boom (T6) and the largest with 12 elements on a 30ft boom (T12). I decided to purchase their 10-element beam (T10) for my main HF antenna.

DESCRIPTION

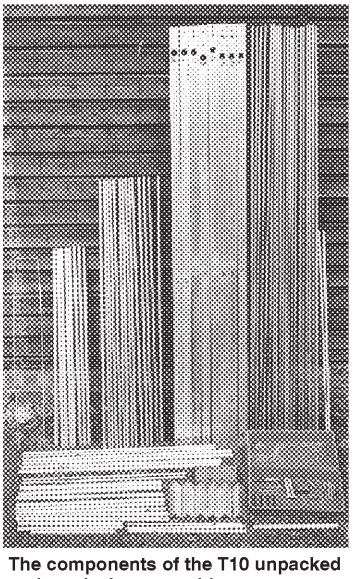
THE T10 IS a 10-element log-periodic dipole array covering the frequency range 13 to 33MHz. The forward gain is claimed to be 6.1dB with respect to a half-wave dipole and the front-to-back ratio 15 - 25dB (lowest on 14MHz and rising with frequency). The power rating is claimed to be "legal limit +" (US limit, so greater than 1.5kW) with a nominal maximum VSWR of 1.7:1 on a 50Ω coaxial feed.

The mechanical characteristics quoted in the manual are shown in **Table 1**. The antenna is quite large but with tapered elements and no heavy traps the weight and wind loading are minimised.

The boom comprises two square sections of aluminium tubing which are spaced an inch or so apart by plastic spacers to provide a transmission line for feeding power to the various dipole elements. The longest dipole element is at the back reducing uniformly to the shortest element located at the front which is where the antenna is fed through a 50Ω balun. The phasing to the elements alternates as you progress along the boom, so that the element halves on one side are alternately connected to the upper and lower boom sections. The transmission line boom is terminated in a short circuit stub connected at the longest element end. With this arrangement, the boom is live to RF and a plastic block is used for the mast mounting plate.

Longest element	38ft
Turning radius	22ft
Boom length	24ft
Wind surface area	10.1 sq ft
Wind load @ 80mph	162lb
Maximum wind	100MPH
Weight	49lb

Table 1: Tennadyne T10 mechanical characteristics quoted in manual.



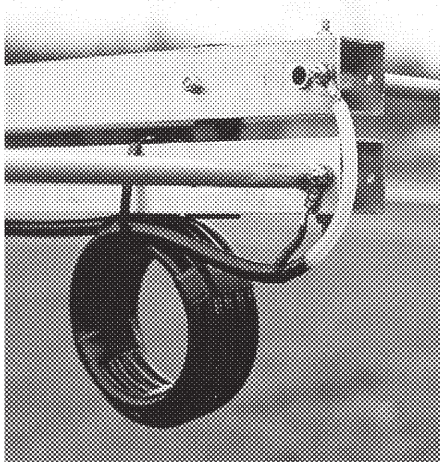
The components of the T10 unpacked and ready for assembly.

The antenna is constructed entirely from 0.058 inch thickness 6061-T6 grade aluminium alloy with seamless tubing elements tapering to 3/8in at the ends. As many as six different concentric tubing sizes are used for the longest element which is 1in diameter in the centre. Element sections are fixed with screws, no hose type clamps are used in the construction and no caps are used on the tubing ends. This helps drainage but encourages nesting insects and other strange effects (see later).

Stainless steel bolts, Nylok nuts and screws are used throughout without the use of washers. The longer elements are fairly 'whippy', with a little sag, but relatively strong and light and the boom assembly is quite rigid.

A balun is not supplied as part of the T10 kit but is simply constructed (full details are given) and is available as an extra if required. It is a choke balun, also known as a Collins balun, comprising about 10ft of RG8/UR67 solid dielectric coaxial cable tightly coiled and mounted adjacent to the feed point.

* The Willows, Paice Lane, Medstead, Alton, Hants GU34 5PR.



The balun and feed arrangement.

ASSEMBLY AND INSTALLATION

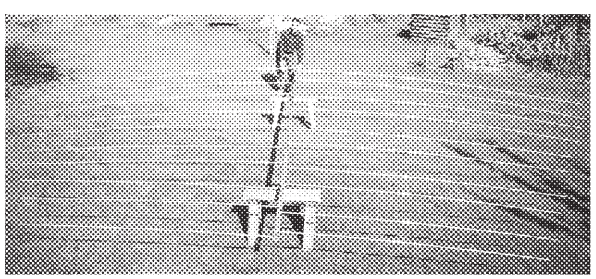
THE ANTENNA IS supplied in a single cardboard box 6ft long and about 7in square which is descriptively labelled "Rattles OK". The first step is to unpack carefully, identify positively and check off all the pieces against the parts list in the assembly instructions. There are some 78 pieces of tubing, various plastic spacers, around 70 bolts and nuts and 50 screws. An exact number of the smaller pieces was supplied but after much searching one small section of tubing was found to be missing. Tennadyne speedily dispatched the missing part. Note that the tubing sections are compactly packed inside each other and need careful checking when unpacking.

The assembly instructions are very explicit and easy to follow but could benefit from more detailed and better-quality diagrams. Assembly is straightforward with standard small hand tools and no problems should be experienced provided you understand the basic structure of what you are building. All parts have a deliberately tight fit and the machining and hole drilling were very accurate. All the parts fitted very well and were of a high quality standard. There are no dimensions to set, the only need for a measure is to identify tubing lengths and the location of mounting holes. The boom sections are identified by marker pen. This is obviously not permanent so if dismantling an antenna for future reassembly, the boom sections should be suitably marked.

The instructions state in large letters *not* to use anti-oxide greases on the antenna but recommend lightly lubricating the tube joining surfaces with a WD-40 / graphite mix. I did not do this, generally preferring metal-to-metal contact, but I always lubricate the threads of stainless steel bolts. I have learned from bitter experience that if not lubricated these tend to gall or seize against the nut and the only solution is to cut off and replace. The instructions don't mention the importance of lubricating the bolts. I use a copper loaded grease (Copaslip) - one tube of this originally bought for car maintenance work has lasted me for 25 years.

Assembly of the antenna starts with mounting the inner element sections on to the boom parts. I started the assembly of the antenna in the garage but as it grew in size, I continued assembly outside with the antenna supported on two saw horses. It took about an hour to unpack and checkout the parts and then about 5 to 6 hours to complete the assembly. Everything went smoothly up until the very last step of fitting the shorting stub. This entails removing the nuts which fix the longest element on to the boom as the shorting stub shares the same fixing. Unfortunately the bolt heads are now obscured by the boom structure and the nuts can't be removed unless the bolts are clamped. This required some dismantling of the boom assembly to gain sufficient access to the bolt heads. Better to fit this element loosely initially and then fit the shorting stub at the same time as the boom insulator plates are mounted. Better still would be to use separate holes and bolts to fit the stub, which would have certain advantages when it comes to mounting the antenna on the mast. I have slight reservations about the long-term tightness of the element fixings. The bolts in effect hold element to boom in compression across an air gap with resultant distortion of the metals. Over time and with cycling of temperature, wind etc these may loosen. Similarly with the single screw fixing of the element sections.

There are no tuning adjustments of any kind, except in the unlikely event that the VSWR on 21 or 24MHz is excessively high. Probably due to the boom resonance (normally around 23MHz), this can be corrected by adjusting the stub length. I installed the antenna on my 60ft crank-over tower fairly easily with two people. The mounting position is about 1ft away from the boom centre and hence either 11ft or 13ft away from the boom end and this distance above ground for mounting with the tower cranked over. The lower height is more convenient and safer but requires the shorting stub to be removed or temporarily moved sideways, and hence my preference to use separate mounting bolts. Otherwise the mounting is 13ft above ground and more difficult to reach. The plastic mounting plate with two U-bolts will only accommodate a 2in mast, and seems a little on the small side, even though it had been uprated from earlier versions.



Final steps in assembling the antenna.

PRACTICAL RESULTS

THE ANTENNA WAS evaluated at a height of about 50ft and fed with around 100ft of low-loss 50Ω cable (Kansai Tsushin Densen 10D-FB). The VSWR figures measured into the feeder were as shown in **Table 2** and are well within specification.

I carried out some estimates of gain by measuring the difference in received signal strength between my older Cushcraft beams (X7 and A3WS) and a reference multiband vertical under a variety of different conditions and signal paths, and then repeating the comparison between the T10 and the vertical. Within the limits of this rather inaccurate method, both beam antenna combinations performed similarly. I can well believe that the claimed forward gain figure of 6.1dBd for the T10 is realistic.

The front-to-back ratio on all the bands seemed entirely satisfactory, and well in line with the Tennadyne claimed figures. This is always difficult to assess depending heavily on paths and radiation angle.

In on-air tests I was most impressed. I first checked out the antenna on 18MHz where 3D2CY and T32EQ both came back on the first call in big pile-ups. Similarly on the other bands, I could cut through the competition with little difficulty.

The antenna has so far withstood gales to perhaps 60MPH with no problems although the elements tend to thrash around a bit in the wind. With a moderate wind the antenna 'sings' to itself as the wind blows across the element ends and various musical notes are generated. No doubt end caps with suitable drainage holes would silence this.

The T10 would appear to be an ideal antenna for high performance and competitive use on the upper five HF bands. It is well made and gives excellent results. The Tennadyne range is available in the UK through agents Vine Antenna Products (tel: 01691 831111 or see www.vinecom.co.uk) and the T10 retails for £759 inc VAT. If the T10 is considered too large, its smaller brothers, the T6, T7 or T8 may alternatively be well worth considering. ♦

Freq	VSWR
14.00	1.2
14.15	1.2
14.35	1.3
18.068	1.0
18.168	1.1
21.00	1.5
21.20	1.4
21.45	1.4
24.89	1.4
24.99	1.4
28.00	1.5
28.50	1.5
29.00	1.4
29.70	1.2

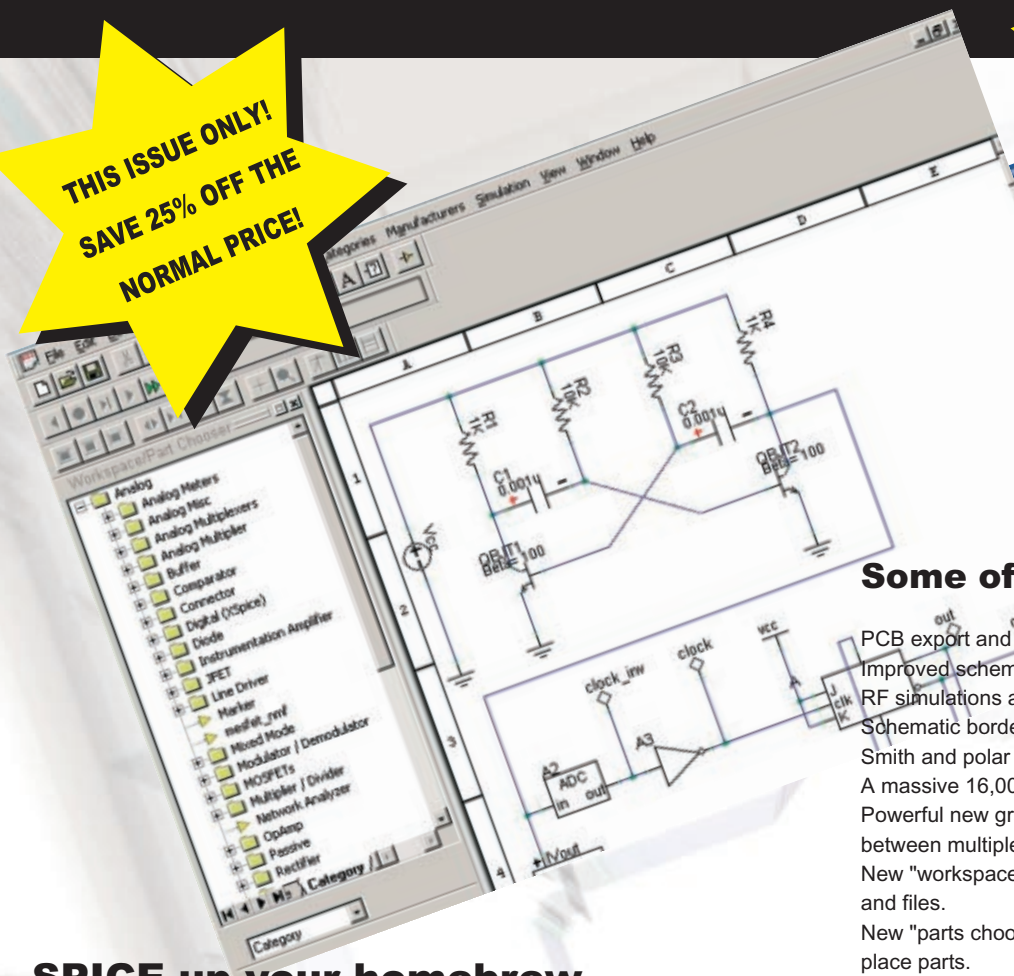
Table 2: VSWR figures of the Tennadyne T10.

B² Spice AD v4

Try the full version risk free for 30 days

THIS ISSUE ONLY! SAVE 25% OFF THE NORMAL PRICE!

NEW VERSION



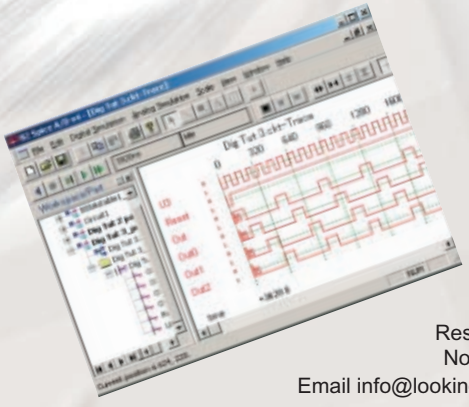
SPICE up your homebrew

B² Spice's ease of use and above all, accuray, is why it is used by dozens of universities and thousands of professional designers in the UK, US and Europe. **The new version includes RF and network simulation as well as PCB export facilities.** It's the ideal software design tool for Radio Amateurs.

More features and simulation options than ever before

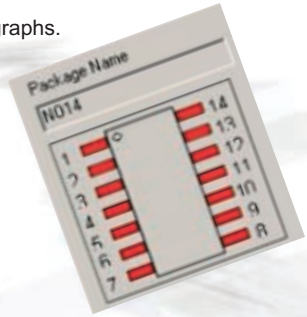
Sinusoidal, constant, periodic pulse, exponential, RF, single frequency, FM, AM, DC voltage, AC voltage, VCO, Vcc, piecewise linear, polynomial / arbitrary source, voltage-controlled voltage, voltage-controlled current, current-controlled voltage, current-controlled current, lossy and ideal transmission line, MESFET, uniform RC, current and voltage controlled switches are all available.

Fully mixed mode, single / dual parameter DC sweep, AC sweep, transient analysis, small signal transfer function, Fourier analysis, AC & DC sensitivity, Smith charts, pole zero, Monte Carlo analysis, noise, distortion operating point, temperature change, as well as generating component faults.



Some of the new features

PCB export and bill of materials.
Improved schematics with DIN and ANSI symbols.
RF simulations and Network Analysis.
Schematic borders and title-box for professional output
Smith and polar plots.
A massive 16,000 parts as standard.
Powerful new graphing and plotting - display & switch between multiple graphs easily.
New "workspace" window to manage your projects and files.
New "parts chooser" window makes it easy to pick and place parts.
Combined digital and analogue graphs.
Even faster simulations.
Unlimited undo / redo.
Many new simulation models.
Create new parts .
Create and edit symbols.
Create new PCB layout parts.
New powerful schematic editor.



There are NO limits

B² Spice sets no limit on the design size or number of parts, it can be as large or complex as you want. High quality graphics ensure that your results are easy to understand and interpret and everything can be customised to suit your requirements. B² Spice is a design tool where the end result behaves just like the simulation.

30 Day no risk trial with free ongoing technical support. If it doesn't do what you want, then simply return it.

From just **£159** ex VAT for the standard version.
Professional full featured version **£229** ex VAT.
All libraries included - no hidden extra costs.

Tel: 01603 872331

Research House, Norwich Road, Eastgate
Norwich. NR10 4HA. Fax: 01603 879010
Email info@looking.co.uk **www.spice-software.com**

RD Research

Work the World with ALINCO

Quality
Innovation
Style

DR135E

- TX: 144 - 146MHz
  RX: Expandable 118 - 174MHz
- 50/10/5 Watts power settings
- 100 memory channels
- Freq Steps: 5, 8.33, 10, 12.5, 15, 20, 25, 30, 50kHz
- Internal TNC operates 1200 and 9600bps
- Front panel GPS input for APRS
- Rear panel DSUB9 computer connection
- No need to remove mic for packet operation
- Ignition key on/off feature
- CTCSS and DCS encode + decode
- Clean, clear Alinco audio
- Super-wide 7 character alphanumeric display
- Wide and narrow (25/12½kHz) FM modes
- Theft alarm feature
- AM airband receive
- Stays in mode you select (voice/packet) through power off cycles
- Ten auto dial memories
- Size: 142 x 40 x 174mm

£235.95

ALSO AVAILABLE:
DR435e 70cm model **£229.95**

DJV5E

- New dual band handy transceiver
- 5W/1W/0.5W output power
- Super wide receive (76-999MHz)
- Includes wide FM mode
- CTCSS enc/dec fitted
- 200 memory channels
- Up to 6 character alpha-tagging

£229.95

DJS 193E

- New design 2m (144-146MHz) handheld
- Up to 5W VHF
- Wide RX possible (typical 135-173MHz)
- CTCSS + DCS enc/dec fitted
- 40 memory channels + 1 call channel

£139.95

DJS 195E

- New 2 metre (144-146MHz) handheld
- Easy to use, direct entry keypad
- Wide RX possible (typical 135-173MHz)
- Up to 5 watts output (0.8W low power)
- 40 memory channels + 1 call channel
- Large range of accessories available

£159.95

HFM-1

Stainless steel HF mobile antenna complete with spring base

- Covers: 3.5 - 30MHz (when used with EDX-2 auto ATU)
- Length: 2.7 metres

REC RETAIL **£59.95**

ALINCO DR-605E Dual Band Mobile

The DR-605E is a no-nonsense twin-band mobile transceiver that delivers power and performance with user-friendly features. The command keys are simply laid out to enable intuitive operation.

£299.95

- Ready for 9600 bps packet
- Extended RX capability
  136 - 174MHz 420 - 470MHz
- 50W (2m) - 35W (70cms)
- 100 memory channels (+ CALL Channels)
- Cross band full duplex
- Tone search function
- Cable cloning function
- Channel indication mode
- CTCSS encoder fitted

ALINCO DX-70TH

The DX70 TH packs a hefty 100W punch on all Ham bands 1.8 - 50MHz. It is backed by a superb receiver with narrow filters fitted as standard. Make no mistake - this is a real DX operators transceiver ideal for use at home, in the car, or for that portable DXpedition.

£699.00

- TX - all HF + 6mtr
- 100W output on HF & 6mtrs
- RX - general coverage 150kHz - 30-MHz 50MHz - 54MHz
- SSB, CW, AM, FM and digital modes
- 100 memories
- Detachable faceplate and remote mounting kit available
- Speech processor standard
- Narrow filters fitted as standard

ALINCO DR-610E Dual Band Mobile

The DR-610E dual band transceiver equipped with Alinco's Advanced Channel Scope utilises a 'Real Time Monitor' on 11 different frequencies simultaneously giving you quick visual scanning capability and the potential for making numerous contacts.

£399.95

- 120 memories
- VHF 50W/UHF 35W max
- Channel Scope
- Full duplex
- CTCSS encoder
- AM Airband RX
- Optional extended receive including airband
  - VHF 108 - 174MHz
  - UHF 420 - 470MHz

DX77E

- 100W HF transceiver
- General coverage RX 500kHz - 30MHz
- All modes, FM, LSB, USB, CW & AM
- 100 memory channels
- Built in speech compressor
- Front mounted speaker, loud clear audio
- Optional keyer

£599.00

EDX2

- Auto tuner
- 3.5MHz-30MHz (with over 3 metre element)
- 200W PEP power handling
- Power for tuning = 7-20W
- 13.8V DC ±10% operating voltage

£289.00

NEVADA®

ORDER HOTLINE: **023 9231 3090**

Unit 1 • Fitzherbert Spur • Farlington • Portsmouth • PO6 1TT • fax: 023 9231 3091

NEVADA - UK Distributors of Alinco

DJ-S40 CQ

70cms Pocket Sized Handheld

- Up to 1 W output (with 13.8V supply)
- Large illuminated display
- Loud clear speaker horn system
- 100 memories
- Multi Scan functions
- 38 CTCSS tones for slective calling
- Huge selection of accessories available

£99.95

NEW!

DJ-596

Dual Band Handheld

A feature packed dual bander - yet simple to use, with the capability of Digital Voice operation (where permitted - using optional digital voice board).

A nickel metal-hydride (NiMH) battery is supplied as standard, for added power and convenience.

VHF/UHF TX/RX including cross-band split operation

- 100 memory channels, any mix of VHF/UHF
- Alphanumeric channel labels
- Direct frequency input from keypad
- Large backlit display and keypad
- CTCSS, DCS encode+decode
- DTMF tones and autodial memories
- Tone bursts
- Three scan modes
- Theft Alarm feature
- Wide and narrow FM TX/RX
- 12VDC direct input (5w output)
- High-power NiMH battery (4.5w output VHF/4w UHF)
- Busy Channel Lock Out
- Mosquito Repelling feature (experimental)
- External Terminal Control
- Wire cloning capability
- Optional digital mode (where permitted)

£199.00

DJ-X3

Ultra modern scanning receiver

- 100kHz - 1300MHz
- AM/FM/WFM
- 700 memory channels
- Steps: 5/6.5/8.33/10/12.5/ 15/20/25/ 30/50/100kHz
- Auto descrambler
- Bug detector
- Stereo FM (with headphones)
- Attenuator
- SMA Antenna
- Battery saver cct
- Size: 56w x 102h x 23d mm
- Weight: 14.5g (without batteries)
- Supplied c/w:
  - 3 AA dry cell battery case
  - Carrying strap

OPTIONAL EXTRAS

- Lithium ion battery pack
- Ni-Mh battery pack
- Drop in mains charger
- Earphone

WITH 8.33kHz for AIRBAND

£129.95

DJ-X2000

the 'Intelligent' wideband receiver

- Covers 100kHz - 2,149.99MHz
- 2000 channel memory
- Modes: AM/NFM/WFM/LSB/USB/CW auto mode position
- 'Flashtune' reads the frequency of a nearby transmitter and instantly takes your receiver to that frequency.
- Transweeper - Instantly locates hidden transmitters that may be used for eavesdropping
- Record - Up to 160 seconds with the digital memory of audio direct from the receiver or voice via the built in microphone
- Descrambler
- Channel scope
- Bug detector
- CTCSS decoder built in
- CTCSS - Search facility
- Frequency counter
- Field strength meter
- S Meter
- FM Stereo receive with ex headphones
- Two level attenuator
- PC programmable
- 24 hour timer

£499

Includes Free

- Multi voltage 110V to 240VAC mains charger for easy use anywhere in the world
- 4.8V DC 700mAH NiCad battery pack
- Belt clip
- Carrying strap
- Flexible low profile antenna

PMR 446 LICENCE FREE RADIO

DJ-SR1

Ideal for: • *FAMILY* • *BUSINESS* • *LEISURE USE*

Gives clear two way communications up to 2 miles range (dependant on terrain)

- 8 channels at 446 MHz
- 312 channel - modes with CTCSS
- 500 mW output

Large selection of accessories available including:

- Headset with Vox £39.95
- Speaker Mic £24.95
- Car DC lead.....£27.95

SPECIAL OFFER!
SPECIAL TWIN PACK

- Two DJ-SR1 radios
- Two NiCad packs
- One drop-in Charger

£199
COMPLETE

PRICE REDUCED!

DR-MO3SX

10 Meter Monobander

- 10W/2W FM output power
- CTCSS encode/(decode optional)
- Repeater offset (adjustable)
- Time out timer

~~£239.95~~ **£149**

while stocks last

available from NEVADA dealers throughout the UK or direct

for the very latest Alinco information visit www.nevada.co.uk

The Foundation Licence

This special feature is in two parts. The first part, on this and the next page, is by Bob Whelan, G3PJT, the RSGB President for 2002, who looks at ways existing radio amateurs and radio clubs can become involved with promoting the new Foundation Licence and introducing more newcomers to amateur radio. Then, on pages 47 - 48, our HF columnist Don Field, G3XTT, examines how a new Foundation Licensee can get going, and what he or she should expect to work, on the HF bands. You are encouraged to copy this article to existing VHF licensees who are not RSGB members and to any potential new Foundation Licensees.

Part 1, by Bob Whelan, G3PJT*

THE FOUNDATION Licence becomes reality on 1 January, but it would be wrong to think that is the end of the matter and we can all get back to other things. To a very large extent the challenge is yet to come and that challenge is how to make the Foundation Licence a big success. But how might we judge success? One way might be to count the number of people taking the courses, and to be sure that's one measure. But I think we have to look at the Foundation Licence as part of a much bigger picture. We are engaged in a strategy to reposition amateur radio as a relevant, exciting, demanding and socially valuable technological pastime. This means that we are going to have to stimulate all aspects of amateur radio. People sometimes ask, "Why do we need to concern ourselves with the public's perception of amateur radio, and with maintaining our numbers?" After all, for 100 years we have ploughed our own furrow, with little interest in what the general public thinks of us.

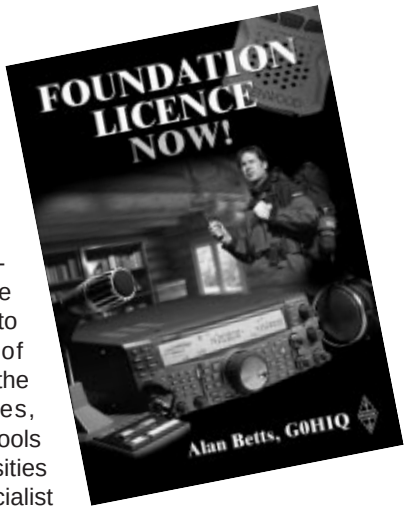
My answer is that other hobbies have stolen some of our clothes while we weren't looking. Technically-minded individuals no longer have a choice of amateur radio as against other hobbies, because most of them have never even heard of amateur radio. If we want to bring people with new ideas into our ranks, we have to bang our drum and make an effort.

You will probably have seen the statistics showing the recent dramatic fall in numbers of UK amateur radio licences issued. Without a reversal of this trend, our numbers will dwindle, and such public support as we now have will disappear. You can't expect neighbours to be sympathetic to your antennas and RF emanations when they find out that your hobby is only enjoyed by a few hundred others. And you can hardly expect the government to continue its current level of commitment for something attracting such a small number of adherents.

As I write this, we have got to the position of having agreed the Foundation Licence details with the RA, of having a syllabus and running some pilots, not only of the Foundation Licence theory, but also the practical QSOs, the Morse Assessments and the short examinations. We have managed to run a course covering all this over a single weekend as was originally planned. In addition, we have prepared the Foundation Licence guide, *Foundation Licence Now!* [reviewed on page 29 - *Ed*] thanks to a Herculean effort by Alan Betts, G0HIQ; the software (thanks to Tim Kirby, G4VXE, and the NZART); and much of the paperwork (thanks to Fiorina Sinapi at RSGB HQ), which inevitably surrounds a course and examination process such as this. The Morse Campaign team has run a special Foundation Morse Assessment afternoon to permit holders of VHF licences to gain a Foundation Licence too through the 'fast track' process. So we are ready to rumble!

OVER TO YOU!

BUT THE KEY to the Foundation Licence lies not with the RA, or the RSGB but with the efforts of *you*, individual radio amateurs, and in particular the many amateur radio clubs across the land. Now I know full well that clubs are always driven by a few enthusiastic individuals, but the Foundation Licence and the opportunities it offers are open for *everyone* to do their bit. The Foundation Licence is relevant to all types of club, from the local ones, those in schools and universities and the specialist ones catering for narrower and deeper amateur radio interests. To a great extent the opportunities are limited only by your imagination, but let me try to suggest some ideas to get things started.



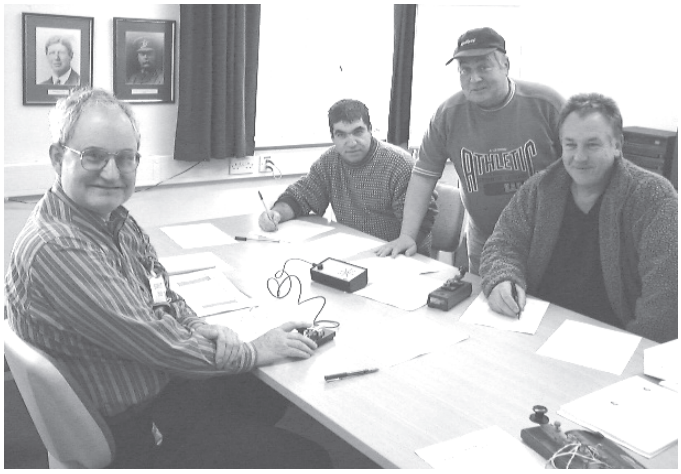
The new book by Alan Betts, G0HIQ (see text).

Many active clubs and individuals hold public events to interest the general public in amateur radio. The Foundation Licence is the answer to the "looks interesting, but what next?" or the "what do I have to do to try myself?" questions. If you like, Foundation provides a structured environment; it meets the requirement for responsible behaviour and health and safety issues as well as being a bit of a filter too. For any club the Foundation course provides a working engagement with the person's new interest. If you want, it can provide a proper social introduction to a club's activities.

So what should you do right now if building or rejuvenating your club is something you think is worthwhile?

You need, if you haven't already done so, to register with the RSGB that you are interested in giving the Foundation course at your club. Meetings of instructors are already taking place to familiarise as many people as possible.

You should start to plan how you are going to integrate a Foundation Licence course into your other club activities. This is particularly true in your PR



Author Bob Whelan, G3PJT (left), at the first pilot Foundation Licence Morse Assessment session at RSGB HQ. Geoff Radivan, G8OFI; Terry Meadows, M1CXC, and Keith Wainwright, G1NHW, all went away with Morse Assessment completion certificates.

* *c/o RSGB HQ. E-mail: g3pjt@rsgb.org.uk*

The Foundation Licence and the Promotion of Amateur Radio

WHAT YOU CAN DO

- **PHONE A FRIEND**

Tell someone else about Amateur Radio and the changes which make it more attractive.

- **BUILD ON THE FOUNDATION**

Push people into the new licence, and increase our numbers. Create new radio amateurs, as well as sympathetic friends.

- **REJUVENATE CLUBS**

Persuade your club to run Foundation Licence and Morse Assessment classes, and register members as instructors. Tell the world what you are doing.

- **GET CLASS Bs ON HF**

Now all you need is the Morse Assessment, and you can enjoy the HF bands.

- **LEND A HAND!**

If you have a skill that Amateur Radio can use, please contact the RSGB.

- **WELCOME PARTY!**

We're having a party - a 'QSO party' for all the new HF amateurs. Come on the air and greet old and new friends. See page 48 for suggested times and frequencies.

activities and your publicity material, but it also applies to your programme of talks. But this isn't just about the actual course syllabus, but as much about picking out club activities which help to introduce and build up new people's background knowledge.

But why not get going straight away with your VHF-licensee members? Ask them how many would like to take the Morse Assessment to get a Foundation Licence and have the opportunity to experiment on HF radio. Get one of your HF licensees to register as a 'Lead Instructor' (for Morse Assessment) with the RSGB. The Lead Instructor will then receive a pack with which he or she, in conjunction with other HF licensees, can give the Morse Assessment (a half-hour appreciation course). This will give a new line of interest to some of your existing club members and provide a limited insight into some aspects of the Foundation Licence course.

But what to do if you are a teacher or perhaps a member of a school or university club? The Foundation Licence and amateur radio is seen by the RA, teachers and industry as being very relevant to education. Amateur radio has the potential to awake an interest in science and technology in students at school or in higher education. But the RSGB recommends strongly that the approach to schools should be through a member of the teaching staff. This ensures that the safeguards when dealing with young people are in place. Furthermore, a teacher will understand the way amateur radio can be presented to the school and its parents. Direct approaches are likely to be less effective and if a teacher cannot be found who is interested it may well be better to look elsewhere.

The Foundation course provides a framework which permits easily any interest to be nurtured. Teachers are actively being encouraged to register with the RSGB and if they are not licensed to take the weekend STELAR course which leads to an RAE examination. Clearly a link to a local club can supply the support which a teacher will need in terms of equipment and specialist expertise.

Many university clubs are much less strong than they used to be. Of course all of my comments with respect to local clubs certainly apply here too, but it is also possible that a more focused and specialist approach will yield a better result, bearing in mind the maturity of the typical student.

If amateur radio can be shown to add value to education then our standing with the general public and politicians will be greatly enhanced.

SPECIALISTS

BUT I HEAR many say, "My interest in amateur radio is very specialised and I am a member of a specialist club, I don't think I can help". Whilst the preceding two types of club have a clear role in introducing people to amateur radio, the specialist club's role is that of developing and extending that initial interest into a lifetime one. It's no coincidence that the success of the Morse Campaign has been driven by two specialist clubs, namely FOC and CDXC. Both have interests in developing the CW and HF operating interests of amateurs. QRP enthusiasts and the G QRP Club certainly have a key role in technical support and general 'how to do it' advice to Foundation Licence amateurs, building their interest through hands-on help. And the Foundation Licence is also relevant in building bridges to other technical pastimes, to astronomy, radio-controlled models, robotics and most of all computing.

For its part the RSGB is handling the interface with the RA, is preparing the necessary information, the software, and addressing the quality control issues. We are preparing publicity material as well as publishing the syllabus guides etc. We are helping to train the instructors, sorting out the logistics and generally debugging what is surely one of the biggest projects ever undertaken by the UK amateur radio community. If you think you can help us at the organisation level, especially if you are in project management, public relations or teaching, please get in touch with me.

All of us involved need to focus on doing the best job we can, in terms of quality of presentation, of consistency, of technical expertise but above all in approachability. We have to be seen as being open, friendly and positively addressing the future. We have to focus on the development of all aspects of amateur radio, opening up the opportunities for new fields of experimentation and new experiences for all radio amateurs. After all, just tuning up the 'front end' of a receiver is only a small part of anybody's receiving system and it doesn't say much at all about the quality of the information it receives either. I will return later to more 'front end' issues, namely the public presentation of amateur radio.

A LIST OF CLUBS OFFERING FOUNDATION LICENCE COURSES CAN BE FOUND IN 'RSGB MATTERS' ON PAGES 5 / 6.

PILOT FOUNDATION COURSE A BIG SUCCESS

ONE OF THE FIRST full Foundation Licence pilot courses has been held under the auspices of the Colchester Radio Amateurs. Fifteen candidates, ranging in age from 11 upwards, assembled at St Helena School in Colchester on 10 November for the weekend course and assessments.

Lead Instructor Frank Howe, G3FIJ, along with group tutors and operators Bill, G4SOB; Scott, G7RVB; Keith, G3ISK, and Gary, M1GJG, led the students through the course, which includes information on the types of amateur licence, technical basics, circuits, HF and VHF operating and tutorials on transmitters, receivers, feeders, aerials, propagation, EMC and safety, along with practical 'hands-on' operating sessions.

Sunday afternoon was 'crunch' time. All assessments, including a number of repeats, had to be completed by 2.30pm before the Final Assessment of 20 multiple choice questions. The independent invigilator, Lead Instructor and an observer marked the papers and afterwards three course members were recalled for a short tutorial and a resit paper. This resulted in a total of 14 successful candidates and one being required to take a further resit later.

Certificates and records of achievement were completed and presented to the candidates along with much applause. Licence applications have been made and 14 M3 callsigns are expected on the bands early in 2002.

Well done to all the candidates and to those providing the weekend experience for them!

The Colchester 15, with the course instructors.

Part 2 - HF Operation Basics - by Don Field, G3XTT**

THE RECENT licence restructuring means that there will be many newcomers to the HF bands, some making the transition from VHF, some by way of the newly-introduced Foundation Licence. At the same time, existing Novice A licensees will gain additional HF privileges, in terms of power limits and available bands.

It's a good time, therefore, to review a number of aspects of HF operation. To supplement this article, I would also recommend that you seek out a copy of the article I wrote after the Class A/B licence was introduced ('Making a start on the HF Bands', *RadCom*, September 1999) and take a look at the *RSGB Amateur Radio Operating Manual* [1], which has a wealth of information on HF operation. The new book by Ian Poole, G3YWX [2], is also a timely and helpful addition to the literature.

CHOOSING A RIG

ONE OF THE early decisions you will have to make, is the rig to buy (Foundation Class licensees are restricted to commercially-manufactured radios or properly-designed commercial kits). Most commercial HF transceivers operate at the 100-watt level, which is more than either the Intermediate or Foundation licence allows. This need not be a deterrent, as all radios have some means of reducing the power, but you will need a reliable external power meter to keep an eye on things. Or, of course, you may decide to buy one of the many excellent QRP transceivers or kits available nowadays. Most of these will operate happily at the 10-watt level, and allow you to make contacts throughout Europe and farther afield. My only caution would be that you may become hooked, and upgrade more quickly than you anticipated, at which time you could be faced with changing that new radio.

In practice, the cheapest way of getting on HF is to buy second-hand. All transceivers made in the last 10 years or so are capable of good performance, and this is undoubtedly the most cost-effective way of dipping a toe in the water.

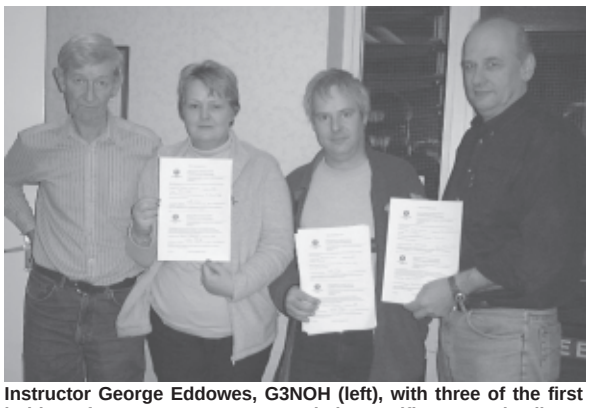
THE ANTENNA

WHILE YOU MAY not be allowed to run as much power as those holding a Full licence, this need not be a major disadvantage. The solution is to put your efforts into the antenna system (where you have no *licence* restrictions, though planning restrictions will, of course, apply). Many HF operators make life unnecessarily difficult for themselves by rushing out and buying multiband dipoles or verticals which, of necessity, are a compromise in terms of construction and performance. One of the joys of HF is that, unlike at VHF, antenna dimensions are not critical, and it is easy to 'do-it-yourself'. So you really can, at almost zero cost, try out different antenna types (for example, dipoles, loops, and quarter-wave verticals) and see which works best at your particular location.

Let me make a few suggestions to start you thinking. For holiday trips, I take a 10m glass-fibre fishing pole, and tape quarter-wave lengths of wire to it for 40m and the higher bands. One set of lightweight guys, a few radial wires run out across the ground and I am in business. This is even more easily done at home, with the advantage that you can take it down in moments to cut the lawn or whatever. The disadvantage with vertical antennas at home is that the radiation is often shielded by surrounding houses and vegetation, unless perhaps you can mount the antenna on the roof, with elevated radials.

So how about a simple dipole? An inverted-vee configuration (see **Fig 1**) requires only one support and, if at least a half-wave above ground at the centre (33ft on 20m, for example), will work very well indeed. Alternatively, the use of a dipole in a sloping configuration was explained in the D68C 'How to' article (*RadCom*, February 2001) and enabled very many British amateurs to contact that expedition.

Given the wide differences in behaviour between the various HF bands, it is understandable that you will want to try out as many of them as possible. One solution is to put up antennas for, say, two bands. Maybe 80m for UK working and 17m for longer-distances, for example. You can always change the combination at a future date; buy a few reels of wire at your local club junk sale and it will keep you in HF dipoles for years!



Instructor George Eddowes, G3NOH (left), with three of the first holders of Morse Assessment completion certificates: Kath Wilson, M1CNY; Dave Garrett, G8CHQ and Dave Wilson, G7OBW. The certificates will allow them to apply for new M3 callsigns for use on HF after 1 January.

OPERATING

THIS IS A great time to be on the HF bands! We are currently at the peak of the present solar cycle, and those who read my HF column will know that band conditions have been excellent recently. Foundation licensees have no access to 10m, but that still leaves you plenty of bands on which to operate. Intermediate licensees, with 50 watts and all bands to play with, will find the world is truly your oyster. When 12m or 15m are wide open, as they should be at least through to April or so (solar disturbances excepted), you will find that signals can be very strong indeed, not only from around Europe but also from the USA, Africa and South America (Asia can be tougher, as the distance to much of Asia is greater and the signals have to travel over land, with subsequently higher absorption). The MUF (maximum usable frequency) follows the sun, so expect signals mainly from the east earlier in the day and from the west during the afternoon and evening. Summer propagation tends to be less favourable for long-distance, though you can expect strong short-skip around Europe, ideal for low-power contacts.

One of the big shocks which faces anyone moving to HF from VHF is the level of activity on the bands. The HF bands are much narrower than the VHF bands (15m is just 450kHz wide, for example, compared with the 2MHz of 2m), while at any one time the band will be open to a radius of 1000 miles (or considerably more!) rather than, maybe, 50 miles at VHF. So, not surprisingly, arriving on HF can seem like turning off a quiet country lane on to a motorway! This is especially true when one of the major contests is

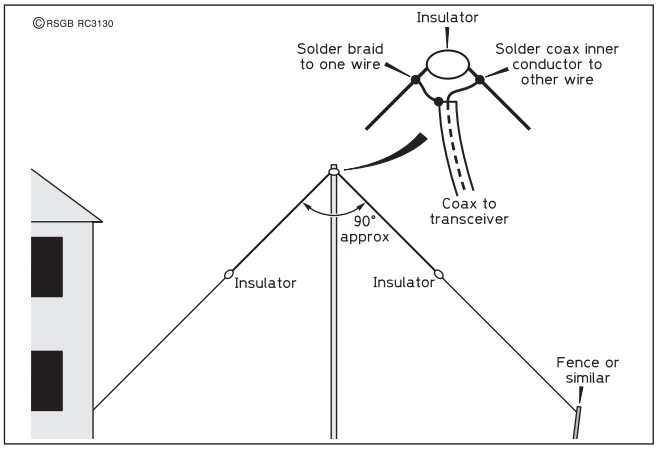


Fig 1: An 'inverted-vee' dipole. This is generally a single-band antenna: the dipole should be a half-wavelength long on the band in question. The use of a balun (balanced-to-unbalanced transformer) between the coaxial cable and the antenna wire (not shown here) is optional but may reduce interference from the station to other electronic devices.

** *105 Shiplake Bottom, Peppard Common, Henley- on-Thames RG9 5HJ, e-mail: hf.radcom@rsgb.org.uk*

Band	QRP CW	QRP SSB
160m	1843kHz	-
80m	3560kHz	3690kHz
40m	7030kHz	-
30m	10106kHz	-
20m	14060kHz	14285kHz
15m	21060kHz	21285kHz
10m	28060kHz*	28360kHz*

Table 1: QRP calling frequencies. (* Note that the 10m band is not available to Foundation Licensees).

in full swing - during the *CQ* World Wide weekends, for example, there will typically be over 30,000 unique callsigns appearing in one or more competitors' logs. That's a lot of activity! One solution is to dip your HF toes in the waters of 12, 17 or 30m. These are the so-called WARC bands, named after the World Administrative Radio Conference of 1979 when they were allocated to the amateur service, and they have always been kept contest-free. As many of the popular multiband Yagi antennas don't cover these bands either, your vertical or dipole (if that's what you decide to start with) won't leave you at a disadvantage.

Incidentally, it's worth noting that (not surprisingly) the bands are much quieter during the week. This is great if you are a student, or retired. A "CQ" call will often produce a pleasant surprise. Which raises another matter I ought to mention. Unlike on the VHF bands, there are no specific calling frequencies. The assumption is that the bands are narrow enough and busy enough that people will simply tune around for a clear frequency or to find a CQ call. Nevertheless, it is worth acquainting yourself with the band plans (from one of the references I mention), as allocations vary from one country to another and, indeed, by class of licence within any specific country (just as here in the UK).

As a Foundation licensee, you may well be wondering what you can do with 10 watts on HF, when many HF operators around Europe and elsewhere are licensed to use powers of 1500 watts and more. It's certainly true that, just because a station is S9 with you, this doesn't necessarily mean that you will be S9 with him. Having said that, signals are often so strong (within the UK on 80 and 40m, or within Europe on the higher bands, for example) that 20dB or so difference in power can be almost irrelevant. It's also worth bearing in mind, if you wish to find and work other low-power operators, that there are a number of recognised QRP calling frequencies (see **Table 1**). You will see that many of these are at CW end of the bands. This isn't a plot against SSB, but recognition that, when radiated power is limited, CW is a more effective mode of operation. However, even on SSB, 10 watts will serve you well. This was the power limit on 160m for many years, for example, and while only the best-equipped stations were able to work the tough DX, even those with modest antennas were able to work round the UK with ease. It's more a case of picking your moment.

PROPAGATION

IT IS THESE variations in propagation that make HF radio so interesting. Indeed, this is one of the main differences between HF and the Internet! There isn't space here to cover propagation in detail and I would refer you to the *RSGB Amateur Radio Operating Manual* [1] as a first port of call. In a nutshell, though, the lower frequency bands (160, 80 and 40m) provide local ground-wave communications during daylight hours and Europe-wide propagation at night (very much like the medium-wave broadcast band). The higher bands support long-distance (ionospheric) propagation during daylight hours, but with the MUF dropping rapidly at night. As well as these daily variations, HF propagation has a seasonal pattern and, most notably, is influenced by the 11-year sunspot cycle. As you gain experience, you will also learn about 'greyline' propagation on the lower bands, the effect of the auroral oval on HF propagation, and much more. As propagation changes, so signal strengths can also change dramatically. A station that is very weak as a band starts to open may be tens of decibels stronger half an hour later.

As on VHF, there are many chains of beacons, which give an indication of prevailing propagation. A good example is that run by the Northern California DX Foundation (NCDXF) on 14.1MHz (also on 17, 15, 12 and 10m). A series of beacons around the world send their calls in turn, and at differing power levels. You will need to brush up your Morse code to the extent that you can read the beacon callsigns, but it is well worth it. The value of the beacons is even greater on the higher bands, where band openings may be more fleeting. Beacons are listed in the *RSGB Yearbook* [3], and further information about the NCDXF beacon chain can be found on their web page.

All radio amateurs are invited to participate in a

NEW LICENSEES' QSO PARTY on 1 January 2002

Just get on the air with your new callsign, and chat to new and old friends on the HF bands.

Suggested times and frequencies (SSB):

Time UTC	Centre of activity (kHz)
0001	1950, 3650
0800	3650
1000	14250
1200	18150
1400	21250
1600	7050
1800	24950
2000	14250
2200	3650, 7050

Have fun!

OTHER INFORMATION

IF YOU ARE going on HF without an apprenticeship listening on the bands, you will almost certainly be confused by the plethora of callsign prefixes you hear. Even when you look them up (in the *RSGB Prefix Guide* [4] or the *RSGB Yearbook* [3], for example), unless you majored in geography at school, you may still be in the dark as to where these folk are! And just as VHF operators enjoy collecting grid squares, so HF operators often swap information for awards as well. You may well be asked for your WAB (Worked All Britain) square, then there are IOTA (Island on the Air) and many other entities to 'collect', if this takes your fancy (Swiss cantons, US states, or whatever). Often you will run across regular nets dedicated to these specific activities, where you will generally be made very welcome. Obviously it will take time to decide which particular objectives take your fancy, as you won't be able to do everything at once.

One area that is becoming increasingly popular is the use of modern HF data modes, with PSK31 currently being the most popular. To get started requires only a PC with soundcard and the relevant software, but the power of that software is such that it will often enable you to maintain solid two-way communications even when signals are inaudible to the ear! This too is a mode that really doesn't require high power.

SUMMARY

IT HAS OBVIOUSLY only been possible to give an overview here, as the HF bands offer so much variety in terms of bands, modes and what can be worked. As with most things in life, the trick is to get on there and have a go, and if the preceding paragraphs have given you the incentive and enough information to get started, then they will have done their job. Happy HFing!

FURTHER READING

[1] *Amateur Radio Operating Manual*, 5th Edn, edited by Ray Eckersley, G4FTJ, price £21.24 (members).

[2] *HF Amateur Radio* by Ian Poole, G3YWX, price £11.89 (members).

[3] *RSGB Yearbook*, 2002 Edn, edited by Steve White, G3ZVW, price £13.59 (members).

[4] *RSGB Prefix Guide*, edited by John Forward, G3HTA, price £7.64 (members). ♦

WWW.

NCDXF Beacons: **www.ncdxf.org/beacon.htm**
G QRP Club: **www.gqrp.com/**

RSGB Contesting Guide 2002

WELCOME TO the 2002 RSGB Contesting Guide. The publication of this year's Guide has been moved from last October to the January issue of *RadCom* in order to allow sufficient time for the RSGB HF and VHF Contests Committees to revise the rules of certain 2002 contests in the light of those contests run in 2001. The earlier submission deadline meant that this was not possible when the Guide was published in October, sometimes leading to a year's delay between amendments being suggested and these appearing in the published rules. The rules for *all* the contests for the year 2002 organised by the RSGB HF and VHF Contests Committees, as well as those organised by the RSGB Microwave Committee, are included in this year's Guide.

Echelford ARS member Nigel, G0VDZ, in action at G3UES/P during SSB Field Day, September 2001.

HF CONTESTS

TO CELEBRATE THE Golden Jubilee of Her Majesty Queen Elizabeth II in June 2002, the RSGB is organising a special Jubilee contest to promote contact with stations in the Commonwealth.

The 7MHz DX Contest and 'LF' Cumulative Contest have been discontinued and there are rules changes to the IOTA contest and the HF Contest Championship. The Slow Speed Cumulative Contests have been expanded to five events per session. Please read the rules carefully and take note of the changes made.

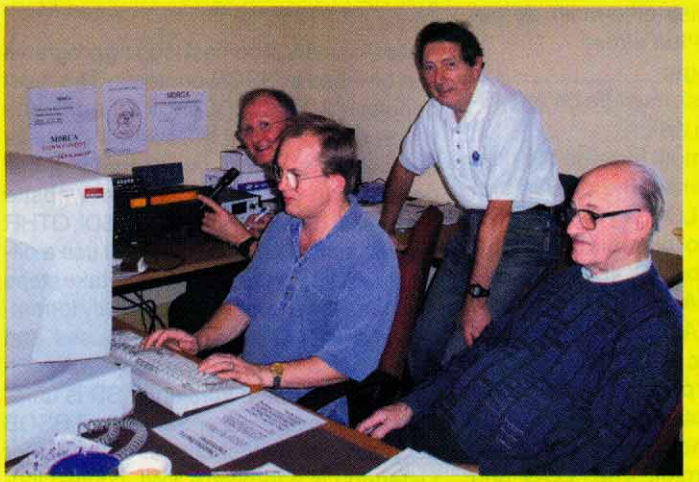
VHF / UHF CONTESTS

THE RSGB VHF Contests Calendar has a new look for Jubilee year. The VHF Contests Committee has taken the opportunity to discontinue some poorly-supported contests, and introduce a major new series of Cumulative events to coincide with the Jubilee celebrations in 2002.

The 2002 Jubilee Cumulative Contests cover five bands - 6m, 2m, 70cm and 23cm / 13cm (combined). The events run on Tuesday evenings, with four events per month, timed to coincide with the popular Nordic Activity Contests and other regular events in other European countries, but running later than the other contests because of the time difference and to promote intra-UK working. Both Single-op Fixed and Open sections are provided, and whilst results will be published for individual sessions, certificates and awards will be issued for Overall placings based on each entrant's best six sessions.

Full details and scoring information can be found in the 2002 Contesting Guide, and on the VHFCC website at http://www.blacksheep.org/vhfcc A special permanent award will be given to the overall winners on each band in each section. If the new format is well-supported, consideration will be given to leaving it in the calendar permanently.

As a result of the introduction of the new series, it has been decided to discontinue the following old-style Cumulative events: 144MHz Cumulatives (Mar / Apr), 144MHz UK Cumulatives (Aug / Sep), 1.3 / 2.3GHz Cumulatives (Oct / Nov) and 432MHz Cumulatives (Oct - Dec). Other contests which will not appear in the 2002 calendar are 432MHz FM (June) and 2m CW (January).



The Radiocommunication Agency's amateur club station, M0RCA, in Whyteleafe, Surrey, took part in the *CQ* World Wide DX phone contest in October 2001. Left to right: Richard Drinkwater, G3ZIY (operating); John Boyer, G0WRX (logging); station manager Peter Burton, G3ZPB; and Bernie Wynn, G8TB. Not in the photo, Mikiko Shepperley, RS181326, who also helped with the logging.

SPECIAL SHORT CONTEST CALLSIGNS

THE HOLDER of any UK Full Class A *club* licence may apply for a special short contest callsign. The callsign consists of 'G' or 'M', a regional locator (if operating outside England), a chosen digit and a single chosen suffix letter, eg G0A, M9B, GM8C, MW7D etc.

The contest callsign may only be used during the contests specified in the NoV, and at no other times. The list of contests permitted is under revision, but currently includes: ARRL DX (CW and SSB events), ARRL RTTY, ARRL 1.8MHz (CW), ARRL 28MHz DX (multi-mode), *CQ* WPX (SSB and CW), *CQ* World Wide DX (phone and CW), *CQ* World Wide 160 (CW and SSB), IARU HF Championship (multi-mode), IARU 50MHz (multi-mode), IARU 144MHz (multi-mode), IARU 432MHz - 248GHz (multi-mode), RSGB IOTA (multi-mode), Worked All Europe DX (CW and SSB). Other contests may be added during 2002.

If you hold a Class A club licence and would like to apply for a special short contest callsign, please contact the Amateur Radio Department at RSGB HQ, tel: 0870 904 7373; or e-mail: ar.dept@rsgb.org.uk

General Rules for RSGB HF Contests for the Year 2002

1. These rules apply to all RSGB HF Contests, except where superseded by the specific Contest Rules.

2. UK means England, Scotland, Wales, Northern Ireland, Channel Islands and Isle of Man.

3. Entrants must abide by their licence conditions.

4. Contacts

a. A contact consists of an exchange with incrementing serial number commencing from 001 and acknowledgement of receipt of callsign and contest data. Incomplete contacts must be logged with zero points claimed. Points are not lost if a non-competing station does not send appropriate information, but a report *must* be logged and any other exchange sent by that station must be recorded. The full contest exchange must be sent to all stations worked.

b. One contact only with the same station per band counts for points, regardless of that station's operator or callsign. More than one contact with the same operator using different callsigns may not be claimed. Contacts with stations which have no other contest contacts may be disallowed. Duplicate contacts must be logged, with zero points claimed.

c. Cross-band contacts do not score.

d. Contacts scheduled before the contest do not count for points. Schedules may only be made during the contest.

e. Simultaneous transmissions on more than one frequency below 30MHz are not permitted, ie in multi-operator / assisted events use of VHF / UHF to access the DX Cluster is permitted.

f. Proof of contact may be required.

g. For contest purposes, /AM and /MM stations are treated as /M stations in their own country. Other stations are regarded as being in the call area / country indicated by their callsign as sent.

5. Multipliers, where applicable, are scored per band, and consist of (a) for UK stations: Countries as per the DXCC countries list, except that JA, W, VE, VK, ZL and ZS call areas count as separate countries. (b) for non-UK stations: one for each UK district (c) Jubilee, IOTA and SSB Field Day contests, see specific rules.

6. Portable stations

(a) Entrants must operate from the same site for the whole contest.

(b) Stations must not be located in a permanent building or shelter.

(c) No permanent building or structure may be used as an aerial support (trees are acceptable).

(d) Power must be obtained solely from on-site batteries, portable generators or solar cells, without use of mains.

(e) All equipment, aerials and supports must be set up on site no more than 24 hours before the start of the contest. This does not apply to short term storage of equipment on site.

7. All operators of UK stations must be RSGB members except visiting amateurs, not normally resident in the UK. UK stations may not use special (eg GB, GX etc) callsigns nor be /MM or /AM.

a. A single-operator station is operated by one person, who receives no assistance whatsoever from any other person in operating, log-keeping, checking and so on, and who does not receive notification from others by radio (including packet), telephone or any other method, of band or contest information during the contest.

b. Multi-operator entries are those not covered by 7a. One operator must act as Entrant and sign the Summary Sheet.

8. Adjudication

a. Errors in sending / receiving are penalised by the loss of all points for the QSO.

b. Points may be deducted or entries disqualified or excluded for any breach of the rules or spirit of the contest. The decision of the RSGB is final.

