www.rsgb.org

The Radio Society of Great Britain Members' Magazine

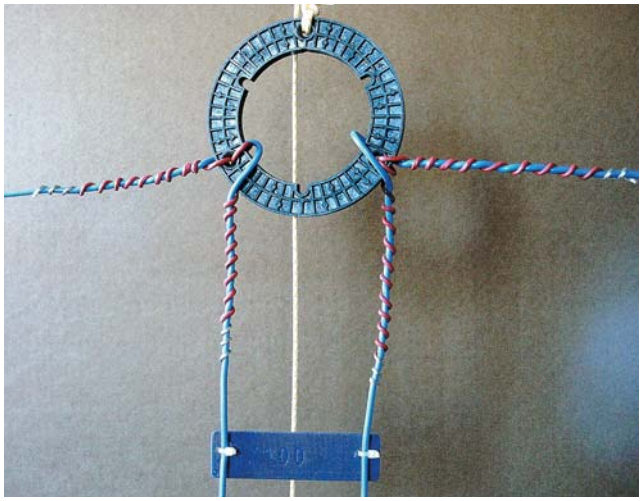
RadCom

£3.95 Vol 80 No. 1 January 2004

ATV
The Solent pictured from space. p79

Space
Soyuz - the 37-year-old space veteran. p77

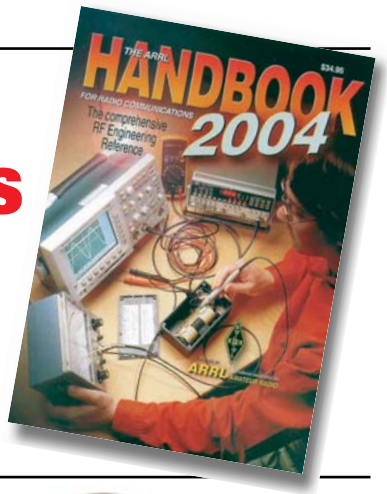
Antenna review
The Maldol HVU-8 HF, VHF and UHF vertical. p30



The Doublet

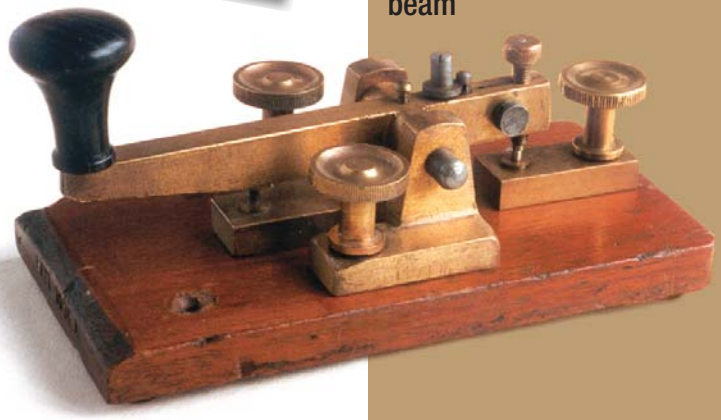
Brian Horsfall, G3GKG, de-mystifies this apparently mysterious antenna! p53

Book reviews



We review two ARRL 'classics' - the Handbook and the Antenna Book. p39

Morse keys



Ian Poole with a look back over the 140-year history of the Morse key. p26

INSIDE

WATERS & STANTON

GENERAL ENQUIRIES: 01702 206835/204965
FREEPHONE ORDERLINE: 08000 73 73 88

carriage charges: A=£2.75, B=£6, C=£10

Merry Christmas & a Prosperous New Year to all our customers

PRICEMATCH

We will Match or Beat any deal*

*Competitor's goods must be in stock, new and UK sourced.

FREEPHONE ORDERLINE:

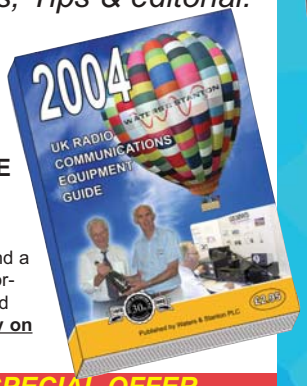
08000 73 73 88

New 2004 Equipment Guide

352 Full Colour Pages Packed with Products, Tips & editorial.

£2.95

+ £1.75 P&P



Includes **FREE CARRIAGE** Vouchers worth **over £20!**

Over 4000 products and a wealth of technical information, illustrations and tech info. **Order Today on your "card"**

ICOM IC-446S SPECIAL OFFER

PMR446 HANDHELD TRANSCEIVER

The IC-446S is easy to use and literally fits into the palm of your hand. The IC-446S is ideal for a multitude of uses along with reliable operation. It is water resistant, and the antenna folds away when not in use. **8 channels *Built-in CTCSS tone squelch *38 CTCSS codes per channel *Foldaway antenna *Large backlit display *Powered by 3xAA Alkaline batts *Water resistant* (OFFER ONLY AVAILABLE WHILST STOCKS LAST)

SPECIAL OFFER was £99.95 now £59 B

GARMIN iQUE 3600 BRAND NEW

Its a GPS, PDA, and MP3 player - - - And it even talks to you!

£549.95 B

The New Garmin IQ3600 gives you a pocket full of power. The advanced 12-channel GPS receiver with flip-up antenna is coupled with Palm OS 5 software package that makes it a fully equipped PDA with all the associated capabilities. We give you a FREE Mapsource disc that goes down to street level for most of Europe! The navigator speaks to you as you drive - so eyes always on the road! A lovely bright crisp screen makes it perfect for car, bike or walking. Includes lithium cell, charger, and USB hod for PC synchronisation. Amazing value and a great companion.

HF TRANSCEIVERS

ICOM IC-756 PRO II SPECIAL OFFER £1899 C

Flagship of the Icom range of HF transceivers. HF & 50MHz, features large colour LCD with spectrum scope, auto ATU and 32-bit floating point DSP unit. **With *FREE* Watson HP-100 or HP-200 Headphones, state preference when ordering.**

3 Year Warranty on orders before 31st Jan.

ICOM IC-7400 SPECIAL OFFER £1299 C

HF/VHF 100W transceiver covers 1.8 - 146MHz Features large LCD with spectrum scope, auto ATU and same DSP system as IC-756PRO II. A great base station! **Comes with *FREE* SP-21 Speaker & SM-20 Desk mic**

3 Year Warranty on orders before 31st Jan.

ICOM IC-703 NEW £599 C

HF/ 50MHz Transceiver 0.1-10W Portable, Mobile, Base-Station. Ideal for Foundation Licence/QRP. Auto ATU, DSP memory keyer. External batt **BP-228 £71.76.** Rucksack **LC-156 £62.**

3 Year Warranty on orders before 31st Jan.

ICOM IC-706 IIG DSP £789 C

HF/VHF/UHF mobile DSP transceiver. Its relative small size not only makes it a great mobile rig but also for fixed station use as well. HF general coverage and VHF & UHF

Heil Traveler single ear "706" headset + PTT **£89.95**

3 Year Warranty on orders before 31st Jan.

ICOM IC-718 £499 C

HF 100W transceiver. Covers all HF bands plus wideband receive. C/w auto notch, dual VFO, SWR meter etc. Options include extnl ATU DSP & filters.

3 Year Warranty on orders before 31st Jan.

KENWOOD TS-2000 £1599 C

Top-of-the-range Kenwood transceiver. HF/VHF/UHF or up to 23cm with the optional module. Built-in auto ATU, DSP and its unique TNC.

ARCP Control Software. **£44.95**

3 Year Warranty on orders before 31st Jan.

KENWOOD TS-870S DSP £1399 C

HFDSP 100W base station. 1.8 - 30MHz. Excellent all round rig great for DX working with its ability to winkle out weak stations using its true IF DSP. No filters to buy.

MC-60A base mic with pre-amp. Ideal match. **£117.95**

3 Year Warranty on orders before 31st Jan.

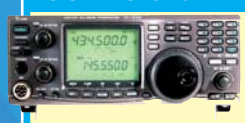
KENWOOD TS-570DGE £849 C

HF100W base station with built-in auto ATU. Very popular rig, excellent performance on SSB and CW. Two fitted antenna sockets - very handy.

SP-23 Matching base station receiver **£68.95**

3 Year Warranty on orders before 31st Jan.

ICOM IC-910X with 23cm £1249 C



Icom's all mode VHF/UHF transceiver with 23cm.
Large clear LCD with lots of facilities. 100W on VHF and 75W on UHF, 10W on 23cm.

UT-106 DSP unit **£84.99**

3 Year Warranty on orders before 31st Jan.

Basic Model IC-910H £1129

HF TX / LINEAR AMPLIFIERS

YAESU FT-1000 MKV £2295 C

200W HF transceiver, EDSP, Collins filter, auto ATU, 220V AC PSU - Acknowledged as one of the finest DX rigs on the market. Superb tailored audio and the ability to select Class A bias for dramatic signal purity.

3 Year Warranty on orders before 31st Jan.

YAESU FT-1000 FIELD £1749 C

100W HF transceiver, EDSP, Collins filter, auto ATU, 220V AC / 13.8V DC - Building on the success of the FT-1000MkV, the Field has become a respected leader in its class.

3 Year Warranty on orders before 31st Jan.

YAESU FT-920AF £1049 C

100W HFplus 6m transceiver. 100kHz - 30MHz, 48 - 56 MHz Gen coverage Rx, 100 memories, Internal ATU with 100 tuner memories, large backlight LCD, Built-in memory keyer, 13.5V DC. Now includes FM unit and 6kHz AM filter.

LAST FEW

YAESU FT-897 £989 C

100W HF rig plus 2m and 70cms (50W/20W) 13.8V external supply / internal optional FP-30V AC power supply / self powered portable using optional Ni-MH pack at 20W output. Compatible with FC-30 auto ATU and ATAS 120/100 antennas. The "must have" radio for 2003.

3 Year Warranty on orders before 31st Jan.

YAESU FT-847 £1199 C

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

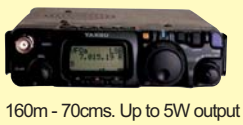
3 Year Warranty on orders before 31st Jan.

YAESU FT-857 NEW £799 C

HF / 50 / 144 / 430MHz Mobile Transceiver. HF/6m 100W, 2m 50W, 70cm 20W. (13.8V DC)
Developed on the FT-897 and FT-817 transceivers. Built-in features 32 colour display, spectrum scope, AM airband aircraft reception, built-in memory keyer, detachable front panel.

3 Year Warranty on orders before 31st Jan.

YAESU FT-817 £529 C



bhi NE-DSP1061 Module available!

160m - 70cms. Up to 5W output all modes. ***Ours includes*** **battery and charger.** **Add £110 for DSP ready fitted.**

NEW DSP Module

There is NO new FT-817 DSP! The fact is that the UK manufacturers, **bhi**, (of whom we are their largest distributor), have produced a lovely 4-stage DSP module that can be fitted inside the FT-817. The NE-DSP1061 module costs £89 plus a fitting charge of £25 for retro-fitting to existing models. This includes installing a mini switch and LED on top cover.

TOKYO HY-POWER HL-50B £265.95 C

FT-817 VERSION !

This model has been specifically designed for the FT-817. Enjoy up to 50 Watts output

HEAD OFFICE • 22 MAIN RD, HOCKLEY • ESSEX • SS5 4QS
ENQUIRIES: 01702 206835/204965 FAX: 01702 205843
MIDLANDS STORE • W&S @ LOWE • BENTLEY BRIDGE • CHESTERFIELD RD • MATLOCK
DERBYSHIRE • DE4 5LE ENQUIRIES: 01629 580800 FAX: 01629 832375
SCOTTISH STORE • W&S @ JAYCEE • 20 WOODSIDE WAY • GLENROTHES • FIFE KY7 5DF
ENQUIRIES: 01592 756962 FAX: 01592 610451-CLOSED MONDAYS

THE ONLY THING WE CUSTOMER SERVICE WON'T DISCOUNT

VHF / UHF TRANSCEIVERS

ICOM IC-E208 NEW £319 C

VHF/UHF FM Dual Band Mobile Transceiver **Freq range 144-146MHz, 430-440MHz Tx *55/50W (3 pwr steps each band) *Wideband Rx 118-173, 230-549 & 810-999MHz *512 memories *FM narrow capability *104x2 DTCS, 50 CTCSS tone squelch *16 DTMF channels *HM-133 remote control mic *Packet ready for 9600/1200bps-mini DIN or 1200bps-mic socket *Supply 13.8V*

ICOM IC-2725E £269 C

The Icom IC-2725 dual band FM transceiver is proving very popular. Easy to install, the controller is separated from the main unit - great where space is limited.

ICOM IC-2100H £229 C

2m 55W FM mobile. Commercial grade, rugged construction. One piece die-cast aluminium chassis. Selectable green or amber display.

YAESU FT-8900R NEW £349 C

Want the best of all worlds then the FT-8900R is just the ticket! A rig with four of the most popular mobile bands - 10m/6m/2m & 70cm. Detachable head.

YAESU FT-2800M NEW £159 C

**144-146MHz *FM *137 - 174MHz expanded Rx *RF Pwr 65/25/10/5W *25/12.5kHz channel spacing.* The NewFT-2800M from Yaesu with 65 Watts High Power, rugged construction, excellent receiver performance and direct keypad entry.

YAESU FT-8800R £299 B

Dual Band FM Mobile 50/35W
The FT-8800R series operates as two radios in one, with independant two channel operation.
Remote head mounting capability, wideband receive on VHF & UHF and over 1000 memories.

YAESU FT-1500M £159 B

Built like a battleship, this rugged design benefits from Yaesu's commercial product range. 2m 50W and a DTMF microphone. Great value.

We Price Match!
Call 08000 73 73 88

KENWOOD TMD-700E £449 C

Certainly the best 2m/70cm dual band mobile transceiver with APRS. Does not need extra high cost boards to function. The only extra if required is a compatible GPS receiver.

KENWOOD TM-V7E £359 C

Dual-band 2m/70cm.
A lovely cool blue display, easy to read with 50/35W output. 50W/35W plus 280 memos and five storable operating profiles.

KENWOOD TM-G707E £289 C

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

VHF/UHF HANDHELDS

YAESU VX-7R £299 B

6m/2m/70cm

Available in Silver or Black

The VX-7R is the best outdoor handie ever. The case, keypad, speaker and connectors are all sealed against water damage. Wide Frequency coverage from 500kHz to 900MHz the VX-7R is ideal for monitoring a variety of broadcasts. The display is a dazzling 132x64 dot matrix providing easy-to-read frequencies and information plus pictorial graphics.

YAESU VX-150 £115 B

The VX-150 is a fully featured compact yet incredibly rugged 2m 5W Handheld. Features include direct keypad frequency entry, CTCSS, DTMF, 1750Hz tone calling, wide/narrow deviation selection. It has a die-cast case, large high output speaker, illuminated keypad and battery voltage meter.

YAESU VX-2E NEW £169 B

Dual Band handy, 1.5W (2m) and 1W (70cm). Full DTMF, CTSS and DCS. With 1300 memories and AM/FM coverage 500kHz-960MHz.

ICOM IC-E90 £269 B

The new E-90 offers triple band coverage of 6m, 2m and 70cms. Up to 5W output and rx coverage from 495kHz - 999MHz makes this a very attractive rig.

ICOM IC-T3H £129 B

The IC-T3H 2m handheld features tough quality but with slim looks. Its striking green polycarbonate case has been ergonomically designed. The rig is capable of providing a powerful 5.5W output with either Ni-Cad or Ni-MH battery packs. Supplied with charger and rechargeable battery.

KENWOOD TH-D7E £319 B

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.

KENWOOD TH-F7E £259 B

WITH EXTRA WIDE RX COVERAGE
• 144-146MHz Tx/Rx: FM
• 430-440MHz Tx/Rx: FM
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.

KENWOOD TH-G71E 199 B

If you want an excellent 2m/70cm dual-bander then you can't go wrong with the TH-G71. Fully functional with three power levels, 200 memories, CTCSS tone encoder/decoder, illuminated keypad and backlit LED.

KENWOOD SINGLE BANDERS

Kenwood's **new range** of single band handheld radios for 2m and 70cms with up to 5W output. These are rugged designs and derived from their commercial range, so reliability is unquestionable.

TH-K2E 2m (No key-pad)	**£139.95 B**
TH-K2ET 2m with keypad	**£145.95 B**
TH-K4E 70cm (No key-pad)	**£139.95 B**

QS-112K speaker microphone for Kenwood handhelds **£16.95**

VHF / UHF ANTENNAS

MOBILE ANTENNAS

DIAMOND ANTENNA (PL-259 base type) *NEW*

CR-8900. Quad bander 6m/10m/2m/70cm. Length 1.26m, max pwr 60W with fold over base. **£72.95 B**

WATSON ANTENNAS (PL-259 base type)

W-2LE	2m quarter wave 2.1dBi 0.45m	**£9.95**	A
W-285S	2m 3.4dB 0.48m (fold over base)	**£14.95**	B
W-77LS	2m/70cm 0/2.5dB 0.42m	**£14.95**	B
W-770HB	2m/79cm 3/5.5dB 1.1m	**£24.95**	B
W-7900	2m/70cm 5.6/7.6dB	**£32.95**	B
W-627	6m/2m/70cm 2.15/4.8/7.2dB 1.6m	**£34.95**	B
WGM-270 *NEW*	2m/70cm On glass 3.7m coax 50W	**£29.95**	B

HIGH SIERRA SIDEKICK NEW £259 B

80m to 6m 200W Mobile Whip Motorised Tuning, Can Be 'Mag' Mounted*

The large diameter coil offers efficiency higher than any other similar antenna, in a very compact size. Band changing is a button press away!

- 3.5 - 60MHz
- 200 Watts
- 15 in base unit
- High Q Coil
- 3ft whip
- 12V motor
- Control box
- DC cables
- 3/8" stud mount
- Made in USA

* Needs our 3-way magnetic mount

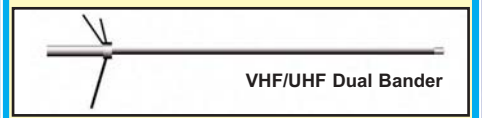
WATSON MOBILE BASES

WM-14B.
Large diameter 14cm magnetic mount SO-239, c/w 5m RG-58 & PL-259

W-3HM	Adjustable hatch mount	**£14.95**	A
WM-08B	8cm mag mount, 5m cable PL-259	**£9.95**	A
WM-14B	14cm hvy duty mag mount+cable	**£12.95**	A
WSM-88V	BNC mag mount plus 3m cable	**£14.95**	A
W-3CK	5m 5D-FB cable assembly+pigtail	**£18.95**	A
W-ECH	5m standard cable kit assembly	**£12.95**	A
W-300T	3/8in" Triple Mag Mount	**£39.95**	A
W-300S	S0-239 Triple Mag Mount	**£39.95**	A

BASE STATION ANTENNAS

DIAMOND



VHF/UHF Dual Bander

X-200	2m/70cm colinear 6/8dB 2.5m	**£79.95**	C
X-300	2m/70cm colinear 6.5/9dB 3.1m	**£99.95**	C
V-2000	6m/2m/70cm 2.15/6.2/8.4dB 2.5m	**£89.95**	C

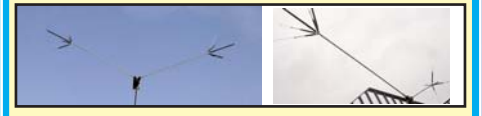
WATSON

W-300.
Very popular dualband base antenna. Supplied with u-bolts for mast fixing.

W-30	2m/70cm colinear 3/6dB 1.15m long	**£39.95**	C
W-50	2m/70cm colinear 4.5/7.2dB 1.8m long	**£49.95**	C
W-300	2m/70cm colinear 6.5/9dB 3.1m long	**£64.95**	C
W-2000	6m/2m/70cm 2.15/6.2/8.4dBi 2.5m	**£69.95**	C

DIAMOND HFV5 NEW

NEW - DIAMOND HFV5 ULTRA COMPACT DIPOLE
40, 20, 15, 10, 6M. 100 WATTS 4M LONG!



This is a superbly engineered rigid dipole for portable or balcony use. Balun fed, it comes with centre mounting plate for up to 2" diameter fixing. Each band is individually adjustable.

* 40 - 6m
* 150 Watts
* 40m = 40kHz, 20m = 160kHz 15m = 200kHz,
* 10m = 340kHz, 6m = 1.3MHz * SO-239 Balun Fed
* 2" mounting bracket * 4m long / 1.95kg

NEW

HFV5 Compact HF Dipole 40-6m **£219.95 C**

WATERS & STANTON

PRICE MATCH

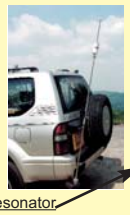
THE ONLY THING WE CUSTOMER SERVICE WON'T DISCOUNT

HF ANTENNAS

VERTICAL ANTENNAS

Hustler Mobiles

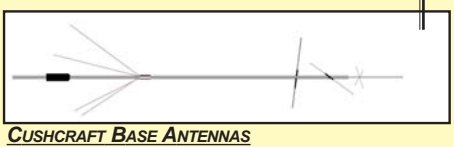
Get top performance when on the move. Purchase the **MO-3 base** (137cm) for **£26.95** or the **MO-4 base** (68cm) for **£22.95**. Then add the resonator of your choice. **RM-10, RM-12, RM-15**, all **£19.95** ea. **RM-17, RM-20 £24.95** ea. **RM-40 £26.95, RM-80 £29.95**



Resonator

MA5V Base vertical
No radials needed

Base section
MO-3 or MO-4



CUSHCRAFT BASE ANTENNAS

MA6V *NEW*	20-17-15-12-10-6m 250W PEP	**£289.95**	C
MA5V	20-17-14-12-10m 250W PEP	**£229.95**	C
R8	40-30-20-17-15-12-10-6m 1.5kW	**£529.95**	C
R6000	20-17-15-12-10-6m 1.5kW PEP	**£349.95**	C

SCOOP! Genuine Ceramic Egg Insulators

We have "discovered" a few boxes of genuine old ceramic egg insulators. Once they have gone - that's the lot!! So Hurry.
Large (as illustrated) **£2.50**
Small (30% smaller) **£1.75**

Carriage at cost -£2.75 up to 10pcs

High quality German traps. (Pairs)
200W 20m £44.95 40m £49.95 80m £53.95
1kW 20m £59.95 40m £64.95 80m £73.95

High quality German Baluns SO-239
200W 1:1, 4:1 or 6:1 £25.95 ea.
1kw 1:1 £34.95 4:1 or 6:1 £41.95 ea

HORIZONTAL BEAMS & DIPOLES

CUSHCRAFT

Premier HF beam used around the world by serious DX'ers.

X-7	20/15/10m 7 el. Yagi 2kW	**£699.95**	D

Not got the space for a full sized HF beam antenna, then the mini beam MA-5B should be considered.

MA-5B	10-12-15-17-20m 4 el. Yagi 2kW	**£389.95**	C
A4-S	10-15 & 20m 4 el. Yagi 2kW	**£599.95**	D
A3-WS	12 & 17m 3 el. Yagi 2kW	**£399.95**	D
D-3	10-15-20m dipole element 2kW	**£259.95**	C

Don't want a wire antenna but can't fit a Yagi, then consider a rotatable dipole.

D-3W	12-17-30m dipole element 2kW	**£259.95**	C
D-4	10-40m dipole element 2kW	**£349.95**	C
D-40	40m dipole element 2kW	**£319.95**	C
TEN-3	10m 3 el. Yagi 2kW	**£229.95**	C
ASL-2010	13.5-32MHz 8 el. log periodic	**£799.95**	C

RADIO WORKS

A choice of quality wire antennas available to fit almost any circumstances.

CW-160	160-10m 76.8m long	**£139.95**	C
CWS-160	160-10m 40.5m long	**£134.95**	C
CW-80	80-10m 40.5m long	**£99.95**	C
CWS-80	80-10m 20.1m long	**£119.95**	C
CW-40	40-10m 20.1m long	**£94.95**	C
CW-20	20-10m 10.36m long	**£84.95**	C
CW-620	20-6m 9.7m (32ft) long	**£94.95**	C
G5RV PLUS	80-10m with balun 31m (102ft) long	**£64.95**	B

HF ANTENNAS

Super Antennas USA - Portable HF Ants

MP-1 Portable "Screwdriver"

It beats the competition!

MP-1 Portable whip for 40m to 70cms! Ideal for FT-817 etc. **£159.95**

* Centre variable loading * 40m to 70cms * 150W pep * Total length extended 185cm approx. Packs down to pocket size * Includes universal table/fence bracket and radial wire * SO-239 socket on bracket. **Optional tripod £22.95. 80m coil £29.95**

"I measured up to 10dB gain over another popular whip for the FT-817". **Peter Waters, G3OJV**

PORTABLE ANTENNAS

MIZUHO (FOR FT-817)

ATX-WBN	Walkabout 80-6m Whip 1.5mBNC	**£49.95**	B
ATX-WPL	Walkabout 80-6m Whip1.5mSO-239	**£49.95**	B
ATX-W38	Walkabout 80-6m Whip 1.5m 3/8in	**£49.95**	B

New Low price on Walkabout whips, three to choose from with three different connectors.

AT-80	Single band 80m whip with BNC	**£24.95**	A
AT-40	Single band 40m whip with BNC	**£24.95**	A
AT-30	Single band 30m whip with BNC	**£19.95**	A
AT-20	Single band 20m whip with BNC	**£19.95**	A

Range of single band HF antennas with BNC connection. Ideal for FT-817.

AT-17	Single band 17m whip with BNC	**£19.95**	A
AT-15	Single band 15m whip with BNC	**£19.95**	A
AT-12	Single band 12m whip with BNC	**£19.95**	A
AT-10	Single band 10m whip with BNC	**£19.95**	A

Zero Space - - DX Antennas

From Hustler USA

Run full legal power - 80m to 10m - with no masts or guys to worry about. 50 Ohm feed.

Small garden, planning problems or similar restrictions? Then the Hustler range is the answer. These HF verticals will take 1kW of power, work at ground level, and are self-supporting. A single earth rod will get you going. Add buried radials for even better results. Many hams have got on the HF bands with just this simple system. So why not join in the fun. These are rugged, well-built antennas that American hams have been using for years. Now they are available in the UK from our three stores.

4BTV
40-20-15-10m. 6.52m high. Full band coverage.
£159.95 C

5BTV
80-40-20-15-10m. 7.64m high. Full band coverage (100kHz on 80m).
£199.95 C

6BTV
80-40-30-20-15-10m. 7.3m high. Full band coverage (100KHz on 80m).
£219.95 C

ANTENNA TUNER UNITS

MFJ Compact Portable Tuners

MFJ-971
QRP portable tuner, 300/30/6W. Wire, coax or balanced. **£99.95 B**

MFJ-902 Travel Tuner
Smallest 150W ATU in the world! 3.5 - 30MHz coax or end fed wires. Real air spaced capacitors! **£69.95 B**

MFJ Power Tuners

MFJ-989C £379.95 C
3kW 1.8 - 30MHz. Wire, balanced and coax feed. Full metering and switching

1.5kW fast differential tuning design. 1.8 - 30MHz. Wire balanced and coax systems. Full metering and switching.

MFJ-971 £349.95 C

MFJ Popular Tuners

MFJ-949E £159.95 B
1.8 - 30MHz. 300W wire, balanced and coax. Inc dummy load, metering and antenna selector.

Similar to the MFJ-949E, but without internal dummy load. One of the most popular ATUs in the world!

MFJ-948E £139.95 B

MFJ Match Makers

MFJ-910 £24.95 A Mobile Matcher. Connect between mobile whip and transceiver. See your VSWR come down as you switch impedance match.

MFJ-914 £64.95 B

Auto ATU extender. It let's your internal transc. ATU handle difficult coax antennas such as G5RVs etc. Greatly extends the range cpability.

Antenna Analysers

MFJ-259B £259.95 B

Full diagnostic information about your antenna. 1.8 - 170MHz. Totally portable. Great value.

MFJ-269 £349.95 B

The most comprehensive diagnostic analyser ever made. 1.8 - 170 plus 415 - 470MHz

ICOM Up to 50% DISCOUNT!

PS-60 40 AMP 13.5V PSU *NEW*

Was ~~£469~~

Our Price: **£199**

This is a commercial power supply made by Icom for marine base station purposes. It is over engineered for amateur use so it will loaf along effortlessly. It has large front DC terminals and measures 330D x 25.5W x 155H mm. **Hockley only**

SM-20 BASE MICROPHONE

Was ~~£144~~

Our Price: **£69**

Limited stocks of this microphone available so hurry! 600 Ohms 8-pin with bottom cut switch and PTT. Matches IC-756, IC-746, IC-7400, IC-718, IC-821H. Once stock exhausted price back! A great chance to purchase a quality microphone at less than half price. **Hockley only**

SP-21 SPEAKER

Was ~~£75~~

Our Price: **£49**

This is a genuine Icom base station speaker that matches all Icom base transceivers. Has 5" cone, 5 Watts rating, and 8 Ohm impedance. Size 200 x 150 x 343mm. Very limited stocks. Offer available to **Hockley only**

Check our website for more info - www.wsplc.com

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, FCMI, MISM, G0TWW
HONORARY TREASURER:
Ken Ashcroft, FCA, FCMA, G3MSW
BOARD OF THE SOCIETY
PRESIDENT
J D Smith, MI0AEX
MEMBERS
G L Adams, G3LEQ
R M Page-Jones, CEng, MIEE, G3JWI
F C Handscombe, G4BWP
E F Taylor, G3SQX
R J Constantine, G3UGF
E A Cabban, GW0ETU
D G C Hicks, G6IFA
K A Wilson, M1CNY

REGIONAL MANAGERS
K A Wilson, M1CNY
G M Darby, G7GJU
E A Cabban, GW0ETU
M J Salmon, G3XVV
G Hunter, GM3ULP
R Clarke, G8AYD
B Llewellyn, G4DEZ
B Scarisbrick, G4ACK
P Thomson, GM1XEA
R Ricketts, GW7AGG
P Berkeley, M0CJX
I Rosevear, G3GKC
P Lowrie, MI5JYK
Details of the Society's volunteer officers can be found in the RSGB Yearbook 2004

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
(managerial)

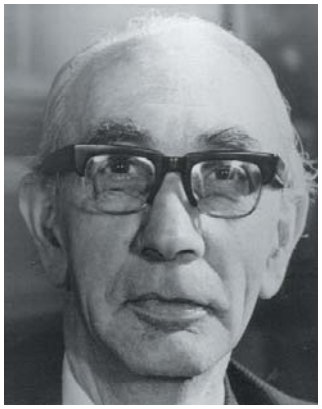
Website: www.rsgb.org
WebPlus: Members-only web site
www.rsgb.org/membersonly Use your callsign in lower case as the user name, and your membership number (see RadCom address label) as the password.

RSGB matters

Presidential dinner tradition returns

After an absence of six years, the traditional dinner to recognise the installation of a new President returns in the New Year. An installation dinner for the Society's 67th President, Jeff Smith, MI0AEX, is to be held on Saturday 24 January 2004 at the Park Avenue Hotel, Belfast. All amateurs are welcome to attend although places are limited. Tickets for this prestigious event can be ordered from RSGB headquarters at £18.00 per head.

PAST PRESIDENT LORD WALLACE OF COSLANY SK



Lord Wallace of Coslany, BRS3003634, SK.

George, Lord Wallace of Coslany, BRS3003634, a past President and honorary member of the Society, became a Silent Key on Wednesday 11 November after a long illness. He was 97.

George Wallace was born in April 1906 in Cheltenham. After moving to Kent, he became active in local politics. He served in the RAF during the war and was first elected as a member of parliament in the 1945 general election. He retired as a Labour MP in 1974, when his loyalty to the party was rewarded with a peerage.

When he was the member of parliament for Norwich North, George tabled a parliamentary question to the then Postmaster General, Tony Benn, asking if the Postmaster General would grant reciprocal licensing within the United Kingdom. The question was tabled as a result of George reading his son's *RSGB Bulletin* (as *RadCom* was then called) editorial on the problems the Society was having over the granting of reciprocal licensing. The Postmaster General replied that reciprocal licensing would be granted once agreement between the RSGB and the Post Office had been reached. This parliamentary answer was a major milestone in the history of the RSGB. Now, as a result of this question, reciprocal licensing is used by hundreds of amateur radio operators from the UK and those visiting from overseas.

George is survived by his wife Vera, whom he married in 1932, his son Michael, G8AXA, and daughter Anne.

HF & IOTA CONVENTION ORGANISING COMMITTEE VACANCY

A volunteer is sought to take the lead on marketing within the organising committee for next year's RSGB HF Convention. The ideal candidate will have had held a senior business position in marketing coupled with experience of amateur radio as a hobby. He or she will thus feel confident working with our sponsors and the channels to the amateur radio market. The workload of the committee is relatively low in that most of the business is carried out via

SPECTRUM FORUM - CHAIR APPOINTED

Recently appointed to chair the new 'Spectrum Forum' is Colin Thomas, G3PSM (pictured right). A long-serving volunteer, Colin takes on the new role having had many years experience in dealing with spectrum matters in the dual role of Chairman of the HF Committee and HF Manager. Colin has also served on CEPT working groups and was a member of the UK delegation to WRC-03, advising on amateur radio matters.

On his appointment Colin stressed that it was his intention to invite as broad a base of interest groups such as BATC, BARTG, FOC, G-QRP, AMSAT and the UK Microwave group to input to the Forum. General Manager Peter Kirby, GOTWW, commenting on the appointment, welcomed this new approach in dealing with Spectrum matters, stressing the need to involve all interested parties in the Forum and thus taking spectrum issues right to the grass roots of amateur radio operation in the UK.

NATIONAL SCIENCE WEEK 2004

The RSGB will be writing to all Affiliated Societies' chairmen in our annual appeal to support National Science Week, which takes place this year between 12 and 21 March. If you would like to organise an event to promote amateur radio during this period, please write to Mark Allgar at RSGB HQ or e-mail: mark.allgar@rsgb.org.uk

e-mail supplemented with a secure website and occasional telephone conference meetings. Applicants should e-mail John Gould, G3WKL, at HFC2003.Chairman@rsgb.org.uk with their particulars and brief CV.

PETER SHEPPARD, G4EJP, OUT & ABOUT

We are sure that members will be pleased to know that RSGB Past President and Life Vice-President Peter Sheppard, G4EJP, is again 'out and about' following his serious motorcycle accident a couple of years ago. He is living in York and is a member of York Radio Club. The photo shows Peter presenting a talk on WAB on 20 November. York Radio Club meets at Bishopthorpe Social Club each Thursday from about 2000. All are welcome, details from Gareth Foster, G1DRG (QTHR).

COPYRIGHT ACKNOWLEDGED

Prof E A Parker of the University of Kent has contacted us to state that he holds the copyright of the graph shown as Fig 1 on page 77 of the October 2003 *RadCom* ('Whatever Next' on frequency-selective surfaces). This graph was re-drawn from one printed in another magazine without any copyright notice and was published by us in good faith. We are grateful to Prof Parker for pointing this out and are happy to acknowledge his copyright of the graph.

JOHN BOYLETT, G3OLY, SK

John Boylett, G3OLY, became a Silent Key on 1 November. He was 67. John was one of those 'unsung heroes' of amateur radio. Every Tuesday he sorted cards for the QSL bureau at RSGB HQ on a voluntary basis, making the round-trip journey of 50 miles from his home in Letchworth every week for several years. His last visit to HQ was on the Tuesday before he died. John was an active member of the Shefford & District Amateur Radio Society and of CDXC (Chiltern DX Club) and his funeral was attended by a large crowd of radio amateurs and former colleagues from British Aerospace.

AROS TALK

The RSGB Amateur Radio Observation Service coordinator, Barry Scarrisbrick, G4ACK, is giving a talk on the work of AROS at the Lothians Radio Society on Monday 26 January at 7.30pm in the Holyrood Room, Royal Ettrick Hotel, Ettrick Road, Edinburgh. For further details please contact Toby Sigouin, MM0TSS, tel: 07739 742367.

CHANGES TO REGION BOUNDARIES

Following a recent Regional council meeting, it was agreed that Bedfordshire would be moved from Region 13 (East Midlands) to Region 9 (London & South East). It is now part of District 93 along with north Bucks.

NEW DRRMS IN SOUTH WALES

Ray Ricketts, GW7AGG, the RSGB Regional Manager for Region 7 (South Wales), has appointed two new Deputy Regional Managers. District 75 (East Glamorgan) now covers Merthyr, Blaenau Gwent, Caerphilly and Cardiff and is being looked after by Jimmy Sneddon, MW0EQL, tel: 01685 350594; e-mail: mw0eql@lycos.co.uk; while District 76 (Gwent) covers Torfaen, Newport and Monmouthshire and is being looked after by Gareth Price, GW3MPP, tel: 01633 880081; e-mail: gcpricegw3mpp@btopenworld.com

RSGB MORSE COMPETENCE CERTIFICATE

Although a knowledge of Morse code is no longer required for access to the HF bands, there is continuing interest in learning Morse and improving skills. To promote such activities, Morse tests at 5WPM were held at the Society's AGM at Telford on 6 December. These were carried out by the First Class CW Operators' Club (FOC) in conjunction with the RSGB. During 2004, a range of Morse training, tests and awards will be introduced by the Society, in cooperation with FOC and other organisations.

LICENSING IN IRAQ

Daniel Wolff, KA7AGN, has written from the Radio Licensing Management Office in Baghdad, Iraq, and provided guidance for requesting a permit to operate amateur radio in Iraq under the provisional authority there. Any radio amateurs who are deployed, or who are shortly to be deployed, in Iraq are invited to contact the Amateur Radio Department at RSGB Headquarters (tel: 0870 904 7373; e-mail ar.dept@rsgb.org.uk) to obtain this information.

RSGB Bookshop

NEW

NEW

ADVANCE!
THE FULL LICENCE MANUAL

This book is the third course-book in the RSGB series for those interested in obtaining an amateur radio licence. In line with the progressive three-tier UK licence structure Advance! the Full Licence Manual completes the natural progression from Intermediate Licence - Building on the Foundation and Foundation Licence Now!

Advance! the Full Licence Manual contains all of the information required to move to the final stage of amateur radio licensing. Based on the best-selling Radio Amateurs Examination Manual, the book has been extensively updated to match the Full licence syllabus. Broken down into logical sections to match the full licence syllabus the book is ideal for all those studying for the Full licence. Presented in an accessible style this book contains everything necessary for home study. Advance! the Full Licence Manual is also the ideal companion to a formal training course. The book provides a useful reference source and so will also find a home on the shelves of many amateurs who have passed the examination.

Advance! the Full Licence Manual is a "must have" for everyone progressing to the Full licence and is the best route to success in the examination.