9. Entries

Logs should be sent to **RSGB - G3UFY, 77 Bensham Manor Road, Thornton Heath, Surrey CR7 7AF, England** and postmarked no more than 16 days after the end of the contest, unless superseded by specific contest rules. Checklogs are welcome where an entrant does not wish to make a formal entry. Acknowledgement will be sent if a stamped, addressed postcard or IRC is enclosed. Logs become the property of the RSGB.

Entries consist of:

A Summary Sheet (RSGB form HFC2 or equivalent) showing: Contest; Date; Final Score; Station Callsign and address; Name of Club or Group (if applicable); Exchange (District Code) sent; Entrant's Name, Address and Callsign; Equipment and Antennas (and height) used for each band; Output Power; Callsigns of all operators and a Signed Declaration. Summary sheets in electronic format (disc or e-mail) do not require a signature. **Plus *either*:**

9.1 Electronic Logs:

a. Files sent on disk must be on an MS-DOS formatted 3.5in disk.

b. The disk label must indicate the contest name and the name of the log files(s) in the form of (callsign).LOG, eg G9XXX.LOG or G9XXX-P.LOG, (for portable stations).

Log entries must be ASCII. Acceptable formats are NA.LOG, SD.LOG, G3WGV.LOG, TR.DAT, or RSGB standard format for electronic logs. Each contact must correctly show points and multipliers claimed for each contact.

E-mail logs should be sent to: hf.contests@rsgb.org.uk The .LOG and .SUM (a text file of the summary sheet including declaration) files *only* should be sent as an attachment to an e-mail. All e-mail logs will be acknowledged.

Or:

9.2 Paper Logs:

a. UK stations must use log sheets in RSGB format. Others may use their own National Society's format. Hand written and typed entries are acceptable.

b. Log sheets must be headed with Name of Contest, Date, Band, Callsign and Page x of n.

c. Log pages should contain 40 QSOs, with columns as follows: Time, Callsign worked, RS(T) / serial sent, RS(T) / serial received, Other Data (specific to the contest), New bonus / multiplier, QSO points. Any RS(T) column left blank will be taken as 59(9).

d. A Duplicate Sheet for each band, comprising of a list of all callsigns worked, sorted into alphabetical order (or alphabetical order of suffix) together with the serial number sent to that station, or the time of the QSO.

e. Paper logs prepared and printed with the aid of a computer will not be accepted. Entrants using a computer to prepare their entry are requested to submit electronically.

10. Receiving Contests. The above rules apply, but also:

(a) Only SWLs or holders of licences to transmit *only above* 30MHz may enter.

(b) Entrants should use RSGB SWL Contest forms if possible. The callsigns of both the 'station heard' (for which points are to be claimed) and the 'station being worked' must be logged.

(c) The same callsign may appear only once in any group of three consecutive entries in the 'Station being worked' column.

(d) The Summary Sheet declaration to include: "I do not hold a licence to transmit on frequencies below 30MHz."

11. Awards. Trophies as specified will be presented at the annual HF Convention and will be held for a maximum period of one year for any particular annual event. Certificates of Merit will be awarded to leading stations in each category / band as appropriate.

Note: A variety of contest logging programs can be used in RSGB contests. The most popular is SD by EI5DI, and it's the only one which supports all the Society's contests and produces a correctly scored log. Full details can be found on the website www.ei5di.com or by writing to EI5DI, QTHR (e-mail: paul@ei5di.com). If you use a different logging program you must take steps to ensure that your entry is correctly formatted and that QSO points, bonuses and multipliers are correctly shown for each contact. The demo version of SD is unrestricted for overseas entrants in all RSGB contests with district codes. SDL (SD for Listeners) is a freeware SWL contest logger. It supports RSGB and other major contests.

RSGB HF Contest Calendar 2002

Date	Contest Name	Mode
13 Jan	Affiliated Societies	CW
19 Jan	Affiliated Societies	SSB
9/10 Feb	1st 1.8 MHz	CW
9/10 Mar	65th Commonwealth	CW
7 Apr	RoPoCo 1	CW
25 Mar, 2 Apr		
10 Apr,	Slow Speed Cumulative	CW
18 Apr, 26 Apr		
1/2 Jun	National Field Day	CW
8/9 Jun	Jubilee Contest	SSB/CW
21 Jul	Low Power	CW
27/28 Juy	IOTA Contest	SSB/CW
4 Aug	RoPoCo 2	CW
7/8 Sep	IARU SSB Field Day	SSB
2 Sep, 10 Sep,		
18 Sep,	Slow Speed Cumulative	CW
26 Sep, 4 Oct		
6 Oct	21/28MHz	SSB
20 Oct	21/28MHz	CW
9 Nov	Club Calls	SSB
16/17 Nov	2nd 1.8 MHz	CW

HF Contests Championship

EVERY UK Single Operator Station entering two or more of the events listed below will automatically be entered for the Championship. For each event the entrant will be awarded points according to their score expressed as a percentage of the score achieved by the leading UK station in that event. These points will then be multiplied by the appropriate factor for the contest. The winner will be the station with the highest number of points at the end of the year and will be awarded the G2QT Trophy. Operations using Special Contest Calls are not eligible for the championship. The callsign used in each event will be the one used in the championship tabulation.

Event	Factor
1st 1.8 MHz	10
Commonwealth Contest	30
RoPoCo 1	10
Jubilee Contest	50
IOTA Contest	30
RoPoCo 2	10
21 / 28 MHz SSB	20
21 / 28 MHz CW	20
2nd 1.8 MHz	10

Affiliated Societies Team Contests

This popular club event has something for everyone. What better way to start contesting than in AFS? You can contribute by just participating and gathering points for your team and Club. Enjoy the local rivalry, it's great fun! You don't need to have a high or complex antenna either, a simple low dipole works well.

Dates:
CW Event: Sunday 13 January 2002.
SSB Event: Saturday 19 January 2002.
Time: 1400 - 1800UTC.
Frequencies:
CW: 3510 - 3590kHz.
SSB - 3600 - 3750kHz.
Exchange: RST plus serial number
1. Eligible Entrants: (a) Each entering club must be affiliated to the RSGB. **(b)** Each operator of a team station must be a member of the club they represent. The operator is not required to be a member of RSGB. **(c)** All stations representing a club must be located within a radius of 50 miles of the normal meeting-place of the club. Where a club has 'branches', eg RNARS, it may define separate 'branch' meeting-places, and the team(s) entered by each branch will be considered to be entirely separate from those entered by other branches, except in respect of affiliation. **(d)** Each station may be single or multi-operator, but no station or operator may represent more than one affiliated club or branch.
2. Teams: Teams comprise of up to five stations for the CW section and three for the SSB section. A club may enter as many teams as they wish. Which stations make up each team is determined by the club entering the event, as defined on the summary sheet.
3. Contacts: In the CW section, 3570 to 3590kHz is reserved for slower-speed contacts. It is intended that operators less experienced in CW and contest techniques should be able to make contacts here in a more relaxed environment. Experienced contesters using the segment are required to keep their speed down.
4. Scoring: 10 points per contact including overseas.
5. Entries: Entries should be submitted by an officer of the affiliated society. A summary sheet showing: name of team, callsign of each station in each team, individual scores, team score, the normal meeting place of the club / branch and a declaration that each operator is a member of the affiliated club should accompany each entry. Each log within the entry should include a completed Summary Sheet.
6. Awards: CW: The Edgware Trophy to the leading team. The Marconi Trophy to the leading single-operator individual station. SSB: The Flight Refuelling ARS Trophy to the leading team. The RSGB Lichfield Trophy to the leading single-operator individual station.

1.8MHz CW Contests

Competitive with some long haul DX available. There will be other European 1.8MHz contests running at the same time, increasing activity and interest. A challenging band for antennas and receiving skills. Please note these are two separate events.

Dates:
1st event: 9 / 10 February 2002.
2nd event: 16 / 17 November 2002.
Time: 2100 - 0100UTC.
Frequency: 1820 - 1870kHz.
Mode: CW.
Exchange: RST + serial number & district code.
1. Sections: Single-operator entries. **(a)** UK **(b)** Overseas including EI.
2. Scoring: Section (a) 3 points per contact plus a bonus of five points for the first contact with each UK District worked and the first contact with each Country outside the UK worked. **Section (b)** 3 points per contact plus a bonus of five points for the first contact with each UK District worked. Overseas stations may only work UK stations.
3. Awards: 1st event: The Somerset Trophy to the leading UK station. **2nd event:** The Victor Desmond Trophy to the leading UK station. The Maitland Trophy to the Scottish entrant with the highest aggregate number of points in the 1st and 2nd events.

65th Commonwealth Contest

The Commonwealth Contest promotes contacts between stations in the Commonwealth and Mandated Territories. A more relaxed contest environment which gives the opportunity to work some choice DX. Note that the start time has been moved forward two hours to 1000UTC. With this being the Golden Jubilee year, the Call area award will require contacts with 50 call areas.

Date: 9 / 10 March 2002.
Time: 1000 - 1000UTC.
Bands: 3.5, 7, 14, 21, 28MHz.
Mode: CW.
Exchange: RST plus serial number.
1. Eligible entrants: UK entrants must be members of the RSGB and may not use special (GB, GX etc) callsigns nor be /MM or /AM. Overseas - Licensed radio amateurs within the Commonwealth or British Mandated Territories. Apart from section (c), all entries must be single operator and may not receive any assistance whatsoever during the contest, including the use of spotting nets, packet cluster or other assistance in finding new contacts or bonuses.
2. Sections:
(a) Open, no limit on operating time.
(b) Restricted, operation is limited to 12 operating hours. Off periods must be clearly marked and be a minimum of 60 minutes in length.
(c) Headquarters stations, one only per Commonwealth Call Area and may be multi-operator.
3. Frequencies: Entrants should operate in the lower 30kHz of each band.
4. Scoring: Contacts may be made with any station using a Commonwealth Call Area prefix, except those within the entrant's own call area. Note that for this contest, the entire UK counts as one call area, and therefore UK stations may not work each other. Each contact scores 5 points with a bonus of 20 points for each of the first three contacts with each Commonwealth Call Area on each band.
5. Headquarters stations: A number of Commonwealth Society HQ stations will be active during the contest and will send 'HQ' after their serial number, to identify themselves. Every HQ station counts as an additional call area and entrants may contact any HQ station (including in their own country) for points and bonuses.
6. Logs: Each entry must be accompanied by a summary sheet indicating the section entered and the scores claimed on each band.
(a) Paper Logs: Separate logs and lists of bonuses claimed are required for each band.
(b) Computer Logs: In any format approved by the Society, showing clearly the points and bonuses claimed for each contact. In both cases entrants are requested to include a duplicate check list with their entry.
7. Closing date for logs: Logs must be postmarked no later than 8 April 2002.
8. Awards:
(a) Open: The Senior Rose Bowl to the overall leader. The Col Thomas Rose Bowl to the highest-placed UK station.
(b) Restricted: The Junior Rose Bowl to the section leader. The Ross Carey Rose Bowl to the highest placed UK station.
(c) A Commonwealth Medal will be awarded to the entrant who in the opinion of the HF Contests Committee has most improved their score or contributed to the contest over the years.
(d) Special Certificates will be awarded to every entrant in each section who makes contact with more than **50 Band-Call Areas** in the 2002 contest. One certificate per entrant. For example,

VP9 worked on three different bands counts as three Band-Call Areas. Entrants are asked to note their claimed Band-Call Area total on the summary sheet.

Slow Speed Cumulative Contests

The aim of these events is to provide training and encouragement for those less experienced in CW and contesting. It is intended primarily for Intermediate, Foundation and newly-licensed operators; more experienced contesters are asked to support the event by inviting an entrant to guest-operate their station.

Dates	UTC	Frequency	Mode	Exchange
Mon 25 Mar				
Tue 2 Apr				
Wed 10 Apr	1900-2030	3540-3580kHz	CW	RST+First name
Thu 18 Apr				
Fri 26 Apr				
Mon 2 Sep				
Tue 10 Sep				
Wed 18 Sep	1900-2030	3540-3580kHz	CW	RST+First name
Thu 26 Sep				
Fri 4 Oct				

1. Sections: (a) Transmitting, single or multi operator. No limit on the number of operators in a team, nor need they be the same for each session. **(b)** Receiving, single operator only.
2. Speed Limit: No faster than 12WPM.
3. Exchange: RST and First Name. Multi-operator stations must send only one name during any particular session, regardless of who is operating, although different names may be used during different sessions.
4. Maximum Power: 10W RF output for all entrants.
5. Scoring: Section (a) Any station may be worked once during each session. Any contact with an Intermediate or Foundation callsign at either or both ends scores 20 points. Contacts between two Full licence-holders score 5 points. The overall score for each session is the total of the best three out of five events in a session as chosen by the entrant. **Section (b)** Listeners may log only stations actively participating in the contest. Each Intermediate or Foundation call logged scores 20 points, each Full call counts 5 points.
6. Logs: Entrants are requested to submit logs for all sessions during which they are active to assist with checking other entries. The name of the operator worked / heard should be recorded in column 5.
7. Awards: Section a: Certificates of Merit to the leading Intermediate, Foundation and Full licence-holders, and also to the highest placed station entering any RSGB HF CW Contest for the first time (please note on your Cover Sheet if you qualify for this last award). Section b: Certificate of Merit to the leading listener.

RoPoCo

A real test of your CW operating skill. Chinese whispers using Rotating Postcodes!
Dates:
First Event: Sunday 7 April
Second Event: Sunday 4 August
Time: 0700 - 0900UTC
Frequency: 3520 - 3570kHz
Mode: CW
Exchange: RST + Postcode received
1. Exchange RST plus for the first contact, the entrant's own postcode. For each subsequent contacts, RST plus the postcode received from the previous contact.
2. Scoring: Ten points for each contact with another UK station.
3. Awards: Trophy and certificate to the highest scoring entrant with the most accurate log; in RoPoCo 1 the Verulam Silver Jubilee Trophy and in RoPoCo 2 the G3XTJ Memorial Trophy. The G5MY Trophy to the entrant with the highest aggregate score from both events.

National Field Day

An excellent club activity with varied areas of expertise required, such as antenna design, construction and erection, generator maintenance and, increasingly, computer expertise. Give your CW operators some support! The QRP section is limited to 12 hours of operation. This should assist groups who have difficulty in finding operators to cover the night shift. It is not an absolute requirement to pre-register to enter Field Day, but you are encouraged still to register and must do so in order to qualify for awards.
Date: 1 / 2 June 2002.
Time: 1500 - 1500UTC.
Bands: 1.8, 3.5, 7, 14, 21 & 28MHz.
Mode: CW.
Exchange: RST + Serial number.
1. Registration: In order that inspections can be arranged, each group intending to compete should send details of the site to be used to: D J Lawley, G4BUO, Carramore, Coldharbour Road, Penshurst, Kent TN11 8EX, to arrive no later than 6 May 2002. Details must include the name and address of the person responsible for the entry; section to be entered; name of group; callsign(s) to be used; national grid reference and sufficient access information to enable an inspector to locate the site.

In the event of a late change of site, it is the responsibility of the members of the group to make suitable arrangements for the inspector to find the new site. Groups not registering may take part in field day but will not be eligible for awards.

All stations are subject to inspection by representatives of the HF Contests Committee, whose brief will be to ensure that the rules and spirit of the contest are being observed. The inspector must be given immediate access to the site and may make return visits.
2. Sections: All sections are multi-operator. This is a portable contest as defined in General Rule 6.

(a) Open Section. There is no restriction on the number or type of antennas, but the maximum height must not exceed 20m.

(b) Restricted Section. One antenna only which must be a single element having not more than two elevated supports and not exceeding 11m above ground at its highest point.

(c) Low Power Section. Same as the Restricted Section with power further limited to 10W output. Additionally, this section has a time limit of 12 hours. Off-periods must be a minimum of one hour and should be listed on the summary sheet.
3. Equipment: Transmitter power output must not exceed 100 watts (10W in section (c)).

(a) Open Section. One transmitter and two receivers. The receiver section of a second transceiver may be used as the second receiver if desired, so long as the transmitter section is disabled for the duration of the contest. Unused receiver sections must also be disabled for the duration of the contest.

(b) and (c) Restricted and Low Power sections. One transmitter and one receiver or one

District Codes for use in RSGB Contests

The District Codes are based upon the main postcode areas within the UK. The two letter code is generally derived from the first two letters of the postcode for the address or location of the station. In a few areas the code that applies differs from the actual postcode district but the list below should enable you to work out what code applies to your station (or the station you are working). The locations given below are a geographical guide and do not necessarily agree with the Royal Mail definition of an area.

AB	Aberdeen	EL	London E1-18	LE	Leicester	SK	Stockport
AL	St. Albans	EC	London EC1-4	LL	Llandudno	SL	Slough
BM	Birmingham	EH	Edinburgh	LN	Lincoln	SM	Sutton
BA	Bath	EN	Enfield	LS	Leeds	SN	Swindon
BB	Blackburn	EX	Exeter	LU	Luton	SO	Southampton
BD	Bradford	FK	Falkirk	MR	Manchester	SP	Salisbury
BH	Bournemouth	FY	Blackpool	ME	Medway	SR	Sunderland
BL	Bolton	GS	Glasgow	MK	Milton Keynes	SS	Southend on Sea
BN	Brighton	GL	Gloucester	ML	Motherwell	ST	Stoke on Trent
BR	Bromley	GU	Guildford	NL	London N1-22	SW	London SW1-20
BS	Bristol	GY	Guernsey	NE	Newcastle on Tyne	SY	Shrewsbury
BT	Belfast	HA	Harrow	NG	Nottingham	TA	Taunton
CA	Carlisle	HD	Huddersfield	NN	Northampton	TD	Twead
CB	Cambridge	HG	Harrogate	NP	Newport	TF	Telford
CF	Cardiff	HP	Hemel Hempstead	NR	Norwich	TN	Tonbridge
CH	Chester	HR	Hereford	NW	London NW1-11	TQ	Torquay
CM	Chelmsford	HS	Scottish Isds	OL	Oldham	TR	Truro
CO	Colchester	HU	Hull	OX	Oxford	TS	Teeside
CR	Croydon	HX	Halifax	PA	Paisley	TW	Twickenham
CT	Canterbury	IG	Ilford	PE	Peterborough	UB	Uxbridge
CV	Coventry	IM	Isle of Man	PH	Perth	WL	London W1-14
CW	Crewe	IP	Ipswich	PL	Plymouth	WA	Warrington
DA	Dartford	IV	Inverness	PO	Portsmouth	WC	London WC1-2
DD	Dundee	JE	Jersey	PR	Preston	WD	Watford
DE	Derby	KA	Kilmarnock	RG	Reading	WF	Wakefield
DG	Dumfries	KT	Kingston on Thames	RH	Redhill	WN	Wigan
DH	Durham	KW	Orkney	RM	Romford	WR	Worcester
DL	Darlington	KY	Kirkcaldy	SD	Sheffield	WS	Walsall
DN	Doncaster	LP	Liverpool	SA	Swansea	WV	Wolverhampton
DT	Dorchester	LA	Lancaster	SE	London SE1-28	YO	York
DY	Dudley	LD	Llandrindod Wells	SG	Stevenage	ZE	Shetland Isds

transceiver. Both receivers in a dual-receive transceiver may be used, if desired.

In all sections, equipment and antennas for packet radio access above 30MHz may also be used, if desired.

4. Frequencies: Contest preferred segments should be used, ie 3510 - 3560 and 14010 - 14070kHz.

5. Scoring: For contacts with: Fixed stations in Europe (including UK) 2 points. Fixed stations outside Europe 3 points. Portable and Mobile stations in Europe (including UK) 4 points. Portable and Mobile stations outside Europe 6 points. Contacts on 1.8MHz and 28MHz should be scored as above and then multiplied by two to obtain the band score. Points must not be claimed for contacts made by a competing station with members of its own group.

6. Logs: Paper and disk entries must be postmarked no later than Monday 24 June 2001. E-mail entries must be sent to hf.contests@rsgb.org.uk by that date.

7. Awards: The National Field Day Trophy to the overall leading station. The Bristol Trophy to the station having the leading score in the other section. The Reading QRP Trophy to the leading station in the QRP section. The Scottish Trophy to the leading Scottish station. The Gravesend Trophy to the runner-up in the Restricted section. The G6ZR Memorial Trophy to the runner-up in the Open section. The Frank Hoosen, G3YF, Trophy to the leading station on the 14MHz band. Certificates of Merit to first, second and third in each section and to the band leaders in each section.

Jubilee Contest

To celebrate the Golden Jubilee of Her Majesty Queen Elizabeth II in June 2002, the Radio Society of Great Britain is organising a special contest to promote contact with stations in the British Commonwealth. There will be commemorative plaques for the overall winners, certificates for the leading score from each country and for all stations contacting fifty or more Commonwealth call areas. There will also be a range of special certificates for UK Intermediate and Foundation licensees. The General Rules for RSGB HF Contests do* not *apply to this event.

Date: 8 / 9 June 2002.

Time: 1000 - 1000UTC.

Bands: 3.5, 7, 14, 21 and 28MHz.

Modes: CW and SSB. IARU band plans should be observed. Contest-preferred segments should be observed, no operation to take place on 3560 - 3600, 3650 - 3700, 14060 - 14125 and 14300 - 14350kHz.

Exchange: RS(T) and serial number starting from 001.

1. Categories:

(a) Single operator unassisted. Entries may be CW only, SSB only or mixed mode.

(b) Single operator assisted. As (a) above but passive use of DX spotting nets and DX Cluster is allowed. Self-spotting is not allowed.

(c) Multi operator. As (b) above but more than one person may operate the station.

In all categories only one signal may be transmitted at a time.

2. Sections:

(a) British Commonwealth. Work any station *except* your own call area.

(b) Rest of the World. Work any station in the British Commonwealth.

3. Scoring: Contact may be made with any station in a Commonwealth call area (see call area list) except those within the entrant's own call area. Note that for this contest all of G, GM, GW, GI, GJ, GU, GD counts as one call area, and therefore British Isles stations (excluding EI) may not work each other. A station may be contacted only once per band, regardless of mode. Each contact scores 5 points. The multiplier is the total of different Commonwealth call areas worked on each band. The final score is the total of QSO points multiplied by the total of multipliers worked.

4. Logs: Electronic submission of logs by disk or e-mail is encouraged, and is required from all who use a computer to log or prepare the logs. Electronic entries are preferred using recognised contest software (eg SD, CT, NA, TR). ASCII log files are required, together with an ASCII summary file. File names must indicate the entrants callsign eg g3xyz.log and g3xyz.sum. The entrant must ensure that the logging software produces a log file which contains all QSO data correctly scored.

Logs must show: Time, Callsign, RS(T) / serial number sent, RS(T) / serial number received, Multiplier claimed, QSO points.

A summary indicating category and section, contacts per band / mode must be included with a declaration that the rules and licence conditions have been complied with.

All QSOs (including duplicates) must be included, with non-scoring QSOs clearly marked. Single mode entrants who make contacts on the other mode should submit these separately as checklogs.

Entries can be e-mailed to hf.contests@rsgb.org.uk and should be sent as a normal attachment to an e-mail.

Postal entries should be addressed to: RSGB HF Contests Committee, c/o S V Knowles G3UFY, 77 Bensham Manor Road, Thornton Heath, Surrey CR7 7AF, UK. The closing date is 6 July 2002.

Customised logging software *SDJ* will be available from EI5DI's web site: www.ei5di.com

5. Awards:

(a) A commemorative trophy will be awarded to the UK station making the highest score in the single operator unassisted category.

(b) Commemorative plaques will be awarded to the first, second and third placed entrants in the British Commonwealth and Rest of the World sections for each category, and to the leader on each mode in each category.

(c) The leading entry from each country will be awarded a special certificate, provided that at least 100 QSOs have been logged.

(d) Certificates will be awarded to the three highest placed UK Intermediate licensees, and to the three highest placed UK Foundation licensees.

(e) A commemorative certificate will be awarded to every entrant who contacts 50 or more band call areas.

Commonwealth and Jubilee Contests Call Areas - 2002

3B6/7	Agalega and St Brandon	J8	St Vincent	VP5	Turks & Caicos Islands
3B8	Mauritius	P2	Papua New Guinea	VP6	Pitcairn Island
3B9	Rodriguez Island	S2	Bangladesh	VP6	Ducie Island
3D2	Fiji	S7	Seychelles	VP8	Antarctica
3D2	Rotuma	T2	Tuvalu	VP8	Falkland Islands
3D2	Conway Reef	T30	W Kiribati	VP8	South Georgia
3DA	Swaziland	T31	C Kiribati	VP8	South Sandwich
4S	Sri Lanka	T32	E Kiribati	VP8	South Shetland
5B	Cyprus	T33	Banaba	VP8	South Orkney
5H	Tanzania	TJ	Cameroon	VP9	Bermuda
5N	Nigeria	V2	Antigua & Barbuda	VQ9	Chagos
5W	Western Samoa	V3	Belize	VU	India
5X	Uganda	V4	St Kitts & Nevis	VU4	Andaman & Nicobar Is
5Z	Kenya	V5	Namibia	VU7	Laccadive Islands
6Y	Jamaica	V8	Brunei	VY0	Nunavut
7P	Lesotho	VE1	Nova Scotia	VY1	Yukon
7Q	Malawi	VE2	Quebec	VY2	Prince Edward Island
8P	Barbados	VE3	Ontario	YJ	Vanuatu
8Q	Maldives	VE4	Manitoba	Z2	Zimbabwe
8R	Guyana	VE5	Saskatchewan	ZB2	Gibraltar
9G	Ghana	VE6	Alberta	ZC4	Cyprus (UK Bases)
9H	Malta	VE7	British Columbia	ZD7	St Helena
9J	Zambia	VE8	North West Territories	ZD8	Ascension Island
9L	Sierra Leone	VE9	New Brunswick	ZD9	Tristan da Cunha & Gough Island
9M0	Spratly Islands	VK0	Heard Island	ZF	Cayman Islands
9M2	W Malaysia	VK0	Macquarie Island	ZK1	North Cook Islands
9M6/8	E Malaysia	VK1	Australian Capital Territory	ZK1	South Cook Islands
9V	Singapore	VK2	New South Wales	ZK2	Niue
9Y	Trinidad & Tobago	VK3	Victoria	ZK3	Tokelau
A2	Botswana	VK4	Queensland	ZL0, /ZL	New Zealand Reciprocal
A3	Kingdom of Tonga	VK5	South Australia	ZL1	New Zealand - Area 1
AP	Pakistan	VK6	Western Australia	ZL2	New Zealand - Area 2
C2	Nauru	VK7	Tasmania	ZL3	New Zealand - Area 3
C5	Gambia	VK8	Northern Territory	ZL4	New Zealand - Area 4
C6	Bahamas	VK9C	Cocos (Keeling) Islands	ZL6	New Zealand
C9	Mozambique	VK9L	Lord Howe Island	ZL7	Chatham Islands
CY0	Sable Island	VK9M	Mellish Reef	ZL8	Kermadec Islands
CY9	St Paul Island	VK9N	Norfolk Island	ZL9	Auckland & Campbell Is
G, GD, GI, GJ, GM, GU, GW etc	United Kingdom (all one area)	VK9W	Willis Island	ZS1	Western Cape Province
		VK9X	Christmas Island	ZS2	Eastern Cape Province
H44	Solomon Islands	VO1	Newfoundland	ZS4	Free State Province
H40	Temotu	VO2	Labrador	ZS5	Kwa-Zulu Natal Province
J3	Grenada	VP2E	Anguilla	ZS6	Gauteng Province
J6	St Lucia	VP2M	Montserrat	ZS8	Marion Island
J7	Dominica	VP2V	British Virgin Islands	ZS0	South Africa Special Event

Islands on the Air (IOTA) Contest

The General Rules for RSGB HF Contests do* not *apply to this event.

1. General: The aim of the contest is to promote contacts between stations in qualifying IOTA island groups and the rest of the world and to encourage expeditions to IOTA islands.

2. When: 1200UTC Saturday 27 July to 1200UTC Sunday 28 July 2001.

3. Bands and Modes: 3.5, 7, 14, 21 and 28MHz, CW and SSB. IARU band plans should be observed, with CW contacts being made only in the recognised CW ends of the bands (see RSGB Yearbook and similar sources, for recognised IARU band plans). Contest-preferred segments should be observed, no operation to take place on 3560 - 3600, 3650 - 3700, 14060 - 14125 and 14300 - 14350kHz.

4. Categories:

a) Single operator, 24 hours. CW, SSB or Mixed-mode.

b) Single operator, 12 hours. CW, SSB or Mixed-mode.

c) Single operator assisted, 24 hours. CW, SSB or Mixed-mode.

d) Single operator assisted, 12 hours. CW, SSB or Mixed-mode.

e) Multi-operator, mixed mode.

Notes:

1. Multi-ops are restricted to a maximum of two transceivers, the second transceiver to be used to find and call other stations only if the station is a new multiplier. It must not be used to solicit other contacts, eg by calling "CQ" or "QRZ?". Any non-multiplier QSOs made accidentally on the second station should be logged, but scored as zero points. Multi-ops may make passive use (self spotting not allowed) of DX spotting nets and *DXCluster*.

2. Single operator assisted categories: passive use (self-spotting not allowed) of DX spotting nets and *DX Cluster* is allowed.

3. In the 12-hour categories, operation need not be for one continuous 12-hour period, but off periods should be a minimum of 60 minutes and should be noted on the summary sheet. A single-op log not showing the time category (with off times clearly indicated) will be classified as a 24-hour entry.

5. Sections:

a) IOTA Island Station, high-power

b) IOTA Island Station 100W

c) World (any station in a location not having an IOTA reference), high power.

d) World (any station in a location not having an IOTA reference), 100W.

e) Short Wave Listener. See rule 10.

Notes:

1. Any station not indicating transmitter power will be classified as High Power.

2. Island stations (sections a and b) may, additionally, indicate that they are a DXpedition station as defined below, and compete for a range of expedition trophies and certificates (an additional listing will be shown in the results). It is essential that you make this clear on your cover sheet as notification after the entry deadline cannot be accepted.

The definition of DXpedition for this optional listing is one:

- where the island can only be reached by boat (islands which can be accessed by bridge or causeway - man-made or natural - or by scheduled commercial airline service are not eligible),
- where none of the operators is resident on the island,
- where the operators take all radio equipment and antennas with them and do not rely on a resident for any part of the station,
- where, in the case of 100W IOTA Island DXpedition stations, the antennas are limited to one element per band (eg dipole, vertical). (High power DXpeditions have no antenna restrictions).

Awards will be given to leading stations in the 24 hour categories only, irrespective of mode, for Single Operator (high power), Single Operator (low power), Single Operator Assisted (high power), Single Operator Assisted (low power), Multi-operator (high power) and Multi-operator (low power).

6. Exchange: Send RS(T) and serial number starting from 001, plus IOTA reference number if applicable. Do not use separate numbering systems for CW and SSB. Stations may be contacted on both CW and SSB on each band.

7. Scoring:

a) QSO Points - Contacts with own IOTA reference counts 3 points, with other IOTA islands count 15 points. Contacts with non-island stations count 3 points.

b) Multiplier - The multiplier is the total of different IOTA references contacted on each band on CW, plus the total of different IOTA references contacted on each band on SSB. Multi-op stations may *not* work members of their own group for multiplier credit.

c) Total Score - The score is the total of QSO points on all bands added together, multiplied by the total of multipliers.

8. Logs:

a) Electronic submission of logs by disc or e-mail is encouraged - and in fact required - for all top scoring entrants and all who use a computer to log or prepare the logs. Electronic entries are preferred using recognised contest software (eg SDI, NA, CT, TR). Two files only are required, (callsign).LOG or .ADI and (callsign).SUM. Always ensure that your logging software produces a log file which correctly contains all the QSO data, and that the summary file clearly indicates your section and category. However, if you prepare your log electronically by *any* means (eg Excel, Word) then please send the electronic version, as it reduces the need for retyping data.

b) Logs must show: Time, Callsign, RS(T) / serial number / IOTA reference sent, RS(T) / serial number / IOTA reference received, Multiplier claimed, QSO points.

c) A summary indicating category and section, contacts per band / mode must be included with a declaration that the rules and licence conditions have been complied with. IOTA stations must state their island name and IOTA reference number.

d) All QSOs (including duplicates) must be included, with non-scoring QSOs clearly marked. Single mode entrants who make contacts on the other mode should indicate this in the log and score these QSOs as zero points.

e) E-mail entries should be addressed to hf.contests@rsgb.org.uk and should be sent as a normal attachment to an e-mail.

f) Postal entries should be addressed to: RSGB IOTA Contest, PO Box 9, Potters Bar, Herts EN6 3RH, England.

g) Entries must be postmarked by 1 September 2002.

9. Penalties: Points may be deducted, or entrants disqualified, for violation of the rules or the spirit of the contest. This includes, for example, refusal by IOTA island stations to make contacts with their own country when requested, use of a third party to make contacts on a list or net, working CW multipliers on an SSB frequency, or not giving the IOTA reference for every contact. The decision of the IOTA Contest Manager and RSGB HF Contests Committee is final in all matters of dispute.

10. SWL Contest: Scoring is as for the transmitting contest. Logs must be separate for each band, and show Time, Callsign of station heard, RS(T) / serial number / IOTA reference sent, Callsign of station being worked, Multiplier claimed, QSO points.

Under 'callsign of station being worked', there must be at least two other QSOs before a callsign is repeated, or else 10 minutes must have elapsed. If both sides of a QSO can be heard, they can be logged separately for points if appropriate.

11. Awards:

Certificates will be awarded to leading stations in each category and section, and in each continent, according to number of entries. Awards include:

- CDXC Geoff Watts Memorial Trophy to the leading IOTA Islands (non expedition) station.
- IOTA Trophy presented by the IOTA Committee to the leading IOTA Island DXpedition station.
- Roger Balister, G3KMA, Trophy to the leading IOTA Island DXpedition 100W station.
- David King, G3PFS, Trophy, in memory of Geoff Watts, to the leading British entrant operating from a location in the UK in the single operator 12-hour SSB category.
- G3DYY Memorial Trophy to the leading British entrant operating from the UK in the single operator 24-hour CW category.
- W9DWQ Contest Award to the leading Single Operator North American Island Expedition Station.

12. Note from RSGB IOTA Contest Manager: The IOTA Contest Manager, G3XTT, can be reached via the RSGB, or by e-mail at: iotacontest@rsgbhfcc.org IOTA Contest information, including the results of the 2001 contest, is available at www.rsgbhfcc.org A list of entries received will be posted at that site by 30 September. High claimed scores will be posted on the website by mid-October. Results will appear in the March 2003 *RadCom* or the first available issue thereafter and on the website by early March. It is hoped to send all entrants making 50 QSOs or more a results booklet. If this is not possible, entrants providing an e-mail address will receive a copy of the results by e-mail. Copies of the *IOTA Directory*, if required, can be purchased from RSGB (see www.rsgb.org). A full list of IOTA islands, and other information relating to the IOTA program can be found on the IOTA Manager's website (www.eo19.dial.pipex.com/index.shtml).

Low Power Contest

This a serious event for the QRPer, providing a choice of fixed station operation or outdoor fun.

Date	Time	Freqs	Mode	Exchange
Sun 21 Jul	0900-1200	3510-3580	CW	RST + Serial Number + Power
	1300--1600	7000-7040	CW	

1. Sections: Single or multi-operator (a) Fixed (b) Portable, both sections 10W RF output maximum. (c) Fixed (d) Portable, both sections 3W RF output maximum.

2. Frequencies: Both bands may be used during each session. Any station may be contacted once on each band.

3. Special conditions for Portable sections:

(i) A Portable station is defined in General Rule 6.

(ii) Antennas must not exceed 11m above ground and may have no more than two elevated supports.

4. Exchange: RST, serial number and RF output power in Watts. Serial numbers commence at 001 and continue through both sessions. Output power should be expressed as one or two digits plus 'W' in place of the decimal point, eg 1W, 1W5. Participants using more than 10W should send 'QRO'.

5. Scoring: 15 points for each contact with a QRP Portable or Mobile station; 10 points for a QRP Fixed station; 5 points for all other contacts. For the purposes of scoring, 'QRP stations' are those using 10W RF output or less.

6. Awards: The 1930 Committee Cup to the winner of section (a). The Houston-Fergus and Southgate Trophies to the winners of sections (b) and (d) respectively.

IARU Region 1 SSB Field Day

A popular club activity. Finding the best ratio of contact rate to country multipliers provides a challenging back drop to weekend outdoors.

Date: 7 / 8 September 2002.

Time: 1300 - 1300UTC.

Bands: 3.5, 7, 14, 21, 28MHz.

Mode: SSB.

Exchange: RS + Serial Number.

1. Sections: All sections are multi-operator. This is a portable contest as defined in General Rule 6.

(a) Open Section. Full licensed power. There is no restriction on the number, height or type of antennas.

(b) Restricted Section. 100W output power. One antenna only which must be a single element having not more than two elevated supports and not exceeding 15m above ground at its highest point.

2. Equipment:

(a) Open Section. Linear amplifier, one transmitter and two receivers. The receiver section of a second transceiver may be used as the second receiver if desired, so long as the transmitter section is disabled for the duration of the contest. Unused receiver sections must also be disabled for the duration of the contest.

(b) Restricted Section. One transmitter and one receiver or one transceiver. Both receivers in a dual-receive transceiver may be used, if desired.

In all sections, equipment and antennas for packet radio access above 30MHz may also be used, if desired.

3. Scoring: For contacts with:

Fixed stations in IARU Region 1: 2 points

Stations outside IARU Region 1: 3 points

/P or /M stations in IARU Region 1: 5 points.

IARU Region 1 countries include those in Europe, Africa, USSR, ITU Zone 39 and Mongolia. For a more precise definition refer to the RSGB *Amateur Radio Operating Manual*. Points must not be claimed for contacts made by a competing station with members of its own group.

4. Multiplier: One for each DXCC Country worked on each band.

5. Awards: The leading station in the Open section will receive the Northumbria Trophy and in the Restricted section, the G3PSH Memorial Trophy.

21 / 28MHz Contests

During the peak years of the sunspot cycle this contest provides much DX to be worked. This is a real test of maximising openings on both bands. The Restricted section allows less complex antenna systems to be used.

Date	Time UTC	Freqs kHz	Mode	Exchange
Sun 6 Oct	0700-1900	21150-21350 28400-29000	SSB	RS + Serial No + District Code (UK)
Sun 20 Oct	0700-1900	21000-21150 28000-28100	CW	RST + Serial No + District Code (UK)

1. Sections: (a) UK Open **(b)** UK Restricted **(c)** UK QRP **(d)** Overseas Open **(e)** Overseas Restricted **(f)** Overseas QRP **(g)** UK Receiving **(h)** Overseas Receiving.

QRP stations must use 10W RF output maximum. Open section has no antenna limitations. In the Restricted section, only one antenna per band is allowed, which must be a single element with a maximum height of 15m and a maximum of 100W output. Single or Multi-operator entries accepted in the transmitting sections. Entrants are reminded that stations using packet or other spotting facilities must enter as multi-operator stations.

2. Frequencies: CW: Entrants are requested not to operate in the sub-band 21075 - 21125kHz.

3. Scoring: The same station may be contacted on both bands for points and multipliers. **(a)** UK. 3 points per contact with Overseas stations. Multipliers as per General Rules except that the UK call areas do not count for multiplier or QSO point credit. **(b)** Overseas. 3 points per contact with UK only stations. 1 Multiplier for each UK District worked on each band. Final Score is the total QSO points for all bands added together, multiplied by the number of multipliers from all bands added together.

4. Closing date for logs: to be postmarked by 20 November 2002.

5. Awards: SSB: The Whitworth Trophy to the UK single operator overall winner. The Powditch Transmitting Trophy to the leading single operator entry on 28MHz. **CW**: T E Wilson, G6VQ, Trophy to UK single operator overall winner.

Receiving Section

Single-operator entries only will be accepted. General Rule 11 and transmitting section rules apply except where specified below.

1. Scoring: UK SWLs log only Overseas stations in contact with UK stations participating in the contest. Overseas SWLs log only UK stations in contact with Overseas stations participating in the contest. Scoring and multipliers as for the transmitting section.

2. Logs: Columns to be headed: time UTC; callsign of station heard; report / serial number sent by that station; County Code sent by that station (if applicable); callsign of station being worked; multiplier (if new); points claimed. Note: in the column headed 'station being worked' the same callsign may only appear once in every three contacts except when the logged station counts as a new multiplier.

3. Awards. SSB: the Metcalf Trophy to the overall leading UK entrant. The Powditch Receiving Trophy to the leading 28MHz entrant.

Club Calls Contest

The aim of this event is to encourage contacts between Affiliated Societies, to give their callsigns an airing and to encourage Class B licensees to operate under appropriate supervision.

Date	Time UTC	Freqs kHz	Mode	Exchange
Sat 9 Nov	2000-2300	1870-1990	SSB	RS + Serial No+ other data

1. Eligible Entrants: All licensed amateurs and SWLs in the UK.

2. Exchange: RS + serial number + name of Club + "Club Station", "Club Member" or "No Club", as appropriate. NB: the name of the club must be sent in full. It must not be sent as initials. A Club Station must use a callsign which is specifically issued to a Club or Society which is affiliated to the RSGB. Use of special club station prefixes such as GX etc by club stations is allowed in this event.

3. Scoring: 3 points per contact, plus bonuses of 5 points for contacts with any club members, and 25 points for contacts with any Club Station.

4. Awards: The Ariel Trophy to the leading Club station. Certificates to the leading club, individual club and non-club member. The David Hill, G4IQM, Memorial Trophy will be awarded to the club having the highest aggregate score of five club members operating within a 30 mile radius of the club meeting place.

Receiving Contest

General Rule 10 and transmitting section rules apply except where specified below.

1. Log column 'Other Data' to show name of Club + 'Member', or 'No Club', or name of Club + 'Club Station' as appropriate. Any station may appear only once in the 'station heard' column, regardless of mode.

General Rules for RSGB VHF / UHF / SHF Contests 2002

1. Entries

a. In submitting an entry to a contest, you agree to be bound by the rules and spirit of the contest, and you agree that the decision of the RSGB shall be final in cases of dispute.

b. All paper and / or disk entries should be addressed to RSGB, PO Box 40, Newport PO32 6BF.

c. Alternatively, entries may be submitted by e-mail to vhf.entry@rsgb.org.uk. Please ensure that you use this address rather than any previously published one.

d. Entries should be postmarked or e-mailed not later than 16 days after the end of the contest, or, for cumulative contests, the last activity period.

e. Entries become the property of RSGB and cannot be returned.

f. Proof of contact may be required. Any station may be approached, without notice to the entrant, for confirmation of contact details.

g. In case of dispute, in the first instance, the Chairman of the VHF Contests Committee (VHFCC) should be contacted in writing. The VHFCC may refer cases of appeal to the RSGB Board. The Board's decision shall be final.

h. In multi-band contests, single-band entries are always acceptable.

i. Queries about the contests may be addressed to the VHFCC Chairman, tel: 0870 740 7909 (calls are charged at BT national rate), evenings / weekends. e-mail: vhfcc.chairman@rsgb.org.uk

2. Paperwork

a. The preferred method of entry is by electronic log in DOS format supplied on diskette or by e-mail. Handwritten or typed entries on paper are always acceptable. If you use a computer to prepare an entry, we reserve the right to require an electronic copy of the entry.

b. Acceptable file formats include .LOG from SDV, G0GJV, G3WGV and CONLOG programs, N6TR .DAT, RSGB standard format, REG1TEST and ADIF. We will endeavour to work with any other reasonable format - please contact the VHFCC to discuss this. The website www.blacksheep.org/vhfcc may also contain details of other means of electronic log submission as they become available. Free software is available from VHFCC Chairman or http://www.blacksheep.org/vhfcc

c. e-mail entries should include a plain text file which contains the same information as the paper coversheet (form 427). Entries on diskette can use either a file or paper coversheet. A suitable plain text template can be found at www.blacksheep.org/vhfcc/stationery/stationery.htm

d. Diskettes and e-mail subject headers must clearly indicate the relevant contest(s) and callsign(s). The file names should consist of the callsign and the extension .LOG or .COV, eg G9XXX.LOG. Where the same callsign is used on more than one band, add some reference to the band, eg G9XXX144.LOG.

e. All diskettes become the property of the RSGB, unless you enclose an SASE, whereupon the disk will be returned to you.

f. All paper entries should be accompanied by a VHF / UHF contest cover sheet (form 427) for each band used, or a similar form which supplies the same information. Please include a contact telephone number or e-mail address in case of query.

g. The logs for paper contest entries should be made out on current RSGB VHF / UHF log sheets or a close replica. These forms may be photocopied from the *RSGB Yearbook*. Larger quantities may be purchased from RSGB HQ. Each sheet should be headed with the entrant's callsign, IARU locator, contest title and sheet number. Logs should be tabulated as follows:

i. Date / time (UTC)
ii. Callsign of station worked
iii. My report on his / her signal and serial number
iv. His / her report on my signal and serial number
v. IARU Locator received
vi. QTH or county received (when required) or comments
vii. Points claimed.

h. In contests with a multiplier scoring system, when submitting paper logs, please also submit a list of multipliers worked, showing at least the callsign, and either serial number sent or time of QSO, for each contact claimed as a new multiplier.

i. Any complaints / adverse comments received or made about signal quality must be recorded in the comments column of the paper log or electronic log.

j. If you wish to receive a copy of the results as soon as they are available, please send an SASE labelled 'results' and the contest name.

3. Station / Operators

a. All operators must be RSGB members except in VHF NFD and the Affiliated Society contests - see individual rules.

b. Stations entering a fixed station section or contest must operate from permanent and substantial buildings located at the main station address as shown on the licence validation document. The spirit of the contest will be paramount.

c. Entrants must not change their location or callsign during the contest. In multi-band events, all stations forming one entry must be located within a circle of 1km radius.

d. Stations located outside of the UK (G, GW, GM, GI, GD, GU, GJ) may enter a contest, and will be tabulated within the overall results tables, but will only be eligible for their own awards.

e. There must be only one frequency used for transmit on any band at any one time.

f. The lower of the contest power limit or the standard licence power limit must not be exceeded during the contest. Contacts made under a high-power permit will not count for points. Severe action may be taken against infringements of this rule.

g. Stations which persistently radiate poor quality signals, cause deliberate interference to other stations, or otherwise contravene the code of practice for VHF / UHF / SHF contest operation may be penalised.

h. Entrants must permit inspection of their stations by members of VHFCC or its representatives, and give site access information if requested to do so. The inspector must be permitted to remain for as long as desired, and to return to the site for subsequent inspections at any time during the contest. Contestants must demonstrate to the inspector's satisfaction that they are obeying the rules of the contest.

4. Contacts

a. The contest exchange consists of at least both callsigns, RS(T) signal reports followed by a serial number, and the IARU locator. Particular contests may require additional information to be exchanged as described in the individual contest rules.

b. Serial numbers start from 001 on each band and advance by one for each contact. In cumulative contests serial numbers start from 001 for each activity period.

c. Crossband contacts do not count for points below 2.3GHz. On 2.3GHz and above, crossband contacts are scored at 50% of the two way score.

d. No points will be lost if a non-competing station cannot provide an IARU locator, serial number, or any other information that may be required. However, the receiving operator must receive and record sufficient information to be able to calculate the score.

e. Contacts with callsigns appearing as operators on any of the cover sheets forming an entry will not count for points or multipliers. In AFS contests, stations within the same AFS team may work each other for points / multipliers.

f. Only one scoring contact may be made with a given station on each band, regardless of suffix (/P, /M, etc) during an individual contest or cumulative activity period. All non-scoring contacts must be clearly marked in the log, and unmarked duplicates will be penalised at ten times the claimed score for that contact.

g. Contacts made using repeaters, satellites or moonbounce will not count for points.

h. The IARU / RSGB band plans must be observed.

i. All information must be copied off air at the time of the QSO. Databases must not be used to fill in missing information.

j. Passive use of the *DXCluster* and other spotting networks (including Internet facilities) is allowed in all contests. Announcements of intended activity prior to the contest are also allowed. However, any active use (spotting, talk messages, announcements etc) during the contest by the entrant or any close associate is not allowed. Any such active use which, in the opinion of the adjudicator, results in additional QSOs or assists in the completion of QSOs, will attract a penalty of at least the score of the QSOs concerned. To assist with the enforcement of this rule, entrants' logs are routinely compared against logs from the *DXCluster* network. The intent of this rule is to prevent repeated use of spotting networks to attract, arrange or complete QSOs. Entrants should not be concerned that they will be penalised because they routinely attract 'spots' from unknown parties.

k. Any band may be used for setting up contacts or talkback. No confirmation of QSO details must take place on the talkback frequency. All exchanges for the contest band in use must be made on that band. The talkback channel can be used for antenna alignment signals and confirmation that signals are audible, but not for giving reports and serial numbers.

l. In contests with a section 6S or 6O, stations may choose any continuous 6 hour period in which to operate (eg 1500 - 2100, or 1917 - 0117). Serial numbers must start at 001 for this period, and you cannot enter both this section and the full contest. Section SS is for single operator fixed stations, section OS for all others. In multi-band contests, a single 6 hour period must be used on all bands.

5. Scoring

a. Scoring will normally be at 1 point per km. Contacts with stations in the same small locator square as your station (eg IO92AA to IO92AA) will score 1 point.

b. For computer purposes a conversion factor of 111.2 km / degree must be used.

c. Multi-band contests will contain an overall results table in addition to the individual band results. The scores in this final tabulation will be formed by taking the sum of the normalised scores on each band. The normalised scores will be calculated by:

Normalised score for each band / session =
(Score achieved x 1000)
(Band/session leader score)

6. Awards & Results

a. Certificates will be awarded to the leading and second placed station in each section of the contest. Additional certificates of merit may be awarded at the adjudicator's discretion.

b. In all contests / sections where the power limit is above 25W, a certificate will be awarded to the leading fixed station using 25W or less into a single antenna.

c. Placement certificates showing the result achieved in the contest can be obtained by including an A4 SASE with the entry marked with callsign, contest and (if applicable) group name.

d. A certificate will be awarded to the leading Intermediate and leading Foundation licensees in each section.

e. A certificate will be awarded to the leading Overseas station in each section.

7. Multipliers

a. Where a contest uses multipliers, the score for each band will be the number of points made on that band multiplied by the number of multipliers contacted on that band.

b. The type of multiplier scheme for a particular contest will be referred to in the individual rules for the contest. Not all contests will use multipliers.

c. Each new multiplier must be clearly marked in the log.

d. In post code multiplier contests, each Scottish Post Code may be worked up to three times for multiplier credit, and BT for Northern Ireland may be worked up to six times for multiplier credit. The TD area counts three times regardless of whether the stations contacted are in England or Scotland.

e. In contests using Post Code Area multipliers the exchange will include the first 2 letters of the postcode (eg EN from EN5 7JE). Where a post code consists of only a single initial letter (eg B6 9AA), the exchange will be padded out to 2 letters - ie in this case 'BM'. This extended exchange is used to keep a common format, but entrants need to be aware that some non-contestants may not be aware of their extended code.

2002 Special Rules

CERTAIN OF THESE rules are invoked for individual contests as listed in the individual contest rules.

S1. Instead of 1 point / km scoring (rule 5a), scores will be calculated at 1 point / QSO.

S2. In addition to the IARU locator, QTH information must be exchanged. This should be given as a point identifiable on an Ordnance Survey route planning map or equivalent (scale 1:625,000) or as a direction and distance not greater than 25km from such a point, eg 10km West of Skegness.

S3. This is an Affiliated Societies contest and is open to both individual entrants (who must be RSGB members), and to teams made up of a number of operators who must all be members of the same affiliated society, but not necessarily RSGB mem-

bers themselves. Scores from portable stations will be included in the results but will not count towards team tables.

a. All members of the team must operate from within 50km of the normal meeting place of the society. No station may represent more than one society. No operator is allowed to use more than one callsign during the contest. In the case of national societies, each team must define a separate meeting place, and each team member must operate within 50km of that designated meeting place.

b. QSOs with other members of your team will count for points.

c. Multiple teams are encouraged from both local and national societies. For the purpose of calculating the overall AFS team score, each member of each team will be placed in one of 5 sections (3 for the 432MHz contest) Sections A, B, C etc. The highest-placed member of each team will be placed in Section A, the second highest in Section B etc. All stations in each of the sections will have their score normalised against the highest score in that section, with the highest score gaining 1000 points. The final AFS team score will be the sum of the team members individual normalised scores.

d. Please mark your RSGB Zone (which can be found in the *Yearbook*) on the cover sheet.

e. Logs should be sent as a single package for each club and should include a declaration by a club official that all operators are members of the Affiliated Society, and listing the QTH locator of the normal meeting place of the club.

S4. This contest runs concurrently with a 'Backpackers' contest. Stations entering the Backpackers contest only may be worked once from a fixed location and once from their portable location for points.

S5. This is a cumulative contest. The following special rules apply:

a. For cumulative contests the overall score will normally be calculated from the best 3 normalised session scores - the normalised score being calculated as above in rule 5c. It is impossible for you to determine your best sessions without knowing everyone else's scores, so please submit your logs and scores from all sessions in which you were active and allow the adjudicator to calculate your best sessions.

b. Stations may move location between individual cumulative activity periods.

c. For cumulative contests, please summarise your scores from each session on the reverse of the cover sheet.

S6. This contest runs concurrently with the first few hours of an RSGB 24 hour event. You may submit entries to both contests with a single set of logs, but please include 2 cover sheets - one for the shorter contest and one for the 24 hour event. Entries may be automatically submitted into the 24 hour event unless you specifically request otherwise.

S7. This contest runs concurrently with all or part of an IARU co-ordinated contest. You may submit a single set of logs for entry to both the RSGB and IARU events. Entries will be submitted to the IARU event unless you specifically request otherwise.

S8. This is an activity contest. The following special rules apply:

a. These contests are timed to coincide with the last two hours of a number of European 2m activity contests, with an extra half hour at the end to encourage intra-UK activity. They take place on Tuesdays from 2000 - 2230 local time with 144MHz on the 1st Tuesday of the month, 432MHz on the 2nd Tuesday, 1.3 / 2.3GHz on the 3rd Tuesday, and 50MHz on the 4th Tuesday. There will be no such contest on any 5th Tuesday.

b. Please submit an entry after each session in which you are active. There are separate sections for Single Operator Fixed Stations and All Others.

c. This contest is scored at 1 pt / QSO with a QTH locator multiplier (multiplier type M2) on 50MHz and 144MHz, and at 1 pt / km with a QTH locator multiplier (multiplier type M2) on 432MHz and 1.3 / 2.3GHz.

d. At the end of the year, on each band an overall score will be calculated from the best 6 normalised session scores - the normalised score being calculated as above in rule 5c. It is impossible for you to determine your best sessions without knowing everyone else's scores, so please submit your logs and scores from all sessions in which you were active and allow the adjudicator to calculate your best sessions.

e. Stations may move location between individual activity periods.

f. A trophy will be awarded to the winner of each section on each band. Certificates will be awarded to the overall winners and runners-up in each section and on each band in the same way as per the general rules. No certificates will be awarded for the individual events.

Multiplier Types

ONE OF THE following rules as defined in the individual contest rules will apply to any contest using multipliers. In each case, a QSO with your own post code, country or large square as appropriate to the contest counts for multiplier credit, and any appropriate QSO can count as more than multiplier (eg your first G QSO in an M3 contest will count for a new locator, postcode and country).

M1. Post Code and Country Multipliers. The multiplier for a band is the sum of the number of different DXCC countries and UK post code areas worked on that band.

M2. QTH Locator Multiplier. The multiplier for a band is the sum of the number of different large locator squares (eg JO01,IO91 etc) worked on that band.

M3. Post Code, Country and QTH Locator Multiplier. The multiplier for a band is the sum of the number of different DXCC countries, UK post code areas, and large QTH locator squares (eg JO01, IO91 etc) worked on that band.

M4. Country and QTH Locator Multiplier. The multiplier for a band is the sum of the number of different DXCC countries, and large QTH locator squares (eg JO01, IO91 etc) worked on that band.

Code of Practice for VHF / UHF/SHF Contests

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 the site is not going to be used by some other group or club. Check with the club and last year's results table to see if any group used the site last year. If it is going to be used by another group, 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 a home station may well be found to be excessive to nearby stations (25 miles away or more).

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 the 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 radiation, including noise modulation, to a level of -100dB relative to the wanted signal. Similarly, every effort should be made to ensure that the receiver has adequate dynamic range.

6. Remember that contesters cannot claim exclusive use of any part of any band. Please respect other operators at all times by avoiding using, or causing interference to, frequencies set aside for other legitimate users. This applies whether the other use is prescribed by an official band plan (eg the 144.300MHz SSB calling frequency on 2m), by recognised code of practice (eg the 50.100-50.130MHz DX window on 6m), or by common convention (eg the GB2RS news broadcasts on 144.250MHz). If asked to QSY because of interference to any such use, please do so quickly and courteously.

7. Above all, be friendly and polite at all times. Be helpful and inform stations apparently radiating unwanted signals at troublesome levels, having first checked your own receiver. Try the effect of turning the antenna or inserting attenuators in the feedline; if the level of spurious signal changes relative to the wanted signal, then non-linear effects are occurring in the receiver. Some synthesised equipment has excessive local oscillator phase-noise, which will manifest itself as an apparent splatter on strong signals, even if there is no overloading of the receiver front-end. Pre-amplifiers should always be switched out to avoid overload problems when checking transmissions. If you receive a complaint, perform tests to check for receiver overload and try reducing drive levels and switching out linear amplifiers to determine a cure. Monitor your own signal off-air if possible. Remember that many linear amplifiers may not be linear at high power levels under field conditions with poorly regulated power supplies. The effects of over-driving will be more severe if speech processing is used, so pay particular attention to drive level adjustment. If asked to close down by a Government Official or the site owner, do so at once and without objectionable behaviour.

VHF National Field Day 2002 Rules

General Rules apply.

1. Date / time of contest

1400 Saturday 6 July 2002 until 1400 Sunday 7 July 2002.

2. Site Notification

Each Group intending to compete must supply the following details:

Name of Club / Group
Contact name and address/telephone number in case of query
Section entered
Choice of Bands (see section 7)
Callsign for each band
NGR of site
Site access information (maps are not required)

A suitable form is available in the *RSGB Yearbook*, from the VHFCC web site (www.blacksheep.org/vhfcc) or from the VHFCC Chairman.

Post the details to: VHF Contests Committee, PO Box 40, Newport PO32 6BF or e-mail to vhf.entry@rsgb.org.uk The postmark of the letter or date of the email must not be later than 30 June 2002.

Each group may only register one site although essential changes may be acceptable provided the VHFCC Chairman is informed before the contest: tel.: 0870 740 7909, evenings / weekends; e-mail: vhfcc.chairman@rsgb.org.uk

3. Bands

The chosen bands must be stated on the site registration form. See individual section rules (see section 7 of these rules) for the choice of bands during the contest.

4. Operators

Any RSGB member or group of members operating from the British Isles (excluding the Irish Republic) may enter. Also, affiliated RSGB societies may enter (operators *must* be members of the Affiliated Society (AFS), but not necessarily members of RSGB themselves). In this case, a declaration signed by an officer of the AFS that the operators are members of the society is required with the entry. RSGB members are allowed to operate in AFS groups whether or not they are actually members of that AFS group.

5. Stations

All equipment including antennas and accommodation must be installed on site not more than 24 hours before the contest. Only portable accommodation can be used to house the stations. Power for all equipment must be derived from an on site generator, battery, wind or solar power.

6. Contest exchanges

a. On each band report, serial number and 6 character (e.g. IO91OJ) locator must be exchanged.

b. Additionally, on 70MHz only, QTH information must be exchanged (Special rule S2).

7. Sections

7.1 Open section (O):

(i) Maximum output power as permitted by standard licence conditions.

(ii) General rules apply

(iii) Operate on up to 4 bands from the following list:

50MHz (6m) 1400 to 2200 Saturday (all mode)
70MHz (4m) 0800 to 1400 Sunday (all mode)
144MHz (2m) 1400 Saturday to 1400 Sunday (all mode)
432MHz (70cm) 1400 Saturday to 1400 Sunday (all mode)
1.3GHz (23cm) 1400 Saturday to 1400 Sunday (all mode)

Single band entries for any band are also acceptable.

7.2 Restricted section (R)

(i) The power output of any band must not exceed 100W PEP at the transmitter.

(ii) The height of the antenna's driven element must

not exceed 10 metres above ground level.
(iii) Only one antenna per band may be used (ie no stacked, bayed or collinear arrays or switching between two or more antennas). A slot fed Yagi or Quad antenna is permitted. Dish or Backfire antennas must not exceed 2m diameter.
(iv) Operate on up to 4 bands from the following list:
50MHz (6m) 1400 to 2200 Saturday (all mode)
70MHz (4m) 0800 to 1400 Sunday (all mode)
144MHz (2m) 1400 Saturday to 1400 Sunday (all mode)
432MHz (70cm) 1400 Saturday to 1400 Sunday (all mode)
1.3GHz (23cm) 1400 Saturday to 1400 Sunday (all mode)
Single band entries for any band are also acceptable.
7.3 Low Power section (L):
(i) The power output of any band must not exceed 25W PEP at the transmitter.
(ii) The height of any part of the antenna's driven element must not exceed 10 metres above ground level.
(iii) Only one antenna per band may be used (ie no stacked, bayed or collinear arrays or switching between two or more antennas). A slot fed Yagi or Quad antenna is permitted. Dish or Backfire antennas must not exceed 2m diameter.
(iv) Operate on up to 3 bands from the following list:
50MHz (6m) 1400 to 2200 Saturday (all mode)
70MHz (4m) 0800 to 1400 Sunday (all mode)
144MHz (2m) 1400 Saturday to 1400 Sunday (all mode)
432MHz (70cm) 1400 Saturday to 1400 Sunday (all mode)
1.3GHz (23cm) 1400 Saturday to 1400 Sunday (all mode)
Single band entries for any band are also acceptable.
(v) Each band may be operated for no more than 16 hours (except for 6m and 4m: see 7.3 (iv) above) during the contest period. Each rest period must last at least 1 hour.
7.4 Mix and Match (M)
(i) A group can elect to place different bands into Restricted, Low-Power or Open sections, eg 4m in Restricted, 2m and 70cm in Open, and 23cm in Low Power. This decision must be made at registration time and the details shown on the site registration form. At least one station must be in a different section to the other stations (eg 6m, 4m and 2m in the Open section, 70cm in the Restricted section).
(ii) Individual band entry will be tabulated in the appropriate main section, and a normalised score for the band produced on this basis.
(iii) The sum of the normalised scores will appear in a separate Mix & Match section table.
(iv) Operate on up to 4 bands from the following list:
50MHz (6m) 1400 to 2200 Saturday (all mode)
70MHz (4m) 0800 to 1400 Sunday (all mode)
144MHz (2m) 1400 Saturday to 1400 Sunday (all mode)
432MHz (70cm) 1400 Saturday to 1400 Sunday (all mode)
1.3GHz (23cm) 1400 Saturday to 1400 Sunday (all mode)
(v) Note that 2m, 70cm or 23cm stations entered in the Low Power section may be operated for no more than 16 hours during the contest period. Each rest period must last at least 1 hour.
7.5 SWL section (S): as per general rules.
8. Inspections
All stations are subject to inspection by members of the VHF Contests Committee or nominated representatives. Should the inspector be unable to locate the site due to inadequate or incorrect information, the entry may be disallowed. In the event of a last minute site change it is the responsibility of the group to make suitable arrangements for the inspector to find the site. The inspector must be given immediate access to all parts of the site with the right to stay as long as desired, and the ability to return at any time during the contest.
9. Entries
(a) All entries must be postmarked no later than 31 July 2002.
(b) Entries must be addressed to VHF Contests Committee, PO Box 40, Newport PO32 6BF, or via e-mail: vhf.entry@rsgb.org.uk
(c) A Form 427 cover sheet or near facsimile is required for each band.
10. Awards.
The Surrey, Martlesham, Arthur Watts and G5BY Trophies will be awarded to the overall winners of the Open, Restricted, Low Power and Mix & Match sections respectively. The Tartan Trophy will be awarded to the leading resident Scottish entry in the Open section, the Cockenzie Quaich to the leading Scottish station in the Restricted Section and the Scottish Trophy to the leading Scottish entry in the Low power section. Certificates will be awarded to the winners and runners-up on all bands in each section, and to the leading stations in each country.

The Backpackers Series of Contests

Aims:
a. To promote the fun of contesting and to develop skills in contesting and operating.
b. To increase access to major contesting events.
c. To encourage low power portable operation with operators working fellow low power enthusiasts from a variety of hilltop sites within the UK.
d. To introduce the art of contesting to those who, for various reasons are unable / unwilling to form / join contest groups or those who simply do not have the time for 'full-blown' contests.
e. To promote innovation, home construction and an awareness of how equipment actually works, particularly in the development of receivers, transmitters, antennas, preamplifiers and feeder systems. It is in the spirit of the contests that the equipment should be capable of being carried to the operating site by the operator(s) or being transported / erected outside a car.
Times:
'Socially acceptable' *four* hour periods. Timing of the contests should allow participants time to (walk) reach their destination, set-up, operate, clear away and return home with a good margin of daylight. Times will be staggered to co-ordinate with existing contests. For dates and times, see the individual contest rules table.
Modes: All mode.
Sections:
a) 10W Single Operator Portable.
b) 10W Multi-Operator Portable.
c) 3W Single Operator Portable.
d) 3W Multi-Operator Portable.
The listed power is output from the transmitter. Participants will be expected to demonstrate how their power level was determined, particularly where the basic commercial equipment is rated at higher output power.
Restrictions:
1. All operators must be RSGB members.
2. The contest is open to all stations, but only portable stations may submit a contest entry.
3. Although any number of antennas or groups are permitted, no fixed or mobile towers, cranes or any other 'significant structure' (in excess of 2in outside diameter) is to be used as support. The highest feedpoint of the antenna(s) driven element will be limited to 30ft (9m). Any part of any antenna will be limited to 10m above ground level. On 144MHz a maximum of 20 half wave elements (or equivalent) in total is permitted for the antenna.
4. All equipment must be battery powered. If a mains rotator is envisaged, they must also be powered from a single source battery (with suitable converter circuitry) supply not exceeding 28V.
5. Petrol / Gas / Diesel generators for charging are not permitted. This includes a motor vehicle engine. If operating from a vehicle supply, the engine must be switched off for the duration of the contest. Wind and solar power generation and charging is permitted.
6. In addition, the General Rules apply.
Scoring: This is at 1 point per km (General Rule 5a) with a multiplier applied. The multiplier type differs between individual contests in order to match the exchange in the main contest running at the same time - check the individual rules table carefully.
Award: Each session should be treated as a separate contest. Please submit an entry after each session. Session winners and runners-up certificates will be awarded. In addition, a certificate will be awarded to the leading station running one watt or less into a single antenna for each session.

On 144 MHz, The Backpacker's Trophy will be awarded to the leading stations in either category, the best three placings out of a maximum of five sessions. Scores will be normalised as in general rule 5c. In the event of a tie, if appropriate, the remaining session will be taken into consideration. The 50MHz Backpacker's Trophy will be determined from the two sessions.

Recommendation: If stations intend to enter any of these Backpacker's contests, they are requested not to call stations in the major events which run alongside from home before the contest as they may, in effect, appear to be working the same station twice. This in fact is not the case as the Backpackers series should be seen as separate, independent events. However, the reality of the situation is such that stations operating in the major events will effectively register the second, portable contact as a 'dupe', thereby causing some confusion and delay. Should this happen, the second contact should be corrected and scored at a later time. This anomaly has arisen as a result of attempting to create more activity by co-ordinating two quite different contests simultaneously. Backpacker's participants, in particular, are requested to bear this in mind in order to help both contests to run as smoothly as possible.

The VHF Contests' Championship

1. The VHF Contests' Championship aims to provide an overall result for the year based on a representative selection of contests. The contests which count towards the championship are:
i. March 2m / 70cm (The overall 2 band normalised score)
ii. 432MHz Trophy
iii. May 144MHz
iv. 50MHz Trophy
v. 144MHz Low Power
vi. 432MHz Low Power
vii. 144MHz Trophy
viii. 70MHz Trophy
ix. 1.3GHz Trophy & 2.3GHz Trophy (combined score)
All stations entering 3 or more events are automatically included in the championship. Stations may opt out of the championship by contacting the VHFCC chairman but individual contest results cannot be excluded.
2. The championship is open to UK stations. Scores from overseas stations will be disregarded when calculating championship scores. There is a Single Operator Fixed Station section (SF), a low power section (LP) and a section for All Others (O).
3. The low power section is open to single operator fixed stations which enter any of the above contests using 25W or less output and a single antenna. If a station enters some contests with high power or extra antennas, and some with low power and a single antenna, only the low power, single antenna scores will count towards this award.
4. The overall score is calculated from the sum of the normalised scores for each event listed above. The normalised scores are calculated as in general rule 5c. Low power entrants will be normalised against the best low power score.
5. Stations entering the single operator fixed section of a contest may elect to submit their score towards an All Others championship score if they wish. In this case their score will be normalised against the leader of the All Others section. Please mark your cover sheet clearly with the name of your contest group / club if you wish to do this.
6. The John Pilags Memorial Trophy is awarded to the winner of section SF, and the Racal Radio Cup to the winner of section O, and the Low Power Championship Trophy to the winner o section LP.

VHF / UHF Listeners' Contests

1. Listeners' contests are open to all non-licensed members of the RSGB and foreign SWLs. Only one entrant may operate the receiving station. Every VHF contest is open to listeners' entries.
2. Logs must show in columns:
i. Date / time (UTC).
ii. Callsign of station heard.
iii. My report on his / her signals.
iv. Report and serial number sent by station heard.
v. Callsign of station being worked.
vi. IARU Locator given by station heard.
vii. QTH given by station heard (if appropriate).
vii. Points claimed.

On 144MHz, the callsign in column (v) may occur once in every five contacts logged. CQ and test calls do not count for points and should not be logged. If both sides of the QSO can be heard, both can be claimed for points.
3. The Hanson Trophy will be awarded to the entrant with the highest aggregate score in all SWL contests between March and September inclusive of each year. The aggregate score will be calculated in accordance with General Rule 5c.

RSGB VHF / UHF 2002 Contest Calendar

Every 1st Tuesday	2000-2230 LOCAL	144MHz Activity	SF, O	This contest is scored 1 pt/QSO with QTH locator multipliers (M2) Activity Contest (S8)
Every 2nd Tuesday	2000-2230 LOCAL	432MHz Activity	SF, O	This contest is scored 1 pt/km with QTH locator multipliers (M2) Activity Contest (S8)
Every 3rd Tuesday	2000-2230 LOCAL	1.3GHz / 2.3GHz Activity	SF, O	This contest is scored 1 pt/km with QTH locator multipliers (M2) Activity Contest (S8)
Every 4th Tuesday	2000-2230 LOCAL	50MHz Activity	SF, O	This contest is scored 1 pt/QSO with QTH locator multipliers (M2) Activity Contest (S8)
13 / 27 Jan 10 / 24 Feb 17 Mar	1000-1200	70MHz Cumulatives	SF,SO,M	Full QTH Information to be sent (S2). Cumulative contest rules apply (S5).
3 Feb	0900-1500	432MHz AFS	SF,SO,M	AFS rules apply (S3), 3 stations per team, only fixed stations count towards AFS tables.
2 / 3 Mar	1400-1400	March 144/432MHz	SF,SO,M 6S,6O	Low power stations running 25W or less at the transmitter will be specially identified in the results and the leading and second placed low power stations in each section will receive certificates.
14 Apr	0900-1300	1st 70MHz	SF,SO,M	Full QTH Information to be sent (S2)
21 Apr	0900-1300	50MHz	SF,SO,M	Postcode, Country & QTH Locator Multiplier (M3)
4 / 5 May	1400-1400	432MHz - 248GHz	SF,SO,M	
4 May	1400-2200	10GHz Trophy	O	Country & QTH Locator Multiplier (M4) This contest runs concurrently with the first 8 hours of the 432MHz - 24GHz event (S6). The 10GHz Trophy is awarded to the winner of this contest.
4 May	1400-2200	432MHz Trophy	SF,SO,M	This contest runs concurrently with the first 8 hours of the 432MHz - 24GHz event (S6).The 1951 Council Cup is awarded to the overall winner of this contest.
12 May	0900-1200	70MHz CW	SF,SO,M	Postcode & Country multiplier (M1). Full QTH Information to be sent (S2)
18 / 19 May	1400-1400	144MHz	SF, SP, M,6S,6O	Postcode/Country Multiplier (M1)
19 May	1100-1500	144MHz Backpackers #1	S, M	Postcode, Country & QTH Locator Multiplier (M3) See separate Backpackers rules.
1 / 2 Jun	1400-1400	50MHz Trophy	SF,SO,M 6S, 6O	Co-ordinated with IARU contest (S7). Country & QTH Locator Multiplier (M4). The Telford Trophy is awarded to the overall winner of this contest, and the Six Metre Cup to the highest scoring UK single operator entrant.
2 Jun	1100-1500	50MHz Backpackers #1	S, M	Country & QTH Locator Multiplier (M4) See separate Backpackers rules.
16 Jun	0900-1300	144MHz Backpackers #2	S, M	Country & QTH Locator Multiplier (M4) See separate Backpackers rules. This event is co-ordinated with the first 4 hours of the *PW* QRP contest.
6 / 7 Jul	1400-1400	VHF NFD		See separate VHF NFD rules.
7 Jul	1100-1500	144MHz Backpackers #3	S, M	Country & QTH Locator Multiplier (M4) See separate Backpackers rules.
14 Jul	1100-1500	50MHz Backpackers #2	S, M	Postcode, Country & QTH Locator Multiplier (M3) See separate Backpackers rules.
20 Jul	1400-2200	144MHz Low Power	SF,SO, M	25W maximum output from the transmitter. Postcode, Country & QTH locator multiplier (M3)
21 Jul	0800-1400	432MHz Low Power	SS,SO,M	25W maximum output from the transmitter. Postcode, Country & QTH locator multiplier (M3)
28 Jul	1100-1500	144MHz Backpackers #4	S, M	Postcode, Country & QTH Locator Multiplier (M3). See separate Backpackers rules.
11 Aug	0900-1500	70MHz Trophy	SF,SO,M	Postcode & country multipliers (M1)
7 / 8 Sep	1400-1400	144MHz Trophy	SF,SO,M	Co-ordinated with IARU contest (S7). The Thorogood Trophy is awarded to the winner of section S, and the Mitchell-Milling Trophy to the winner of section M of the contest.
8 Sep	1100-1500	144MHz Backpackers #5	S, M	Country & QTH Locator Multiplier (M4). See separate Backpackers rules.
22 Sep	0900-1300	2nd 70MHz	SF,SO,M	Full QTH Information to be sent (S2)
5 / 6 Oct	1400-1400	432MHz - 248GHz IARU	SF,SO,M	Co-ordinated with IARU contest (S7)
5 Oct	1400-2200	1.3 / 2.3GHz Trophies	SF,SO,M	These contests run concurrently with the first 8 hours of the IARU contest (S6, S7). The VHF Contests Committee cup is awarded to the winner of the 1.3GHz contest, and the G6ZR Memorial Trophy to the winner of the 2.3GHz event.
20 October	0900-1300	50MHz	SF,SO,M	Postcode, County and QTH locator multiplier (M3)
2 / 3 Nov	1400-1400	144MHz CW Marconi	SF,SO,M	The RSGB and European Marconi Memorial events run concurrently (S7)
3 Nov	0800-1400	6 hour 144MHz CW	S, M	This event runs in the last 6 hours of the European contest (S7)
1 Dec	0900-1700	144MHz AFS	SF,SO,M	AFS rules apply (S3), 5 stations per team, only fixed stations count towards AFS tables.
26 / 27 / 28 / 29 Dec	1400-1600	50/70/144/432MHz Christmas Cumulatives	SF, O	Cumulative contest rules apply (S5). Score at 1 pt / QSO (S1). QTH locator multipliers (M4) applies, and the same multipliers may be claimed for credit on each band on each day.

Key to sections: S - Single Operator; M - Multi Operator, SF - Single Operator Fixed, SO - Single Operator others, 6S - Six hour single operator fixed, 6O - Six hour others.

MICROWAVE CONTEST RULES 2002

THE RULES listed below are final and binding for 2002 (they are essentially unchanged from 2001). The following contests are scheduled for 2002:

- 10GHz Cumulatives (6 contest days with 4 to count for scoring purposes)
- Millimetre Bands Contest: 24GHz and up (4 separate events - not cumulative)
- All Bands Contests (3 separate events - not cumulative)

In addition there are five non-competitive activity days.

NB: The 10GHz Trophy is organised by the VHF Contest Committee, see the VHF listing for further information.

General Rules (applicable to all events)

ALL THE CONTESTS run from 0900 to 2100UTC on a Sunday.

The Contests are open to all comers (you do not have to be an RSGB member).

Contestants are expected to enter in the true spirit of the event and to adhere strictly to any equipment or power restrictions that apply to the particular contest.

Contacts are scored on the basis of 1 point per kilometre for full, two-way microwave contacts and at half points for one-way (ie crossband) contacts.

Contest exchanges on the microwave bands consist of RS(T) + serial number (starting at 001). In addition, the six (or eight) figure QTH Locator must be exchanged either via the microwave band or on the talkback frequency. Where the Locator is not known, a full six-figure National Grid Reference (UK only) must be provided. In multiband contests, the serial number will start at 001 for each band (ie a common sequence across the bands is NOT to be used).

Operators may enter as home station or portable (either mixed or separately).

Except where indicated, the VHFCC General Rules also apply.

Contestants are asked to make sure their entries have been scored correctly and that all relevant bonus points and multipliers have been claimed. The adjudicator will not do this for you!

All entries must be prefaced with an appropriate summary / cover sheet (either an RSGB VHF / UHF type or a personal one) showing: Title of contest, name(s) of operator(s), location(s) of station, section entered, callsign used, band score(s), multipliers or bonus points, final claimed score. The sheet should also detail equipment used, particularly the power output, antenna and receiver for both the microwave band and the talkback. This is very important if the logs are entered in one of the restricted sections. Where the contest has a 'rover' facility, it is essential that each location used is clearly stated.

Where Locator squares and / or countries are used as multipliers for bonus points, a summary list of the squares and countries worked must be attached to the contest cover (summary) sheet. This list should include the callsign and date of the first contact for each square / country.

Log entries may be submitted directly on paper, using standard RSGB VHF Contest sheets or self-prepared contest sheets, on a 3.5in diskette (IBM PC format), or via e-mail. For electronic entries, the format should be one of the following: ASCII text, Microsoft Excel, Microsoft Word, or the G4JNT contest software format. E-mail entries will be acknowledged to confirm receipt.

All logs should be sent to the Contest Adjudicator, G4KNZ, *within 16 days of the end of the contest.* Late entries will be acknowledged but not used in the final ranking. G4KNZ's address is: 17 Haywood, Bracknell, Berks RG12 7WG, UK; or e-mail: steve.davies@nokia.com

Appropriate Certificates will be awarded to overall contest winners and individual section leaders. Additional Certificates of Merit may be awarded at the discretion of the RSGB Microwave Committee. With these, as with the logs, the adjudicator's decision is final.

Note: There has been some discussion between the VHF Contests and Microwave Committees on the date and format of the **10GHz Trophy** contest. This is still ongoing, and further input is still required. Due to time constraints, however, in 2002 the event remains co-ordinated with the May '432MHz and up' contest (see page 59).

10GHz Cumulatives Rules

1. The general rules shown above apply.

2. Six events, approximately monthly, are available from May to October inclusive.

3. Any four of the six events may be used for final scoring purposes. Logs for *all* events entered should be submitted.

4. Contestants may submit logs for any one of the following sections:

- Open
- Restricted
- Wideband

There is no separate section for portable stations. However, the Restricted and Wideband sections offer much scope for portable work.

The sections have individual restrictions as follows:

Open: No power or antenna restrictions (other than those laid down in the amateur licence) on either 10GHz or on the talkback band.

Restricted: 10GHz transmit output not to exceed 1.0 watt to the antenna. No power restrictions on the talkback band. No antenna restrictions on either band.

Wideband: 100 milliwatts maximum transmit power to the antenna. Modulation bandwidth to exceed 50kHz. This section includes wideband modes such as FM (voice), MCW, ATV and data.

For both the Restricted and Wideband sections contestants are free to use the 'Rover' concept of portable operation. This allows the location of the station to be moved as many times as desired and by a minimum of 16 linear kilometres, at any time during the contest period. From each new location, stations worked from any of the previous locations during the event may be worked again, both stations involved in the contact gaining points. The serial number, however, will not revert to 001 each time a move is made but will carry on consecutively from the previous contact.

The 'Rover' concept is to encourage lightweight, low power portable activity. Details of the equipment used for this type of operation should be included on the log summary / cover sheet. The 'Rover' concept is *not* applicable to the Open section.

5. Scoring - as detailed in the General Rules (ie 1 point per km). In addition the following BONUS points will also apply:

LOCATOR SQUARE MULTIPLIER: (applicable to all sections):

The final, total kilometre score for the best four cumulative sessions will be multiplied by the total number of different Locator Squares ('grids'), for example IO92, IO81, etc) contacted over the entire cumulative (ie up to the six events maximum). To claim this bonus it is therefore essential to submit logs for all events entered, not just the best four. Please include a separate check list of the squares worked with your cover sheet.

WIDEBAND BONUS: (applicable to all contacts in which a wideband mode forms at least one half of the microwave contact):

- Two-way wideband contacts multiply the distance points by 2
- Wideband to non-wideband contacts multiply the distance points by 1.5
- One-way contacts score half the points a full contact would have made, including the multiplier.

The wideband bonus applies to both sides of the contact. Therefore a narrowband operator working a widebander would also multiply the score for that contact by 1.5.

NOTE: Wideband stations do *not* multiply the Locator Square Bonus as well!

It is appreciated that operators who use computer contest log software will not yet have the facility to include automatically the wideband bonus in their logs. For the moment, the bonus will have to be added manually to the final score. All bonus carrying contacts should be clearly marked as such.

6. Logs should be sent to the adjudicator G4KNZ posted no later than Tuesday 22 October 2002.

Millimetre Bands Contests Rules

1. The rules are identical for each of the millimetre bands: 24GHz, 47GHz, 76GHz and higher.

2. These band contests are 'stand alone' events and will be scored as such. However, as an incentive to millimetre wave activity, an award will also be made to the operator with the highest combined 24GHz scores, a further one to the operator with the highest combined 47GHz scores and likewise to the operator with the highest combined 76GHz scores, and above, over the four sessions. These awards will be in addition to the band leaders in each event.

3. The General Rules apply (see above).

4. Sections: One section only (Open) on each band. There will be *four* contests for each band held over the summer season.

5. Scoring: Each contact will be scored on a 1 point per km basis. Crossband and one-way contacts score half points. The 'Rover' concept is applicable to both bands (see 10GHz Cumulative rules above) as it has been in previous years for the 24GHz contests. There are no bonus points for wideband contacts, unlike the 10GHz contests.

6. Logs should be sent to the adjudicator, G4KNZ, posted no later than 16 days after the contest.

All Band Microwave Contests Rules

1. The General Rules (see above) apply to this contest.

2. Three All Bands Contests will be held, each a 'stand alone' event.

3. Each band will be scored separately and band leaders will receive certificates. The overall contest winner will be the operator with the highest normalised scores for the whole band range 1.3 to 47GHz.

4. The raw claimed scores will be 'normalised' to a maximum score of 1000 and then ranked.

5. There are no bonus points. The normalisation of scores takes care of differences in activity and 'difficulty' from band to band.

6. 'Rover' contacts may be made on 24 and 47GHz only (see 10GHz Contest Rules for definition of this).

7. There are no separate sections for low power, wideband, etc.

8. Logs should therefore only include the exchange of information outlined in the General Rules.

9. One-way and crossband contacts score half points.

10. If the 10GHz logs are to be also entered in the 10GHz Cumulative Contest they will need to be rescored for that contest in the light of the Cumulative Contest rules (see earlier).

11. The completed logs and summary / cover sheets should be sent to the adjudicator, G4KNZ, posted no later than 16 days after the contest.

MICROWAVE CONTEST CALENDAR 2002

Dates, 2002	Time UTC	Contest name	Sections
27 Jan	0900 - 2000	All-band Activity Day	Non competitive
24 Feb	0900 - 2000	All-band Activity Day	Non competitive
24 Mar	0900 - 2000	All-band Activity Day	Non competitive
21 Apr	0900 - 2000	Millimetre Bands	Open
5 May	0900 - 2000	All Band Microwave	Open
26 May	0900 - 2000	1st 10GHz Cumulative	Open, Restricted, WB
9 Jun	0900 - 2000	Millimetre Bands	Open
23 Jun	0900 - 2000	2nd 10GHz Cumulative	Open, Restricted, WB
28 Jul	0900 - 2000	3rd 10GHz Cumulative	Open, Restricted, WB
11 Aug	0900 - 2000	All Band Microwave	Open
25 Aug	0900 - 2000	4th 10GHz Cumulative	Open, Restricted, WB
8 Sep	0900 - 2000	Millimetre Bands	Open
22 Sep	0900 - 2000	5th 10GHz Cumulative	Open, Restricted, WB
6 Oct	0900 - 2000	All Band Microwave	Open
20 Oct	0900 - 2000	6th 10GHz Cumulative	Open, Restricted, WB
27 Oct	0900 - 2000	Millimetre Bands	Open
24 Nov	0900 - 2000	All-band Activity Day	Non competitive
29 Dec	0900 - 2000	All-band Activity Day	Non competitive

HATELY ANTENNA TECHNOLOGY GM3HAT

4, Redwood Crescent, Milton of Leys, INVERNESS IV2 6HB,
Scotland U.K. Tel/fax: 01463 772169

FULL RANGE OF CROSSED FIELD ANTENNAS

There are two main groups of the very small and inconspicuous aerials made for Amateur Use presently. As noted at the foot, these arrangements will have to change in the near future.

MULTIBAND LOOPS and DELAY-LINE RADIATORS
The loop is the CFL 1 which is only 67 centimetres in diameter and will radiate on any frequency in the HF spectrum from 1.8 to 30MHz. This is sold with either a 9 metre feeder or a 15 metre feeder. Prices:- CFL 1 inclusive of VAT and Postage £308 or £320.
The Delay-Lines are EMDR 1 suitable for the roof of a bungalow, being 8.5 metres in length Price £275 inclusive. And EMR 2 suitable for the roof of a two or three storey home, being 15.5 metres in length Price £300 inclusive.

MONOBAND LOOPS
These are approxiamately 1 percent of a wavelength in diameter, and can be held on a 2 inch diameter pole or tube at a chimney, or at the corner of a balcony of an apartment. They are pre-tuned and operate over about 3% of the frequency band, and can be pushed somewhat by means of an ATU.

Prices are	CFL 1.9 for the 160 metres band	£132	CFL 3.6 for the 80 metres band	£99
	CFL 7 for the 40 metres band	£ 83	CFL 14 for the 20 metres band	£66
	CFL 18 for the 17 metres band	£ 66	CFL 21 for the 15 metres band	£60
	CFL 28/27 for the 10/11 metres band	£ 55	CFL 50 for the 6 metres band	£50

CHANGING ARRANGEMENTS FOR THE CFA
Due to illness, the arrangements for the marketing of the Amateur Band Crossed Field Antennas will be changing in the New Year. It is the intention of the proprietor to transfer the Patents and Know-how to new ownership, so the potential for these designs can be continued to satisfy the market. If you are interested, please write or telephone.
Signed Maurice C Hately, M Sc FIEE (GM3HAT)

G4ZPY PADDLE KEYS INTERNATIONAL

41 MILL DAM LANE, BURSCOUGH, ORMSKIRK L40 7TG
email: g4zpy@lineone.net http://website.lineone.net/~g4zpy/index.htm
Tel/Fax: (0)1704 894299

Visit our Web Site
http://website.lineone.net/~g4zpy/index.htm

Send S.A.S.E. 2 IRC or $2 US for hard copy Brochure
Hand Crafted Straight and Paddle Keys Made to Order

WHY NOT ADVERTISE IN THE BUSINESS CARD SECTION ONLY £300 FOR 12 INSERTIONS PHONE JAN: 0870 904 7377

SPECIAL OFFER

RACAL H.F. Communications Receiver RA1792

* Fully synthesized solid state receiver as used by government departments
* 150kHz - 30MHz
* Modes LSB, USB, AM, CW & FM
* Digital AGC scan facility
* 100 channel memory

Price: £550.00
(incl. VAT @ 17.5%)
P&P £15.00 (mainland U.K.)
Callers welcome strictly by appointment

Racal RA1772 HF Communications Receiver 15kHz to 30MHz Complete with operator/ user manual
Price: £352.50

Raven Research 8 way HF Multicoupler
Price: £352.50

Watkins & Johnson 8615D VHF/UHF Receiver
Price: £881.25

Racal RA1795 VHF/UHF Receiver 20MHz to 1GHz
Price: £940.00

Bird 43 Watt Meter
Price: £117.50

Bird 8201 RF Load 500W DC-2GHz
Price: £235.00

Bird 4314 Peak Power Meter
Price: £176.25

A selection of Bird Elements in stock
Prices from: £35.25

Sealed Lead Acid Rechargeable Battery Sonnenschein - Dryfit A500 12V 6.5Ah - Brand New & Boxed
List Price: £44.64 each
Our Price: £11.75 each

TELFORD ELECTRONICS

Old Officers Mess, Hoo Farm, Humbers Lane,
Horton, Telford, Shropshire TF6 6DJ, UK
Phone: (0044) 01952 605451 / 670178
- Fax: (0044) 01952 677978

E-mail: telfordelectronics@btinternet.com
Web site: http://www.telford-electronics.com

WE NOW ACCEPT ALL MAJOR CREDIT CARDS. OVERSEAS ORDERS WELCOME. PLEASE SEND LARGE SAE FOR DETAILS

VISA SWITCH MasterCard

JANUARY SALE!

Saturday 19th January

Used radios and accessories, Grundig portables, aerials, loads of components, cables, leads, connectors, valves, old books and QSLs, discontinued kits, and an even greater pile of honest to goodness JUNK!

The door opens at 10am at:

7 Kings Road
Haslemere, Surrey
(opposite railway station)

G3TUX

01428 661501 www.G3TUX.com

J.BIRKETT

25, The Strait, Lincoln LN2 1JF
(Partners: J.H Birkett, J.L. Birkett) Tel: (01522) 520767

AIRSPACED VARIABLE CAPACITORS With Slow Motion Drive 365+190pf @ £3.50, 350+400pf @ £3.50, 325+380pf with 3/16" Spindle @£3.00, 4 for £10.00.
AIRLIGHT 62 HEADPHONES With Boom Mike, Need attention, Two pairs for £15 Post Paid.
LEMCO SILVER MICA CAPACITORS 750v.w. 82pf, 120pf, 220pf, 330pf All @ 20p each.
2GHz NPN GOLD PLATED STRIPLINE TRANSISTORS @ 8 for £1.00.
SMITHS MICRO WIRE ENDED GOLD PLATED RELAY SPCO 12 volt @ £1.00.
VALVES REMOVED FROM SERVICEABLE EQUIPMENT OA2 @ £1, OB2 @ £1, 3B28 @ £4, 5R4GWB @ £4, 829B @ £4, 836 @ £4, 5670 @ £1, 5687 @ £1, 6080 @ £1, 8020 @ £4, CV 4010 @ 50p, CV4024 @ £1, 6293 (6146) @ £8.
DUBILIER BLOCK PAPER CAPACITOR 40uf 150 v.w. AT 70ºC Size 78 x 45 x 63mm @ £1.50.
EX NEW EQUIPMENT WW2 VALVES CV1052 (EL32) @ £1, CV1053 (EF39) @ £1.50, VR91 (EF50) @ £1.50, 1626 (12J5) @ £1, 6K7G @ £1, CV1501 (TT11) @ £1.50, 6SK7GT @ £1.50.
NEWVISTOR Type 8627 @ £1.50 each.
GOOD QUALITY FLEXIBLE COUPLER 1/4" Spindle @ £1.20 each.
OUT OF SPEC TUNING VARACTOR DIODES 100pf T018 Can, 300pf T05 Can Both @ 6 for £1.00.
TEXAS FET TIS14 @ 6 for £1.00, Unijunction like TIS43 @ 30p, 2N2646 @ 75p.
100 ASSORTED LOW CAPACITANCE VARI-CAP DIODES for £1.00.
WIRE ENDED P.I.N. DIODES VHF @ 5 for 75p, UHF @ 5 for 80p.
SMALL WIRE ENDED ELECTROLYTICS 1uf 500v.w. @ 35p, 2uf 350v.w. @ 30p, 4.7uf 450v.w. @ 35p, 10uf 350v.w. @ 75p, 33uf 450v.w. @ £1.20, 5 for £5.

Access, Switch, Barclay Card and American Express Cards accepted.
P&P £2 under £10, Over Free, Unless otherwise stated.

JAYCEE ELECTRONICS LTD

20 Woodside Way, Glenrothes, Fife KY7 5DF

Tel: 01592 756962

NEW OPENING HOURS:
Tues - Fri 9am to 5pm, Sat 9am to 4pm.
Closed Sunday & Monday

AUTHORISED DEALER
KENWOOD - ICOM - YAESU - ALINCO
Web Site: www.jayceecoms.com
E-mail: Jayceecoms@aol.com

WIRELESS AND ELECTRONIC SURPLUS

FLUKE HANDHELD DIGITAL MULTIMETER MODEL 8024B Cancelled export order. Brand new and boxed but with original purchasing organisations small identifying mark on case. With test leads and handbook **£47.50. P&P £6.50.**

A DIGITAL HANDHELD LCR METER Measuring inductance, capacitance, resistance. LCD display. Range 2MH to 20H inductance. 2000pf to 200uf capacitance. 200ohm to 20megohm resistance. Brand new with test leads and manual. **£44.00. P&P £3.50.**

VALVE BASES Octal B7G B9A. **All 5 for £2.50.**

HIGH VOLTAGE CAPACITORS 0.1 1000v.wkg.mixed dielectric axial. .05 600v.wkg axial. 0.68 800v.wkg myler dipped axial. **All 5 for £3.00.**

VINTAGE CARBON ONE WATT RESISTORS Useful values. **Pack of 50 £3.00.**

1/4 WATT METAL/CARBON FILM RESISTORS 250 for £1.00.

500K LOG POTS WITH DPDT SWITCH 2 for £4.50

1 MEG LOG POTS WITH DPDT SWITCH 2 for £4.50.

TUNING CAPS 150pf. Upright mounting air spaced suitable for low pow TX. **£3.50 each. 4 for £10.00.**

EX REUTERS DIGITAL SATELLITE SET TOP RECEIVERS Suitable for weather maps and low res pictures. 950-1460 mc/s/ needs dish and LNB. With manual. **Used in good condition. £22.50. Brand new and boxed £30.Carr. £9.50.**

IEC 3 PIN Mains inlet chassis mounting plug. **£4 for £1.00.**

OC42 VINTAGE TRANSISTORS Military spec. Individually wrapped. **10 for £2.50.**

GOVT. SURPLUS MANUALS FACSIMILE COPIES. Large format. **R1155 receiver.** 47 pages. **£12.50. Racal RA17.** 46 pages. **62 set. sender/receiver.** 70 pages. £**14.50. Transmitter T1154.** 50 pages. **£14.75.**

BOOKS

MULLARD VALVE DATA AND EQUIV. HANDBOOK Over 300 pages. **£16.50. P&P £2.25.**

THE ULTRA MAGIC DEALS By B.Smith. About ultra code breaking operations. 276 pages. **£11.50. P&P £2.75.**

CLYDESDALE GOVT. SURPLUS WIRELESS CATALOGUE FACSIMILE REPRINT 179 pages. Photos. **£11.25.**

P&P £2 under £10.00. Over Free unless otherwise stated.

Dept (RC) CHEVET SUPPLIES LTD
157 Dickson Road, BLACKPOOL FY1 2EU
Tel: (01253) 751858. Fax: (01253) 302979.
E-mail: chevet@globalnet.co.uk TELEPHONE ORDERS ACCEPTED.

COLOMOR (ELECTRONICS) LTD

Unit 5, Huffwood Trading Estate
Brookers Road, Billingshurst, West Sussex, RH14 9RZ
Tel: 01 403 786 559 Fax: 01 403 786 560
Email: sales@colomor.demon.co.uk

SEE OUR WEB PAGE AT: **http://www.colomor.demon.co.uk**

VALVES

3/500Z CHINESE £128 EA.
6LQ6 / 6JE6C RCA & PHILIPS USA £31 EA.
6HF5 USA £29.30 EA.
6JS6C USA £37 EA.
6KD6 USA £37 EA.
12BY7A USA £10.50 EA.
12BY7A COLOMOR BRAND £7.90 EA.
572B £37 EA.
811A CHINESE £9.45 EA.
811A SVETLANA £17.35 EA.
6164 B USA £19.65 EA.
6146W PENTA USA MATCHED PAIRS £42 PER PAIR
EL519 £11.75 EA.
QQVO6-40A £17.65 EA.
QQVO7-50 £23.50 EA.
4CX250B BASES, AEI, USED £11.75 EA.
UX4 CERAMIC 811A BASES £2.40 EA.
UX5 CERAMIC 807 BASE £2.50 EA.

ALSO AVAILABLE

RACAL RA17 I.F. CRYSTAL FILTER £18
LARKSPUT NO.8 RF TUNER £23
100Pf SILVER PLATED BALL BEARING TUNING CAPACITOR £5 EA
100Pf TWIN GANG SILVER PLATED BALL BEARING TUNING CAPACITOR £9.50 EA
500PF + 500PF TWIN GANG VARIABLE CAPACITOR £5 EA
KW 2000 AC POWER SUPPLY, NEW & BOXED £96
19 SET REMOTE CONTROL NO.1 £36
RACAL DANA FREQUENCY COUNTER 9915, 560 MHz £87
FLUKE HIGH VOLTAGE PROBE, 40KV, MODEL 80K-40,NEW IN CASE, £32.50
ROLLER COASTER GLASS FIBRE RACAL 41 TURNS 3 5/8" DIAMETER, 9 1/2" COIL, 3/8 X 1/16 SILVER PLATED SRTIP, USED £47 EA
MORSE KEY ARMY BAKELITE 8 AMP No.2 £9.40 EA
GERMAN JUNKER BENCH MORSE KEY £53 EA

CARRIAGE **£3 PER UK** ORDER **VAT INCLUDED** IN ALL PRICES
OVER 6000 TYPES OF ELECTRONIC TUBES IN STOCK INCLUDING MANY RARE TYPES
PLEASE TELEPHONE FOR AN UP TO DATE QUOTATION

W.H Westlake
ELECTRONICS

CABLES & CONNECTORS

WESTFLEX 103, low loss Airspaced, 50 ohm	£1/m
RG213U (eq U R67), M ii spc, 50ohm	75p/m
URM43,5mm dia, 50 ohm, single conductor	35p/m
RG58CU, 5mm dia, 50 ohm stranded conductor	35p/m
RG1 74U, 2.3mm, 50 ohm Mini Coax	40p/m
RG11U,10.3mm, 75 ohm low loss Coax	£1/m
URM70,6mm, 75 ohm Tx grade Coax	35p/m
BT2002, 5mm, 75 ohm double screened Coax	35p/m
RG62AU, 6mm dia, 95 ohm Coax	50p/m
TV, 75 ohm, low loss Downlead	30p/m
MINI 8 low loss 7mm dia, 50 ohm coax	50p/m
POLYESTER (Dicrom type) 4mm GUY ROPE	30p/m
RG214U	£2/m
RG223U	£1/m
75 ohm Twin balanced Feeder, Light/Med 400w PEP	30p/m
300 ohm Ribbon standard light duty	30p/m
300 ohm Ribbon, HD USA Slotted type	65p/m
3 Core Mains/Rotator Cable, 5 amp	30p/m
6 Core Rotator Cable	50p/m
8 Core Rotator Cable	70p/m
Aerial Wire, light duty PVC coated	8p/m
Aerial Wire, medium duty PVC coated	10p/m
Aerial Wire, heavy duty PVC coated	25p/m
16swg HD copper	25p/m
16 swg stranded copper	25p/m
Single core screened, 2.3mm dia	20p/m
Two core screened, 5mm	30p/m
6 core screened, 5mm	40p/m
Red/Black DC power cable, 8 amp	30p/m
Red/Black DC power cable, 15 amp	45p/m
Red/Black DC power cable, 20 amp	£1 p/m

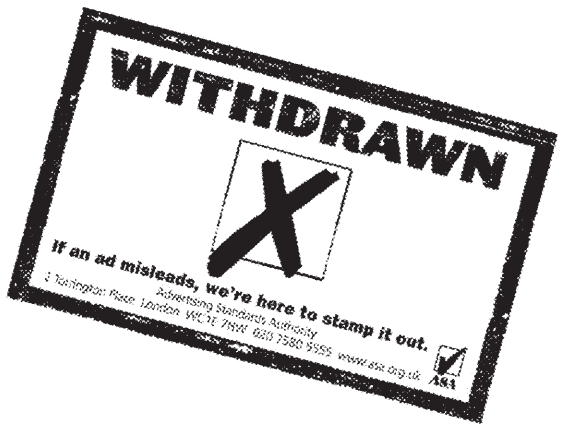
Postage on cables - up to 20m £3. over 20m £5.

CONNECTORS ETC

Self Amalgamating Tape	£4.50	Dipole centre boxes	£3.50
4" Dog Bone insulators	75p	Polyprop Egg insulators	60p
Mil Spec P.Sleeve N plugs 10.3mm	£3.00	Mil Spec P. Sleeve BNC plugs 5mm	£1.70
Mil Spec P.Sleeve N plugs 5mm	£3.00	Greenpar N line skt, 10.3mm	£3.00
Greenpar N Panel sq skt	£2.50	Mil Spec P.Sleeve PL259 plugs 5mm	£3.00
SMA Adaptors to BNC skt/N/skt/SO239	£3.00	Mil Spec P.Sleeve PL259 plugs 10.3mm	£3.00
SPECIAL N PLUG for W103	£5.80	Special PL959 for W103	£1.70
ADAPTORS BNC/SO239	£1.80	PL259/BNC skt	£1.80
N plug/SO239	£2.50	N PLUG/BNC skt	£3.00
BNC plug/N skt	£3.00	PL259 plug/N skt	£3.00

Postage on above connectors etc £1 per order. Lots more on our lists 30p stamp for copy. Cheque/PO/Stamps with order, regretfully we do not take cards

W. H. Westlake, Clawton, Holsworthy, Devon EX22 6QN
Phone 01409 253758 Fax 01409 253458



NEW CHANNEL MASTER ROTATOR

- 69 channel programmable memory controller
- Access via digital compass location
- 113Kg vertical carrying load
- 3-core cable operation
- 2" main mast – 1 1/2" stub mast
- Infra-red remote control

£169.95
Delivery £10.00

Alignment Bearing
Allows greater/higher head loads.
Fitted above rotor. **£18.95**
Postage £2.95

COMPREHENSIVE CATALOGUE AVAILABLE BY RETURN @ £1.50

AERIAL TECHNIQUES
59 Watcombe Rd, Southbourne, Bournemouth, Dorset BH6 3LX
Tel: 01202 423555
Fax: 01202 425055
E-mail: atech@dircon.co.uk
www.aerial-techniques.com

in practice

IAN WHITE, G3SEK

52, Abingdon Road, Drayton, Abingdon, OX14 4HP
Web site: www.ifwtech.com/g3sek
E-mail: g3sek@ifwtech.com

INDUCTIVE SPIKES

WHAT IS THE correct way to protect a switch or transistor against voltage spikes from inductive loads such as relays?

COMPONENTS WITH WINDINGS such as relays, chokes and DC motors store energy in the magnetic field while current is passing through them. When you switch off the current, the magnetic field collapses and the stored energy has to go somewhere - and if you're not careful it will go into burning the switch contacts or blowing the switching transistor! When the field collapses, it creates a back-EMF, opposite in sign to the voltage drop in normal operation. So when you switch off an inductive load in the negative line (**Fig 1**) the back-EMF drives the switch contact positive, adding on to the positive supply voltage.

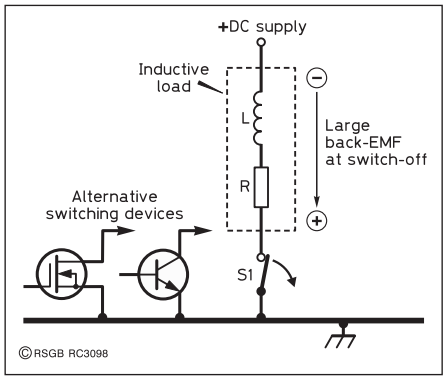


Fig 1: Switching-off an inductive load creates a large back-EMF (adding on to the positive DC supply rail) unless the spike is suppressed. The voltage spike can easily destroy mechanical or semiconductor switches.

If you take no precautions, the voltage spike can be enormous and very damaging. Even a small inductance can produce a spike of a kilovolt or more. This will find any current path it can, in order to release the stored magnetic energy and let the field collapse. It will punch through any semiconductor device, or will arc across mechanical switch contacts as they begin to open. Arcing of contacts will evaporate any conductive plating, and produce pits and irregularities which will promote even more arcing next time, so the contacts are soon destroyed. You might imagine that switching-on would not be a problem, because the current starts at zero and the inductance limits the rate of rise. But with mechanical switches you still get arcing at switch-on because of contact bounce, which means that there are multiple 'breaks' as well as 'makes' until the moving contact comes to rest. Fortunately there are several solutions.

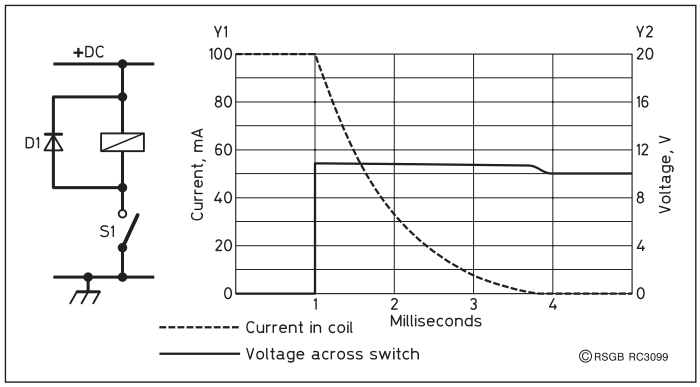


Fig 2: Diode suppressor prevents voltage spike but slows the decay of the current and magnetic field.

The basis of all these solutions is to provide an alternative current path at switch-off so that the magnetic field can collapse harmlessly. The most common method is to connect a diode across the coil as shown in **Fig 2**. The diode is reverse-biased in normal operation, so it has no effect, but when the switch is opened it becomes forward-biased by the back-EMF and provides a current path which collapses the field. The stored energy is dissipated in the internal resistances of the coil and the diode. The current diverted back through the protection diode is initially the same as the DC current through the coil before you switched off, so this is a job for a small power diode such as the 1N4001 series. Peak inverse voltage is usually irrelevant, because it is never greater than the DC supply voltage, so just about any small power diode will do. Don't use small diodes such as the 1N914 / 4148 because they won't handle the current in every situation.

However, the simple diode isn't always the best solution, especially if you're switching-off something like a relay and you want it to release quickly. While the magnetic field is collapsing, it is still maintaining current through the coil, and will continue to hold the relay armature closed until it has reduced to a significantly lower value than the current that was needed to close the relay in the first place. The rate of energy dissipation into the internal resistance, R, of the coil is given by V^2 / R, where V is the reverse voltage that you're allowing the back-EMF to develop across the coil. If V is limited to the forward voltage drop of a silicon diode, about 0.6V, it may take several milliseconds before the current has reduced to the point where the relay armature can release. To speed up the collapse of the magnetic field, you need to let the reverse voltage rise - but not high enough to do damage. A good solution is to connect a Zener diode in series with the silicon diode as shown in **Fig 3**. The conventional diode is still necessary in order to prevent forward conduction of the Zener while the switch is closed. When the switch is opened, the Zener allows the reverse voltage to rise to 15.6V which collapses the field much more quickly. However, there is a trade-off between speed and the voltage you allow to develop. With a +10V DC supply rail and say a 15V Zener, the voltage across the switch (mechanical or semiconductor) rises to (10 + 15.6)V = 25.6V, or actually a little more because Zener diodes aren't perfect, so the switch or transistor has to be rated accordingly. Some of the stored magnetic energy is now dissipated in the Zener diode, but a 1W wire-ended type will easily handle this brief surge.

While we're here, let's look at some other methods to control inductive surges. Another common trick is to connect a resistor in series with the diode (**Fig 4**). This is quite effective but, once again, there is a trade-off between voltage and speed. If the resistor is equal to the internal resistance of the coil, the peak voltage will be approximately twice the supply voltage. However, the resistor does not maintain the same voltage drop as the current decreases, so the process will always be slower than with a Zener selected to give the same peak voltage.

Another popular circuit is the R-C 'snubber'

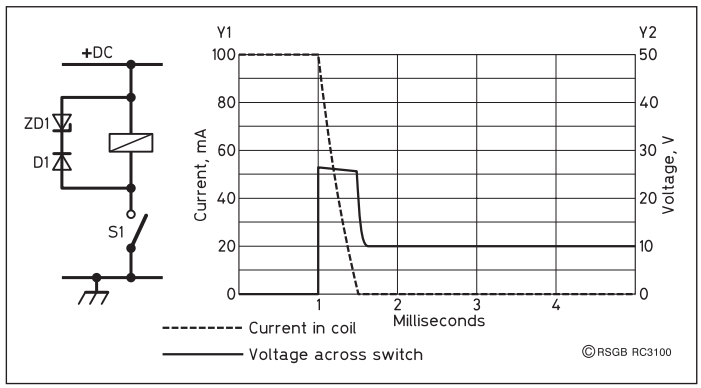


Fig 3: Zener diode allows faster decay. Peak voltage is higher, but controlled.

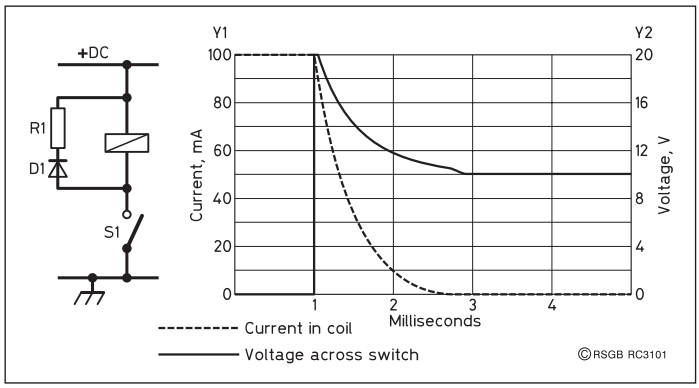


Fig 4: Resistor allows faster decay, but not so fast as the Zener diode for the same peak voltage.

but this operates in a rather different way. As you see from **Fig 5** the current decay is a damped oscillation, as the stored energy sloshes back and forth between the coil and the capacitor, dissipating in the circuit resistances as it goes. The voltage across the switch is quite substantial - with the typical values assumed here, it peaks at almost 100V from a 10V DC supply rail. Also the voltage across the switch swings negative during the early cycles of the oscillation. This is usually fine for a mechanical switch but it may produce some unexpected effects in semiconductor switches. (Some types of semiconductors will clamp the negative voltage swing close to zero, as the voltage across an internal diode reverses, but you need to know what you're doing to exploit this effect.) R-C snubbers can be quite effective in reducing voltage swings and suppressing contact arcs, but you have to accept that you are allowing the voltage to swing quite wildly in the first cycle or two. You also need to understand that the performance of packaged snubbers such as the popular 100Ω -100nF combination will depend on the type of load you are switching - no combination of values can be a cure-all. It follows from the discussion of R-C snubbers that a simple capacitor across the switch or the coil will be even less effective, because the only damping resistance is in the coil itself.

The current and voltage curves for Figs 2 - 5 were generated using the freely downloadable *SIMetrix Intro* software from the web site of Newbury Technology Ltd. This is a very good Windows implementation of the industry-standard circuit modelling programme, *SPICE*. For every set of curves I assumed the same component values of 10V DC supply rail, and a 100mH inductance with 100Ω internal resistance. This gives a starting current of 100mA in every case. The graphs then show how rapidly the current decays to zero for each circuit, and the associated voltage swing. The time scale is the same for all the graphs, but notice that the voltage scales vary. The voltage always finishes at +10V from the open-circuited supply rail... although the R-C snubber takes a particularly long time to get there.

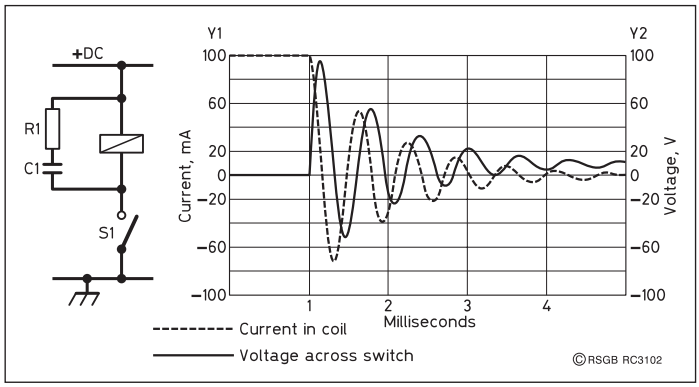


Fig 5: R-C snubber allows wild voltage and current swings (including below zero) and requires careful design to be effective.