£8.49 or £9.99 for non-members (plus p&p)

INTERMEDIATE LICENCE
BUILDING ON THE FOUNDATION

With the introduction of the new Intermediate Licence Syllabus the RSGB is pleased to present our new companion book for those working to pass the exam. Intermediate Licence - Building on the Foundation draws heavily on the decade of success enjoyed by the Novice Licence scheme and in particular the Novice Student's Notebook by John Case, GW4HWR. However, this is more than a new edition with it adopting the easy to read and understand style of the hugely popular Foundation Licence - Now, that many readers will be familiar with. The book is broken down into manageable half-hour worksheets and contains practical exercises along with plenty of helpful advice and safety tips. This is the course workbook for the Intermediate Licence, and as such contains all the information covered during the 20 hours recommended for the course. This is the ideal book for every Intermediate Licence student.

£4.92 or £5.79 for non-members (plus p&p)

FOUNDATION LICENCE
NOW!

For those wanting to know more about the new Foundation Licence the RSGB has produced "Foundation Licence - Now". The book contains all that is required to obtain that first step into Amateur Radio hobby - gaining the Foundation Licence - Now!

This is not simply a textbook; we provide insight into the technical basics, receivers, transmitters and antennas. How and where to operate with your new licence are covered along with safety considerations and electromagnetic compatibility. Written in an easy to use and understand style this is the ideal book for young and old alike.

£3.39 or £3.99 for non-members (plus p&p)

Order today from the RSGB Bookshop
www.rsgb.org/shop or Tel: 0870 904 7373

RSGB SHOP
www.rsgb.org/shop

0208 566 1120

Call us 6 days a week, mon-sat 9.30-5.30

Calling ALL H.F. Operators!

For the SHACK, CAR, Boat or Plane Yaesu have a Rig for You!

FT-1000MPMkV

"The Flagship Bench-mark 200 Watt H.F. Base"

FT-1000MkV Field

"Built on the heritage of the MkV, but 100 Watts"

Whether you've been stuck on the VHF bands for years or just fancy an up-grade, ML&S are the U.K's No. 1 choice for Yaesu Ham Radio.

FT-897

"The conoisseurs choice for portable & base operation"

FT-857

"The world's leading HF & VHF mobile"

FT-840

"Get onto H.F. without breaking the bank"

For the VERY BEST DEALS on ALL YAESU products call Martin Lynch & Sons today

STOP PRESS

The famous 5-Star DX'ers Association choose ML&S to co-sponsor the new Project Star Reach Dxpedition to Rodrigues in March & April 2004. This prestigious event employs a complete range of Yaesu H.F. equipment including TEN FT-1000MPmkV and TEN VL 1000 Quadra's.

ML&S are proud to co-sponsor this important HF 5-star DXer's event

ML&S martin lynch & sons

Suppliers of Communications Equipment

128, 140-142 Northfield Avenue, Ealing, London W13 9SB

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

E&OE

RadCom
RADIO COMMUNICATION

Editor
Steve Telenius-Lowe, G4JVG
Technical Editor
George Brown, M5ACN
Secretarial
Pat Taverner

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:
David Thompson, Manning Publishing Ltd,
The Irwin Centre, Scotland Farm, Dry Drayton,
Cambridge CB3 8AR.
Tel: 0870 904 7377; fax: 0870 904 7378;
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.

Designed and printed by Space Matters,
60 Borough High Street, London SE1 1XF.

RSGB MEMBERSHIP – Annual Rates

Home Corporate	£42.50
Overseas Corporate	£42.50
Corporate (Senior Citizens) (Applications should provide proof of age at last renewal date)	£33.50
Corporate (50 years membership)	50% DISCOUNT
Corporate (60 years membership)	FREE
Family member (Must reside with existing member. Does not include RadCom)	£18.50
Student Members (Applications should include evidence of full-time student status)	£28.50
HamClub (under 18)	£18.50
Affiliated Societies (UK or Overseas)	£42.50

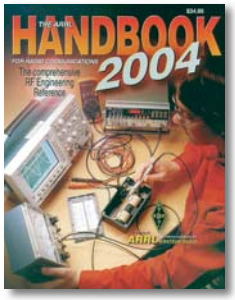
Subscriptions include VAT where applicable.

Special arrangements exist for blind and disabled persons. Details and membership application forms are available from RSGB HQ.

Contents

JANUARY 2004

p73 – More spectacular auroras - VHF/UHF.



p39 – Two new ARRL books reviewed.

News and Reports

Down To Earth - Amateur Radio From The Ground Up

Review

Technical Features

Regulars

Use of mobile amateur radio equipment in motor vehicles

Mobile phones and the new law

As members will be aware, a new law came into effect on 1 December 2003 which outlaws the use of mobile phones whilst driving. The use of two-way radio equipment when driving, unless the device can also be used as a phone, is *not* included in the new offence. It must be remembered, however, that there is still a risk of distraction and prosecution under other laws should an accident occur. If stopped by the police for operating mobile amateur radio, the reference to quote is: "The Road Vehicles (Construction and Use) (Amendment) (No.4) Regulations 2003 Statutory Instrument 2003 No 2695."

This lays out clearly the exemptions under the new law. Statutory Instrument number 2695 can be viewed on the Internet at www.legislation.hmso.gov.uk/si/si2003/20032695.htm

Mars probe received by radio amateurs

The AMSAT P5-A ground station in Bochum, Germany, has successfully received transmissions from ESA's *Mars Express* probe. *Mars Express* has been on its way to the red planet since 2 June 2003 and is scheduled to arrive on Christmas Day 2003. On 16 November a strong 8.4GHz signal was received from *Mars Express* - over 107 *million* kilometres away. Although travelling at the speed of light, the signal took about six minutes to reach earth! This was probably the first time that such a signal has been received by radio amateurs. The receive equipment was a 20m dish, horn, low-noise down converter to 1270MHz and a Yaesu FT-736R transceiver, but James Miller, G3RUH, explains on the AMSAT-DL website (www.amsatdl.org/p5a/reception_g3ruh.htm) how amateurs with much more modest antennas could also receive *Mars Express*.

Photo: AMSAT-DL

The AMSAT ground station facilities in Bochum, Germany.

This successful test confirms the general operational readiness of the AMSAT ground station for the P5-A Mars Mission scheduled for 2007. More on this project can be found at www.amsat-dl.org

"This is Tirana calling"

A unique amateur radio programme started in Tirana, Albania (www.za1a.com) on 9 November when 34 third and fourth year university students began a five-week amateur radio course using RSGB study material as the reference books. Roger Brown, G3LQP, one of the organisers of the project, said: "The university staff and students gave us a very warm welcome. They are very appreciative of the RSGB contribution, especially the students, who at first could not believe that the examination manuals were supplied free of charge! I am very proud to have been associated with the project and flying high the RSGB flag."

Project leader Martti Laine, OH2BH, reported from Tirana that 33 students passed the CEPT 1 level theory exam on 26 November and that the course then moved on to amateur radio operating matters. He thanked John Share, G3OKA, from the University of Liverpool, who was the tutor for the first part of the course, for a job well done.

Many of those involved with the project took the opportunity to operate as ZA1A and ZA1UT while in Albania. Roger Brown was issued with a personal callsign, ZA/G3LQP, believed to be the first Albanian licence issued to a British amateur.

Roger Brown, G3LQP, visiting RSGB HQ just before setting off for Albania.

VK 'welcome to HF' QSO party

On New Year's Day Australian radio amateurs who have not passed a Morse code test will gain access to the HF bands. The Wireless Institute of Australia (WIA) invites all radio amateurs to join in with the WIA 'Welcome to HF' QSO Party, which begins at midnight Australian time (1300UTC) and concludes at 2400UTC on New Year's Day, a total of 35 hours. Former VHF-only VK amateurs can be identified by three-letter suffixes beginning with the letters H, T, U, X, Y and Z. Special WIA stations will also be on the air, and these have two-letter 'WI' suffixes or three letter suffixes starting with 'WI'.

- Sweden is likely to follow suit on 1 January. The November issue of the Swedish amateur radio society's magazine, *QTC*, states that: "Soon - very soon - the requirement for knowledge of CW [for HF-bands access] will be dropped for the country's would-be amateurs and current Class 2 amateurs". Gunnar, SM0SMK, the President of SSA, says that they hope the Morse code test requirement will be removed at the turn of the year.

You've been framed!

The Swedish-based 'Club-TV' plans to establish a monthly amateur radio magazine programme to be transmitted to Europe by digital satellite TV. Club-TV has already carried out a number of tests and broadcast a couple of programmes. Transmissions are via the Sirius 2 satellite at 5° E with a Symbol Rate of 6667 and FEC 1/2. The frequency / polarisation may change from time to time, but normally it is on 12,590MHz, vertical polarisation. The exact information for each transmission, with dates and times, is on the Club-TV website at www.parabolic.se Club-TV invites amateurs around Europe "who can handle a video camera and edit the result" to send in videos of 10 - 20min. There is no cost involved other than the tape as the broadcasts are sponsored by Parabolic AB. Please send any queries to Ben, SM6CKU, e-mail: sm6cku@parabolic.se

NEWS BRIEFS

- GB4BLC (Bedworth Lions Club) will be operated by Brian, G8GMU, from 2 to 29 January to raise awareness of the work of Lions International. On 10 / 11 January GB4BLC will be entering the 'Hunting Lions in the Air' contest, which is held annually to commemorate the birthday of Lions' founder Melvin Jones, who was born in Arizona in 1879. Further information at www.lions105m.org.uk~bedworth
- The Radiocommunications Agency has been taken over by Ofcom (Office of Communications). Members and non-members with amateur radio related enquiries are asked to contact Ofcom HQ at the following address and telephone number (telephone calls, letters and e-mails to the RA's former address will be automatically forwarded for the time being): Ofcom, Riverside House, 2A Southwark Bridge Road, London SE1 9HA; tel: 020 7981 3000; fax: 020 7981 3333; website: www.ofcom.org.uk
- Icom (UK) is offering free QSL cards and posters (subject to availability) for special event stations, exhibitions etc. The QSL cards can be customised by the user. Alternatively, send Icom (UK) one of your QSL cards and they will send you 20 of theirs. Contact marketing@icomuk.co.uk for further details.

Enigmatic exhibition

A new exhibition called 'Enigma and Friends' opened at Bletchley Park on 6 December. The exhibition is based on the private collection of John Alexander, G7GCK, who has kindly loaned his magnificent collection of cipher machines to the Bletchley Park Trust. 'Enigma and Friends' tells the story of European and American cipher machines that were contemporaries of Enigma, and shows visitors what happened after Enigma's heyday. This exhibition complements Bletchley Park's existing exhibitions and displays machines from 1936 through to the 1970s. Please see the Bletchley Park website at www.bletchleypark.org.uk for details of opening hours and admission.

Concorde between Britain and Barbados

Concorde taking off from Barbados on one of its final flights.

With the demise of the scheduled *Concorde* aircraft services, amateurs in Barbados, led by Ron Wilkinson, 8P6JB, are planning to set up a station close to *Concorde* in Bridgetown to make contact with other sites connected with the airliner - one of which is GB2IWM at Duxford, where the prototype aircraft is located.

Amateur radio for D of E Award evening

Amateurs in the Horncastle area of Lincolnshire area put on special event station GB0HYC at the request of the Horncastle Youth Club for a Duke of Edinburgh Award scheme promotion evening. The station was on the air on 6 October to introduce amateur radio to the young people of Lincolnshire. The event was organised by Youth Development Worker Viv Thurlow, M3VFT, and Philip Cross, G7MWH.

G3ZPU and G1ZQC operating GB0HYC.

European Science Week: 3 - 7 November 2003

The week of 3 - 7 November saw a series of European Science Week activities in schools and universities throughout Europe. Richard Constantine, G3UGF, reports that Bradford University, which is working with educational establishments throughout the region, hosted an exhibition of schools' work, based on modern and future communications. Amongst the many models and drawings there were plans for 'intelligent' furniture, interactive refrigerators and a working, self-charging robot vacuum cleaner. Rishworth School Radio Club near Halifax in West Yorkshire demonstrated effective data transmissions in a hostile EMC environment using PSK31. Radio conditions were atrocious and the background electrical noise level within the university complex was exceptionally high, but readable PSK contacts were still possible. By far the greatest public interest was created by the use of Echolink operating via the university's Internet gateway, to almost any part of the globe. High-quality audio contacts, using links and VHF / UHF repeaters were possible with all continents. The most memorable QSOs included the 'Flying TV repair man' in Darwin, Australia; the amateur repeater at Disney World in Orlando and McMurdo Station in Antarctica.

The three members of Rishworth School Radio Club demonstrating digicomms at Bradford University.

Foundation & Intermediate material for the blind

Following a successful appeal in *RadCom* and elsewhere for new readers, the Radio Amateur Invalid and Blind Club (RAIBC) has formed a new team of narrators for its recordings. Its next project is to record the RSGB *Intermediate Licence, Building on the Foundation* book on CD. The RSGB *Foundation Licence Now!* book, read by Alan, GM4FLX, and produced by Kelvin, M0AID, is already available. Blind persons with the latest RNIB reading machine, any CD player, or a PC capable of reading MP3 files can prepare themselves for the licences. Please tell your blind friends about this facility and suggest they contact Kelvin, M0AID, e-mail: kelvin@qti.org.uk or the RAIBC helpline on 020 8204 2347.

Randy ram rubs GCHQ up the wrong way

A mysterious transmission that baffled British intelligence analysts for days was caused by a ram rubbing up against an aerial mast, a spokesman for GCHQ reported in November. Radio operators at GCHQ in Cheltenham were baffled by strange high-frequency noises coming from an out-station at Scarborough. The noises were unlike anything encountered before and an investigating team initially thought they were coming from spies. Their investigations found the signal only happened during the day, went across all the HF bands and were only received in Scarborough. Eventually, investigators discovered that a ram was rubbing its horns against the aerial masts "in between servicing some local ewes," the spokesman said. This (true) story appeared in a recruitment newspaper designed to attract graduates to GCHQ. In addition to information on job prospects, features such as a crossword, a horoscope, sports news - and some weird but true stories - were included to lighten things up. Thanks to Bob McNally of GCHQ for permission to use this story.

Club & regional news

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.

Region 1: Scotland West & Western Isles

AYR ARG
7, Coastal Radio Stations & Merchant Navy. 21, MSG1 (Meteo Sat8). John, MM1JAS, 01292 445 599.

PAISLEY (YMCA) ARC
7, Make your own PCBs. 21, What is a valve & what does it do? Jim, GM3UWX.

Region 2: Scotland East & the Highlands

LOTHIANS RADIO SOCIETY
12, Minitalks. 26, AROS, Barry Scarisbrick, G4ACK. Toby, MM0TSS, 07739 742367.

Region 3: North West

SOUTH MANCHESTER R & CC
2, Forum on Technical Topics. 9, Home Constructor's Competition. 16, 'The Dawn Of Science', Chris, G4HON. 23, VHF on air. 30, 'The Road to Winning SSB Field Day', Ron G3SVW. Ed, 0161 969 1964.

STOCKPORT RS
16, DAB and satellite radio. 20, Practical activities and on air. David, M1ANT, 0161 456 7832.

THORNTON CLEVELEYS ARS
5, On air (SSTV), G0LRK. 12, Table top sale / auction. 19, Tech Talk, Tony Llewellyn. 26, Discussion on NARSA & events for the year. Jack, G4BFH, jack@jduddington.fsnet.co.uk

Region 4: North East

GRIMSBY ARS
15, UFOs, Les, G8JIC. George, G4EBK, 01472 887720.

HORNSEA ARC
7, TBD. 14, Club dinner. Richard, G4YTV, 01964 562498.

HULL DARS
9, Film / video. Bob, G0VVP, 01482 834240.

MALTBY & DARS
Meets Fridays at Centenary Hall, Clifford Road, Hellaby, Rotherham (just off M18 J1). Foundation & Intermediate Licence training. New members and visitors welcome. Details at www.qsl.net/g7skm, or contact Keith, G1PQW, tel: 078 011 56678.

NORTH WAKEFIELD RC
8, Myths, mysteries, facts of the G5RV / long wire. 15, In the shack operating the Yaesu FT-1000MP Mk V Field, John, G4RCG. 22, Quiz night, Corned Beef Hash. 29, In the shack, Q&A for new licensees. www.g4nok.org

SHEFFIELD ARC
5, Club night. 12, VHF radio. 19, Video: Hancock's Half Hour. 26, HF radio. Nick, 0114 255 5500 (office hours); g4fal@river-auto.co.uk

WAKEFIELD & DRS
6, Rally meeting. 13, Ten-pin bowling night. 20, On air. 27, RSGB video. Rick, G4BLT, 01924 255515, www.wdrs.org.uk

Region 5: West Midlands

BROMSGROVE & DARC
1, New Year's Day 2m net. 9, Christmas / New Year Party. 30, QRP night. Chris, M0BQE, 01095 776869.

CHELTENHAM ARA
2, Quiz evening with Pat, G3IKR. Ivan, G4BGW, 01452 731956, ivan@g4bgw.freeserve.co.uk

GLOUCESTER AR & ES
5, Videos 'Antenna Antics'. 12, 19, 26, On air HF / workshop. Tony, 01452 618 930 office hours.

HILLCREST ARS
8, Photography Digital and Traditional, Horace, M1WHW. 15, AGM. Stuart, M0SJV, m0sjvstuart@supanet.com

KIDDERMINSTER & DARS
6, Short talks by Committee & Society members. Tony, G1OZB, 01299 400172.

ST LEONARD'S ARS
1, Happy New Year gathering. 9, Christmas / New Year party. 29, VHF Propagation, Paul, G8IYG. Derek, G0EYX, 01785 604904.

STRATFORD UPON AVON DRS
12, DF equipment & use, G8UKT. 26, The ground beneath us, G3VYE. Terry, G3MXK, 01789 294387.

TELFORD & DARS
7, Open evening, on air. Mike, G3JKX, 01952 299677.

Region 6: North Wales

CONWY VALLEY ARC
7, No Meeting. Wynne, GW6PMC, 01745 855068.

WREXHAM & DARS
20, Science Festival planning. Mark, MW3MDH, www.qsl.net/wars

Region 7: South Wales

No club details received

Region 8: Northern Ireland

BANGOR & DARS
7, Annual quiz. Mike, GI4XSF, 028 4277 2383.

MARCONI RADIO GROUP
Meets on first Thursday of each month, 8.00pm, above Ballycastle Museum. New members always welcome. More information at www.qsl.net/mn0mrg

Region 9: London & Thames Valley

AYLESBURY VALE RS
14, Annual dinner. Roger, G3MEH, 01442 826 651, roger@g3meh.fsnet.co.uk

BROMLEY & DARS
20, AGM. Alan, G0TLK, 0208 777 0420.

CHESHAM & DARS
7, AFS Contest planning. 14, On air. 21, Technical Talk. 28, AGM, White Hill Centre, start 2045. Terry, G0VFW, terence.thirwell@eds.com

CRYSTAL PALACE R & EC
2, Technical discussions, club projects. 16, VHF Contest Operation, G3MEH. Bob, G3OOU, 01737 552 170 or Victor, G1PKS, 020 8653 2946.

MAIDENHEAD & DARC
1, No Meeting. 20, TBA. John, G8RYW, 01628 628463.

RADIO SOCIETY OF HARROW
2, No Meeting. 9, 'Bring and Show' unusual radio-related equipment. 16, Informal. 23, Video - material associated with De Havilland Museum. 30, Informal. Jim, G0AOT, 01895 476 933 or 020 7278 6421.

READING & DARC
8, EMC, Robin Caine, G4IWS. Pete, G8FRC, 01189 695 697.

SILVERTHORN RC
9, First meeting of New Year - informal. 16, Junk Sale. 23, 'Receiving images from weather satellites', Keith, G3MCD. 30. On air. Les, G0CIB, 07980 275 081.

STEVENAGE & DARS
13, Operating M3 tuition. info@sadars.org

SURREY RCC
5, 'The Good Life', Gareth, G4XAT. Ray, G4FFY, 020 8644 7589.

WIMBLEDON & DARS
9, Cycling the Nile, Barbara. 30, PicATUne building. Jim, M0CON, 020 8874 7456.

Region 10: South & South East

ANDOVER RAC
6, 'But is it really radio?', Mike, G0AMO. 20, 'Advice for new HF users', Stan, G4MOE, & Terry, G8ALR. Terry, G8ALR, 01980 629346.

DORKING & DRS
14, New Year Party, Stephen, G1LJR. 27, AGM. John, G3AEZ, 01306 631236.

FARNBOROUGH & DRS
14, Members' evening. 28, Visit to FAST, G3KND. Norman, G0VYR, 01483 835320.

HARWELL ARS
4, New Year 'foxhunt', Malcolm, G8NRP. 13, Rally preparations, Ann, G8NVI, and Quiz, John, M3LNU. Angus, G0UGO, hars.g3pia@tiscali.co.uk

HASTINGS E & RC
21, RDS Railway. 25, Annual lunch at High Beech Hotel. 28, Auction (Hastings Repeater Group) William Parker School. R C Gornall,

G7DME, 01424 444466.

HORNDEAN & DARC
6, Social evening. 27, Quiz, Arthur Hansley, G0JRN. Stuart, G0FYX, 023 9247 2846.

HORSHAM ARC
8, Inimitable Codes & Cyphers, G3ZBU. David, G4JHI, 01403 252221.

ITCHEN VALLEY RC
9, Maritime Comms, Vic, G3NVB. 23, Computers in the Shack, Brian, G0UKB. Sheila, G0VNI, 023 8081 3827, sheila.williams@ivarc.org.uk

SOUTHDOWN ARS
5, AGM plus Foundation Licence exam. 11, 25, Operation from Beachy Head site, 10am - 2pm, John, M0AEK. John, G3DQY, 01424 424319.

SWINDON & DARC
15, Video. 29, 'PSK31 and other Digital Modes', Ian Dredge, G4DIE. Mike, M5CBS, 01793 826465.

WORTHING & DARC
7, New Year's Resolutions. 14, Club contests and events for 2004. 21, History of Club Newsletter. 28, Collectorama. Roy, G4GPX, 01903 753893.

Region 11: South West & Channel Islands

APPLEDORE & DARC
19, Devon North Repeater or Worldwide Sat Domestic Radio, Don, G0RGL, or Graham, G1ZTG. Brian, M0BRB, brian.jewell@ic24.net

BLACKMORE VALE ARS
6, VHF on air. 13, RSGB video and committee special. 20, HF on air. 27, Local Raynet net on air. Tony, G0GFL, 01258 860741.
1, No Meeting. 8, Show & Tell: what did you have for Christmas? Dave, G7BYN, 01454 883720.

CORNISH RAC
9, Main Meeting, Simon to answer all questions on Digital TV etc. 12, Computer Section. 16, Annual Dinner at Country Skittles, Townshend. John, G4LJY, 01872 863849.

SOUTH BRISTOL ARC
7, Computer clinic, David, G7PKJ. 14, Planning events for 2004, Chairman. 21, Display of club archives. Muriel, G4YZR. 28, Amateur TV demo, Dave,GW0ROL & Mike, M0MAS. Len, G4RZY, 01275 834282.

TORBAY ARS
2, 9, No Meeting. 12, Construction Cup. 23, Annual Construction Competition. Dave, G6FSP, dave.helliwell@tesco.net

WEST SOMERSET ARC
6, Social. Jean, G0SZO, 01984 633060.

WESTON-SUPER-MARE ARS
5, AGM. 19, Construction night. D Welch, G0ATD, QTHR.

YEOVIL ARC
1, No Meeting. 8, 'Baluns', Rob, G3MYM. 15, Junk Sale. 22, Tim's Projects No2, Tim, G3PCJ. 29, On air. Derek, M0WOB, 01935 414452, m0wob@tiscali.co.uk

Region 12: East & East Anglia

BRAINTREE & DARS
5, On air. 19, Essex wildlife. John, M5AJB, 01787 460947.

CHELMSFORD ARS
6, Beginner's Guide to Propagation Predictions, Carl, G3PEM. George, G3UTC, 01277 622707, george3utc@btopenworld .com

COLCHESTER RADIO AMATEURS
15, Variacs & Transformers, Alan, G0HKG. 29, DXpedition video. James, M0ZZO, 01255 242748.

DOVER ARC
7, On air. 14, RSGB video. 21, On air. 28, Behind the scenes of broadcast radio, Matt, M1CMN. Brian,G4SAU,g4sau@bcuff.freeserve.co.uk

EAST KENT RS
5, Gadget night. Paul, G3VJF, mail@paulnic.com

LEISTON ARC
6, Quiz. M3MIG,m3mig@aol.com, 01728746044.

Region 13: East Midlands

DENBY DALE ARS
7, Rip-offs in hi-fi, Denis Mott. 21, Advanced test equipment, Phil, G4SFQ. Darren, G0BWB, g0bwb@btinternet.com

DERBY & DISTRICT ARS
6, Junk sale. 20, Quiz. 27, Video. Martin, G3SZJ, 01332 556875.

EAGLE RADIO GROUP
13, Talk on history and working of thermionic valve. Terry, G0SWS, 01507 478590.

LINCOLN SW CLUB
7, G5FZ on air. 14, AGM. 21, Talk by Jim, G0EJQ. 28, Video. John, G1TSL, 01522 793751.

LOUGHBOROUGH & DARC
6, 'Welcome to 2004', ideas for the New Year. 13, Computers old & new: have you a vintage machine? 20, 'Bakelite cabinet repairs & vintage night', bring something bakelite along. 27, Video TBA. Chris, G1ETZ, 01509 504319.

MELTON MOWBRAY ARS
16, Visit by Mark Francis, G0GBY of W&S. Phil, G4LWB, Phil@croxtonkerr.fsnet.co.uk

SOUTH NOTTS RC
1, New Year's Day net on 2m, 12.00 noon. 9, AGM.

NEW RSGB CLUB CHAMPIONSHIPS

If you want to increase activity and interest in your local radio club (and which club doesn't?!), please encourage all your club members to get on the air for the RSGB's new 80m and 2m Club Championship contests. Andy Cook, G4PIQ, gives more details on pages 85-89 this month, and the full rules can be seen on the HF and VHF Contest Committees' web-sites (www.rsgbhfcc.org and www.blacksheep.org/vhfcc respectively) or by sending an A4 SASE to the Amateur Radio Department at RSGB HQ. The first events are on 2m on 6 January and the 80m ones on 5 January (CW); 14 January (SSB); and 22 January (datamodes).

CHILDREN IN NEED CHARITY STATION

On 21 / 22 November, members of the Worthing and District Amateur Radio Club (www.wadarc.org.uk) operated Special Event Station GB2KIN to raise money for the BBC's Children in Need appeal. The station was located in the foyer of the Holmbush Shopping Centre, Shoreham, West Sussex, where members of the public watched the operators in action on 40m CW and phone. The station was organised by Chris Delhaye, G3NDJ. Two Pudsey bears were raffled, one on each day, to raise even more money and the total raised was over £2300.

EGRAC RECEIVES £4000 LOTTERY GRANT

EGRAC, the East of Greenwich Radio Amateur Club, M0EGC, (www.egrac.co.uk) has been awarded a lottery grant of over £4000. The club was founded in Holmpton near Withernsea, East Yorkshire in January 2003. As a new club with low funds and lack of equipment, it was decided to apply for an 'Awards for All' lottery grant, with the hope of raising funds for station equipment: a mobile mast, HF / VHF transceiver, antennas, rotator and other equipment. A great wealth of information regarding amateur radio and the aims of the newly-formed club was included with the application and, to everyone's surprise, the club has been awarded the sum of £4190.

In its first year, the new club has achieved so much thanks to the dedication and hard work of the committee and club members. Events with which the club has been involved include GB4KAY during International Lighthouse Weekend, Welwick Heritage Weekend, and the East of Greenwich RAC Trophy, which will be awarded on a yearly basis to the best electronics student at Withernsea High School, the winner receiving free membership and courses at the club. For further details contact 'Baz' on 01964 613928 or see the club's website.

The lottery certificate being presented to the club by Deputy RSGB Regional Manager for District 14, Andy Russell, G0VRM.

SWANSEA RADIO SHOW: CHANGE OF DATE & VENUE

The Swansea ARS Radio & Computer Show was scheduled to take place on 29 February, but the venue has closed down. The show is now scheduled for **22 February** at the Afan Lido, Aberavon seafront, Port Talbot, opening at 10.30am. Further details in the 'Rallies' section (see pages 91 - 93). Contact Roger, GW4HSH, tel: 01792 404422, for immediate information.

AMATEUR BEQUEATHS EQUIPMENT TO CLUB

The Maltby & District ARS has recently added to its equipment thanks to a former member. Roy Fisher, G1YLH, who died on 23 October 2003, bequeathed the contents of his shack to the club, which is now operational on HF, 2m, 6m and 70cm. Rather than leave their newly-acquired equipment in a cupboard for six days and 22 hours a week, the group intends to add a portable mast and generator to facilitate easier portable and contest operation.

OLDHAM CLUB'S RALLY

The Oldham ARC (www.oarc.zen.co.uk) is holding its rally at the Oldham Sports Centre, Lord Street, Oldham OL1 3HA on Sunday 18 January. Doors open at 11.00am (10.30am for disabled visitors). The event features the usual traders and a bring & buy stall. Talk-in is on 145.550MHz via GB4ORC, commencing at 7.30am. Refreshments will be available. Details from Hazel, tel: 01706 848092, or m5aeg@btinternet.com A map is available on the club's website.

ANGLO-GERMAN NAVAL AGMs

In October 2003 four members of the Royal Naval Amateur Radio Society London (GB2RN) Group with their wives visited MF Runde, the German Naval Amateur Radio Club, at their AGM in Gosen near Berlin. The photo shows Bob Wilson, G0FEK; Terry Barclay, G0TBD (Chairman *HMS Belfast*), Graham Chatfield, G0LEH, and Phil Manning, G1LKJ, with members of MF Runde. The Chairman of MF Runde, Harald, DL5XI (in the middle), visited the Royal Naval ARS AGM at *HMS Collingwood* the following week.

Jenny Shardlow, G4EYM, representing the Derby & DARS, receiving the quiz prize from Mike Stone, G4JGA.

EAST MIDLANDS INTER-CLUB QUIZ

On 31 October members of clubs from Derby, Nottingham, South Normanton and Loughborough converged on Alvaston in Derby for an Inter-Club Quiz night. Six teams of four members plus supporters arrived at the HQ of the Nunsfield House Amateur Radio Group for a light-hearted evening of general knowledge and trivia. On arrival guests were asked to guess the price of a Yaesu FT-747GX as it was advertised in *RadCom* in July 1988. The main quiz took the form of two rounds of 25 questions covering topics from amateur radio to Biblical facts, read out by NHARG Chairman, Chris Carrington, G0IYZ. After totalling up the scores it was found that the winning team was Derby & DARS. NHARG Treasurer Mike Stone, G4JGA, presented the winning club's Vice-Chairman, Jenny Shardlow, G4EYM, with the team prize of a Diamond SX-200 SWR / power meter donated by NHARG. Other prizes up for grabs during the evening included a denim jacket, mugs, mouse mats etc donated by Kenwood UK and a pair of quality headphones, logbooks, etc donated by Waters & Stanton plc. NHARG would like to thank all those who took part and especially Kenwood UK and Waters & Stanton plc for supporting the event.

FOUNDATION COURSES AT . . .

. . . BROMSGROVE

Over the weekend of 15 / 16 November the Bromsgrove & District ARC held its fifth Foundation Course, at the Avoncroft Arts Centre, next to the famous Avoncroft Museum of Buildings. Over 25 candidates have now been successful in gaining their Foundation Licences with the club. Course Tutor for the weekend was Chris, M0BQE, with the help of Mick, M0BQF; Peter, G4BBU, and John, G4OJS.

Candidates at Bromsgrove & DARC's weekend course. Left to right: Michael Williams, Les Fowler, Susan Skinner, Naomi Skinner (Susan's daughter) and Ruth Whittle.

. . . AND BANGOR

The Bangor & District ARS (www.bdars.com) has recently completed its forth Foundation Licence course. Since its first class in February 2003, it has taken 64 students through the course. Special mention should be made of the club's youngest student who was eight years old, showing that age is no barrier to getting on the air. She excelled at the practical work and easily scored better than the pass mark in the test.

Members of the Bangor & DARS's latest Foundation Course.

Members of the Barry Amateur Radio Society who have taken the Foundation and Intermediate exams at the club and who took the Full licence exam in December. Front row left to right B Collins, MW3GBW; J Evans, MW3ELY. Back row P Provis, MW3XMG, instructor G Tucker, MW1RRW; R Jeffery, MW3DYZ, and instructor M Adcock, GW8CMU.

By Bob Whelan, G3PJT,
36 Green End, Comberton, Cambridge CB3 7DY.

The Radio Communications Foundation

The RSGB's charity, the Radio Communications Foundation, has now been created. Bob Whelan, G3PJT, explains the role of the RCF, the projects that it is intended to fund, and how best you can donate to the new charity.

As I announced at the Annual General Meeting last year, the RSGB was taking steps to create a charity. I can now announce that the legal formalities have been completed and the charity called the Radio Communications Foundation (RCF) will be ready to start operating early in 2004. This article will outline the role of the charity, the way it will work and will, I hope, answer many of your questions.

Why is a charity needed? It often comes as a surprise for people to realise that whilst the RSGB is a Company Limited by Guarantee and has an objective to break even on its day to day operations, it does not have charitable status. In the past this in itself has not been a disadvantage but it is now starting to limit the ability of the RSGB to support new initiatives, especially in the field of education.

The Board has concluded that the role of the RSGB is changing dramatically. It is clear, for example, that we will have a much bigger role in our support to the community, in particular in the raising of public awareness and understanding about radio communication, the provision of education and training, and in the support of communication for public events.

These new responsibilities illustrated by the success of GB4FUN in our schools programme and our strengthening links with the national education system call on both our volunteer resources and our financial resources for their operation. These financial demands are likely to increase significantly. At present these demands are met from your membership subscription and from the donations members have made to GB4FUN, for which many thanks. However, the Board have felt that to meet these new demands a serious fundraising effort needs to be made. Also it should be undertaken independently from the commercial operations of the RSGB. The RSGB needs a structure which is tax efficient and one that can access other funds such as the Lottery. By way of example if the current GB4FUN donations had been made into a charity such as is proposed, the GB4FUN funds would probably be about 28 pence in the pound better off.

It is expected that the RCF will be visible throughout UK industry and Government. The RSGB has recognised that it has a responsibility to encourage public awareness, teaching and training of radio communication for the good of the national economy. This might sound a grand responsibility but if we don't, then who will?

OBJECTS

The charitable objects of the Radio Communications Foundation are stated formally as follows:

- to advance the education of the public in the science and practice of radio communication and electrical engineering and to promote wider benefits to the public resulting from such education and training.

PROJECTS: WHAT SORT OF THINGS WILL THE RCF FUND?

Within the objects and financial resources of the RCF there are a wide range of possible projects which the RCF might help to fund.

Bringing radio communication to the public is clearly an important part of our objectives. Examples of projects might include:

- the enhancement of GB4FUN from a demonstration vehicle to a 'mobile classroom'. The current vehicle is being very heavily used and will need significant refurbishment and possibly replacement in the near term.

- a second mobile classroom, possibly located in the north of England, positioned to serve that area and to support the initiatives being taken to bring radio communication to schools on a more regular basis than at present.

- support for exhibitions of the educational potential of radio communication, primarily aimed at teachers and the general public.

- support for high visibility demonstrations of radio communication, especially if national coverage in the media is involved.

- a bursary scheme to support young licensed amateurs with university or college fees and operated with universities offering courses in radio communication. Such bursaries could be named in memory of the donor.

The above are examples of the sort of projects which the RCF will consider.

FUNDRAISING

We have set ourselves a target to raise £250,000 to meet our needs for the next three years. We see donations arising from a number of sources, principally:

- from members, at present a large number of members are making donations with their membership renewals. These donations are being treated as donations to the charity and where possible advantage will be taken of Gift Aid.

- through bequests. Many members make provisions in their wills regarding amateur radio. In future all such bequests will be treated as being donations to the Radio Communications Foundation. Instructions will also be available from the address below for those members who wish to do this.

- from amateur radio companies. Many suppliers of amateur radio equipment already have given their support to GB4FUN and other RSGB and club initiatives concerned with the promotion of radio communication to the public. These suppliers will be encouraged to support the RCF as their support will enable this prestigious initiative to expand its activities rapidly.

- from industry. The UK radio communications industry is one of the most innovative and vibrant in the world. Radio technology is set to expand dramatically especially in the VHF and Microwave parts of the spectrum. There is a severe shortage of skills and familiarity with radio technology and engineering. The RCF aims to play its part in raising public awareness of the opportunities for jobs and careers.

- from the Lottery. Although some radio clubs have been able to win small amounts from the Lottery funds it is the intention to apply for Lottery support for some of the more substantial projects which may be proposed to the RCF.

How to donate effectively

Members have had the opportunity to make donations towards GB4FUN for the past year now. Bearing in mind the Objects of the charity mentioned above the application of these donations will be extended to cover all of its objectives.

All members may donate to the charity at any time although all payments must be made payable to the Radio Communications Foundation.

Gift Aid

Use Gift Aid and you can make your donation worth more. For every pound you give to us, we get an extra 28 pence from the Inland Revenue. (You must pay an amount

TRUSTEES

The Trustees of any charity carry the personal responsibility that the funds raised by the charity are properly applied to the charity's objects. The Board have therefore decided that the Trustees should reflect this independence and be drawn from a background which represents industry, Government and education as well as the amateur radio.

The trustees are: Gerald Davies, Aerial Facilities; Sir Martin Sweeting, Chairman SSL; Dr Bruce Smith, Chairman National Space Centre, Chairman Smith Institute; David Hendon, DTI; Dr Bob Whelan, G3PJT, RSGB President 2002-2003; Richard Constantine, G3UGF, Board Member with responsibility for Education and Schools programmes; Peter Kirby, G0TWW, General Manager, RSGB; Marilyn Slade, Financial Controller, RSGB.

The Trustees will be chaired by Gerald Davies and this also confirms the intent for the charity to be chaired by a well known industry figure with independence from the Society.

CHAIRMAN: GERALD DAVID, OBE

Gerald David, OBE, FREng, FIEE, date of birth DOB 07.08.33, is Chairman and majority shareholder in Aerial Facilities Limited, designers and manufacturers of RF hardware,

Gerald David, OBE, Chairman.

particularly combiners, filters, low-noise amplifiers and cell enhancers. He formed the company in 1972 and built it up over the years to become Aerial Group and sold the sites operation in 2000 which is now part of Gridcom. As a very young man he was deeply involved with amateur radio and shared this activity with various Swansea amateurs, which is where he consolidated his love for radio frequency engineering. His career commenced at Standard Telephones and Cables and after four years at sea returned to work at Airmec in High Wycombe, followed by Air Tech at Haddenham and then came his own company, Aerial Facilities Limited. He is very active in the Royal Academy of Engineering and the IEE and is Chairman of the ETSI committee, ERM TG 27 Radio Site Engineering.