BEST VHF POLARISATION?

WHY IS HORIZONTAL the standard polarisation for SSB/CW on VHF? I have heard that horizontal is better than vertical - so why is vertical used for FM and packet?

THE ANSWER lies in the different uses that we make of these modes. VHF SSB and CW are generally 'DX' modes - they can of course be used for local contacts, but their useful range generally extends far beyond the horizon. DXing is best suited to fixed stations, where you can settle down and concentrate fully on the task of operating. And when you are operating from a home station, or have gone to a portable site to operate for several hours, you also have the opportunity to use beam antennas - almost invariably Yagis - to extend your range further. For this style of operation, horizontal polarisation has significant advantages.

VHF signals propagate beyond the horizon by a variety of means, but often the path involves some element of diffraction over the horizon [1]. Normally, radio waves propagate in straight lines but, when a wavefront strikes the horizon, diffraction is what allows it to bend 'around the corner' and continue to follow the earth's curvature instead of going straight on into space. There is some loss involved, but a horizontally-polarised wave suffers slightly less loss than a vertically-polarised wave. This gives horizontal polarisation a slight advantage. As the wave continues, it probably uses many other propagation mechanisms, but almost all of these preserve the polarisation intact. Therefore, a second horizontally-polarised antenna at the far end of the path will receive the maximum possible signal.

There are a few exceptions, but not enough to make a difference to the standard use of horizontal polarisation for VHF/UHF DX. In particular, backscatter modes such as auroral reflection may scramble the polarisation, and so too may ionospheric propagation modes on 50MHz. The same applies to space communication, because the plane of polarisation is rotated as the VHF/UHF waves pass through the ionosphere. Circular polarisation is often used for space communication because it is unaffected by rotation, but it is not favoured for terrestrial communication because it involves a 3dB loss in communicating with *any* linear polarisation.

FM is used in a very different way, generally for local communication and often between mobile and even hand-portable stations. These stations are often in very poor locations with lots of nearby obstructions, so the plane of polarisation is likely to be altered by local reflections. In addition, beam antennas are often undesirable because you want to work in all directions. These features make vertical polarisation the best choice because the vast majority of FM stations can use simple omni-directional whip antennas.

The most important thing of all is to *use the same polarisation as all the other people you want to work*. You'll lose a lot by going against the standard. Theoretically, the loss between perfect plane polarisations exactly at right-angles is *infinite*! In practice, you can expect losses of at least 20dB - and that makes all the difference between a station that works and one that doesn't.

REFERENCE

1. For a detailed explanation of propagation modes, see *The VHF/UHF DX Book*, Chapter 2. Available from the RSGB Shop.

www.

Newbury Technology Ltd
www.newburytech.co.uk

The 'In Practice' website [www.ifwtech.com/g3sek] contains links to all pages mentioned in this column. ♦

If you have new questions, or any comments to add to this month's column, I'd be very pleased to hear from you by mail or e-mail. Please remember that I can only answer questions through this column, so they need to be on topics of general interest.

TRIDENT® antennas

Trident Mono Band Yagis

Trident Antennas are a collaboration between **Mike Devereux G3SED** and **John Barker G0UPB**; Mike has 37 years experience as a world class DXer and DXpeditioner whilst John has the reputation as a highly skilled antenna designer and manufacturer.

At **Trident Antennas** we intend to only manufacture the best designed and constructed products. All Mono Band Yagis are computer optimised using the very latest industry software and then exhaustively tested to ensure they meet our high standards.

We decided that no compromise would be made when it comes to components, materials and construction methods. We have invested heavily in new tooling and extrusion dies to produce components that enable us to manufacture extremely strong, yet lightweight antennas.

Wherever possible, we use riveted construction. Only high grade extruded aluminium is used throughout, no welded seams. All rivets used on our antennas are made of the same high quality aluminium to avoid any of the problems associated with dissimilar metals, and to ensure good RF conductivity. Other fixings are of stainless steel.

No more do you have to carry out endless measurements trying to get the elements in the correct position on the boom, and horizontal with each other at the same time. All Trident Mono Band Yagis have their element brackets securely riveted to the boom in the correct position using jigs at the factory to ensure perfect element alignment, thus optimum performance

Element sections are also riveted, they are extremely strong and light. They are much better than self-tapping screws, or hose clamps, which invariably corrode, or cause poor RF conductivity, they can even fall out completely.

Rivets elements on the HF antennas use up to five telescoping tube sections, double walled where they cross the boom to achieve high wind survivability. Most of these sections are riveted at the factory, just leaving one or two sections for the customer to rivet. These sections are index drilled for easy alignment and are clearly marked *(rivets are supplied)*.

Trident VHF Verticals

Constructed of fibreglass, stainless steel and heavily chromed brass. Supplied complete with mounting kit for masts up to 55mm diameter.

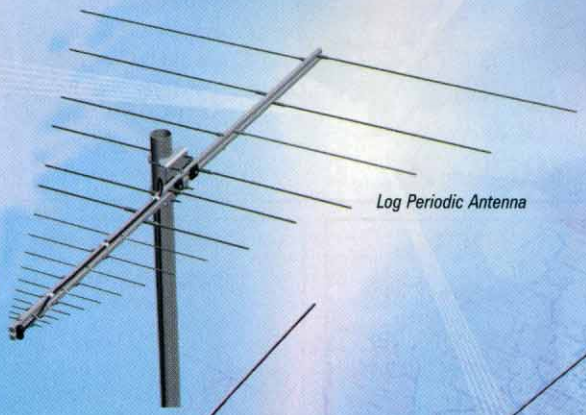
MODEL	DESCRIPTION	GAIN dBi		PRICE
TA2M258	2mtr 5/8 wave colinear	8.5dBi	3.2m long	69.95
V6M	6 mtr 1/2 wave *(50-51MHz)*	2.2dB	'N' type	59.95
V4M	4 mtr 1/2 wave *(70-71MHz)*	2.2dB	'N' type	59.95

Trident Vertical

Log Periodic Antennas

Constructed using stainless steel and aluminium. These antennas may be mounted horizontally or vertically. They provide wideband coverage for both receive and transmit with powers up to 500 Watts.

MODEL	DESCRIPTION	LONGEST EL	BOOM	GAIN dBi	PRICE
LP1300	105-1300MHz	1.46mtr	1.50mtr	9.0dB	129.00
LP270	144-440MHz	1.06mtr	1.44mtr	9.5dB	110.00



Log Periodic Antenna

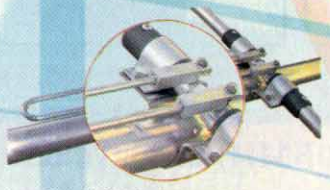
Trident Monoband Yagi

Trident Mono Band Yagis

MODEL	DESCRIPTION	GAIN dBi	BOOM	F/B dB	POWER	PRICE
2 Meters						
TA2M5L	5 element 144 MHz Beam	12.31	2.5M	19.09	600W	85.00
TA2M7L	7 Element 144 MHz Beam	14.19	4.4M	20.40	600W	99.00
4 Metres						
TA4M3L	3 element 70 MHz Beam	8.70	1.48M	18.50	1.5KW	85.00
TA4M4L	4 element 70 MHz Beam	11.02	3.25M	18.50	1.5KW	105.00
6 Metres						
TA6M3L	3 element 50 MHz Beam	8.21	1.9M	27.50	1.5KW	85.95
TA6M5L	5 element 50 MHz Beam	10.31	3.6M	26.50	3.0KW	119.95
TA6M5L DX	5 element 50 MHz Long Yagi	11.75	6.0M	21.60	3.0KW	165.95
TA6M7L DX	7 element 50 MHz Long Yagi	13.31	9.6M	23.40	3.0KW	199.95
10 Meters						
TA10M2L	2 element 28MHz Beam	*SPECS TBA*				
TA10M3L	3 element 28MHz Beam	*SPECS TBA*				
TA10M4L	4 element 28MHz Beam	*SPECS TBA*				
TA10M5L	5 element 28MHz Beam	*SPECS TBA*				
12 Meters						
TA12M2L	2 element 24MHz Beam	*SPECS TBA*				
TA12M3L	3 element 24MHz Beam	*SPECS TBA*				
TA12M4L	4 element 24MHz Beam	*SPECS TBA*				
15 Meters						
TA15M2L	2 element 21MHz Beam	*SPECS TBA*				
TA15M3L	3 element 21MHz Beam	*SPECS TBA*				
TA15M4L	4 element 21MHz Beam	*SPECS TBA*				
17 Meters						
TA17M2L	2 element 18MHz Beam	*SPECS TBA*				
TA17M3L	3 element 18MHz Beam	*SPECS TBA*				
TA17M4L	4 element 18MHz Beam	*SPECS TBA*				
20 Meters						
TA20M2L	2 element 14MHz Beam	*SPECS TBA*				
TA20M3L	3 element 14MHz Beam	*SPECS TBA*				

Detail of element joint

Detail of Yagi feed



Detail of hairpin match

SPOKEN GLOBE

The new benchmark for high performance antennas

Created in Britain with pride

For more information visit our website at:
www.tridentantennas.co.uk
or call the **NEVADA ORDER HOTLINE**
023 9231 3090

NEVADA® ***Official World Distributors of TRIDENT ANTENNAS***

Unit 1 • Fitzherbert Spur • Farlington • Portsmouth • PO6 1TT • website: nevada.co.uk • Tel: 023 9231 3090 • Fax: 023 9231 3091

WE HAVE MOVED TO BIGGER AND BETTER PREMISES

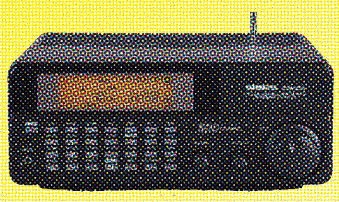
SRP TRADING

1175 BRISTOL ROAD SOUTH
NORTHFIELD
BIRMINGHAM B31 2SL

** TRADE AND EXPORT ENQUIRIES WELCOME **

WE HAVE MOVED TO BIGGER AND BETTER PREMISES

225 BASE SCANNER



500 Channel Programmable Scanner.

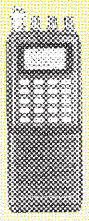
CONTINUOUS COVERAGE
Range: 25-1300MHz
'NO GAPS'
Modes AM FM WFM
Switchable.

FREE!!
SILVER DIAMOND
Four Band Discone
Transmit
6m,2m,70cm & 23cm 200W
Receive
25 to 1300MHz

Worth £39.95

~~£299.00~~ **£249.95 + p&p**

YUPITERU MVT 7100



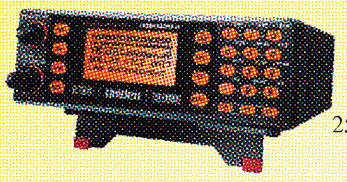
100kHz to 1650MHz
(With No Gaps)
AM / FM / WFM / USB / LSB

Full Civil, Military and Oceanic Aircraft Coverage
And Lots More

£229.95 + p&p

UNIDEN UBC 780XLT BASE SCANNER

NEW!!



500 Channel
Programmable Scanner
Continuous Coverage
25 to 1300MHz 'with no gaps'
AM, FM & WFM
With Trunk Tracking
(software now in stock)

£349.95 + p&p

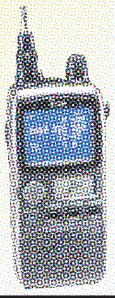
UK SCANNING DIRECTORY

Eighth Edition

This radio frequency list covers 26MHz to 1.8GHz with thousands of frequencies

£19.75 + p&p

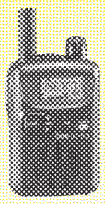
ICOM IC-R3



UNBEATABLE PRICE?

£PHONE

ICOM ICR-2



AM / FM / WFM
Switchable
HF / VHF / UHF
Scanning Receiver

Frequency Coverage
0.5MHz to 1300MHz

£PHONE

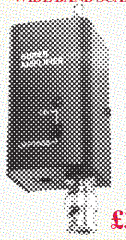
MAYCOM AR-108

108 - 136.975MHz (AM).
136 - 180MHz (FM)
Steps 5, 10, 12.5, 15, 25kHz & 1MHz
99 memories
3.4 x 2.3 x 1.0 inches
Full Civil
Aircraft Coverage

£69.95 + p&p

GRE PRE-AMP

WIDE BAND SCANNING PRE-AMPLIFIER



100MHz to 1GHz
with adjustable
amplification level
up to to 20dB

£39.95 + £3 p&p

YUPITERU MVT 7300

The MVT 7300 scanning receiver incorporates the new 8.33kHz frequency steps
used by
Civil Aircraft
Frequency coverage
531kHz to 1320MHz

SPECIAL PRICE!!
~~£289.95~~ **£259.95** + p&p

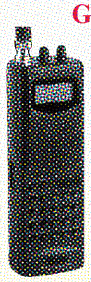
MAGNUM DELTAFORCE

10MTR Transceiver
28.000 - 29.699 MHz
30 Watts PEP
AM / FM / USB / LSB / CW

Microprocessor Controlled, Variable RF output, 5 Digit LCD Frequency Display, S/RF and SWR Meter, Scanning Microphone, Off set (Split) Frequencies ETC

£225.95 + p&p

GRE PSR 275



50 Channel Programmable Portable Scanner

Frequency Coverage
68 - 88MHz
108 - 137MHz
137 - 174MHz
380 - 512MHz

£95.00 + p&p

SANGEAN ATS 505

FM-STEREO / MW / LW / SW / PLL SYNTHESIZED RECEIVER

Professional digital multi-band world receiver
AM / FM /S SB
Continuous coverage
150-29999 kHz

£99.95 + p&p

MAYCOM FR-100

AIR AND 4 MORE BANDS
5 BANDS
COMMUNICATION
420 - 470MHz NEM
136 - 174 MHz NEM
108 - 136MHz AM AIR
88 - 108MHz WEM
66 - 88MHz NEM/WEM
'WITH NEW AIRBAND
8.3 STEPS

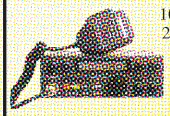
£99.95 + p&p

RECHARGEABLE N1-MH BATTERIES

"No memory effect"
Over twice the capacity of Nicads.

AA cell 1500mAh @ 1.2V each	£2.00
AAA cell 550mAh @ 12V each	£2.40
C cell 2200mAh @ 1.2V each	£3.99
D cell 2200mAh @ 1.2V each	£3.99
PP3 cell 150mAh @ 1.2V each	£3.99

PRESIDENT LINCOLN

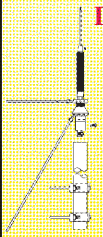


10MTR Transceiver
28.000 - 29.7 MHz
am / fm / ssb / cw
Microprocessor Controlled
Amateur Radio

Switchable RF gain, RF / MODULATION / SWR Meter, Variable RF Output, Variable (Clarifier) RIT, 10kHz, 1kHz and 100Hz Steps, Frequency Lock, Frequency Change on Microphone, ETC.

£199.95 + p&p

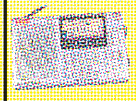
SKYSCAN SILVER DIAMOND



Four Band Discone
Transmit: 6m, 2m, 70cm & 23cm 200W
Receive: 25 to 1300MHz
Quality stainless steel construction.
Connection N type
Complete with mounting tube and brackets

~~£49.95~~ **£39.95 + p&p**

SANGEAN ATS-909



QUALITY
PORTABLE
SHORTWAVE
RECEIVER

153kHz to 30MHz (AM / SSB)
87.5MHz to 108MHz (FM)
Features (RDS) Radio Data System; 307 memory channels; World clock; 3 timers; LCD display; Signal strength meter etc.

£139.95 + p&p

OPENING TIMES: MON-SAT 9.30am to 5.15 pm. We are Kenwood, Yaesu, Icom & Alinco dealers.
Trade customers are you getting the best deal? Phone & find out!

VISA

Call Mary (M0BMH) or Dave on

SWITCH

0121 475 9898, 0121 475 6969 - FAX: 0121 475 3355 - email: srp.trading@virgin.com

MEMBERS ONLY OFFERS

A series of unique historical radio kits all based on actual examples from the 1920s. Three of these are crystal sets, whose power is drawn from the radio signal itself, and one is a single valve receiver which uses everyday batteries (not supplied). Aerial and earth wires are included. No special tools or prior knowledge are needed for assembly.

"OLD TOM" CRYSTAL RADIO

This kit looks very similar to the original, but uses a glossy printed image wrapped around a plastic tube to provide the "Old Tom" look. The tuning coil is wound around the top hat. The radio is tuned by moving a metal cylinder up and down within the body.

£ 21.24

MATCHBOX CRYSTAL RADIO

The original was probably the smallest commercial radio until Sinclair introduced a transistor version in the 1960s. The kit contains all the parts to build a radio in a matchbox. The components are connected together in a terminal block for which a special screwdriver is provided.

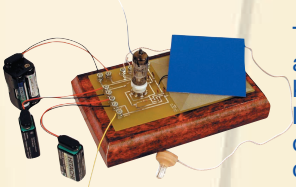
ONLY £9.34

POSTCARD CRYSTAL RADIO

This kit comprises a *ready to use* 2mm thick radio board manufactured using printed circuit technology. It is tuned by moving a metal plate over its flat coil.

ONLY £14.44

ONE VALVE RADIO



The kit needs only four (AA) batteries and one or two (PP3). Although the kit uses a later valve, it is laid out and looks like one of the originals. The components, including an authentic ceramic valve base, are pre-soldered onto the main board.

ONLY £14.44

DON'T MISS YOUR LAST CHANCE TO BUY 2001 COINS

MARCONI £2 COIN

Uncirculated sterling silver with outer ring plated with 22 carat gold Limited Edition.

£26.50

Also available:
Uncirculated £2 coin
£6.95
22 carat Gold £2 coin
£285.00

EXECUTIVE SPINNING DESK TOY

Featuring a 2001 uncirculated £2 coin commemorating the achievements of Guglielmo Marconi.

£27.85

KEYRING

With spinning £2 Marconi coin which sits in a silver plated frame.

£13.90

RSGB FASHION DESIGN TIES

SINGLE RSGB DIAMOND DESIGN

Durable Polyester

Cream and blue design (order code: TIEC)

Dark Blue with red diamond (order code: TIEB)

£7.99

RSGB ENGRAVED CALL BADGES

Available in Jet Black Enamel for all members. Also available in the following finishes for long serving members:

5 Years+ Green
25 Years+ Red
50 Years+ Gold
10 Years+ Blue
40 Years+ White

Deluxe

£4.50

Standard

£4.00

RSGB POLO SHIRTS

- Hardwearing Poly/Cotton
- Blue or Red
- With White RSGB Logo
- Available in L, XL, XXL

£9.99

RSGB BASEBALL CAP

Quality baseball caps in heavy duty brushed cotton with embroidered RSGB Logo.

£4.99

RSGB LUXURY TIE

100% Woven silk

Burgundy, navy and gold woven pattern

With gold RSGB diamond (order code: TIER)

£12.99

www.rsgb.org/shop - Tel: 0870 904 7373

WATERS & STANTON, WHERE ELSE

ICOM WOULD YOU BUY IT FROM!

IC-756PRO II

NEW

- DIGITAL RF SPEECH COMPRESSOR
- SHARP & SOFT FILTER SHAPES ARE SELECTABLE EACH FOR SSB & CW
- 50 Hz PASSBAND WIDTH FOR PSK31 MODE
- 5-INCH TFT COLOUR LCD

NEW

FREE 3 YEARS WARRANTY

* Receive: USB, LSB, CW, RTTY, AM, FM
* 300kHz - 60MHz,
* Transmit: (UK ham bands)
* 160 - 6m, 100-5W (all modes accept AM)
(40-5W AM carrier)
* 32-bit, floating point, IF DSP
* Digital twin Pass Band Tuning
* 5in TFT colour LCD
* Memory channels 101
* Real-time spectrum scope
* Dual watch
* Digital IF filter - 51 selectable bandwidths

* Digital voice memory/CW memory keyer contents
* Low distortion, RF type, speech compressor
* Built-in RTTY demodulator/dual peak APF
* Auto ATU built-in (1.8-54MHz)
* Antenna connectors SO-239
* Power requirement: 13.8V DC
* Current consumption: Tx max 23A
* Current consumption: Rx max 2.7A
* Audio: 2.0W (8 Ohms)
* Size: 340 x 111 x 285mm
* Weight: 9.6kg

MOST ADVANCED DSP EVER CREATED

WATERS & STANTON PLC.

22 MAIN RD, HOCKLEY, ESSEX, SS5 4QS

TEL: 01702 206835. E-MAIL: sales@wsplc.com.

ALSO AVAILABLE AT MATLOCK: 01629 582380 AND GLENROTHES: 01592 756962

MasterCard VISA

Technical Topics

PAT HAWKER, G3VA
37 Dovercourt Road, London SE22 8SS

MORE ON THE HRO

THE OCTOBER 'TT' item "When Receivers Were Large and Heavy" (pp62-64) included a number of notes arising from the article by Mike Lemin, G4UUB, describing his notable effort in completely rebuilding an HRO receiver (see *Radio Bygones* No 72, August/September 2001, pp4-12). As a result of copious correspondence with G4UUB, checking the 1934/35 volumes of *QST* at the Science Museum Library, rechecking the late Bill Orr's article in *CQ,* May 1975, and *Communications Receivers, 1932-1981*, by Raymond Moore (3rd edition), it becomes possible to delve a little further into the origins of the HRO. I can also correct some of my October remarks (even though I still think it more likely that HOR stood for a 'Hell Of a Rush' than 'Ham-Operated Receiver').

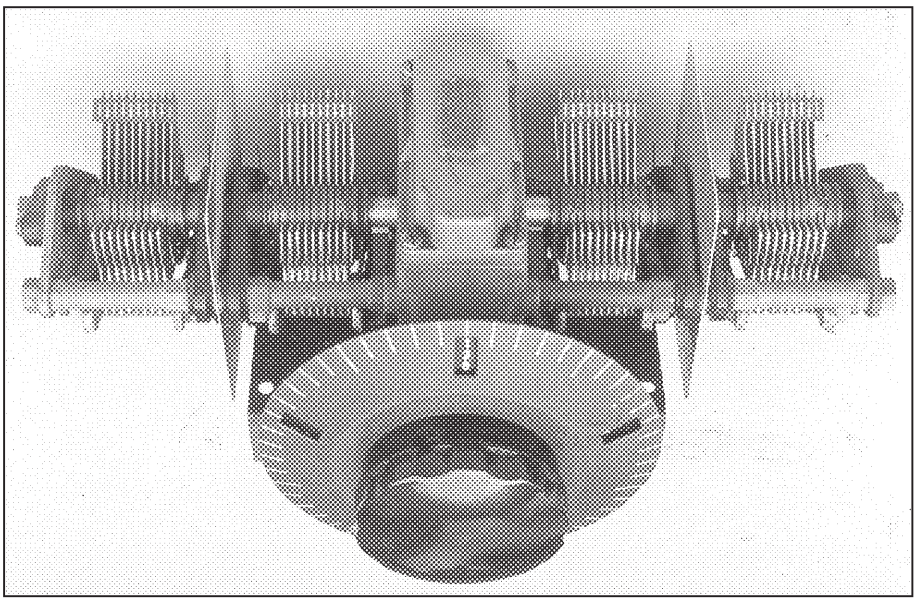
First, it is now clear that W6SAI's article (although clearly written after consultation with James Millen, National's chief designer in the 1930s and the man primarily responsible for the excellent design of the HRO), confused the issue in linking the HRO directly with the Aviation Ground Station (AGS) receivers developed in conjunction with Herbert Hoover Jr for the American airlines. Ray Moore shows that in 1933 and 1934, National marketed at least nine versions or variations of the AGS receiver including the AGS-X with a crystal filter at a list price of $295. Although this appears to have been an excellent high-performance receiver, it had neither the famous PW-dial of the HRO nor the ganged plug-in coil assemblies. It seems likely, however, that it was experience with this receiver that encouraged James Millen and National to press ahead with the design of a receiver aimed at the wealthy minority of American amateurs while continuing with their relatively low-cost FB series costing from about $30 to $45.

The first oblique reference to the HRO (name not given) was in James Millen's editorial-style advertisement in *QST,* August 1934: "One of the most frequently-asked questions… is about our plans for a new receiver. It seems that many of the fellows have heard of the new model we have been trying to work on quietly during the past six months and have the opinion that it is being designed to replace the FB7A and FXBX. This is not so. The new receiver is intended to fill the existing gap between the FB7 and the AGS in both price and performance. It is intended as a strictly amateur receiver incorporating as far as possible all those features which we believe to be desirable for amateur band operation. It will have a two-stage pre-selector, use a radically new type SFL gang condenser with precision pre-loaded worm drive tuning; a new dial; a separate built-in vacuum-tube voltmeter for direct reading of carrier intensities; a Lamb-type Single Signal crystal filter with full front-of-panel control and calibrated plug-in coils ganged for easy handling… Obviously this means it has been necessary to design this new receiver without the restrictions as to cost which were given so much consideration in the case of the FB series… Present indications are that that the list price will be slightly over two hundred dollars and that production sets will be available in September."

Advertising of the 'HRO' began in the October, 1934 issue of *QST*, but it seems that National were still experiencing production problems. The advertisement illustrated and described a laboratory prototype model. Deliveries of the production model, which differed in several respects from the prototype, did not begin until about March 1935. Price was also a problem. The October 1934 advert priced the HRO 'without tubes, speaker or power supply' at $233. This implied that a complete receiver, including the external matching speaker cabinet and external PSU and with the necessary set of valves would have set an amateur back by roughly the cost of the professional AGS-X. There would not have been much change from $300, way beyond the usual top price for amateur receivers.

At the then $/£ exchange rate of roughly 4.7, this represented some £65 in the USA, roughly two- to three-months' wages of a British skilled technician! My suggestion in the October 'TT' that the retail price of an HRO was only about £35 was clearly wrong by a factor of about two. My error may have arisen from confusion with the HRO Junior introduced in 1936, when initial sales of the costly HRO must have been proving disappointing. It is also clear that the HRO Senior was not a new model, but was used to distinguish the original HRO from the simpler HRO Junior. National also introduced such models as the high-performance NC101X amateur-bands-only receiver as a lower-cost alternative to the HRO. It is also now clear that the 1935 production HRO included the amateur-bands bandspread facility that I suggested was introduced only with the HRO Senior.

My guess is that total pre-war sales of the HRO to amateurs were probably at most a few hundred, although W6SAI pointed out that they picked up somewhat after the success of the Howard Hughes round-the-world flight; G4UUB dates this at July 1938. The plane carried HRO receivers operated by two American radio amateurs. But the real success of the HRO followed the recommendation, by [Sir] Albert Mumford of the GPO, of its use for the British Y-services, the RSS, and the SCUs. Several wartime versions were also produced for the US Navy. Altogether some 10,000 sets were produced of this truly classic receiver – a set designed for amateurs but chosen by the professionals to make it one of the outstanding receivers of WW2 and, indeed, of all time!



HRO-type capacitors and drive as used in a German wartime copy of the HRO made by Körting. It is possible that this may have been a genuine PW drive made by National, since it is known that Germany was able to import components from the USA (and at first from the UK) through Portugal during the first years of the European war. (Photo: PA0SE)

TREE ANTENNAS – CHOP 'EM DOWN!

ANTENNAS ARBOREAL ('TT' August 2001) reported the efforts of G3ENI to investigate the claims made in *Electronic Design* (20 December 1973) that the US Army Electronics Command Centre had successfully developed a 'Hemac' antenna-coupling system that enabled transmitters to be coupled into trees, metal posts, etc. The results at G3ENI with a cypress tree proved most disappointing, with only minimal radiation attributable to the tree.

The item stirred the memories of several readers, though did nothing to substantiate the American claims that were apparently based on trials in dense, damp jungles in Panama – notably forbidding to conventional whip antennas.

Stan Brown, G4LU, notes that Moorecroft, in his *Principles of Radio Communication* published in 1921, describes, as a tree antenna, a wire nailed to a tree but opines that the wire was the radiator, experiments seeming to show that the tree was merely acting as a support for the upper end of the wire. G4LU also provided a cutting from a 1923 *Popular Wireless,* reporting an experiment in which a powerful jet of salt water, thrown high into the air, was used as a transmitting antenna, communicating over a distance of 80 miles. What price the Geneva fountain jet that reaches some 50m high – although it might be necessary to add salt to the water!

Dave Buddery, G3OEP, has in the past experimented with the use of apple trees as antennas, but found the results disappointing. He wonders if there might be more promise in trying to use tree roots as a large earthing system. I would rate this a doubtful prospect!

Gus Taylor, G8PG, recalls reading the *ED* article and, in the mid-1960s, began playing with tree antennas for both amateur and professional reasons – not very successfully! He eventually closed down the project, but notes that the subject keeps cropping up every so often in the amateur literature. He feels that "it cannot be made to work with trees, but the use of galvanised gutters and pipes as antennas is another matter. It is much easier to couple the transmitter to these using the method described some years ago by a Swedish amateur in *SPRAT*. He moved into a ground-floor flat that had a 60ft galvanised downspout outside the window. He wound 20 turns of wire round it to provide capacitance coupling. Then took the far end of the wire to the rig, and worked the world with 5 watts." G8PG adds that drainpipes were used occasionally in WWII by the Norwegian MILORG (Home Army Resistance) for their secret radios.

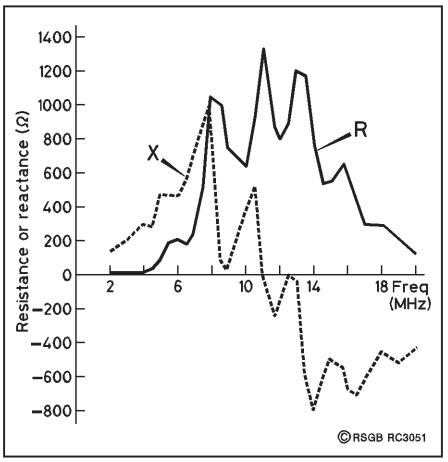


Fig 1: Tree-antenna resistance and reactance for an oak tree with a Hemac tuner / coupler 2.3m above moist ground in a forest, as given in *Electronics Design*, 20 December 1973.

The most detailed put-down of the original claims came in the form of a bulky package from Dr Brian Austin, G0GSF / ZS6BKW containing a 90-page report of an investigation carried out at the University of Witwatersrand, Johannesburg, by A H Bodenstein. This covers a very detailed investigation into whether trees could usefully be used as antennas, based on the published reports of the work by Dr Kurt Ikrath of the US Army Electronics Command. Apart from the *ED* report, the US Army work, including the trials in Panama, was described more fully in *IEEE Trans on Ant & Prop* (January 1974, pp137-140) by Kurt Ikrath *et al,* containing references to a *US Army Electronics R&D Tech Report ECOM-3512* of November 1971. It is clear that Dr Ikrath was concerned primarily with dense jungles which he likened to "a maze of aperture-coupled screen rooms" with screens formed of vertical tree and fern trunks with a horizontal canopy of variable thickness. **Fig 1** shows one of the apparently-encouraging illustrations in the *ED* report.

The extensive work in 1983 by A H Bodenstein and P A Twomey in South Africa led to the following conclusions: "Does a tree work as an antenna? Ikrath reported that a tree outperforms a whip antenna, but his experiments were all conducted in situations where conventional antennas are detrimentally loaded, such as in a forest. The experiments described in this report were conducted in an 'ideal' environment where the performance of conventional antennas is not affected. It was found that the tree does not perform as well under these conditions as under the conditions in which Ikrath was conducting his experiments. Ikrath did not report any tests done on the toroid [coupling coil to the tree] alone so that no conclusions may be drawn as to what role the tree played in the launching of RF energy in his experiments. Our results of tests conducted on the toroid by itself indicate that it plays a major part in the radiation of signals…"

While the report suggests that there were still some unanswered questions, there is little doubt that the South African work shows, as did G3ENI, that trees are *not* in normal environments to be recommended as antennas and, even in dense jungles, probably play only a minimal role. The large, flexible toroid of the 'Hemac' coupling unit must have formed a reasonably effective multi-turn loop antenna. What the Fort Monmouth work *did* confirm is that vertical whip antennas are virtually useless in forests and jungles!

SENSITIVE RF EMC SNIFFER

A SENSITIVE RF sniffer and interference tester, capable of detecting the presence of RF fields down to 1mW (at a distance of 1m) over the range of about 100kHz to 500MHz has many uses for the radio amateur and also for such applications as testing car alarm keys, and similar low-power RF generators as well as for such arcane purposes as checking for RF 'bugs'.

Such a device was described some years ago by Alan J Jones of Newcastle in *Electronics World + Wireless World* (March 1994, p213). It comprises an untuned broad-band input circuit, a germanium point-contact diode (OA90 or equivalent) as rectifier, an operational-amplifier with switched gain adjustment and a 50 or 100μA output meter: **Fig 2**.

Alan Jones stresses that "Germanium

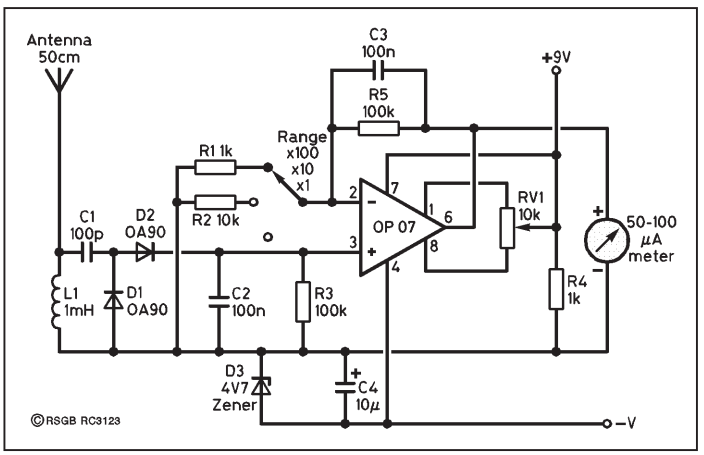


Fig 2: Wide-band RF detector unit indicates RF in the 100kHz - 500MHz range at low levels. (Source: *Electronics World*)

diodes conduct at lower forward voltages than silicon types and frequency response is higher with a point-contact device". He adds: "A 1mH inductor on the input reduces LF sensitivity, as does the feedback capacitor. Meter zeroing is not essential, but it does allow the nulling of background signals. The meter may need a series resistance to adjust sensitivity; the reading is not linear and simply indicates the presence of RF and its relative level."

THE NEW EC 'e'-MARK FOR MOBILES

CHRIS HOARE, G4AJA, draws attention to the European Commission (EC) Directive 95/54/EC that apparently is due to come into force in October this year, with the aim of improving safety by minimising the risk of interference to essential electronic systems in vehicles.

According to an announcement in the RA document *PBR News* (www.radio.gov.uk/topics/pbr/pbrnews/pbrnws15.htm) of 10 October 2001, no new car built after October 2002 can be fitted with a radio transceiver, or any other equipment that produces radio emissions, unless that equipment has an 'e'-mark. To quote: "This presents a number of problems, not least if a mobile radio user acquires a new car, it will not be acceptable to transfer the old radio to the new vehicle, unless it has the 'e'-mark, a fact that could cause considerable hardship to some businesses".

No specific mention is made of amateur radio equipment, but the RA notes that it has only recently become clear that the Directive, issued in October 1995, will have very wide implications. It points out that the 'e'-mark should not be confused with the 'CE'-mark which is for general equipment, and requires conformity to a number of different standards: "Since 1995 it has been acceptable to certify automotive equipment with the 'CE'-mark, but this will not be allowed after October 2002".

The Directive states that all four-wheel vehicles (other than tractors and mobile machinery) with a design speed greater than 25kph will need to meet suitable EMC standards, and this includes electronic/electrical sub-assemblies fitted to the vehicles.

The RA pointed out that as it is currently unaware of any manufacturers who are making 'e'-marked equipment, the radio industry and its users should be aware that 95/54/EC exists, and that implementation day is not far distant. Radios are not the only devices affected by this Directive, as it applies to all electronic/electrical equipment. The RA and other government bodies are working on guidance and clarification for industry.

It has been noted a number of times in 'TT' and elsewhere that the increasing use of microprocessor-controlled electronic systems in vehicles can give rise to serious safety problems. Transmitters can cause interference to braking and speed control systems etc. 'TT' in February 2001 referred to the EMC problems posed by vehicle electronics and noted: "For the amateur, a particular concern must be the effect of his mobile transceiver on the electronic systems in his own or passing vehicles. Some of the up-market manufacturers now include advice in their users' manuals, stressing the importance of achieving a good SWR on the feeder cables to external antennas."

One must be puzzled whether it will be possible for virtually *any* typical amateur mobile HF or even VHF transceiver to be given an 'e'-mark since the potential EMC problems clearly depend on the actual installation of the complete system and the inbuilt electromagnetic compatibility of the vehicle electronics. Perhaps the answer is that, if you are thinking of buying a new car, better make sure it has been manufactured before next October!

PBR News adds for the benefit of business users: "For further views and discussion on this subject please contact Steve Hoye on 020 7211 0516 or e-mail: steve.hoye@ra.gsi.gov.uk".

THE GROUNDED-MARCONI ANTENNA

MALCOLM HEALEY, G3TNO, in commenting on the use of NVIS on 7MHz during a past NFD also provides information on his successful use on all bands from 1.8MHz to 50MHz of a grounded-Marconi antenna as first suggested to him by G4LRP. On 1.8MHz the antenna provides low-angle vertical radiation and G3TNO has used it to work some 60+ countries including Canada, the USA and Russian Siberia etc from two locations over the past five years.

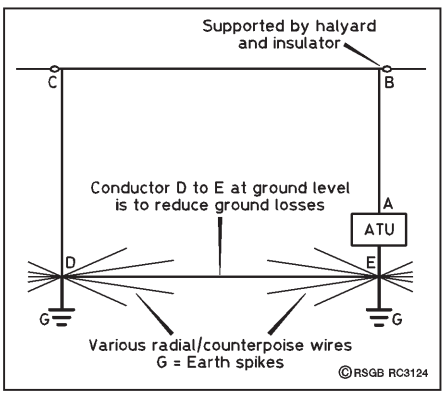


Fig 3: Basic form of the grounded-Marconi antenna that can be used on all bands from 1.8 to 50MHz with the use of a suitable ATU. Effective low-angle performance, particularly on 1.8MHz and 3.5MHz, depends on the use of as extensive a counterpoise and radial system beneath the antenna as circumstances permit. The more radials and/or counterpoise wires the better the DX performance. While dimensions and shape are largely non-critical (see text for those used by G3TNO), the objective is to ensure maximum RF current flowing at the base of the vertical section C-D.

During NFD in the days of A- and B-stations and 10-watt limits, the Crawley group found inter-G and European contacts on 7MHz were proving sticky going when using a dipole about 40ft high. A reflector wire was hurriedly erected below the dipole to form an upward-facing crude Yagi antenna. This greatly improved results, not only on the British and European stations but, surprisingly, also produced plenty of contacts with North America. G3TNO was so impressed that he subsequently used a similar arrangement with his home 3.5MHz dipole, up 40ft and located along the northern boundary of his garden. He placed the reflector along the top of the southern boundary wooden fence, resulting in an array at an angle of about 60° to the horizon. This provided excellent results during an AFS contest on British stations located to the north.

Later, using a heavy-duty relay to place an open circuit about two-thirds from one end, he could switch the reflector wire in or out of use and found that on stations to the north the reflector produced a 1.5 to 2 S-point advantage.

Following a change of location, G3TNO lost this facility. A friend, G4LRP, suggested he should try using a grounded-Marconi which he recommended as a good antenna for working DX. This has now been used for some five years at two locations and has more than lived up to expectations.

The grounded-Marconi antenna has an established history. Various versions and adaptations have appeared several times in 'TT' (eg as described by F5LCI in December 1991 and August 1996) and as the 'Skymiser' by J Ellerton, G3NCN (*RadCom,* June 1999 p24, with a valuable suggested improvement by PA0SE, *RadCom* August 1999 p37). G3TNO has traced a description of the grounded-Marconi in a book published in 1923, and its use for LF and MF probably stretches back to the early years of the last century.

He stresses that the antenna is capable of producing low-angle radiation on all the MF and HF bands from a suburban garden of fairly modest dimensions. The basic principle could be used similarly on 136kHz. The advantage of this approach is that maximum RF current flows at the base of the vertical conductor at the far end, although it will also have a horizontally-polarized component.

The main problem to be overcome is the earth loss. This can be significantly reduced by the use of radials rather than relying on the earth stakes and by connecting the two earth-points together. With dimensions fashioned with 1.8MHz in mind it may prove difficult to feed the antenna on some HF bands without the use of an efficient flexible ATU capable of matching a wide range of low, medium and high reactive impedance. [Remember that a T or pi-network coupler with suitable components of *correct values* is capable of matching any length of wire to the 50Ω output socket of a transceiver - *G3VA*].

Fig 3 shows the basic arrangement of a grounded-Marconi antenna although, in practice, the shape may vary appreciably to fit the specific location. G3TNO stresses that the ground spikes (G) are for lightning protection only and have little effect on RF performance. He considers that for optimum performance it is of utmost importance to lay as extensive a counterpoise and radial system beneath the antenna as circumstances permit. The more radials and / or counterpoise wires the better the DX performance. Lengths of scrap UR67 cable with the inner conductor and screen shorted together, or areas of chicken wire, all bonded together, or whatever you have at hand, will improve the 'ground conductivity'. In the years since Arch Doty, W7ACD (former K8CFU), thoroughly investigated the use of radials above ground, it has been shown that they give superior performance compared with the ground rods or buried radials of the size typically used by amateurs.

The implementation of the grounded-Marconi by G3TNO has dimensions and materials as follows: A - B, 58ft PTFE-covered stranded wire. Slopes from outdoor shack to pole on boiler chimney (height is not specified). B - C, 51ft PTFE-covered stranded wire (presumably sloping downwards rather than horizontal as shown). C - D, the pole itself can form this part of the element (provided it is a metal pole). If the support is non-metallic, then a heavy-gauge conductor should be used for this section. If a wire downlead is used, additional parallel wires have been shown to improve radiation efficiency. D - E, 51ft very heavy-gauge conductor, eg URM10 or UR67 with inner shorted to braid is ideal.

These dimensions provide a non-resonant system, and are non-critical, provided that the total loop length is *not* a multiple of one or more half-waves. This avoids very high impedance appearing at the feed points A and E, causing high RF voltages to be present at the ATU. G3TNO also found it best to avoid total loop lengths that are odd multiples of a quarter-wavelength, as this would result in fairly high RF currents flowing at points A and E. The dimensions shown appear to produce feed-impedances in the range 200 to 700Ω. G3TNO has found no problems in matching the antenna to 50Ω on all bands using a home-brew T-Match ATU. The horizontal radiation pattern appears virtually omni-directional.

Resulting from a suggestion by G3KXF, the vertical angle of radiation can be increased for medium-distance working simply by disconnecting A - B from ground at the lower end (and readjusting the ATU) but, in this configuration, the DX "disappears".

G3TNO considers that, for its size (a span little more than that of a half-size G5RV) and cost, this form of grounded-Marconi antenna is capable of excellent DX performance on all bands from 1.8MHz to 50MHz.

SIMPLE TONE GENERATORS

SIMPLE TONE GENERATORS have a number of uses including Morse practice oscillators, keying monitors, etc. A traditional form for many years has been the neon-bulb audio oscillator shown in **Fig 4(a)** and in more refined form in **Fig 4(b).** Both these come from a *QST* 1930s article by Fred Schnell, W9UZ, who, in 1923 at ARRL HQ in West Hartford (W1MO), made the historic first trans-Atlantic two-way contact with Leon Deloy, F8AB.

Two up-dated minimal audio oscillators are described by Dom di Mario of Milan in *Electronics World,* September 2001: **Fig 4(c)** and **4(d)**. These are based on a telephone earpiece oscillator and a ceramic oscillator described earlier but, by using reverse-biased npn transistors, it is possible to design such basic oscillators with just three components.

The earpiece oscillator operates between about 8 and 16V with a frequency of about 1800Hz at 12V. The ceramic oscillator exploits its intrinsic capacitance and operates between 9.5 and 20V with the useful frequency of about 1000Hz, drawing very little power despite delivering a sound level comparable to the earpiece oscillator. Dom di Mario points out that not all npn transistors will oscillate in these circuits, and it may be necessary to try others. He adds: "The base lead is normally left unconnected, but it could be used to modulate the generated sound."

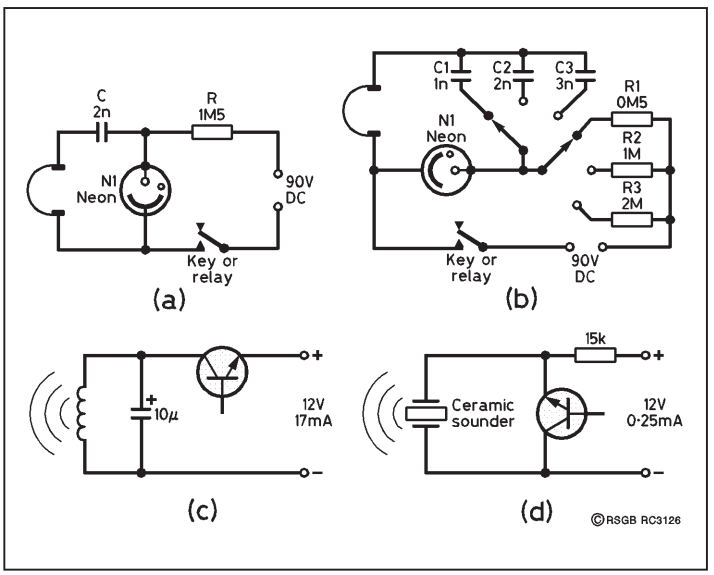


Fig 4: Simple tone generators: (a) The simple tone generator used in the 1930s at W9UZ as a keying sidetone generator. (b) More refined wide-range version of (a). Both use the Westinghouse N1 miniature neon bulb. (c) Earpiece oscillator with an output about 1800Hz using an npn transistor. (d) Ceramic oscillator, with a frequency around 1000Hz. Like (c), this also uses parasitic effects in a transistor.

HERE & THERE

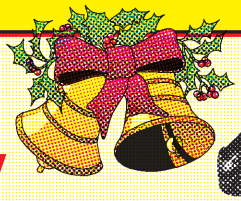
GODFREY MANNING, G4GLM, has drawn attention to some errors in N1BYT's 'WBR' receiver (Fig 3 of the October 'TT') as a result of which I found a detailed 'feedback' note in *QST,* August 2001, p37. This covers both text and diagram, but is not easily conveyed without reading the original four-page article. For anyone actually attempting to build this novel receiver, I will send photocopies of the full *QST* article and correction note on receipt of a stamped-addressed envelope.

ELECTRONICS WORLD reports that fuel cells developed by the German firm NovArs look set to go into pilot production. Their US backer, Manhattan Scientifics, aims to start pilot production aimed at portable electronics such as power tools, home generators and laptop computers. The cells are based on a proton-exchange membrane (PEM) which, it is claimed, can extract hydrogen from almost any hydrocarbon fuel. Power outputs range from 2W to 3kW. Energy density is about 115W/l, several times higher than lead-acid batteries. Contracts have been drawn up with manufacturers of motorcycles, vacuum cleaners and with the US Army. ♦

RADIO WORLD

42 BROOK LANE, GREAT WYRLEY, WALSALL, WEST MIDLANDS WS6 6BQ

Tel Sales & Service: 01922 414796 Fax: 01922 417829



YAESU FT-1000 MkV

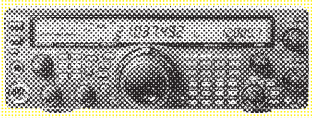
200W output comes with external supply.

£2799.00

YAESU FT-817

The all new multi-band manpack, 5 watts, multi-mode, transceiver with lithium pack and charger, smaller than the FT-290, but can replace the whole shack!

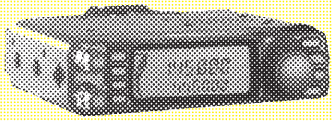
RWP price **£799.00**



YAESU FT-847

Best selling multiband. 160-6m/ 100W, 2-70cm/50W, 4m/10W. All mode satellite operation. Base/mobile

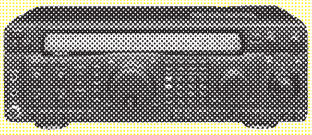
£1199.00



YAESU FT-7100

The latest of Yaesu's pedigree dual band dual receive 50W output

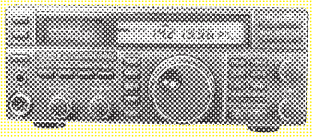
£379.00



YAESU FT-920AF

HF and 6m base station. Built-in ATU, DSP, 100W outputs, 2 antenna sockets, large amber display. High-tech front end receiver adopted from the FT-1000MP.

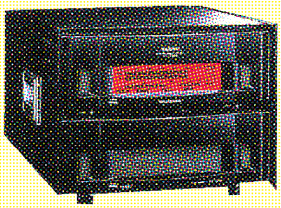
£1099.00



YAESU FT-840

HF and mobile base. An absolute joy to use. Excellent front end. 100W. 100 memories. Easy to use. A bargain!

£569.00



YAESU QUADRA AMP

The amplifier adored throughout the industry. 1kW, solid state transmit power on HF-500W, 6m, LCD read-out. Price smash

£3999.00

YAESU FT-100D

Yaesu's latest mobile transceiver. HF, VHF, UHF, DSP, TX, RX, built-in CW filter, TCXO & larger speaker. For that tailored transmit audio derived from the FT-1000MP.

£999.00

YAESU FT-8100

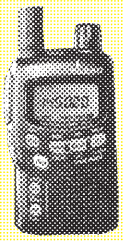
Dual band, cross repeat, dual read-out. Detachable front, wide band receive. Packet ready.

£299.00

YAESU VR-5000

HF/VHF/UHF wideband scanner built-in wave meter. Real time band scope. 0.1-2.6GHz. A bargain!

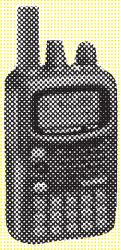
£599.00



YAESU VX-1R

The world has never seen a dual-band amateur hand-held transceiver which provides such an incredible small size combined with ultra-wide frequency coverage until now. Weighs just over 4 ounces. 1W output. 10hrs of operation, wide band receive.

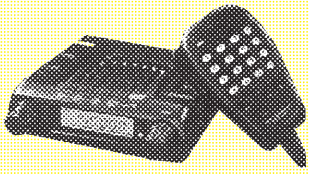
£169.00



YAESU VX-5R

Tri-band transmission. Short wave to microwave reception. 5W output off the lithium battery, spectrum scope, dot matrix, LCD, CTCSS, optional barometric pressure sensor.

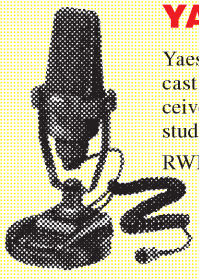
£265.00



YAESU FT-1500M

- 50W output power
- Four power levels
- Rugged construction
- Keyboard entry from microphone
- 175 memories
- Built-in CTCss
- Smart search
- Wide/narrow deviation select
- Packet ready

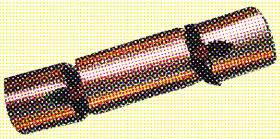
£159.00



YAESU MD-200BX

Yaesu's all new desk top microphone built for broadcast quality, large diaphragm, a must for DSP transceivers. It has the build quality and sound of Top End studio mic's.

RWP price **£249.00**



EXTRA DISCOUNTS MAY APPLY

RADIO WORLD

42 BROOK LANE, GREAT WYRLEY, WALSALL, WEST MIDLANDS WS6 6BQ

WE ARE 5 MINS AWAY FROM J11 M6

MAIN DEALERS FOR ALINCO, ICOM, YAESU & KENWOOD

Manufacturers warranty on all new equipment

WANTED
USED EQUIPMENT
PX WELCOME
BEST PRICES PAID!

YAESU

ROTATORS

G-1000DXC Rotator 1100kg/cm CE c/w control box & 25m cable. RRP £599.00. RWP **£509.00**

G-2800SDX Rotator HD 0.2 degree CE c/w control box. 1 remaining. RRP £1229.00. RWP **£999.00**

G450C Rotator light duty CE c/w control box & 25m cable. RRP £379.00. RWP **£325.00**

G650C Rotator medium duty CE c/w control box & 25m cable. RRP £499.00. RWP **£425.00**

OPTIONS

GC-038B	Mast Clamp (brown)	OUR PRICE £25.00
GC-038G	Mast clamp (green)	OUR PRICE £25.00
GC-048	Mast clamp for G-28000SDX	OUR PRICE £39.00
GS-050	Stay bearing (small type)	OUR PRICE £29.00
GS-065	Stay bearing (medium type)	OUR PRICE £45.00


G-450C


G-100DXC


G-650C

KENWOOD

TS-870S

Kenwood's top HF radio, DSP & IF. No need for filters, transmit Tx audio, fully adjustable, broadcast audio on SSB. A CW's operators dream. Plus Rx antenna tuner.

BARGAIN AT **£1299.00**

TS-50S

The first and still one of the best little mobile radios, dedicated for HF users. Don't miss out! Brand new with UK warranty.

£599.00

TS-570DG

Still the only HF monoband mobile radio with DSP and ATU built-in for under £1000.00.

OUR PRICE **£829.00**

TM-D700E

The latest dual bander, dual display, built-in TNC, APRS locating system, alpha-numeric. List price £519.00.

OUR PRICE **£429.00**

TM-V7E

Cool blue display, dualband, packet ready, detachable front. List price £419.00.

OUR PRICE **£379.00**

TM-G707

Dual band, detachable front, clear display. No squinting! Bullet proof front end. List price £319.00

OUR PRICE **£279.00**

TH-D7E

The world's first handle with built-in TNC, plus APRS, CTCSS searching system, metallic silver finish. List price £309.95.

OUR PRICE **£299.00**

TH-G71E

Dualband handle, reliable and rugged. List price £279.00.

OUR PRICE **£210.00**

while stocks last

TS-2000

All mode multibander HF/6m/2m/70cm optional 23cm, DSP, built-in keyer, large amber coloured backlit LCD.

OUR PRICE **£1649.00**

ICOM

IC-756 PRO

Icom's flagship. Colour screen, 32 bit processor. Absolutely fabulous.

£1895.00

IC-746

HF/VHF all mode transceiver, 6m/2m, 100W with tuner built-in. 2 years warranty.

£1299.00

IC-706 MKII G

Smallest DSP radio on the market. HF, 6m/2m/ 70cm. Detachable front.

£959.00

IC-R8500

Probably the best wide band receiver availble, coverage from 0.1-2GHz. Many 'top-end' features, 2 years warranty.

£1199.00

IC-821

2m, 70cm base flexible main/sub band operation. Advanced CW features, separate VFO & 10 memory channels for satellite operation & connection for 9600 packet operation. Limited stock.