SIR MARTIN SWEETING, OBE.

Sir Martin Sweeting OBE.

Professor Sir Martin Sweeting OBE, FREng, FRS, Chief Executive - Surrey Satellite Technology Ltd (SSTL), Director - Surrey Space Centre. Born in 1951 in London, Sir Martin has pioneered the concept of advanced microsatellites utilising modern COTS devices for 'affordable access to space'. Following BSc and PhD degrees in Electronic Engineering gained at the University of Surrey, in 1985 he formed a spin-off University company (SSTL - Surrey Satellite Technology Ltd) which has designed, built, launched and operates in orbit a total of 24 nano, micro, and mini-satellites. SSTL is now the world's leading microsatellite company. Sir Martin is also Director of the academic Surrey Space Centre, leading a team of 50 faculty and doctoral researchers investigating advanced small satellite concepts and techniques. In 1995, Sir Martin was awarded the OBE and the Royal Academy of Engineering Silver Medal. In 1996, he was elected a Fellow of the Royal Academy of Engineering. In 1998, he was awarded the UK Engineering Council Gold Medal and the Space Achievement Medal by the British Interplanetary Society. In 1999, Professor Sweeting was elected to the International Academy of Astronautics and in 2000 was elected a Vice-President of the International Astronautics Federation; elected a Fellow of the Royal Society; and also awarded the Royal Society's Mullard Prize. Sir Martin was Knighted by HM the Queen in 2002 for services to the small satellite industry. Most recently Sir Martin was awarded the IAA Frank Malina medal for contribution to space education and is a member of the EU Framework Programme 6 Space Advisory Panel and the ESA Aurora Advisory Committee. Sir Martin holds the callsign G3YJO.

DR BRUCE SMITH, CBE

Bruce Smith, CBE, MA, DPhil, FREng, aged 64, is Chairman of IP2IPO PLC. He is also Chairman of the Council of Smith Institute for Industrial Mathematics and System Engineering, a Faraday Partnership and collaboration between industry and academia in applied mathematics and computing. Until a management buyout in 1997 he was the Chairman and majority share-

of income tax and / or capital gains tax at least equal to the tax that the charity reclaims on your donations in the tax year).

To be able to do this we will ask you to make a simple declaration saying that you want to use Gift Aid. This declaration can be made in writing, by e-mail or orally and will be forwarded to you if you indicate your intention for Gift Aid to be applied.

Payroll Giving

If your employer offers a Payroll Giving scheme you can make a charitable donation each month that gives you tax relief at your top rate of tax. This method allows you to make a regular donation with the minimum of effort. The Charity receives the donation gross so that there is no tax to reclaim from the Inland Revenue and saving time and paperwork compared with Gift Aid.

Giving certain shares or securities

Individuals can claim a deduction for the gift against their income for income tax purposes. No tax is deducted from the gift so the charity does not need to reclaim any tax from the Inland Revenue in connection with the gift.

Other methods of making donations

- You may consider leaving a bequest to the Charity in your will;
- Perhaps through fund raising events / club events;
- Or of course you may make a donation at any time.

In these cases please advise the treasurer of your donation or intention so that we can ensure it is directed to the Charity's bank account and that acknowledgement letters are sent out quickly.

HOW TO APPLY FOR FUNDS FOR YOUR PROJECT

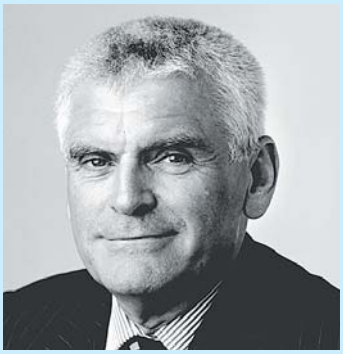
As will be clear the RCF can only donate funds it has in its reserves. In order that the Trustees can make a proper assessment of any bids which might be made, a call for proposals will be made two or three times per year only. These calls will be advertised in *RadCom* and on the RCF website three months before the closing date. The RCF will expect to fund as many projects as it can but might in some cases only offer part of the funds requested.

Although funds disbursed by the RCF should be treated as grants there will be a requirement that the recipient confirms the RCF funds were applied as described in the proposal.

Successful bidders will be required to arrange proper recognition of the role of RCF in any publicity associated with the project.

CONTACT POINTS

Initially to contact the Radio Communications Foundation please write to: The Secretary, Radio Communications Foundation, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE. E-mail provision and an RCF website is being established and details of these facilities will be published shortly. ◆



Dr Bruce Smith, CBE.

holder of Smith System Engineering Limited. Before founding that company in 1971 he worked in design engineering for Decca Radar Limited after a period in the United States with Bellcomm Inc in the US Space programme. Prior to that he occupied a physics research post at the University of Chicago, having previously obtained a first class honours degree and a doctorate in physics at Oxford University. He is a Fellow of the Royal Academy of Engineering, the Institution of Electrical Engineers and the Institute of Physics. He is Chairman of the Rainbow Seed Fund, Chairman of the Board of Trustees of the National Space Science Centre, a member of the Board of the British Antarctic Survey, a Director of Innovision Research and Technology Plc, Vice Chairman of the Council of Southampton University, a Governor of Imperial College and a Domus Fellow of St Catherine's College, Oxford.

DAVID HENDON

David Hendon.

David Hendon is Director Communications & Information Industries at the DTI, where he is responsible for the communications, IT, electronics and media business sectors. From 1998 to 2002, David was chief executive of the Radiocommunications Agency where he took a particular interest in amateur radio, overseeing the introduction of Internet linking and the Foundation Licence scheme. Earlier in his career David held posts concerned with radio communications in the MoD, the Home Office and the DTI. From January 2004 he co-chairs the Cabinet Office Official Committee on Spectrum Strategy which is the Government's top committee dealing with radio spectrum matters - a task that also fell to him when he was at RA, but which reverts now to the DTI with RA's move into Ofcom. David still holds an amateur licence, G8DPQ, and is a Member of the RSGB, although he isn't active at the moment. He is a Fellow of the Royal Academy of Engineering, a Fellow of the Institution of Electrical Engineers and a member of the Particle Physics and Astronomy Research Council, the BNSC Space Strategy Council and the IEE Communications Sector Panel. Aged 54, David is married with a son and two daughters.

Right top: Peter Kirby, G0TWW, RCF Hon Sec.

Right middle: Richard Constantine, G3UGF, RSGB Board Member.

Right bottom: Marilyn Slade, RSGB Financial Controller, RCF Hon Treasurer.

Below: Bob Whelan, G3PJT, RSGB President 2002 - 2003.

HUGE STOCKS • FAST DELIVERY • EXPERT ADVICE

nevada®
The Radio Specialists

PALSTAR where QUALITY counts

PALSTAR AT1500 CV
1.5kW HF Antenna Tuner

- Now with heavy duty edge-wound **silver plated roller inductor** for ***ultra high efficiency*** and ***reliability***
- Matches dipoles, centre fed doublets, G5RV's balanced feeders, Verticals, single wire, delta loops, beams, windoms, Inverted V's
- Built in 4:1 balun for balanced wire feeders
- Bypass position for quick straight-through antenna connection with SWR/POWER monitoring
- 6 position antenna selector switching
- Average power meter reading to 3000W
- Vernier dial plates for more accurate settings

£389 P&P £10 | 3 CHEQUES OF **£133.00**
PAY BY CHEQUESPREAD INTEREST FREE!

PALSTAR AT1500 BAL
1.5 kW True Balanced Tuner

- Designed to Match Open wire, balanced Line, or twin feeder antenna systems, Centre Fed Doublets, etc.
- Balanced tuning PRIOR to the BALUN ensures balun always "sees" correct input and output impedances for high efficiency and low heat
- High power components and circuit design, ensure optimum efficiency.
- Dual roller balanced L antenna tuner
- Switchable Hi-Z/Low-Z impedance ranges
- Total inductance of 44uH for extended range on 160m
- Switchable 500pF fixed capacitor for 160m
- Two edge-wound silver plated ball bearing drive roller inductors driven synchronously with a toothed fibreglass belt
- New low minimum variable capacitor with vernier drive
- 1500 Watts PEP
- Dimensions: 12 1/2" x 6 1/2" x 15"
- Weight: 16 lbs
- Requires 12V @ 100mA *(Power supply not included)*

£599 P&P £10 | 3 CHEQUES OF **£203.00**
PAY BY CHEQUESPREAD INTEREST FREE!

Palstar AA30
Active Antenna Matcher for Receiver use only. A low loss antenna tuner suitable for random long wire, dipoles, Beveridges, Delta loops, inverted V's, Verticals, G5RV and most receiving antennas. Or use as a standalone active antenna.

- Frequency: 100kHz-30MHz **£69.95** £6 P&P

Palstar Wire Antennas

Windom.....40-10 Mtrs (3 band)	**£49.95**	£10 P&P
Windom.....80-10 Mtrs (6 band)	**£59.95**	£10 P&P
G5RV 1/2....40-10 Mtrs (Flexweave) ...	**£29.95**	£10 P&P
G5RV full ....80-10 Mtrs (Flexweave) ...	**£34.95**	£10 P&P

Palstar External Baluns

B1500.....1.5Kw 4:1 (1.8-30)MHz	**£35.95**	£6 P&P
B1500C .....1.5Kw 1:1 (1.8-30)MHz	**£35.95**	£6 P&P
B4000.....4.0Kw 4:1 (1.8-30)Mhz	**£79.95**	£6 P&P

PALSTAR R30
Portable Communications Receiver

W.R.T.H HANDBOOK Best HF Design 2002 ★★★★ RATING OVERALL

- 100kHz - 30MHz AM, SSB SW
- 100 memory chan.
- 8"w x 2.5"h x 9"d
- 4-pole crystal filter at 45MHz
- Internal batteries (not supplied) or 12V
- Switchable 7 pole input filt.
- Ceramic filters fitted
- 5W low distortion full fidelity audio amp
- Analog S-Meter
- +15dBm 3RD order intercept

£449 P&P £10 | 3 CHEQUES OF **£153.00**
PAY BY CHEQUESPREAD INTEREST FREE!

POWER SUPPLIES

NEW! **Palstar SPS-8250**
Switch Mode Power Supply

- Current: 25 Amp Continuous
- Variable Voltage: 3 – 15V DC
- Twin Meter Current/V Display
- Compact and Lightweight
- High Efficiency

Protected for
- Overvoltage
- Overload
- Over temperature
- High RFI stability

£99.95 P&P £10 | 3 CHEQUES OF **£36.65**
PAY BY CHEQUESPREAD INTEREST FREE!

Palstar PS-50

- Current: 40/50 Amps
- 13.8V DC
- Twin Meter Current/Voltage
- Short circuit overload protection

NEW! IMPROVED VERSION

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

Palstar PS-30

- 3-15V adjustable
- 25/30A max
- Voltage + current meters
- 10mW RMS noise & ripple

£99.95 P&P £10 | 3 CHEQUES OF **£36.65**
PAY BY CHEQUESPREAD INTEREST FREE!

Palstar PS-15
15 Amp 13.8V (12A/15A max)
£59.95 £10 P&P

PS-06 4 Amp / 6 Amp peak **£29.95** £10 P&P
PS-04 2 Amp / 4 Amp peak **£19.95** £10 P&P

CABLE & ANTENNA WIRE

HIGH QUALITY MILITARY SPEC 50 Ohm Coax cables at
WHOLESALE PRICES!

SPECIAL PRICE!

PER 100 METRE DRUMS

RG58 C/U Mil spec.....	~~£38~~ **£25**	P&P £10
RG213U Mil spec low Loss	~~£75~~ **£55**	P&P £10
H100 Semi Airspaced	~~£95~~ **£65**	P&P £10
Westflex 103 Ultra Low Loss.....	~~£99~~ **£89**	P&P £10
300 Ohm Twin feeder (slotted)....	~~£80~~ **£69**	P&P £10
450 Ohm Twin feeder (slotted)....	~~£90~~ **£79**	P&P £10

FLEXWEAVE (style) ANTENNA WIRE
HIGH QUALITY VERY FLEXIBLE

- **168 strands of 14 AWG Copper Wire.**
- **Ideal for all your antenna projects**

SPECIAL PRICE!

Flexweave....*per metre* .....**55p** +10p/metre P&P
Flexweave....*per 100 Mtr Drum*....**£40** +£6.50 P&P

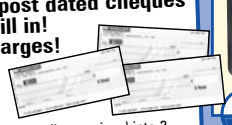
ALINCO EDX-2
Auto Tuner

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

£289.95 P&P £10 | 3 CHEQUES OF **£99.98**
PAY BY CHEQUESPREAD INTEREST FREE!

Easy to pay & GENUINE INTEREST FREE with CHEQUESPREAD

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



- 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.

CHEQUESPREAD AVAILABLE ON ITEMS OVER £100 ONLY

PALSTAR Compact - 1kW HF Antenna Tuner

PALSTAR AT1KM
Cross Needle version

NEW!

PALSTAR AT1KD
Digital Bargraph version

NEW!

- ***Easy to TUNE - Just 2 Controls and it matches most antennas in an INSTANT !***
- ***Matches Long Wires, Doublets, G5RV, Dipoles, Beams, Loops, Verticals***

- Covers 1.8 - 30 MHz
- Power 1,000 Watts SSB
- Built in 4:1 Balun
- Ceramic Roller Coaster with silver plated wire
- Differential Tuning Capacitor for "EasyTune"
- Switch 2 antennas plus Balanced Line
- Vernier Drive for accurate tuning
- Compact Size: 10.5"(w) x 4.5"(h) x 11"(d)
- **D version:** Metre range 0-140W / 0-1400W
- **M version:** Metre range 0-300W / 0-3000W

£335 P&P £10 | 3 CHEQUES OF **£115.00**
PAY BY CHEQUESPREAD INTEREST FREE!

£345 P&P £10 | 3 CHEQUES OF **£118.33**
PAY BY CHEQUESPREAD INTEREST FREE!

ALINCO DX-70TH
Fully Featured Portable HF+6mtr Transceiver

10W-100W SWITCHABLE

- TX - all HF + 6mtr, 100W output on HF & 6mtrs
- RX - Gen. coverage 150kHz-30MHz, 50MHz-54MHz
- SSB, CW, AM, FM and digital modes

~~£600~~ **£599** P&P £10 | 3 CHEQUES OF **£203**
PAY BY CHEQUESPREAD INTEREST FREE!

ALINCO DX-77E

HF Transceiver 'GREAT VALUE'

10W-100W SWITCHABLE

- 100W HF transceiver
- General coverage RX 500kHz - 30MHz
- All modes, FM, LSB, USB, CW & AM

~~£599~~ **£499** P&P £10 | 3 CHEQUES OF **£169.66**
PAY BY CHEQUESPREAD INTEREST FREE!

ALINCO DR-135E

EXPANDABLE TO RX AM AIRBAND INC 8.33KHZ CHANNELS

- TX: 144-146MHz RX: Expandable 118-174MHz
- 50/10/5W power settings
- 100 memory channels
- Frequency Steps: 5, 8.33, 10, 12.5, 15, 20, 25, 30, 50kHz

•EJ-41U Internal TNC £69.95
•EJ-40U Digital Voice Board £79.95

£235.95 P&P £10 | 3 CHEQUES OF **£81.98**
PAY BY CHEQUESPREAD INTEREST FREE!

ALINCO DR-605E
Dual Band Mobile

- Ready for 9600 bps packet
- Extended RX capability 136-174MH, 420-470MHz
- 50W (2m) - 35W (70cms)

£299.95 P&P £10 | 3 CHEQUES OF **£103.31**
PAY BY CHEQUESPREAD INTEREST FREE!

ALINCO DJ-195E
2MTR Handheld with Keypad

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

£159.95 P&P £10 | 3 CHEQUES OF **£56.65**
PAY BY CHEQUESPREAD INTEREST FREE!

ALINCO DJ-193E
Great Value 2MTR Handheld

- 2m (144-146MHz)
- Up to 5W VHF
- Wide RX possible (typ. 135-173MHz)
- CTCSS + DCS enc/dec fitted
- 40 memory channels+1 call ch
- DCS, Tone burst and DTMF

£139.95 P&P £10 | 3 CHEQUES OF **£49.98**
PAY BY CHEQUESPREAD INTEREST FREE!

ALINCO DJ-V5
Compact Dual Band Transceiver

- 5W/1W/0.5W output power
- Super wide RX (76-999MHz)
- Includes wide FM mode
- CTCSS Encode+decode, DTMF squelch and 4 different European Tone Bursts
- 200 memory channels+2 call ch

£225.95 P&P £10 | 3 CHEQUES OF **£78.65**
PAY BY CHEQUESPREAD INTEREST FREE!

ALINCO DJ-596
Dual Bander

- 100 memory ch, any mix of VHF/UHF
- Alphanumeric channel labels
- Wide and narrow FM TX/RX
- Direct freq input from keypad
- CTCSS, DCS encode+decode
- DTMF tones and autodial memories

£199.95 P&P £10 | 3 CHEQUES OF **£69.98**
PAY BY CHEQUESPREAD INTEREST FREE!

ORDER HOTLINE
023 9231 3090

USED EQUIPMENT

BUY WITH CONFIDENCE!

All safety tested & guaranteed for 3 months

VHF/UHF Transceivers

ALINCO DJ-191E+ACC ..... 2M HANDI + SPK/MIC&DRY/CELL 125.00
ALINCO DJ-SR1 ..... PMR 446 TRANSCEIVER 59.00
ALINCO DRM06 ..... 6M FM TRANSCEIVER 129.00
ICOM IC-2725E ..... 2M/70CM MOBILE TRANSCEIVER 259.00
ICOM IC-T8E ..... 6M/2M/70CM HANDI 199.00
KENWOOD TM702 ..... TWINBAND TRANSCEIVER 175.00
YAESU FT-8100R ..... 2M/70CM MOBILE TRANSCEIVER 249.00
YAESU FTL2014 ..... VHF PMR TRANSCEIVER 75.00
YAESU VX-5R+ACC ..... 6M-70CM HANDI + VC25 CASE MIC ..249.00

Scanners and Receivers

ALINCO DJX-10E ..... HANDHELD SCANNER 225.00
ALINCO DJX-2000 ..... HANDHELD SCANNER + EDH16 ..... 375.00
ALINCO DJX3 ..... H/HELD SCANNER C/W ACC & BOOK ..159.00
AOR AR5000+3 ..... HI-PERFORMANCE BASE SCANNER ...1199.00
AOR AR-8200MK2+CASE ... HANDHELD SCANNER 285.00
STANDARD AX-700E ..... BASE SCANNING RECEIVER 229.00
YUPITERU MVT-7100 ..... HANDHELD SCANNER 149.00
AOR AR300A ..... WIDEBAND RECEIVER 399.00
GRUNDIG YB-400 ..... SHORTWAVE RECEIVER 75.00
ICOM ICR-71E ..... HF RECEIVER 425.00
ICOM IC-R75DSP ..... HF RECEIVER + SOFTWARE 549.00
ICOM IC-R75DSP ..... HF RECEIVER + DSP 525.00
ICOM IC-R8500 ..... WIDEBAND RECEIVER 849.00
JRC NRD345 ..... HF RECEIVER 350.00
SONY ST-SE200 ..... FM/AM TUNER 59.00
YAESU FRG-8800V ..... HF RECEIVER + VHF CONVERTER 325.00

HF Equipment

ALINCO DR-M03 ..... 10M FM MOBILE 149.00
ALINCO DX-70TH ..... HF/6M 100W TRANSCEIVER 459.00
ICOM IC-575H ..... 10M/6M BASE TX 100/50W 475.00
ICOM IC-737A ..... 100W HF TRANSCEIVER 699.00
YAESU FL-7000 ..... HF LINEAR AMPLIFIER 899.00
YAESU FT-840+MD-100 ... 100W HF TX+BASE MIC 499.00
YAESU FT-990/DC ..... 100W HF TRANSCEIVER 699.00

Accessories

AMDAT ADC-60 ..... FREQUENCY STANDARD CLOCK 99.00
AOR LA-350 ..... ACTIVE LOOP ANTENNA 149.00
AOR SDU-5500 ..... SPECTRUM DISPLAY UNIT 599.00
COBRA CA79 ..... HANDHELD ECHO MICROPHONE 29.00
DEWSBURY S/TUTOR ..... SUPA TUTOR/MORSE TUTOR 25.00
GLOBAL AT-2000 ..... RX ANTENNA TUNER 69.00
HITACHI KH-YG1 ..... WORLDSPACE YAGI KIT 39.00
ICOM IC-AT160 ..... ICOM COAXIAL AUTO ATU 169.00
ICOM PS-85 ..... 20A POWER SUPPLY 129.00
ICOM SM-8 ..... BASE MICROPHONE 69.95
MFJ 934 ..... ANTENNA TUNER 115.00
MICROSET PRI45A ..... MAST HEAD AMPLIFIER 100W 79.00
MML144/40 ..... 2M 40W AMPLIFIER+PRE-AMP 59.00
PALSTAR PS-30M ..... 25/30A POWER SUPPLY 79.95
TONO Q-550 ..... DATA TERMINAL 69.00
YAESU MH-35 ..... SPEAKER/MIC 19.00
YAESU YSK-100 ..... REMOTE KIT FOR FT-100/D 39.00

KENWOOD TS-2000

All Band Base/Portable Covers 1.8-500Mhz, All Modes, Built in TNC, DSP Filtering, Auto ATU, Twin Receivers. Optional Wideband RX inc Airband AM.

~~£1695~~ **£1599** P&P £10 | 3 CHEQUES OF **£536.33**

PAY BY CHEQUESPREAD INTEREST FREE!

ICOM 756 PRO 2

"LATEST BATCH" PRODUCTION

100 Watts HF + 100Watts 6M, DSP, ATU, Multi-Colour Display Screen.

~~£2695~~ **£1949** P&P £10 | 3 CHEQUES OF **£653**

PAY BY CHEQUESPREAD INTEREST FREE!

NEW! YAESU FT-857

INCLUDES DSP CHIP!

New 1.8Mhz- 70cms Mobile/Portable. 32 colour display, Inc. DSP.

~~£849~~ **£799** P&P £10 | 3 CHEQUES OF **£269.66**

PAY BY CHEQUESPREAD INTEREST FREE!

KENWOOD TS-570 DGE

- 10 - 100Watts HF Base/Portable
- Built in Auto Tuner • DSP Filtering
- 0 - 30 Mhz Receive • Built in Keyer.

~~£999.95~~ **£849** P&P £10 | 3 CHEQUES OF **£286.33**

PAY BY CHEQUESPREAD INTEREST FREE!

ICOM IC-706 Mk IIG

1.8Mhz - 500Mhz All Modes, Use Mobile or Base, Built in DSP.

~~£1299~~ **£799** P&P £10 | 3 CHEQUES OF **£269.66**

PAY BY CHEQUESPREAD INTEREST FREE!

YAESU FT-897

New All Band Transportable Radio, Covers 1.8Mhz - 70cms ! Fitted DSP.

~~£1099~~ **£989** P&P £10 | 3 CHEQUES OF **£333.00**

PAY BY CHEQUESPREAD INTEREST FREE!

ICOM IC-7400

100 Watts HF, 100Watts 6m, 100Watts 2m, All Modes, AutoTuner, DSP Filtering.

£1449 P&P £10 | 3 CHEQUES OF **£486.33**

PAY BY CHEQUESPREAD INTEREST FREE!

NEW! ICOM IC-703

New Portable/Mobile covers 0-60 MHz, 10 Watts Output, Built in Tuner, DSP.

~~£645~~ **£579** P&P £10 | 3 CHEQUES OF **£196.33**

PAY BY CHEQUESPREAD INTEREST FREE!

YAESU FT-847

All Band Base Station, includes 4m, covers 1.8 - 500Mhz.

~~£1699~~ **£1199** P&P £10 | 3 CHEQUES OF **£403.00**

PAY BY CHEQUESPREAD INTEREST FREE!

TRIDENT® ANTENNAS

NEW!

2 Element 30Mtr Lightweight Mono Band Yagi

- 7.11dBi Free Space Gain
- 12dBi main lobe when @ 60ft
- Boom length - 2.875 Mtrs
- Weight - approx 12kg
- Turning radius - 7.6Mtrs

£299.95 P&P £15 | 3 CHEQUES OF **£103.31**

PAY BY CHEQUESPREAD INTEREST FREE!

2 Metre Yagis	GAIN	BOOM	WEIGHT	PRICE
2M5L	5 element	12.24dBi	2.50mtr	2.2Kg	£85.00
2M7L	7 element	14.19dbi	4.40mtr		£99.95
6 Metre Yagis 'DX BUSTERS'				
6ML	3 element Std	8.21dBi	1.9mtr	3Kg	£85.95
6M5L	5 element Std	10.31dBi	3.6mtr	6 Kg	£119.95
6M5LDX	5 el Long Yagi	11.75dBi	6.0mtr	8.5Kg	£165.95
6M6L	6 el Yagi	12.40	7.22mtr	n/a	£225.00
6M7LDX	7 el Long Yagi	13.31dBi	9.6mtr	11.2Kg	£249.95
4 Metre Yagis				
4M3L	3 element	8.70dBi	1.48mtr		£85.00
4M4L	4 element	11.02dBi	3.2mtr		£105.00
10 Metre Yagis				
10M2L	2 element	6.59	1.5	5.0Kg	£119.95
10M3L	3 element Std	7.41dBi	3.0mtr	6.5Kg	£129.95
10M4LDX	4 el Long Yagi	9.42dBi	5.40mtr	11Kg	£199.95
15 Metre Yagis				
15M3L	3 element Std	8.21dBi	4.40mtr	tba	£215.00
15M4L-DX	4 el.Long Yagi	10.6dBi	8.20mtr	17.5Kg	£255.00
20 Metre Yagis				
20M2L	2 element Yagi	6.37 dBi	3.00mtr	tba	£179.95
Log Periodic Yagis				
LP270	144-440 MHz	9.50dBi	1.40mtr	2.6Kg	£110.00
LP1300	105-1300 MHz	11-13dBi	1.50mtr	2.2Kg	£129.00
LP1830	18-30 MHz	7.8 dBi	3.0mtr	16Kg	£399.00
Baluns				
CB 18-52	18 - 52 MHz 50 ohm Coaxial Balun			1Kw	£12.95
W2DU	3.5 – 52 MHz 50 ohm 1:1 Balun			3 Kw	£29.95

NEW FIBREGLASS VERTICALS

HF VERTICALS

NEW! HFV2 40 Metre Vertical
5.6 mtrs long - Helical loaded 1/4 wave - 1kW **£139.95**

NEW! HFV180 Metre Vertical
5.6 mtrs long - Helical loaded - 1/4wave -1kW **£139.95**

VHF VERTICALS

V4M 4 Metre Vertical
2.35 mtrs long - 1/2 wave - 2.2dBi - 200W **£59.95**

V6M 6 Metre Vertical
3.75 mtrs long - 1/2 wave - 2.2dBi - 200W **£59.95**

TA2M258 2 Metre Vertical
3.2 mtrs long - 2 x 5/8wave - 8.5 dBi - 400W **£69.95**

PLEASE ADD £10 P&P

COMET ANTENNAS

VHF/UHF Base Antennas

GP-15N ..... Triple Band 50/144/430MHz, L:2.4m 300W PEP .. £89.95
GP-1 ..... 144/430MHz 3/6dB L:1.25m 200W £49.00
GP-3 ..... 144/430MHz 4.5/7.2dB L:1.78m Colinear 200W .. £59.95
GP-6 ..... 144/430MHz 6.5/9.0dB L:3.07m Colinear 200W .. £89.95
GP-98 ..... 144/430/1.2GHz 6.5/9.0/13.5dBi 2.94m 200W PEP £129.95

PLEASE ADD £10 P&P UK MAINLAND

Comet Filters

CF-30S ..... 32MHz low pass filter, 150W CW £19.95
CF-30MR ... 32MHz Low pass, 1kw PEP £37.50
CF-50S ..... 50MHz low pass filter, 150W CW £21.50
CF-50MR ... 50MHz low pass, 1kw PEP £37.50

PLEASE ADD £4.75 P&P UK MAINLAND

Comet Baluns

CBL-2000 .. 0.5 - 60MHz 2kW 1:1 ..... £27.50
CBL-30 ..... 1.7 - 30MHz 1kW 1:1 ..... £21.95

PLEASE ADD £4.75 P&P UK MAINLAND

Comet Duplexers

CF-416A .... 144/430MHz SO239/PL/PL £27.50
CF-416B .... 144/430MHz SO239/PL/'N' £28.50
CF-360A .... 1.3-30MHz/49-470MHz SO239/PL/PL £37.95
CF-530 ..... 1.3-90MHz/125-470MHz SO239/PL/PL £39.95

PLEASE ADD £4.75 P&P UK MAINLAND

Comet Triplexers

CFX-431A .. 144/430/1200MHz £46.00

PLEASE ADD £4.75 P&P UK MAINLAND

MFJ ANTENNA TUNERS & ACCESSORIES

MFJ-989C
1.8-30MHz 1500W Tuner+Dummy Load

MFJ-269
HF/VHF/UHF Antenna Analyser

MFJ-259B .Antenna Analyser 1.8-170MHz £249.95
MFJ-269 ...Antenna Analyser HF/VHF/UHF £369.95
MFJ-914 ...Auto Tuner extender 300W £64.95
MFJ-914E .1.8-30MHz 300W Tuner £129.95
MFJ-945E .1.8-60MHz 300W Tuner £119.95
MFJ-948 ...1.8-30MHz 300W Tuner w/Balun £139.95
MFJ-949E .1.8-30MHz 300W Tuner+D/load £159.95
MFJ-969 ...1.8-60MHz 300W Tuner £199.95
MFJ-971 ...1.8-30MHz 200W Portable Tuner £99.95
MFJ-986 ...1.8-30MHz 1500W Tuner £349.95
MFJ-989C .1.8-30MHz 1500W Tuner+D/load £379.95

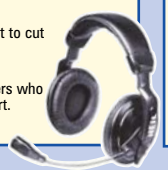
HEIL PRO SET 4

For contesters & DX'ers who want to cut through the pile ups. Hc4 insert.

HEIL PRO SET 5

A fuller range insert for rag chewers who want quality with clarity. Hc5 insert.

£129.95 *P&P £7.50*



SGC TUNERS

SGC MAC-200 Master Antenna Controller

NEW!

- Freq Range: 1.8-60MHz
- Pwr Rating: 1.5-200W
- Impedance range: 2 - 5000 Ω
- Revolving Mem bins: 168
- Outputs x 5: 3 coax, 1 wire & 1 balanced
- VSWR: Better than 2:1 • Interface: RS-232C & CI5
- Connectors: 50Ω BNC, GPS: MCX, SO-239 & wire terminals • Supply: 13.8V DC @ 230mA
- Size: 165 x 76 x 216mm • Weight: 2kg

£339.95 P&P £10 | 3 CHEQUES OF **£116.65**

PAY BY CHEQUESPREAD INTEREST FREE!

SGC SG-230

NEW LOW PRICES

Auto ATU

- 1.8-30MHz • 200W PEP

£359.95 P&P £10 | 3 CHEQUES OF **£123.31**

PAY BY CHEQUESPREAD INTEREST FREE!

	WAS	NOW
SG-239	1.8-30MHz 200W	£299	**£189.95**
SG-231	1.8-60MHz 100W	£439	**£359.95**
SG-235	1.8-30MHz 500W	£1499	**£799.95**
SG-237	1.8-60MHz 100W	£439	**£299.95**

PLEASE ADD £10.00 P&P UK MAINLAND

TIMEWAVE ANC-4

Antenna Noise Canceller & Diversity Combiner

- Cancels S-9 line noise
- Nulls strong interfering signals
- Makes two antennas into phased array
- Wipes out noise before it hits your receiver
- Works with any transceiver/receiver+LOTS MORE!

£199.95 P&P £10 | 3 CHEQUES OF **£69.98**

PAY BY CHEQUESPREAD INTEREST FREE!

DAIWA

SWR/POWER METERS

CN801H 1.8 - 200MHZ 2KW ..... **£109.95** £6 P&P
CN801V 140 - 525MHZ 200W ..... **£119.95** £6 P&P
CN801S 900 - 2500MHZ 200W ... **£139.95** £6 P&P
CN101L 1.8 - 150MHZ 1.5KW ..... **£59.95** £6 P&P
CN103LN 140 - 525MHZ 200W ..... **£65.95** £6 P&P

MINIATURE RUBBER DUCK ANTENNAS - *4.5cm LONG*

HA45 SMA 144/430/1200MHz ..... **£12.95** £2 P&P
HA45 BNC 144/430/1200MHz ..... **£12.95** £2 P&P

YAESU FT-1000MP FIELD

~~£2195~~ **£1749** P&P £10 | 3 CHEQUES OF **£586.33**

YAESU FT-817

~~£799~~ **£539** P&P £10 | 3 CHEQUES OF **£183.00**

YAESU FT-8800R

NEW!

£299 P&P £10 | 3 CHEQUES OF **£103.00**

YAESU FT-8900

£349 P&P £10 | 3 CHEQUES OF **£119.66**

YAESU VX-7R

£299 P&P £10 | 3 CHEQUES OF **£103.00**

YAESU VX-2R

£169 P&P £10 | 3 CHEQUES OF **£59.66**

KENWOOD TH-D7E

£319 P&P £10 | 3 CHEQUES OF **£109.66**

KENWOOD FH-D7E

£259 P&P £10 | 3 CHEQUES OF **£89.66**

KENWOOD D700E

£449 P&P £10 | 3 CHEQUES OF **£153.00**

RSGB HF Convention - 'up north'

Did you visit the HF Convention at the beginning of November? Yes? Then we hope this article brings back some happy memories of a really enjoyable weekend. No? Here's what you missed - don't miss out next year!

Left: Alf Wilson, 5B4AFB, who was presented with the IOTA 750 Trophy at the convention. Right: Chris Sauvageot, DL5NAM, gave a presentation on the Sudan ST0RY DXpedition on both Saturday and Sunday.

Well, we defied some of the sceptics and held a very enjoyable RSGB HF & IOTA Convention for the first time in Manchester! It was interesting to note than many of the regulars made the journey, which for some was a significant reduction on their previous journey down to Windsor. That was balanced though by many of us 'southerners' enduring huge traffic jams, as we made our way north on a busy and rainy 'end-of-half-term' Friday [and back again on Sunday afternoon / evening! - *Ed*]. I think many of us motorway 'veterans' looked more tired that those international jet-setters arriving via the nearby Manchester Airport!

One of the rewards for holding the event in a new location was to meet many new faces; people who haven't before attended the event because of its location. Sadly too, we missed some of our regulars - there seems no simple solution to satisfy everyone.

PRESENTATIONS

The presentations were amazing. It's too difficult to single out any specific talks as the programme had such variety and the talks were aimed at all levels of experience and capability. Yes, there were sessions for the die-hard DXer and contester, and talks for those who wanted to be seriously challenged technically. However, we had sessions aimed at the beginner or newcomer to HF. All were, we hope, made to feel welcome.

The long-awaited announcement of 3B9, Rodrigues Island, as the location the next Five Star DX Association's DXpedition was greeted with great interest. We also broke new ground by hosting 2.5 hours of world-class presentations on radio design delivered from Texas and California via a real-time Internet videoconference link - this has now set a precedent for the future by truly internationalising the event.

A further 'first' was set with the presentation of the Nevada Cup for the LF experimenter of the year to Laurence Howell, KL1X / GM4DMA, through another Internet link-up with him in his shack in Anchorage! We could do with a *Star Trek* transponder to get the cup over to Laurence, but he's going to have to wait for a parcel to arrive via the post instead!

SPONSORS

In putting on such a successful event we need to thank our main sponsors

Below left: Paul Bigwood, G3WYW, of Yaesu (UK) (right) hands over a cheque to Roger Balister, G3KMA RSGB IOTA Manager, continuing Yaesu's sponsorship of the RSGB IOTA Programme

Below right: A spellbound audience at one of the numerous excellent presentations during the weekend.

By John Gould, G3WKL, Pathways, 116 Wolverton Road, Newport Pagnell, Bucks MK16 8JG. E-mail: g3wkl@btinternet.com

and IOTA n 2003

Yaesu (UK) and Martin Lynch & Sons, whose support is crucial to the financing of the event. We also need to thank Yaesu (UK) for stimulating the raffle with an FT-857 all-mode 1.8 - 430MHz transceiver which was won by that well known DXer, Roger Western, G3SXW: he will have to do a special DXpedition, just to prove the new rig! The raffle raised over £1110, all of which will be used to support future HF DXpeditions. In addition we also need to thank Heil Sound, Kenwood (UK), Moonraker, Nevada, *Practical Wireless*, *SHACKLOG*, *SuperDuper*, *TurboLog*, W3UR *(The Daily & Weekly DX*), Waters and Stanton, *WinEQF*, and the RSGB and IOTA for donating prizes to the raffle.

As is usual with any event there are many people to thank who work behind the scenes, often over many months, to make it all happen. I have personally thanked members of my organising committee, the RSGB HQ staff and the support from the Stockport ARS, Warrington ARS and the Cheshire Raynet Team. We need to thank our presenters for their time, effort and skill at making their talks so interesting. But finally, this year we have special thanks to the designers of the Yaesu VL-1000 linear amplifier used at demonstration station MB2HFC, for making it sufficiently robust to survive a horrendous crash into the wall and window of the operating room when a truck outside caught the feedline to the HF beam! ◆

This page - anti-clockwise from bottom left:

The CDXC stand included a display by the Five Star DXers Association on the forthcoming Rodrigues Island DXpedition.

The special HF demonstration station MB2HFC consisted of a Yaesu FT-1000MP Mk-V 'Field' transceiver and VL-1000 linear amplifier, which continued operating even after taking a big knock when a truck became tangled in the feedline, nearly pulling the amplifier through the window!

Laurence Knott, M0LSK, on the Martin Lynch & Sons' stand. ML&S is a major sponsor of the HF Convention.

The traditional Saturday night 'DX Dinner' was complemented this year with the welcome addition of the UK Six Metre Group and guests (l to r: Costas, SV1DH; Bob, W6BYA; Peter, G3ZSS/K6ZSS; and UKSMG Chairman Trevor Day, G3ZYY, standing).