£999.00

IC-2800

Dual band mobile, colour display. Full duplex, inc. CTCSS, 50W output. Detachable front. List price £449.00

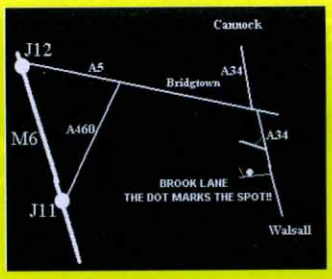
£395.00

PRICE MATCH

Up to 5% extra discount may be available on selected items

TELEPHONE SALES ON:
01922 414796

Ask for Dave (G1LBE)
Open Mon-Fri 9.30 - 6.00pm.
Sat 9.30 - 4.00pm.
Web Site: http://www.radioworld.co.uk
E-mail: sales@radioworld.co.uk



Tel Sales & Service:
01922 414796
Fax: 01922 417829

There is NO CHARGE for using credit cards

USED EQUIPMENT PRICE LIST

Make	Model	Description	Price
ADI	AR-146	2m FM 50W MOBILE	£130.00
AKD	4001 4m	TRANSCEIVER	£130.00
AKD	6001 6m	FM TRANSCEIVER	£135.00
ALINCO	DJ-580E	2/70CM HANDY TRANSCEIVER	£140.00
ALINCO	DJ-G1	HANDY TRANSCEIVER	£120.00
ALINCO	DJ-G5EY	DUAL BAND HANDY	£199.00
ALINCO	DJ-X1	RECEIVER	£90.00
ALINCO	DJ-X10	WIDE BAND RECEIVER	£275.00
ALINCO	DR-140	2M MOBILE TRANSCEIVER	£120.00
ALINCO	DR-150E	2M 50W MOBILE TRANSCEIVER	£140.00
ALINCO	DR-M06	6M FM TRANSCEIVER	£160.00
ALINCO	DR-M065X	6M 10Watt MOBILE TRANSCEIVER	£140.00
ALINCO	EDX-1	ATU	£140.00
AOR	AR-1500	HANDY SCANNER 0-1500M /72	£99.00
AOR	AR-3000	WIDE RECEIVER	£350.00
AOR	AR-3000A	WIDE RECEIVER	£475.00
AOR	AR-3030	HF / VHF RECEIVER Inc converter VHF	£450.00
AOR	AR-3030	HF RECEIVER	£399.00
AOR	AR-7030	TOP RECEIVER	£550.00
AOR	AR-7030+	HF RECEIVER (With AM Filter,Optical Encoder)	£650.00
AOR	AR-8000	WIDE BAND RECEIVER	£199.00
AOR	AR-8200 mk1	WIDE BAND RECEIVER	£230.00
AZDEN	PCS-4000	2M TRANSCEIVER	£99.00
BNOS	AMPLIFIER	432-10-50 70CM 50Watt	£99.00
CAPLO	SPL-3000	ANTENNA TUNING UNIT	£199.00
DAIWA	CNW-419	ATU	£190.00
DAIWA	CNW-518	1KW AUTO ATU	£199.00
DAIWA	NS-660P	SWR &PWR MTR	£40.00
DAIWA	CN-540	SWR &PWR MTR	£30.00
DAIWA	CN-630	SWR &PWR MTR	£40.00
DATONG	FL3	FILTER	£75.00
DATONG	FL-2	FILTER	£60.00
DRAKE	MN7	ATU 300 WATT INPUT	£140.00
DRAKE	R7	HF RECEIVER	£550.00
DRAKE	R-8E	HF RECEIVER	£499.00
DRAKE	SW-2	HF RECEIVER	£299.00
DRAKE	SW-8	WORLD BAND RECEIVER	£375.00
DRESSLER	D200	2M MAINS AMPLIFIER 400Watt	£399.00
FAIRHAVEN	RD-500	WIDE BAND RECEIVER	£575.00
ICOM	AT-150	AUTO ATU	£175.00
ICOM	AT-500	AUTO ATU	£275.00
ICOM	IC-2000H	2/70 MOBILE TRANSCEIVER	£170.00
ICOM	IC-2100H	2M MOBILE TRANSCEIVER	£150.00
ICOM	IC-251	2m MULTIMODE TRANSCEIVER	£295.00
ICOM	IC-275E	25W TRANSCEIVER	£525.00
ICOM	IC-275H	2M MULTIMODE 100W TRANSCEIVER	£575.00
ICOM	IC-290H	2M MULTIMODE MOBILE TRANSCEIVER	£250.00
ICOM	IC-2KL	AUTOMATIC LINEAR AMPLIFIER + PSU	£999.00
ICOM	IC-3230H	2-70CM MOBILE TRANSCEIVER	£160.00
ICOM	IC-471E	70CM BASE MULITMODE TRANSCEIVER	£299.00
ICOM	IC-490E	70cms MULTIMODE MOBILE TRANSCEIVER	£265.00
ICOM	IC-728	HF TRANSCEIVER	£399.00
ICOM	IC-730	HF TRANSCEIVER MINT!	£400.00
ICOM	IC-735	HF TRANSCEIVER	£400.00
ICOM	IC-737	HF BASE BUILT IN ATU 100W	£595.00
ICOM	IC-737	HF inc ATU BASE STATION TRANSCEIVER	£575.00
ICOM	IC-746	TRANSCEIVER	£899.00
ICOM	IC-756	HF / 6m All Band Transceiver	£999.00
ICOM	IC-756PRO	ICOM TRANSCEIVER	£1,699.00
ICOM	IC-765	HF BASE TRANSCEIVER	£800.00
ICOM	IC-775DSP	HF 200W BASE STATION TRANSCEIVER	£1,499.00
ICOM	IC-820	2-70CM BASE STATION 50Watt	£599.00
ICOM	IC-821H	VHF / UHF MULTIMODE TRANSCEIVER	£699.00
ICOM	IC-910	2/70 CM BASE TRANSCEIVER + 23CM UNIT	£1,100.00
ICOM	IC-R2	HANDY SCANNER	£99.00
ICOM	IC-R3	SCANNER + TV	£299.00
ICOM	IC-R7000	RECEIVER MINT! CONDITION	£550.00
ICOM	IC-R72	RECEIVER	£399.00
ICOM	IC-R75	HF / 6m RECEIVER	£475.00
ICOM	IC-T81E	QUAD BAND HANDY 2m/6m/23cm/70cm	£250.00
ICOM	IC-T8E	HANDY TRANSCEIVER	£175.00
ICOM	IC-W21E	HANDY TRANSCEIVER	£199.00
ICOM	PCR-1000	COMPUTER SCANNER	£200.00
ICOM	PS-1520A	POWER SUPPLY FITS ALL ICOM	£110.00
ICOM	PS-85	POWER SUPPLY	£175.00
ICOM	R-75	HF RECEIVER	£400.00
ICOM	SP-20	SPEAKER	£120.00
ICOM	SP-21	LOUDSPEAKER, BOXED	£55.00
ICOM	T-7E	2/70CM HANDY TRANSCEIVER	£170.00
ICOM	T-8E	2/70CM 6M HANDY TRANSCEIVER	£185.00
ICOM	UT-84	TONE SQUELCH UNIT	£25.00
ICOM	IC-2SET	2M HANDY	£89.00
ICOM	IC-R71E	RECEIVER	£399.00
JRC	JST-245DSP	HF 50MHz 1500w AC BASE TRANSCEIVER	£1,295.00
JRC	NRD-535	HF RECEIVER	£600.00
KANTRONICS	KAM PLUS	TNC	£220.00
KENWOOD	DFC-230	FREQUENCY CONTROLLER	£70.00
KENWOOD	PS-20	10A POWER SUPPLY FITS TR-9130 ETC	£55.00
KENWOOD	PS-430	POWER SUPPLY	£100.00
KENWOOD	PS-50	POWER SUPPLY	£145.00
KENWOOD	R-5000	RECEIVER	£499.00
KENWOOD	SP-950	LOUDSPEAKER	£90.00
KENWOOD	SW-2000	SWR METER	£60.00
KENWOOD	TH-22E	2M HANDY TRANSCEIVER	£89.00
KENWOOD	TH-25E	HANDY TRANSCEIVER	£49.00
KENWOOD	TH-47E	HANDY TRANSCEIVER	£100.00
KENWOOD	TH-75E	2/70 HANDY TRANSCEIVER	£125.00
KENWOOD	TH-78E	2/70CM HANDY TRANSCEIVER	£175.00
KENWOOD	TH-79E	HANDY TRANSCEIVER	£189.00
KENWOOD	TL-922	HF LINEAR AMP 1Kw (AS NEW!)	£899.00
KENWOOD	TM-231E	2M MOBILE TRANSCEIVER	£120.00
KENWOOD	TM-241E	2M MOBILE TRANSCEIVER	£120.00
KENWOOD	TM-251E	MOBILE TRANSCEIVER	£140.00
KENWOOD	TM-255E	2m MULTI-MODE MOBILE TRANSCEIVER	£400.00
KENWOOD	TM-455E	70CM MULTIMODE MOBILE TRANSCEIVER	£495.00
KENWOOD	TM-733	2/70 MOBILE TRANSCEIVER	£225.00
KENWOOD	TR-751E	2M MULTIMODE TRANSCEIVER	£350.00
KENWOOD	TR-851E	70CM MULTIMODE MOBILE TRANSCEIVER	£395.00
KENWOOD	TS-120	HF SOLID STATE MOBILE	£225.00
KENWOOD	TS-450S	HF TRANSCEIVER	£499.00
KENWOOD	TS-450SAT	HF BUILT IN ATU EXCELLENT TRANSCEIVER	£575.00
KENWOOD	TS-530SP	HF MAINS 100Watt TRANSCEIVER	£275.00
KENWOOD	TS-680	HF 6M MOBILE/BASE TRANSCEIVER	£400.00
KENWOOD	TS-690SAT	HF 6M Inc ATU	£650.00
KENWOOD	TS-711E	SM BASE STATION TRANSCEIVER	£399.00
KENWOOD	TS-790E	2/70CM BASE STATION TRANSCEIVER	£699.00
KENWOOD	TS-790E	2m / 70cm MULTIMODE BASE TRANSCEIVER	£799.00
KENWOOD	TS-811E	70cms MULTIMODE BASE TRANSCEIVER	£399.00
KENWOOD	TS-830S	HF TRANSCEIVER	£325.00
KENWOOD	TS-850SAT	HF TRANSCEIVER MINT!	£800.00
KENWOOD	TS-870SAT	HF/DSP-IF-100W BUILT IN ATU TRANSCEIVER	£999.00
KENWOOD	TS-950SD	HF/ 150W DSP BASE TRANSCEIVER	£1,100.00
KENWOOD	TSB-2000	LATEST KENWOOD - COMPUTER CONTROLED	£1,299.00
KENWOOD	VFO-120		£50.00
KENWOOD	VFO-180	EXTERNAL VFO	£75.00
KENWOOD	VS-1	VOICE SYTHESISER	£30.00
KENWOOD	VS-2	VOICE SYTHESISER	£30.00
KENWOOD	YG-455 CN-1	270Hz CW CRYSTAL FILTER	£100.00
KENWOOD	YK-88A-1	AM FILTER	£40.00
KENWOOD	YK-88C-1	500Hz CW NARROW FILTER	£40.00
KENWOOD	YK-88CN1	270Hz CW FILTER 8.83MHz IF	£40.00
KENWOOD	YK-88S-1	2.4KHz SSB NARROW FILTER 8.83MHz IF	£40.00
KENWOOD	YK-88SN	1.8K SSB FILTER (TS-440 /R5000)	£40.00
KENWOOD	YK-88SN-1	1.8KHz SSB NARROW FILTER 8.83MHz IF	£40.00
KENWOOD	PS-430	POWER SUPPLY	£120.00
LINEAR AMP	CHALLENGER II	CHALLENGER AMPLIFIER 11 2kW	£1,400.00
LOWE	HF-150	SW RECEIVER	£150.00
LOWE	HF-250	INCLUDES REMOTE CONTROL	£300.00
MCL	MCL1100	EASY READER	£75.00
MFJ	MFJ-414	MORSE CODE TRAINER	£120.00
MFJ	SET-UP	971-9015-4114 PORTABLE 21MHz	£299.00
MICROSET MICROWAVE	PT-135	POWER SUPPLY	£80.00
MODULES	28/144	TRANSVERTER 28/144	£125.00
PACCOM	TINY 11	TNC	£99.00
PACCOM	TNC-320	TNC	£90.00
PLESSEY	PR-2250	HF RECEIVER BEST QUALITY CLASSIC!	£1,200.00
QM 70	28/144	TRANSVERTER	£100.00
RACAL	RACAL 1792	HF RECEIVER	£499.00
REALISTIC	PRO-2037	SCANNER BASE	£99.00
REALISTIC	PRO-394	HF RECIEVER	£99.00
SGC	SGC-2020	HF TRANSCEIVER	£450.00
SOMMERKAMP	FT290R	2m MULTI-MODE TRANSCEIVER	£180.00
SONY	ICF-SW77	FM/SW/MW/LW PORTABLE AS NEW!	£250.00
SONY	SW-100E	FM/SW/MW/LW PORTABLE	£90.00
ST3 HEADPHONES		DELUXE HEADPHONES	£45.00
SYNCRON	PS-1220VU	20 AMP POWER SUPPLY	£60.00
TAGRA		22AMP POWER SUPPLY	£70.00
TENTEC		SCOUT + MODULES	£350.00
TIMEWAVE	DSP-9+		£125.00
TOKYO HY-POWER	HL-30V	2M and 25W AMPLIFIER	£75.00
TOKYO HY-POWER	HL-37V	LINEAR AMPLIFIER	£60.00
TONNA	7000E	TERMINAL	£130.00
TRIO	R-2000	RECEIVER + CONVERTER	£300.00
TRIO	TR-9130	2M ALL MODE TRANSCEIVER	£250.00
TRIO	TRIO 9130	2M MOBILE MULITMODE TRANSCEIVER	£250.00
TRIO	TS-780	DUAL BAND BASE TRANSCEIVER	£275.00
WELZ	AC-38M	200W MOBILE MATCHING NETWORK	£50.00
WELZ	SP-15M	SWR & POWER METER	£20.00
YAESU	FC-102	1 .2KW ATU WITH 4 WAY SWITCHING UNIT	£200.00
YAESU	FC-20	AUTO ANTENNA TUNER FOR 847/FT100	£175.00
YAESU	FC-902	ATU 500W	£140.00
YAESU	FL-2100Z	HF AMPLIFIER	£450.00
YAESU	FP700	POWER SUPPLY	£100.00
YAESU	FP-757HD	HEAVY DUTY POWER SUPPLY	£120.00
YAESU	FRG-100	HF RECEIVER	£300.00
YAESU	FRG-7700	HF RECEIVER	£220.00
YAESU	FRG-8800	RECEIVER INCLUDES CONVERTER	£399.00
YAESU	FRT-7700	ATU MINT!	£75.00
YAESU	FRV-7700	UHF CONVERTER MINT!	£80.00
YAESU	FT-1000MK5	200W DSP HF TRANSCEIVER	£2,600.00
YAESU	FT-1000MP	AC HF BASE DSPTRANS-CEIVER (Late serial no)	£1,550.00
YAESU	FT-1000MP	DC BASE TRANSCEIVER	£1,200.00
YAESU	FT-101ZDmk111	HF TRANSCEIVER inc FM	£375.00
YAESU	FT-225RD	2M BASE MULTIMODE CLASSIC!	£399.00
YAESU	FT-23R	HANDY TRANSCEIVER	£180.00
YAESU	FT-2500M	MOBILE TRANSCEIVER	£190.00
YAESU	FT-290RMK1	2M ALL MODE TRANSCEIVER	£180.00
YAESU	FT-290RMK11	MOBILE 2M MULTIMODE TRANSCEIVER	£275.00
YAESU	FT-411E	2M HANDY TRANSCEIVER	£99.00
YAESU	FT-41R	HANDY TRANSCEIVER	£120.00
YAESU	FT-470	2/70CM HANDY TRANSCEIVER	£140.00
YAESU	FT-650AC	26-50MHz 100w BASE STATION TRANSCEIVER	£599.00
YAESU	FT-690MK11	6M MULTIMODE MOBILE TRANSCEIVER	£295.00
YAESU	FT-690RMK	1 6M MULTIMODE MOBILE TRANSCEIVER	£250.00
YAESU	FT-690RMK11	6M PORTABLE	£375.00
YAESU	FT-726R	2 / 70 / HF TRANSCEIVER	£400.00
YAESU	FT-726R	2 / 70 / 6m TRANSCEIVER	£575.00
YAESU	FT-730R	70CM MOBILE TRANSCEIVER	£120.00
YAESU	FT-736R	2/70/6/23CM TRANSCEIVER	£1,050.00
YAESU	FT-736R	2m / 70cm TRANSCEIVER	£650.00
YAESU	FT-736R	2m/70cm/6m TRANSCEIVER	£750.00
YAESU	FT-7400	70cm MOBILE TRANSCEIVER	£160.00
YAESU	FT-747GX	HF TRANSCEIVER	£399.00
YAESU	FT-747GX	TRANSCEIVER	£299.00
YAESU	FT-757GXMK11	TRANSCEIVER MINT!	£400.00
YAESU	FT-757MK1GX	HF TRANSCEIVER	£375.00
YAESU	FT-767GX	HF BASE 100watt built-in ATU	£599.00
YAESU	FT-77	INCLUDES FM MINT!	£275.00
YAESU	FT-790R	70CM MULTIMODE MOBILE TRANSCEIVER	£225.00
YAESU	FT-7B	HF 50W MOBILE TRANSCEIVER	£199.00
YAESU	FT-80C	0-30MHz COMMERCIAL TRANSCEIVER	£375.00
YAESU	FT-8100	2/70cm MOBILE TRANSCEIVER	£249.00
YAESU	FT-811E	70CM HANDY TRANSCEIVER	£99.00
YAESU	FT-847	HF / 2 / 6 / 70cm BASE TRANSCEIVER	£999.00
YAESU	FT-900	HF TRANSCEIVER	£550.00
YAESU	FT-902DM	HF BASE TRANSCEIVER	£400.00
YAESU	FT-920AF	HF/6M BASE WITH DSP	£899.00
YAESU	FT-980	HF TRANSCEIVER	£495.00
YAESU	FT-990AC	HF BASE STATION TRANSCEIVER	£750.00
YAESU	FT-ONE	HF BASE TRANSCEIVER	£450.00
YAESU	FTV-901	TRANSVERTER Inc 2m Mod	£165.00
YAESU	FV-707	VFO UNIT	£99.00
YAESU	SP-8	LOUDSPEAKER Including Audio Filters	£100.00
YAESU	VFO-102	MINT CONDITION!	£199.00
YAESU	VR-5000TOP	RANGE SCANNER RECEIVER	£500.00
YAESU	VX-5R	2 / 70 / 6 HANDIE 5W	£220.00
YAESU	XF-114SN	2KHz SSB FILTER	£60.00
YAESU	YO-100	SCOPE VERY RARE!	£150.00
YAESU	YS-60	SWR METER 1.6 - 60MHz	£30.00
YUPITERU	MVT-7000	HANDY SCANNER	£99.00
ZETAGI	B-132	10 / 11m LINEAR AMPLIFIER, MAINS	£60.00

...bring your scanning directories to life!

With 2 Megabytes of Memory

FAIRHAVEN RD500VX
RADIO DATABASE

The RD500VX is a new kind of wideband receiver with sleek, robust styling, ...only 8 inches wide!

Its massive memory can store information equivalent to several scanning directory books. Any word such as "Fire', "Air", "Voice Of America", or even your local town can be searched for. It can hold 54,682 entries, each with 20 characters of text, mode, and frequency.

A 45 key TV style remote is provided for text entry and control, and a PC keyboard can be plugged into the receiver.

...No more thumbing through scanning directories, and no PC needed!

The RD500VX gives wideband coverage with auto memory, skip list, priority channel, pause/hold, AFC, world time clock, and S.meter, and its HF performance is complemented with pass band shift, notch and peak filter, noise blanker, and smooth 5Hz tuning steps.

Modes include USB/LSB, AM, sync AM, stereo CW, NBFM/WBFM and stereo FM, with TV sound and video output as standard.

We include Windows software to make it easy to gather information from document scanners, the Internet and other sources. **The RD500VX** can be linked to your PC to backup or download information, and a database is loaded into the receiver before shipping.

It also has a built in digital sound recorder and editor so a news flash or rare DX can be recorded. Up to 4 minutes of sound can be permanently stored!

Price: £899

FAIRHAVEN RADIO

Includes software, PSU, remote and 2 year guarantee.

Specifications:
Sensitivity (10dB S/N) HF SSB 0.2uV. IP3 +10dBm.
VHF/UHF NBFM 0.3uV. Scan speed 50/second.
Frequency range 0 - 1750MHz
Collins filters available.

Phone +44(0)1332 670707 Fax +44(0)87 00 55 88 99
http://www.fair-radio.demon.co.uk
PO Box 6102, Hatton, Derby DE65 5WG

Members' Advertisements

RSGB Members wishing to place an advertisement in this section must use the official form incorporated on the label carrier of Radio Communication. This will prove membership and must be for the current month. No acknowledgment will be sent. Ads not clearly worded, or which do not comply with these conditions will be returned. If an ad is cancelled no refund will be due. An advertisement longer than 60 words will be charged pro rata. Trade or business ads, even from members, will not be accepted. Traders who wish to use this facility must send a signed declaration that the items for sale are part of, or intended for, their own personal amateur station. The RSGB reserves the right to refuse ads, and accepts no responsibility for errors or omissions, or for the quality of goods for sale or exchange. Each advertisement must be accompanied by the correct remittance, as a credit card payment, cheque or postal order made payable to the Radio Society of Great Britain. Please note that because this is a subsidised service to members, no correspondence can be entered into. Licensed members are asked to use their callsigns and QTHR, provided their addresses in the current edition of the RSGB Yearbook are correct. RS members will have to provide their names and addresses or telephone numbers. Please include your town and phone number in the free boxes provided to assist readers. Advertisements will be placed in the first available edition of *RadCom.*

The closing date for copy is the first day of the month prior to publication, eg the deadline for the March issue is 1 February.

Warning: *Members are advised to ensure that the equipment they intend to purchase is not subject to a current hire purchase agreement. The 'purchase' of goods legally owned by a finance company could result in the 'purchaser' losing both the goods and the cash paid.*

EXCHANGE

TRIO CS-2070A 70MHz, 4-channel delayed-sweep oscilloscope, full retune by Universal Calibration with h/book and leads, exchange for TS-50 plus auto ATU or similar small HF plus auto ATU, call after 6pm. 01388 747 018 (Co Durham).
E-mail: boltonjd28071945@netscapeonline. co.uk

OLYMPUS OMN-2 Zuiko, f/1.4 lens, T32 flash, holda1l, will exchange for general coverage rcvr. Please phone G3PTN, QTHR, 0113 265 4644 (Leeds).
E-mail: zygic@btinternet.com

FOR SALE

KANTRONICS KAM-plus TNC with man, software, £120. HP Colorado 5GB internal IDE tape drive, £60. 01586 552 496 (Campbeltown).
E-mail: andy-h@netcomuk.co.uk

STRUMECH Versatower system, 40ft with top section complete with ground post for tilt, £300, buyer collects all vgc. Rotator Daiwa MR-750E plus drive unit and cables £185, the best all vgc plus top section bearing. Heatherlite 2m Explorer linear with preamp immaculate condition, all instruction mans, £300 ovno, buyer collects.G0EKD, 01234 824 741 (Bedford).

YAESU 736R, 2/6/70cm installed, mint condition, boxed, all-mode with triplexer 2/6/70cm, £650 ono. MD-4 Yaesu desk mic, £40. 01772 517 383 (Kirkham).
E-mail: w.hol@blueyonder.co.uk

YAESU FT-708R, 70cm, h/held, complete with man, charger, mic, AC charger and car adapter/charger and speaker/mic. Microwave Modules 432MHz, 30W power amplifier. Welz SP-300 SWR and power meter, three power ranges, up to 1kW. Zetagi, BV130P, 200W power amplifier (two 6JB6A valves). Grenson Electronics power unit, variable 0-30V, 2A, metered for voltage and current. Small AC/DC converter, output 3 –9V DC. Timothy Edwards universal logic probe. Leader LCR Bridge, model LCR-740, complete with man. Panasonic battery charger, 2Ahr, 14.5V. Antenna matcher, CO-85 CB-Master. Kyoritsu AC volt/ohm/ammeter, model 830 (clip on) up to 300A. Kenwood low-pass filter, model LF-30A (1kW PEP). Avo transistor tester, type TT-169 with probes, man and in case. Aiwa stereo condenser mic. Datong Morse tutor, model D70. Kenwood grid dip meter, model DM-81 (minus coils). Sensible offers for whole or in part. 01332 831 965 (Derby)

23cm tvtr 1W, £60. FT-790 Mk1 + 15W linear, £200. FT-290 Mk1 + 60W linear, £200. 6m 7W tvtr 70cm drive, £50. Buyer inspects or carriage extra. 01527 574 934 (Bromsgrove).

40ft stainless steel mast in two sections, £30. PSU 30W (needs attention), £30. Max, G3BSK, 0121 744 4671 (Birmingham).

60ft mobile lattice tower, £500. Create 5-ele 14/21/28 Yagi 24ft boom, 11 months old, £275. Cushcraft D40 40m rotary dipole, £80. Cushcraft D3W WARC rotary dipole, £80. 45ft 2-section lattice tower (needs base), £75. 4-ele 28MHz Yagis choice of two, £30 ea. Sale due to new QTH. www.g0tsm.com for photos. 023 8026 1549 (Southampton).
E-mail: darren@g0tsm.com

ACORN computer equipment. A3000, 4000 and 5000. All with monitors. Various printers and interface cards. Call or e-mail for details. 01527 526 415 (Redditch).
E-mail: dgrb@bowlers-end.co.uk

B2 tx, no coil. Two Vibroplex keys. Two 515 Argonaut tcvrs (QRP Ten-Tec). Laboratory quality valve voltmeter, mast ex-Army, unused, steel 20ft, very strong. All surplus to requirements, offers? 01234 711 538 weekends (Bucks).

BIRD Thruline inserts 2-30MHz, 100W, 250W, 500W, 1000W, £25 each plus p&p. G4JTR, QTHR, 0118 947 6873 (Reading).
E-mail: g4jtr@thersgb.net

COAXIAL cable professional low loss Andrews Heliax LDF4-50A, ½in foam dielectric 50-ohm, ideal for UHF/microwave, approx 50m unused, £100 inc special plugs and sockets (cost £4.47/m). HRO dial and gearbox, offers? G3FYF, 01364 631 319 (Ashburton, Devon).

COLLINS mech filter F-455, F05, 500Hz, £35. Collins auto-ATU 180L2, £40. Kenwood headphones HS5, £20. KW 160 ATU, vgc, £55.Quad FM4 stereo tuner, boxed £135. Ferrograph series 5 stereo recorder, new tapes, aluminium spools, £65. Gerry, G0AQH, 01273 454 108 (Brighton).

COMMODORE sale, 3 of C64 computers, 2 of 803 printers with 10 ribbons, 3 of data cassettes. 1541 disc drive. 1571 disc drive, 3 of joysticks, 26 spare discs, 36 discs with games, 11 on radio, 11 with programs, DR DX, 17 tapes, several books, any offer, will split. G3IJL, QTHR, 020 8749 1454 (London).

DRAKE TR-4C AC4/MS4 speaker, wkg but needs attention. MN2000, match unit. Yaesu FT-101ZD, offers? 01430 430 472 (Howden)

FORCE 12 Sigma 5 10-20m vertical dipole. 3m high, quick assembly, 1 month old, effective, worked JA, new cost £349, accept £250. Create log-periodic antenna, frequencies 90-220MHz rated 500W PEP, 6 months old, £50. 01243 586 838 (Bognor Regis).
E-mail: dfall@btinternet.com

FT-101 MkII, £150. Europa-B 2m tvtr wired for '101', £30. MM tvtr 10m – 70cm, £70. FT-290 MkI, £145. Trio 9R59DS SW rcvr, £35. G4AAH, QTHR, 01623 642 719 (Mansfield).

GERMAN rcvr, Sternradio Berlin, circa1960. LM/KW/UKW 600 x 325 x 255mm, LS 215 x 158mm, 11.5kg, h/book and circuit diagram, £40 ono. Solartron Solascope CD513.2 for small repair or spares. Very heavy, buyer collects, £25. 01302 365 472 (Doncaster).

HEATHKIT enthusiasts DX-100U SSB adapter, SB-10U, spare valves, original mans, £60 ono. AR88D man, £60 ono. Buyer collects, G0KSG, QTHR, 01233 812 799 (Ashford, Kent).

HELP placate the wife and buy some of my military and old radio bits and test equip inc wavemeters, generators, KW Vanguard, BC-312, Hallicrafters S27, Eddystone 358X plus coils, RCA ACR-136 crystals. SAE for list, QTHR. E-mail G1NSV or phone 01579 345 740 (Liskeard).
E-mail: david.kemplen@ukonline.co.uk

HEWLETT-Packard d/beam 20MHz scope, £40. Farnell pulse generator 1Hz-10MHz, £40. Piccolo 6m FM tcvr (with modified PIC chip for repeater shifts), £55. Cirkit 4m/6m 20W linear amp, £20. Boonton capacitance meter 1-3000pF, £15. Buyer collects or pays carriage. Eric, G0ORD, 0161 427 1027 (Stockport).
E-mail: eric.chantler@man.ac.uk

ICOM 290E multimode, original mic, mobile mount, h/book, wiring diagram, original box, gwo, £185, genuine reason for sale. 0113 294 3211(Leeds).

ICOM 706 Mk1, car mount remote head, SG-231 Smartuner, 4 G-whip HF mobile whips, mag mount, £500. 01934 512 141 (Weston-Super-Mare).
E-mail: nick@quixotics.co.uk

ICOM IC-505 6m SSB/CW only, 10W out, boxed, £200. Phone only 1800-2230. 01522 513 151 (Lincoln).

ICOM IC-706 Mk2G, brand new unused, £700. IC-756 HF + 6m, IC-746 HF, VHF, 6m, both as new £795 each, original packing, original owner from new. IC-735 as new, £350. ICR-7000 base scanner, all-mode, £375. Yaesu FRG-9600 scanner all-mode £190. PRO-2036 scanner, £95. Timewave DSP599ZX filter, £185. ERA Micro-reader, £75. ERA-232 display, £75. ERA filter, £25. FL-101 filter, £45. Cushcraft A3 tribander, £150. May exchange for IC-775DSP, buyer pays p&p. 01953 884 305 or 07970 214 039 (Norfolk).

ICOM IC-970H m/mode 2/70/23cm, dual rcvr, 50-905MHz, as new, boxed, £995. PX TS-2000, TS-440S, ATU, PSU, vgc, £550. IC-737A HF tcvr, ATU, boxed, £595. IC-T7E h/h, £135. Want, SP-380 Welz. G4AFY, 01562 747 480 or 07944 929 836 (Kidderminster).

IMMACULATE Yaesu FT-900ATC, little used, narrow CW fitted, radio warranty expires June 2003, 30A PSU inc, £650, no offers. Timewave 59+ DSP filter as new, £150, prefer buyer collects. New radio forces reluctant sale, phone evenings, Graeme, G0TNU, 01562 822 806 (Kidderminster).

KENWOOD station monitor SM-220 with panadapter, mint condition, £230 + carriage. 01639 642 942 (Neath).

KENWOOD TL-922 linear amplifier, just fitted 2 new 3-500ZG tubes, £850 ovno, complete with original packing & man. Kenwood MC-85 desk mic, £55 ovno. WHY? G0EHQ, 01527 879 636 (Bromsgrove).
E-mail: g0ehqg0bir@aol.com

KENWOOD TS-570S/TS-5700 auto keyer, auto ATU, bargain, £400. Peter, G3JXR, QTHR, 01908 642 398 (Bletchley).

KENWOOD TS-820S HF tcvr digital with AT-200 tuner, VFO 180, CW filter, £150. Kenwood monitor SM-220 pan display, £200. All-mode Kenwood TS-780, £200. All good condition with leads, mans, boxes. Complete set £500. 01530 262 330 (Nr Leicester).
E-mail: charles.james@breathe.com

KENWOOD TS-850S immaculate, boxed, mans, PS-62, boxed, KW Ezematch, all £600. John, G4MXU, 01494 565 129 (High Wycombe).

KENWOOD TS-850SAT plus matching speaker SP-31, boxed, mic, mans, leads and connectors as originally supplied, exc cond, £600. Barry, GM4GIF, 01436 678 646 (Helensburgh).

KENWOOD UT-10 1200MHz unit for TS-790. 01276 475 338 (Bagshot).
E-mail: pfhutchinson@ntlworld.com

MAGAZINES *RadCom* complete years and singles 1980-2000, some earlier, *HRT* various 1986-1999. Discuss wants and negotiate! 07887 788 711 or 01903 879 083 (Worthing).
E-mail: reparkes@iee.org.uk

MK-II prismatic brass marching compass, WWII, mother of pearl card, lovely, £110. Genuine Karl Zeiss German WWII U-boat torpedo-sighting binoculars, 7 x 50, brass, £800. Geoff, 01634 253 056 (Medway).

PAIR Mullard QY4-250 (4-250) valves. Bought new, never used, £45 inc post or swap for pair good 4-125s. John, G3EGC, 01204 301 502 (Bolton).

R107 military rcvr in full working order. Immaculate face panel, military enthusiasts' item. Offers over £200. 01562 700 513 (Kidderminster).
E-mail: john.clarke@iclway.co.uk

CONGRATULATIONS

to the following
whom our records show as having reached
50 or 60 years' continuous RSGB membership this month:

50 years

G3CCM Mr W R Harris

60 years

G3AKX Mr R G Lascelles
G3ASE Mr H S King
G3LCZ Mr T W Hickinbottom

SHACK clearance. Icom R-700, £300. HRO-500, £300. Eddystone 830, £100. Yaesu YO-100, £100. NEC CQ201, £100. Gemquad, £100. ATU ZA56234, £75. BC-221, £25. Xtal 10, £15. PK-232MBX, £150. HAL ST6, £100. DT-600, £50. PAG, £25. ST5, £25. Marconi 2060, £25. Marconi H5011, £25. Dave, 01482 449 950 (Hull)

SHACK clearance, Yaesu 736 6/2/70, CTCSS, boxed, man, £700. Yaesu speaker SP-102, £40. Yaesu FT-77, copy man, £120, no box. Sommerkamp FC-902, £100. Icom IC-R7000, £500. Kenwood 680S full Rx/Tx, fitted auto ATU VS-2, fully loaded, CW filters, boxed, mans, £650. Kenwood speaker SP-23, £30. MC-80, choice of two, £35 each. 01782 772 572 (Stoke on Trent).
E-mail: tonyharris@talk21.com

SILENT key sale IC-735, £250. 01480 456 781 (Huntingdon).

TEKTRONIX Oscilloscope type 465 dual trace 20MHz, good cond, £190. Daiwa power meter CN-460M, £4. Dummy load DL 600W, £40. G0PJI, 01934 812 543 (Weston-Super-Mare)

TIMESTEP satellite rcvr 4.1 with crossed dipole antenna, *Prosat 32* software, also active feed and down-converter for geostationary reception, £240. Yaesu FT-2200 2m FM mobile tcvr absolute mint condition, boxed, man, now have dual-bander, £130. Postage extra on both lots. 01709 582 419 (Swinton).

TRIO TS-830S, £300. Kenwood TS-850S, £575. Collins 30L-1, £485. All exc cond, buyer collects or pays carriage. 01449 676 355 (Stowmarket).

TS-450S vgc, filters, h/book, MC-60 desk mic, pwr lead, £325 buyer collects. TB3 good condition, a gift at £100, buyer collects. 01234 824 741 (Bedford).

VERSATOWER BP60 base plate version, top section, dismantled, could deliver, £550. FL-2100Z WARC linear, £350. *RadCom* 1972/1995 complete, offers? HRO rcvr metal valves, tropicalised, vgc, 2 PSUs, full set of 9 plug-ins, original box, 20m bandspread coil, £95. 50MHz 'Meon' tvtr boxed, Spectrum 25W PA, 28MHz, £45. TR-2300 2m FM, base unit PSU charger, 10W PA, £40. 01908 649 138 (Milton Keynes).
E-mail: cfarman@avaya.com

WILLIAM Nye MB-V hand-built antenna tuner, 300-3000W, roller inductor, SWR and power meters, cost £465, best offer. Yaesu FT-480R with bracket mic, £165. G3IJL, QTHR, 020 8749 1454 (London).

YAESU FT-101E tcvr 100W, good working order. Also Capco ATU 300W, bargain price £180 for the lot, mans inc. 0151 928 9419 (Liverpool).

YAESU FT-102 HF tcvr (+line up), all bands/modes, CW filter, SP-102 spkr, FC-102 ATU, FV-102 VFO, MD-1 mic, all vgc, some boxed, mans, £475. FTV-107R tvtr with 2m/70cm modules, vgc, £100. Two further FT-102s, £195, £125. Filter XF-8.2HC, £20. 01453 845 013 6-8pm (Gloucestershire).

YAESU FT-290 Mk 1 2m multimode, £125. 25W linear amp SEM, £10. 01284 755 333 (Bury St Edmunds).

YAESU FT-290R Mk1, carrycase, charger, man, boxed, vgc, £160 buyer inspects and collects or pays carriage. Colin, G4ZVS, QTHR, 0121 605 2877.

YAESU FT-757GX 100W radio complete with FC-757AT antenna tuner, one owner, good cond, £350. 01409 261 223 (Holsworthy).
E-mail: g0rql@erobfill.co.uk

YAESU FT-757GX HF tcvr, matching FC-757AT ATU, Yaesu mic, 25A PSU. Complete HF station, £400. 07764 153 615 (Ipswich).
E-mail: dick.hall@btinternet.com

YAESU FT-8000 2m/70cm mobile inc mobile headset and two quick-release mounts. Original packaging, £250 ono. Alinco DJ-582E 2m/70cm handy desk charger, extra battery pack, desk stand, speaker mic, original packaging, £125 ono. Delivery at cost, G3PRR, QTHR, 01673 858 291 (Lincoln).
E-mail: ian@ianpartridge.org.uk

YAESU FT-817 5W QRP, CW filter, Z11 ATU, Heil mic mod, only 12 QSOs from new, £675. Diamond 6m/2m/70cm vertical, £50. ½-wave 6m vertical, £35. 8-ele X-Yagi, £35. Daiwa 6400 rotator, £90. MFJ-259 antenna analyser, £150. Many other bits & pieces. 01257 249 185 (Chorley).
E-mail: k555arl@aol.com

YAESU FT-920 HF/6m tcvr, FM unit, 500Hz CW filter, boxed, man, excellent unmarked cond, £675. Morsematic MM2 keyer, man, £40. 01751 476 380 (Nr York). E-mail: phil.catterall@ntlworld.com

ZETAGI SWR/power meter, model 500, range 3-200MHz. Impedance 50 or 75 ohms. Wattmeter 10W/100W/1kW all selective. Readings from two large separate meters. Boxed, unused, £25 plus p&p. KW Eze-match, £25 plus p&p. 01656 653 585 (Bridgend).

WANTED

ATU No 5 for ex-Army C12 tcvr, stores number ZA43051. Unit is easily identified by its blue and red knobs; would consider unit with stripped roller coasters. Nick, G4IQR (Not QTHR), 01440 783 184 (Nr Cambridge).
E-mail: nick.t@btinternet.com

EARLY crystal and one-valve sets wanted; all early valve equipment is of interest including valves, speakers, components and catalogues. Very keen for early Marconi items, still want a good Hallicrafters SX42 or similar top-end valve comms rcvr. G4ERU, QTHR, 01202 510 400 (Bournemouth).

VALVE tx 160/80m AM. Must be excellent condition, fwo, recently restored etc, not QRP (AT5) and including PSU. Advise details and price. 07866 077 249 (Notts).
E-mail: howardwalton@thersgb.net

AN FRG-8800 Yaesu rx dead or alive. 01483 202 004 (Guildford).
E-mail: se@ndirect.co.uk

AVO VCM 163 valve characteristic meter. 3-pin small Belling-Lee plug. HF elements for Bird 43. AVO coil winder. GI0SFT, 028 7135 2804 (Londonderry).
E-mail: pascalmcd@aol.com

CALLBOOKS 50s or early 60s for research project. Any early radio-related books or written items considered also.01789 296 342 (Stratford upon Avon).
E-mail: g0rep@otterburn2.freeserve.co.uk

ELECTRONIQUES HB-166T ham band transistor Coilpax II and IF modules for general coverage and ham band versions also SMD-2 or Eddystone 898 dials. Holders for crystals and cats whiskers required. Teaching the grandkids wireless. Any basket-weave coils etc. G4IAD, QTHR, 01942 817 556 (Bolton).

G2DAF components, xtals, switches, IF transformers, coils etc. Also circuit diagram for Hallicrafters SX130. 0151 632 0614 (Hoylake).

GEC BRT400 rcvr wanted. I am interested in any version. Please call Rupert, G4XRV, QTHR, 01494 778 686 (Chesham).

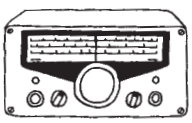
ISA serial card (8250?) guaranteed to work with micro-Baycom modem. Ring between 1800 and 2200. 01604 844 440 (Northampton).
E-mail: flet@another.com

MANUAL / circuit for Ajax A25 Radiotelephone - not A20. Tony Bull, 01635 848 783 (Thatcham).
E-mail: tony.bull@ntlworld.com

SILENT key clearout or just not needed. Wanted for research project, QSL accumulations, old call books etc, can collect. 0113 269 3892 (Leeds).
E-mail: g4uzn@qsl.net

STRUMECH Versatower P60 with ground post. Would also consider beam and rotator if available. Must be in gwo. Call Bob, GU4YOX, QTHR, 01481 256 755 (Guernsey).
E-mail: bob@beebe77.freeserve. co.uk

Looking for a classic receiver?



Find one with a member's ad!

Rallies & Events

16 JANUARY 2002

SURREY IEE MEETING - Wates House, University of Surrey. 7pm, admission free. 'The Small Antenna Controversy', by Prof Mike Underhill, G3LHZ. Stewart, G3YSX, sfbryant@iee.org

20 JANUARY 2002

OLDHAM ARC Rally - Queen Elizabeth Hall, Civic Centre, West Street, Oldham. OT 10.30/11am. TS, B&B, MT (two photos required), TI on S22 via GB4ORC, C, CP free. Steve, 01706 848 092 or m5aeg@btinternet.com

23 JANUARY 2002

SURREY IEE MEETING - Theatre M, University of Surrey. 7pm, free admission. 'UK Space Electric Propulsion', by Richard Blott and Neil Wallace, DERA Farnborough. R Longman, rlongman@iee.org

27 JANUARY 2002

FENLAND RG Horncastle Amateur Radio Rally - The Old School, Cagthorpe, Horncastle, Lincs. OT 10.30am, £1. C, MT. 01526 860 320 or 07778 274 535. [www.fenlandrepeater.org.uk]

30 JANUARY 2002

SURREY IEE MEETING - Theatre M, University of Surrey. 7pm, admission free. 'Channel Tunnel Fire', by Colin Kirkland, OBE. R Longman, rlongman@iee.org

3 FEBRUARY 2002

SOUTH ESSEX ARS Rally - The Paddocks, Long Road, Canvey Island, Essex (at the southern extremity of the A130). OT 10.30am. Radio, computer and electronics, CP free, DF, C (home-made), MT (two photos needed), but book before midday, please. Brian, G7IIO, 01268 756 331. [www.southessex.ars.btinternet.co.uk]

10 FEBRUARY 2002

CAMBRIDGE & DISTRICT ARC Annual Radio & Computer Rally - Lordsbridge Arena, Wimpole Road, Barton, near Cambridge. From M11 jn 12 (A603) follow signs. OT 10am, £2, disabled £1.50, with concessions. CBS, B&B, C, LB, CP free. John, G0GKP, 01954 200 072 or j.bonner@ntlworld.com

HARWELL ARS Radio and Computer Rally - Didcot Leisure Centre, Mereland Road, Didcot, signposted from A34. OT 10.15/10.30am, £1.50. TI on S22, CP, TS, B&B, SIG, LB, C, DF. Ann, G8NVI, 01235 816 379 or ann.stevens@btinternet.com

NORTHERN CROSS Radio Rally - Thornes Park Athletics Stadium, Wakefield, W Yorkshire. Just out of town on the Horbury Road. Easy access from M1 jns 39 and 40 - well signposted. OT 10.15/10.30am. TI on 2m and 70cm, B&B, MT (two photos required). John, G7JTH, 01924 251 822 or g7jth@wdrs. org.uk [www.wdrs.org.uk]

24 FEBRUARY 2002

SWANSEA ARS Amateur Radio & Computer Show - Swansea Leisure Centre, on the Swansea-Mumbles A4067 coast road. OT 10.30am. TS, B&B, TI on S22 via GC4CC, LB, C. Roger, GW4HSH, 01792 404 422.

6 MARCH 2002

SURREY IEE MEETING - 7pm free admission. 'History of the Croydon Tramlink', by Jim Snowdon, Tramlink. John Stevens, jstevens@iee.org

SILENT KEYS

WE REGRET to record the passing of the following radio amateurs:

G0UZI	Mr P J Carvell	
G1UBY	Mr E Mole	02/01
G2FS	Mr L K Winsor	11/07/01
G3BRR	Mr W J Leader	14/11/01
G3CEL	Mr A Stafford	10/01
G3CUC	Mr W H Moore	30/10/01
G3DKR	Mr K Roberts	
G3GPE	Mr K Smethurst	13/11/01
G3IDQ	Mr J D Booth	
G3IMF	Mr P J Faulkner	08/11/01
G3JDP	Mr A B Altschul	29/08/01
G3JXW	Mr W J Wills	
G3PVA	Mr P King	13/10/01
G3TYH	Mr M J Cooney	09/01
G3UUX	Mr E W Hibbert	11/10/01
G4ANL	Mr A Rodgers	01
G4EIB	Mr J H Challenger	15/11/01
G4IXL	Mr R Swinney	
G4KXD	Mr H Spooner	26/05/01
G4PAY	Mr B Caines	30/10/01
G4PDA	Mrs P Caines	06/01
G4PZQ	Mr D A Coe	11/05/01
G4SFC	Mr R Farrington	12/11/01
G4YSI	Mr J R Rayner	
GI4PCY	Mr F Sammon	
GM0ASY	Mr L Lambert	03/11/01
GM4VIR	Mr A Anderson	11/11/01
GW4ISF	Mr W Browning	31/10/01
GW7ACC	Mr J E Evans	03/11/01
GW7LYD	Mr P Jenkins	23/10/01

KEY

Rallies & Events

TI - Talk-In; **CP** - Car Park; **£** - admission; **OT** - Opening Time - time for disabled visitors appears first, eg (10.30/11am); **TS** - Trade Stands; **FM** - Flea Market; **CBS** - Car Boot Sale; **B&B** - Bring and Buy; **A** - Auction; **SIG** - Special Interest Groups; **MT** - Morse Tests; **LB** - Licensed Bar; **C** - Catering; **DF** - Disabled Facilities; **WIN** - prize draw, raffle; **LEC** - LECtures / seminars; **FAM** - FAMily attractions; **CS** - Camp Site.

9 MARCH 2002

CRYSTAL PALACE & DARC Spring Fair - St John's Hall, Sylvan Road, London SE19. OT 10.30, £1 (incl free drink), under 16s free. C. Bob, G3OOU, 01737 552 170.

17 MARCH 2002

BREDHURST R & TS Rainham Radio Rally - Rainham School for Girls, Derwent Way, Rainham, Kent. OT 9.30/10am, £2. TS, SIG, C, Microwave ATV, TI on S22. Martin, M0AAK, 01634 365 980 or martinm0aak@yahoo.co.uk [www.the-brats.com].
NORBRECK Amateur Radio, Electronics & Computing Exhibition - Norbreck Castle Exhibition Centre, Blackpool. MT (two photos required). Peter, G6CGF, 0151 630 5790.

20 MARCH 2002

SURREY IEE MEETING - Visit to Surrey Satellite Centre, University of Surrey. Pre-registration required through Abhaya Sumanasena, abhaya@iee.org

23 / 24 MARCH 2002

LONDON COMMUNICATION & COMPUTER SHOW - Lee Valley Leisure Centre, Pickett's Lock Lane, Edmonton, London N9. OT 9.45/10am. TS, B&B, SIG, DF, C, LB, MT, TI on 2m & 70cm, CP, CS, FAM (cinema, swimming, golf, spa). RadioSport 01923 893 929. [www.radiosport.co.uk]

7 APRIL 2002

45th NORTHERN MOBILE RADIO & COMPUTER FAIR - Gerald, G0UFI, 01765 640 695. [www.harrogaterally.co.uk]

18 APRIL 2002

WORLD AMATEUR RADIO DAY 2002 - theme 'Amateur Radio: continuing innovation in communications technology'.

21 APRIL 2002

YEOVIL & DARC 18th QRP CONVENTION – Derek, M1WOB, 01935 414 452, m1wob@tiscali.co.uk

27 APRIL 2002

CORNISH RAC International Marconi Day - John, G4LJY, QTHR.

28 APRIL 2002

ALDRIDGE & BARR BEACON ARC Surplus Radio & Electrical Sale - John, G0SWZ, 01922 548 014.

6 MAY 2002

DARTMOOR RADIO CLUB Radio Rally - Ron, G7LLG, 01822 852 586.
MID-CHESHIRE ARS Rally - David, G4XUV, 01606 77787.
WEST WALES AMATEUR RADIO & COMPUTER RALLY - Ray, GW7AGG, 01686 628 778, fax 01686 621 880 or mwmg01@aber.ac.uk

11 MAY 2002

YORKSHIRE DX CLUSTER SUPPORT GROUP Rally - John, G3LZQ, g3lzq@john-dunnington.freeserve.co.uk

19 MAY 2002

MIDLAND ARS Drayton Manor Radio & Computer Rally - Peter, G6DRN, 0121 443 1189 (eve).

22 MAY 2002

SURREY IEE MEETING - R Longman, rlongman@iee.org

26 MAY 2002

SPALDING & DARS Annual Rally - Ray, M0CTM, 01775 711 953, or John, G4NBR, 07946 302 815. [www.sdars.org.uk]
WEST MANCHESTER RC 6th Red Rose QRP Festival - Les, 01942 870 634 or g4hzj@btinternet.com

5 JUNE 2002

SURREY IEE MEETING - John Stevens, jstevens@iee.org

15 / 16 JUNE 2002

INTERNATIONAL MUSEUMS WEEKEND - Harry, M1BYT, 0113 286 6897 or harry_m1byt@ntlworld.com

16 JUNE 2002

EPSOM Radio & Electronics Fair - Paul, M0CJX, m0cjx@lineone.net
NEWBURY & DARS Boot Sale - Cold Ash, nr Newbury. Mark, M0CUK, 01635 36444. [www.nadars.org.uk]

23 JUNE 2002

MID-LANARK ARS Scottish Convention - Elvin, GM8BBA, 01698 748 616 or elvin8bba@blueyonder.co.uk

30 JUNE 2002

CITY OF BRISTOL RSGB GROUP Longleat Amateur Radio & Computer Rally - Ron, G4GTD, 0117 985 6253 or ronford@g4gtd.freeserve.co.uk [www.longleatrally.co.uk]

13 JULY 2002

CORNISH RAC Radio & Computer Rally - Ken, G0FIC, ken@jtarry.freeserve.co.uk or John, G4LJY, g4ljy@hotmail.com

26 - 28 JULY 2002

RADIO AMATEURS OF CANADA 2002 National Convention - [www.rac2002.org/]

28 JULY 2002

COLCHESTER RA Amateur Radio Rally & Computer Fair - Ron, G4JIE, 01206 826 387 or ron@g4jie.freeserve.co.uk [www.g3co.ccom.co.uk]

11 AUGUST 2002

FLIGHT REFUELLING ARS Hamfest - Keith, G1VHG, 01202 577 937 or keithg1vhg@netscapeonline.co.uk [www.qsl.net/g4rfr]

14 / 15 SEPTEMBER 2002

TRANSMISSION 2002 - John 01634 832 501.

20 / 21 SEPTEMBER 2002

LEICESTER Amateur Radio Show – Geoff, G4AFJ, 01455 823 344, fax 01455 828 273 or g4afj@argonet.co.uk

13 OCTOBER 2002

NORTH WAKEFIELD RC Radio Rally & Computer Fair - 01924 824 451. [www.nwrc.org]

GB calls

Callsigns are valid for use from the date given, but the period of operation may vary from 1 – 28 days before or after the event date. Operating details are provided in an abbreviated form as follows:

T = 160m; L = 80 or 40m; H = HF bands (30 - 10m); V = 6 and / or 4m; 2 = 2m; 7 = 70cm; S = satellite and P = packet.

Please send operational details of your special event station to the *RadCom* office at least five weeks before publication.

The QSL Bureau sub-managers for special event station callsigns are as follows:

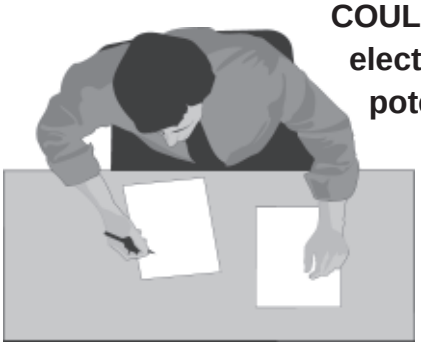
GBxAAA-MZZ - Mike Evans, 322 Heol Gwyrosydd, Penlan, Swansea SA5 7BR, e-mail mw0cna@ntlworld.com

GBxNAA-ZZZ - Graham Ridgeway, 37 Highfield Gardens, Blackburn BB2 3SN, e-mail m5aav@zetnet.co.uk

Will organisers of special event stations please ensure that they lodge plenty of envelopes with their sub-managers?

12 Jan GB2RAF: Royal Air Force. Norfolk. LH2 (G4PSH)

COULD YOU WRITE A BOOK?



COULD *YOU* WRITE A BOOK about aspects of amateur radio or electronics? If the answer is "Yes", the RSGB is on the lookout for potential new authors.

You don't have to have to write in perfect English or to draw immaculate diagrams - we can sort these out. What we do need, however, is for you to know your subject.

Although amateur radio publishing is not likely to return thousands of pounds in royalties, more than a few pounds could be yours as the author of the next RSGB best-seller!

Even if you have only the odd article, the RSGB is also looking for contributors to compilation titles that are being planned.

If writing a book appeals to you, simply send a synopsis of the book you would like to write, preferably with a sample chapter, by e-mail to: mark.allgar@rsgb.org.uk or by post to Mark Allgar, RSGB, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE.

Club & Regional NEWS

Region1: Scotland West & Western Isles

KILMARNOCK & LOUDOUN ARC
15, Musical Morse, Barry, GM3YEH. 29. AGM. Steve, GM4OSS, 01560 483800.

Region 2: Scotland East & the Highlands

No club details submitted.

Region 3: North West

MID CHESHIRE ARS
2, No meeting. 9, Use and abuse of coax cable part 2, Rob, G8XMZ. 16, Activity night & committee meeting. 23, VHF on air. 30, HF on air. Niall, G0VOK, 01606 871413.

THORNTON CLEVELEYS ARS
7, New Year party. 14, Auction. 21, 'How I became a Radio Amateur'. 28, Tech talk. Details from Jack Duddington, G4BFH, e-mail: jack@jduddington.fsnet.co.uk

Region 4: North East

DENBY DALE ARS
16, 'Up the creeks', Ken Wortley. Tony, G4LLZ, 01484 318 750.

GRIMSBY ARS
3, AFS organising. 17, 'Family history'. Brian, G4DXB, 01472 231383.

HALIFAX & DARS
15, 'RSGB Regions, 12 months on', Derek, G3WYP. R E Nolson, G0PMU, 01274 600297.

HAMBLETON ARS
9, Operating & chat night. 23, AGM. Ian Brickwood, 01609 775598.

HORNSEA ARS
9, My rig and equipment, G0TPS. 16, Activity night. 23, Schools project: space environment simulator, G0VRM. Andy, G0VRM, 07050 287279.

KEIGHLEY ARS
7, RAE Course Week 8. 9, Morse class (NRAE & Morse classes every Wednesday). Ian, M1BGY, 01274 723951.

NORTH WAKEFIELD RC
8, Committee meeting. 17, Junk sale. 31, 'Mills on the air', Jasmine, G4KFP. Jim, G3YDL, 01924 824451.

Region 5: Midlands

DERBY & DISTRICT ARS
8, Committee meeting. Martin, G3SZJ, 01332 556875.

GLOUCESTER AR & ES
7, WWII Japanese code interception. 14, On air. 21, Gadget evening: bring and show. 28, HF on air. Tony, 01452 618930 office hours.

HEREFORD ARS
18, Construction contest. Mike, G0WZY, 01981 251743.

KIDDERMINSTER & DARS
8, 'The Wartime Y-Service', Rosemary Lyman. Tony, G1OZB, 01299 400172.

LINCOLN SW CLUB
2, G5FZ on air. 9, AGM. 23, 'Flying the Shack', Peter, M0EJL. 30, Demo at St Francis School. John, G1TSL, 01522 793751.

LOUGHBOROUGH & DARC
8, Welcome back open forum, ideas for the New Year. 15, Video night, 'Charnwood 2001'. 22, Computers old and new. 29, Junk sale. Chris, G1ETZ, 01509 504319.

MELTON MOWBRAY ARS
18, 'Internet and Amateur Radio Married'. Geoff, G3STG, 01664 480733.

MID-WARWICKSHIRE ARS
8, Mini talks by society members. 22, Ascension Island and St Helena DXpedition, Keith, G3TTC. Bernard, M1AUK, 01926 420913.

RAF WADDINGTON ARC
3, RAE course. 10, AGM. 17, 24, 31 RAE course. Bob, G3VCA, 01522 528708.

SOUTH NOTTS ARC
9, On air HF & VHF. 16, AGM. 23, On air HF & VHF. 30, Construction project Part 1. Tel: 01509 569679.

SHEFFORD & DARS
10, Welcome back: a chance to show off your new Christmas presents. 17, Marconi's Achievements, Roy Rodwell. 21, Committee meeting. 24, 'Hints and Kinks'. Derek, G4JLP, 01462 851722.

STRATFORD UPON AVON & DRS
14, Ask the Experts, Terry, G3MXH. 28, Film night, Tony, G0REP. David, 01926 642858 or 07816 550075.

TELFORD & DARS
2, Open evening, on air, committee. Mike, G3JKX, 01952 299677.

Region 6: North Wales

NORTH WALES RADIO RALLY CLUB
17, 'My time in the Mediterranean', Vic, GW0MOJ. Ted, GW0DSJ, 01745 336939.