Lucky winner Roger Western, G3SXW (left), collects the raffle 'star prize', a Yaesu FT-857 transceiver, from Paul Bigwood, G3WYW, of Yaesu (UK). Photo by John Gould, G3WKL

Among the many RSGB HF contest trophies presented by 2003 President Bob Whelan, G3PJT, was this one, to the Granta Contest Group (l to r: Mark Marsden, G4AXX; Andy Summers, G4KNO; and Simon Ruffle, G4EAG) for their win in the Restricted section of the 2002 SSB Field Day.

Richard Pollard, M0RJP, of the Eagle Radio Group, is presented with the G5RP Trophy for the greatest advances by a beginner in HF DXing during the previous 12 months. Photo by Nevil Brinnen, G3VDV

RADIOWORLD

42, Brook Lane, Great Wyrley, Walsall, WS6 6BQ.
Tel: 01922 414796 Fax: 01922 417829
web: www.radioworld.co.uk
e-mail: sales@radioworld.co.uk

Yaesu FT-857

£789.00

Mobile Transceiver with DSP.
HF/2m/6m/70cms
HF/6m - 100W.
2m - 50W. 70cms - 20W

NEW!

Yaesu FT-847 **£1,149.00**

HF/6m/2m/70cms Plus 4m Satellite Transceiver

Yaesu FT-817 **£525.00**

Mobile / Portable Transceiver
HF/6m/2m/70cms
Also available now with DSP from bhi for an extra £89.95

Yaesu FT-897

£975.00

Portable Transceiver
HF/6m/2m/70cms
HF/6m - 100W. 2m - 50W.
70cms - 20W

Yaesu VX-2E

£165.00

2m/70cms, 1.5W
Worlds Smallest Handheld Transceiver with Wideband Receive

NEW!

Yaesu VX-7R

£295.00

Submersible Handheld Transceiver 6m/2m/70cms
Optional Barometer Available

Kenwood TS-2000

£1,549.00

HF/6m/2m/70cms
with built in ATU.
Optionial 23cms @ £329

Kenwood TS-870S

£1290.00

HF DSP 100W BaseTransceiver

Kenwood TS-570DGE **£794.00**

HF 100W Transceiver with built in ATU

Kenwood TH-F7E

£249.00

Dualband Handhold Transceiver with wideband receive 0-1300MHz

Icom IC-756proII

£1,899.00

HF/6m Base Transceiver with Auto ATU

Icom IC-7400

£1,299.00

FREE SM-20, SP-21.

HF/VHF 100W Transceiver.
Built in Auto ATU.

Icom IC-910H

£1090.00

HF/VHF Transceiver.
Optional 23cms Board.

Icom IC-718

£449.00

HF All ModeTransceiver.
General Coverage.

Icom IC-706mkIIG **£779.00**

HF/6m/2m/70cms mobile Transceiver

Icom IC-703 **£589.00**

HF/6m 10W QRP Mobile Transceiver, with built in Auto ATU

Icom IC-2725E **£299.00**

2m/70cms Mobile Transceiver

Icom IC-E90

£269.00

2m/6m/70cms, 5W Handheld Transceiver

Alinco DX-70TH

£599.00

HF/6m Mobile Transceiver.
100W HF & 6m.

Alinco DX-77E

£499.95

HF Transceiver.
Upto 100W Output Power.

bhi NES10-2

£99.95

Noise eliminating speaker with built in DSP Filters

bhi NEIM1031

£129.95

Noise eliminating in-line module

MFJ MFJ-969 **£199.95**

160 - 6m, 300W Roller Inductor Tuner

MFJ MFJ-949E **£159.95**

300W, 1.8 - 30MHz Deluxe Versa Tuner II

MFJ MFJ-941E **£129.95**

300W, 1.8 - 30MHz Manual Antenna Tuner

MFJ MFJ-259B

£269.95

HF Digital SWR Analyser
Also available MFJ-269 HF/UHF/VHF @ £349.95

YAESU Available from RADIOWORLD

42, Brook Lane, Great Wyrley,
Walsall, WS6 6BQ.
Tel: 01922 414796 Fax: 01922 417829
Web: www.radioworld.co.uk
E-mail: sales@radioworld.co.uk

QUADRA £3,725.00
HF & 6m Solid State
Amplifier. 1kW Output.
Built in Tuner.
Auto Bandswitch.

FT-1000MPmkV-Field
£1,739.00
100W HF Transceiver,
220V AC / 13.8 DC.
Auto ATU, Collins Filter

FT-817 £525.00
Mobile/Portable Transceiver.
HF/6m/2m/70cms.
Also available now with
DSP from bhi for an extra
£89.95 plus fitting

FT-2800M
£169.00
2m FM Mobile Transceiver.
65/25/10/5W Power Output

VR-5000
£549.00

0.1 - 2600 MHz All Mode
Receiver.
2000 Memory Channels.
with Bandscope.

£235.00
ATAS-120
Active Tuning
Antenna System
40m - 70cms.
Max input 120W.
For use with FT-857
FT-100(D), FT-897,
FT-847 etc.

FT-847 £1,149.00
HF/6m/2m/70cms plus
4m Satellite Transceiver,
100W on HF/6m
50W on 2m/70cms

FT-8900R £339.00
Quad-Band
MobileTransceiver.
10m/6m/2m/70cms.
50W on 10m/6m/2m
35W on 70cms.

FT-1500M
£159.00
2m FM Mobile Transceiver.
50/25/10/5W Power Output.

VR-500
£199.00

0.1 - 1300MHz All Mode
Handheld Receiver.
PC Compatable, with
Alpha-Numeric Tagging

FC-30 £225.00
Bolt on auto ATU for use
with FT-897, FT-857.
Covers HF & 6m.
Max Input of 100W.

FT-897 £975.00
Portable Transceiver
HF/6m/2m/70cms
100W on HF/6m
50W on 2m. 20W on 70cms

FT-8800E
£299.00
Dual Band
Mobile Transceiver.
2m/70cms. 50W on 2m.
35W on 70cms

VX-7R
£295.00

Submersible Tri-Band
Handheld Transciever.
6m/2m/70cms. 5W Output.
Also available in Black.

MD-200A8X
£225.00
Deluxe
Desktop
Microphone
Made for DSP
Transcievers.
Broadcast
Audio.

FC-20 £225.00
Automatic Antenna Tuner for
FT-100(D), FT-847.
Covers HF & 6m.
Max Input of 100W.

FT-1000MPmkV
£2,290.00
200W HF Transceiver,
220V AC PSU,
auto ATU, Collins Filter

FT-857 £789.00
Mobile Transceiver with
DSP. HF/6m/2m/70cms.
100W on HF/6m
50W on 2m. 20W on 70cms

FT-7100M
£289.00
Dual Band
Mobile Transceiver.
2m/70cms. 50W on 2m.
35W on 70cms

VX-2E
£165.00
Worlds Smallest Handheld
Transceiver. 2m/70cms.
With wide band receive.
1.5W on 2m. 1W on 70cms

MD-100A8X
£100.00
Desktop Microphone with
Up/Down/Fast Tuning
Buttons.

FP-30U
£225.00
Internal AC Power Supply
for FT-897.
13.8V DC @ 22A.
200 - 240V AC.

RADIOWORLD

SECOND HAND LIST

42 BROOK LANE, GREAT WYRLEY, WALSALL, WS6 6BQ.
TEL: 01922 414796 FAX: 01922 417829
WEB: www.radioworld.co.uk E-MAIL: sales@radioworld.co.uk

MAKE	MODEL	DESCRIPTION	PRICE
Adonis	AM-805G	Desk Mic Built In Compressor, VU Meter	£70.00
AEA	PK-232MBX	TNC	£125.00
AEA	PK-900	TNC	£200.00
AEA	PK-96	TNC	£90.00
AKD	6001	6m FM Transceiver	£135.00
Alinco	DJ-G5EY	Dual Band Handheld	£199.00
Alinco	DJ-X10	Wide Band Receiver	£200.00
Alinco	DR-150	2m Transceiver with Air-and Receive	£150.00
Alinco	DX-70	HF & 6m Transceiver	£399.00
Alinco	DX-70TH	HF & 6m Transceiver (100W Output)	£475.00
Alinco	DX-77E	HF Base Station	£399.00
Ameritron	QSK-5	Amplifier Switch / Pre Heat	£200.00
Ameritron	RCS-4X	4 Way Switch	£99.00
AOR	AR-3000A	Wide Band Receiver	£450.00
AOR	AR-3030	HF Receiver, Including PSU	£350.00
AOR	AR-7030	Top Receiver	£550.00
AOR	AR-7030+	HF Receiver	£625.00
AOR	AR-8600	Base Scanner / Receiver	£425.00
AOR	AR-8600mkII	Base Scanner / Receiver	£499.00
AOR	AR-950	Communications Receiver	£89.00
AOR	ARD-2	Decoder	£200.00
Cubic	CDR-3550	Top Class 20-1300MHz Digital Receiver	£4,999.00
Datong	ASP	Auto Speech Processor (FT-817, FT-77)	£70.00
Global	AT-1000	Manual Short Wave Tuner	£50.00
Hunter	750	Linear Amplifier	£599.00
Icom	IC-2100H	2m FM Mobile Transceiver	£150.00
Icom	IC-2710H	Dual Band Mobile	£225.00
Icom	IC-271E	2m Multimode Transceiver - 25W	£299.00
Icom	IC-32E	2m / 70cms Handheld Transceiver	£99.00
Icom	IC-471E	70cms Multimode Transceiver	£299.00
Icom	IC-490E	70cms Mobile Transceiver	£250.00
Icom	IC-575A	50 MHz Multimode Transceiver	£450.00
Icom	IC-7100	25 - 2000 RECEIVER	£575.00
Icom	IC-720A	HF & FM Transceiver	£400.00
Icom	IC-735	Base Or Mobile Transceiver	£399.00
Icom	IC-7400	HF / 6m / 2m Built In ATU	£999.00
Icom	IC-746	HF / 6m / 2m Built In ATU	£875.00
Icom	IC-756	HF / 6M All Band Transceiver	£950.00
Icom	IC-910	2m / 70cms Base Transceiver	£999.00
Icom	IC-E90	Tri-Band Handheld	£220.00
Icom	IC-R5	Handheld Scanner	£125.00
Icom	IC-R10	Handheld Scanner	£229.00
Icom	IC-R70	HF Receiver	£299.00
Icom	IC-R7000	MINT CONDITION!!! Receiver	£550.00
Icom	IC-R71E	Receiver	£325.00
Icom	IC-R72	Receiver	£350.00
Icom	IC-R75	Receiver (With DSP Unit)	£499.00
Icom	IC-W2E	2m / 70cms Handheld Transceiver	£140.00
Icom	PS-55	Power Supply Matching IC-735	£100.00
Icom	SP-20	External Speaker	£99.00
JRC	JST-245	HF 50MHz 1500w AC Base Transceiver	£1,295.00
JRC	NRD-525	HF Receiver	£375.00
JRC	NRD-545	DSP Receiver	£899.00
JRC	NRD-L2000	1kW Linear Amp Solid State	£1,600.00
Kamtronics	KAM	Multimode TNC	£140.00
Kenwood	23cms	23cms Module for Kenwood TS-790E	£299.00
Kenwood	PS-31	Power Supply (TS-870, TS-850, etc)	£135.00
Kenwood	PS-430	Power Supply	£100.00
Kenwood	R-2000	Receiver Including Converter	£275.00
Kenwood	R-5000	Receiver	£499.00
Kenwood	R-5000	Receiver With VHF Converter	£600.00
Kenwood	TH-215E	2m Handheld Transceiver	£99.00
Kenwood	TH-235	2m Handheld Transceiver	£85.00
Kenwood	TH-47E	70cms Handheld Transceiver	£80.00
Kenwood	TH-79E	2m / 70cms Handheld Transceiver	£175.00
Kenwood	TH-F7E	Dual Band Handheld	£199.00
Kenwood	TL-120	Low Drive Linear Amplifier 100W HF	£150.00
Kenwood	TM-255E	2m Multimode Transceiver (MINT)	£395.00
Kenwood	TM-451E	70cms Mobile Transceiver Data Ready	£175.00
Kenwood	TR-751E	2m Multimode Transceiver	£250.00
Kenwood	TS-450S	HF Base / Mobile	£499.00
Kenwood	TS-50S	HF Mobile / Base Variable Power	£425.00
Kenwood	TS-570DGE	Mobile / Base HF Transceiver	£675.00
Kenwood	TS-790E	Dual Band Base - All Mode	£750.00
Kenwood	TS-850SAT	HF Base Station with Built In ATU	£699.00
Kenwood	TS-950SD	HF 150W DSP Base Station	£1,200.00
Kenwood	TS-950SDX	Kenwood's Flag Ship	£1,650.00
Kenwood	YG-455CN-1	270Hz CW Crystal Filer	£100.00
Kenwood	YK-88C-1	500Hz CW Narrow Filter	£40.00
Kenwood	YK-88CN1	270Hz CW Filter 8.83MHz	£40.00
Kenwood	YK-88S-1	2.4KHz SSB Narrow Filer 8.83MHz	£40.00
Kenwood	YK-88SN	1.8K SSB Filter	£40.00
Kenwood	YK-88SN-1	1.8KHz SSB Narrow Filter 8.83MHz	£40.00
Lowe	HF-350	HF Receiver	£295.00
MFJ	MFJ-1278	TNC All Mode	£175.00
MFJ	MFJ-784DSP	DSP Tunable Filter	£140.00
OptoElectronics	MiniScout	Frequency Counter	£129.00
PacCom	TNC-320	TNC	£90.00
Pres. Lincoln	10 METRE	10 Metre Multimode	£175.00
RadioShack	Pro-60	Scanner (30MHz - 999MHz, Gaps)	£99.00
RevCo	RS-2000	60 - 519 MHz Home Base Scanner	£79.00
Sommerkamp	FT-290R	2m Multimode Transceiver	£150.00
Sony	SW-100E	FM/SW/MW/LW Portable Receiver	£90.00
Standard	C-156E	2m Handheld Transceiver	£125.00
TenTec	RX-350	HF Receiver	£999.00
Tokyo	HL-30V	2m - 25W Amplifier	£75.00
Tokyo	HL-35V	2m Power Amplifier with Pre-Amp	£89.00
Tokyo	HL-37V	Linear Amplifier	£60.00
Tono	T-777	Communications Terminal	£120.00
Transverter	QM-70	28/144 Transverter	£100.00
Trident	TRX-200	Latest Scanner	£175.00
Trio	TR-9000	2m Multimode	£199.00
Trio	TR-9130	2m All Mode Transceiver	£250.00
Uniden	UBC-860XLT	Base Scanner / Receiver	£99.00
Uniden	UBC-9000XLT	Base Scanner	£199.00
WinRadio	WR-1550E	Trunking Software	£450.00
Yaesu	FP-700	Power Supply	£100.00
Yaesu	FP-707	Power Supply Unit	£80.00
Yaesu	FP-757GX	Power Unit for FT-757	£300.00
Yaesu	FR-101	HF, 2m, 6m Base Transceiver	£399.00
Yaesu	FRG-8800	Receiver Including Converter	£399.00
Yaesu	FRT-7700	Antenna Tuner for FRG-7700	£60.00
Yaesu	FRV-7700	Converter for FRG-7700	£60.00
Yaesu	FT-100	HF/6m/2m/70cms Mobile Transceiver	£499.00
Yaesu	FT-1000MP	HF Base Station, Built In ATU, DSP	£1,199.00
Yaesu	FT-1000mkV	200W DSP HF Transceiver	£1,800.00
Yaesu	FT-1000mkV-Field	Top HF Radio - AC	£1,500.00
Yaesu	FT-1500M	2m 50W Mobile w/ DTMF Mic	£129.00
Yaesu	FT-221R	2m Multimode Base Station	£200.00
Yaesu	FT-2600M	Mobile VHF / FM Transceiver	£120.00
Yaesu	FT-290RmkII	2m Multimode Mobile Transceiver	£225.00
Yaesu	FT-41R	Handheld Transceiver	£120.00
Yaesu	FT-50R	Dual Band Handheld	£150.00
Yaesu	FT-51R	2m / 70cms Handheld Transceiver	£199.00
Yaesu	FT-690R	6m Multimode Mobile Transceiver	£199.00
Yaesu	FT-7100M	2m / 70cms Mobile Transceiver	£220.00
Yaesu	FT-726R	6m / 2m / 70cms / HF Transceiver	£575.00
Yaesu	FT-790R	70cms Multimode Transceiver	£175.00
Yaesu	FT-790RmkII	70cms Multimode Transceiver	£250.00
Yaesu	FT-8100R	2m / 70cms Mobile Transceiver	£220.00
Yaesu	FT-817	Mobile HF, VHF, UHF Transceiver	£450.00
Yaesu	FT-840	HF Base / Mobile Transceiver	£399.00
Yaesu	FT-920AF	HF / 6M Base Transceiver	£899.00
Yaesu	FTV-1000	200 W Transverter	£475.00
Yaesu	FTV-430MHZ	Module for Transverter	£99.00
Yaesu	FTV-901R	Transverter including 2m Module	£165.00
Yaesu	SP-980	Speaker	£60.00
Yaesu	System 600	HF Commercial Radio	£600.00
Yaesu	VR-120	FM / WFM / AM Receiver	£99.00
Yaesu	VR-500	Yaesu Handheld Scanner	£149.00
Yaesu	VR-5000	Top Class Base Scanner	£450.00
Yaesu	VX-1R	Handheld Transceiver	£120.00
Yaesu	VX-5R	Triband Handheld	£220.00
Yaesu	VX-7R	Triband Handheld	£240.00
Yaesu	XF-114SN	2KHz SSB Filter	£60.00
Yupiteru	MVT-3300	Handheld Scanner	£99.00

By Steve Hartley, G0FUW, 5 Sydenham Buildings, Lower Bristol Road, Bath BA2 3BS. E-mail: newcomers.radcom@rsgb.org.uk

Steve Hartley bids a fond farewell to the City & Guilds Radio Amateurs Examination - and welcomes in the new RSGB three-tier system of licensing.

Newcomers' news

With the festive season upon us, 'Goodwill to all licensees' would seem to be a suitable greeting. Let's all hope for harmony, rather than harmonics, as we move into the first full year of our three-tier system.

END OF AN ERA

The December Radio Amateurs Examination (RAE) was the last to be run by the City & Guilds of London Institute and it would be wrong to let it pass without some recognition. The first City & Guilds RAE was in May 1946 when there were 182 candidates and they have provided a total of 104 RAEs, not to mention the Novice RAE (NRAE).

David Pratt, the Chief Examiner in recent years, the examination committee, who assemble the papers, and all those involved behind the scenes are to be congratulated for all their hard work over the years.

LOCATOR IDEAS

The first suggestion on how to work out your IARU locator without using a computer came from Ian Brothwell, G4EAN. Ian reminded me that there is a latitude / longitude to locator conversion table in the *RSGB Yearbook* [page 151 in the 2004 *Yearbook - Ed*] and suggests that a GPS receiver could be used to obtain your latitude and longitude. He also says that he finds 'Philips OS' street atlases easier to read than Ordnance Survey 1:50000 sheet maps.

Roy Walker, G0TAK / 2E1RAF, also advocates the use of GPS. He says that the easiest way to find out your Maidenhead locator, latitude and longitude, National Grid Reference, Worked All Britain square and the accurate time in UTC, anywhere in the UK, is to use a GPS receiver. He goes on to point out that even the simplest models have all these features and concludes by saying that "It entails no complicated calculations and is the ideal tool for the /M, /P operator, especially those new to the hobby - but you still have to take a friend along to make the tea!"

David Reynolds, G3ZPF, points us back to the Internet and recommends the *DX Atlas* software (see 'Websearch' below). He enjoyed the free demonstration so much he paid the £30 to register it. Thanks for the tip David.

OLDEST NOVICE SK?

It is always a sad time when an amateur becomes a 'silent key' (SK - denoting that they have passed away) but it is also a time to celebrate their achievements. I was recently made aware of the passing of Ernest (Les) Breeze, 2E0ART, who we believe was the oldest Intermediate Licence holder at 97. Les only became interested in amateur radio about seven or eight years ago and, despite being blind, he passed the old NRAE and the 12 words per minute Morse test. Les fully enjoyed his time on the radio and was studying for the Full RAE the day before his sudden death in October.

He will be sadly missed but his achievements, long into retirement, should give further encouragement to those coming into the hobby and thinking they may never progress.

SUCCESSES FOR THE PHOENIX CLUB

Training at the Phoenix Radio Club in Kent saw a successful Foundation Course in September, followed by further successes in the October Intermediate examination.

The Foundation Course brought four new licensees to the hobby (see photo) and the Intermediate exam brought 2E0 callsigns to Peter Swan, M3CYG; Dave Hannington, M3DJL; Dudley Cox, M3DSC; Ian Lippett, M3ICI; Mike Couchman, M3SAC; Bill Richardson, M3WAR; Rebecca Reay, M3JSA; and Richard Mason - who only passed his Foundation Licence Exam in September.

These new 2Es, plus a group from a previous Intermediate Course run by the club's Lead Instructor, Brian Reay, G8OSN, are already studying in readiness for the new pilot RAE examination, hopefully in February 2004.

Further details of the Phoenix Radio Club's courses can be found on the Club's website (see 'Websearch' below).

MORE FOUNDATIONS IN BATH

At the risk of being accused of blowing one's own trumpet, I would like to pass on congratulations to the latest batch of Foundation Licence holders from our classes in Bath. The class included Hazel and Fiona White, who are still at school, Andrew Ewence, a long-standing paid-up RSGB 'receiving station', and Roger Haywood, who has been an active CB user for many years. The other four, Tony Thompson, Patricia Ball, Peter Millard and Bryan Banfield have joined Tony Way, M3TSX, in our Intermediate classes aiming for the January exam.

Pamela Lippett, her son James, Petros Kurios, and Richard Mason after their Foundation Licence course (see 'Successes for the Phoenix Club').

Thanks go to Mike Coombs, G3VTO, my co-tutor and Robin Room, M0RCR; Ray Anderson, M5RAR; Dennis Carter, M1NED; Ian Carter, G0GRI; and Brian Davis, 2E0BGD, who all assisted with practical assessments and the written exam. The RSGB Bristol Group should also take a bow for their continued sponsorship, which helps to minimise the costs of our courses.

'TT' FOR NEWCOMERS?

Arthur Scothern, 2E1HVB, has had an idea and wanted to share it. Arthur says: "It is good to have newcomers page, but what about having an M3 'Technical Topics'? As we all know, Pat Hawker is a legend. But I feel that M3s and 2Es need a 'TT' page of their own to help them along with very basic things. Many new people to the hobby do not have a technical background (I am a printer) and this would help them and maybe increase the membership among M3s with something in the magazine for them."

I think Arthur has a point but there is always pressure on space in *RadCom* and I think a monthly page might not go down well with the editor. However, there have been occasional 'An Introduction to . . .' articles in the past and I think a quarterly page might be a good start. If this was to go ahead, what subjects do you think should be covered first? Let me have your suggestions and I will pass them on. [As well as 'Newcomers' News', the 'Down to Earth' section always includes features that should be of particular interest to beginners. Sometimes these will be technical features such as 'An Introduction to . . .' articles. I am always interested in receiving articles suitable for beginners for possible publication in *RadCom - Ed.*] ◆

WEBSEARCH

Phoenix Radio Club:	www.amateurradiotraining.org.uk
DX Atlas:	www.dxatlas.com

The developm

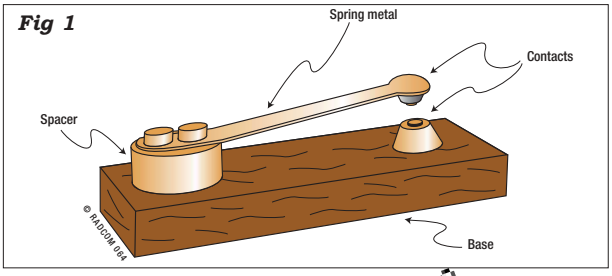
Although a test in Morse proficiency is no longer required for an HF bands licence, Morse code will continue to be widely used by amateurs for the foreseeable future. Now is therefore perhaps an appropriate time to take a look back over the 140-year history of the Morse key, invented several decades before radio itself.

Since it was first introduced in the mid-nineteenth century, the Morse key has undergone considerable development and a vast number of different designs has been produced. Whilst some may say that a Morse key is simply a switch, this is most certainly not the case. The Morse key has been the subject of over 300 patents in the USA alone, and keys have undergone a considerable amount of development. The way in which keys have developed since the very first ones used by Morse himself is a fascinating story. Some styles of key are quite familiar, whilst others have quite unusual attributes and as a result many people find collecting them a fascinating pastime.

THE ORIGINS OF THE 'KEY'

The first Morse keys arrived at the very beginning of the Morse telegraph system in 1844. A few weeks before the demonstration of the first line between Washington and Baltimore in the USA, Vail used a system of opening and closing the circuit using a simple switch. Vail described the operation of the device saying that it worked "in much the same manner as a key closes a door". His first key consisted of a simple device that had two contacts and needed to be pushed together to make a contact and close the circuit. This first key which he called a 'Correspondent' was made using 'springy' brass and was mounted on a wooden base (**Fig 1**). It was used for the first demonstration of the Morse telegraph system on 24 May 1844 when the message "What hath God wrought" was sent. However, within six months Vail had developed a new type of key that he called a 'Lever Correspondent'. This used a lever and a fulcrum, the same format that is used for manual keys today.

Fig 1: The design of the original 'Correspondent' key.



In the years after the first demonstration the Morse telegraph system experienced a phenomenal growth in its use. As a result many keys were needed. The first ones were very crude, but it was quickly discovered that keys needed to be easy and comfortable to use as operators had long working hours. New keys were designed and produced that made operation much easier. One of the first was known as the 'Camelback'. Its name resulted from the very characteristic shape of the lever. It was designed this way so that the centre of gravity of the lever held the key in the open position and as a result a spring to hold the key open was not considered necessary. However, two years later springs *were* added and later, in 1860, George Phelps, the chief engineer with Western Union made further improvements that made the keys much lighter and easier to use. These Camelback keys were produced from around 1848 to 1865, mainly in USA, although a few very nice Camelback keys were made in Germany.

Although the very first Morse systems used devices called registers that physically marked the message in Morse code on to paper, sounders were introduced shortly afterwards. As sounders were developed and became smaller, the idea of putting a key and sounder together on a small base started to find favour. These could be moved around the telegraph office or when telegraphers moved from one job to another. It was the custom for a telegrapher to have his own key, one that he liked to use and was familiar with. These combined units were called 'Key on Base' or 'KOB' sets, and the first of these started to be seen in the late 1840s. They were generally quite small and could be carried quite easily by the telegrapher on his travels.

THE TRIUMPH & THE SIDESWIPER

Keys continued to be used in ever-increasing numbers and their development progressed. The next major step forward occurred in 1881 when James Bunnell introduced his 'Triumph Key'. The basic design involved a steel lever with an integral fulcrum or trunnion. A hollow oval frame made the key very light and easy to use. These keys provided a number of advantages. Early keys suffered from the fact that the lever would come loose from the press fit trunnion. As a result of the improvements this style of key was produced in very large quantities by a number of companies including Western Electric, Signal Electric and of course the Bunnell company itself.

Morse code was widely used for early wireless transmissions as it was an easy way of producing a signal, especially when spark transmissions were used. The transmitters generally used a relatively low voltage in the primary circuit of a transformer that stepped up the voltage to a much higher level that could be sued to generate the spark. As the keyed low voltage circuit carried a high level of current, the small contacts for keys used for landlines could not cope and much larger contacts were required. Accordingly keys with large contacts were developed. These contacts were often made of silver to improve the conductivity, but as they often became pitted they could usually be unscrewed for easy replacement or refurbishment. A few keys even had cooling fins attached to the contacts. Eventually as transmitters were developed, low current keying could be used and the need for keys with much larger contacts disappeared.

During the late 1880s when operators were working very long hours it was found they suffered from wrist pain. This was known as telegraph-

the

WEB SEARCH

Ian Poole, G3YWX, radio and electronics:	www.radio-electronics.com
Ian Poole business website:	www.adrio-communications.com

By Ian Poole, G3YWX, 5 Meadway, Staines, Middx TW18 2PW.

ent of...

Morse key

er's cramp, or paralysis, and arose from the large number of movements that needed to be made. To help overcome this, Bunnell introduced a new form of key in 1888 known as the 'Sideswiper'. Instead of using an up-and-down action the Sideswiper used a side-to-side action with contact being made when the key was moved to either side. The rest, or 'off', position was in the centre. The Sideswiper was a great improvement for telegraphers. The incidence of telegrapher's cramp reduced significantly.

THE TWENTIETH CENTURY

The next step in the development of keys was the semi-automatic or 'bug' key. The first major step in the automation of Morse generation appeared in 1902 when Charles Yetman received his patent for what he called a 'telegraphic transmitter'. This consisted of a typewriter keyboard that converted the key depressions into Morse characters. The idea did not catch on because the unit was large and expensive.

A year later Horace Martin introduced a machine called an 'Autoplex'. This was battery powered and had a vibrating arm to generate the dots. Production of these items was very slow and only continued until 1905. However, in 1904 Martin introduced a mechanical bug he called a 'Vibroplex'. It used a vibrating arm to generate the dots. Martin filed the patent for his idea on 7 May 1904, but he was not the only person working along these lines. A man named William Coffe had filed a patent on 11 January 1904. This was very general in its wording, encompassing many aspects of keyers, and as a result its acceptance was delayed and was only granted after that of Martin's. As a result many legal battles were fought, although during this time both the Vibroplex and Coffe's Mecograph were manufactured and sold. The problem was finally resolved when Martin's company bought the patents for the Mecograph. The Vibroplex was very successful, being manufactured in large quantities, and it can still be bought today.

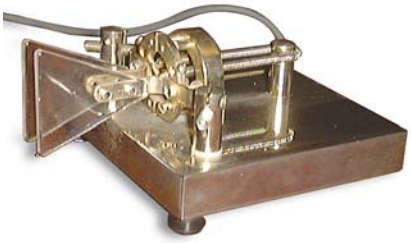
With the advancement of electronics, fully-automatic keyers that generated dots and dashes were eventually produced. Some of the earliest designs are from the 1940s and one appeared in the April 1940 edition of *QST*, the magazine of the American Radio Relay League. Then, in the 1960s, transistorised versions were manufactured.

Now, with the introduction of integrated circuit technology, keys that can store strings of code can be made easily and cheaply. Another improvement was the iambic or squeeze keyer. Although requiring a little more practice to master than a traditional keyer, it enabled the paddles for the dots and dashes to be squeezed together to provide a string of alternating dots and dashes. This made producing letters such as 'C' much easier, thereby reducing operator strain. The high levels of integration meant that keyer ICs became available. The fact that many transceivers used microprocessors at their heart also meant that the electronics for a keyer could be built in to a transceiver very cheaply. Accordingly many, if not most, modern transceivers only require the mechanical paddle to be connected to allow a fully-operational iambic keyer to be used.

The more widespread use of computers and computer technology meant that this technology could be used to generate and also to decode Morse signals. Whilst it is quite easy to generate Morse signals from a keyboard input on a computer, decoding incoming Morse signals is not as easy, as the human brain is far more adept at deciphering the incoming signal amongst heavy interference. However, such Morse decoder units still have their place.

Editor's note:

This feature is adapted from an article that can be found on Ian Poole's radio and electronics website (see 'Websearch' opposite). ◆



Top to bottom:

A 'Camelback' key. This 'KOB' ('Key on Base') has no adjustment on the spring and therefore dates from before 1860. Note the 'hump' on its back that gives it the name. Also note the sounder on the same base as the key.

A steel lever key. This one was manufactured around 1920 but it follows the basic design introduced by James Bunnell in 1881.

A British Post Office key. European keys often tended to be heavier than their US counterparts. This key dates from around 1900 and was manufactured by Walters Electrical.

A 'Sideswiper': note the different type of construction with the paddle.

A modern version of the original Vibroplex.

A typical paddle for use with a modern transceiver.

MOONRAKER

www.amateurantennas.com

TEL: (01908) 281705. FAX: (01908) 281706

LOG PERIODIC

MLP32 TX & RX 100-1300MHz one feed, S.W.R. 2:1 and below over whole frequency range professional quality (length 1420mm) **£99.95**

MLP62 same spec as MLP32 but with increased freq. range 50-1300 Length 2000mm **£169.95**

MOBILE HF WHIPS (with 3/8 base fitting)

AMPRO 6 mt **£16.95**
(Length 4.6' approx)

AMPRO 10 mt **£16.95**
(Length 7' approx)

AMPRO 12 mt **£16.95**
(Length 7' approx)

AMPRO 15 mt **£16.95**
(Length 7' approx)

AMPRO 17 mt **£16.95**
(Length 7' approx)

AMPRO 20 mt **£16.95**
(Length 7' approx)

AMPRO 30 mt **£16.95**
(Length 7' approx)

AMPRO 40 mt **£16.95**
(Length 7' approx)

AMPRO 80 mt **£19.95**
(Length 7' approx)

AMPRO 160 mt **£49.95**
(Length 7' approx)

AMPRO MB5 Multi band 10/15/20/40/80 can use 4 Bands at one time *(Length 100")* **£69.95**

VHF/UHF MOBILE ANTENNAS

MICRO MAG Dual band 2/70 antenna complete with 1" magnetic mount 5mtrs of mini coax terminated in BNC **£14.95**

MR700 2m/70cms, 1/4 wave & 5/8, Gain 2m 0dB/3.0dB 70cms Length 20" 3⁄8 Fitting **£7.95**
SO239 Fitting **£9.95**

MR 777 2 Metre 70 cms 2.8 & 4.8 dBd Gain (5⁄8 & 2x5⁄8 wave) (Length 60") (3⁄8 fitting) **£16.95**
(SO239 fitting) **£18.95**

MRQ525 2m/70cms, 1/4 wave & 5/8, Gain 2m 0.5dB/3.2dB 70cms Length 17" SO239 fitting commercial quality **£19.95**

MRQ500 2m/70cms, 1/2 wave & 2x5/8, Gain 2m 3.2dB/5.8db 70cms Length 38" SO239 fitting commercial quality **£24.95**

MRQ750 2m/70cms, 6/8 wave & 3x5/8, Gain 2m 5.5dB/8.0dB 70cms Length 60" SO239 fitting commercial quality **£39.95**

MRQ800 6/2/70cms 1/4 6/8 & 3 x 5/8, Gain 6m3.0dBi/2m 5.0dB/70 7.5dB Length 60" SO239 fitting commercial quality **£39.95**

GF151 Professional glass mount dual band antenna. Freq: 2/70 Gain: 2.9/4.3dB. Length: 31" ..... New low price **£29.95**

SINGLE BAND MOBILE ANTENNAS

MR 214 2 metre straight stainless 1/4 wave 3⁄8 fitting **£4.95**
SO239 type **£5.95**

MR 258 2 Metre 5⁄8 wave 3.2 dBd Gain (3⁄8 fitting) (Length 58") **£12.95**

MR 268S 2 Metre 5⁄8 wave 3.5dBd gain Length 51" S0239 fitting **£19.95**

MR 290 2 Metre (2 x 5/8 Gain: 7.0dBd) (Length: 100"). SO239 fitting, "the best it gets" **£39.95**

MR 625 6 Metre base loaded (1/4 wave) (Length: 50") commercial quality **£19.95**

MR 614 6 Metre loaded 1/4 wave (Length 56") (3⁄8 fitting) **£13.95**

MR 644 6 Metre loaded 1/4 wave (Length 40") (3⁄8 fitting) **£12.95**
(SO239 fitting) **£15.95**

SINGLE BAND END FED BASE ANTENNAS

70 cms 1⁄2 wave (Length 26") (Gain: 2.5dB) (Radial free) **£24.95**

2 metre 1⁄2 wave (Length 52") (Gain 2.5dB) (Radial free) **£24.95**

4 metre 1⁄2 wave (Length 80") (Gain 2.5dB) (Radial free) **£39.95**

6 metre 1⁄2 wave (Length 120") (Gain 2.5dB) (Radial free) **£44.95**

6 metre 5⁄8 wave (Length 150") (Gain 4.5dB) (3 x 28" radials) **£49.95**

VHF/UHF VERTICAL CO-LINEAR FIBREGLASS BASE ANTENNA

SQ & BM Range VX 6 Co-linear:- Specially Designed Tubular Vertical Coils individually tuned to within 0.05pf (maximum power 100 watts)

BM100 Dual-Bander **£29.95**
(2 mts 3dBd) (70cms 6dBd) (Length 39")

SQBM100 Dual-Bander **£39.95**
(2 mts 3dBd) (70cms 6dBd) (Length 39")

BM200 Dual-Bander **£39.95**
(2 mts 4.5dBd) (70cms 7.5dBd) (Length 62")

SQBM200 Dual-Bander **£49.95**
(2 mts 4.5dBd) (70cms 7.5dBd) (Length 62")

SQBM500 Dual - Bander Super Gainer **£59.95**
(2 mts 6.8dBd) (70cms 9.2dBd) (Length100")

BM1000 Tri-Bander **£59.95**
(2 mts 6.2dBd) (6 mts 3.0dBd) (70cms 8.4dBd) (Length 100")

SQBM1000 Tri-Bander **£69.95**
(2 mts 6.2dBd) (6 mts 3.0dBd) (70cms 8.4dBd) (Length 100")

SQBM 100/200/500/800/1000 ***are Polycoated Fibre Glass with Chrome & Stainless Steel Fittings.***

SINGLE BAND VERTICAL CO-LINEAR BASE ANTENNA

BM33 70 cm 2 X 5⁄8 wave Length 39" 7.0 dBd Gain **£34.95**

BM45 70cm 3 X 5⁄8 wave Length 62" 8.5 dBd Gain **£49.95**

BM55 70cm 4 X 5⁄8 wave Length 100" 10 dBd Gain **£69.95**

BM60 2mtr5⁄8 Wave, Length 62", 5.5dBd Gain **£49.95**

BM65 2mtr 2 X 5⁄8 Wave, Length 100", 8.0 dBd Gain **£69.95**

MINI HF DIPOLES (length 11' approx)

MD020 20mt version approx only 11ft **£39.95**

MD040 40mt version approx only 11ft **£44.95**

MDO80 80mt version approx only 11ft **£49.95**
(aluminium construction)

ROTATIVE HF DIPOLE

RDP-3B 10/15/20mtrs length 7.40m **£99.95**

RDP-40M 40mtrs length 11.20m **£139.95**

RDP-6B 10/12/15/17/20/30mtrs boom length 1.00m. Length 10.0m **£199.95**

HF DELTA LOOPS

DLHF-100 10/15/20mtrs (12/17-30m) Boom length 4.2m. Max height 6.8m. Weight 35kg. Gain 10dB **£399.95**

HAND-HELD ANTENNAS

MRW-310 Rubber DuckTX 2 Metre & 70 cms Super Gainer RX 25- 1800 Length 40cm BNC fitting **£14.95**

MRW-232 Mini Miracle TX 2 Metre 70 & 23 cms RX 25-1800 Mhz Length just 4.5cm BNC fitting **£19.95**

MRW-250 Telescopic TX 2 Metre & 70 cms RX 25-1800 Mhz Length 14-41cm BNC fitting **£16.95**

MRW-200 Flexi TX 2 Metre & 70cms RX 25-1800 Mhz Length 21cm SMA fitting **£19.95**

MRW-210 Flexi TX 2 Metre & 70cms Super Gainer RX 25-1800 Mhz Length 37cm SMA fitting **£22.95**

All of the above are suitable to any transceiver or scanner. Please add £2.00 p+p for hand-held antennas.

HB9CV 2 ELEMENT BEAM 3.5 dBd

70cms	(Boom 12")	**£19.95**
2 metre	(Boom 20")	**£24.95**
4 metre	(Boom 23")	**£29.95**
6 metre	(Boom 33")	**£34.95**
10 metre	(Boom 52")	**£64.95**
6/2/70 Triband	(Boom 45")	**£64.95**

HALO LOOPS

2 metre (size 12" approx) **£14.95**

4 metre (size 20" approx) **£19.95**

6 metre (size 30" approx) **£26.95**

These very popular antennas square folded di-pole type antennas

CROSSED YAGI BEAMS All fittings Stainless Steel

2 metre 5 Element
(Boom 64") (Gain 7.5dBd) **£74.95**

2 metre 8 Element
(Boom 126") (Gain 11.5dBd) **£94.95**

70 cms 13 Element
(Boom 83") (Gain 12.5dBd) **£74.95**

YAGI BEAMS All fittings Stainless Steel

2 metre 4 Element
(Boom 48") (Gain 7dBd) **£24.95**

2 metre 5 Element
(Boom 63") (Gain 10dBd) **£44.95**

2 metre 8 Element
(Boom 125") (Gain 12dBd) **£59.95**

2 metre 11 Element
(Boom 185") (Gain 13dBd) **£89.95**

4 metre 3 Element
(Boom 45") (Gain 8dBd) **£49.95**

4 metre 5 Element
(Boom 128") (Gain 10dBd) **£59.95**

6 metre 3 Element
(Boom 72") (Gain 7.5dBd) **£54.95**

6 metre 5 Element
(Boom 142") (Gain 9.5dBd) **£74.95**

70 cms 13 Element
(Boom 76") (Gain 12.5dBd) **£49.95**

ZL SPECIAL YAGI BEAMS
ALL FITTINGS STAINLESS STEEL

2 metre 5 Element (Boom 38") (Gain 9.5dBd) **£39.95**

2 metre 7 Element (Boom 60") (Gain 12dBd) **£49.95**

2 metre 12 Element (Boom 126") (Gain 14dBd) **£74.95**

70 cms 7 Element (Boom 28") (Gain 11.5dBd) **£34.95**

70 cms 12 Element (Boom 48") (Gain 14dBd) **£49.95**

The biggest advantage with a ZL-special is that you get massive gain for such a small boom length, making it our most popular beam antenna

MULTI PURPOSE ANTENNAS

MSS-1 Freq RX 25-2000 Mhz, TX 2 mtr 2.5 dBd Gain, TX 70cms 4.0 dBd Gain, Length 39" **£39.95**

MSS-2 Freq RX 25-2000 Mhz, TX 2 mtr 4.0 dBd Gain, TX 70cms 6.0 dBd Gain, Length 62" **£49.95**

IVX-2000 Freq RX 25-2000 Mhz, TX 6 mtr 2.0 dBd Gain, 2 mtr 4dBd Gain, 70cms 6dBd Gain, Length 100" **£89.95**

Above antennas are suitable for transceivers only

G5RV Wire Antenna (10-40/80 metre)
All fittings Stainless Steel

	FULL	HALF
Standard	**£22.95**	**£19.95**
Hard Drawn	**£24.95**	**£22.95**
Flex Weave	**£32.95**	**£27.95**
PVC Coated Flex Weave	**£37.95**	**£32.95**
Deluxe 450 ohm PVC Flexweave	**£49.95**	**£44.95**

TS1 Stainless Steel Tension Springs (pair) for G5RV **£19.95**

G5RV INDUCTORS

Convert your half size g5rv into a full size with just 8ft either side. Ideal for the small garden **£19.95**

REINFORCED HARDENED FIBRE GLASS MASTS (GRP)

1½" Diameter 2 metres long **£19.95**

1¾" Diameter 2 metres long **£24.95**

2" Diameter 2 metres long **£29.95**

GUY ROPE 30 METRES

MGR-3 3mm (maximum load 250 kgs) **£6.95**

MGR-4 4mm (maximum load 380 kgs) **£14.95**

MGR-6 6mm (maximum load 620 kgs) **£29.95**

Shop 24hrs a day on-line at www.amateurantennas.com

UNIT 12, CRANFIELD ROAD UNITS, CRANFIELD ROAD WOBURN SANDS, BUCKS MK17 8UR. sales@moonrakerukltd.com

Callers welcome.
Opening times:
Mon-Fri 9-6pm

SALES 01908 281705

Postage & packing UK mainland just £6.00 max per order E&OE

MOUNTING HARDWARE ALL GALVANISED

6" Stand Off Bracket *(complete with U Bolts)* **£6.00**
9" Stand off bracket *(complete with U Bolts)* **£9.00**
12" Stand off bracket *(complete with U Bolts)* **£12.00**
12" T & K Bracket *(complete with U Bolts)* **£11.95**
18" T & K Bracket *(complete with U Bolts)* **£17.95**
24" T & K Bracket *(complete with U Bolts)* **£19.95**
36" T & K Bracket *(complete with U Bolts)* **£29.95**
Chimney lashing kit **£12.95**
Double chimney lashing kit **£24.95**
3-Way Pole Spider for Guy Rope/ wire **£3.95**
4-Way Pole Spider for Guy Rope/wire 1" Mast Sleeve/Joiner **£6.95**
1.25" Mast Sleeve/Joiner **£7.95**
1.5" Mast Sleeve/Joiner **£8.95**
2" Mast Sleeve/Joiner **£9.95**
Earth rod including clamp (copper plated) **£9.95**
Earth rod including clamp (solid copper) **£14.95**
Pole to pole clamp 2"-2" **£4.95**
Di-pole centre (for wire) **£4.95**
Di-pole centre (for aluminium rod) **£4.95**
Dog bone insulator **£1.00**
Dog bone insulator heavy duty **£2.00**

5ft POLES H/DUTY (SWAGED)

Heavy Duty Aluminium (1.2mm wall)
1¼" single 5' ali pole **£7.00**
1¼" set of four (20' total approx) **£24.95**
1½" single 5' ali pole **£10.00**
1½" set of four (20' total approx) **£34.95**
1¾" single 5' ali pole **£12.00**
1¾" set of four (20' total approx) **£39.95**
2" single 5' ali pole **£15.00**
2" set of four (20' total approx) **£49.95**
(All swaged poles have a push fit to give a very strong mast set)

CABLE & COAX CABLE

RG58 best quality standard per mt **35p**
RG58 best quality military spec per mt **60p**
RGMini 8 best quality military spec per mt **70p**
RG213 best quality military spec per mt **85p**
H100 best quality military coax cable per mt **£1.10**
3-core rotator cable per mt **45p**
7-core rotator cable per mt **£1.00**
10 amp red/black cable 10 amp per mt **40p**
20 amp red/black cable 20 amp per mt **75p**
30 amp red/black cable 30 amp per mt **£1.25**
Please phone for special 100 metre discounted price

CONNECTORS & ADAPTERS

PL259/9 plug (Large entry) **£0.75**
PL259 Reducer (For PL259/6 to conv to P1259/6) **£0.25**
PL259/6 plug (Small entry) **£0.75**
PL259/7 plug (For mini 8 cable) **£1.00**
BNC Screw type plug (Small entry) **£1.00**
BNC Solder type plug (Small entry) **£1.00**
BNC Solder type plug (Large entry) **£2.50**
N-Type plug (Small entry) **£2.50**
N-Type plug (Large entry) **£2.50**
SO239 Chassis socket (Round) **£1.00**
SO239 Chassis socket (Square) **£1.00**
N-Type Chassis scoket (Round) **£2.50**
N-Type Chassis scoket (Square) **£2.50**
SO239 Double female adapter **£1.00**
PL259 Double male adapter **£1.00**
N-Type Double female **£2.50**
SO239 to BNC adapter **£1.50**
SO239 to N-Type adapter **£3.00**
SO239 to PL259 adapter (Right angle) **£2.50**
SO239 T-Piece adapter (2xPL 1XSO) **£3.00**
N-Type to PL259 adapter (Female to male) **£2.50**
BNC to PL259 adapter (Female to male) **£2.00**
BNC to N-Type adapter (Female to male) **£2.50**
BNC to N-Type adapter (Male to female) **£2.50**
SMA to BNC adapter (Male to female) **£3.95**
SMA to SO239 adapter (Male to SO239) **£3.95**
SO239 to 3/8 adapter (For antennas) **£3.95**
3/8 Whip stud (For 2.5mm whips) **£2.95**
Please add just £2.00 P&P for connector only orders

10/11 METRE ANTENNAS

G.A.P.12 1/2 wave alumimum (length 18' approx) **£24.95**
G.A.P.58 5/8 wave aluminium (length 21' approx) **£29.95**
S27-3 3-element yagi. Freq: 27-28MHz. Length: 2.5mtrs. Gain: 8.5dB **£59.95**
S27-4 4-element yagi. Freq: 27-28MHz. Length: 3.8mtrs. Gain: 10.5dB **£69.95**

BALUNS

MB-1 1:1 Balun 400 watts power **£24.95**
MB-4 4:1 Balun 400 watts power **£24.95**
MB-6 6:1 Balun 400 watts power **£24.95**
MB-1X 1:1 Balun 1000 watts power **£29.95**
MB-4X 4:1 Balun 1000 watts power **£29.95**
MB-6X 6:1 Balun 1000 watts power **£29.95**
MB-Y2 Yagi Balun 1.5 to 50MHz 1kW **£24.95**

TRI/DUPLEXER & ANTENNA SWITCHES

MD-24 HF or VHF/UHF internal duplexer (1.3-225MHz) (350-540MHz) SO239/PL259 fittings **£22.95**
MD-24N same spec as MD-24 but "N-type" fittings **£24.95**
MX2000 HF/VHF/UHF internal Tri-plexer (1.6-60MHz) (110-170MHz) (300-950MHz) **£59.95**
CS201 Two-way di-cast antenna switch. Freq: 0-1000MHz max 2,500 watts SO239 fittings **£18.95**
CS201-N Same spec as CS201 but with N-type fittings **£28.95**
CS401 Same spec as CS201 but4-way **£49.95**

ANTENNA ROTATORS

AR-31050 Very light duty TV/UHF **£24.95**
AR-300XL Light duty UHF\VHF **£49.95**
YS-130 Medium duty VHF **£79.95**
RC5-1 Heavy duty HF **£349.95**
RG5-3 Heavy Duty HF inc Pre Set Control Box **£449.95**
AR26 Alignment Bearing for the AR300XL **£18.95**
RC26 Alignment Bearing for RC5-1/3 ..... **£49.95**

MOBILE MOUNTS

Turbo mag mount 7" 4mtrs coax/PL259 3/8 or SO239 ..... **£14.95**
Tri-mag mount 3 x 5" 4mtrs coax/PL259 3/8 or SO239 ..... **£39.95**
Hatch Back Mount (stainless steel) 4 mts coax/PL259 3/8 or SO239 fully adjustable with turn knob **£29.95**
Gutter Mount (same as above) **£29.95**
Rail Mount (aluminium) 4mtrs coax/PL259 sutiable for up to linch roof bars or poles 3/8 fitting **£12.95**
SO259 fitting **£14.95**
Gutter Mount (cast aluminium) 4mtrs coax/PL259 3/8 fitting **£9.95**
SO259 fitting **£12.95**
Hatch Back Mount 3/8 4mtrs coax/PL259 ..... **£12.95**
Roof stud Mount 4mts coax/PL259 3/8 or SO239 fitting **£12.95**

ANTENNA WIRE & RIBBON

Enamelled copper wire 16 gauge (50mtrs) **£11.95**
Hard Drawn copper wire 16 gauge (50mtrs) **£12.95**
Equipment wire Multi Stranded (50mtrs) **£9.95**
Flexweave high quality (50mtrs) **£27.95**
PVC Coated Flexweave high quality (50mtrs) **£37.95**
300Ω Ladder Ribbon heavy duty USA imported (20mtrs) **£15.00**
450Ω Ladder Ribbon heavy duty USA imported (20mtrs) **£15.00**
(Other lengths available, please phone for details)

HF BALCONY ANTENNA

BAHF-4 FREQ:10-15-20-40 Mtrs LENGTH: 1.70m HEIGHT: 1.20m POWER: 300 Watts **£129.95**

MISCELLANEOUS ITEMS

CDX Lightening arrestor 500 watts **£19.95**
MDX Lightening arrestor 1000 watts **£24.95**
AKD TV1 filter **£9.95**
Amalgamating tape (10mtrs) **£7.50**
Desoldering pump **£2.99**
Alignment 5pc kit **£1.99**

TELESCOPIC MASTS (aluminium & fibreglass options)

TMA3 3" to 1¼" heavy duty aluminium telescopic mast set, approx 40ft when errect, 6ft collapsed **£199.95**
TMA2 2¼" to 1¼" heavy duty telescopic mast set, approx 40ft when errect, 9ft collapsed **£149.95**
TMA1 2" to 1¼" heavy duty aluminium telescopic mast set, approx 20ft when errect, 6ft collapsed **£99.95**
TMAF-1 2" to 1¼" heavy duty fibreglass telescopic mast set, approx 20ft when errect, 6ft collapsed **£99.95**
TMAF-2 2¼" to 1¼" heavy duty telescopic fibreglass mast set, approx 40ft when errect, 9ft collapsed **£189.95**

HF YAGI

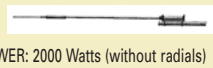
HBV-2 2 BAND 2 ELEMENT TRAPPED BEAM FREQ:20-40 Mtrs GAIN:4dBd BOOM:5.00m LONGEST ELEMENT:13.00m POWER:1600 Watts **£329.95**

ADEX-3300 3 BAND 3 ELEMENT TRAPPED BEAM
FREQ:10-15-20 Mtrs GAIN:8 dBd
BOOM:4.42m LONGEST ELE:8.46m
POWER:2000 Watts **£269.95**

ADEX-6400 6 BAND 4 ELEMENT TRAPPED BEAM FREQ:10-12-15-17-20-30 Mtrs GAIN:7.5 dBd BOOM:4.27m LONGEST ELE:10.00m
POWER:2000 Watts **£499.95**
40 Mtr RADIAL KIT FOR ABOVE **£99.00**

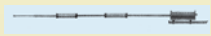
HF VERTICALS

VR3000 3 BAND VERTICAL
FREQ: 10-15-20 Mtrs
GAIN: 3.5dBi HEIGHT: 3.80m POWER: 2000 Watts (without radials)
POWER: 500 Watts (with optional radials) **£89.95**
OPTIONAL 10-15-20mtr radial kit **£34.95**



VR5000 5 BAND VERTICAL FREQ:10-15-20-40-80 Mtrs GAIN: 3.5dBi HEIGHT: 4.00m RADIAL LENGTH: 2.30m (included). POWER: 500 Watts **£169.95**

EVX4000 4 BAND VERTICAL FREQ:10-15-20-40 Mtrs GAIN: 3.5dBi HEIGHT: 6.50m
POWER: 2000 Watts (without radials) POWER: 500 Watts (with optional radials) **£99.95**
OPTIONAL 10-15-20mtr radial kit **£34.95**
OPTIONAL 40mtr radial kit **£12.95**



EVX5000 5 BAND VERTICAL FREQ:10-15-20-40-80 Mtrs GAIN: 3.5dBi HEIGHT: 7.30m POWER: 2000 Watts (without radials) POWER: 500 Watts (with optional radials) **£139.95**
OPTIONAL 10-15-20mtr radial kit **£34.95**
OPTIONAL 40mtr radial kit **£12.95**
OPTIONAL 80mtr radial kit **£14.95**

EVX6000 6 BAND VERTICAL FREQ: 10-15-20-30-40-80 Mtrs GAIN: 3.5dBi HEIGHT: 5.00m RADIAL LENGTH: 1.70m(included) POWER: 800 Watts **£249.95**

EVX8000 8 BAND VERTICAL FREQ:10-12-15-17-20-30-40 Mtrs (80m optional) GAIN: 3.5dBi HEIGHT: 4.90m RADIAL LENGTH: 1.80m (included)
POWER: 2000 Watts **£269.95**
80 MTR RADIAL KIT FOR ABOVE **£79.00**

(All verticals require grounding if optional radials are not purchased to obtain a good VSWR)

TRAPPED WIRE DI-POLE ANTENNAS

(Hi Grade Heavy Duty Commercial Antennas)

UTD160 FREQ:160 Mtrs LENGTH:28m POWER:1000 Watts **£44.95**
MTD-1 (3 BAND) FREQ:10-15-20 Mtrs LENGTH:7.40 Mtrs POWER:1000 Watts **£39.95**
MTD-2 (2 BAND) FREQ:40-80 Mtrs LENGTH: 20Mtrs POWER:1000 Watts **£49.95**
MTD-3 (3 BAND) FREQ:40-80-160 Mtrs LENGTH: 32.5m POWER: 1000 Watts **£89.95**
MTD-4 (3 BAND) FREQ: 12-17-30 Mtrs LENGTH: 10.5m POWER: 1000 Watts **£44.95**
MTD-5 (5 BAND) FREQ: 10-15-20-40-80 Mtrs LENGTH: 20m POWER:1000 Watts **£79.95**
(MTD-5 is a crossed di-pole with 4 legs)

PATCH LEADS

STANDARD LEADS
1mtr RG58 PL259 to PL259 lead **£3.95**
10mtr RG58 PL259 to PL259 lead **£7.95**
30mtr RG58 PL259 to PL259 lead **£14.95**

MILITARY SPECIFICATION LEADS
1mtr RG58 Mil spec PL259 to PL259 lead **£4.95**
10mtr RG58 Mil spec PL259 to PL259 lead **£10.95**
30mtr RG58 Mil spec PL259 to PL259 lead **£24.95**
1mtr RG213 Mil spec PL259 to PL259 lead **£4.95**
10mtr RG213 Mil spec PL259 to PL259 lead **£14.95**
30mtr RG213 Mil spec PL259 to PL259 lead **£29.95**
(All other leads and lengths available, ie. BNC to N-type, etc. Please phone for details)

ZL SPECIALS LIMITED OFFER

2 mtr 5 ele ~~£39.95~~ .....now just **£30.00**
2 mtr 7 ele ~~£49.95~~ .....now just **£40.00**
2 mtr 12 ele ~~£74.95~~ .....now just **£65.00**
70cm 7 ele ~~£34.95~~ .....now just **£30.00**
70cm 12 ele ~~£49.95~~ .....now just **£40.00**

Reviewed by Steve Telenius-Lowe, G4JVG,
c/o RSGB HQ. E-mail: radcom@rsgb.org.uk

The Maldol HVU-8 HF/VHF/UHF base station vertical

Do you live in a flat? Do you want to become active on HF, VHF and UHF? Do you fancy portable operation? The Maldol HVU-8 could be just for you!

The Maldol HVU-8 is a vertical antenna system covering 80, 40, 20, 15, 10, 6, 2m and 70cm in a very small package. It comes complete with short loaded radials and can be mounted virtually anywhere.

The HVU-8 consists of a vertical radiating section at the top of which are fitted separate radiating elements for 80, 40, 20, 15 and 10m. The 80m element is screwed vertically on top of the lower section of the antenna, while those for the other bands are fitted horizontally around the top of the lower section. Each radiating element consists of a loading coil and stainless steel 'whip', the length of which can be adjusted for resonance.

Towards the base, the loaded radials - for 80, 40, 20, 15, 10 and 6m - are fixed to a pair of rings that can be rotated around the base of the vertical. This allows the antenna to be mounted on a balcony, for example, where it may not be possible to have all six radials spaced equally. The radials also consist of loading coils and adjustable-length whips, and look very similar to the radiating elements. Each of the loading coils is clearly identified, although care should be taken not to mix up the whips, which are all of different lengths.

For those who may wish to operate 29MHz FM rather than 28MHz CW/SSB, Maldol thoughtfully also provide shorter whips for the 10m radiating element and radial.

The HVU-8 is a quarter-wave design on the bands up to 6m, a half-wave on 2m, and 2 x 5/8-wave collinear on 430MHz. It is rated at 200W PEP on the HF bands and 150W FM on VHF/UHF. It is 2.62m (8ft 7in) high and weighs about 2.4kg.

Right, top to bottom: The 80m radiating element is screwed vertically on top of the lower section while the 40, 20, 15 and 10m radiating elements are attached horizontally.

Close-up of the base of the antenna, showing radial attachment rings and mounting hardware.

Resonance is achieved by adjusting the length of the whips in both the radiating elements and radials and locking with an Allen key. Note the clear identification on the 14MHz radial loading coil.

ON THE AIR

Two reference antennas were used to compare the performance of the HVU-8. On 20m the reference antenna was a 20m half-wave dipole approximately 30ft high. On 10m and 15m a ground-mounted dual-band vertical was used, with plenty of buried radials. Both the reference antennas are sited in the rear garden and are relatively in the clear. The HVU-8 was mounted in the front garden, well away from other antennas so as to minimise any possible interaction, but closer to the house, trees and an overhead telephone wire. This poorer location, which was the only practical place to locate the antenna for the tests, should be taken into account when looking at the results.

On 20m, virtually every signal was on average 1 to 2 'S' points down on the dipole. **Table 2** on page 75 shows some typical 'real-life' examples. Its performance was best on 10m and 15m, where there was little difference between the HVU-8 and the reference antenna. Most signals were at a similar level, although a couple of North American stations were a couple of 'S' points down on the HVU-8. Unfortunately, 28MHz was fairly 'dead' during the period of testing, but those very weak signals heard were the same strength on both antennas, with an African station, 6W/ON5TN, being about 1 'S' point *stronger* on the HVU-8.

On 40m, only listening tests were carried out, as I had no resonant transmitting antenna to compare the HVU-8 with. The band certainly sounded lively enough and using the 20m dipole as a reference receive antenna, the HVU-8 provided stronger signals in every case. This is probably to be expected, but the difference on some signals - notably GM stations during the day - was very marked indeed, suggesting the HVU-8 was performing pretty well.

CONCLUSIONS

At just 8ft 7in long, the HVU-8 is clearly not going to outperform a beam or even a full-size dipole or

Continued on page 75

SETTING UP

The HVU-8 comes complete with hardware to allow it to be mounted on a ground post, balcony railing etc, and four A4 sheets of instructions. Despite occasional use of 'Japanese-English', these are clear enough and no problems were encountered when assembling the antenna. The only items not provided by Maldol are a tape measure and an adjustable spanner or pair of pliers: an Allen key is included to adjust the length of the radiating element and radial whips.

Because this was only to be a temporary installation, I mounted the HVU-8 on a short piece of plastic pipe knocked into the ground. I set the 11 whips carefully to the lengths recommended in the instructions. Adjustment of resonant frequency is made by sliding the whips in or out and securing with the Allen key. The radiating elements are done first, one band at a time, and then, if necessary, the radials. This requires considerable 'to-ing and fro-ing' and I recommend using an antenna analyser, as I did, rather than a transceiver and SWR meter. The resonant frequencies and SWRs measured are shown in **Table 1** on page 75.

I put the high SWR on 80m and 40m at my temporary installation down to the fact that the HVU-8 was mounted very close to ground level - indeed, the radials were only a matter of a few centimetres above the wet lawn. Nevertheless, on the higher bands it was easy to adjust the whips to provide an SWR of 1.2:1 or better on all bands tested (70cm was not used as I do not have a transceiver for that band and nor does the MFJ antenna analyser cover 70cm).

As would be expected with such a small antenna, the usable bandwidth is quite narrow on the lower bands, the instruction sheets suggesting 22kHz on 80m and 52kHz on 40m between the SWR 2:1 points. On higher frequencies, though, the HVU-8 covered almost all of each amateur band between the SWR 2:1 points, providing a wider bandwidth than that suggested in the instructions. On 20m, for example, the SWR was 1:1 at 14230kHz, rising to 2:1 at 14335kHz and 14000kHz. On 15m the SWR was below 2:1 over the whole band. On 10m, the minimum SWR was 1.2:1 at 28170, rising to 2:1 at 28690kHz and off the end of the scale at 29700kHz (but don't forget Maldol allows for 29MHz operation instead of 28MHz if that's what you want).

On 6m and 2m the SWR was very low across the whole of both bands.

INTERNATIONAL ANTENNA COLLECTION

This book is a collection of over 50 of the very best articles published on antennas from around the world. The book is wide ranging and offers solutions to many problems experienced by the antenna enthusiast.

Amongst the articles are antenna designs for every band imaginable. Stealthy and invisible antennas are covered alongside many interesting traditional designs.

Great care has been taken to ensure that there are antennas to cover the range from 136kHz to 1.3 GHz, receiving and transmitting, fixed and mobile.

Everyone interested in antenna design and construction will find something in this book.

£10.19
or £11.99 non-members
Plus (p&p)

COMMAND

Computers, Microcontrollers & DSP for the Radio Amateur

This book is for the radio amateur and home experimenter who wants to use modern digital and computer technology to make more use of his/her radio equipment. It is aimed at those who want to add additional hardware and try new signalling and communications methods, and to build hardware and systems for controlling existing equipment.

Written for the experienced amateur, this book is aimed at the experimenter and home constructor who wants to get involved in the subject, and to understand how to take it further.

£14.44
or £16.99 non-members
Plus (p&p)

Order today from the RSGB Bookshop
www.rsgb.org/shop or Tel: 0870 904 7373

RSGB SHOP
www.rsgb.org/shop

YAESU

Choice of the World's top DX'ers

Only Available: Hockley, Matlock & Glenrothes

HAVE WE GOT DEALS FOR YOU!

VX-2E Dual Band Handy

The world's smallest dual band handy. 1.5W (2m) and 1W (70cm) from internal lithium. Up to 3W output from external supply. With full DTMF, CTSS and DCS, you are ready for your travels. And with 1300 memories, you can make maximum use of the very wide AM/FM coverage from 500kHz - 960MHz (including WFM broadcast).

Our Price: £169

PLUS FREE:

SPM-102 matching speaker microphone

Offer ends 31/1/2004 and is subject to stock

FT-8800 Dual Band Mobile

The very latest dual-band mobile with 50W on 2m and 35W on 70cms. It's a great mobile with a great receiver section and rugged finish. You get CTCSS, DCS and DTMF, plus wide FM/AM receiver coverage from 108 - 520MHz and 700 - 999MHz. It has over 1000 memories and with the detachable head, it is an easy radio to install. And you get auto UK repeater shift.

Our Price: £299

PLUS FREE:

Both standard microphone and DTMF ready microphone

Offer ends 31/1/2004 and is subject to stock

FT-8900 Quad Band Mobile

Work the world from your car with this ultra compact transceiver offering 50W on 10m, 6m, 2m and 35W on 70cms. This is a real adventure radio that gives you the chance of world DX on 10m and 6m, whilst giving you a standard dual-band 2m/70cms rig. With full CTCSS, DCS and DTMF you are well equipped for many modes of operation and you get automatic UK repeater shift. You even get full duplex operation and of course, a wide receiver range up to 985MHz.

Our Price: £349

PLUS FREE:

Mobile Log Book
Base Log Book
Spare DC Lead

Offer ends 31/1/2004 and is subject to stock

WATERS & STANTON

Main Store: 22 Main Road, Hockley, Essex, SS5 4QS. Tel:01702 206835/204965, Fax:01702 205843, E-mail:sales@wsplc.com, Web:www.wsplc.com
Midland Store: W&S @ Lowe, Chesterfield Road, Matlock, Derbyshire, DE4 5LE. Tel:01629 832375, Fax:01629 580020, E-mail:info@lowe.co.uk, Web:www.lowe.co.uk
Scottish Store: 20 Woodside Way, Glenrothes, Fife, KY7 5DF. Tel:01592 756962, Fax:01592 610451, E-mail:jayceecoms@aol.com, Web:www.jayceecoms.com

Reviewed by Peter Hart, G3SJX, The Willows,
Paice Lane, Medstead, Alton, Hants GU34 5PR.

The Ten-Tec Jupiter HF transceiver

A DSP transceiver that may easily be PC controlled, the Jupiter is the latest from the US Ten-Tec stable.

In 1999 Ten-Tec introduced the Pegasus transceiver, a fully featured HF radio for use with a Windows PC. There was no front panel as such, just a box fitted with sockets and a power switch and with all control via the PC monitor, keyboard and mouse. In 2000 Ten-Tec took the Pegasus design and added a conventional front panel, controls and display to make a standalone radio. Thus was born the Jupiter. The same feature set is retained and also the PC interface so the radio can also emulate the Pegasus in PC control mode with software freely downloadable from the Ten-Tec website. The transceiver's firmware is held in flash memory and can be updated at any time by downloads from the Ten-Tec website. New features can be added: a recent update provides for 5MHz transmit coverage. Although the Jupiter has been available in the USA for some time, it has only recently received CE approval for sales within Europe. It is available in two versions, model 538 without auto ATU and model 538AT with internal auto ATU fitted. The ATU can be fitted at a later date if needed. The non-ATU version was the model supplied for review.

BASIC FUNCTIONS

The Jupiter is a table-top sized 12V operated radio measuring 308W x 144H x 350Dmm and weighs about 5.5kg. The receiver tuning range is specified from 100kHz to 30MHz but it continues to tune all the way down to DC although the sensitivity at low frequencies is very much reduced. The transmit segments are confined to the amateur bands with a bit to spare and the transmit power is nominally 100W maximum. Modes covered are USB, LSB, CW, AM and FM. Digital modes make use of the SSB modes with AFSK input. A menu item toggles the transmit audio source between the microphone and the accessory jack on the rear panel. The receiver bandwidth can be tailored to suit the different tone standards by suitable adjustment of the bandwidth and PBT (passband tuning) controls but no frequency display offset is provided.

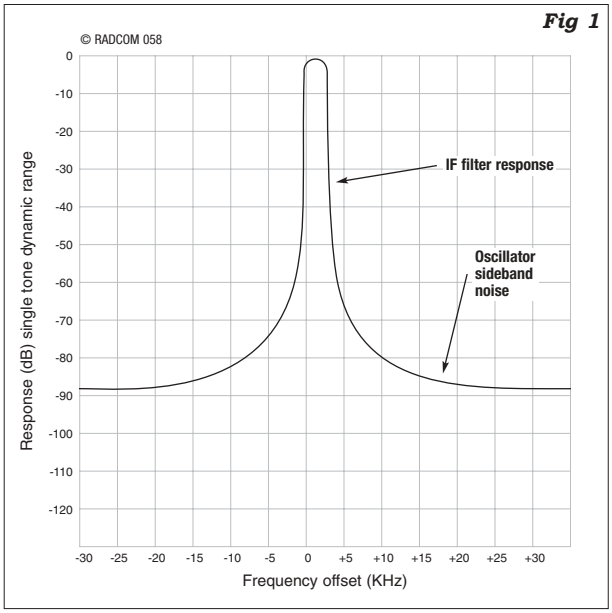
The Jupiter front panel is clearly laid out with spacious buttons and good-sized controls. As every control except the power on/off switch may be computer operated, the rotary controls are all digital encoders. Dedicated rotaries are used for the main tuning, RIT, bandwidth and PBT and a multifunction rotary control is switchable to other functions such as RF and AF gain, power output, microphone gain and squelch. Surprisingly, the AF gain control is not a dedicated rotary so I left the

The Jupiter's rear panel.

multifunction control normally set to this position. A large green backlit LCD panel is used for the display giving a clear indication of the frequencies of the twin VFOs and the state of the switchable functions. A bargraph meter for the S-meter function and transmit power or VSWR also gives the numerical value and a separate slide rule bargraph shows the levels associated with the multifunction rotary also with a numerical percentage of the maximum.

The rear panel carries the usual interface connectors. Phono sockets are used for T/R functions including handshaking support for QSK linears, two auxiliary 12V outlets and a spare for custom use. DIN connectors are provided for interfacing accessories such as data terminals, sound card connections and an optional keypad. A 9-pin D connector interfaces directly to the PC serial COM port without the need for level conversion. I was surprised at how much space there is inside the cabinet but note that a Torx driver is needed to remove the screws. The radio could have been made significantly smaller but for a radio intended for home station use that is not necessarily an advantage. A 75mm speaker fits in the upper case top. There is a heatsink on the rear panel but no fan is fitted, the radio shutting down if the heatsink temperature exceeds 85°C. An optional fan is available but is claimed not to be necessary unless transmitting key down for extended periods such as in RTTY contests.

Fig 1: Jupiter effective selectivity curve on USB (bandwidth 2.4kHz).



The receiver is a triple superhet with IFs of 45MHz, 455kHz and 12kHz. Most of the signal processing including receiver IF filtering functions is implemented by DSP at the 12kHz IF. The receiver front end uses a push-pull FET first mixer and three parallel FETs in the RF amplifier. The RF amplifier is in-circuit all the time but there is a switchable 20dB attenuator for very strong signal situations. Conversion to the second and third IFs uses diode balanced mixers and gain is carefully controlled up-front of the DSP with AGC applied to the RF amplifier and first IF stages. AGC detection is done partly by the DSP but also at the second IF so there can be some AGC control from big signals outside of the main filter passband but inside the roofing filter bandwidth. The local oscillator drive for the first mixer is derived from a single loop PLL tuning in 2.5kHz steps. The smaller tuning step sizes are accommodated within the DSP. Hence the signals within the IFs move by up to 2.5kHz. A built-in TCXO reference ensures good frequency accuracy and stability.

As standard, the Jupiter transceiver is provided with various plugs and leads including a full accessory jack lead and a microphone plug, but the microphone is an extra. The radio accommodates most microphone types including electret and Ten-Tec supply hand and desk models. The radio is shipped with a comprehensive operator's manual covering the installation and operation and a full set of circuit descriptions, schematics and part lists. However, I did come across numerous errors in the manual.

FEATURES

Most of the features of the radio are clearly implemented and easy to select. Some of the lesser-used functions are accessed via the menu system but this is also easy to access. A band button scrolls through the bands and a mode button through the modes. The 50mm diameter rotary tuning knob tunes in a variety of step sizes from 1Hz to 100kHz but at only 120 steps per knob revolution. The usual twin A/B VFOs are provided with facilities for split operation and the frequencies of both are continuously displayed. 128 memories are available for storing frequencies and mode and RIT and XIT are both provided giving offset tuning up to ±8kHz.

All selectivity related features are implemented in DSP. 34 different receiver bandwidth settings between 300Hz and 8kHz may be selected by a rotary control on all modes and a separate PBT rotary control shifts the bandwidth by up to ±8kHz in 10Hz steps. This is useful for combating QRM and optimising the passband on data modes. The effective selectivity curve on USB, with the bandwidth set at 2.4kHz, is shown in **Fig 1**. DSP noise reduction may be selected which is effective at removing broadband noise by up to 15dB and an automatic notch operates at audio which is reasonably effective at removing continuous heterodynes. Other receive functions include an impulse noise blanker selected via the menu sys-

TEN-TEC JUPITER MEASURED PERFORMANCE

RECEIVER MEASUREMENTS

FREQUENCY	SENSITIVITY SSB 10dBs+n:n	INPUT FOR S9
1.8MHz	0.56µV (-112dBm)	63µV
3.5MHz	0.40µV (-115dBm)	40µV
5.4MHz	0.32µV (-117dBm)	35µV
7MHz	0.32µV (-117dBm)	35µV
10MHz	0.35µV (-116dBm)	40µV
14MHz	0.35µV (-116dBm)	45µV
18MHz	0.40µV (-115dBm)	50µV
21MHz	0.49µV (-115dBm)	50µV
24MHz	0.45µV (-114dBm)	56µV
28MHz	0.50µV (-113dBm)	70µV

AM sensitivity (28MHz): 2.2µV for 10dBs+n:n at 30% mod depth

FM sensitivity (28MHz): 0.45µV for 12dB SINAD 3kHz pk deviation

AGC threshold: 18µV

100dB above AGC threshold for <0.5dB audio output increase

AGC attack time: 2ms (see text)

AGC decay time: 100ms (fast), 1s (medium), 8s (slow)

Max audio at 5% distortion: 1.0W into 4Ω (see text)

Inband intermodulation products: -20dB to -40dB

S-READING (7MHz)	INPUT LEVEL SSB
S3	0.5µV
S5	2.2µV
S7	9.0µV
S9	35µV
S9+20	350uV
S9+40	2.5mV
S9+60	100mV

FILTER	IF BANDWIDTH -6dB	-60dB
6kHz	5675Hz	see text
3.9kHz	3710Hz	see text
2.4kHz	2418Hz	see text
1.8kHz	1837Hz	see text
900Hz	988Hz	see text
525Hz	660Hz	see text
300Hz	472Hz	see text

INTERMODULATION (50kHz Tone Spacing)

Frequency	3rd order intercept	2 tone dynamic range
1.8MHz	+6.5dBm	86dB
3.5MHz	+6.5dBm	88dB
7MHz	+6dBm	89dB
14MHz	+9dBm	90dB
21MHz	+10dBm	90dB
28MHz	-3dBm	80dB

CLOSE-IN DYNAMIC RANGE MEASUREMENTS ON 7MHz BAND

FREQUENCY SPACING	3rd ORDER INTERCEPT	TWO TONE DYNAMIC RANGE	BLOCKING	RECIPROCAL MIXING FOR 3dB NOISE
3kHz	-26dBm	67dB	-34dBm	68dB
5kHz	-14dBm	75dB	-33dBm	71dB
7kHz	-10dBm	78dB	-23dBm	74dB
10kHz	-5dBm	81dB	-13dBm	78dB
15kHz	+1.5dBm	86dB	-8dBm	82dB
20kHz	+4dBm	87dB	-6dBm	84dB
30kHz	+5dBm	88dB	-6dBm	88dB
40kHz	+6dBm	89dB	-6dBm	90dB
50kHz	+6dBm	89dB	-6dBm	92dB
100kHz	+6dBm	89dB	-6dBm	99dB
200kHz	+6dBm	89dB	-6dBm	106dB

TRANSMITTER MEASUREMENTS

FREQUENCY	CW POWER OUTPUT	HARMONICS	INTERMODULATION PRODUCTS 3rd order	5th order
1.8MHz	100W	-56dB	-32 (-26)dB	-41 (-35)dB
3.5MHz	100W	-57dB	-28 (-22)dB	-39 (-33)dB
5.4MHz	91W	-62dB	-28 (-22)dB	-41 (-35)dB
7MHz	98W	-49dB	-30 (-24)dB	-38 (-32)dB
10MHz	99W	<-75dB	-28 (-22)dB	-36 (-30)dB
14MHz	99W	-67dB	-35 (-29)dB	-36 (-30)dB
18MHz	100W	-54dB	-36 (-30)dB	-38 (-32)dB
21MHz	100W	-63dB	-30 (-24)dB	-38 (-32)dB
24MHz	101W	-62dB	-36 (-30)dB	-38 (-32)dB
28MHz	101W	-60dB	-32 (-26)dB	-35 (-29)dB

Two-tone transmitter intermodulation product levels are quoted with respect to PEP, figures in brackets are with respect to either tone.