Region 7: South Wales

No club details submitted.

Region 8: Northern Ireland

BANGOR & DARS
2, Annual quiz. Mike, GI4XSF, 028 42772383.

Region 9: London & Thames Valley

AYLESBURY VALE RS
9, Annual dinner at 'The Duck Inn', Aston Clinton. Roger, G3MEH, 01442 826651.

CHESHAM & DARS
9, General meeting. 16, AGM. 23, Tech talk, G0VFW. 30, on air. Terry, terence.thirlwell@eds.com

CHESHUNT & DARC
2, Members' forum. John, G3WFM, 01707 651532.

CRAY VALLEY RS
17, Cables & connectors, Dave, G4BUO & Chris, G0FDZ. Bob, BRS32525, 020 82657735 after 8pm & weekends.

CRYSTAL PALACE & DRS
18, An evening of receivers: those we were unable to demonstrate last time. Bob, G3OOU, 01737 552170 or Victor, 020 86532946.

ECHELFORD ARS
24, *RadCom* PicATUne project demo, Paul Berkley, M0CJX. Robin, G3TDR, 01784 456513.

EDGWARE & DARS
10, AGM. 24, Informal - pay your subs. David, G5HY, 01923 655284 (days) / 020 89549180 (eve).

MAIDENHEAD & DARC
3, 'The RSGB', Neil Savin, G0SVN. 15, Topband antennas, John Rogers, G3PQA. John, G3TWG, 01628 525275.

SILVERTHORN RC
4, First meeting of New Year. 18, Amateur Radio Observation Service, Barry Scarisbrick, G4ACK. 25, Club meal, venue TBA. David, G0KHC, 020 85042831.

SURREY RADIO CONTACT CLUB
7, RSGB Deputy Regional Manager for Surrey & South London Paul Berkeley, M0CJX. Ray, G4FFY, 0208 6447589.

VERULAM ARC
14, 'Pico Erg Race' (note change of date). Walter, G3PMF, 01923 262180.

Region 10: South & South East

CRAWLEY RC
9, Run down on local 2m repeater GB7WS, G4EFO. 23, AGM. Derek Atter, G3GRO, 01293 520424.

CROWBOROUGH & DARS
19, Annual dinner. 25, AGM. Margaret, G6UIF, 01892 663666.

FAREHAM & DISTRICT ARS
2, Club station G3VEF & G8KGI on air. 9, Aerials for the shorter garden, G4ITF & G4ITG. 16, Basic electronic building blocks. 23, AGM. Steve, G7HEP, 01329 663673.

HASTINGS E & RC
16, The Enigma encryption machine, John Whinney. R C Gornall, G7DME, 01424 444466.

HORNDEAN & DARC
1, No meeting. 22, Talk TBC. Stuart, G0FYX, 023 92472846.

HORSHAM ARC
3, RSGB amateur radio videos. David, G4JHI, 01403 252221.

MID SUSSEX ARS
4, Shack ops, meet new committee. 11, Earthing, G4AKG. 18, Testing your rig, G8YKV. Geoff, G6MJW, 01273 845103.

WORTHING & DARC
9, Discussion evening. 16, The Foundation Licence. 23, Trans-Atlantic on LF, Peter Dodd, G3LDO. 30, Discussion evening. Roy, G4GPX, 01903 753893.

Region 11: South West & Channel Islands

APPLEDORE & DARC
3, Vintage Broadcasts receiver, Mike, G4NCU. Brian, M0BRB, 01237 473251.

BRISTOL RSGB GROUP
28, 'Why match your antenna?', Frank, G0CEN. Martyn, G3RFX, 0117 973 6419.

CORNISH RAC
3, Antenna matching, Dave, G3NPB. 14, Computer section, searching and downloading on the web. John, G4LJY, 01872 863849.

SOUTH BRISTOL ARC
2, Morse Assessment (club members). 9, Plans for club events in 2002. 16, Display of club archives. 23, Computer software exchange. 30, On air. Details from Len, G4RZY, tel: 01275 834282.

UNIVERSITY OF PLYMOUTH ARS
Meets 7.30pm 1st and 3rd Tuesday of each month at Smeaton Building, Room 312. Open to all (not just university). RAE classes available (details Bob Griffiths, tel: 01752 343177). General details: Den Perryman, G7NMA, 07811 934845.

Region 12: East & East Anglia

BRAINTREE AR & COMPUTER COMMS CLUB
7, Operating evening. 21, Video evening. Keith, M0CLO, 01376 347736.

BROMLEY & DARS
15, AGM. Alan, G0TLK, alangm2@clara.net

BURY ST EDMUNDS ARS
15, AGM. George, G3LPT, 01359 259518.

CHELMSFORD ARS
8, Junk sale. David Bradley, M0BQC, 01245 602838.

COLCHESTER RADIO AMATEURS
12/13, Foundation Licence training course (fully subscribed). Frank Howe, G3FIJ, 01206 851189.

HARWICH ARI GROUP
9, Discussion on new licence arrangements. Eugene, G4FTP, 01206 826633.

LEISTON ARC
1, Quiz night. David, G1YRF, 01728 833202.

MAIDSTONE YMCA ARS
4, RAE transmitters. 11, RAE transmitter interference. 12, Club dinner (TBC). 18, RAE measurements. 25, RAE EMC. Andy, M0CST, 01622 661035.

NORFOLK ARC
2, Informal Morse practice and instruction. 9, Discussion: what do you want from your club? 16, IInformal Morse practice and instruction. 23, Using the oscilloscope, Doug, G0UYC. 30, Informal Morse practice and instruction. Details from Peter, G3ASQ QTHR.

Region	RSGB Regional Manager
1. Scotland West & Western Isles	Vacant
2. Scotland East & the Highlands	Vacant
3. North West	Kath Wilson, M1CNY
4. North East	Geoff Darby, G7GJU
5. Midlands	Vacant
6. North Wales	Liz Cabban, GW0ETU
7. South Wales	Simon Lloyd Hughes, GW0NVN
8. Northern Ireland	Jeff Smith, MI0AEX
9. London & Thames Valley	Roger Piper, G3MEH
10. South & South East	Vacant
11. South West & Channel Islands	Vacant
12. East & East Anglia	Malcolm Salmon, G3XVV

RSGB Regional Managers from 1 January 2002.

KIDS IN NEED

Members of the Worthing & DARC celebrate after raising over £1900 for Children in Need.

ON 16 / 17 NOVEMBER, members of the Worthing and District Amateur Radio Club operated a special event station in the foyer of the Holmbush Shopping Centre, Shoreham, West Sussex. It was organised by Chris Delhaye, G3NDJ, to raise money for the BBC Children In Need appeal. The club used the callsign GB2KIN ('Kids In Need').

Members of the public watched the station operators in action using CW and phone. Special certificates were issued to successful children who sent their name in Morse code. Two Pudsey bears were raffled, one on each day, to raise even more money. The total raised was over £1900. The Worthing & DARC meets every Wednesday at the Parish Hall, South Street Lancing, West Sussex. For more details please contact Roy, G4GPX, tel: 01903 753893, write to WADARC, PO Box 599, Worthing BN13 1PZ, or visit the website at www.wadarc.clara.net

● THE MOORLAND and District Amateur Radio Society took part in a sponsored 24-hour on-air activity for the BBC Children in Need appeal on 16 / 17 November. In 2000 the club raised over £900 for Children in Need and it was aiming to break that figure in 2001.

CRAY VALLEY ACTIVITY

CVRS members John, G3XWK, and Wilf, G0WLF, at two of the three operating positions at GB8ST, while RSGB representatives Ryan, G5CL, and Roger, G3MEH, greet the public.

2001 WAS A busy year for Cray Valley Radio Society. Apart from regular meetings throughout the year and the occasional visit, the Society manned three special event stations and celebrated their 55th birthday in style.

The first special activity was in June when members operated GB2SJS to celebrate the centenary of the nave of a local church. In September, they ran GB2FB, raising money for the British Wireless for the Blind, and in October operated GB8ST for the Crown Woods Festival of Science & Technology (SciTech). The RSGB also supported SciTech with Roger, G3MEH, and Ryan, G5CL, manning the RSGB bookstall and amateur radio information area.

Also in October over 30 Cray Valley members attended the club's 55th birthday celebrations. You can find out more about Cray Valley by visiting their web site at www.cvrs.org

Items for club news should be sent to the *RadCom* Office at HQ to arrive by the 26th of the month, ie approximately a month before publication (eg 26 January for the March issue). News items should be sent in writing (fax, letter or e-mail gb2rs@rsgb.org.uk) by the club secretary or the person responsible for publicity. Post cards for this purpose are available from RSGB HQ. A database of all meetings is shared between *RadCom* and GB2RS, so information only needs to be sent once.

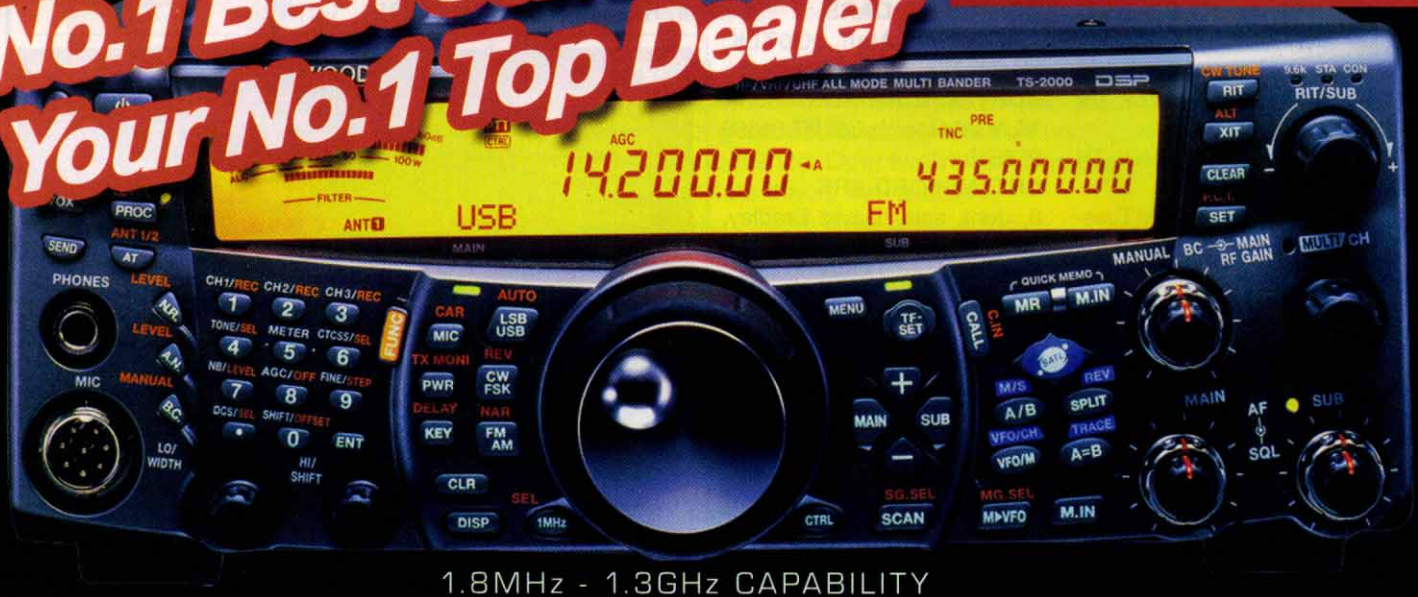
Club News is a service for clubs and societies affiliated to the RSGB. The announcements are intended to notify non-members and potential members of your club of specific events, therefore 'informal', 'committee meeting', 'natter night' and 'ragchew evening' etc will only be included if space permits. Basic, unchanged details about RSGB-affiliated clubs are published annually in the *RSGB Yearbook*.

WATERS & STANTON | KENWOOD

TS-2000

No.1 Best Seller From Your No.1 Top Dealer

+£100 HEIL VOUCHER



1.8MHz - 1.3GHz CAPABILITY

FEATURES

FREE 3 YEARS WARRANTY

- Frequency: 30kHz-60MHz, 142-152MHz, 420-450, (1240-1300MHz optional)
- Wideband Rx Dealer Mod.
- RF Output: HF/50/144MHz 100W, 440MHz 50W, 1200MHz 10W
- Modes: LSB, USB, CW, FM, AM, FSK
- Independent sub-band 118-174MHz, 220-512MHz (FM/AM only)
- Built-in automatic ATU HF/50MHz (preset memory)
- IF DSP for main-band use
- AF DSP for sub-bands
- Combination of Digital IF filters & IF DSP slope tuning
- Digital IF AGC
- IF Auto-Notch function
- Manual Notch for single wave
- AF beat canceller
- Choice of Noise Reduction - NR1 for SSB, NR2 (SPAC) for CW
- CW Autotuning
- DSP variable demodulation for SSB/CW/FSK/AM
- Built-in TNC (1200/9600bps) For DX Cluster
- Information displayed on LCD
- Electronic keyer system
- Size 270 x 96 x 317mm
- Weight 7.8kg

Breathtaking is the word to describe the TS-2000 specification. Whether you operate, SSB, CW, Data modes, FM or AM, and whether you are an HF operator or VHF/UHF enthusiast, you'll find the TS-2000's performance and flexibility unrivalled. This all-band, all-mode transceiver takes the "station-in-a-box" concept to a new high level whilst offering exceptional value for money. What is more, you will never need to buy another filter; the TS-2000 has its own built-in digital filters. You can easily change the shape and bandwidth to suit mode, preference or band conditions. Add to this the DSP audio filtering that offers Beat cancel, CW auto-tune, Noise reduction and transmit audio shaping, and you have one very serious radio. But there's more. Satellite users have 10 dedicated memories and manual control for Doppler shift. And with the optional UT-20 you can monitor any band and any mode, whilst also monitoring VHF or UHF FM/AM signals - even on the same band. For example, you can keep an ear open on the local repeater or call channel whilst hunting the DX. You can even monitor the VHF DX cluster (using the built-in AX-25 TNC) whilst working HF DX, display the information on the screen and ask the transceiver to automatically QSY to the DX frequency. But to really appreciate all the features the TS-2000 has to offer, you'll need the 10-page colour brochure, available from Waters and Stanton by simply phoning 01702 204965 or check our website at www.wsplc.com.

WATERS & STANTON PLC - 22 MAIN RD, HOCKLEY, ESSEX, SS5 4QS.

ENQUIRIES: 01702 206835/204965 FAX: 01702 205843 E-MAIL:sales@wsplc.com

WEB: www.wsplc.com

ALSO AVAILABLE AT MATLOCK AND GLENROTHES LOCATIONS

VHF/UHF

NORMAN FITCH, G3FPK
40 Eskdale Gardens,
Purley, Surrey CR8 1EZ.
E-mail: g3fpk@compuserve.com

A HAPPY NEW Year to all readers and contributors and, what a month it's been! The 50MHz band was open world-wide, culminating in a magnificent opening to North America. There were some good auroral events, thanks to spectacular solar activity, and some good tropospheric propagation. All times are in UTC, ODX indicates best DX and QTHR signifies that the operator's address is in the current *RSGB Yearbook.* An asterisk (*) after a callsign denotes a CW contact, (DG), (TR) etc refers to the postcode area and (JO45), for example, is the Maidenhead grid.

GEOMAGNETIC AND SOLAR ACTIVITY

IN THE 30-DAY period to 6 November the geomagnetic data from the Space Environment Center (SEC) shows that the middle latitude A-index at Fredericksburg was in double figures on 11 days. Sub-storm values occurred on 21, 22 and 28 October with a storm level of 60 recorded on 6 November.

The 2.8GHz solar radio flux exceeded 200 units on 22 days, peaking at 248 on 19 October to give a daily average of 216.4. The SESC sunspot number peaked at 239 on 21 and 26 October, the daily average being 189.6. 34 new sunspot regions were recorded and the maximum area in millionths of the Sun's visible disc was 2650 on 28 October. Thanks to Neil Clarke, G0CAS, for the copy of the September issue of *Sunmag* and I acknowledge receipt of the August edition of *The Six and Ten Report.*

MOONBOUNCE

THE FIRST LEG of the ARRL International EME Contest on the 13/14 October weekend, "... will not go down in history for great conditions" (one of the comments in the 'Conditions' paragraph in the November issue of Al Katz's, K2UYH, *432 and Above Newsletter*) Because the Sun and Moon were close and the solar flux was high at 192 units, Sun noise was a nuisance. Signal quality was poor on 23cm and Faraday rotation was a problem on 70cm. Al concludes, "I am afraid the folks that choose the contest dates do not understand EME."

Graham Daubney, F/G8MBI (JN04), was QRV on 23cm using 50W to a 3.95m dish which gives 17.5dB of Sun noise with a solar flux of 122 at 1.45GHz. He heard 51 stations in the contest and completed with 17 including ZS6AXT, K0YW, K5JL, K1RQG and KA0Y. He thanks all those who tried very hard to hear his signals.

Photo: Carol Lakomiak

The 5 November aurora as seen in Tomahawk, Wisconsin, by Carol Lakomiak (www.spaceweather.com).

METEOR SCATTER

DURING THE ORIONIDS meteor shower observers over a 200-mile stretch of the east coast of England from Hastings to Lincolnshire reported a very bright fireball at 2030 on 27 October. It was seen by coastguards in Holland and people on ferries and gas platforms. Descriptions included "a brilliant white flash" and "a massive explosion" which was *very* loud. The trail was visible for about half an hour and experts have suggested that this meteor could have been the size of a small boulder.

Philip Town, G0ISW, is finding WSJT a very useful way to work new grids on 2m. He runs a lead containing a miniature VOX unit from his IC-746 that plugs straight into the soundcard in his computer. He appears to be the only MS operator in IO84 so has a queue of sked proposals mainly from German stations. Running 50W to a 25-ele log periodic antenna 7m AGL, he has recently added IN94, JN49, JO33, 43 and 55 to his total.

The first major shower in 2002 is the Quadrantids, which should peak around 1700 on 3 January. At this time, the reflection efficiency is best for the Northeast/Southwest path and worst for the Northwest/Southeast direction. The OH5IY software suggests a maximum zenithal hourly rate (ZHR) of over 119. The peak is quite short and is often missed resulting in reports that the shower wasn't very good.

Roger Stapleton, GM0GKR (KY), points out that the suggested sources of accurate time signals mentioned last month are all fine as long as you use a terrestrial analogue service to receive them. He writes, "If you get your 'pips' from the BBC World Service via the Worldspace satellite, the delay is 6 - 10 seconds. A good source of time is a GPS receiver." Thanks for your comments, Roger.

Peter Blair, G3LTF (IO91), operated on four bands, 2m to 13cm. He reports that conditions were good at times on 70cm but with very sharp Faraday and found difficulty in working smaller stations as they put out few CQs. He completed with 25 stations on the 13th and with nine next day. His tally on 23cm was 33 different stations with one on 13cm and two on 2m.

Howard Ling, G4CCH (IO93), was pleased with the good turn out on 23cm. He was kept busy all day on the Saturday working 41 stations, but things slowed down on the Sunday with 13 completions. New initials were F/G8MBI, DL4MUP, DO6ME and NL7F.

During the 3/4 November activity weekend he found good conditions on 23cm in the first session with minimal libration but low activity. Libration was more noticeable in the second session and activity was better. An interesting QSO on the 3rd was a three-way on SSB with OE9XXI and K1RQG. He is now up to 162 initials in 31 DXCC countries and 124 grids. He asks if anyone has information on DO6ME and DH5RZ and knows the locator of Z25JJ worked in 1983? He has found out that DL4DTU is the same station as DK0ZAB and that NY2Z is the same as W2DRZ.

To date I have not seen a Lunar Weekend Calendar for 2002 but the next favourable sked weekend would seem to be 26/27 January when London latitude stations will enjoy about 31.7 hours of Moon time. The declination varies from +23.41º to +24.30º, the signal degradation referred to perigee ranges from -0.77dB to -0.36dB and the 144/432MHz sky temperature varies from 575/44K to 321/23K.

BAND REPORTS

50MHz

John Hoban, G0EVT (WF), missed the opening on 25 October but was QRV next day when he heard Australian video on 46.171MHz up to S8. He went on CW from 0813 to work UK9AA (MN40), UN9P (MO60), 9M2TO (OJ05) and YB5QZ (OJ00). UN3

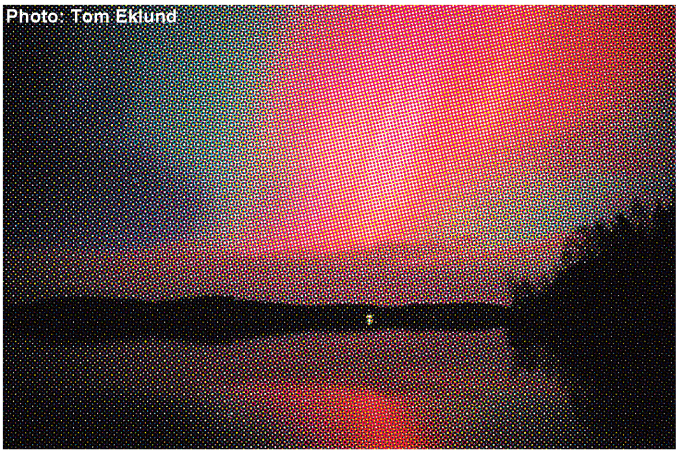
and 9M2 were heard next morning. At 1056 on the 29th he worked 9G5AN (IJ95) for a new country. The 31st was a rewarding day from 0900 with VU2RM (NK16), XW0X (OK18), DU1EV* (PK04) providing new countries and JR6WPT* (PM53), JR5JAQ* (PM63) and JA5AIE* (PM53) new grids. At 1039 he copied beacon VK6RSX (OG89) at S2 for the first time and heard VK6JQ*. The last contact was with E30NA (KK95) at 1130.

In the morning of 2 November the VK6RSX beacon was up to S8 and at 0911 he contacted DU1/GM4COK* (PK04) with XU7ABW heard. Countries heard in the morning of the 3rd were XW, DU, 9G, VK6, JA, XU and VY2, with VE1 and ZS6 in the afternoon. More VK signals were copied next morning and later on he heard the big opening to North America, working K8MD* (EN82) and VE3KZ* (FN02) for new grids. Unfortunately the northwest is a bad direction for John due to burglar alarm problems.

Bryn Llewellyn, G4DEZ (JO03), writes about 26 October thus, "Big opening this morning, where to I've no idea. I listened for over an hour and heard many stations on CW and SSB 'working' the DX. The problem was that *not one station* exchanged both callsigns. So technically none of those contacts was valid. This is yet another 'dumbing down' of operating procedures, yet all stations concerned will claim that they have 'worked' the DX."

He was called by TR8CA and also worked into the Ukraine that day. In the RSGB contest on the 21st he worked TR8CA and ZA/LZ3XV. There were auroras on the nights of the 21st and 22nd which went on till 0200 the next mornings. In the early hours of the 22nd, OH9SIX (KP36) was RST599 and Bryn presumes it was auroral-E mode.

Ted Collins, G4UPS (EX), saw the aurora in Devon at 2047 on 21 October but did not hear many signals. From 2059 he worked G4ZTR* (JO01) and GW3RYR* (IO81), the event fading out by 2110. At 0938 on the 22nd he worked D44TD (HK86) for DXCC country 164. Auroral signals were heard in the afternoon till 1500 and from 1600 to 2005 there was another phase with stations in EI, G, GD, GM, GW, LA and OZ heard.



The 5 November aurora as viewed by Tom Eklund in Valkeakoski, Finland (www.spaceweather.com).

In the morning of the 29th 4X and 5B stations were heard and OD5UT (KM73) worked. At 1101 Ted contacted 9G5AN, DXCC #165; Mick is K5ANB and his QSL route is via W7XU. Caribbean and W stations were heard later and AE4RO* was worked at 1502. The 30th brought DXCC #166 in the shape of UK9AA* while VU2ZAP* at 1041 was #167. D44TC was another new grid, E30NA was #168, QSL via DL5NAM, and HP2CWB* was #169. VU and XW stations were copied in the morning of the 31st with North Americans worked between 1215 and 1615.

Coming to early November and on the 2nd from 0813, DU, XU, VK4 and VK6 stations were copied. XW0X* was yet another new DXCC at 0917 on the 4th. From 1720 he worked into W1, 2, 8 and 9 and VE2 till fade-out at 1800. Ted is the QSL manager for Tony Selmes, A45ZN, but *only* for 6m contacts and only *direct* to G4UPS (QTHR).

Steve Larkins, G8SBF (RG), writes, "The crowning glory of achievement with just the tri-band collinear and 100W was XW0X on 50.143MHz SSB on 31 October." Later on he worked VE1YX (FN74) and VO1TJM (GN08) and next day 9G5AN. In the afternoon of 4 November he worked K8MD (EN82), N1RZ and K1TOL (FN44), VA3MW, AA6TT (FN34), N1RR (FN42) and VE2PEP (FN46) all at S9.

Tony Jones, GW4VEQ, on Anglesey came on at 1645 in the great opening on 4 November and completed 180 QSOs in 77 minutes, 95% of which were on SSB on 50.117MHz in horrendous QRM. VE9AA gave him a report of S9+50dB! The breakdown was 21 W6s, 12 W7s, five W0s, 20 W9s, 25 W8s, 22 W5s, 10 VE3s, five XEs, the rest being W1 - 4, VE1 and 2.

Jamie Ashford, GW7SMV (NP), turned in another superb list in the second half of October including ZS6s via TEP on the 15th, F_2 QSOs with TR8CA, D44TD, UN6P, AA6TT, K1SIX, EK6AD* (LN20), 9G5AN, 4Z5AO (KM72), OD5UT, 9M6US (OJ85) at 1016 on the 29th and possibly a GW/9M6 first. 5B4JE (KM64), D44CF* (HK76), PY0FM (HI36), ZF1DC (EK99) for a new grid and country, W4OV and K4SN (EL96). He completed a Worked All Continents (WAC) in *six hours*.

On the 30th VU2ZAP was new and a claimed first GW/VU contact. 9M2TO* and HP2CWB (FJ09) were new DXCCs and grids. E30NA and VU2MKP (MK82) were also worked. Next day brought XW0X for a possible GW/XW first, while JR5JAQ*, JR6WPT* and VU2RM were more new grids.

On 3 November DU1/GM4COK was new and in the grand opening next day Jamie worked 24 North Americans, ODX being K8MD (EN82), VE2BKL (FN48), K9HMB (EN52), K8HFX (EN74) and KE9I (EN61).

Gordon Wyatt, GW8ASA (CF), remarks on the dramatic improvements in propagation in the latter half of October. New stations include PY0FM, 9G5AN, ZF1DC, D44TC, E30NA and VU2ZAP. David Whitaker, (BRS25429), listening on the afternoon of 4 November, was logging North American stations at one-a-minute for over an hour. He heard W1-4, 6 and 9 districts and lots of new grids. ODX was AA6DD (DM13) heard working M0CTP at 1716.

144MHz

Angie Sitton, G0HGA (SG), has set up a new reflector for 2m CW in Yahoo groups. It's purpose is to encourage newcomers to CW activity on the band and to exchange information. She hopes that members will post information about auroral, Es and other DX alerts with beam headings and use the reflector to make DX and local skeds. The group is open to all licensed amateurs and SWLs and you can sign up by logging on to the website. Angie also has her own website - see the list.

Bob Harrison, G8HGN (CM), was QRV on 11 October and found tropo propagation up. He worked DH1NFL (JO50) at 2136 then QSYd to 70cm. Tropo was good on the 13th resulting in a QSO with OE2WPO/2 (JN76) at 1104 for grid #164, followed by DL5SDK/P (JN59), DC8RA (JN39), DL7UIO (JN48), DH1MJ/P (JO31), DJ6DZ (JN49), DK5EQ (JO31) and DK0OG (JN68). Conditions seemed best an hour either side

ANNUAL VHF / UHF TABLE - JAN TO DEC 2001

	50MHz		70MHz		144MHz		430MHz		1.3GHz		Total
Callsign	Dist	Ctr	Dist	Ctr	Dist	Ctr	Dist	Ctr	Dist	Ctr	Points
G4DEZ	65	62	24	6	72	17	26	12	20	2	306
G4ZTR	45	37	38	7	96	29	13	5	-	-	270
G3FIJ	34	40	21	3	62	13	15	4	6	1	199
G4APJ	6	15	-	-	60	11	21	7	-	-	120
G6TTL	10	35	-	-	34	8	14	4	-	-	105
G7CLY	7	14	-	-	28	8	4	1	-	-	62
G1UGH	1	15	-	-	8	9	-	1	-	-	34

The District Codes are the 124 listed on page 53 in the October 2000 *RadCom*. Up to 6 different GI stations and up to 3 different GM stations in each Scottish district may be counted. Countries are the current DXCC ones plus IT9. The deadline for the final 2001 entries is 15 January.

of midday. Using 50W of FM to a tri-band collinear on S22 G8SBF worked DC6HQ/P, PA0QRS and ON4AQB on 12 October.

Reg Woolley, G8VHI (CV), has been back on the band for 18 months using an FT-847 running 50W to two 14-ele Yagis at 50ft AGL. In the evening of 21 October he found an aurora in full swing and, after working into GI and GM went on to contact DL, F and PE stations in JO22, 30, 32, 38 and 62. In another event next day from 1608 he worked DL, G, OZ and PE stations in IO93, JO22, 30, 43, 44, 52 and 53, ODX being LY2SA (KO14) at 1808. All these QSOs were on SSB.

John Nelson, GW4FRX (SY), was listening on 22 October when the aurora was "switched on" at 1400. There were some very big signals from all over the place resulting in four new grids thanks to CW QSOs with OZ9PP (JO47), LY2SA, SM3BEI (JP81) and OH1XT (KP01). He had to go QRT at about 1735.

GW7SMV caught the enhanced tropo on 12 October working 6 DLs, 3 PAs and an ON, but nothing further east than JO31. In the auroras on the 21st and 22nd Jamie contacted G, GI, GM and ON stations in IO74, 75, 78, 79 and JO10 and 21. In the tropo opening on the 29th he worked EA1EBH (IN73), F4BWJ (IN93), F4ARU (IN94) and F5GHP (IN96). In the big tropo event on 2 November he made 63 QSOs between 1851 and 2322 comprising 43 DLs, 10 PAs, seven ONs and one each OK, OZ and SM, ODX being OZ0JX (JO54), DD0VF (JO61), SK7MW (JO65), DL3BUE and DL3BRS (JO72) and OK1AR/P (JO60). Next day brought contacts with OK1DTC (JO60), OK1VMS (JO70) and DL2OM/P (JO61) with LY2SA and SP5WCK heard in the evening.

430MHz

G8HGN has been quite active on the band and on 11 October Bob worked F1EZQ (JN27) at 2115. Following a 2m QSO he then contacted DH1NFL, DF0HF (JO50), DG1MUE (JN48) and DK2BJ (JO30). On the 13th, again after an initial QSO on 2m, he gave DL7UIO his first UK contact on 70cm. Subsequent QSOs were with DF6IY (JN48), DL6WU (JN49) and DG1KJG (JN30).

G8VHI runs an IC-451 and 100W PA to a pair of 23-ele Yagis at 55ft AGL with masthead preamp. Reg was QRV in the UHF/SHF contest on 6/7 October and made 73 QSOs. In the first leg of the Cumulatives on the 12th he completed 48 contacts worth 9352 points.

GW8ASA/P was QRV for the second of the Cumulatives on 29 October when the tropo was good resulting in 45 contacts including 13 Fs, two GUs and a PA, the rest being with G and GW stations. ODX was F1VBW (JN03) at 994km. Gordon reports that the local 70cm activity nights are still ongoing in the South Wales area.

1296MHz

David Dodds, GM4WLL/P (IO85NR), was QRV in the second leg of the 1.3/2.3GHz Cumulatives on 26 October and made nine QSOs in seven grids using a DEM transverter, 18W PA 67-ele Yagi and preamp. ODX was G4BRK (IO91) at 461km but he says that conditions were nothing to get excited about. G8VHI runs an old MM transverter to a 35W PA and a 67-ele Yagi with masthead preamp 57ft AGL. Reg was QRV in the 6 / 7 October contest and made 24 QSOs.

DEADLINES

A VERY REWARDING month and let's hope that the imminent - at the time of writing - Leonids shower produces the 2500 meteors/hour some scientists have been predicting. The March deadline is **15 January** - don't forget your final Annual Table scores - and the April date is **12 February**. My telephone answering and fax machine is on 020 8763 9457 and the CompuServe ID is g3fpk ♦

WWW.

2m CW Reflector http://yahoo.groups.com/group/twometrecw
G0HGA http://www.qsl.net/g0hga/2mcw.htm

Helplines FOR MEMBERS

● Michael, G8MOB, would appreciate the loan of a manual or circuit diagram of the **Racal MA1101 automatic pre-selector** and the **Solartron AS1165** 0-500V **variable PSU**. He would also appreciate the loan of a manual or circuit diagram for the **Nems-Clarke 1306 VHF receiver** and the **Rohde & Schwarz Time and Frequency Standard type CAQ** (100kHz). All postal and copying expenses willingly paid. G8MOB, QTHR. Tel: 020 8224 8606 or 07751 838 760.

● Bruce, M0CVP, needs to borrow or buy a service manual for the **Trio TS-830S transceiver**. All costs covered. M0CVP, QTHR. Tel: 01244 343 825 or e-mail: bfcsutherland@supanet.com

● Peter, G4CGP, is searching for a maintenance manual (to purchase or borrow) for the **Telequipment Oscilloscope D1101**. All costs gratefully reimbursed. G4CGP, QTHR. Tel: 01709 548 703 or e-mail: pail@tinyonline.co.uk

● Norman, M0ALB, would appreciate a short-term loan of the handbook for the **Matsui MR4099 / Sangean ATS-803A / Realistic DX440 receiver**. He would also welcome circuit details or other information relating to the **Lissen 0-V-2 short-wave receiver kit** marketed in the mid-1930s. All costs will be paid. M0ALB, QTHR. Tel: 01202 747 223.

● John, M0BIC, requires the operating manual or handbook to photocopy for the **Marconi *in situ* Universal Bridge TF2701**. Quick return guaranteed and all costs re-imbursed. M0BIC, QTHR. E-mail: brock@jbrocklebank.fslife.co.uk

● Brian, M0CFY, needs any information on connecting an **Easy Reader DM1000** via radio to a computer. The machine is made by Dewsbury Momentum Communications, and reads RTTY and CW. All expenses met. M0CFY, QTHR. Tel: 01952 415 440 or e-mail: m0cfy@thersgb.net

● Mal is looking for copies of circuits, service data, and specifications of the **DATApulse 106A pulse generator** (Inglewood, CA) and **receiver** (Ultra Electronics). Tel: 0151 649 9201.

● Eric, G3KXE, requires the handbook and circuit diagram of the **Marconi Power Meter type TF893A**, and will meet all expenses. G3KXE, QTHR. Tel: 023 8046 6506.

● Umberto, I1BIN, is searching for the circuit diagrams and manuals for the **Gould OS4030 oscilloscope**, the **Redifon RR102/a receiver** and the **Eddystone 1002/1 receiver**. He will cover all costs. Please write to I1BIN at 81 Corso Cosenza, 10137 Torino, Italy.

● Rodney, G4CCE, is urgently seeking an individual or business capable of repairing a **Datong UC1B upconverter**. G4CCE, QTHR. Tel: 01474 568 704 or e-mail: rod@curzonamp.f9.co.uk

● Keith, G3RHR, needs the circuit diagram for the **Scopex 4S6 oscilloscope**. He will meet all expenses. G3RHR, QTHR. Tel: 01423 868 139 or e-mail: G3RHR@lineone.net

● Vic, G0XYS, needs a modern (**Pentium** or similar) **main board for a PC**. G0XYS, tel: 01482 216 549.

● George, M5ACN, is looking for an **audio filter plug-in unit** for the **R107 receiver**. Such items are very elusive and he would welcome contact with anyone who has a unit surplus to requirements. M5ACN, QTHR. Tel: 0870 904 7373 extension 38, during office hours.

IMPORTANT NOTE

Respondents to items in the 'Helplines' column are advised not to send original documents, but to copy them and send the copies. This is to protect your (often valuable) property in those very few instances where the originals are not returned.

CONTEST

TIM KIRBY, G4VXE
11a Vansittart Road,
Windsor SL4 5BZ
E-mail:tim@ukgateway.net

LIKE MANY others who have an eye on the longevity of our hobby, I welcome the licence changes introduced recently and hope that they will serve as an entry point for a new generation of radio amateurs. As contest enthusiasts, we will have to find ways of drawing the newcomers into contests and spurring them on to try different aspects of the hobby.

Despite the doom and gloom merchants, it is great to note that there are newcomers to the contesting scene. I was delighted, following the CQWW DX SSB contest to get in touch with Jonathan, M5FUN. Jonathan had put together an impressive entry of 475 QSOs with overall totals of 128 countries and 82 zones. He writes, "Great contest! The rig I was using was a TS-430S and the antenna was a G5RV. D44TC was the probably the rarest, but not the best DX. I managed to work Alaska, Kazakhstan and several stations in South America including Brazil, Argentina and Chile. I missed out on working VU through the huge pile-up." Jonathan hopes to do well in the Under-21 section. I'm sure he will, and his entry stands up well in any category. At 13, Jonathan is one of the youngest serious entrants to a contest that I am aware of. Congratulations, Jonathan, and we will look forward to working you in many more events in the future.

CQ WW SSB

CONDITIONS WERE great! Particularly on the Saturday, 28MHz was really buzzing. Stations stretched from 28300 (and below probably - I didn't look!) to well over 29MHz. I worked HC8A on 29008 and there were a number of stations higher in the band. The great thing about the *DXClusters* in a contest that it really doesn't matter whether you are on a 'prime' frequency. As long as you get spotted on the *Cluster*, which if you are a nice multiplier, you will - people will find you. Around 0930UTC I found KL7Y around 28700 calling CQ at S9 with very few people calling him. Having worked him, I spotted him and waited to see the effect the spot would have. I was quite pleased: it took only about 30 or 40 seconds for a small pile-up to develop! Another amusing anecdote involving a *Cluster* spot was that towards the end of the Sunday, I was tuning around and listening to some stations on backscatter. I thought I'd spot some stations in 'close-in' countries such as F, DL, ON and PA, as they might be tricky multipliers for some people. One station wasn't too strong, so I just spotted him and started to turn the dial. Imagine my surprise when the station called me. I was impressed by the operator's resourcefulness if nothing else!

MORE VHF ACTIVITY

WELL, MORE VHF Activity contests, anyway! I was delighted to see some new additions to the VHF Contests Calendar for 2002. In addition to the 2m Activity Contest on the first Tuesday of every month, there is now a 432MHz Activity Contest on the second Tuesday, a 1.3 / 2.3GHz Activity Contest on the third Tuesday and a 50MHz Activity Contest on the fourth Tuesday of the month. Tuesday night is VHF Contests night. It'll make it easier to remember which evening there's a contest on! We look forward to seeing a healthy entry in the contests, and don't forget that you can post your VHF claimed scores on the web at http://www.blacksheep.org/cgi-bin/vhfcc/claim.pl

WRITELOG

DURING THE preparations for CQWW CW, it came as something of a surprise to be asked by one of the members of the team whether we should use *Writelog* as contest logging software. I had, probably unfairly, always seen *Writelog* as a very competent datamodes program but not as a CW / SSB contest logger. It seems that perception is changing around the contesting community, as I know one major group had exactly the same discussion. Clearly W5XD who writes the program and K5DJ who distributes it, have been working hard. I was interested to note the availability of a plug-in for *Writelog* which, during the contest, assuming an Internet connection is present, updates your score on a real time basis to a webpage enabling instant feedback on how you're doing. I don't suppose that will be to everyone's taste, but it seemed like an interesting idea.

CONTEST CALENDARS

I WAS PLEASED to receive an e-mail from Les, G4OGB, who said the following, "Reading your comments regarding contest calendars it struck me that not everyone is yet 'connected'. I have drawn up my own (mainly CW) calendar, if anyone would like a copy, please send an SASE (A5 size) envelope plus one 2nd class stamp (to cover cost of paper and printing) to me, QTHR".

Jonathan, M5FUN, in full contesting action.

144MHz CW CONTEST, JANUARY 2001

AFTER LAST year's good conditions things returned to normal this year. G4ZTR again heads the single operator section with G7RAU taking second spot. G0NFA was the only Multi Operator entry this year. G3FIJ is the highest placed 25W / single-antenna entry.

Pete Lindsay, G4CLA

144MHz CW Contest, January 2001

Multi Operator

Pos	Call	Loc.	QSOs	Mults	Points	Total	ODX	Dist	Power	Ant
1*	G0NFA	IO91NE	44	32	7607	243424	DK5DQ	568	100	9ele

Single Operator

Pos	Call	Loc.	QSOs	Mults	Points	Total	ODX	Dist	Power	Ant
1*	G4ZTR	JO01KW	43	34	9415	320110	GI8AYZ	543	150	5WL
2*	G7RAU	IO90IR	35	25	9589	239725	DJ2JA	705	400	2x9ele
3	G4OUT	IO92AT	19	19	3364	63916	LX2DX	683	40	12ZL
4	GW3HWR	IO71XN	15	16	3814	61024	G0UEC	457	350	9ele
5*	G3FIJ	JO01KV	18	18	2718	48924	G4RRA	353	10	10ele
6	G0DVJ	JO01MX	15	14	2602	36428	DL0HSC	429	50	5ele
7	GW4HBK	IO81KP	14	15	1931	28965	G4ZTR	278	60	9ele

7MHz DX CONTEST, 2001

THE 7MHz CONTEST this year proved to be little different from past years with the exception of a few missing faces. Numbers taking part seem to remain pretty static. Nevertheless, most who took part made some form of enjoyable comment, many on the lack of UK activity. UA4ARL made 14 QSOs with 5 watts output. YU7SF has now taken part in 34 7MHz Contests since 1962. Most comments are summed up by Steve Ireland, VK6VK - "As usual, really enjoyed myself, although conditions were quite poor. It is a shame there is not more activity from the UK in this Contest - it is a great chance to work some excellent DX, even with low power and a simple antenna. To my mind, outside of the Commonwealth Contest, it is the best and most fun RSGB Contest."

The outright overseas winner this year is RA9OW - who also wins Section (d) North and South America, Africa and Asia. Ilya used an Icom IC-751A barefoot to an 80m delta loop about 35m high. In second place is K3ZO and in third VE1AYY. Leading European contender was LY3BA who came in overall fifth place. VK6VZ, the leading station from Oceania, came in overall 11th.

The leading UK Restricted station is Clive Whelan, GW3NJW. Clive knocked up a very respectable score from 513 QSOs and 63 mults. Second was Ken, G0ORH, and third Dick, G3CWI. The Celts kept the upper hand in the Open Section too, where Clive Penna, GM3POI, again achieved first place. Second was the Mimram Contest Group, M0ABC, whilst third place goes to G4RCG. Congratulations to all the section winners!

Although there were 74 UK stations in the log of LY3BA, only 14 in the Open and 27 in the Restricted bothered to send logs. Is it time the 7MHz Contest was retired from the Contest Calendar?

Tom Wylie, GM4FDM

7MHz Contest, 2001

Open Section

Pos	Callsign	QSOs	Mults	Score
1	GM3POI	613	82	478960
2	M0ABC	545	72	333680
3	G4RCG	491	73	292653
4	GM3JKS	479	69	285113
5	M0SDX	341	73	228370
6	G2QT	382	69	222246
7	G3LZQ	385	71	218197
8	G3YEC	302	54	111965
9	G3ZDD	213	46	69098
10	G3JJG	238	44	65010
11	G3KKP	204	41	52702
12	G3UFY	125	32	47122
13	G3TXF	116	39	30156
14	G4BJM	73	29	22995

Restricted Section

Pos	Callsign	QSOs	Mults	Score
1	GW3NJW	513	63	265482
2	G0ORH	441	63	226586
3	G3CWI	436	56	173146
4	G3WPH	346	55	141488
5	G3KNU	350	53	137122
6	G4CWH	328	*	106604
7	G4CXT	298	50	102655
8	G3VYI	250	51	95462
9	G3GLL	270	53	92713
10	G3RSD	275	49	83075
11	GM3CFS	251	42	64415
12	G2HLU	215	44	57350
13	G4EBK	242	42	53920
14	G4CZB	156	*	49093
15	G3MPB	165	*	43835
16	GW3KJN	169	41	43796
17	G3GMS	175	38	37426
18	G3LJK	171	35	36873
19	GW3WWN	127	38	32957
20	G0RDO	116	33	24255
21	G3GMM	115	33	21183
22	G3ZGC	97	33	18272
23	GM0CLN	85	31	16253
24	G3YHF	*	*	4620
25	G6QQ	34	14	2470
26	MU0FAL	67	30	1970
27	G3JKY	23	11	1240

SWL section

1	ONL-383	35	25	4375
2	UA3-170-847	12	12	660

Checklogs

Checklogs received from: UA4NF, KF3CV and SM0CCE.

7MHz DX Contest, 2001 - Overseas Section

Pos	Callsign	QSOs	Mults	Score
1	RA9OW	53	39	30385
2	K3ZO	47	38	26255
3	VE1AYY	56	29	23870
4	K9BG	42	33	20375
5	LY3BA	74	52	18855
6	UA9AM	38	29	16200
7	EA8CN	37	29	15770
8	S53F	67	46	15100
9	N5DO	35	28	14405
10	K1ZZ	37	31	13995
11	YO3ND	61	45	13450
12	VK6VZ	23	19	12591
13	UA3RF	59	45	12533
14	OK1FCA	58	44	12255
15	EA6ZY	58	43	11977
16	VA3TTT	21	19	11496
17	OK1FPS	55	43	11357
18	ES1RF	57	41	11222
19	UA9FEG	31	25	11189
20	DL4FN	54	42	10893
21	LZ1DQ	49	41	9648
22	DL3BRA	49	40	9413
23	EI7CC	49	39	9178
24	RW4NM	51	36	8815
25	PA3AMA	48	37	8528
26	W1END	26	22	8237
27	OK1AYY	46	37	8173
28=	DL1CW	47	35	7899
28=	RD4M	47	35	7899
30=	DL8ULF	45	36	7781
30=	UA1AUA	45	36	7781
32	W4SAA	27	20	7742
33=	SP7FGA	45	35	7561
33=	VE3FU	25	21	7561
35	PA3BFH	45	34	7350
36	OH2FS	46	33	7286
37	DL4WA	44	34	7183
37=	OM7RC	44	34	7183
39	EU6DX	42	34	6860
40	SM0J	43	33	6816
41	RU6FA	42	33	6654
42	UA9XC	23	20	6630
43	HA3GE	41	33	6497
44	DL4JYT	42	32	6453
45	HA3GA	41	31	6105
46	YU7SF	39	31	5807
47	YL2PP	38	28	5111
48	OK1DKM	35	28	4704
49	SP9KOV	35	27	4537
50	DL1DQY	35	26	4248
51	PA0EHF	32	27	4150
51=	PA3CLQ	32	27	4150
53	HA7SQ	38	29	4038
54	OK1WWJ	31	25	3724
55	RA4NF	31	25	3602
55=	RZ3DX	30	25	3602
57	OH1UP/7	30	24	3342
58	OK2ZJ	30	23	3312
59	SP4AVG	29	23	3205
60	F2FX	28	23	3092
61	PA2DGR	25	22	2735
62	RN1AO	27	20	2592
63	UT3QT	25	22	2577
64	OH1NMH	19		2372
65	VA3UZ	12	11	1901
66	UA9ZZ	11	11	1744
67	DK5ZX	20	18	1730
68	DL9GFB	19	17	1553
69	RN3BK	25	19	1372
70	UA4YG	23	20	1250
71	EA1FBJ	15	15	1201
72	SP9KRT	17	14	1142
73	PA1PLT	15	14	1009
74	UA4ARL/QRP	14	13	910
75	RV6LSS			358
76	VK8AV	9	9	260
77	LZ1FJ	7	6	201
78	UA4SBZ	1	1	5

CONTEST CALENDAR

HF Contests

Date	Time	Mode	Contest	Bands	Exchange
1 Jan	*0800-1100*	*RTTY*	*SARTG New Year*	*3.5/7*	*RST+Serial+Name+"Happy New Year" in your native language!*
1 Jan	*0900-1200*	*CW*	*AGCW Happy New Year*	*3.5/7/14*	*RST+Serial*
4/6 Jan	*2200-2200*	*CW*	*Japan International DX*	*1.8-7*	*RST+CQZone*
5/6 Jan	*1500-1500*	*CW*	*AGCW QRP Winter*	*3.5-28*	*RST+Serial+Category*
5/6 Jan	*1800-2400*	*RTTY*	*ARRL RTTY Roundup*	*3.5-28*	*RST+Serial*
12/13 Jan	*1600-0900*	*CW/SSB*	*Cray Valley SWL*	*1.8-7*	-
13 Jan	1400-1800	CW	RSGB Affiliated Societies	3.5	RST+Serial
19 Jan	*1200-2000*	*CW*	*LZ Open*	*3.5/7*	*RST+Serial+Serial last recd*
20 Jan	*0000-2400*	*CW*	*HA DX*	*1.8-28*	*RST+Serial*
19 Jan	1400-1800	SSB	RSGB Affiliated Societies	3.5	RST+Serial
25/27 Jan	*2200-1600*	*CW*	*CQ 160m*	*1.8*	*RST+Prefix/Country*
26/27 Jan	*0600-1800*	*CW*	*REF*	*3.5 28*	*RST+Serial*
26/27 Jan	*1200-1200*	*RTTY*	*BARTG RTTY Sprint*	*3.5-28*	*Serial (Note not RST!)*
26/27 Jan	*1300-1300*	*SSB*	*UBA DX*	*3.5–28*	*RS+Serial*

VHF Contests

Date	Time	Mode	Contest	Bands	Exchange
1 Jan	2000-2230	ALL	RSGB 144MHz Activity	144	RST+Serial+Locator
8 Jan	2000-2230	ALL	RSGB 432MHz Activity	432	RST+Serial+Locator
13 Jan	1000-1200	ALL	RSGB 70MHz Cum#1	70	RST+Serial+Locator+QTH
15 Jan	2000-2230	ALL	RSGB 1.3/2.3GHz Activity	1.3/2.3	RST+Serial+Locator
22 Jan	2000-2230	ALL	RSGB 50MHz Activity	50	RST+Serial+Locator
27 Jan	1000-1200	ALL	RSGB 70MHz Cum#2	70	RST+Serial+Locator+QTH

Microwave

30 Dec	0900-2100	ALL	RSGB All Bands Activity	All	Non-competitive

The full rules of RSGB HF and VHF/UHF contests were published in the RSGB Contesting Guide in October 2000 *RadCom*. Brief rules for non-RSGB contests, which are listed in italics above, can often be found in the 'HF' and 'VHF/UHF' columns. The HF and VHF Contest Committees both have web sites from which comprehensive details are available. These are www.g4tsh.demon.co.uk/HFCC/index.htm and www.blacksheep.org/vhfcc

HF HF HF HF

DON FIELD, G3XTT
105 Shiplake Bottom, Peppard Common, Henley on Thames, RG9 5HJ.
e-mail: hf.radcom@rsgb.org.uk

I WRITE THIS in mid-November, just prior to leaving for Burkina Faso for the CQWW CW Contest. Looking back at the last few weeks' propagation, while patchy, it has - on the whole - been superb. I was in Jersey for the CQWW Phone contest at the end of October, running single-band on 15m so I didn't experience the huge level of activity on 10m. However, even on 15m I managed some 141 countries in the weekend, despite a downturn on the Sunday due to a solar storm. Of course, it helps to be in a needed location, with a good monoband antenna on a cliff-top site, but I'm sure any of you who had been on the air that weekend would have had a ball. I say "any of you who had been on the air", but Laurie, G3UML, who was operating the contest from Nicaragua with a couple of American friends, remarks on how few UK stations they worked compared with many of the Central and Eastern European countries (he particularly mentions Poland as having a very high level of activity).

The good times continued into November, and even the 6m enthusiasts had a ball, as I'm sure you will read elsewhere in this issue. On HF, I recall several evenings where ZK1AKX in the South Cook Islands, ZK1NCP in the North Cook Islands and FO/SP9FIH in the Marquesas were all booming into the UK on 10m, along with West Coast USA, Hawaii, etc. Make the most of it. If you are new to HF it is easy to consider these conditions commonplace, but in a few short years the high bands will be quiet again, with just the occasional short-skip signals to be found.

DX NEWS

ELMER, 9L1DX, a doctor working in **Sierra Leone**, is expected to be there for the next two or three years. During his spare time, look for him on 80, 40, 20, 15 and 10m SSB. QSL via EA4CEN. In addition, Polish amateur Zbyszek (Zbig) Belchacz, SP7BTB, working with the UN Assistance Mission in Sierra Leone (UNAMSIL), was recently issued the call 9L1BTB. He will be active from Freetown for about 10 months running 120 watts to a multi-band dipole. He expects to be on all bands from 10 to 80m, on SSB. He was travelling back to Poland for Christmas and on his return to Sierra Leone will take more antennas to improve his signal. QSL via SP7CDG.

The same crew that aired 5U2K, 5U3T and 5U5A last March will be back in **Niger** sometime this month or next for a two week DXpedition. The group will be enlarged with the participation of three to four new operators from Italy and the USA. They will have at least three stations on the air with special attention to 80 and 160m. However, activity will be on all bands and modes. Keep an eye on the website for the latest information on dates and callsigns.

Missionaries Trudie, 7Q7TV, and Richard, 7Q7RV, are newly-licensed operators in **Malawi**. Currently they have antennas for 20, 30 and 40m and are active on SSB, but will soon be operational on CW. They also plan to operate on other bands. QSL via ZS6DX.

A DXpedition to **Cocos Island** (NA-012) off Costa Rica - not to be confused with the Cocos (Keeling) Islands in the Indian Ocean - is planned for 4 to 9 February. A team of 12 experienced operators will be signing TI9M on all bands, CW, SSB and RTTY. They will have four stations on two operating sites. Further information is available on the website.

Australia is to have a new 80m allocation. VK3EW reports the 4kHz segment around 3798, which has always been constricting for DX work to that part of the world, will become 3776 - 3800kHz, but unfortunately not until 1 January 2004. It will take until then to move commercial land mobile stations to other nearby frequencies.

COUNTRIES WORKED, 2001
(sorted this month by Mixed totals)

CALL	CW	SSB	RTTY	MIXED
M0CTQ	40	250	0	273
G4DUW	195	228	0	270
G4OBK	231	137	83	265
G0TSM	208	202	105	259
M0AWX	0	256	0	256
G0NXX	248	0	0	248
M0BZQ	38	218	0	246
G0VHI	0	240	0	240
M0BIB	-	-	-	231
G3SXW	222	0	0	222
G3YVH	169	124	2	217
ZC4BS	139	197	52	213
G3LHJ	198	107	72	212
G3IGW	210	0	0	210
G4EDG QRP	209	0	0	209
G0MSM	35	203	37	206
G3JFS	166	167	134	200
GM0VIT	141	134	2	196
G3TXF	193	1	1	193
M0LLW	0	181	0	181
M5PLY	0	181	0	181
G0CAS	-	-	-	180
G3XTT	164	91	2	180
ZC4DW	155	99	104	180
MU0FAL	149	157	0	179
MM0BQI	89	117	119	165
G0ARF	0	0	163	163
M0CNP	-	-	-	139
G4FVK	47	121	0	126
GU0SUP	-	-	122	122
M0CAL	0	121	0	121
G4IRN	91	85	0	119
GM4OBK	110	10	0	116
G3WP	108	0	0	108
GM4ELV	-	-	-	107
G3MDH	0	103	0	103
GM4FAM	-	-	-	102
G4YWY/M	0	85	0	85
G4MUW	0	84	0	84
M5AEF QRP	21	80	0	82
G4DDL	54	35	23	67
GW4SKA	0	0	66	66
M0ASJ	-	-	-	55
G3URA	0	0	53	53
GI0NQC	0	15	41	49

NORTH KOREA

THE RAREST COUNTRY on the list, with maybe only 200 or so valid contacts ever having been made from there, is **North Korea**. Now it looks as though things may be changing. As I write this, there have been reports that 4L4FN, a UN worker, has been active signing /P5, albeit only with verbal permission at this stage, but with a promise that written permission will be forthcoming in due course. One operator, actually in the country for other purposes and operating only in his spare time, is hardly going to bring North Korea tumbling down the 'Most Wanted' lists, but at least it is a start.

DUCIE ISLAND

NOW THAT **Ducie Island** has become a 'new one' (see the November 'HF' column), you might find the following data useful for your logging programs:

Prefix: VP6/D; DXCC Entity: Ducie Island; IOTA: OC-182; Latitude: 24 40' 00" South; Longitude: 124 47' 00" West; CQ zone: 32; ITU Zone: 63; Continent: Oceania; Area: 6 sq km (2.5 sq mi); GMT offset: -8 hours.