Carrier suppression: 50dB approx

Sideband suppression: >70dB @ 1kHz

Transmitter AF distortion: <1%

Microphone input sensitivity: 7 - 40mV

FM deviation: see text

SSB T/R switch speed: mute-TX 20ms, TX-mute 12ms, mute-RX 40ms, RX-mute 4ms

NOTE: All signal input voltages given as PD across antenna terminal. Unless stated otherwise, all measurements were made on USB with a 13.8V supply and 2.4kHz bandwidth setting.

tem, three selectable AGC speeds, an all-mode squelch and high boost tone control.

On transmit, the power output is adjustable from a few watts to 100W, a selectable speech processor is provided and the transmit audio response may be tailored to suit individual preferences. DSP filtering provides 18 bandwidth settings from 900Hz to 3900Hz and the low frequency roll-off is adjustable. This last menu item was added during a firmware update and post-dates the current manual. An audio monitor and VOX facilities are also provided but to use the Ten-Tec hand microphone on VOX the short across the mic insert on receive should be removed from the PTT switch. A tune button transmits a carrier on all modes at either the selected power level or at the 10W level.

On CW, full QSK with adjustable delay and support for both QSK and non-QSK linears is provided. CW sidetone and pitch may be set over a wide range and a spot button provides an accurate netting tone. A built-in keyer for external paddles may be selected operating over the wide range of 1 to 63WPM. The dot/dash weighting is fixed but the dot/space weighting is adjustable. There are no memories or contest modes.

The Jupiter includes a sweep and spectrum display facility with eight selectable sweep widths from 240Hz to 2.4MHz. These are displayed at a high resolution of 240 frequency steps per scan and the receiver is briefly muted whilst the sweep is in progress. An auto mode can select a fresh sweep when changing bands or frequencies outside the scan range.

PC CONTROL

Software downloads to update the firmware and for Pegasus emulation control are available free of charge from the Ten-Tec technical support website (see 'Websearch' below). Both downloads are about 750KB each and are executable files which install easily and link to the radio via a serial COM port. During the period I had the radio, I upgraded the firmware from v1.24 to v1.26 which took about 40 seconds. The Pegasus control software seemed fairly undemanding and I had it running satisfactorily in Windows 3.1, 98 and XP with machine speeds from 25MHz to 2GHz.

When the Pegasus control software is started, the radio switches automatically to PC control mode showing a virtual front panel on the PC monitor. Local front panel settings are stored and the remote Pegasus settings enabled. Similarly exiting Pegasus mode stores the

Top: The 'virtual transceiver' on the monitor when the Jupiter is controlled from a PC.

Below right: The Jupiter transceiver under the top cover, showing the RF board.

remote settings and returns the local settings, settings cannot be shared. Emulation of the rotary tuning knob is rather slow and cumbersome but an optional remote keypad and tuning knob directly equivalent to that on the front panel is available. Sliders are used instead of rotary controls and a fast tuning slider speeds rapid frequency changes. Many facilities are better implemented, eg separate buttons for modes and also for bands and there are a number of additional features not available on the Jupiter alone. Memory stores are much more comprehensive with various text fields and sweep functions are more informative. Overall a worthwhile addition and a different operating experience.

MEASUREMENTS

Measurements shown in the table were made with the review radio powered from a 13.8V supply and the receiver bandwidth set to 2400Hz. The supplied power cable looks rather thin but only dropped 0.2V under full transmit output.

The receive sensitivity is lower than most radios but still entirely adequate for practical antennas. Below 500kHz the sensitivity drops away sharply, measuring 140µV at 136kHz for 10dB s+n:n. The overall gain is also quite low with the AGC threshold set at about S8 (18µV). This yields a quiet background noise level but weak signals give less audio than strong ones unlike many radios. S-meter range and linearity are excellent and spurii and images fairly low. A number of low level 'birdies' can be heard across the tuning range but none are of consequence within the amateur bands. The third order intercept is reasonable but the lower sensitivity yields a below average two tone dynamic range. Reciprocal mixing is also fairly poor. The DSP IF filters have excellent flatness and steep sides but meaningful measurements at -60dB were compromised by the effects of oscillator noise (reciprocal mixing) and AGC action. A wide range of AGC decay times are provided but the attack time suffered 10ms or more overshoot. The audio output could be driven to at least 2W but at this level it overheated and collapsed after a few seconds. Note that the speaker drive is balanced and neither side of the external speaker output should be grounded. When tuning close to carriers strong clicks could be heard every 2.5kHz. This is a consequence of the synthesiser architecture adopted in this radio and was also observed during on air testing.

Transmit SSB intermodulation products were generally quite reasonable and not significantly degraded by the speech processor. CW keying was clean with low distortion and reasonable rise and fall times although the first attack edge was noticeably sharper. Full QSK and delayed QSK gave identical results. On FM there did not appear to be a deviation limiter but deviation was about 1.5kHz with the microphone gain set as for SSB use.

ON THE AIR

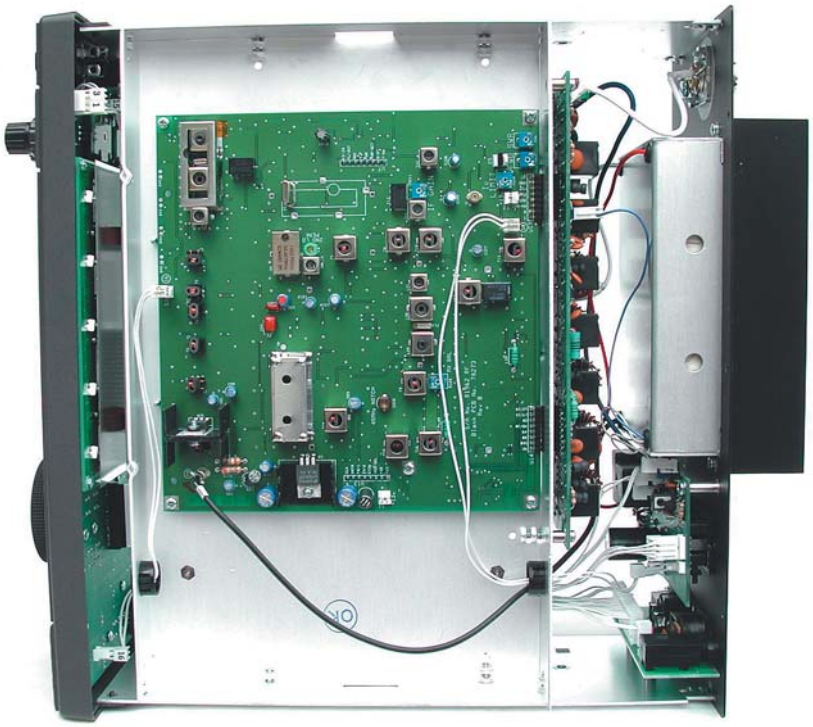
I found the Jupiter generally easy to use with its spacious well laid out panel and a good all round performer. On transmit good quality reports were received on SSB with the Ten-Tec hand microphone and the CW QSK was very effective. Receive sensitivity seemed just about adequate and I experienced no serious strong signal problems on 40m although slight overload could be heard with exceptional signals. The audio quality on headphones in particular was excellent. However, I did find tuning clicks every 2.5kHz near strong signals, most noticeable on the broadcast bands. DSP filter selection was excellent but I think that other implementations may have narrower skirts particularly on the lower bandwidth filters. It would be better if mode selection returned the last used filter bandwidth on that mode rather than link this to the band selection. DSP noise reduction was very effective in removing background noise on armchair copy signals but did not improve readability on weak signals. The automatic notch was not as effective as some other DSP implementations of this feature.

Generally the user ergonomics are very good but there are a couple of areas for improvement. The rotary tuning knob has only 120 steps per revolution. Tuning in 10Hz steps is smooth but tediously slow, 100Hz steps are too coarse. Constant switching between step sizes is needed to navigate the bands effectively. Even 20 years ago 1000 step/revolution rotary encoders were the norm. Band and mode keys only scroll in one direction although the band key will step backwards if two keys are pressed. True bidirectional scrolling would be an advantage. The AGC setting defaults to medium at switch-on and some other front panel settings to their default (off) value.

CONCLUSIONS

The Jupiter is a good all-round mid range radio, easy to use and a good CW performer. A major strength is the ability to upgrade the firmware and the ease of operating under PC control. The current list price is £1159, or £1439 with internal ATU, and it is available from Ten-Tec Direct (4E East Mill, Bridgefoot, Belper, Derbyshire DE56 2UA; tel: 01773 880788) and UK agents.

My thanks to Ten-Tec Direct for the loan of the review radio. ◆



WEB SEARCH

Ten-Tec technical support:	www.rfsquared.com
Ten-Tec Direct UK:	www.aoruk/tentec

Career Opportunity in Amateur Radio

- Are you an active radio ham?
- Do you have a wide and varied interest in all aspects of amateur radio?
- Do you have a background in administration?
- Are you a team player?
- Are you bored in your current position?
- Are you under 40?

If you are all of these things and would be interested in finding out more about a career based in the SE of England - Please send your CV and salary expectations in complete confidence to:

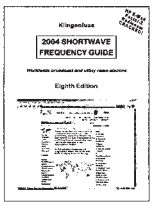
PO Box 76
C/O PW Publishing Ltd
Arrowsmith Court
Station Approach
Broadstone
Dorset
BH18 8PW

New books and CDs for worldwide radio! HF E-mail radionets and digital data decoding

2004 SUPER FREQUENCY LIST CD-ROM

all broadcast and utility radio stations worldwide!

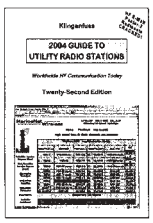
10,100 entries with latest schedules of all clandestine, domestic and international broadcasters on shortwave. 10,200 frequencies from our *2004 Utility Radio Guide*. 19,600 formerly active frequencies. All on one CD-ROM for PCs with Windows™. You can search for specific frequencies, countries, stations, languages, call signs, and times, and browse through all that data within milliseconds. It can't get faster and easier than this! · EUR 25 = £ 17 (worldwide postage included)



2004 SHORTWAVE FREQUENCY GUIDE

Simply the most up-to-date worldwide radio handbook available today. Really user-friendly and clearly arranged! Contains more than 20,000 entries with all broadcast and utility radio stations worldwide from our *2004 Super Frequency List on CD-ROM*, and a unique alphabetical list of broadcast stations. Two handbooks in one - at a sensational low price! 532 pages · EUR 35 = £ 24 (worldwide postage included)

2004 GUIDE TO UTILITY RADIO STATIONS



Includes many HF E-mail digital data radionets that we have cracked! Here are the really fascinating radio services on SW: aero, diplo, maritime, meteo, military, police, press, telecom, and terrorists. 10,200 *up-to-date* frequencies from 0 to 30 MHz are listed, plus hundreds of new decoding screenshots, abbreviations, call signs, codes, explanations, meteo/NAVTEX/press schedules, modulation types, all Q and Z codes, and much more! 600 pages · EUR 45 = £ 31 (postage included)

Special package price: CD-ROM + Shortwave Frequency Guide = EUR 50 = £ 34. For more package deals and a full list of our products see our website and catalogue: books, CDs, frequency databases. WAVECOM Digital Data Decoders = the # 1 worldwide: ask for details. Cracks Pactor-2 and its variants, plus 100+ other modes! Sample pages and colour screenshots can be viewed on www.klingenfuss.org. Payment can be made by AmEx, Eurocard, Mastercard. No cheques! Please ask for our free catalogue with recommendations from all over the world. We've been leading in this business for 35 years! ☺

Klingenfuss Publications · Hagenloher Str. 14 · D-72070 Tuebingen · Germany
Fax 0049 7071 600849 · Phone 62830 · info@klingenfuss.org · www.klingenfuss.org

...America's Best!

TEN-TEC

RX340
best professional receiver award 2003

Ten-Tec products held in UK stock for immediate despatch, CE approved, 12 month warranty. Other short wave DSP receivers, kits and HF transceiver available, see the web for details or request the kit catalogue and leaflets.
UK mainland carriage £10 on main items, typically £5 on smaller items.
UK sales & support office operated by AOR UK LTD. E&OE.

MADE IN USA

JUPITER 538 'DSP' HF TRANSCEIVER

Now available from UK stock for immediate despatch. Coverage is 160 - 10m, 100W output, general coverage RX, 34 DSP IF bandwidths on RX, notch filter, noise reduction, DSP TX. 12V DC operation. Many options available including 963PS mains power supply, microphones etc

538 JUPITER HF DSP transceiver 160 - 10m with gen cov RX 100W	**1159.00**
538AT JUPITER HF DSP transceiver with internal auto ATU 160 - 10m with gen cov RX 100W	**1439.00**
302J Optional remote keypad & encoder	**129.00**
307C Optional external speaker	**89.00**
310 Optional fan (only required for long TX)	**39.00**
701 Hand microphone	**27.00**
706 Stand microphone	**90.00**
963PS Switching mains PSU 25A	**159.00**
R9624 Studio-One mic by Heil	**129.00**
R9625 CC1 cable for Heil Studio-One mic	**24.00**
R9626 TB1 table stand for Studio-One mic	**24.00**

ORION 565 The preparation has begun to bring the 'twin receiver equipped' Orion transceiver to the UK market. Please keep an eye out for TenTec advertising and the TenTec DIRECT UK web site for further details.

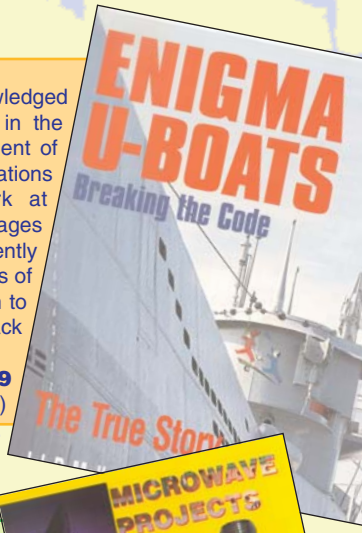
TEN-TEC DIRECT **Tel: 01773 880788** Fax: 01773 880780
4E East Mill, Bridgefoot, Belper, Derbyshire, DE56 2UA England
tentec@aoruk.com www.aoruk.com/tentec
TEN-TEC USA, 1185 Dolly Parton Parkway, Sevierville, TN 37862, USA

2003 TOP TEN

RSGB YEARBOOK

The 2004 edition of the RSGB Yearbook is bigger than ever, with more pages in the Information section, more pages in the callsign listings section and more colour pages. Every page has been reviewed and updated from last year. TheYearbook reflects the current state of the hobby, with pages devoted to contesting, awards, satellites and propagation.

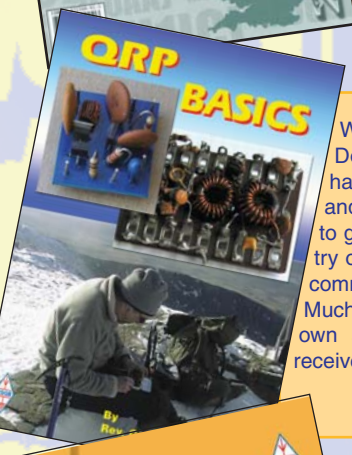
£14.44
Non-members £16.99 (plus p&p)



ENIGMA U-BOATS

BREAKING THE CODE Jak is an acknowledged expert on the history of the U-boat arm in the Second World War analyses the development of Enigma, its role during German U-boat operations and the subsequent codebreaking work at Bletchley Park. It also explains how messages intended "for officers' eyes only" were frequently read by the telegraphists. It also gives details of the 'letter code' based on Morse code given to U- boat officers to enable them to pass back information from POW camps.

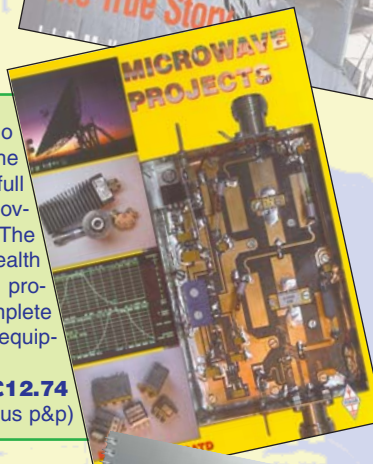
£14.99
Non-members £19.99 (plus p&p)



QRP BASICS

Written by the UK's QRP supremo Rev George Dobbs, G3RJV, QRP Basics tells of the fun to be had by operating with low power, both from home and in the great outdoors. Advice is given on how to get the best results from a QRP station, how to try out QRP if you haven't before. A large range of commercial QRP equipment and kits are described. Much of the book explains how to construct your own station, including complete transmitters and receivers, and accessories.

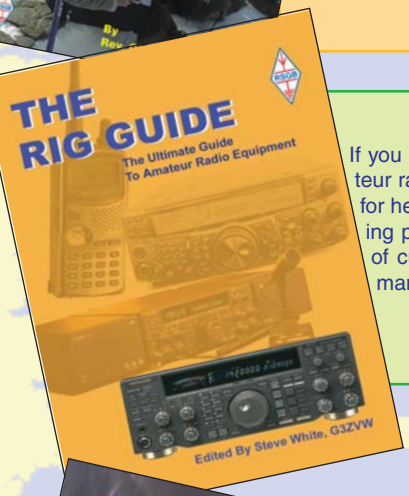
£12.74
Non-members £14.99 (plus p&p)



MICROWAVE PROJECTS

Microwave Projects is aimed at those who are interested in building equipment for the amateur radio microwave bands. Packed full of ideas from around the world this book covers the subject with a variety of projects. The book has many contributors who have a wealth of experience in this area and they have produced many projects, design ideas, complete designs and modifications of commercial equipment, for the book.

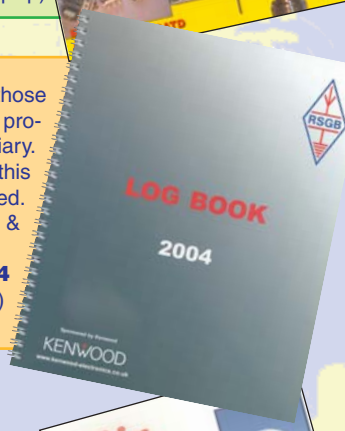
£12.74
Non-members £14.99 (plus p&p)



THE RIG GUIDE

If you are thinking of buying new or used amateur radio equipment the "RSGB Rig Guide" is for here to help. The guide is packed with buying prices and specifications on a vast range of current and older rigs covering the major manufacturers.

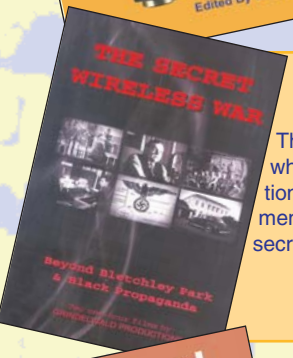
£3.99
(inc. p&p)



LOGBOOK

The Deluxe Log Book is back! Designed for those requiring more from their Logbook, we have produced the popular 2004 Deluxe Logbook & Diary. Containing far more than a standard Log book this edition has been thoroughly revised and updated. New this year is a handy lists of abbreviations & codes.

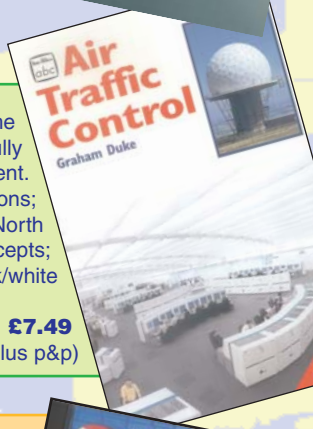
£4.24
Non-members £4.99 (plus p&p)



THE SECRET WIRELESS WAR VIDEO

This 120 minute video tells the the tale of those men who were specially enlisted for wireless communications during WW2 and their shared experiences. The men have pieced together their part in what was a very secret operation only revealed in recent years .

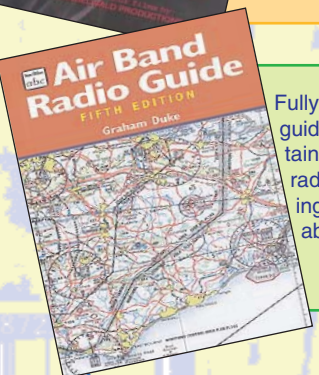
£14.99
(plus p&p)



AIR TRAFFIC CONTROL

This new edition of this informative guide to the important topic of air traffic control has been fully updated to take account of all the latest development. Included are sections of Airspace Classifications; Aviation Language; Charts and Publications; the North Atlantic system; Meteorology; Free Flight concepts; Datalinks and Useful Addresses. Diagrams; black/white photos. 112 pages. Softback

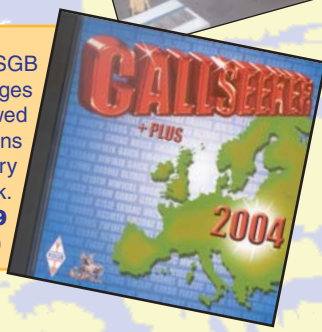
£7.49
Non-members £9.99 (plus p&p)



AIR BAND RADIO GUIDE

Fully updated the "ABC Air Band Guide" is an essential guide for the well-informed aviation enthusiast. It contains a wealth of information, both from the technical radio experts and those experienced in airband listening with advice on how to choose and set up a suitable receiver.

£6.74
Non-members £8.99 (plus p&p)



CALLSEEKER PLUS CD

CD contains the complete contents of the RSGB 2004 Yearbook and more. All the information pages of the Yearbook are available and can be viewed using the Adobe Acrobat. The PDF format means you can see on screen or via your printer every page exactly as it appears in the printed Yearbook.

£11.89
Non-members £13.99 (plus p&p)

Order today from the RSGB Bookshop
www.rsgb.org/shop or Tel: 0870 904 7373

RSGB SHOP
www.rsgb.org/shop

Book review

This month, the new 2004 editions of two ARRL 'classics' are reviewed: The ARRL Handbook and The ARRL Antenna Book.

THE ARRL HANDBOOK 2004

Edited by Dana G Reed, W1LC
Reviewed by RSGB Staff

How do you review 1216 pages in about 500 words? The *ARRL Handbook* presents this problem on a yearly basis, and makes the reviewer's task incredibly difficult. Difficult, but enjoyable.

It would be a mistake for anyone to write off this tome as being 'the same as last year'. This is certainly not the case because, as ARRL's Executive Vice President, David Sumner, K1ZZ, says in his Foreword, "In this new 81st edition, you'll find more emphasis on beginner to intermediate-skill-level projects in the lineup".

There are 30 chapters plus a 25-page index, divided up into five main sections, labelled Introduction, Fundamental Theory, Practical Design and Projects, Construction Techniques, and Operating Practices. Several sections begin or end with glossaries, which are of great help to newcomers to the topics: unfortunately not all sections - perhaps something for the 2005 edition?

To concentrate on some of the new areas of the *Handbook* would seem to be the best way to give readers an idea of the 2004 edition. In these days of DSP, with auto-notch and brickwall filters, it is refreshing to find a high-performance *passive* CW filter, constructed entirely from inductors and capacitors, an updated design due to W3NQN. Users have stated a preference for this over a DSP filter, so it is not necessarily a step backwards in technology!

There are several designs for beefy power supplies, one of which is a switchable 3050/5400VDC giant. It was designed by W1LC for use with a grounded-grid triode Class AB2 RF amplifier. Consequently, it can handle a continuous output current of 1.5A and intermittent peak currents of 2A. A constructional project not to be undertaken lightly!

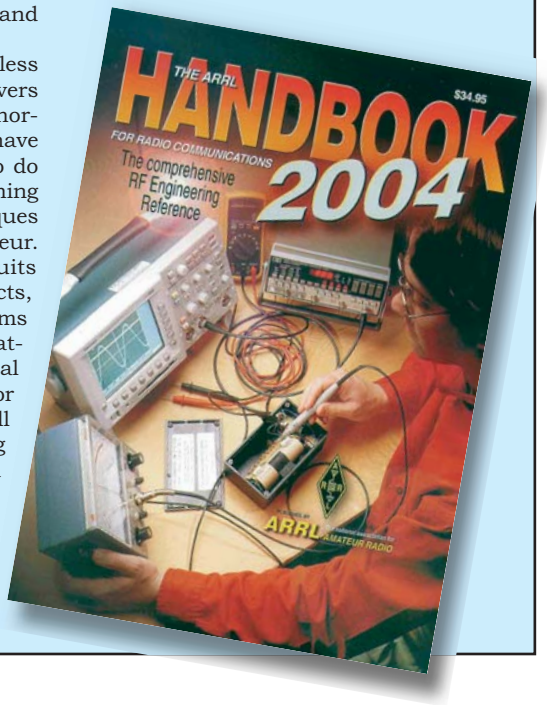
The synthesisers section on AC/RF Sources (Oscillators and Synthesisers) has been significantly updated by WA7TZY to complement the rest of the section, written by GM4ZNX. Together, they make a very readable account of the principles and practices involved – not an easy task.

There is a short chapter entitled 'Wireless Technology for Everybody', which covers pagers and cellular technology in a thoroughly understandable way, which I have not found elsewhere. "What has this to do with amateur radio?" you ask. Nothing directly, is the answer, but the techniques involved should interest any radio amateur.

For the beginner, there are circuits galore, not necessarily listed as projects, but included as single diagrams for items of test equipment, for example. In this category, you will find AF and RF signal injectors, based on audio flip-flops or with crystal control. Elsewhere, you will find a circuit for testing and reforming electrolytic capacitors, or a circuit for a crystal marker generator, a dip meter, a frequency counter, or add-ons to your DVM to enable the measurement of inductance and capacitance.

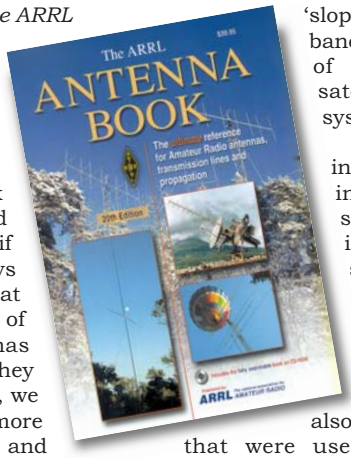
This continues to be the reference book *par excellence* for the amateur radio operator, and the 2004 edition has something for everyone, old and young, experienced and non-experienced alike. It succeeds in being readable rather than academic and stuffy. You need a copy, if your bookshelf can stand the extra load!

THE ARRL HANDBOOK 2004
Published by ARRL Inc, 2003.
Soft covers. 1216 pages.
ISBN 0-87259-196-4.
Members' price £23.79 (non-members £27.99).
Available from the RSGB Shop.



THE ARRL ANTENNA BOOK 2004

Edited by R Dean Straw, N6BV
Reviewed by RSGB Staff



This is the 20th edition of *The ARRL Antenna Book*. It was first published in 1939 and each edition since then has provided more and better information about the fascinating subject of radio antennas. You may think that antenna theory and practice has changed little - if at all - since those early days of radio. While it is true that you can't change the laws of physics, and that antennas work in the same way now they did when Marconi was a lad, we have certainly learned a lot more about how antennas work and how best to make them work for you since those days. And that's where *The ARRL Antenna Book* comes in. Around 30% of the material in the book has been updated since the previous edition. There have been major revisions to the chapters covering subjects as diverse as ground systems for verticals, elevation angles for the low HF bands, stacking HF, VHF and UHF Yagis, ionospheric sounding and propagation predictions, as well as completely new sections on computer modelling, 'sloper' antennas for the low HF bands, computing the coverage of repeater antennas, and satellite and EME antenna systems.

The ARRL Antenna Book includes a CD-ROM, which includes the book in a fully-searchable form. Also included on the CD is a special *EZNEC ARRL* program, written by Roy Lewallen, W7EL, especially for the book / CD. *EZNEC ARRL* uses a multitude of modelling files also included on the CD and that were used throughout the book. Numerous other programs including *Geoclock, Active Beacon Wizard, Yagi for Windows, Transmission Line for Windows, HF Terrain Assessment* and many others, plus band-by-band propagation tables for more than 150 locations world-wide are included on the CD.

It would be pointless to try to describe the scope of the book in such a short review. It simply cannot be done. Suffice to say that virtually any antenna type you can think of is described in detail within its 944 pages. To help to find them, there is an excellent 22-page index. Antenna theory is covered well, but so are practical designs: in the 'HF Yagi Arrays' chapter, for example, there are tables giving dimensions (boom lengths, element spacings, element diameters) for monoband Yagis for all bands from 7 to 28MHz, from a 2-element 10m beam on a 6ft boom right up to a 6-element 20m Yagi on an 80ft boom.

Even if they do not construct any other piece of their station, most radio amateurs enjoy making and experimenting with antennas. There are numerous amateur antenna books available, but no other comes close in size and scope as this one. If you could only have one antenna book on your shack shelf, make sure it is *The ARRL Antenna Book*

THE ARRL ANTENNA BOOK 2004
Published by ARRL Inc, 2003.
Soft covers. 944 pages.
ISBN 0-87259-904-3.
Members' price £23.79 (non-members £27.99).
Available from the RSGB Shop.

BOURNEMOUTH RADIO SOCIETY

MARCH 14TH 2004

BOURNEMOUTH RADIO SOCIETY'S 16TH ANNUAL SALE WILL BE HELD AT KINSON COMMUNITY ASSOCIATION CENTRE, PELHAMS PARK, MILLHAMS ROAD, KINSON, BOURNEMOUTH

Doors Open at 10.00 hours until 16.00

- Talk In from G1BRS on 2m S22 •
- Amateur Radio •
- Computer Traders •
- Accessory Traders •
- Antenna Supplier •
- BRING & BUY STALL ETC. •
- Also Specialist Groups and Clubs •
- Home Made Refreshments •

Details from OLIVE & FRANK GOGOX

01202 887721

ADMISSION £1

By Pat Hawker, G3VA,
37 Dovercourt Road, London SE22 8SS.

Pat Hawker looks at the thermionic valve on its 100th birthday. He discusses the finer points of the superhet with regenerative detector, while pointing out the differences between the 'regenerative' and 'super-regenerative' detector. Was the HRO 'obsolete', as suggested by a letter in the October RadCom? Pat begs to differ. A simple indicator to help test 10GHz equipment is also described. Les Moxon, G6XN, has been obliged to give up active amateur radio at age 94.

CENTENNIAL OF THE VALVE

As we enter the year 2004, it seems appropriate (if a few months early) to mark the invention of the thermionic diode by Professor (Sir) John Ambrose Fleming (1849 – 1945). The official birth was 16 November 1904, as British Patent 24 850 for his 'oscillation valve'. A somewhat confusing name for a vacuum diode that acted towards oscillatory (RF alternating) current in the same way as a non-return valve behaves to water in a pipe – to quote from *Early Radio Wave Detectors*, by V J Phillips (1980).

Dr Fleming, Professor of Electrical Technology at University College, London had been a pupil of Clerk Maxwell and had duplicated Hertz's work and followed the progress of Marconi after his arrival in England. In September 1999, he lectured to the British Association meeting at Dover, where a demonstration of Marconi wireless-telegraphy was staged.

In July 1900, he became Scientific Advisor to the Marconi Company, while retaining his Chair at University College. He played an important role in the trans-Atlantic tests of December 1901 at Poldhu.

Earlier, Dr Fleming had investigated the 'Edison Effect', something that Thomas Edison had found while seeking to discover why his newly-invented incandescent lamps were being discoloured by the deposit of carbon on the bulb. Edison believed this must be due to 'electrical carrying' of carbon particles from the filament to the bulb and instituted an investigation that included the insertion into the bulb of an electrical 'plate'. This showed that a current-flowed in the plate-filament circuit. Edison patented this as an 'electrical indicator' in November 1883.

Fleming made and investigated several Edison lamps, but they were then put away in a cupboard at University College. In 1904, as a victim of progressive deafness, he began seeking a means of detecting weak W/T signals so that they could operate a sensitive galvanometer. In October, he recalled his work on the Edison effect and thought that his lamps might be the solution to the problem of developing DC from an oscillatory circuit. He recovered one of his lamps and with an assistant set up an oscillatory circuit a few feet away. "To my delight I saw the needle of the galvanometer indicate a steady direct current passing through... we had in this peculiar kind of electric lamp a solution to the problem of rectifying high-frequency wireless currents. The missing link in wireless was found – and it was an electric lamp." - J A Fleming, 1923, quoted in *Saga Of The Vacuum Tube*, by Gerald E F J Tyne (1977).

At first, little use was made of Fleming's diode valve; it was not as sensitive as a crystal detector – or as the 'audion' triode that Lee de Forest devised in 1907 in an effort to defeat the diode patent. Only later was the triode to prove capable of amplification and oscillation and become for a quarter-century the unique key to the electronic age.

In 1913, Fleming became closely associated with the newly-formed Wireless Society of London. In 1919, he joined with Marconi and Eccles in advocating in *Wireless World* an early resumption of amateur activity. Fleming wrote: "It is a matter of common knowledge that a large part of the important inventions in connection with wireless telegraphy have been the work of amateurs and private research, and not the outcome of official brains or the handiwork of military or naval men. In fact, we may say that wireless telegraphy itself, in its inception, was an amateur product. Numerous important inventions such as the crystal detector, the oscillation valve, the three-electrode valve – have been due to private or amateur work..." (see *World at their Fingertips* by John Clarricoats, G6CL).

Fig 1

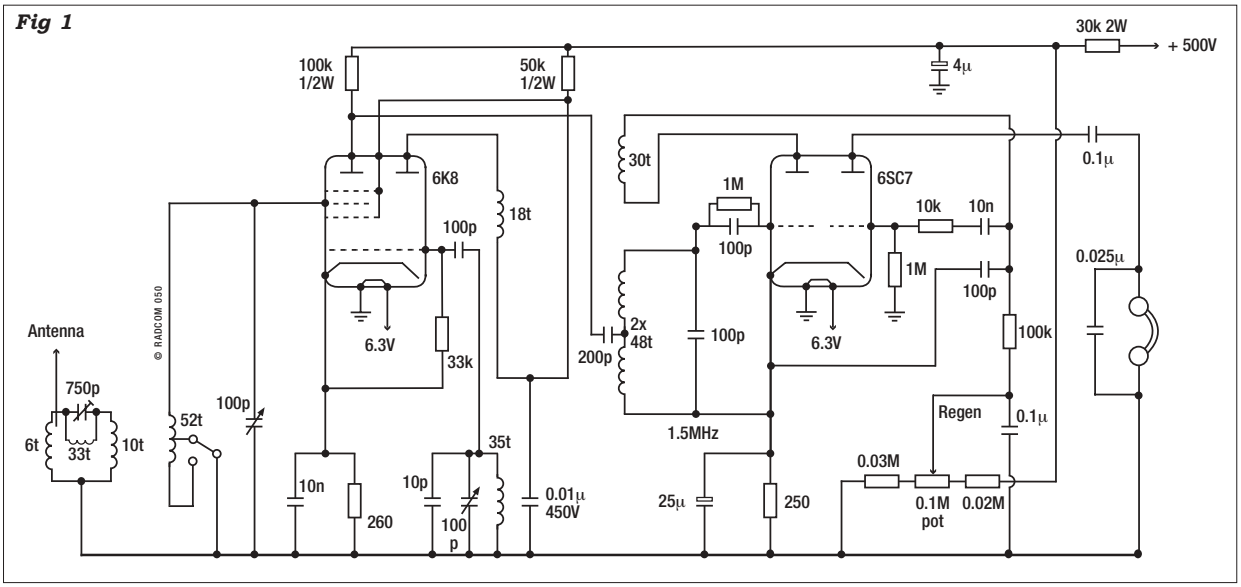


Fig 1: The two-valve (super-gainer) superhet receiver section of the A3 clandestine agent radio transmitter-receiver, covering 2-8MHz designed and built at the Polish Radio Centre, Stanmore about 1942. Simple superhets with regenerative-detectors were used by the London Poles for their similar- looking A1, A2, A3, AP4 and AP5 models, although the AP4 and AP5 had an extra 6SJ7 IF amplifier. All these models had a crystal-controlled 6L6 power oscillator providing about 15W RF output and integral 450/500V power supply in a single compact metal case.

As Bill Baker put it: "Fleming packed into a lifetime as much labour as could reasonably be expected from any four men. A brilliant theoretician, a very capable practical instrument maker, a first-class lecturer and an author of text books which became standard sources of reference for engineers the world over... When he died, full of years, he had had the satisfaction of seeing a world industry grow from those crucial experiments carried out in 1904."

SIMPLE SUPERHET WITH REGENERATIVE DETECTOR

Although the Fleming thermionic diode has vanished from modern amateur equipment, the thermionic valve still retains its appeal, not only for high-power linear amplifiers (eg PA0FRI's design in 'TT', November 2003) but also as a means of obtaining reasonable performance in simple home-brew receivers and QRP transmitters where it can often out-perform solid-state designs.

Ron D'Eau Claire, AC7AC, in 'The Simple Superhet' (*QST*, November, 2003, pp31-37) answers affirmatively the question: "Is it possible to design an easy-to-build receiver that will demonstrate the basic concepts of the superheterodyne circuit and still give adequate performance?". He describes in detail the construction of a simple 7/14MHz superhet receiver using only two valves plus an LM386 audio amplifier with all devices powered directly from a 12V battery.

This is achieved by the use of the range of low-voltage valves developed in the 1950s for use in hybrid car radios. Since the low-voltage valves could deliver only milliwatts of output they were used in conjunction with early power transistors such as the OC12 or OC16. To achieve acceptable gain and selectivity, AC7AC revives the principle of the 'super-gainer' using a regenerative 'second' detector to provide high gain and selectivity.

Although the use of the low-voltage range of valves in an HF amateur receiver is new to me, the use of a regenerative detector in simple superhet receivers has a long history. I came across it first in the ninth edition of *The Radio Handbook* (Editors and Engineers, 1942). This presented details of a '3-tube superhet' (6K8 frequency changer, 6SJ7 regenerative detector and 6V6 audio amplifier requiring a separate PSU providing 350VDC and 6.3VAC. The handbook also showed how improved performance could be achieved by adding an IF and an RF amplifier to provide a good five-valve superhet.