QSO RECORD?

ROGER, G3SXW, HAS passed on a note from Vlado, Z35M (ex-Z32KV), who asks whether anyone has information about the European QSO record for one calendar year (single operator). What set Vlado thinking was that he decided to undertake a personal QSO marathon in 2001 and was on-target for about 40,000 contacts by the end of the year. His all-time total is 143,800 contacts since he was licensed in August 1987. What is interesting about this question is that the only amateur radio record that has ever appeared in the *Guinness Book of Records* (to the best of my knowledge) is KV4AA's in-year record of something like 425,000 contacts. That record was dropped from the book some years ago, but it might be nice if someone in the amateur radio community were to collate similar data, a sort of *Guinness Book of Records* specifically for amateur radio. Some data was brought together in K1DG's *Amateur Radio Almanac* (*CQ* Publications, various editions up to 1997) but that related mainly to contests and to QSL card collections. Of course, one or more of you out there may already have the sort of data which would be of interest to Vlado, in which case please send it to me or to G3SXW and we will pass it on.

Neville Cheadle, G3NUG (left), of the D68C Comoros DXpedition, presenting Victor Brand, G3JNB, with one of the Nevada Comoros Trophies. Victor worked D68C on an incredible 20 band-mode combinations, using a maximum of 100 watts and wire antennas. Inset: close-up of one of the Nevada Comoros Trophies, a traditional galawa canoe individually hand-carved on the Comoros.

SILENT KEY

JEAN, F6AJA, REPORTS that Robert, FO5BI, passed away in September. Robert was one of the regulars on CW from Tahiti and will have given many UK DXers their first contact with French Polynesia. He will be missed.

TABLES

THIS MONTH'S TOTALS see table on page 88) are sorted by overall country score for the year, and it is clear that it's been a good year. Some of those totals will be getting quite close to the 300 level by year-end. Welcome this month to Ron, G0MSM, and Steve, G4EDG. G4EDG's entry is QRP (defined as 5 watts or less). Steve writes that his 28MHz QRP entry in the 2000 CQWW CW contest (November HF) gained him first place in Europe (world 6th) and is a new European record. He says that his QRP operation is based around a selection of homebrew radios, with the FT-1000MP (with power wound down) only resorted to when wide-split operation is required. On the antenna side, he uses a DX-33 for 10, 15 and 20, with a dipole for the WARC bands made from a scrap A3WS and mounted on the boom of the DX-33 between the driven element and the reflector. Most of the time this lot is about 7m above ground. An inverted-vee trap dipole is used on the low bands. Steve says he decided to go the QRP route when he had finally 'worked 'em all' on high-power CW and comments that low power operation has really sharpened his operating skills. His recent QRP DX includes 4W (East Timor), FK8 (New Caledonia), D4 (Cape Verde), E3 (Eritrea), VK9N (Norfolk Island) and 9N (Nepal). It goes without saying that several of these would be good catches, even with high power.

For 2002 I propose to maintain the same format for the in-year table, as the number of participants increased steadily during 2001 and it would be nice to hit the ground running this time around. However, I am always pleased to hear from those of you who specialise in a single band or mode. Send me your year-end scores in time for the March issue, and your first 2002 scores for the April deadline.

CONTESTS

THIS MONTH I can bring you the results of last year's ARRL International DX CW Contest. Top scorers from the UK include G3LZQ (DX 5th, single-op assisted), M6T (operated by G4PIQ) and G0IVZ (DX 9th and 10th single-op high-power), G4BUO (DX 5th 15m high-power), and GM3POI, G3TXF and G3WVG (DX 2nd, 4th and 6th, 10m high-power). The MD/DL5AXX team take the plaque for leading multi-op unlimited entry, while M6T receives the plaque for leading European single-op. I must also mention D68C, put on by members of the UK-led Comoros Islands DXpedition, which receives the plaque for Africa multi-two. Although the official write-up states that no new DX records were set in 2001, the D68C effort actually set a new African record in that category. The Phone contest results will appear next month.

Results of the 2001 ARRL RTTY Roundup also appear. Congratulations especially to G5G (operated by G0LII) DX 9th single-op and MW2I DX 1st multi-op.

Here are the results of the 2001 *CQ/RTTY Journal* RTTY WPX Contest held last February: (High power) G5G (G0LII op) 829,808 pts; GI4KSH 177,560; (Low power) MM0BQI 557,096; GU0SUP 190,162; GM4SQT 72,644; G0URR 69,768; M0CFV 53,120; (10 metres) G0NWY 113,715; (20m) G0NUP 56,166; GM4CXM 38,199; (multi-single) MW2I world 5th 2,221,284.

In the AGCW QRP Winter Contest UK entries included (Class MP) G4OGB 29,882; G0MRH 420; (Class QRP) G4EDG 53,354. In the AGCW QRP Summer Contest (Class QRP) G0VQR 3036 and (Class VLP) G4EDG 2794.

Finally, in the EU Sprint Spring 2001: (SSB) G4BUO 152, GW4BLE 123, G0IVZ 106, G4TSH/P 96, G0MTN 32; (CW) G4BUO 195, G0IVZ 181, GM3POI 176, G0CKP 173, GW3NJW 132, G3RSD 108, G0JQN 104, G0MTN 86, GU3SQX 63.

Incidentally, I receive (thanks to G4OGB and others) the UK results of many international contests and it isn't always possible to find space in these pages to list them all. Hopefully, if you entered, you will receive a results booklet from the organisers or know where to look for the results (which, increasingly, are being published on the Internet, though this isn't always the case). If you are desperate to know how you got on in a particular event, do feel free to drop me a line and I will try to help.

To my mind the main contest to look forward to in January is the CQWW 160m CW Contest on 25 - 27 January. If 160m is not your forte, then you might prefer the BARTG RTTY Sprint Contest, the REF CW (work France and its territories) or the UBA (Belgium) SSB contest, all over the same weekend. The ARRL RTTY Roundup is on 5/6 January. See also the following item. I can provide further details of any of these if required.

Results of ARRL International DX CW Contest 2000

A=QRP, B=Low Power, C=High Power

Call	Score	Category
GW3KZW	12,276	A
GW3NJW	1,002,744	B
G3KKP	455,535	B
GW3SYL	231,660	B
M0BIN	227,700	B
G3KNU	226,008	B
GM3NHQ	193,185	B
G6QQ	140,868	B
MU0FAL	119,316	B
GI0GDF	110,745	B
G3HZL	99,180	B
G3RSD	88,818	B
G4ZME	63,210	B
MM0BQI	61,740	B
G3VQO	60,060	B
GM3ZAS	57,420	B
G3ECS	55,836	B
G4EDR	17,496	B
G3JJG	16,758	B
G0MRH	6,720	B
M6T (G4PIQ op)	3,250,350	C
G0IVZ	3,205,950	C
M0C (G0CKP op)	2,416,128	C
G3MXJ	1,542,240	C
GJ2A (K0WR op)	1,374,975	C
G0WKW	1,002,162	C
G2QT	697,245	C
G3NKS	267,775	C
G4BJM	253,287	C
G3TMA	196,125	C
GI4KSH	129,528	C
G0UKX	122,244	C
G3UFY	87,300	C
G3WPH	39,600	B 80
G3JKY	5,250	B 40
GM3CFS	59,823	B 15
G4BUO	216,978	C 15
G5G	152,772	C 15
GM3POI	297,018	C 10
G3TXF	264,708	C 10
G3WVG	208,962	C 10
G4IIY	38,880	B 10
M4T (G0VQR op)	25,542	B 10
GW3WWN	11,259	B 10
Single-op Assisted		
G3LZQ	1,163,280	C
GW0GEI	260,568	C
G0MTN	27,945	B
Multi-op Unlimited		
MD/DL5AXX	6,055,086	C

EUCW 160m CONTEST

TO PROMOTE AN increase in 160m activity, the *Union Française des Telegraphistes* has proposed a joint topband contest. The first of these will take place this month. The date will normally be the first weekend of January each year except when 1 January falls on the Saturday or Sunday . In such a

ARRL RTTY Roundup 2001
A=low power; B=high power

Call	Score	Category
G0KRL	49,401	A
MM0BYC	37,350	A
GU0SUP	24,056	A
G0NWY	16,380	A
G0URR	6,148	A
MM0BQI	5,136	A
M0CFV	224	A
G5G (G0LII op)	94,380	B
GW4KHQ	69,319	B
GI4KSH	34,853	B
Multi-op		
MW2I	143,385	B

case, the second weekend will be chosen. This year's times and dates will be: Saturday 5th from 2000 to 2300 and Sunday 6th from 0400 to 0700. Use 1810 to 1840kHz, CW only. Members of clubs affiliated to EUCW send RST / name / Club / membership number, while others send RST / name / NM (non-member). Affiliated clubs include FISTS, FOC, G QRP and, indeed, many others.

AWARDS

YOU WILL PROBABLY not be surprised to hear that there is a new award to commemorate the introduction of the • (Euro) as from 1 January. All that is required is to make at least one QSO with each country of the Euro zone during 2002, regardless of band or mode. In case you don't know, the countries concerned are Portugal, Germany, Spain, Ireland, France, Italy, Luxembourg, Austria, Finland, Belgium, Netherlands and Greece. One contact with TM2E may be used as a 'joker'. No QSLs are required, simply a certified log extract. The charge (for European residents) is •20 or 25 IRCs and (for rest of world) •25 or 30 IRCs. Why should you want to chase this one? Mainly because the award itself will be an attractive wooden plaque (see photo). Applications go to Dejean Mauricette, F8BPN, 10 Impasse M R Guillot, 19240 Varetz, France (e-mail: f8bpn@wanadoo.fr). SWL applications are also welcome.

THANKS

SPECIAL THANKS GO to the authors of the following for information extracted: *OPDX Bulletin* (KB8NW), *The Daily DX* (W3UR) and *425 DX News* (I1JQJ). Please send items for the **March** issue (including your year-end table scores) by **19 January.** A very Happy New Year to all readers of the column, and particular thanks to those of you who have contributed news and photographs during 2001. ♦

WWW.

TI9M:	http://www.qsl.net/ti2hmg/cocos.htm
5U Expedition:	www.qsl.net/niger-2002
CQWW Phone QSL info:	http://www.arrakis.es/~ea5eyj/cqssb01.htm
UFT Contest:	http://www.uft.net/

HF F-Layer **Propagation Predictions** for **January 2002**

	3.5MHz	7.0MHz	10.1MHz	14.0MHz	18.1MHz	21.0MHz	28.0MHz
Time	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220
(UTC)	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020
*** Europe							
Moscow	882....78888	7481..298888	..4523796.11	...777881...	..1999982...	...99997....	....775.....
*** Asia							
Yakutsk	3332	532...167677	5227675888456	...885244..2	...66.....	...44.....	.....
Tokyo	.......11.	...1..14424.	...31.133.1.	...31.....	...2.....	.....	.....
Singapore	.....	155221	575111	......772...	.....486....	.....574....	....235.....
Hyderabad	.....	1.....12222	1.....66521	.....574...	...115882...	...66798....	...88995....
Tel Aviv	771....36777	787....88868	7423..398378	3..867894.23	...77776....	...47783....	...2554.....
*** Oceania							
Wellington	.....1....	...3657785...	...6888984...	...59997....	...39996....	....8982....	....675.....
Perth	.....	.....2222.	.....36311.	.....661...	.....387....	.....586....	...45672....
Sydney	.....	.....2221..	.....1751...	.....685....	....7996....	....7882....	...4887.....
Honolulu	.....	...2...1....	.1.323131...	.....2...	.....	.....	.....
W. Samoa	.....	.....3....	...16677....	....7886....	....5872....	....376.....	.....3.....
*** Africa							
Mauritius	.....	3.....1112	1.....12111	.....421..	.....51...	.....4....	.....
Johannesburg	62.....54	98.....2888	85.....7888	5.....48745	...3113886..	...5456872..	...567782...
Ibadan	.1.....	666.....4556	835....17777	2..611167622	...98889841.	...9999962..	...999986...
Nairobi	.....	33.....2211	56.....24444	4.2....56635	..33225775..	...6556862..	...77778....
Canary Isles	666.....6666	8885....8888	87271.128888	22.864568842	...88888962.	...7888893..	....88883...
*** S. America							
Buenos Aires	1215.....	6639.....25	23.9.....22	...8.....	...72...11..	...631.22...	....2324....
Rio de Janeiro	...1.....	11.7.....1	.1.7.....	...7.....	...84..143..	...7632451..	....63252...
Lima	.....	...3.....	...4.....	...2.....	...323..1...	.....6332...	.....654....
Caracas	.....	22.2.....22	12.5.....31	....3....1..	.....1.12...	.....3233...	.....7772...
*** N. America							
Guatemala	.....	22.3.....1	...21.....	.....	.....	.....	......42....
New Orleans	.....	32.2.....3	11.5.....11	....1.....	.....2767...	.....886...	......883...
Washington	111.....2	7727.....77	36.5.....583	.....4..331.	.....76671..	.....4788...	......882...
Quebec	666.....576	7718.....887	...11...16..	....54125...	....88898...	....67998...	....35996...
Anchorage	455.....	8736211476 57	2...32135..1	.....4...	.....3...	.....	.....
Vancouver	.....	32.1.....1	.....	.....21...	.....55...	.....32...	.....
San Francisco	.....	22.2.....	.....	.....	.....42...	.....4....	.....

Key: Each number in the table represents the expected *circuit reliability*, eg '1' represents reliability between 1 and 19% of days, '2' between 20 and 29% of days etc. No signal is expected when a '.' is shown. **Black** is shown when the signal strength is expected to be low to very low; **blue** when it is expected to be fair and **red** when the signal is expected to be strong.

The RSGB Propagation Studies Committee provides propagation predictions on the Internet at www.g4fkh.demon.co.uk The page is updated monthly. The provisional mean sunspot number for November 2001 issued by the Sunspot Data Centre, Brussels, was 106.5. The maximum daily sunspot number was 152 on 8 November and the minimum was 67 on 24 November. The predicted smoothed sunspot numbers for January, February and March are respectively: (SIDC classical method – Waldmeier's standard) 107, 105, 104 (combined method) 93, 90, 90.

Antennas

PETER DODD, G3LDO
37 The Ridings, East Preston,
West Sussex, BN16 2TW
E-mail: g3ldo@ukonline.co.uk

WELCOME to the 'Antennas' column. As you are all aware, the single most critical item determining the performance of an amateur radio station is the antenna. The main purpose of the column is to address problems readers may have installing and adjusting antennas from suburban sites that may be regarded as a challenge; although any antenna subject that is considered to be of interest to readers will be discussed or described.

MOXON RECTANGLE

THE YAGI antenna is probably the most effective way of obtaining gain and directivity. However, the 10m + 'wingspan' of a conventional Yagi for 20m can be a problem for many locations and many attempts have been made to make a more compact antenna. These include using loading coils or by simply bending the elements.

With antennas there is very little that is actually new and a two-element Yagi with bent elements certainly falls into this category. A configuration, where the elements of a two-element beam were bent so that the 'wingspan' was halved, was first suggested by John Reinartz, W1QP, way back in October 1937. Burton Simson, W8CPC, constructed such an antenna [1], the elements of which were supported on a wooden frame. This allowed the element ends to be folded towards each other. The 14MHz antenna was constructed from 1/4in copper tubing with brass tuning rods that fitted snugly into the ends of the elements for tuning.

A wire edition of the W1QP / W8CPC two-element antenna was described in 1973 by VK2ABQ [2]. In this configuration the tips of the parasitic and driven elements support each other in the horizontal plane. The insulators are constructed so that the tips of the elements are 6mm (1/4in) apart.

Les Moxon, G6XN, did a lot of experimental work with the two-element Yagi with bent elements [3], particularly in optimising the element spacing. However, some of these structures are complex and difficult to reproduce. A simplified, although slightly larger structure, was devised by L B Cebik, W4RNL (see WWW. below). This he named the Moxon Rectangle, and it is shown in **Fig 1**.

The remarkable characteristic of this arrangement is its very high front-to-back ratio. It also has a feed impedance close to 50Ω. The dimensions for the Moxon rectangle for 40 to 10 metres are given in **Table 1**. The dimensions are not perfect scaling because the length-to-wire-diameter ratio changes for each band.

The antenna has a feedpoint impedance between about 56 and 58Ω, a close match to the standard amateur 50Ω coaxial cable. Free space gain and front-to-back ratio are consistent for all the models, averaging 5.8dBi and greater than 30dB in free space, respectively.

Freq	Dimensions, metres (*mm)						
MHz	A	B	C	D	E	A+B+B	A+D+D
29.50	3.79	0.59	125*	0.74	1.45	4.97	5.27
24.94	4.33	0.67	140*	0.84	1.66	5.67	6.0
21.20	5.00	0.80	158*	0.99	1.95	6.6	6.98
18.12	5.96	0.94	180*	1.16	2.28	7.84	8.28
14.17	7.62	1.22	219*	1.48	2.92	10.06	10.58
10.12	10.66	1.71	305*	2.07	4.08	14.08	14.8
7.15	15.10	2.75	405*	2.93	5.73	20.6	20.96

Table 1: Dimensions for the W4RNL-designed Moxon Rectangle beam. Refer to Fig 1 for dimensions A to E. These dimensions have been calculated using *EZNEC* for a non-critical design to give a free-space gain around 5.8dBi and a front-to-back ratio greater than 30dB. The elements are constructed from 1.6mm diameter copper wire. A+B+B is the driven element total length and A+D+D is the reflector total length. Remember to add additional wire for fixing the elements to the insulators.

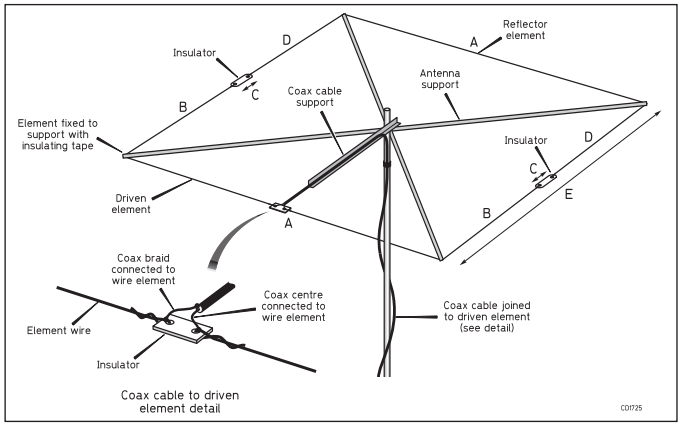


Fig 1: Perspective view of the Moxon Rectangle showing the general construction. The element supports can be made from weather treated cane or fibreglass.

In *Backyard Antennas* [4], I stated that the Moxon Rectangle could be made into a multi-band antenna by simply interlacing the elements for the different bands on a common support structure. This was based on the diagram shown in Fig 12.11 of [3]. VK2ABQ [2] also describes this method of multibanding his antenna.

Some time after [4] was published I decided to build a *multiband* Moxon Rectangle and ran into some difficulties. I had previously built a multiband Double-D antenna (another antenna with bent elements, see [4]), which worked fine, so I had not expected any problems. No amount of playing with element lengths resolved the problem. I found I was not alone with this difficulty. From the L B Cebik, W4RNL, web site I found the following regarding this antenna: "I have had a number of inquiries into multi-banding the Moxon Rectangle. The compact antenna seems to beg for nesting. However, to the present time, I have had no success in developing a workable model of the antenna for any HF band combination in the nested configuration. In Moxon's book, *HF Antennas for All Locations*, G6XN notes a detuning system that he uses with his wire version. However, the wire spacing required by the system makes for a bad model. Consequently, I cannot say whether or not the system would work with aluminium rectangles, each of which has been optimised for its band."

W4RNL describes a number of solutions to multibanding the Moxon Rectangle but none of these is simple. I feel that the reason that, while multibanding works fine for the VK2ABQ and the Double-D, the parasitic element / driven element coupling on the Moxon rectangle is much more critical and is more easily disturbed by antenna elements of adjacent bands.

The antenna would probably work as a multi-band antenna if the element supports, shown in Fig 1, are set 90 degrees to each other; so that the antenna is a square rather than a rectangle. This arrangement would only work provided that the bands are an approximate octave apart (14, 21, 28 or 10, 18, 24MHz). The element lengths shown in Table 1 (A+B+B and A+D+D) are a good starting point. The driven elements can all be connected together and fed with one feeder.

I should point out, from the experiments that I have done, that the Moxon Rectangle is an excellent single-band antenna.

I would be pleased to hear from any readers who have built a multi-band antenna similar to those described above.

FURTHER READING

[1] 'Concentrated Directional Antennas for Transmission and Reception', *QST* October 1937, John Reinartz, W1QP and Burton Simson W8CPC.
[2] 'VK2ABQ Antenna', Fred Caton, VK2ABQ, *Electronics Australia*, October 1973.
[3] *HF Antennas for all Locations*, 1984 Edn, Les Moxon, G6XN, RSGB.
[4] *Backyard Antennas*, Peter Dodd, G3LDO, RSGB. ♦

WWW.
Peter Dodd, G3LDO:
http://web.ukonline.co.uk/g3ldo
L B Cebik, W4RNL:
http//www.cebik.com/

SWL

BOB TREACHER, BRS32525
93 Elibank Road, Eltham, SE9 1QJ.
E-Mail: brs32525@compuserve.com

I MAKE NO apology for starting this column with news of fantastic F2 openings on 50MHz. I know that few listeners have much interest in the band - or if so they keep their news to themselves - but November was blessed with some sensational openings.

David Whitaker, BRS25429; Simon, RS177448, and I have all caught some exceptional DX. Best for David was XV3AA who was 59 at 0850UTC on 18 November, while Simon's best was a 59 signal from XE1KK at 1540 on 19 November. I was absolutely amazed to hear XW0X on 3 November at 0930!

In between, Stateside and Canadian stations have been in abundance, with much of the eastern seaboard audible any time from 1230 through until 1700. Apart from several XEs, a number of other interesting DX stations have been heard from the west - HP2CWB, KP4EIT, TI5KD, TI5DX and YS1RR, while UN6P, DU/GM4COK and 9G5AN have also been audible on SSB.

There can be no doubt that the propagation mode is F2, but why now, when Cycle 23 was supposed to have come and be going? I have heard it said that we are experiencing a second peak to Cycle 23. No doubt the propagation experts will explain all, but the upsurge in conditions on 50MHz has been truly wonderful.

NOT ASLEEP!

PETER WEBB, RS53907, comments that he is one of those listeners that is extremely active on the HF bands, but hardly ever finds time to contribute to the column. He has over 21,000 QSL cards stretching back to 1948 to prove how active he has been. Even now, Peter is taking advantage of the peak in conditions and reports listening to QSOs made by stations in the Pacific.

Peter comments that the most difficult moments in our hobby of DXing come when the listener has to wait an age for some DXpedition operators to announce the callsign of their station. Additionally, SWLs are at a disadvantage when stations send 'the last two' and the DX station either doesn't repeat the full callsign, or does so without using phonetics!

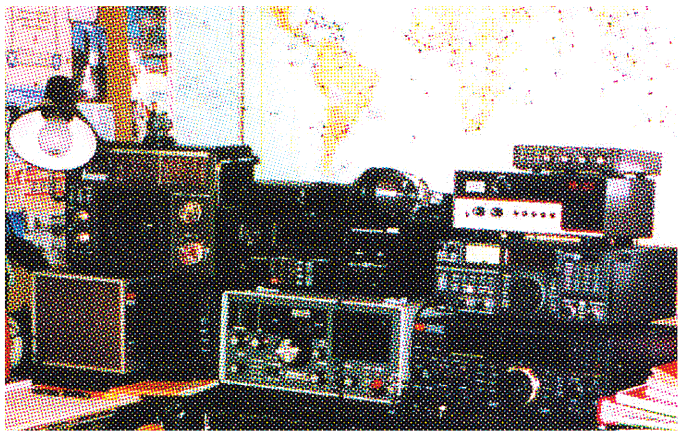
Peter comments that he considers that SWLs receive an excellent service from David Borne, G4CYW, the RSGB's incoming SWL QSL manager.

Another 'SWL' who reports for the first time in a very long time is Jonathon, ex-BRS45205, now M5AEO. Jonathon still regards himself as much more a listener than a 'transmitter', and much of his time is spent listening. He would be interested to see a listing of equipment used by SWLs, especially the types of antennas in use. He also craves more pictures of SWLs in their shacks. Let's see what we can all do, shall we? For the record, Jonathon lives in Milton Keynes, where gardens are small, so he has a 66ft Carolina Windom for amateur bands and a 55ft loop (+MLB) in the loft for general coverage. He uses a Kenwood TS-2000 which has a separate input for a receive-only antenna. This is a great innovation, as it makes switching in the loop so much easier than unscrewing PL259s on the back!

CRAY VALLEY LOW BANDS CONTEST

THE CRAY VALLEY RS is sponsoring this contest for the second year. The society was pleased with the size of the entry in 2001, but hopes for even more entries this time around. The event provides just the opportunity to spend time on 40, 80 and 160 metres to try to add to your DXCC scores. As I have said before, January is a good time for the low bands, with excellent DX opportunities. The rules of the contest are available on the CVRS website at www.cvrs.org or send an SASE to Bob Treacher, BRS32525, for a copy.

Remember, to hear the DX on the low bands, you do need to have something better than a 'bit of wire in the loft'. Assuming you have sufficient garden area, why not spend some time over the Christmas / New Year holiday period experimenting with either an inverted-vee or a sloping dipole cut for 40 or 80 metres? Such antennas are ideal for the low bands, and you should quickly increase your country scores.



This fine array of receivers has enabled Peter Webb, RS53907, to amass no fewer than 21,000 QSLs since 1948.

CQ WORLD WIDE SSB

THIS YEAR'S event was, once again, an event of two halves. Conditions were excellent on the Saturday, but yet again, an aurora intervened during early Sunday morning. The onset of the aurora had a superb effect on signals from the Caribbean about two hours before sunrise, with many stations S9.

Once again, my multi-multi SWL team was active. This year, the team was made up of only six listeners: Mick, BRS31976; Simon, RS177448; Clare, RS102891; Paul, G3SXE; John, G3XWK; Rich, G7GLW, and myself. Mick and I managed to stay awake long enough to handle the low bands on both nights with Paul, G3SXE, taking the 14MHz station through the first night, and John, G3XWK, taking the second night.

We managed to overtake our world record score with about two hours of the contest left, so have set a mark that might last round to 2012! We managed to find 675 band countries during the contest weekend. The team were especially pleased to log 56 countries on 1.8MHz, and 84 countries on 3.5MHz.

Entries for my CQWW SWL Challenge have been disappointing this year, with fewer than 20 logs received. As I write this, there is still time for more logs to be received, but it would appear that the novelty of the event has worn off a little.

WEBSITES

LISTENERS WILL have come across Belgian stations using the special 'OQ' prefix recently. There is a special award and details can be found on ON4CAS's website.

VA3NEA is the author of 'DX Atlas', an electronic world atlas for amateurs and SWLs on the web. ♦

WWW.

OQ Prefix www.qsl.net/on4cas/oq.htm
DX Atlas www.dxatlas.com
CVRS www.cvrs.org

ATV

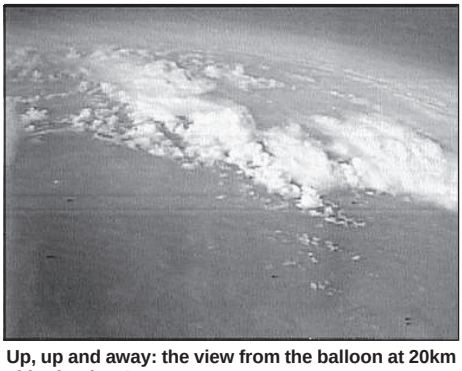
TREVOR BROWN, G8CJS
E-mail: chairman@batc.org.uk

THIS YEAR'S Dutch balloon foxhunt took place successfully on 9 September. This is an annual event in which a simple meteorological balloon equipped with various amateur radio projects is launched and tracked across Holland. This year it was equipped with an 80m transmitter (3.582MHz) a 2m transmitter (145.450MHz) and an ATV transmitter (2330MHz). The ATV transmitter and camera beamed back some very spectacular live pictures of the balloon flight. The ATV transmitter also had an audio sub-carrier of 7.02MHz, which was used to send back temperature information in Morse code.

There were some initial worries about co-siting a TV camera and an 80m transmitter, as 3.582MHz is within the video baseband spectrum. It was thus an important part of the project, not only because of this, but also because little data is available on 80m transmissions from the stratosphere. The 2m transmitter was to be particularly important after landing, because the 80m wire antenna was not expected to function when lying on the ground.

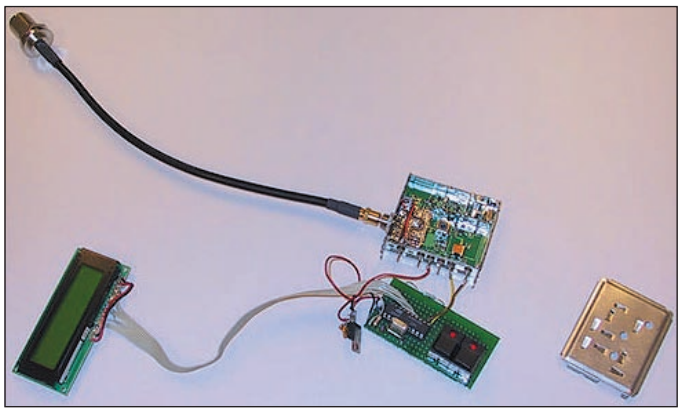
The radio sphere, which housed all the equipment, was made of polystyrene foam, and the entire payload had to weigh less than 1.5kg. The balloon was also equipped with a GPS receiver and telemetry transmitter, so that the organisers could monitor the exact position of the balloon during its flight.

The 13cm ATV transmitter was an off-the-shelf unit made by Comtec, with the addition of a small power amplifier to raise the power to 500mW. It was possible to modify the Comtec module to house the power amplifier within the module, by removing one of the two audio sub-carrier generators that was not going to be needed. The final unit consumed only 1W and delivered 490mW. Any heat provided by the module was more than welcome, since the temperature at the estimated height of 25km would be -65°C. Another requirement of the Comtec transmitter is I²C data to talk to the PLL control which sets the transmitter frequency to 2330MHz. To this end, a small double-sided PCB CPU was constructed and again housed inside the Comtec module. The 13cm aerial was the next problem, and some early tests with a quad proved to be a problem when the balloon was spinning. To overcome this problem an omnidirectional aerial was required, and the end design was four quads positioned in a square with all the elements pointing down at an angle of 45°. This required the construction of a suitable power splitter to feed the four quads with equal power and the correct phase of signal.



Up, up and away: the view from the balloon at 20km altitude via 13cm ATV.

Bad weather threatened the balloon launch but, shortly before 2pm, the balloon took to the air. The 80m transmitter was damaged - it was initially powered with the antenna cables lying on the wet ground, and producing a high SWR. The 2m transmitter was switched on and enabled the balloon to be tracked by an enthusiastic ground crew. This transmitter had a power of only 250mW but, when the balloon reached 8km, signal reports were coming in from as far afield as Austria. The balloon reached a height of 20km, producing pictures that showed the curvature of the earth. The GPS telemetry held together and enabled ground-based software tracking of the balloon. It ended its flight at about 4pm and landed near the small village of Schaijk where, about 15 minutes later, Henk Vrolijk, PA0HPV, arrived on the scene and was declared the race winner.



The Comtec transmitter with the PA fitted inside, connected to an external I2C decoder and frequency display.

GB3TM INTERNET GATEWAY

SOME FURTHER additions to GB3TM, the 24cm ATV repeater located on Anglesey, have now enabled it to have an Internet gateway. The gateway is linked through Derek, GW0BCR, who uses *Iphone* software and is controlling the gateway between 1700 and 1800 local time. This gateway enables a two-way contact between the repeater and an Internet input. For more information on this, visit the Arfon repeater group website.

Lift-off: the meteorological balloon and its payloads.

DIGITAL ATV A STEP CLOSER

UWE KRAUS, DJ8DW, will soon present a detailed description of third-generation DATV which is designed to enable experienced TV amateurs to use the new single-chip MPEG2 coders and decoders from Fujitsu and a universal modulator for GMSK and QPSK. For more information, visit the DARC site.

BATC FORUM PROBLEMS SOLVED

IF YOU HAD a problem logging into the BATC forum, this has now been fixed, and the site is again fully operational for ATV matters.

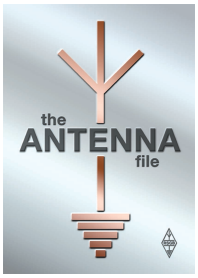
CQ-TV 196 AVAILABLE

CQ-TV 196 IS NOW available and features a full report on IBC, an article on converting surplus LNBs to 10GHz, and a look at designing a 70cm ATV transmitter by Ian Waters, G3KKD. Ian is now retired, but spent his working life on professional broadcast TV transmitter designs and this article reflects that experience. ♦

WWW.

Arfon repeater group
www.gb3arg.org.uk
Balloon foxhunt
www.ballonvossenjacht.nl
DARC DATV page
www.darc.de/g/datv/index.html
BATC forum
www.batc.org.uk

RSGB BOOKSHOP

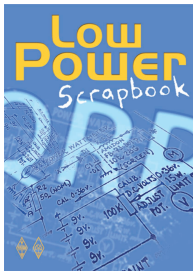


The Antenna File

The RSGB produces some of the best works on antennas, this is a collection of that work from the last ten years. Containing articles drawn from RadCom magazine.

297x210mm
288 pages

£16.14 (£18.99 non-members)

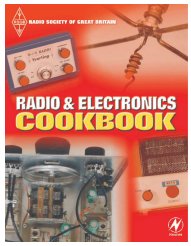


Low Power Scrapbook

The G-QRP Club are renowned as the leaders in Low Power and this book contains 133 of the very best projects from the Club's magazine Sprat, 320 pages of original material.

210x148mm
320 pages

£11.04 (£12.99 non-members)

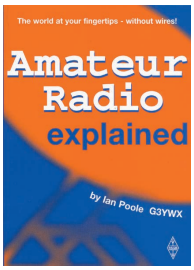


Radio & Electronics Cookbook

A collection of the best weekend projects from the popular RSGB magazine D-I-Y RADIO. Ideal for DIY enthusiasts. Never before have so many straightforward and rewarding amateur radio construction articles been assembled in one book.

234x175mm
160 pages

£14.44 (£16.99 non-members)

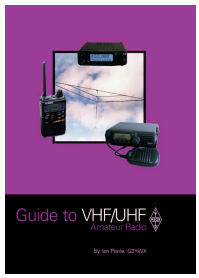


Amateur Radio Explained

Have you ever needed to explain to someone what amateur radio is all about? Have you ever wanted something to help fan the flames of someone's initial interest in the hobby? Do you give talks about amateur radio? If so, this book will help you.

210x146mm
264 pages

£8.49 (£9.99 non-members)



Guide to VHF/UHF Amateur radio

The VHF and UHF band are some of the most interesting, useful and challenging of those available. Ian Poole explains just how to get the most from your VHF/UHF station.

210x148mm
112 pages

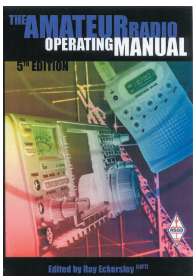
£7.64 (£8.99 non-members)

RSGB Technical Compendium

For the first time, we have collected all of the technical material from a whole year's RadCom and published it in a single volume. Thats nearly 300 pages of construction, technical innovation and practical advice.

297x210mm
320 pages

£15.29 (£17.99 non-members)

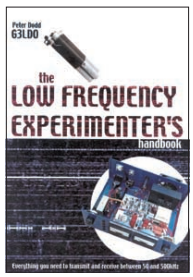


The Amateur Radio Operating Manual

This book is essential reading for any amateur radio operator. It describes operating techniques invaluable for enjoying amateur radio to the full.

272x199mm
264 pages

£21.24 (£24.99 non-members)

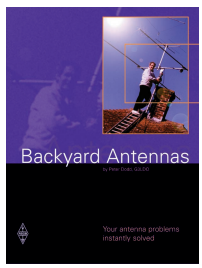


The L F Experimenter's Handbook

This book has been written to meet the needs of amateurs and experimenters who have an interest in low power radio techniques at frequencies below 200kHz.

296x210mm
146 pages

£21.24 (£24.99 non-members)



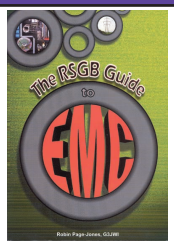
Backyard Antennas

Antenna guru Peter Dodd explains how, by using a variety of simple techniques, it is possible to achieve very high performance from a compact antenna. Also detailed is how to make an antenna efficient on several bands at once.

244x183mm
208 pages

£16.14 (£18.99 non-members)

RSGB BOOKS ARE AVAILABLE IN BOOK STORES ASK FOR 'GARDNERS BOOKS WHOLESALE'



The RSGB Guide to EMC

How to resolve EMC problems that occur in the real world.

244x172mm - 208 pages

ONLY £16.99

£19.99 (non-members)

Radio Communications Handbook

An invaluable reference for radio amateurs everywhere.

272x198mm - 820 pages

ONLY £22.49

£29.99 (non-members)

CALL THE RSGB ONE-STOP SHOP

TEL: 0870 904 7373
FAX: 0870 904 7374
E-mail: sales@rsgb.org.uk

For full catalogue: www.rsgb.org/shop

(All books are subject to p&p £1.50 for 1 item - £2.95 for 2 or more)

THE BEST OF 2001

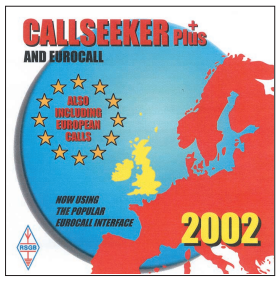
RSGB Yearbook 2002

Your favourite annual has just got even bigger and even better.

A massive 784 pages with the most up to date UK callsign data, 176- page information section & much, much more!!

297x210mm

ONLY £13.59
£15.99 (non-members)

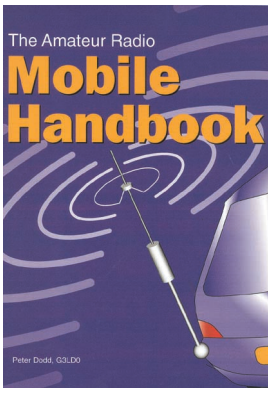


NOW INCLUDING EUROPEAN CALL USING THE POPULAR EUROCALL INTERFACE!

Callseeker Plus 2002

The complete contents of the RSGB Yearbook are available on CD-Rom. Now also including European Calls and using the popular Eurocall Interface. The callsign directory is accessed by a sophistlcated yet easy-to-use search program.

ONLY £11.89
£13.99 (non-members)



Amateur Radio Mobile Handbook

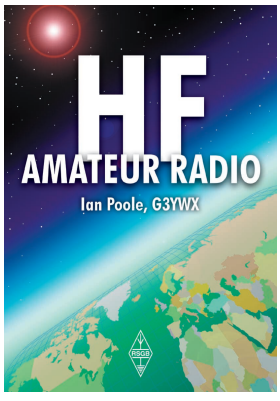
The Amateur Radio Mobile Handbook covers all aspects of this popular part of the hobby.

It includes operating techniques, installing equipment in a vehicle and antennas, as well as maritime and even bicycle mobile.

This is essential reading if you want to get the most out of your mobile station.

240x175mm - 128 pages

ONLY £11.89 - £13.99 (non-members)



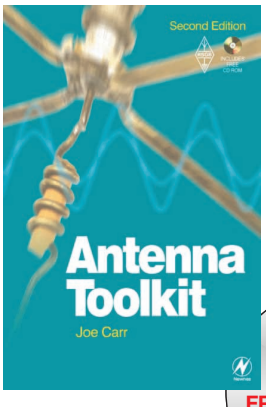
HF Amateur Radio

HF Amateur Radio takes the reader through setting up an efficient station, how to make the best use of each of the bands, choosing equipment and antennas, and the advantages of each type of transmission.

Written in an easy-to-read style, HF Amateur Radio will benefit those new to HF, anyone contemplating exploring the world below 30MHz, and just about any HF operator who feels he could get more out of his station.

240x174mm- 132 pages

ONLY £11.89 - £13.99 (non-members)



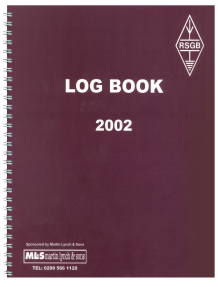
Antenna Toolkit II

The complete solution for antenna design

The legendary Joe Carr writes for the first time for the RSGB and brings you his vast experience in the area of antenna design. Joe's latest book provides radio amateurs with the definitive design guide for sending and receiving radio signals.

234x156mm
256 pages

ONLY £21.24 - £24.99 (non-members)



Deluxe Log Book & Diary 2002

This book not only contains generous 255x420mm sized log pages, but also contains a 2002 desk diary section, a listing of Radio Events in 2002, current UK Band plans and much more.

255x210mm
96 pages

£4.24 (£4.99 non-members)

Deluxe Log Book Cover

Protect your Deluxe Log Book with this padded PU construction cover.

275x 230mm

£8.49 (£9.99 non-members)

BUY BOTH FOR ONLY £10.99

For full information visit our website **www.rsgb.org/shop**

ANDY GAYNE, G7KPF
119 Lower Lickhill Road,
Stourport-on-Severn DY13 8UQ.
E-mail: www.radcom@rsgb.org.uk

ONE OF THE pioneers of amateur radio web pages in the UK is Jeremy Boot, G4NJH, whose site (1) has been keeping readers informed of news and developments in the hobby for over six years now. When originally conceived, Jeremy's site also contained a wealth of information aimed at the newcomer and prospective members of the amateur radio community, simply because there were virtually no other sites serving this purpose. Of course since then, the World Wide Web has exploded into life, and many resources are now available giving detailed descriptions of every aspect of amateur radio.

With this in mind, Jeremy has now taken the opportunity to simplify his web site, making it much easier to navigate and, more importantly, much easier to maintain! Still present are the introductions to basic aspects of amateur radio, many in the form of reprints of articles written by Jeremy for the now-defunct *Ham Radio Today* magazine, together with Jeremy's thoughts on the future of amateur radio and its interaction with the Internet. A page dedicated to Short Wave Listening continues the educational theme, introducing readers to the delights of listening to world-wide broadcasts and amateur radio operators.

A major feature of the site is the regularly-updated Real Audio version of the RSGB news broadcast, GB2RS, which is ideal for those needing their news 'on demand' due to a modern busy lifestyle. Overall, Jeremy's new-look site appears to be a definite step forward from the site's previous incarnation, with generally shorter, more focussed pages. I can't help feel, though, that Jeremy is in need of a new crusade - with the long-running Morse code debate looking like coming to a conclusion, and widespread acceptance of the Internet within amateur radio, what controversial subject will Jeremy debate next, I wonder?

TRADING PLACES

I RECENTLY RECEIVED an e-mail from Thommy Alexandersson, SM6EQH, asking me about UK-based 'for sale' web sites, and were there any I could recommend. This is a type of web page that I've seen attempted many times, with people setting up a message board on their sites to provide some free advertising space; usually they end up having limited success. I've even tried a trading page on my own Quick Links web site for a while, but I found that the effort involved in maintaining it was not justified for the use it received.

I suspect many others have found the same, but there is one site in particular that appears to have got the formula right. Set up by Chris Richmond, G0TOO, in July 2001, the Junk Sale Forum (2) uses a web-based database engine to manage the entry and storage of submissions, presenting them in a format that is common for many other web-based forums. Anyone can browse the site and read the adverts, which are segregated into 'for sale', 'wanted' and 'exchange' areas. To post an advert, a user must first register with the site, providing simple identifying information and a password.

Additional forums are provided for general radio and electronic discussions, modifications, news, etc which, if used widely, may become a more pleasant alternative to the much-maligned (and abused) uk.radio.amateur newsgroup. The only criticism I have of the site is its name; one user has already pointed out that high value equipment might not be advertised, as it is not 'junk'! However, with the domain name established I'm sure the site will remain the Junk Sale Forum, so don't be put off by the less-than-complimentary title.

FISHING FOR CHIPS?

ANYONE TRYING TO identify an unknown IC from its generic part number may find the Chip Directory web site (3) a useful aid. The URL given here is a UK mirror of the American-based site, and contained within it are references for over 10,000 integrated circuits, categorised in a number of different ways to make the identification process easier.

This is not a particularly appealing site, visually speaking, but it is functional and does the job in hand. The information contained in the Chip Directory for any one device is rather limited, with pin connections being available for a small percentage of parts, and a glossary being linked to the descriptive terms. The main advantage of this site is that, once a part is identified, you can follow the links to the manufacturer's site for further information. Alternatively, you can use a link to a handful of other on-line data resources, although most will require registration before you can access the device data sheets.

A small section of the site containing 'Texts about hardware' will also be useful for those not experienced in identifying ICs, especially the 'Tips for chip spotting', which can help you decode the plethora of numbers found on most modern devices. I'm not 100% enthusiastic about the Chip Directory's implementation, but it is a rare resource that will certainly assist the less-experienced constructor with identifying ICs from the junk box.

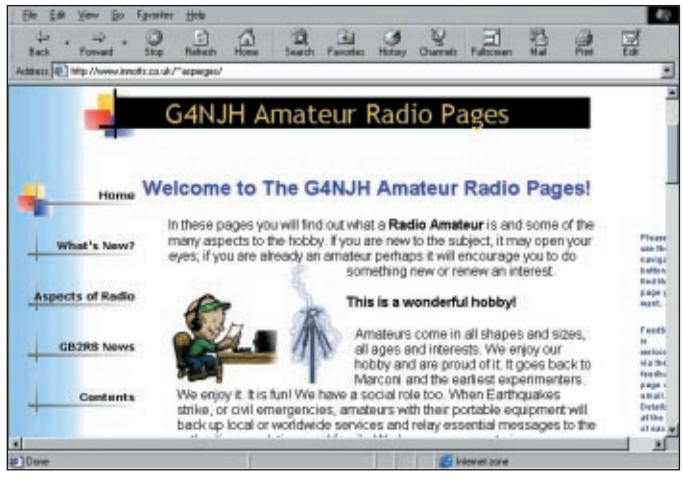
EARTH VIEW

LOOKING BACK ON planet Earth is a whole lot easier, thanks to the Earth and Moon Viewer web page (4), part of the Fourmilab web site created and maintained by John Walker (founder of the well known Autodesk company). This page allows virtual views of the earth to be generated, showing current areas of night and day, centred around the present position of the sun or, more interestingly, a variety of satellites.

Data from weather satellites can also be overlayed, to show cloud cover and global temperatures. The software used to generate the images is also available for download, allowing you to generate Earth images, as well as a variety of star maps, off-line. ♦

WWW.

(1) Jeremy Boot G4NJH	http://go.to/g4njh
(2) The Junk Sale Forum	www.junksale.co.uk
(3) Chip Directory	www.chipdiruk.com
(4) Earth and Moon Viewer	www.fourmilab.ch/earthview



Jeremy Boot explains our hobby to the world.

QRP QRP QRP QRP QRP

REV GEORGE DOBBS, G3RJV
St Aidan's Vicarage,
498 Manchester Road,
Rochdale OL11 3HE.
E-mail: g3rjv@gqrp.com

THE REV Bill Burton, T88BA, has been active on QRP from Koror in Palau. Bill's station is a NorCal-20 transceiver donated by the Northern California QRP Club in association with the G QRP Club. The NorCal-20, which is supplied in kit form, is a 5W output 20m superhet transceiver.

Bill uses the NorCal-20 to a sloping dipole at his workplace on the edge of the Pacific Ocean. He arrives there early in the mornings and is active from 2230 to 2300UTC prior to starting work. He sticks closely to 14,004 kHz and tries to be active Monday to Friday inclusive, but not Saturday or Sunday. However, in the UK, we must remember that our Friday evening is his Saturday morning and our Sunday evening is his Monday morning, etc.

T88BA has had reasonably consistent success in contacting Bill, GM3KHH in Oran, Buckie, Moray. The panel below is a mini-log sent to me by GM3KHH, who used a Yaesu FT-990 running 100 watts to a 3-element monoband Yagi about 50 feet up.

THE *QRP HOMEBREWER*

THE *QRP HOMEBREWER* is a 64-page professional-quality publication dealing with QRP construction projects - tools, advice and guidance on the practical side of QRP homebuilding. It is published quarterly (approximately November, February, May and August) by the New Jersey QRP Club as a service to the QRP community. There is no need to be a member of the New Jersey QRP Club to subscribe, and the magazine encourages readers and article contributions from all round the world.

The editor of the *QRP Homebrewer* is George Heron, N2APB, whom I know from his very lively input to the 'Four Days in May' QRP symposia at the Dayton Hamventions. George is a very active radio constructor and contributor of ideas and articles in the QRP literature. His aim in the *QRP Homebrewer* is two-fold. Primarily, it is about the homebuilding of QRP equipment, gadgets, antennas and accessories. But alongside this is the targeting of less-experienced constructors with information, ideas and techniques to suit their ability. At the same time, the magazine plans to run the more advanced projects to keep the experienced constructor interested.

Original colour photographs and graphics from previous issues can be viewed at www.njarp.org/qhbextra The *QRP Homebrewer* costs $15 a year for USA and Canadian subscribers, and $20 a year for those outside North America. To subscribe, make a cheque or money order payable to 'George Heron, N2APB' and send it to him at 2419 Feather Mae Court, Forest Hill, MD 21050 USA. His e-mail address is n2apb@amsat.org

TWO QRP EVENTS

JUNCTION 28 QRP CONVENTION

The South Normanton, Alfreton and District ARC, in association with the G QRP Club, is once again presenting the Junction 28 QRP Convention on Saturday 23 March 2002 in the Village Hall Community Centre, South Normanton, Derbyshire (5 minutes from Junction 28 on the M1). As last year, the event will feature components, kits and surplus traders with G QRP Club and bring-and-buy stands. There will be a programme of lectures throughout the day. The doors open at 10am; the admission is £1 with a talk-in station on 2m, channel S22. Further details can be obtained from Duncan Walters, G4DFV, on 01623 465 443 or by e-mail to pentode@ntlworld.com.

Having attended, and indeed spoken at this event last year, I can commend it as a good 'old-fashioned' amateur radio event. There is plenty of interesting surplus equipment and junk on sale and components to be bought. Those interested in construction, QRP and the cheaper approach to our hobby will have an enjoyable day.

RED ROSE QRP FESTIVAL

The Sixth Red Rose QRP Festival is to be held on Sunday 26 May 2002, from 11am to 4pm at the Formby Hall, Alder Street (off High Street), Atherton, Manchester. The aim of the event is to promote interest in low power operating and home construction. The festival will include trade and club stands, including RSGB, G QRP, FISTS, a low cost bring-and-buy and a display of Morse keys and QRP rigs. There are spacious halls at ground level with a large free car park and disabled facilities. Refreshments are available all day, including a bar.

The admission cost is £1 with a talk-in station on 2m, channel S22. Some tables are available at £5, but please book early. For further details, please contact Les Jackson, g4hzj@btinternet.com or telephone 01942 870 634.

QRP GENEROSITY

EACH YEAR at the Pacificon Amateur Radio Convention held in Concord, near San Francisco in California, there is a large QRP Forum. The event is organised by Doug Hendricks, KI6DS, of the Northern California QRP Club, NorCal (see the T88DA story above). I had the pleasure of being a guest speaker at the QRP Forum in October 1998.

It is usual to have a large raffle at the event and this year KI6DS decided to give the proceeds to St Aidan's Church, Sudden, Rochdale. Doug has, in the past, visited me and the church. He invited vendors to give prizes and many of them responded with very generous offerings. The nature of the raffle was rather novel. Entry was by means of a $5 bill with the donor's callsign written on the back. The entries were extended beyond those who attended the convention and I was amazed when Doug e-mailed me to say that a total of $2745 had been raised. A real case of QRO generosity from QRPers. ♦

Mini-Log

4 September 2001 at 2253: T88BA heard by GM3KHH RST 449 reported to him by e-mail (0753 Palau local time, 5 September).
5 September 2001 at 2250: T88BA worked by GM3KHH who sent RST 239 and received 339 from Palau (0750 Palau local time, 6 September).
6 September 2001 at 2243: T88BA worked by GM3KHH who sent RST 449 and received 539 from Palau (0743 Palau local time, 7 September). On 6 September (UK date), there was nil QRN and nil QRM until JA4DZ appeared on frequency with an S9 plus signal, which obliterated T88BA and the QSO ended. The frequency used for all the above was 14,004kHz.
GM3KHH

Real winter sports: Fred Garrett, G4HOM, takes part in the G QRP Club Winter Sports 2000/01 event from the Hostyn Mountains, Cernava, JN89VJ, using a homebrew 'Malta-40' transceiver.

DAVE PICK, G3YXM
178 Alcester Road South,
Kings Heath,
Birmingham B14 6DE.
E-mail: lf.radcom@rsgb.org.uk

HAPPY NEW Year! 2002 should be an interesting year on LF with more stations in more countries coming on 136kHz all the time and don't forget we still have 73kHz to experiment with. If you don't yet have a New Year's Resolution, may I suggest "I will get going / improve my setup (delete as appropriate) on LF in 2002"?

136kHz FROM NEW ZEALAND

THE QUARTZ HILL station, ZL6QH, has received permission to operate on the 135.7 to 137.8kHz band. Its good aerial means that it will probably get close to the New Zealand maximum allowed ERP of 5W. Initial tests showed good results all over the country, so they are well on the way.

Some European listening tests are being conducted in December to see if anything can be detected; it may be a long shot, but this is the station which has been received twice in Canada over a 11,709km path.

MB7LF, LF ON VHF

THE CRAWLEY CLUB has a special licence to operate a relay of 136kHz in the 2-metre, 6-metre or 10-metre band. Currently the system works by receiving the whole 136kHz band in the 2.1kHz bandwidth of an SSB receiver, this audio being fed into a 2-metre SSB transmitter, together with the necessary 'MB7LF' identification. Thus it is possible to tune across the 136kHz band at a remote site, using a 2-metre CW receiver. There are many potential problems, such as desensing by strong local stations but, in practice, the system proved very effective when used as the 'ears' for the LF station at the HF convention.

This interesting project has divided opinion on LF, the experimenters seem to be for it, but some operators see it as cheating. It is only an experiment with a limited time span and it is hoped that it will give a few more people an opportunity to listen on LF and will serve as an incentive to get their own systems up to scratch.

If you want to hear it and are within about 40 miles of Crawley, listen on 144.986kHz USB.

HF CONVENTION REPORT

THE CONVENTION returned to the Beaumont centre in Windsor and the LF sessions, held on the Saturday, were well attended.

The morning was spent in the Orchid room enjoying talks from G3NYK on LF propagation and G3LDO on the trans-Atlantic contacts. Delegates then took part in the LF Forum, where the subject of a bandplan was discussed along with other items of interest to LF operators. It was decided that, as operating practices are still changing, a formal bandplan should not be imposed, but that we should all try to stick to the 'gentleman's agreement' frequency plan. The session ended with the award presentations:

The Orchid room packed with attentive LFers.

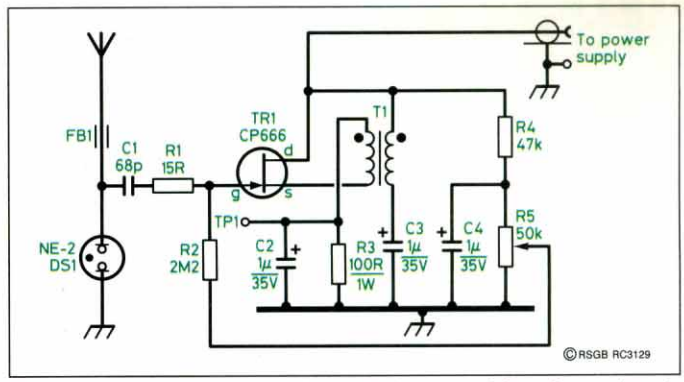


Fig 1: The circuit of the preamplifier, which is powered from the receiver via the coaxial feeder. T1 is 17 turns bifilar-wound on an Amidon T50-75 core.

The Nevada cup went to Alan, G3NYK, for his great work studying LF propagation as it applies to amateurs. He is now able to predict good daytime or night-time DX conditions several days in advance if all goes well.

The special operator's award went to Mike, G3XDV, for his outstanding achievements on LF from a small suburban garden.

The Peter Bobek awards were presented to G3AQC, G3LDO and M0BMU (also to be sent to VE3ZJ, VA3LK and VE1ZZ) for their trans-Atlantic successes. Awards were also presented for the furthest distance worked in the last year. The award for an outstanding contribution to LF operation went to Alberto, I2PHD, and Vittorio, IK2CZL, who wrote *Argo*, the most popular spectral analysis program for QRSS work.