I also recall that Roy Wilkins, G2ALM, a fellow operator at the Weald Section VIIIP clandestine-control station, built an effective two-valve superhet that gave a very lively performance with headphones. Again, in 1944, I had an opportunity of trying one of the Polish A/AP series of clandestine sets designed by Tadeusz Heftman at the Polish radio workshops in Stanmore, north-west London. These sets all used simple superhets with regenerative detectors. Models A1, A2, A3 receivers had just two-valves: 6K8 (triode-hexode) and 6SC7 (double-triode): **Fig 1**. Models AP4, AP5 had an extra 6SJ7 IF amplifier. These sets (with 6L6 15W power crystal oscillator transmitter) were intended for use with high-impedance headphones. Some of the earlier SOE models similarly used a regenerative detector (reaction).

I was much impressed with the performance and versatility bestowed by the performance of regenerative detectors in superhets and incorporated one in a home-built receiver that remained, with various modifications, my main CW station receiver from 1946 to about 1973.

For simple receivers, there is little doubt that the valve still offers advantages over solid-state devices with their wider tolerances found in 'identical' type numbers, the increased input capacitance of FETs and the lower impedance of bipolar transistors. These drawbacks can, of course, be overcome by using more complex designs.

AC7AC points out that the regenerative detector will demodulate AM, SSB and CW signals and is capable of synchronous detection of AM signals. He admits that such a simple receiver does not approach the selectivity or stability of modern synthesised receivers, but is adequate for normal use on CW, SSB and even for monitoring PSK31 digital signals.

He claims that the low-voltage valves are still readily available in the USA. He used types 12AD6 (miniature heptode frequency changer) and 12DZ6 (RF pentode as regenerative detector) both with 12.6VAC, 0.15A heaters. These valves have a maximum anode voltage of 30V, but will function with 12V anode voltage. Total consumption from a 12V car battery of his simple superhet is about 500mA.

I can trace Brimar types 12AD6 and 12AC7 (variable-mu pentode) suitable for use with12V anode voltages marketed in the UK. There was also a range of Mullard low-voltage valves with 6.3V, 0.3A heaters as used, for example, in the 1960 Pye car radio model TCR2000 and Ekco model CR903. These used the ECH83 triode-heptode (two), EBF83 double-diode variable-mu RF pentode, and EF98 pentode as AF driver to the OC19/2N253 power transistor. The four heaters were connected in series-parallel across the 12-13.8V car battery.

The circuit diagram of AC7AC's Simple Superhet is shown in **Fig 2.**

The IF is 3.5MHz and the local oscillator tunes from 10.5 to 10.9MHz, permitting the reception of both the full American 7MHz band and the 14MHz band without band-switching the LO (but changing the tuning sense). A detailed description of functioning, components, mechanical and electrical construction and adjustment of the set, including coil-winding data, is given in the *QST* article. Briefly, the coils are wound on plastic formers rather than toroids.

SUPER-REGENERATIVE DETECTORS

There continues to be confusion among some amateurs between

Fig 2

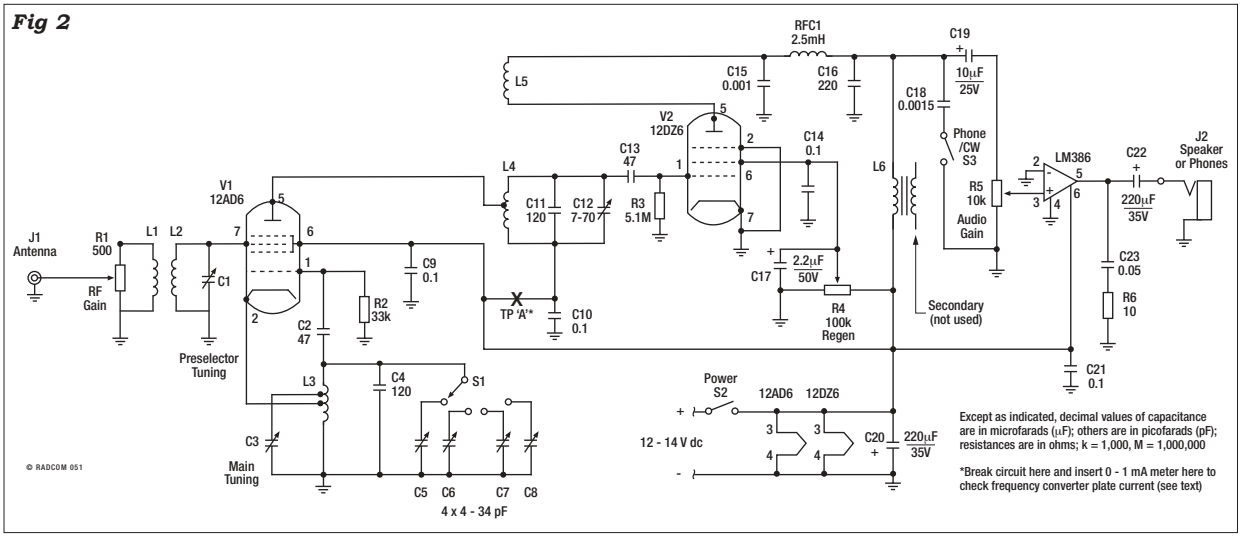
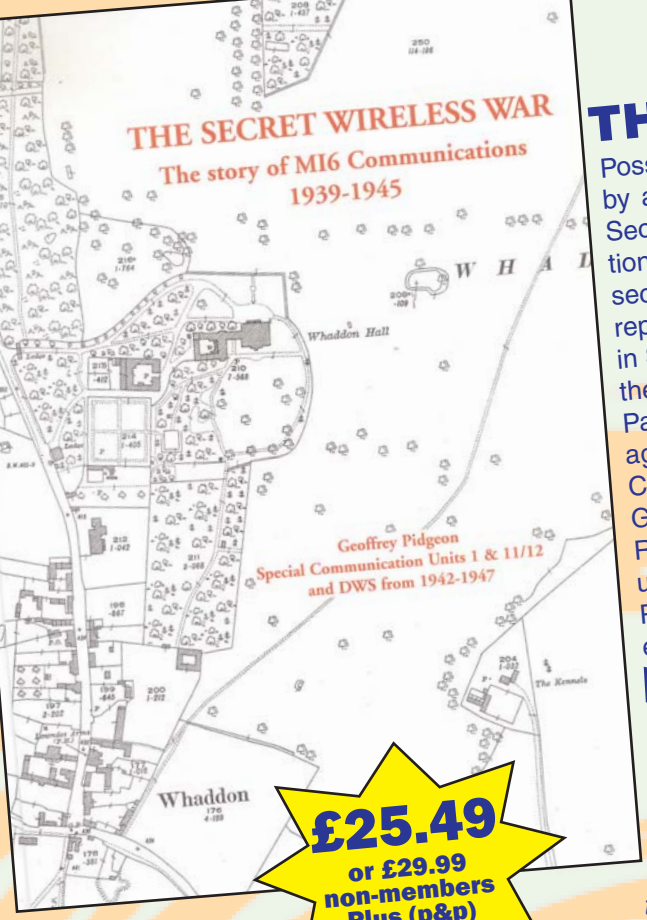


Fig 2: Circuit diagram of AC7AC's 'Simple Superhet' using low-voltage valves of the types developed in the 1950s for hybrid valve/transistor car radios. With these valves, the receiver is powered directly from a 12V vehicle battery. Test Point 'A' is provided to break the circuit and insert a 0-1mA meter to check frequency converter plate current. For static use it would be possible to adapt a combination of Fig 1 and Fig 2 to develop a two-valve superhet for headphone reception using miniature valves such as the ECH81 (triode heptode) and ECC81 (double triode with separate cathodes) in conjunction with a conventional 250V/6.3VAC power supply.



THE SECRET WIRELESS WAR

Possibly the most important UK wireless traffic in World War II was handled by a unit formed in 1938 by Brigadier Richard Gambier-Parry head of MI6 Section VIII - the communications division of SIS. This book tells of its formation and includes diary entries by one of the 'founding fathers' recording the secret meetings that took place, and the assembly of its talented staff. It also reports the earlier days of the original SIS wireless 'Station X' based in Barnes in SW London. The building of its second station in a bungalow in Surrey with the strange name of 'Funny Neuk' and the units wireless stations at Bletchley Park and Whaddon Hall are also described. It documents the work of our agents in embassies abroad, and of those in occupied territories; the story of Churchill's personal wireless operator, and there is the description by a German soldier of the Afrika Corps of his operating an Enigma machine at Rommel's HQ in the desert. The story of 'Black Propaganda' is told and the units handling of the military ULTRA traffic out to commanders in the field. Personal tales by those who were part of this most secret of units are included in this important record of people and events that helped to win the war.

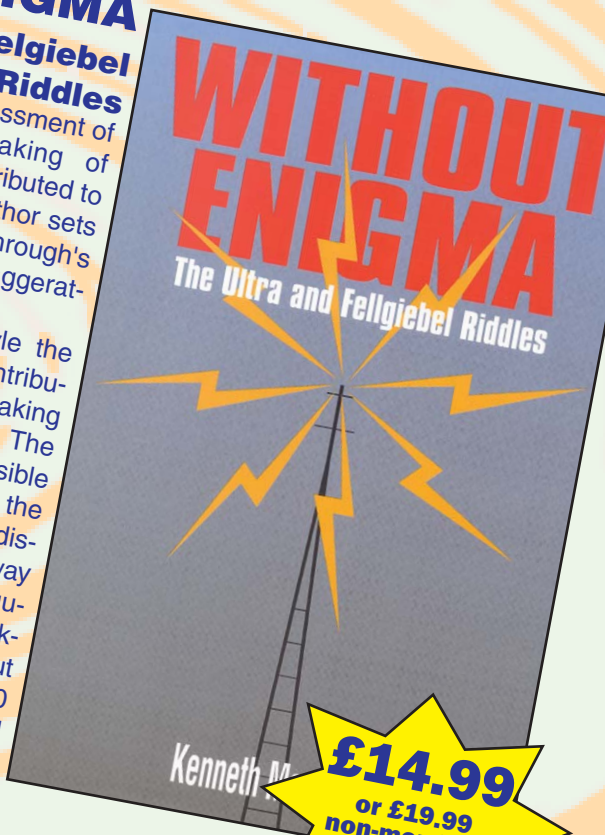
£25.49
or £29.99 non-members
Plus (p&p)

WITHOUT ENIGMA

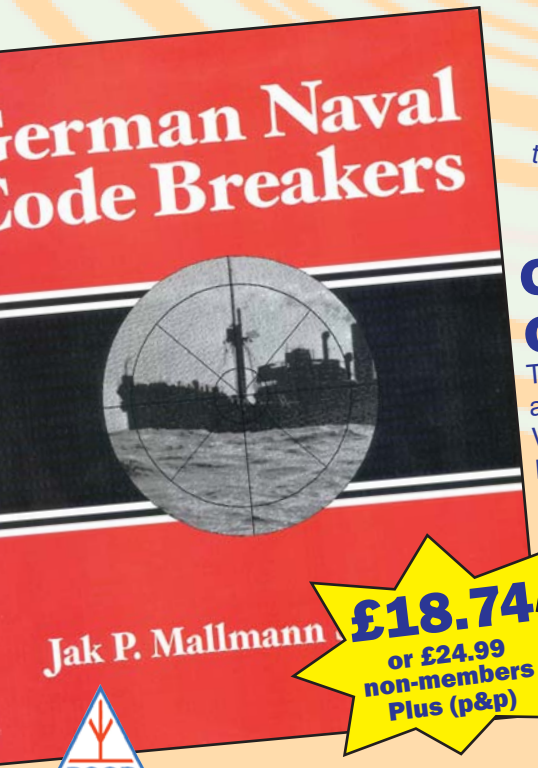
The Ultra & Felgiebel Riddles

Without Enigma is a reassessment of just how much the breaking of German Enigma codes contributed to the Allied war effort. The author sets out to explore if this breakthrough's importance has been over-exaggerated by historians.

Written in a semi-fictional style the book explores how large the contribution to the Allied victory the breaking of the Enigma codes were. The author then proposes the possible results would have been had the breaking of the code had been discovered by the Germans. In this way we are provided with a counter-argument to the importance of the breaking of the Enigma code. Without Enigma is a hardback book of 160 pages which are packed with detail and are an essential read for anyone with an interest in Bletchley Park and the Enigma code.



£14.99
or £19.99 non-members
Plus (p&p)



GERMAN NAVAL CODE BREAKERS

This book details the work of the German Code Breakers although the story of the German naval code breakers in WWII is less well known than that of the British at Bletchley Park their role was undoubtably significant. German Naval Code Breakers looks in detail at how German code breaking developed after the traumas of defeat in 1918, the variety of codes used by the British and allied navies during WWII. All those who want to know more about this cruicial era in naval warfare will find that German Naval Code Breakers provides an interesting new perspective to this aspect of WWII. With over a 150 photographs on 160 glossy pages this hard back book is an excellent buy.

£18.74
or £24.99 non-members
Plus (p&p)

Order today from the RSGB Bookshop
www.rsgb.org/shop or Tel: 0870 904 7373

RSGB SHOP
www.rsgb.org/shop

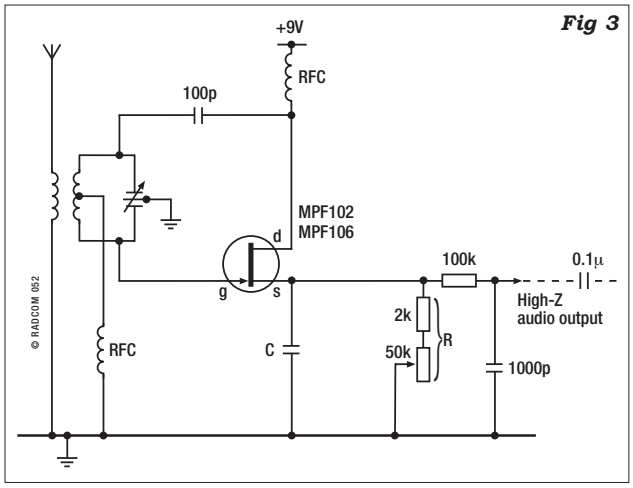


Fig 3: Basic self-quenched FET super-regenerative detector as used by ZL3VN. To prevent radiation of interference, regenerative detectors should be preceded by a tuned or untuned RF stage.

'regenerative detectors' and 'super-regenerative detectors' as widely used by amateurs on 56MHz pre-war (see 'TT' November 2003) and in the early CB models and still found in 27MHz garage-door openers.

Super-regeneration, discovered and patented by Howard Armstrong in 1922, but found unsuitable for the reception of medium-wave AM broadcasting stations, permits greatly increased gain from positive feedback by 'quenching' the build-up of oscillation by the imposition of a lower (above audio) frequency. This can be achieved by the use of a separate quench oscillator or by careful selection of the self-biasing constants of a regenerative detector. Super-regeneration will detect AM and wideband FM signals but, in its usual form, is unsuitable for CW and NBFM reception and has broad selectivity. There seems no way in which it could handle SSB. Valve super-regenerative receivers without an RF stage can radiate strong local interference. In the absence of an incoming signal, the device noise builds up to give a strong noise output that is automatically reduced or suppressed in the presence of a signal. Inter-station noise is a reflection of the very high gain (up to 100dB) rather than deficient sensitivity.

The super-regenerative detector still finds a number of commercial applications and offers useful experimental opportunities for amateurs at VHF and UHF. One advocate is Charles Kitchin, N1TEV. He described 'An Ultra-Simple Receiver for 50MHz' (*QST,* December 1997, pp39-41) that he claimed could be built in a few hours without any special components or test equipment. This had an untuned RF stage using a MPF102 or 2N4416 FET, a super-regenerative detector using a similar device and an LM386 IC AF amplifier. Earlier, he described an 88-210MHz version in *Communications Quarterly* (Fall, 1994): see 'TT' March 1996 or *Technical Topics Scrapbook 1995-1999*, pp83-84. This item also included the circuit diagram of a basically similar design by Brian Atkinson in *Short Wave Magazine,* May and June, 1995, tuning the aircraft band 105 to 185MHz. **Fig 3** shows a basic FET self-quenching super-regenerative detector as used by ZL3VN as noted in 'TT' July, 1979. Improved results can usually be achieved with a separate quench oscillator.

Subsequently, Ray Howgego, G4DTC, reported in 'TT' May 1996 his 'Ultimate Super-Regenerative Receiver', originally published with full details in *SWM* June/April, 1991. It was original in using a unijunction transistor, TIS43, as a sawtooth quenching oscillator at about 75kHz.

G4DTC's circuit diagram is shown in **Fig 4.** He claimed: "My circuit has two main advantages. (a) By careful, once-only, adjustment of R7, it achieves full sensitivity without the high level of inter-station noise associated with most super-regeneratives. (b) It tolerates a degree of coupling from the RF stage (or antenna) which would normally stop most circuits regenerating. It is therefore extremely reliable and reproducible.

"TR3 operates as an oscillator tuned by L1/C6 to the received frequency. TR2, the unijunction device, provides the necessary quenching (or 'blocking') voltage to the second gate of TR3. R7 varies the amplitude of the quenching voltage and should be adjusted until inter-station noise all but disappears. TR1 functions as a buffer stage with a gain of about 10dB. The gain may be increased by reducing R2, although this may call for a more critical layout to prevent instability. C5 should be increased to the point where TR3 fails to oscillate reliably, then reduced a little. All components were carefully optimised, but some experimenting with C7, which controls the quenching frequency, may be justified. A low value (470pF) seems best suited for AM reception, while a high value (4.7nF) seems better for FM."

More recently, Charles Kitchin, N1TEV, has written a 15-page survey article 'New Super-Regenerative Circuits for Amateur VHF and UHF Experimentation' (*QEX.* September/October 2000, pp 18-32, brought to my notice by John Crabtree, KC0GGH). This includes circuits covering 38-54MHz, 118-136MHz and 88-180MHz plus a TV UHF downconverter for 450-910MHz and new squelch and NBFM designs.

While the conventional super-regenerative detector can handle wideband FM broadcast transmissions, it does not cope with amateur NBFM signals. N1TEV provides a novel self-quenched circuit that increases selectivity and allows detection of NBFM signals; his approach is the opposite of the G4DTC approach, which uses a separate sawtooth quenching oscillator intended for AM (aircraft) signals.

N1TEV writes: "**Fig 5** shows a new self-quenched circuit that has several important differences from the traditional, unselective super-regenerative. All previous articles and references I have seen on super-regeneratives credit the *Q* of the LC tank circuit as the primary determinant of receiver selectivity. Quench frequency is usually listed as non-critical, while the waveshape of the quenching oscillation is not mentioned. However, as my own experiments have shown, *the most important variable affecting the selectivity of a super-regenerative detector is the waveshape of the quenching oscillation.* I have found that the use of a very clean sine-wave quenching oscillation greatly increases selectivity and allows detection of NBFM signals."

Personally, I am not convinced that the use of a sine-waveform quenching signal is a new development. I recall building a super-regenerative detector about 1936-37 using Eddystone quench coils, and later used to build a VLF receiver for GBR on 16kHz as a wartime aid to Morse practice and described in a wartime *T&R Bulletin* in conjunction with Charles Bryant,

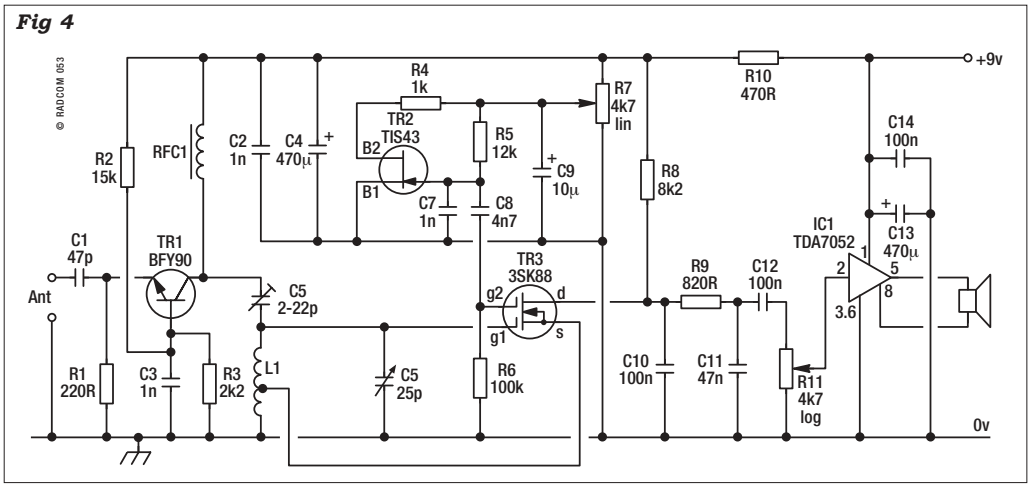


Fig 4: G4DTC's 'ultimate' design of a super-regenerative VHF receiver with unijunction (TR2) quenching oscillator. For 90-170MHz range, L1 is 4 turns, 10mm ID, stretched to 10mm length, tapped at 1 turn. RFC1 is 5 turns of thin wire on a ferrite bead. See 'TT' May 1996. Published originally in* Short Wave Magazine*, 1991.

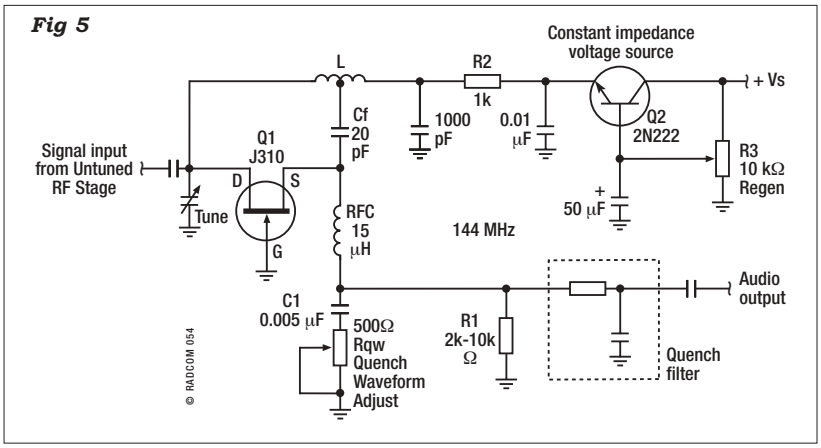


Fig 5: N1TEV's design of a super-regenerative circuit for NBFM (Source: QEX. Sept/Oct 2000).

G(W)3SB. This would have produced near sine-wave quenching. The set received American 28MHz AM amateurs at loudspeaker strength, and one could just detect the 405-line Alexandra Palace TV signals at a distance of over 150 miles.

The main new feature of N1TEV's 144MHz super-regenerative circuit, shown in Fig 5, is the inclusion of a 500Ω 10-turn potentiometer (R_{qw}) in series with C1 to provide a quench waveform adjustment control. It is stated that this added resistance varies the waveshape of the quenching oscillations from the usual sawtooth to something much closer to a sine wave. He writes: "Once TR1 begins oscillating, the long time constant set by C1/R1 causes the source DC bias level to increase until it stops the detector's RF oscillation. This bias voltage then discharges through R1 until oscillations start again. The values of R1 and C1, plus any resistance and capacitance in the detector's power-supply line set the frequency and waveshape of this relaxation oscillation. Both are critically important in determining the receiver's selectivity... The use of TR2, a simple voltage source, helps prevent any large changes in the series resistance of the detector's supply line as regeneration is varied.

N1TEV also suggests that a further major improvement is the use of a super-regenerative detector operating grounded-gate in a modified Hartley oscillator. He includes a detailed illustrated description of the effect of the quench-waveform control and adds: "When receiving NBFM, the detector is tuned to one side of the carrier and the regeneration control is carefully adjusted to permit slope detection... While slope detection usually works poorly with superhets because their selectivity cannot be easily changed, the user-controlled selectivity of a super-regenerative receiver allows the reception of NBFM and virtually all common modes of transmission. Like traditional regenerative sets operating on HF, this narrow-band circuit requires careful adjustments of tuning and regeneration by the operator. Nonetheless, learning to tune and operate is considerably easier than building a sensitive, broadband superheterodyne receiver for VHF."

It would appear that at least some of the new ideas presented by N1TEV have been inspired by the earlier work (1970s) of Nat Bradley, ZL3VN. ZL3VN's article 'Taming the Super-Regenerative Detector' (*Break-In,* November 1978) was discussed with four circuit-diagrams of self-quenched and separately-quenched super-regenerative detectors in 'TT' July 1979, pp624-626. This was accompanied by a brief account of the 1921 development of the super-regenerative circuit by Armstrong and his sale of the patent to RCA for $200,000 and 60,000 shares making him the largest individual shareholder in the corporation. Almost immediately afterwards, the increasing number of broadcasting stations brought into prominence one of the several problems that have always dogged the design - its lack of selectivity and consequent inability to hold a weak signal in the presence of stronger signals.

I commented in July 1979 that "ZL3VN makes a strong case for giving this old technique a dusting off and a good polish with modern components". This was echoed by N1TEV in 2000 when he wrote: "I invite all radio amateurs to join with me in exploring this very exciting technology. Even today, there still remains a great deal that is unknown (or misunderstood) about these circuits. For example, a superhet receiver with a whip antenna becomes much more sensitive when you place an operating super-regenerative receiver next to it. Many of the basic circuit techniques outlined in this article could be used to develop easy-to-build experimental receivers at UHF or even microwave frequencies". It would, for example, be possible to use a 'tamed' super-regenerative detector in a simple 'super-super gainer' VHF superhet of the form discussed earlier.

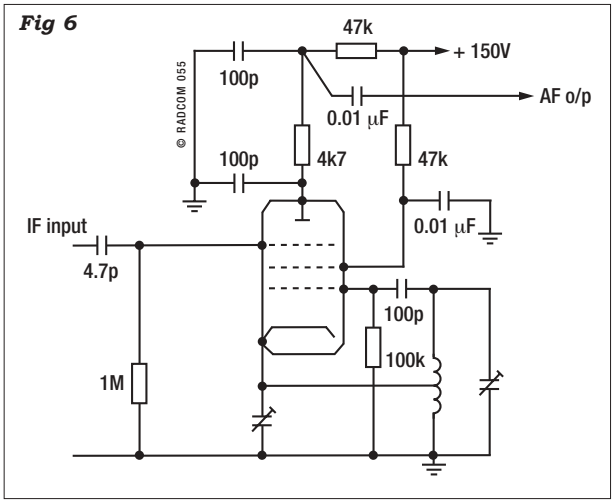
THE 'OBSOLETE' HRO OF 1939

In the 'Last Word' (*RadCom*, October 2003, p97), Ben Nock, G4BXD, complains that that I quoted from his recent *Radio Bygones* article on the HRO "out of context". He certainly wrote *inter alia*: "The HRO may have been the best available receiver at the time of its introduction. There was a feeling, however, that it was distinctly obsolete by about 1939. I mean, plug-in coils and no calibrated dial!". In his letter he writes: "[G3VA] seems to imply that it was my opinion that the HRO was outdated by 1939. It was not my opinion but rather the one found while searching the web for historical material on the HRO." He changes the word 'obsolete' to 'outdated', but sticks to what is clearly *his* view that a set using plug-in coils with no dial reading was outdated by the standards of other sets that were around at the time.

As a welcome new member, I assume that G4BXD did not follow the detailed discussion in 'TT' (October 2001, January and February 2002) about the HRO that was sparked off by the article by Mike Lemin, G4UUB, 'Rebuilding a National HRO' (*Radio Bygones,* August/September 2001). Items contributed by G4UUB, G3RZP and others, plus my research of early National advertisements in *QST*, brought to light a few errors in the classic article by Bill Orr, W6SAI - a source acknowledged by G4BXD. Additionally, Peter Chadwick, G3RZP, pointed out a valid criticism of the HRO design in that the alignment was not based on the concept of 'three-point tracking' that had been published in 1931. There are no variable padding capacitors and only very limited pre-set adjustment to the coils. Alignment is confined to the trimmers.

G3RZP has shown convincingly that the HRO cannot be aligned to track accurately when the set is used with the coils set to general coverage, particularly on the lower HF bands. My feeling is that, since the HRO was designed as an amateur receiver, the designer may have decided that tracking for the narrower amateur-band settings could be set accurately enough with the trimmer capacitors, although I cannot quote figures to confirm this. Similarly, I would argue that the admittedly small calibration scales on the coil assemblies, although impracticably small for general coverage (RSS provided SCU3 operators with detailed calibration

Fig 6: For his rebuild of an HRO, G3RZP fitted a simple product detector/BFO. He used a 6SJ7, but virtually any pentode would be suitable. This arrangement should prove suitable for fitting into almost any of the vintage 'boat-anchor' receivers designed before the introduction of amateur SSB. It has the advantage for all modes over diode detectors which require volts of input to minimise distortion



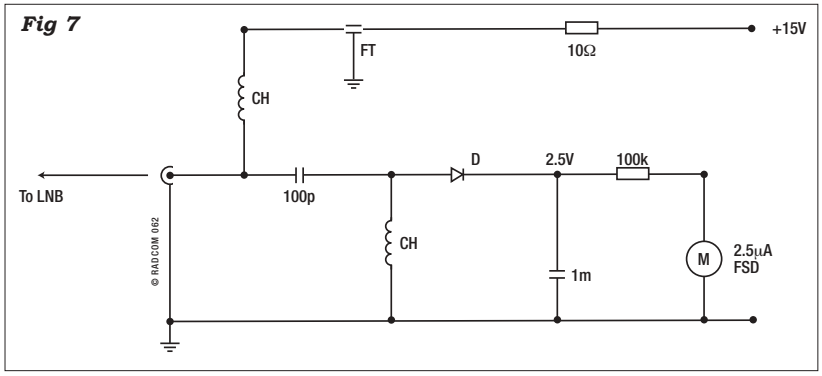


Fig 7: GW3XYW's sensitive 10GHz RF detector, based on using a surplus LNB. FT is a 1nF feed-through capacitor. The CHs consist of 6 turns of 0.5mm copper wire wound on 3mm drill, length 8mm. D is a 5082-2835 Schottky diode. M is 25µA FSD.

charts), were reasonably good on the bandspread coil settings. They were almost certainly better than the "dial readings on other sets" that seem so important to G4BXD.

Michael O'Beirne, G8MOB, points out that, by post-war standards, the HRO has a reputation for noise and drift [the absence of a voltage regulator tube – a development of the late 1930s - meant that the frequency changed with rotation of the RF/IF gain control – *G3VA*]. He also considers that the idea of fiddling about with the small tuning graphs and a pile of plug-in coil boxes is not his idea of a good radio for tactical military use. Although I would not think of the HRO as a tactical radio, I cannot recall any difficulties with using the HRO in the two SCU9 vehicles, and I believe they also functioned satisfactorily for the SCU4 mobile D/F teams.

The HRO was, of course, not designed for SSB reception, and for his rebuild, G3RZP used a 6SJ7 as a product detector and BFO: **Fig 6.** He points out that, since the diode detectors used for AM need a lot of input volts to minimise distortion, it's quite easy to use almost any pentode as a product detector and BFO. He also comments: "I cheated a bit in my HRO rebuild, and used a 6SG7 first RF, 6SK7 2nd RF, 6AC7 mixer and 6J5 oscillator, with a pair of 6K7 IFs, a 6SQ7 detector/AGC and AF, 6SJ7 BFO/product detector and 6V6 output". He feels that the lack of good image rejection [almost inevitable with single-conversion 456kHz IF] lets it down, and the crystal filter certainly not up to the standards of the multiple-pole filters in modern rigs. He adds: "It is better than the [much later] Eddystone 888A though, which has no crystal filter at all!"

G3RZP has also provided some useful hints on restoring old equipment. It is hoped to include some of this information in a future 'TT'.

The sensitivity and image rejection on 28MHz with its 456kHz IF was certainly not good, despite the two RF signal-frequency stages. But then this was even more marked on the lower-cost pre-war receivers with their single RF stages. It is worth remembering that the concept of noise factor and the associated equivalent noise resistance of valves was a wartime development little known until post-war.

Clearly, by modern standards, the 1934/5 HRO design leaves a lot to be desired and did not incorporate the later developments found in the AR88 and some other wartime models. The AR88 was not available until about 1941-42. It was apparently designed at the Camden NJ RCA Laboratories by Lester Fowler (electrical) and George Baker (mechanical), primarily to meet a British Joint Services specification. The vast majority came to the UK and it was never marketed in the USA. It had a calibrated dial but, for accurate re-setting to a specific frequency, it was necessary to use the logging scale. Calibrated dials in that era gave only rough-and-ready frequencies!

I still claim that the HRO should be recognised as one of the few outstanding general-coverage valve receivers available in quantity before September 1939, even if not using the latest advances. It continued to perform well – at least for CW reception up to about 20MHz – until at least the early 1950s. To the best of my knowledge, the only comparable, readily-available, pre-war HF communication receivers were the Hammarlund Super Pro (progressively modified from the original SP10 of 1936, SP110 of 1937, SP210 of 1939 and widely used by the Americans in WWII as the BC779) and the little known RCA AR60.

The AR60 was designed in 1935-36, cost almost $500 and weighed over 70lb. I recall trying one at Weald in 1943 where one experienced Scottish operator preferred it to the HROs or the one AR88. According to Crawford MacKeand, WA3ZKV/VP8CMY, in his account of the tragic last flight of Amelia Earhart in aircraft KHAQQ (Chapter XI of his book *The Friendly Ionosphere*, Tyndar Press, 2001) about 250 AR60 receivers were made by RCA, originally intended for the top end of the amateur market but mostly purchased by the US Coast Guard. He was able to inspect a surviving AR60 that had come from the famous US coast station, WCC. Like the HRO, it had two 6D6 RF amplifiers, crystal filter and was of 'battleship' construction. Though, as I recall, in 1943 it had a distinctly old-fashioned look compared with the sleek HRO.

WWII saw the hasty development and introduction in the early 1940s of many other high-performance receivers including Chinese copies of the HRO in Germany, Japan and seemingly in the UK, as G4BXD points out in his *Radio Bygones* article and previously reported in 'TT'.

So if, as G4BXD believes, it is "blatantly obvious" why users should have thought the HRO was "outdated" or "obsolete" by 1939, perhaps he will identify the pre-war receivers that he feels outclassed it! Surely there is more to performance than a calibrated dial and built-in band-switching.

F W J Sainsbury of the Marconi company wrote in 1954 in Section 22 of *Radio and Television Engineers' Reference Book*, "At one time a communication receiver could be described as a relatively cheap receiver, more expensive than a broadcast receiver, but very much cheaper than those designed for commercial organisations or for the Fighting Services. It normally covered the high-frequency band 3-30MHz and the medium-frequency broadcast band, and was developed largely to meet the demand by amateur radio operators. During the last war, communication receivers were pressed into service for a great many purposes for which they were not originally designed, but nevertheless proved very successful, since they could be operated and maintained by comparatively unskilled staff and could be manufactured easily in large quantities..."

SENSITIVE 10GHz RF INDICATOR

Stuart Jones, GW3XYW, writes: "When testing 10GHz equipment, the traditional 1N23 diode in a waveguide transition has a sensitivity limited by the diode forward volts drop. By amplifying the RF before detection this limitation is overcome. Following the changeover to digital satellite TV, there are plenty of surplus analogue LNBs available. Their original signal input was from 10,950 to 11,750MHz with an IF output from 950 to 1750MHz, ie the DRO local oscillator is 10,000MHz. I tested various LNBs made by different firms using my personal 10GHz beacon and a simple interface circuit (see **Fig 7**). I found they gave a saturated output of 3 - 3.5VDC.

"The gain of these units ranges from 40 - 50dB, so they were too sensitive for the application I had in mind. The simplest way of reducing sensitivity without modifying them was to place some anti-static black absorbent sponge in the feedhorn. The other possibility is to remove and ink-out one or more amplification stage (not tried). My beacon frequency is 10,368.75MHz. This produced an IF of 368.75MHz. The bandwidths of the LNBs are wide enough to cope with this. The LNB output stages are usually untuned MMICs. Lowering the LOs by adjusting the DRO trimmers is possible and this would increase the IF. On one unit I got an output of 432.75MHz.

"The free-running LO is satisfactory for FM, but not stable enough for CW or SSB modes." ◆

HERE & THERE

Readers will be extremely sorry to learn that Les Moxon, G6XN, who in the past has contributed so much antenna lore to 'TT' and is the author of HF Antennas for All Locations has, at the age of 94 years, been obliged by deteriorating health to give up amateur radio and enter a care home. Thanks to Brian Grist, G3GJX, for this information.

By Steve White, G3ZVW, 31 Amberley Road, London N13 4BH. E-mail steve.white@rsgb.org.uk

Whatever next

An interesting description of a new system which aims to use cellphone transmitters as part of a 'radar' system to track aircraft, vehicles or even people. The English system, being developed by Roke Manor Research Ltd, is claimed to be on the point of being viable, and great interest is being shown by the Armed Forces.

I guess we all know that radio signals are reflected off metal objects. It is the basic concept behind radar. I guess we also know that the cellular phones so many of us carry can be used to keep tabs on us, because the networks need to keep a record of where each switched-on phone is, and it is a simple matter of stringing together entries to provide a log of a phone's movements. Over the past five years, the UK company Roke Manor Research Ltd has been working on implementing a vehicle tracking system which uses the cellular telephone network, the difference being that their 'Cellular Radar' or 'Celldar' system can track a vehicle even if there is no cellular telephone on board! *Business Week* magazine has dubbed it 'Super-radar, done dirt cheap'.

CELLDAR

Celldar differs from conventional radar in several key respects. In a conventional radar system, the same set of equipment transmits pulsed radio signals and receives the returning echoes. Based on how long it takes a transmitted signal to return, and its strength, it is a relatively simple matter to calculate an object's distance and relative size. The direction element of conventional radar is derived from a rotating antenna, which transmits and receives signals within a narrow beamwidth. In contrast, Celldar takes a so-called passive approach, by monitoring and interpreting how signals from numerous cellular telephone base stations interact with objects such as cars, boats and planes. The hardware required to accomplish this is much simpler than conventional radar systems, ie it is just a monitoring station, but the software is far more complex. It is the power of modern computers which make the system viable, low cost and attractive.