After lunch there was a series of short talks. Firstly, G4JNT described his 700W half-bridge MOSFET PA which needs no mains transformer and was inspired by the Decca design. Next, G3YSX enlightened us on the workings of MB7LF in Crawley (see earlier). N4ICK then talked about the AMRAD E-field antenna, which recently featured in *QST*. This is capable of very good performance, as experienced by G3GRO, who has had one on test. More on this later.

A special event station, MB2HFC operated throughout, and benefited from the remote receiver at Crawley. MB7LF was received by a beam on the roof of the building and the IF of the 2-metre transceiver was fed into an HF receiver with decent CW filters. The LF gear was provided by G3XTZ, who also used his catapult skills to help erect the impressive aerial. With this setup the station worked into PA and EI; without MB7LF they would only have heard S9 signals through the local noise.

THE AMRAD RECEIVE AERIAL

THIS PROJECT was undertaken by Frank Gentges, K0BRA, assisted by other AMRAD members and was intended to provide a high-performance receive aerial for use in the trans-Atlantic challenge. It consists of a 1m rod connected to a high impedance preamplifier (**Fig 1**) which is powered up the coax feeder from the receiver. The aerial must be sited as high and clear as possible as these E-field aerials suffer from screening effects and are liable to pick up noise from electricity cables etc.

The preamplifier design is based upon the work of Ralph Burhans, who produced a similar design in the 1980s, but this one is capable of much improved intermodulation performance. It is this performance which is crucial to the E-field aerial; with useful sensitivity from 10kHz to 30MHz, it must not be overloaded by anything in that range!

The design uses a modern high-linearity J-FET from Crystalonics in the USA. This CP666 device is run at 24V and 53mA so needs a heat-sink, but at least the heat should keep the damp out of the preamp box! Further information is available on the AMRAD website. ♦

WWW.

Argo dowload
www.weaksignals.com
Crystalonics (tel: 001 781 270 552)
www.crystalonics.com
AMRAD website
www.amrad.org/lf/active/

ROGER BALISTER, G3KMA
La Quinta, Mimbridge, Chobham, Surrey, GU24 8AR.
E-mail: g3kma@dial.pipex.com

YAESU ONCE again confirmed its position as Principal Sponsor of the IOTA Programme at the October RSGB HF & IOTA Convention with the presentation of a generous cheque to the IOTA Committee. In thanking Paul Bigwood, G3WYW, of Yaesu, the IOTA Committee Chairman, Martin Atherton, G3ZAY, said that the money would be used for programme development and DXpedition support.

IOTA IN MEXICO

THE BIG EVENT of the period was the operation by XF2RCS from Lobos Island off the northern coast of Mexico's Veracruz State, NA-221. Put on in early November by an all-Mexican team consisting of XE1KK, XE1VIC, XE1ME, XE1JG, XE1YJY and XE1ZOI, it logged more than 4500 contacts on all bands from 2 metres to 160. This, together with other recent island operations, highlights the fact that IOTA activity is now looking up in Mexico after a rather quiet period during the late 90s. There is good reason to believe that further DXpeditions to new or very rarely activated IOTAs are being planned.

ANNUAL UPDATE

IOTA ENTHUSIASTS are reminded that the last date for mailing applications or updates to checkpoints for inclusion in the 2002 Honour Roll and other performance tables is **1 February**. If postmarked after that date, they will be processed in the normal way but the scores will be held over to the following year's listing.

Existing members, who intend to claim credit for any of the 39 new references marked with an asterisk in the list alongside and have not yet completed a Conversion Sheet, must include one with their update and enclose supporting QSLs. Checkpoints are under instructions not to process cards from aster-isked groups where a Conversion Sheet has not yet been submitted. You can download the Conversion Sheet from the IOTA websites below, or obtain it from your checkpoint (enclose an SASE please).

A final reminder, following publication of the 2002 tables, IOTA HQ will delete from members' records on the IOTA database any of those credits subject to review that have not been rechecked through a Conversion Sheet exercise. So, if you have not yet converted your existing IOTA record on to the basis of the new *Directory* listings, you have until 1 February 2002 to do so - it's not a big job, it involves resubmitting a maximum 16 cards.

New applicants should base their application on the island listing in *Directory 2000* [available from RSGB Sales - *Ed*], updated by the table alongside.

IOTA ON 6 METRES

RECENT GOOD F2 propagation, following summer Es openings, has again shown the possibilities for IOTA contacts. Between 24 October and 15 November I was lucky enough to work D44BS (AF-005), JR6HI (AS-017), D44CF (AF-086), ZF1DC (NA-016), 9M2TO (AS-015), PY0FM (SA-003), KP4EIT (NA-099), VK4BRG (OC-001), XU7ABW (AS-133), 9V1UV (AS-019), VR2XMT (AS-006), DU1/GM4COK (OC-042), VY2SS and VY2RU (NA-029), VE1ZJ (NA-010) and OX3OX (NA-018), making a total of 43 IOTA groups in the log since coming on the band in mid-July. Another 20 groups were either worked or heard in the UK during the openings. What is clear is that there is regular activity from many island groups with some of the IOTA DXpeditions now putting in a lot of time on the band. ♦

Take, JI3DST, enjoyed working the JA pile-up from demonstration station MB2HFC at the RSGB HF Convention in October. Take plans to be active as JI3DST/6 from Miyako Island (AS-079) between 29 December and 5 January (see 'HF' column, December 2001).

RSGB IOTA Programme, PO Box 9, Potters Bar, Herts EN6 3RH; e-mail: iota.hq@rsgb.org.uk

IOTA REFERENCES ISSUED SINCE PUBLICATION OF *DIRECTORY 2000*

AF-086	D4	Windward Islands*
AF-087	5H	Tanga Region group
AF-088	C9	Nampula District group
AF-089	TR	Ogooue-Maritime Province group
AF-090	5R	Madagascar's Coastal Islands East*
AF-091	3V	Jendouba / Bizerte / Tunis / Nabeul Region group
AS-145	HS	Malay Peninsula South East group
AS-146	BY4	Shandong Province North East group
AS-147	JA8	Hokkaido's Coastal Islands*
AS-148	HL4	Cholla-bukto Province group*
AS-149	R0F	Sakhalin's Coastal Islands*
AS-150	BY4	Shandong Province South group
AS-151	BY2	Liaoning Province West group
AS-152	R0Q	Respublika Sakha: Laptev Sea Coast West group
AS-153	VU	West Bengal State group
AS-154	TA	Black Sea Coast East group
AS-155	BV	Taiwan's Coastal Islands*
AS-156	R0B	Ushakova Island
AS-157	3W	South China Sea Coast Centre group
AS-158	BY2	Liaoning Province East group
AS-159	TA	Black Sea Coast West group
AS-160	BY4	Shandong Province North West group
EU-170	9A	Dalmatia North group*
EU-171	OZ	Jylland North group*
EU-172	OZ	Jylland East and Fyn group*
EU-173	OH1	Lansi-suomi (Pori) Province group*
EU-174	SV	Makedonia / Thraki Region group*
EU-175	CU3-7	Central group*
EU-176	SM3	Gavleborg County group*
EU-177	SM5	Sodermanland / Ostergotland County group*
EU-178	ES0,8	Parnumaa County / Saaremaa County South group*
EU-179	UR	Mykolayivs'ka / Khersons'ka Obl: Black Sea Coast group
EU-180	UR	Respublika Krym: Black Sea Coast group
EU-181	LZ	Bulgaria group
EU-182	UR	Odes'ka Obl: Black Sea Coast group
EU-183	YO	Romania group
EU-184	OH8	Oulu Province group*
EU-185	R6A-D	Krasnodarskiy Kray: Black Sea Coast group
EU-186	TA	Turkey group*
EU-187	SV9	Crete's Coastal Islands*
EU-188	R1P	Pechorskoye Sea Coast West group*
NA-213	W4	Alabama State group*
NA-214	KL	Nome County South group*
NA-215	KL	Northwest Arctic County group*
NA-216	KL	Northern Alaska Peninsula West group
NA-217	W1	New Hampshire State group*
NA-218	CO8	Las Tunas / Holguin / Santiago de Cuba Province group*
NA-219	C6	Cay Sal Bank Cays
NA-220	OX	Greenland's Coastal Islands South West*
NA-221	XE1	Veracruz State North group
OC-232	4W	East Timor's Coastal Islands*
OC-233	VK7	Tasmania's Coastal Islands*
OC-234	VK	Browse Island
OC-235	DU8-9	Mindanao's Coastal Islands*
OC-236	YB8	Celebes's Coastal Islands*
OC-237	YB0-3	Java's Coastal Islands*
OC-238	FO	Pukarua and Reao Atolls, Tuamotu Islands
OC-239	YB9	Irian Jaya's Coastal Islands West*
OC-240	P2	Papua New Guinea's Coastal Islands East*
OC-241	YB9	Timor Barat's Coastal Islands*
OC-242	YB8	Bonerate and Taka' Bonerate Islands
OC-243	VK6	WA State (South Coast) West group*
OC-244	DU1-4	Luzon's Coastal Islands*
OC-245	YB5-6	Sumatra's Coastal Islands North*
OC-246	YB8	Leti and Sermata Islands
OC-247	YB8	Sabalana and Tengah Islands
SA-087	LU	Santa Cruz Province North group
SA-088	PP5	Santa Catarina State South group*
SA-089	YV1	Falcon State group*
SA-090	YV5-7	Anzoategui State / Sucre State West group*

AF-091, AS-156, AS-160 & NA-221 are provisional numbers. * see text.

WWW.

RSGB IOTA Programme: www.rsgbiota.org
IOTA Manager's website: www.eo19.dial.pipex.com/index.shtml
IOTA Contest rules: www.rsgbhfcc.org/

MICROWAVE

SIMON LEWIS, GM4PLM
Creoch Farm, Ochiltree, Ayrshire KA18 2QH.
E-mail: uwave.radcom@rsgb.org.uk

AS I WRITE this, we are fast approaching winter, the first snow has been and whatever summer we had is gone. There has been lots happening over the past few months - 24GHz EME, K-band activity on AMSAT AO-40, and much more. Winter is always a time for preparing for next year's events and, hopefully, next year will see a full return to the portable operations we are used to. With plans for next year in mind, perhaps it's time to consider a new band? Perhaps a different mode of operation, or simply to become a little more active during those important summer contests and activity periods? I know I am guilty and with a busy job and young family it's always hard but, if we all make the effort, the levelof activity on the bands will soar. So get the mind working, plan something and then carry it out! I shall look forward to all the lovely reports for this new year's 'Microwave' column.

WWW.

G3PHO's website www.g3pho.free-online.co.uk
G3WDG's website www.g3wdg.free-online.co.uk

A PLEA!

THIS PAST YEAR has seen very little news or activity reports from the microwave fraternity. So what I would like to see is some input from you for the column. That is, anything microwave, not simply narrowband modes like SSB or CW. What about all the ATV activity? Packet links? Come on, get writing and include some nice pictures and let the rest of the world know what you're up to.

MICROWAVE UPDATE 2001

PETER DAY, G3PHO, who also, incidentally, edits the *RSGB Microwave Newsletter*, was lucky enough to be able to attend this year's Microwave Update. He writes "This year's 16th Annual Microwave Update was held at the Four Points Sheraton Hotel in Sunnyvale, California. Sunnyvale lived up to its name as it was glorious sunshine and high temperatures throughout the Update weekend. Well over 100 amateur microwavers from all parts of the world, Australia, Japan, UK, Germany, Canada and the USA, attended these immensely enjoyable and rewarding few days. 'MUD', as we now call the event, has become an annual pilgrimage for many microwavers. If you haven't been to a MUD meeting, it's about time you did! You owe it to yourself. Next year's event will be held in New England, USA."

A full report can be found on Peter's website, and includes some excellent photos.

MORE 24GHz EME ACTIVITY

ON 18 AUGUST 2001 at 1419UTC, VE4MA and W5LUA completed the world's first 24GHz two-way EME QSO after exchanging 'M' reports. Signals were quite good with slightly less that the normal buzz experienced at 10GHz. VE4MA was using 60 watts at the feed of an offset-fed 8ft dish, and W5LUA had 80 watts at the feed of his 10ft dish.

After the news of the world's first 24GHz EME contact, Charlie Suckling, G3WDG, who had already been receiving the AO-40 satellite downlink on 24GHz, knew his K-band setup should do the business with EME on the same band.

He reports: "With G4KGC on the receiver and G3WDG handling the tracking, we were pleased to find VE4MA's signal quite easily a few seconds into his transmit period. During the 30-minute sked, we copied both stations, VE4MA at 'O' level and W5LUA at 'M' level, and heard them complete their second QSO of the morning. We also watched their signals on the computer using the AE4JY AO-40 receive software, which has a waterfall-type audio spectrum analyser display. The capture clearly shows the libration spreading widening the signal (a clear tone would show up as a narrow line).

"We have posted the AO-40 receive capture and about a minute of audio on our website."

They are not the only ones to hear these amazing signals. Gunther, VE7CLD, also heard the signals on 9 October at around 0902UTC for about half an hour as well as on 10 October at 1031UTC.

An amazing feat; congratulations to all concerned for an outstanding effort.

NEW UK 47GHz RECORD

AFTER MONTHS of constructional work and short-distance tests, a group of millimetre-wave microwavers in the north has finally made what is likely to stand as the UK 47GHz DX record for a very long time. On Sunday 21 October, Paul, G0HNW, and Martin, G7MRF, operating as GM0HNW/P and GM7MRF/P, made a 203km contact with Dave, G0IVA, operating as GW0IVA/P. The path is approximately 90% over sea and is line-of-sight.

Paul, Martin and David, M0VZT, were located on Cambret Hill (351m ASL, Galloway, in SW Scotland, NGR NX523577, IO74UV34). Dave, GW0IVA/P, was some 1065 metres above sea level on a subsidiary summit of Snowdon (NGR SH611552, IO73XB18). Apart from a short 100m section, the Scottish end was 'drive on', but GW0IVA/P had to backpack all of his 24GHz, 47GHz and 144MHz equipment, plus batteries, dish antenna, food, and foul weather clothing, up to the top of the mountain. He was helped by Jeremy, G6ZGP. The climb took some three-and-a-half hours after setting off at 0900 local time!

The weather conditions for this DX record were touch and go. The path was fortunately in the only rain-free part of the UK that day. Deep fades were noticed on 24GHz but, strangely, 47GHz signals seemed quite steady in comparison. At the Welsh end, the weather was very poor throughout, with the cloud base at approx 600m (ie the station was 400m into cloud).

This contact was over what is almost the longest line-of-sight path available in the UK. The longest is from Cairnsmore of Carsphairn (about 42km to the north of Cambret Hill) to the summit of Snowdon in North Wales. This 245km path was worked in the mid-1980s on 10GHz wideband FM using open waveguide. Congratulations to all concerned on a fantastic effort. ♦

The 47GHz equipment used by Martin, G7MRF.

JOHN HEATH, G7HIA
Chestnuts, Desford Lane, Kirkby Mallory, Leicester LE9 7QF.
E-mail: g7hia@amsat.org

SPACE

THE EXCELLENT articles that have appeared recently from Simon Lewis, GM4PLM [1], and Howard Long, G6LVB [2], will certainly have shown you that there are plenty of opportunities for construction and experimentation; you may even be setting up right now for AO-40.

You may be interested in 'space radio' and be wondering how to get started, and what possibilities there may be with your existing equipment. A quick examination of **Table 1** will show that, with a 2m and 70cm multimode (or separate radios), you have access to the popular analogue satellites. You can even work some satellites with a hand-held. Contacts are made regularly into Europe and to North America on UO-14, and AO-27. With a receiver on 10m USB, and 2m USB transmitter, you can work RS-12.

A REPEATER IN ORBIT

THE TRANSPONDER on the spacecraft works a bit like your local repeater, with the input and output on separate frequencies. For space communication, separate bands are used. Transmit to the spacecraft (uplink) on one band, receive from the spacecraft (downlink) on another. CW / SSB satellite transponders are configured in two ways - inverting or non-inverting. You will see this in the table and you will notice that to get your downlink as USB you need to transmit in LSB when using an inverting transponder.

My recommendation is to construct a 'look-up table' for each satellite you want to use. This will be covered in a future column.

For satellites with a beacon, the very first thing to do is listen for the beacon to confirm that the satellite is operational and assess conditions. If you don't hear the beacon or some contacts, do not transmit, the satellite may be switched off for essential command uplinks.

Satellite	Signal	Range (MHz)			Mode
RS-12	Uplink	145.910	to	145.950	CW/USB
	Downlink	29.410	to	29.450	CW/USB
	Beacon	29.408			CW
AO-10	Uplink	435.030	to	435.180	CW/LSB
	Downlink	145.975	to	145.825	CW/USB
	Beacon	145.810 (unmodulated carrier)			
AO-27	Uplink	145.850	FM		
	Downlink	436.795	FM		
	Single channel. No beacon. Switches on in full sunlight. Transponder off from time to time.				
UO-14	Uplink	145.975	FM		
	Downlink	435.070	FM		
	Single channel. No beacon. On 24 hours.				
FO-20	Uplink	145.900	to	146.000	CW/LSB
	Downlink	435.900	to	435.800	CW/LSB
	Batteries failing - use only in sunlight.				
FO-29	Uplink	145.900	to	146.000	CW/LSB
	Downlink	435.900	to	435.800	CW/USB
	Digital Mode Downlink	435.910			
	Digitalker	435.910			
PCSAT	APRS Downlink AX-25 Packet 1200 baud	145.825			
OSCAR-11	Data Downlink 1200 baud PSK	145.825			

Table 1: Operating frequencies for selected satellites.

YOUR FIRST SATELLITE CONTACT

IF YOU HAVE listened to a few passes of the satellite of your choice and have a feel for how things work, you will next want to make a contact. Headphones are recommended for most satellite working, as signals are generally R5 but not S9.

With fixed horizontal antennas, choose a 10-20° elevation pass and tune to a quiet part of the passband, usually at the HF end. On FO-29 it may be 435.890MHz. 145.910MHz is the matching uplink frequency. Keep your receiver on 435.890MHz and give a whistle on 145.910MHz. If you are in a clear spot with no contacts over a band of ±10kHz, you will not cause anyone any problems. You will need to tune your transmitter a little HF or LF of the theoretical frequency before you can hear your own signal coming back. Give your callsign and a short message like "Gxxxx testing on satellite xxxx".

Don't forget to keep your antennas beamed up on (ie pointed to) the satellite. With a horizontal antenna, keep the azimuth (bearing) correct for the best results. Coordinating your up- and downlink signals is probably the hardest aspect to explain on paper; it's not easy to do the first few times either, but it becomes easier with practice.

DOPPLER SHIFT

SATELLITES ARE travelling at high speed, and frequencies given in tables take no account of Doppler shift. This is the effect that makes the note of a police car siren drop in frequency as it passes you. Doppler shift can be several kHz and is greater the higher the frequency of operation. The shift at 435MHz is thus greater than at 29MHz. The Doppler shift gives an apparent *increase* in frequency as the spacecraft approaches you and a *decrease* as it goes away. For example, the beacon on RS-12 is nominally 29.408MHz but, at the beginning of the pass, tune nearer to 29.410MHz and, at the end, 29.406MHz. Low-elevation passes have less Doppler shift than high-elevation passes, so start with the former until you get some practice.

THE 'EASY SATS'

YOU MAY LIKE to start with the FM satellites AO-27 and UO-14. For these satellites, the uplink can stay fixed and it is only necessary to tune the downlink. If you have a discriminator scale on your S-meter, tune to keep the signal centred on the meter and you will get clear reception. These are single-channel satellites and can get very busy. If all you can hear is white noise then many stations are trying to access the transponder. Late at night is a good time to experiment on UO-14.

DIGITAL SATELLITES

I HAVE INCLUDED PCSAT, as it's just about certain that you will receive this on a hand-held or a base station with small antennas. Listen for intermittent bursts of AX-25 packet, which you can display with your normal packet gear.

Also on 145.825MHz, when it's in range of course, you will hear the rasping note of the data transmissions from the University of Surrey satellite Oscar-11. It uses PSK so needs a special modem to decode.

AND ON HF...

RS-12 IS INCLUDED since, in many ways, the Russian satellites with 2m uplink and 10m downlink are some of the easiest satellites to work. If you have the equipment, do give RS-12 a try. It produces some good DX including well into Russia to the east and across the Atlantic into the United States and Canada to the west.

If you would like me to cover any particular topic in this column, or just need some help with space radio, contact me at either of the above addresses.

REFERENCES

[1] 'Microwave Radio via AMSAT Oscar 40', *RadCom* Aug 2001, pp18 - 22.
[2] 'A Practical Approach to Operating AO-40', *RadCom* Nov 2001, pp22 - 24, *RadCom* Dec 2001, pp29 - 32. ♦

CLASSIFIED ADVERTISEMENTS

Classified advertisements 58p per word (VAT inc.) minimum 14 words £8.12. All classified advertisements must be prepaid. Please write clearly. No responsibility accepted for errors. Latest date for acceptance is 1st month prior to publication.

Cheques should be made payable to RSGB. Copy and payment to:

Jan Forde, Lambda House, Cranborne Rd, Potters Bar, Herts EN6 3JE.

Tel: 0870 904 7377 Fax: 0870 904 7378

E-mail: adsales@rsgb.org.uk

FOR SALE

ALUMINIUM TUBE. Heavy-duty (scaffold) tube approx. dimensions 20' long 2" dia. $^{11}/_{64}$" (4.5mm) wall thickness, 20' and 10' lengths available @ £1.80 + VAT per ft. C.W.O. Rusper Hire (Crawley) 01293 87 1621 office hours only.

FIBREGLASS TUBE High strength tube, square box, rod and other sections all from stock in 6m lengths. Engineered Composites, Chester. Tel: 01244 676000 www.engineered-composites.co.uk

G2DYM TRAP-DIPOLE AERIALS, anti-TVI, anti-interference, information Large SAE:- G2DYM, Uplowman, Devon EX16 7PH. 01398 361215 Anytime.

ICOM 505 all modes plus accessories £200. ICOM 2GE plus accessories £95. KENWOOD 231E plus extras imac. boxed £125. 01737 360045

LIMITED SPACE ANTENNA 160-10 metres 84' overall with 76' of balanced feedline £59.95 plus £5.00 P&P. Choke Baluns Std model £36.85, Yagi Model £37.45 (state boom size) G5RV £28.50 all inc. P&P. Amidon Cores, limited stocks available. Send SAE for full details of all the above. Ferromagnetics, P.O. Box 577, Mold, Flintshire CH7 1AH.

OLD YAESU REPAIRS PARTS & VALVES. G3LLL - 0790 1932763 - Morecambe. List g3lll@onetel.net.uk

PROGRAMMED PROMS, PMR & MORE Details: www.atlantacomms.co.uk or S.A.E.: Atlanta Communications (RC), PO Box 5, Chatteris, Cambridgeshire PE16 6JT.

PSK-31 INTERFACES Fully isolated. See: www.g3liv.co.uk Info: Johnny@melvin.com Phone: 0191 2843028 G3LIV QTHR.

THE RF KIT CATALOGUE. Send 2 x 2nd class stamps or browse www.rf-kits.demon.co.uk. Hands Electronics, Tegryn, Llanfyrnach, Dyfed SA35 0BL Tel: 01239 698427.

BRING & BUY

ADVERTISE OR AUCTION your surplus equipment at http://www.bringandbuy.cjb.net

COMPUTER SOFTWARE & HARDWARE

QUESTIONS FOR THE RAE Download practice questions for the Radio Amateurs Exam from http://freespace.virgin.net/murray.g3kzb or phone 01483 417597 for disks.

SD - EI5DI's CONTEST LOGGERS. HF £25.00, VHF £25.00, both £39.00. Paul O'Kane, 36 Coolkill, Dublin 18. (00353 1295 3668) www.ei5di.com

SHACKLOG 5.5 - Probably the most popular UK written and UK supported logging software. £32.00. With IOTA add-ons £42.50. SASE + disk for demo copy. Alan Jubb, G3PMR, 30 West St., Gt Gransden, Sandy SG19 3AU. 01767 677913. www.shacklog.co.uk

WEB SITE HOSTING. You can Have your own domain name and web site up and running for £5 per month. E-mail websites@g3vji.com for further information.

HOLIDAY ACCOMMODATION

BED & BREAKFAST/FOOD. Scotland, North coast GM0EXN, Cliff Top HF & Internet. Tel: 01847 851774 Email: accommodation@btinternet.com. Web address: http://www.btinternet.com/~bandb.farnorth/index.html

CRICCIETH, NORTH WALES. Bed and Breakfast. Seaview all rooms. Pennyfarthing 01766-522744, e-mail: pennyfarthing@psilink.co.uk

HAM VACATION QTH Gran Canaria www.bbelporche.com

NORTH WALES, CARAVAN, BUNK HOUSE, CAMPING. Elevated site. Use of shack and beam antenna. Open all year. Rural setting. "Tynrhos", Mynytho, Pwllheli LL53 7PS (01758 740712). tynrhosdiving@btinternet.com

MISCELLANEOUS

CALL IN ON THE 'GOOD NEWS' CHRISTIAN NETS! Every Sunday at 8am on 3747kHz and around 7047kHz and 144.205 at 3pm sharing Christian fellowship over the air. Info from WACRAL, 51 Alma Road, Brixham, South Devon TQ5 8QR Tel: 01803 854504

CALLSIGN T-SHIRTS / POLOS Ideal for special events and gifts. Minimum one shirt. Visit:www.cozmikshirts.co.uk/cqdx/

CT KEYS AND PADDLES. Svetlana/Russian valves. Shack rentals in Ukraine (30 U.K. pounds per day). Details at http://www.dxham.com E-mail: cthrd@thersgb.net

VIDEO TAPE CONVERSIONS to and from all modes NTSC : SECAM : PALN : PALM Digital processing. Fast and economic service. Also 'cine' conversions. G4WMP@qsl.net Phone 01932 846139.

QSL CARDS

FULL COLOUR QSL CARDS , plus our low cost, conventional cards. Personal designs our speciality. LSAE for samples:- The Standfast Press, South Drive, Inskip, Preston PR4 0UT.

G4TJB QSL CARDS printed to your specification, send large SAE for samples and full product list. Unit 6, Worle Industrial Centre, Coker Road, Worle, Weston-Super-Mare BS22 6BX. Tel/Fax: (01934) 512757

QSL CARDS OF QUALITY Specialising in personalised designs incorporating photographs. Large S.A.E. for samples to: Admiral Printers, 12 Faraday Court, Park Farm North, Wellingborough, Northants NN8 6XY. Tel 01933 400883

UX5UO QSL PRINT, probably the cheapest ones. From £20 for 1000. For samples and prices please sned SAE to: Vlad M0UNF, 43 Nine Acres Road, Cuxton, ME2 1EN

CLASSIFIED continued

WANTED

VALVES WANTED - NEW AND BOXED. KT66 GEC £35. KT88 GEC £60. EL34 Mullard £27. EL84 Mullard £4. EL37 Mullard £27, DA30, DO30, PX25, all at £120 each. PX4 Globe Shape £70, DA100 GEC £150. ECC83 Mullard £5. GZ32 and GZ34 Mullard £10, ECC32 and ECC33 Mullard £15, B65 Metal Base £8. 53KU Bulbous £8. Other types wanted. Please send a SAE for free list. Old valved radio and test equipment also wanted. COLOMOR (ELECTRONICS) LIMITED, Unit 5, Huffwood Trading Estate, Brookers Road, Billingshurst, West Sussex RH14 9RZ. Tel: +44 (0) 1403 786 559 Fax: +44 (0) 1403 786 560

NOTICE TO READERS

Although the staff of *RadCom* take reasonable precautions to protect the interests of readers by ensuring as far as practicable that advertisements in our pages are bona fide, the magazine and its publisher, The Radio Society of Great Britain, cannot accept any undertaking in respect of claims made by advertisers whether these advertisements are printed as part of the magazine, or are in the form of inserts.

The publishers make no representation, express or implied, that equipment advertised conforms with any legal requirements of the Electro Magnetic Compatiblility Regulations 1992. Readers should note that prices advertised may not be accurate due to currency exchange rate fluctuations, or tax changes.

While the publishers will give whatever assistance they can to readers having complaints, under no circumstances will the magazine accept liability for non-receipt of goods ordered, late delivery, or faults in manufacture. Legal remedies are available in respect of some of these circumstances, and readers who have complaints should address them to the advertiser or should consult a local Trading Standards Office, or a Citizens Advice Bureau, or their own solicitor.

Readers are also reminded that the use of radio transmission and reception equipment (including scanning) is subject to licencing and the erection of external aerials may be subject to local authority planning regulations.

BUSINESS CARD SECTION

Advertisement Index

Next Advertisement Copy Date:
Display advertisement copy date for February 2002 is 18th December 2001

the last WORD

Code or Cipher?

Mike Bedford, in the December *RadCom*, ['Morse Code - the Little-Known Facts', part 2 - *Ed*] claims that each symbol in a 'code' represents a word or a concept, and that Morse is therefore a cipher, not a code.

It's true that in the field of cryptography - the science of sending secret messages - a 'code' is as Mike describes where each word in a secret dictionary is assigned a unique number, but in the fields of information technology and telecommunications, the word 'code' has acquired a different meaning. Whether Morse code, ASCII code, colour code or bar code, the essential quality of a code is simply that of substitution of a more effective way of representing information than in its original form. So we have colour-codes because it's easier to print them on tiny components, bar codes because it's easier to read them with a scanner, and a whole range of codes used in telecommunications to make effective use of the channel, regardless of whether we are transmitting words, letters, numbers, or even digital speech or video.

My dictionary talks about ciphers in the context of the written patterns used to represent letters of the alphabet, but in the field of communications I think most people would understand a cipher as being a method of sending secret messages by encrypting the letters. Even our licence conditions prohibit us from sending 'enciphered' signals (BR68 1(4)b).

Long live Morse Code!

Peter Martinez, G3PLX

The Heys Collection

I have been collecting old (from the time of the first QSL cards in 1922 / 3) QSL cards for more than 30 years and have many historic cards. I assembled a virtually complete collection of QSL 'stamps' used by many European countries, mostly on actual QSL cards, researched them and gained a Silver-Gilt Medal at a big national philatelic meeting in Brighton and Hove a few years ago. The collection is mounted on 64 album sheets.

The British Library was pleased to accept my collection as a reference collection and anyone also collecting or researching these items may study my cards at the British Library by appointment. The address is: the British Library, Philatelic Collection, 96 Euston Road, London NW1 2DB. Should I find enough time (I'm now 78 . . .) I hope to assemble my hoard of QSL stamps on cards from the rest of the world outside Europe.

The autumn issue of the *British Library Philatelic Collections Newsletter* contains the following item: "The Heys Collection. A small collection of the stamps and cards used by amateur radio operators across Europe has been presented by John Heys of Sussex. These fascinating issues (known as 'QSL' cards because this is the radio telegraphists' abbreviation for 'Message received'), little known in philately, were made by radio operators to communicate their results. The scheme chiefly organised by national radio societies was a less expensive communication than by using the postal system."

John D Heys, G3BDQ

Sparks an Interest

The commemoration of Marconi's success in his trans-Atlantic tests as noted in the December *RadCom* has, no doubt, in common with other readers, reawakened many memories for me - not of the time (I am not that old), but of later events.

In my case it was the purchase by my father in the mid-30s of a splendid Marconiphone radiogram. It was the size of a small sideboard and included with it was a green Rexine-covered album containing a demonstration 78RPM record of favourite music on one side and on the other a recitation called 'The Birth of Radio'. This was a monologue, with some sound effects, spoken slowly and with perfect diction by a solemn male voice. It began, as I recall, thus:

"Signal Hill, Newfoundland, the 12th of December 1901. A gale of wind and a kite, tugging frantically at about 500 feet . . ." It went on to describe reception of the signal. "(Click click click.) What was that? A little click. There it was again. Marconi passed the receiver to Kemp. Could he hear it? (Click, click, click). Yes, he could . . ." It went on to describe the future benefits of the discovery and although I cannot remember it all, it ended: " . . . and lovers, separated by a hemisphere, could converse privily [*sic*] and be comforted. A whole new world would be born."

In the case of one small schoolboy, it was. I have been fascinated by radio and in particular Morse code, ever since. Does anybody still have a copy of that record or remember it? Is there a transcript in the Marconi archives? I should love to know.

L J Smith, G3HJF

What Value Amateur Radio?

I have been reading reports of the valuable assistance the 570 radio hams gave to the emergency services in New York on 11 September. The extraordinarily good value radio hams give to society in such situations needs to be taken into account when the radio spectrum is audited by government organisations.

As radio hams we need to remind government that they should not be asking how much revenue can be generated from the sale of the radio spectrum, but how will society benefit from a particular use of parts of the radio spectrum? At a time when the amateur radio allocations are under increasing pressure from commerce we need to blow our own trumpet loud and clear. We are a *free* service highly valued by the emergency services.

(Please note I am not a member of Raynet or any similar group.)

Mike Davis, G0ROT

GB2RS News Headlines by E-Mail

The GB2RS News Headlines for Members e-mail is a great service. Many thanks for implementing it.

Tony Gargano, N2SS

[This service is available to all RSGB members: if you wish to receive the GB2RS news headlines by e-mail each week, simply send your e-mail address to sales@rsgb.org.uk - *Ed*.]

RSGB Website

Your website [at www.rsgb.org - *Ed*] is just great and a pleasure to visit. Full of good up-to-date information, very modern and colourful and easy to use. Thank you for all the hard work, time and care that you put into the RSGB website.

I believe that the new-look RSGB website could well help to bring more people into the wonderful hobby of amateur radio and short wave listening.

Kind regards.

Paul Goodhall, RS176562; Peter Goodhall, RS181414

By Popular Request

Just a short note to thank David Clarke for his article on 'A pnp Transistor Tester' in the July edition of *RadCom*. It is much appreciated after my request for a pnp version following his earlier article on an npn transistor tester. Thank you.

Steve Seabrook, M1ECS

JOTA Fun

I'm just writing to say what a good time we had during Jamboree on the Air last weekend and how grateful we are to the RSGB for the part you play in co-ordinating the publicity for the event, issuing the licences, reports etc.

Over 20 Cubs, Scouts, Brownies and friends joined in and we were lucky to have quite a long contact with HB9S at the World Scout Bureau in Geneva.

Enclosed is a press cutting from our local paper [*The Herald*, headlined 'Kirkby Stephen Calling - Upper Eden Youngsters Make Waves on Worldwide Air Time' - *Ed*].

Many thanks from all of us!

Tom Higgs, G4TUA, Kirkby Stephen Scout Group

WATERS & STANTON

- e-mail: sales@wsplc.com
- on-line catalogue: www.wsplc.co
- freephone orders: 08000 73 73 88

2002 W&S CATALOGUE NOW OUT SEND £4.20 inc. p+p FOR 336 PAGES OF RADIO EQUIPMENT

HYGAIN

HYGAIN ROTATORS BACK IN THE UK

CD45IIX	£399	C
HAMIVX	£499	C
T2XX	£649	C

FULL DETAILS AVAILABLE

"FULL DETAILS AVAILABLE"

NOW IN STOCK

HYGAIN ANTENNAS

TH7DX	£799	D
TH11DX	£995	D

Self Amalgamating Tape £7.95
Plus £2.00 Carr.

The tape self amalgamates with itself forming a rubber-type shroud that is resistant to moisture and ozone. Length of each reel is 10m and tape width is 19mm.

SGC-230 Smart Tuner £359.95
Plus £8.00 Carr.

Covers 1.6 - 30MHz and handles 3 - 200W. Designed for end fed wires, just connect to 12V and feed with RF via coax. Can be mounted outside or at top of mast.

MICROSET AMPLIFIERS

All FM/SSB with GaAsFET pre-amps and RF switched. 13.8V DC powered.

R25	2m 1-4W in / 30W max out	£84.95 B
RV45	2m 3-15W in / 45W max out	£95.95 B
R50	2m 1-7W in / 50W max out	£89.95 B
SR-100	2m 4-25W in / 100W out	£169.95 B
SR-200	2m 10-50w in / 200W max out	£299.95 B
VUR-30	2m/70cms 1-5W in / 20/30W out	£199.95 B
RU-20	70cms 3-15W in / 20W max out	£119.95 B
RU-45	70cms 3-15W in / 45W max out	£165.95 B
RU432-95	70cms 6-12W in / 95W max out	£499.95 C

WCN-3 Adaptor. For all transceivers using SMA connector. Converts to BNC £3.95 A

HEIL AUDIO

Appointed by Heil as UK Distributor

Proset-4	H'phone/boom mic	£129.95 B
Proset-5	H'phone/boom mic	£129.95 B
Micro-4	Lightweight ver.	£99.95 B
Micro-5	Lightweight ver.	£99.95 B
AD-1	Cables Y, K. or I	£14.95 A
HM-10-4	Stick mic	£69.95 B
HM-10-5	Stick mic	£69.96 B
CC-1	Cables Y, K. or I.	£25.95 A
HC-4	Spare insert	£32.95 A
HC-5	Spare insert	£32.95 A

You can convert your mic to Heil by simply purchasing HC-4 or HC-5 insert.

ALINCO NI-CD OFFER

REDUCED TO CLEAR

EDC-53	fast charger	~~£80~~ £39 A
EBP-30N	7.2V 700mAh	~~£30~~ £19 A
EBP-31N	7.2V 1200mAh	~~£50~~ £25 A
EBP-32N	12V 700mAh	~~£60~~ £29 A
ESC-17L	Leather Case	£9.95 A

Coax Connector Kit £49.95
Plus £6.00 Carr.

The kit comprises a set of coax cable connector adaptors. Six threaded interconnectors enable any of the supplied plugs and sockets to be assembled back to back to form the adaptor of your choice. The centre pins of all the connectors are gold plated.

RADIOCOM 5.1

DSP-Filter Analyser & Decoder Program

New! For Windows™ '95/'98/'ME/'2000 and NT 4.0

Professional style DSP filter analyser decoder and rig control program. Works with any modern version of Windows and is a must if you are into radio communications analogue or digital. Other programs at best only emulate part of what this program is capable of.

Radiocom 5.1 (RC-HAM)	£149.95 B
Radiocom 5.1 (IC-SWL)	£149.95 B

TEN TEC RX-340 £3995
PROFESIONAL QUALITY HF RECIEVER
Plus £8.00 Carr.

The Ten-Tec RX-340 is a multi-mode, professional grade, general coverage synthesised receiver. It utilises extensive Digital Signal Processing (DSP), which brings the performance of commercial grade communications receivers into the affordable top end of the amateur market.

FULL DETAILS AND REVIEW AVAILABLE

CREATE JAPANESE ROTATORS

These are tough rotators that weigh almost twice as much as similar priced units and have great turning capacity. Made by Create of Japan, they will handle 4 element HF yagis with ease. Our own Create model has been on our roof for 12 years turning a 4-element HF beam. We wouldn't use anything else!

RC5-1	Standard control box, OK for 4-el Yagis - needs 7-core cable	£349.95 C
RC5-3	Control box features pre-set or manual control. Otherwise the same as RC5-1 above	£449.95 C
MC-2	Lower mast clamps	£49.95 B

CASE FOR FT-817 £9.95
Plus £2.00 Carr.

HOCKLEY ONLY

We have a quantity of cases made by Motorola, that are ideal for the FT-817. They will house the radio, microphone, spare battery and our ATX whips. Can be configured as as waist band or lengthened as shoulder strap.

W-40SM 40 Amp Switch Mode £149.95
Plus £6.00 Carr.

NEW

Digital display, 3 - 15V rated at 40 Amps continuous. Fully protected and very low noise. Ideal for a wide variety of ham applications. Light weight of 3.5kg and measuring 220 x 110 x 300mm Fixed 13.8V switch.

W-25SM 25 Amp Switch-Mode Power Supply. £69.95
Plus £6.00 Carr.

NEW

IN STOCK

Specially modified by Watson to offer extra large terminals and increased terminal spacing to make it easier to attach the thicker HF radio DC cables.

Switched 230 / 115V AC input and fixed 13.8V output at 22 Amps continuous and 25 Amps peak. Over voltage and over current protected and fan cooled. Measures 180mm (W), 75mm (H) and 190mm (D) excluding terminals. Provided with detachable 13 Amp plug and cable.

PRICE SUBJECT TO REVIEW IN JANUARY

LINEAR AMP UK AMPLIFIERS

British made Amplifiers with a Pedigree

Full Range Stocked

Challenger II	HF 2 x 3CX800 AT 1.5kW out	£2095 D
Explorer	HF 2 x 3-500ZG 1.3kW out	£1595 C
Hunter	HF 1 x 3-500ZG 750W out	£1195 C
Hunter VI	6m 1 x 3-500ZG 800W out	£895 C
Ranger	HF 4 x 811A 800W out	£895 C
Discovery II	2m 1 3CX800 400 - 1KW out	£1395 C

CAROLINA WINDOMS

CW-80 Special

Just 66ft long yet covers 80m - 10m. It will out perform a G5RV and give lower angle of radiation because of the 10ft vertical section which is forced to radiate. It will handle 1.5kW

Carolina Windom 80 Special

Just 66ft Long! £109 C

Other Models (all with low angle radiator stub)

CW-160	160 - 10m 171ft long	£129.95 C
CWS-160	160 - 10m 133ft long	£125.95 C
CW-80	80 - 10m 133ft long	£95.95 C
CW-40	40 - 10m 66ft long	£89.95 C
CW-20	20 - 10m 34ft long	£77.95 C

80-40-20m Mini Dipole

The "80 plus 2" Mini - Dipole was designed by our Director, Peter Waters, G3OJV. Just 52ft long, it uses linear loading - no tuned traps. It can be directly fed without ATU and also operates at 2.5:1 VSWR on 15m. Amazingly efficient, it handles 400 Watts and is balun fed. Erect it as an inverted V and it takes up less than 40ft of space. If you have a small garden, don't miss out on the LF bands anymore.

£79.95 Carr. £6.00

POWER SUPPLIES £89.95
Plus £8.00 Carr.

Watson power supplies guarantee the very best performance and value for money. Tried and tested, they have been submitted for independent laboratory testing for safety and electrical performance.

W-3A	3 Amp fixed supply.	£22.95 B
W-5A	5 Amp fixed supply	£29.95 B
W-10AM	10 Amp variable supply	£59.95 C
W-25AM	25 Amp variable supply	£89.95 C
W-30AM	30 Amp variable supply	£119.95 C

Compact 10 Amp Switch Mode PSU £49.95
Plus £6.00 Carr.

The W-10SM is small enough to fit in a brief case. Measuring just 230 x 100 x 65mm, it's ideal for 50 Watt mobile's etc. Over voltage and current protection.

W-GMV Deluxe Key £39.95
Plus £2.00 Carr.

A high quality Morse key made of brass with wood base. Full set of adjustments

Full Range Stocked

SANYO WS-1000 £149.95
WORLD SPACE DIGITAL RECEIVER
Plus £6.00 Carr.

The New Sanyo Satellite receiver is ideal for table top use. Comes complete with detachable mini flip-up dish and with 5m of cable. Receives digital broadcasts from the WorldSpace Satellite. Runs from supplied AC mains adaptor or optional batteries Audio output via internal mono speaker, external optional stereo headphones or stereoline out via phono connectors as well as a S/PDIF digital audio output. It also has 32 memories complete with remote control and a port for multimedia services

YAESU FT-8100R £299
Plus £6.00 Carr.

SPECIAL OFFER

DUALBAND MOBILE / BASE TRANSCIEVER

- 2m and 70cm
- 50W and 35W
- Wideband RX AM & FM 208 Memories
- 7 Tuning Steps DTMF Remote Front panel
- Very compact, supplied with all hardware.

HURRY WHILST STOCKS LAST!

HEAD OFFICE
22 MAIN RD, HOCKLEY, ESSEX, SS5 4QS ENQUIRIES: 01702 206835/204965 FAX: 01702 205843
MIDLANDS + NORTH SHOP
BENTLEY BRIDGE, CHESTERFIELD RD, MATLOCK, DERBYSHIRE, DE43 5LE ENQUIRIES: 01629 582380 FAX: 01629 580020
SCOTLAND + BORDERS SHOP
20, WOODSIDE WAY, GLENROTHES, FIFE KY7 5DF ENQUIRIES: 01592 756962 FAX: 01592 610451

MFJ

PHONE OR FAX FOR A FREE MFJ CATALOGUE
MFJ - HYGAIN - AMERITRON - MIRAGE

MFJ-Cubs
£89.95 (KIT)
£139.95 (BUILT) + £8.00 carr

Single band QRP Rigs

Case etc. included.

VFO controlled up to 2W(1W on 15m), you can adjust it down to milliwatts. Measure just 90 x 47 x 98mm and requires 12v DC. Models for 80m, 40m, 30m, 20m & 15m. Order MFJ-9380, 9340, 9330, 9320 or 9315 (plus "K" for kit or "W" for built).

MFJ 5W QRP
£189.95 Plus £8.00 Carr.

Low Power CW Transceivers

VFO control, single band, 12V 750Hz xtal filter, sidetone, break-in, speaker, 162 x 60 x 150mm. Great value!
Order MFJ-9040, 9030, 9020, 9015 or 9010. All ready built.

MFJ-989C ATU
£349.95 Plus £8.00 Carr.

3kW 1.8- 30MHz "T" Match

This design has a roller coaster coil and a 4:1 balun to match balanced line. Ideal for coax, end fed wires and open wire feeder. Features PEP or RMS power measurement VSWR, antenna switch, bypass, built-in dummy load etc. Size 270 x 375 x 115mm.

MFJ-986 ATU
£319.95 Plus £8.00 Carr.

3kW Differential 1.8 - 30MHz

One less knob to twiddle, but all the facilities of the MFJ-989C

MFJ-969 ATU
£189.95 Plus £8.00 Carr.

HF + 6m! 300W "T" Match ATU

It has a very accurate PEP meter built-in, (PP3 battery needed) Includes VSWR cross needle meter, dummy load and lovely roller coaster for critical adjustment. Handles coax, balanced an wire. Size 268 x 242 x 95mm.

MFJ-949E ATU
£149.95 Plus £8.00 Carr.

1.8 - 30MHz 300W "T" Match ATU

Our most popular ATU because it covers all HF bands and matches anything from coax to long wire to balanced feed. Take a look at the price and then consider that it even includes a dummy load plus power and VSWR meter. Measuring 260 x 190 x 83mm, it really is great value.

MFJ-934 + MFJ-931 ARTIFICIAL GROUNDS
MFJ-934 £169.95
MFJ-931 £89.95
Plus £8.00 Carr.

Removes RF hot spots and offers a true ground, even when operating upstairs.

If you operate upstairs or well away from an earth, you will know that trying to use an end fed long wire is a problem!

Now MFJ have solved the problem. With the MFJ-931, you just run out a random length of wire and connect it to the transceiver chassis via the MFJ-931. Then adjust as per instructions and you have guaranteed zero RF potential at the chassis and a good antenna earth. Can also be used with an external counterpoise. The MFJ-934 operates exactly the same but also includes a built-in HF ATU for wire, coax and balanced feed. Maximum power is 300W.

MFJ-8100 Short Wave Receiver
£75.95 (KIT)
£99.95 (BUILT)carr. £8.00

Case etc. included.

Experience the thrill of short wave listening on this regenerative receiver that has amazing sensitivity. Brand new solid state design. Just a short length of wire will bring good signals in. Covers all the major short wave general and ham bands. Simple to build and operate.

MFJ-962D ATU
£259.95 Plus £8.00 Carr.

1.8 - 30MHz 1.5kW "T" Match

For use with medium linears. Using the famous "T" Match design, this ATU will cope with any antenna whether it be coax, end fed wire or balanced feed. You can monitor your power (average or PEP 200W or 2kW max))and VSWR. Antenna switch selector is included for two antennas. Size 270 x 375 x 115mm.

MFJ-941E HF 300W Budget ATU
£109.95 Plus £8.00 Carr.

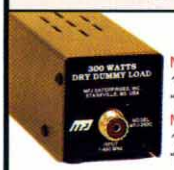
Matches all types of antennas.

At this price there is no excuse for not having an ATU and offering your transceiver a perfect match. Covering 1.8 - 30MHz, rated at 300W and having built-in VSWR and power meter. it will match wires, coax systems and balanced feed.

MFJ-1700B Tx - Rx 6-way Switch
£79.95 Plus £8.00 Carr.

2kW from 1.8 - 30MHz, use it to select up to 6 antennas and 6 transceivers in any combination. Unselected terminals are automatically grounded

MFJ Dummy Loads



MFJ-264 or MFJ-264N
1.5-150MHz 1.5kW £64.95
"N" version of above £69.95
MFJ-260C or MFJ-260CN
1.5 - 150MHz 300W£32.95
"N" version of above £39.95
Carr. £8.00

MFJ-914 Auto ATU Extender
£59.95 Plus £8.00 Carr.

Match into that G5RV or similar

If your internal auto atu is having trouble matching your G5RV or similar antenna. this should solve the problem. Just place it in series with the coax feed to the rear of your transceiver. Magic!

MFJ-382 Amp + Speaker
£39.95 Plus £8.00 Carr.

This desktop speaker will amplify and improve the audio of scanners and QRP radios etc. Powered from 9V batt (extra) or external 12V supply, it measures 89 x 45 x 114mm comes with mono - mono lead.

MFJ-418
£69.95 Plus £8.00 Carr.

The easy way to learn CW

Unlike other tutors, this one sends true text and full length QSOs, just like the real test. The massive database avoids frequent repeats too! Will also send groups and displays the text.

MFJ-269 and MFJ-259B

The most advanced antenna analysers

MFJ-259 £249.95 Carr. £8.00
MFJ-269 £329.95 Carr. £8.00

Connect it to your antenna and get all the information you need to optimise it for best performance including resonance, VSWR and impedance. Totally portable (using AA cells), you can work right up by the antenna. The MFJ-259 is the basic design covering 1.8 - 170MHz. The MFJ-269 has extended coverage up to 470MHz and gives an extremely wide range of measurements, even indicating where a break is in a coax cable.

MFJ-1704 4-way switch
£59.95 Plus £6.00 Carr.

DC - 500MHz 2.5kW

This is a heavy duty die-cast 4-way switch with SO-239 sockets, central earth position and built-in static discharge protector. Makes changing antennas a breeze!

MFJ-392 Mono Padded Communications Earphones
£22.95 Plus £3.00 Carr.

These are purpose designed communications padded headphones that are ideal for all the modern transceivers and receivers. Suits 3.5mm and 1/4" jacks - adaptor provided.

AMERITRON - FULL RANGE OF HF LINEAR AMPLIFIERS IN STOCK - SEND FOR MFJ CATALOGUE FOR DETAILS

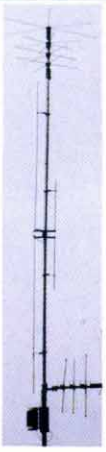
MFJ-1025 "Local Noise" Canceller
£119.95 Plus £8.00 Carr.

Kills local noise, but lets signals through. Handles electrical noise, TV time-base etc. Short length of wire picks only local interference and cancels it out.

MFJ-1026 As MFJ-1025, but has active whip antenna for picking up noise signals (as illustrated above). £159.95 Carr. £8.00

MFJ Compact Verticals

MFJ verticals are compact, yet offer a large number of bands. Being vertical dipoles, they offer exceptionally low angle of radiation for DX. They are rated up to 1kW on the HF bands.

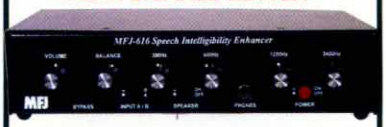


MFJ-1796 (40, 20, 15, 10, 6 & 2m)
Just 3.65m long, it is the ideal antenna for really small spaces.VSWR typically 1.2:1
£209.95 Carr. £8.00

MFJ-1798 (80, 40, 30, 20, 17, 15, 12, 10, 6 & 2m!)
Only 6.7m long, it covers every popular band. No radials and no ground needed. £279.95 Carr. £8.00

MFJ-616 Speech Intelligibility Enhancer
£169.95 Plus £8.00 Carr.

HEAR SIGNALS BETTER



Designed to enhance the audio of your transceiver. MFJ President, Martin Jue suffers with deafness and said that this has put the enjoyment back into radio for him!

MFJ-461 MORSE CODE READER
£84.95 Plus £6.00 Carr.

The MFJ-461 is a stand-alone pocket sized Morse code reader. Similar in size to the MFJ Morse tutors, all you do is hold it close to your receiver and it instantly displays CW on the 32 character high contrast LCD. It has automatic speed tracking, a serial port - if you wish to connect to a computer to display the text on a bigger screen. It can also be connected to your receivers audio if required. Truly pocket sized at 57 x 82.5 x 25.5mm and 156g.

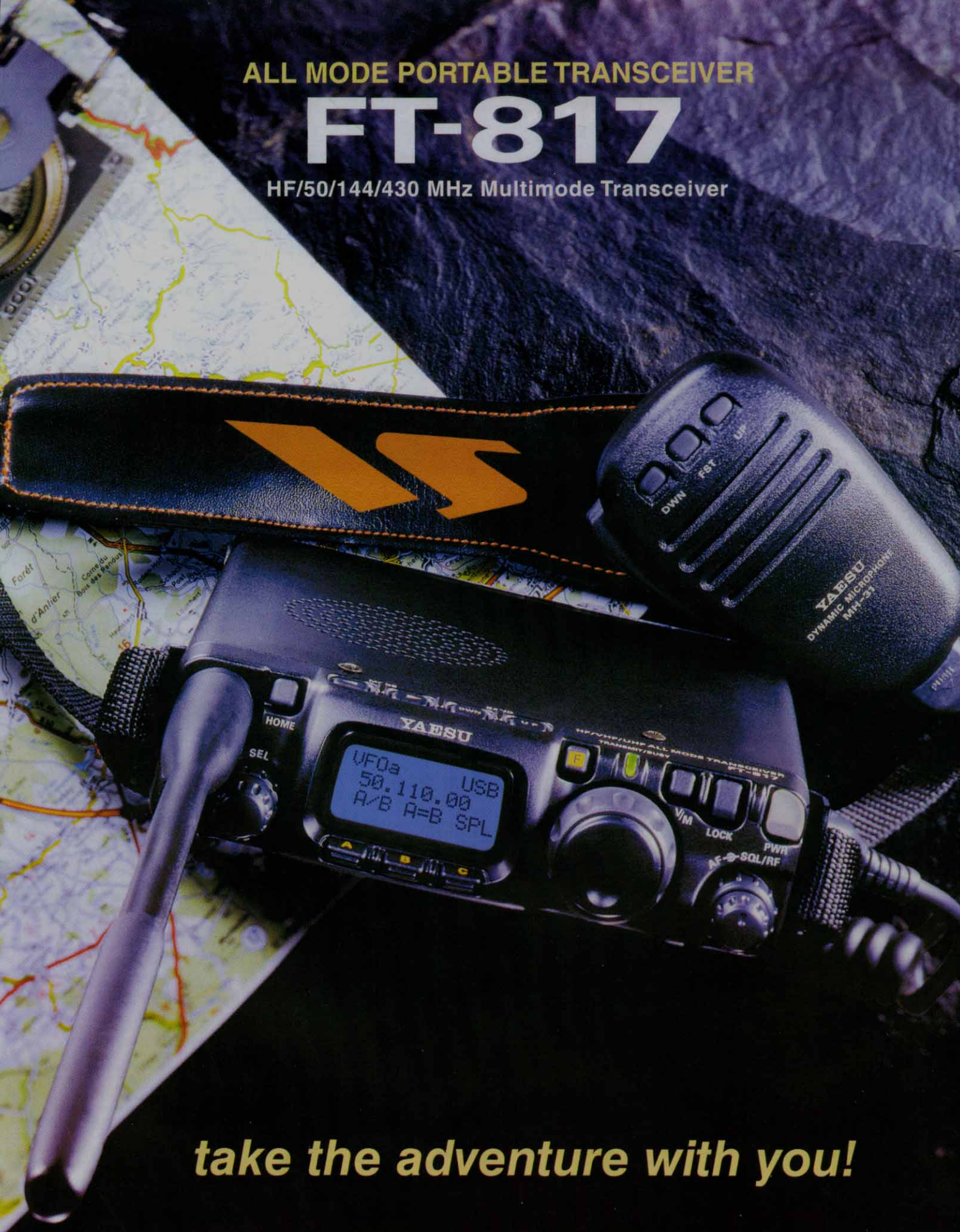
MFJ-1786-1788

MFJ-1788

MFJ-1786

MAGNETIC LOOP ANTENNAS
MFJ-1786 10-30MHz £369
MFJ-1788 7-21MHZ £419

Ideal for restricted space locations. Rugged all welded aluminium construction, they are fully weatherproof and don't require a separate control cable, the coax carries the signal and the DC control signals for tuning. You can remotely tune to the amateur bands. They have very narrow bandwidth



YAESU

© YAESU UK Ltd, Unit 12,
Sun Valley Business Park,
Winnall Close, Winchester,
Hampshire, SO23 0LB, U.K.
Visit us on the internet! http://www.yaesu.co.uk