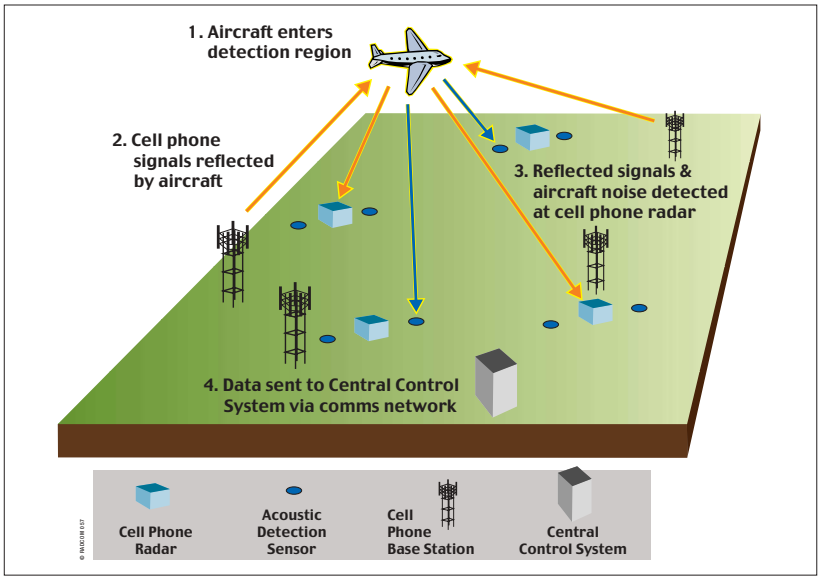
Signal processing

It takes a lot of signal processing to convert the reflections from cellular telephone transmissions off vehicles into a tracking system. There are significant problems to be overcome, such as stray reflections, multi-path propagation, the influence of buildings, trees etc. However, Roke insists that Celldar is now at the point of becoming a viable system... and the implications are huge. The military is said to love the idea, because amongst the first things attacked in a war are radar installations. Celldar uses only monitoring stations, which are far more difficult to put out of action because they do not transmit anything on which to lock a missile. With the enormous number of cellular telephone base stations around, it is not viable to knock out an entire network to render Celldar ineffective. Also it would be possible for a flying Celldar installation to monitor movements within a neighbouring country without ever transmitting a signal towards it. In the civilian sector, Celldar looks set to be used to provide an inexpensive way of overseeing traffic flow and road conditions; it is inexpensive because the cost of installing cameras and movement detectors all over the place would be eliminated. But it doesn't stop there - Celldar could be used to track individual cars on the road, so it could become part of a road pricing scheme.

Watching you...

According to *Business Week*, passive radar raises massive 'Big Brother' issues. Even though the human body is not a good reflector of radio waves, it is being suggested that the system *could* be developed to the extent that it would be able to track individual people, although it acknowledges that it might have to be done in conjunction with surveillance cameras. Whilst the primary intention might be to keep an eye on suspected terrorists or criminals, civil libertarians will surely have a field day if this ever comes to pass!

At this point, it is worth mentioning that Celldar isn't the only passive radar system currently under development. In the USA, the Lockheed-Martin Corporation has developed a system which monitors the reflections of FM broadcast and TV transmitters called 'Silent Sentry'. In France, ONERA (the French counterpart of NASA) is also working on a similar system.



Below: How Celldar can be used to locate an overflying aircraft. Passive detectors would also have microphones to detect and identify aircraft types by their unique noise signatures.

In conclusion, I've got to say that I don't really consider 'passive radar' to be an appropriate term, because 'passive' systems do not use sources of power. Clearly, there is a source of power being used in this system, it just happens that it is stray energy from this source which is being used. Am I allowed to suggest that 'incidental radar' would be more descriptive? ◆

WEB SEARCH

Passive Radar — www.roke.co.uk/sensors/stealth/celldar.asp

PIC-A-STAR

PART 18 SOFTWARE TRANSMITTER AND RECEIVER

The next two episodes cover the design and construction of a band-pass filter - for 10 bands - which is compatible with the rest of STAR.

Fig 41: Cross-section of band-pass filter enclosure. The main board is single-sided with critical incremental screening on the top provided by brass shim. The same material is used to form a central spine shield running up the middle of the filters in the lower compartment. It is bent over to make spring contact with a bottom cover plate - made from PCB stock.

Fig 42: Band-pass filters circuit diagram and mechanical overview. All the filters have identical circuit diagrams. A band-select line is set to +5V to engage a filter block and to 0V to isolate it. This is compatible with direct interfacing to the Pic 'N' Mix band-select outputs. These lines are deliberately routed around the side-plates and not across the filter. For illustration, the 160m filter is shown 'on' and the T/R switch is 'on receive'.

I felt a need to improve on my Third Method front-end (and add 60m) - and could find nothing suitable in the literature that met my requirements. This development is of general interest and application.

DESIGN AIMS

Like everyone else, I think I want narrow filters with no insertion loss, superb IP3 performance - and acceptable cost. I definitely want a finished size that does not impact on the overall dimensions of my transceiver.

For a fact, you can't simultaneously optimise all these parameters, so this design - like all others - is a careful compromise.

The prime function of any BPF is to reject the image frequency adequately - and it is achieved by this design (with a little help from an ATU and/or your LPF on the highest bands), provided your IF is 9MHz or higher - and you use high-side injection.

You could use different filter topologies. The mechanical construction is for three inductors (see **Fig 41**). That is the only practical constraint. The filter capacitors are soldered directly to the coil terminals and there is plenty of room for lots of them in different configurations.

PERFORMANCE REQUIREMENTS

Since, on the higher bands, Noise Figure is everything, I need low insertion loss above all else. Say 1.5dB. The consequence is wider filters which have the significant benefit of spanning more than one band.

The other great benefit - and integral to the whole front-end design strategy - is that I need the highest possible signal level going into the mixer so that any DDS spurii are below this level on the higher bands.

As you move down in frequency, Noise Figure becomes less and less important and greater insertion loss is a positive benefit, adding directly to the mixer intercept. It also helps to keep the power output flat on transmit if, like me, it tends to drop off at the higher frequencies. Phrased better, I don't drop off, but the power does.

COST CONSIDERATIONS

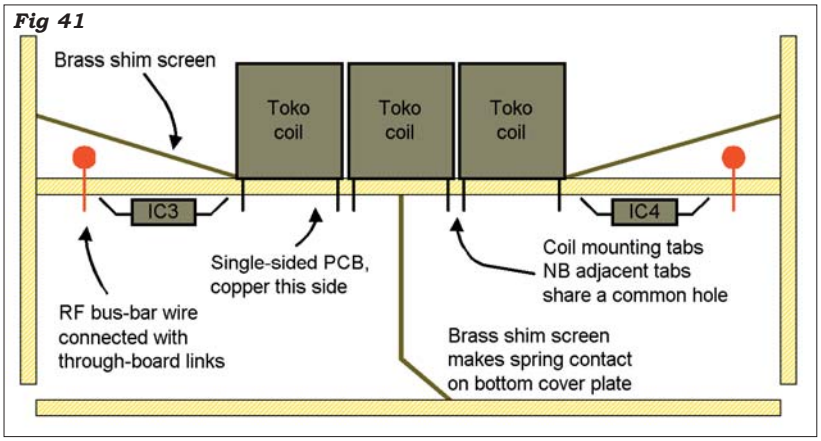
On the cost front, diode switching is the cheapest - but unacceptable for strong-signal performance. Good relays (and you would not want to use bad ones) are very expensive given the quantity involved. I settled on integrated bus switches and use the FST3126. This is a close relative of the FST3125 as typically used in the H-mode mixer, the difference being that the switch control logic is inverted and is compatible with direct drive from the Pic 'N' Mix band-switching latches.

As I have configured them, the *ON* insertion loss is less than I can measure, at well under 0.5dB; the *OFF* isolation is better than 90dB; and IP3 is better than 40dB. They are very inexpensive.

I settled for Toko coils, because they are readily available and also inexpensive - but I used the larger cup-core inductors where possible, ie on all bands up to and including 20m.

As a gross alternative, you could use fixed toroidal inductors and trimmer capacitors if the Toko coil *Q* or IP3 performance are issues for you.

Fig 41



COMPONENTS LIST

FOR THE OVERALL BPF ASSEMBLY

Resistors 1206 SMD

R7, R9	1k
R8	0R link (or wire!)
R10, R11	2k2

Capacitors

C7-C13	100n 1206 SMD
C14	1n feedthrough
C15	100n disc ceramic
C16	see text

Inductors

RFC1, RFC2	100µH axial choke
L1	Toko BTKANS-9445HM 3µ3

Integrated circuits

IC1	FST3126M
IC2	78L05 regulator

PER BPF FILTER BLOCK

Resistors, 1206 SMD

R1-R6, R12	10k

Capacitors

C1-C6	100n 1206 SMD
Filter capacitors	Polystyrene or silver mica For values, see Fig 42.

Inductors for filters

All Toko coils, 3 off

160m	154ANS-T1017Z
80m	154ANS-T1012Z
60m	154ANS-T1014Z
40m	154ANS-T1014Z
30m	154ANS-T1012Z but see text
20m	154ANS-T1007Z
17m/15m	TKAN-9448HM
12m/10m	BTKANS-9450HM

Integrated circuits

IC3, IC4	FST3126M

Miscellaneous

Small ferrite bead, 2 off

CIRCUIT DESCRIPTION

The filters (see **Fig 42**) are all 0.01dB Chebyshev designs. They are switched by identical switches at each end (IC3 and IC4). For each switch, two sections are paralleled to reduce 'on' insertion loss; one section inverts the control logic and one section grounds the filter when 'off'. For the T/R switch (IC1), three sections are paralleled on receive and one is used on transmit.

By Peter Rhodes, G3XJP, Danvers House, Wigmore, Herefordshire HR6 9UF. E-mail: g3xjp@qsl.net

L1 and C16 form a series-tuned IF trap and C16 should be chosen to resonate with L1 at your chosen IF frequency.

A spare filter position is provided for experimental purposes, eg different topologies, different frequencies.

The filter capacitors' exact theoretical values are given in Fig 42, and the nearer you can get to them, the better. I obtained a large bag of assorted polystyrene capacitors and arrived at the values to within 1pF (as measured on my DVM) with never more than two in parallel - by measuring the actual values within the tolerance range.

For example, the 40m and 20m blocks require six capacitors of near 20pF. The exact values were found from a small selection of 20pF and 22pF 5% capacitors.

PERFORMANCE SUMMARY

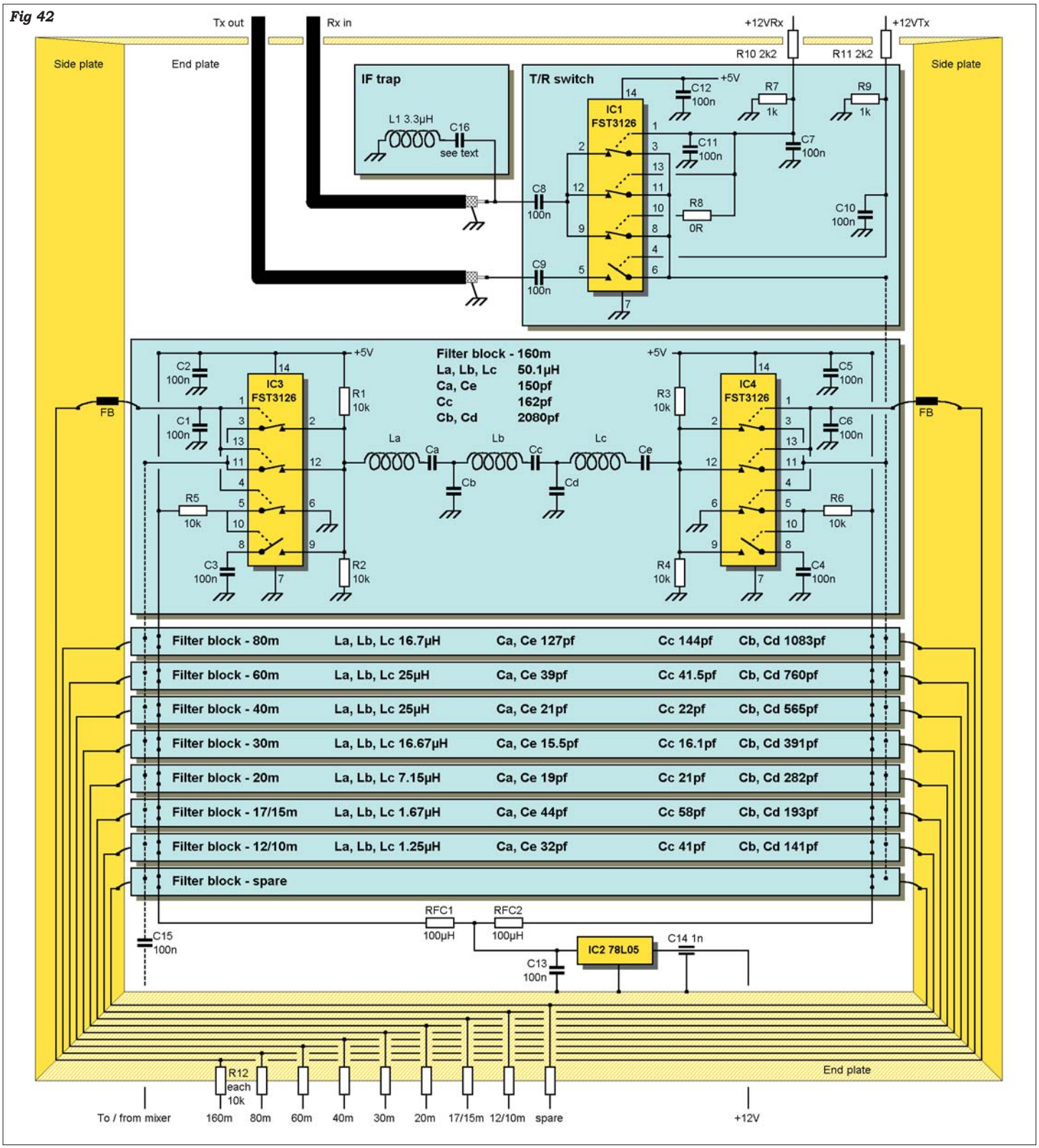
Up to 20m, the filters give >100dB image rejection. By 12m/10m, this has fallen to some 50dB, so you could benefit from some incremental filtering provided by low-pass filters, an ATU, or even a beam.

Insertion loss is around 5dB on the lower bands, falling to 3dB on 20m, 1.6dB on 17m, 1dB on 15m, 1.5dB on 12m and a delightful 1dB at 28MHz rising to a mere 1.3dB at 29.7MHz.

30m is exceptional because of the proximity to my IF. Here a 5dB in-band insertion loss rises to 18dB at 10.7MHz and 55dB at 9MHz. Depending on your mixer balance and trap tuning, this could be marginal with a 10.7MHz IF.

My compromises, your call! ◆

Fig 42



Attention All new "Class A" Licenc

Firstly, welcome to the H.F. Bands. Now you have the entire radio spectrum at yo
RIGHT ADVICE in choosing your H.F. Kit is paramount.

Martin Lynch has been selling equipment to Radio Amateurs for over 25 years and we know how to choo customers needs, NOT the dealers pocket!

For an informed, logical and honest guide to buying or upgrading your H.F. Station please call our Licensed H.F. Specialists on 020 8566 0007 or 020 8566 1120

FT-857 Ultra compact HF/6/2/70 mini mobile

- Only 1455x52x233mm
- TX: 100W HF/6m, 50W 2m, 20W 70cm.
- RX: 100kHz-56MHz, 76-108MHz, 118-164MHz, 420-470MHz
- Full DSP fitted free on all ML&S supplied FT-857's, including DSP Auto-notch, DSP Noise Reduction, DSP Mic Equaliser.

ML&S Special Package Deal ONE

FT-857 with DSP Fitted, RRP £849,
ML&S £799
PAY NOTHING FOR SIX MONTHS!
Pay discounted price of only £799 Interest FREE or pay 36 x £34.69 (TAP £1248.84. 26.9%APR)

ML&S Package Deal TWO

■ FT-857 with DSP fitted ■ YSK-857 Head Separation Kit ■ Collins 2.2kHz SSB Filter YF-122S ■ Collins 500Hz CW Filter YF-122C ■ ATAS-120 Motorised Auto Antenna ■ Maldol Mount and cable assembly for above
PAY NOTHING FOR SIX MONTHS!
Pay discounted price of £1236 in six months time INTEREST FREE or pay 36 x £53.66
(TAP £1931.76. 26.9% APR)

FT-897 The world's first 20W/100W Transportable Transceiver

For an afternoon at the park, climbing Summits on the Air or an emergency exercise, power your FT-897 using the optional internal FNB-78 battery packs, and you're on the air completely portable.

- Size only: 200x80x262mm
- Weight: 8.6lb, 3.9kg
- Can be internally fitted with 240V PSU (FP30) or two internal Ni-MH batteries
- TX External 13.8VDC: 100W HF/6m, 50W 2m, 20W 70cm
- TX using optional internal Batteries: 20W all bands.
- RX: 100kHz-56MHz, 76-108MHz, 118-164MHz, 420-470MHz

ML&S Special Package Deal ONE

FT-897 RRP £1099,
ML&S Only £989
PAY NOTHING FOR SIX MONTHS!
Pay discounted price of only £989 interest FREE or pay 36 x £42.94
(TAP £1545.84, 26.9% APR)

ML&S Special BASE STATION SYSTEM Package Deal TWO

■ FT-897 ■ Internal PSU, FP-30 ■ Bolt-on Auto Tuner, FC-30 ■ Collins 2.2kHz SSB Filter YF-122S ■ Collins 500Hz CW Filter YF-122C ■ Maldol HVU-8, Eight Band Base Antenna
PAY NOTHING FOR SIX MONTHS!
Pay discounted price of £1760 in six months time INTEREST FREE, or pay 36 x £76.41
(TAP £2750.76, 26.9% APR)

TS-570DGE

Probably the best selling HF-only rig this side of a TS-850S!

Built-in Auto ATU, excellent easy to read display and does exactly what it says in the handbook.

TS-570DGE RRP £999 ML&S Call!

Package Deal

- TS-570DGE
- SP-23 External Speaker
- MC-60A Desk Microphone
- MS-1228 PSU
- MFJ-949 ATU

Only £1249, or ZERO DEPOSIT & 36 x £45.41 p/month

IC-7400

BUY NOW AND PAY NOTHING FOR SIX MONTHS!

Full DSP HF, 6m and 2M 100W Transceiver
The latest 32-bit DSP Technology employed by the IC-7400 earned it favourable comments by the UK's top reviewer, Peter Hart. 100 Watts on all bands, Huge LCD Panel display, Twin PBT, Digital Noise Reduction, built in Microphone Equalizer for great sounding TX audio.

RRP £1569 - ML&S Call!

Package Deal

- IC-7400 Full DSP 100W Transceiver
- SM-20 Deluxe Desk Microphone
- SP-21 Matching Base Speaker
- FP-1030A 25 Amp PSU

Pay discounted price of £1470 in six months time INTEREST FREE or pay 36 x £63.82
(TAP £2297.52, 26.9%APR)

New! FT-817DSP

Package 1 The new FT-817 DSP is available from stock for only **£649.95.**
Price includes: New FT-817 fitted with DSP, NiCads, Microphone, Charger, Antenna, Strap and two year warranty.

Package 2 As above but complete with CSC-83 Carry Case and Miracle Whip mk11 for only **£789.95**
P&P on either package only £10.00.

Package 3

As package 2 above but including Tokyo-HyPower HL-50B 50 Watt amp (HF/6M) & MS-1228 PSU 25A PSU. **Only £1114.95 or ZERO DEPOSIT & 36 x £40.54 p/month**

New! Kenwood TS-480SAT/HX

HF/50MHz All Mode Transceiver

DX Distinction - Creative Concept, Elegant Engineering

One Rig to Rule Them All - Kenwood Engineering at its Finest

As a go-anywhere HF/50Mz all-mode transceiver, Kenwood's new TS-480HX/TS-480SAT is well ahead of the pack when it comes to advanced electronic engineering, convenient features and ease of operation.

200W output (50MHz: 100W) DC 13.8V operation: The TS480HX is a highly portable rig offering 200W output (50MHz: 100W) - making it ideal for both base station and DX'ing applications. 100W model: The 100W TS-480SAT is additionally equipped with a built-in automatic antenna tuner.

Remote control (Kenwood Network Command System):
Using the ARHP-480 radio host program, you can control the transceiver remotely over a LAN or via the Internet. The Kenwood Network Command System also enables VoIP (Voice over Internet Protocol) applications.

For further details see our web site: www.hamradio.co.uk

Base Station Package Deal ONE:

- TS-480SAT 100W version c/w ATU or HX 200W version*
- VGS-1 Voice guide & Storage unit
- YF-107SN SSB Narrow Filter
- SP-23 External Speaker
- MC-60A Desk Microphone

Pay discounted price of £1315 in six months time INTEREST FREE or pay 36 x £57.09
(TAP £2055.24, 26.9%APR)

***For TS-480HX 200W (without ATU) pay discounted price of £1399 in six months time INTEREST FREE or pay 36 x £60.74**
(TAP £2186.64, 26.9%APR)

Mobile Station Package Deal TWO:

- TS-480SAT 100W version c/w ATU
- SP-50B Mobile Speaker
- Maldol HMC-6 HF Mobile Antenna (7-432MHz)
- Maldol mobile mount & cable assembly

Pay discounted price of £1139 in six months time INTEREST FREE or pay 36 x £49.45
(TAP £1780.20, 26.9%APR)

Basic TS-480SAT

RRP: £1099 ML&S: CALL

TS-480HX

RRP: £1199 ML&S: CALL

BUY NOW AND PAY NOTHING FOR SIX MONTHS!

TRADE-INS

Have a trade in? **We pay TOP MONEY.** Call the sales desk or E-MAIL your request. sales@hamradio.co.uk

Call us 6 days a week, mon-sat 9.30-5.30

0208 566 1120

zero deposit finance
Finance example: ATAS-120 RRP: £249.95.
Payment illustration: Zero deposit and NOTHING to pay for 6 months.
If paid in 6 months - no interest payable or 36 payments of £10.85.
Total amount payable: £390.60. APR: 26.9%. ML&S is a licenced credit broker.
Finance offered subject to status. Full written details on request. E&OE

Don't forget! ML&S are approved stockist for the following: MFJ, Maldol, Miracle Antenna, Revex, Icom, Kenwood, Yaes

ce Holders!

our disposal getting the

se a set up that suits the

ML&S are proud to co-sponsor this important HF 5-star DXers event

ML&S martin lynch & sons

Suppliers of Communications Equipment

Looking for READY CASH for your unwanted equipment?

ML&S Buyers are trooping the country looking for good clean Amateur Radio Equipment. Doesn't matter how old as long as it's in working order and in good condition.

For the BEST OFFER ALWAYS call Chris on 020 8566 1120 or email a list of your "Kit 4 Cash" to Chris@HamRadio.co.uk

TS-2000E/X

All band All mode Base Transceiver

The TS-2000 is a full function HF, 6M, 2M, 70cm and 23cm (with optional UT-20) DSP base station. Built in Auto ATU, it has on board 9k6 packet modem, full remote capabilities when used with the optional RC-2000 controller. The TS-2000 is, which ever way you look at it, the most advanced all band all mode operation transceiver available today.

Package Deal

- TS-2000E Transceiver
- UT-20 23cm 10w unit
- MC-60A Desk Microphone
- SP-23 Desk Speaker
- ARCP-2000 Control Software

The remote controller RC-2000 is also available at £209.95

For the TS-2000X version (with 23cm), package deal as above, ML&S £2469 or ZERO DEPOSIT & 36 x £89.77

IC-703

CALL NOW for the very best price available!

RRP: £703

10 watt QRP HF/50mHz radio with built in ATU (Ideal for the new Foundation license)

TMD-700E

RRP: £519.95

CALL NOW for the very best price available!

Dual band VHF/UHF mobile with built-in TNC for APRS

TH-D7E

RRP: £359.95

CALL NOW for the very best price available!

Dual band handy with Built in TNC

TH-F7E

Dual Band VHF/UHF handy with Built in scanner

RRP: £289.95

CALL NOW for the very best price available!

TS-870S

RRP: £1599.95

CALL NOW for the very best price available!

100 watt HF all Mode with DSP & ATU

CALL NOW for the very best prices available!

IC-E90

RRP: £309.95

3 band handheld VHF/UHF + 50mhz

IC-7800

RRP: £7999 approx

Deluxe DSP radio - call for details

IC-2725

RRP: £359.95

CALL NOW for the very best price available!

Dual Band VHF/UHFMobile

IC-706mk2G

RRP: £940

CALL NOW for the very best price

HF/50mHz/144mHz/430mHz all mode mobile

IC-756Pro mk11

BUY NOW AND PAY NOTHING FOR SIX MONTHS!

When you consider the new IC-7800 is basically two of these bolted together but costs £7500, the ë756Pro is a bargain!

IC-756Pro mk11 RRP £2695. ML&S Call!

Package Deal One

- IC-756Pro mk11
- SP-21 Matching Speaker
- SM-20 Deluxe Desk Microphone
- FP-1030A 25A PSU

Pay discounted price of £2269 in six months time INTEREST FREE or pay 36 x £82.49

(TAP £2969.64, 26.9%APR)

FT-1000MPmkV & Field

SPECIAL DEALS

BUY AN FT-1000MPmkV or FIELD DURING DECEMBER OR JANUARY & PAY NOTHING UNTIL JUNE 2004!

FT-1000MPmkV 200W: £CALL
FT-1000MPmkV Field: £CALL

You won't find them for less on the same deal!

FT-920AFC 100 watt HF/50 mHz base station with DSP and Auto ATU
RRP: ~~£1299~~ ML&S: £CALL

FT-8900
RRP: ~~£429~~
ML&S: £CALL

Latest Quad-Band Mobile. 10/6/2/70

NEW! FT-8800E

The FT-8800E operates as two radios in one, with either 144MHz or 430MHz as the Main TX/RX band, while simultaneously monitoring the other band. Each band has its own Volume and Squelch controls. And, if you like, you can configure your FT-8800R for VHF-VHF or UHF-UHF operation, too!

Available from stock. ML&S Only £299.95 (RRP £339.95)

The Smallest 1.5W Dual Band Handie in the World!

The new VX-2E

The world's smallest Dual-Band HT with up to 1.5 Watts of output power is your high-tech gateway to the world, via VHF, UHF, Shortwave Broadcast, Marine and Aircraft bands, or WiRES- Internet linking!

- Dual-Channel "Priority" Operation
- VOX (optional VC-25 Headset required)
- RF Squelch Only responds to signals exceeding user-set signal strength
- Channel Counter Searches for frequency of strong nearby station
- Automatic Repeater Shift (ARS)
- ARTS - Auto-Range Transponder System
- Busy Channel Lock-Out (BCLO)
- DC Voltage Meter
- Wide/Narrow Deviation Setting
- Cloning For quick transfer of programming data between two VX-2 series
- 1750Hz Tone Calling For European Repeater Access

Now in Stock! Only £169.95 (RRP £199.95)

Available for the very first time in the U.K. from ML&S

FT-847

The original multi-band radio

HF/6/2/70 plus 4 metres "Shack in a box"

RRP: £1420

CALL NOW for the very best price available!

Check out our new shopping basket website:

www.hamradio.co.uk

ML&S martin lynch & sons
Suppliers of Communications Equipment

128, 140-142 Northfield Avenue, Ealing, London W13 9SB
email: sales@hamradio.co.uk
tel: 0208 566 1120 fax: 0208 566 1207

su, Oregon Scientific, bhi Ltd, Watson, Diamond and many more!

Maldol

For many years Hokushin have manufactured trend setting mobile antennas of the finest quality.

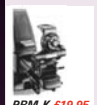
All the antennas featured are the conventional M mount that has become the industry standard. The VHF/UHF selection are slender profile with foldover on most models while the HF range are sturdy and durable offering excellent mobile performance.

Maldol Mounts

EM-K80 £17.95

EM-L80 £19.95

EMW-325 £34.95



PRM-K £19.95

PRM-L £19.95

PRM-T £17.95

PRM-TW £19.95

Maldol

Earpiece & Microphone Headsets available for Yaesu, Icom & Kenwood

Apex Range

AX-40 *144/430MHz* — £24.95

TYPE 1/4λ, 144MHz, 1/2λ, 430MHz • GAIN 3.0dBi 430MHz • MAX POWER INPUT 60W • CONN. M-P • LENGTH 425mm • WEIGHT 110g

AX-75 *144/430MHz* — £33.95

TYPE 1/2λ, 144MHz, 5/8λ, 430MHz • GAIN 3.2dBi 144MHz, 5.7dBi 430MHz, • MAX POWER INPUT 60W • CONN. M-P • LENGTH 760mm • WEIGHT 140g

AX-95 *144/430MHz* — £32.95

TYPE 1/2λ, 144MHz, 5/8λ, 430MHz • GAIN 3.3dBi 144MHz, 5.8dBi 430MHz, • MAX POWER INPUT 60W • CONN. M-P • LENGTH 950mm • WEIGHT 150g

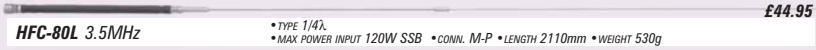
AX-110 *144/430MHz* — £34.95

TYPE 1/2λ, 144MHz, 5/8λ, 430MHz • GAIN 3.5dBi 144MHz, 6.0dBi 430MHz, • MAX POWER INPUT 70W • CONN. M-P • LENGTH 1100mm • WEIGHT 150g

HFC Range

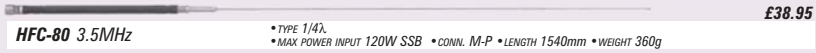
HMC-6S *7/21/28/50/144/430MHz* — £79.95

TYPE 1/4λ, 7/21/28/50MHz, 1/2λ, 144MHz, 5/8λ, 430MHz • GAIN 3.5dBi 144MHz, 6.0dBi 430MHz, • MAX POWER INPUT 120W 7/21/28, 150W 50/144/430MHz • CONN. M-P • LENGTH 1800mm • WEIGHT 800g



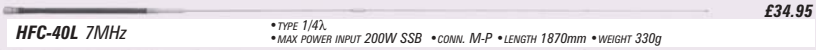
HFC-80L *3.5MHz* — £44.95

TYPE 1/4λ • MAX POWER INPUT 120W SSB • CONN. M-P • LENGTH 2110mm • WEIGHT 530g



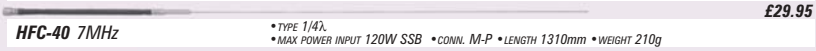
HFC-80 *3.5MHz* — £38.95

TYPE 1/4λ • MAX POWER INPUT 120W SSB • CONN. M-P • LENGTH 1540mm • WEIGHT 360g



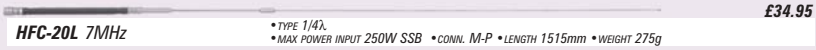
HFC-40L *7MHz* — £34.95

TYPE 1/4λ • MAX POWER INPUT 200W SSB • CONN. M-P • LENGTH 1870mm • WEIGHT 330g



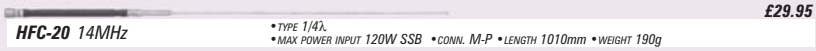
HFC-40 *7MHz* — £29.95

TYPE 1/4λ • MAX POWER INPUT 120W SSB • CONN. M-P • LENGTH 1310mm • WEIGHT 210g



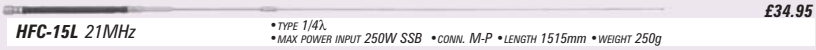
HFC-20L *7MHz* — £34.95

TYPE 1/4λ • MAX POWER INPUT 250W SSB • CONN. M-P • LENGTH 1515mm • WEIGHT 275g



HFC-20 *14MHz* — £29.95

TYPE 1/4λ • MAX POWER INPUT 120W SSB • CONN. M-P • LENGTH 1010mm • WEIGHT 190g

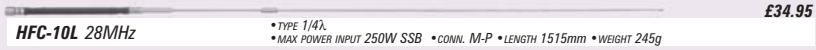


HFC-15L *21MHz* — £34.95

TYPE 1/4λ • MAX POWER INPUT 250W SSB • CONN. M-P • LENGTH 1515mm • WEIGHT 250g

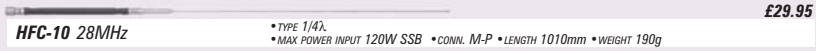
HFC-15 *21MHz* — £29.95

TYPE 1/4λ • MAX POWER INPUT 120W SSB • CONN. M-P • LENGTH 1010mm • WEIGHT 190g



HFC-10L *28MHz* — £34.95

TYPE 1/4λ • MAX POWER INPUT 250W SSB • CONN. M-P • LENGTH 1515mm • WEIGHT 245g



HFC-10 *28MHz* — £29.95

TYPE 1/4λ • MAX POWER INPUT 120W SSB • CONN. M-P • LENGTH 1010mm • WEIGHT 190g

Maldol HVU-8

Maldol

The Maldol HVU-8 is a unique and ultra-compact HF, VHF, and UHF antenna developed for confined and restricted space installations like apartments and condominiums or for temporary or portable use. Installation is easily accomplished and convenient due the HVU-8 being only the traditional height and weight of HF vertical antennas. It includes 80/40/20/15/10/6/2M/70cm bands in a compact and user defined combination to complement the new multi-band HF/VHF/UHF radios that have recently been introduced. Each HF band and 6M has it's own independently tuned radiator and radial system while the main antenna mast is pre-tuned for constant operation on 2M/70cm. Of course, band width is very narrow and radiator element tuning takes time and patience but the results are surprising. The HVU-8 comes with mounting brackets, U-bolts, etc. for easy installation.

HVU-8 Specifications

- Frequency: 80/40/20/15/10/6/2M/70cm bands
- Type: HF and 6M: wave.
- 2M: wave 2.15 dBi gain
- 70cm: Two 5/8 waves in phase 5.5 dBi gain
- Power: 200 watts SSB on HF and 150W FM on 6M to 70 CM
- SWR: 1.5:1 at fO frequency
- Connector: UHF (SO-239)
- Mast Diameter: 1.0 - 2.36 inches (25-60 mm)
- Height: 8.5 feet (2.62 m)
- Weight: 5 Lbs. 7 ounces. (2.4 kg)

Only £199.95

Maldol HMC-4

Type:	Amateur HF/VHF/UHF mobile antenna
Band(s):	10 m - 1/4-wave 6 m - 1/4 wave 2 m - 1/2-wave 70 cm - 2*5/8-wave
Gain:	10 - 0 dBi 6 m - 0 dBi 2 m - 2.15 dBi 70 cm - 5.5 dBi
Max power:	120 W (10/6 m: 80 W)
Impedance:	50 ohms, M-plug/PL-259
Length:	1.19m
Weight:	390gr
Manufactured:	Japan, 2003-200x
Other:	Suitable for Yaesu FT-8900R.

Only £69.95

Maldol VK5 Junior vertical Antenna HF

The VK5jr is an antenna "Ground Plane" for vertical HF multiband with "traps", covering the amateur bands of 80, 40, 20, 15, 10 meters.

Characteristics

- Bands: 10, 15, 20, 40, 80 meters

Width of band:

- 10 meters: 1400KHz
- 15 meters: 300KHz
- 20 meters: 200KHz
- 40 meters: 80KHz
- 80 meters: 30KHz
- Height: 6.1 meters
- Diameter of the radial ones: 2 meters
- Permissible maximum power: 500 W (SSB)
- Nominal SWR: 1:1.5 in the central frequency
- Weight: 6 kg
- Resistance to the wind: 120 Km/h

Only £199.95

Call today for a catalogue of the Maldol range.

New Maldol Handheld Discone. Maldol HDX30. New discone to clip on top of any bnc scanner. Only £38.95

Power Amplifiers from Tokyo-HyPower

As the only Authorised U.K. distributor for Tokyo-HyPower, ML&S are pleased to announce some exciting new products from one of the oldest Japanese manufacturers.

HL-50B The only all mode 50W Linear Amplifier designed to work with the FT-817 & IC-703. **Only £249.95**

HX-240MkII Got a high performance 2M multimode that you want to use on H.F.? Thought so! Just plug the new compact HX-240mkII straight onto the antenna socket and convert TX & RX across all the main H.F. Amateur Bands (80-10m). Almost 40Watts output and very simple to use. **Only £249.95**

HL-700B Compact All mode solid state 500W Linear Amplifier. Only 10 Watts drive will produce a staggering 400 Watts output. (100W produces 600W). 12V DC required @ 70 Amps. **Only £899.95**

HL-200BDX A mobile/base 200W HF Amplifier (up to 350W with optional Cooling Fan) 5W input produces 100W out, 50W or more 200W plus. Complete with remote control head for easy mobile install. **Only £599.95**

HL-1Kfx A sturdy 240 volt powered 500W linear amplifier all mode with protection against over-drive, over heat, high drain voltage, and faulty band setting. ALC out. Remote TX control, all for a very attractive price. **Only £1399.95**

HL-2Kfx Available early 2004, this new Linear Amplifier not only produces 1kW out on HF but the same on 6 Meters. All solid state, heavily protected and weighing only 22 kilos, we can't wait to get our hands on the first shipment. Place your deposits now! **Price TBC**

HL-721DX Desined with the TH-F7E, VX-5/7R and other twin banders, just slip this new FM amplifier in line and boost your output to a very respectable 15-18 Watts. **Only £129.95**

accessories

The Deluxe Range of 'CT Keys' from ML&S.

ML&S are pleased to announce the range of CT keys for the Radio Amateur. Beautifully engineered and competitively priced. Who said Morse code was dead?

CT-1 Miniature Hand Crafted Key £65.73

CT-Asia-Polished Brass Hand Key ..... £ 92.73

CT-Asia 'Original' Hand Key ..... £ 97.73

CT-Deluxe Large Hand Crafted Hand Key £132.73

CT-Ham-Dual Iambic Lever Paddle £84.95

CT Europe Iambic Lever Paddle £111.73

CT9B Dual (Iambic) Lever Paddle. All Brass Edition £73.73

The full range is available from stock.

Please add £10 for express shipping.

look! New Miracle Antenna MkII has arrived!

Miracle whip MkII

This antenna has been designed with the Yaesu FT-817 & FT-897 in mind. The MkII uses a black anodized longer flexible whip for better low frequency tuning. The performance is staggering and it will work with any radio from 3.5-460mHz (25W max). without a counter poise. Ideal for listeners, radio amateurs and commercial applications. ML&S: £129.95

MyDEL Wire Antennas & Accessories

The complete "Megatrap" 160-40m antenna.

The MyDEL Brand was introduced back in the early nineties primarily to offer a range of high quality products that included wire antennas for commercial and amateur radio use. The most famous of the range is the Multitrap— (80m-10m, 20m long) & Megatrap— (160m-40m, 32m long) wire dipoles. Both these antennas use 1kW traps through-out the range, both constructed using pre-tensioned copper multi-strand wire covered in a tough plastic outer sheath. Both coax fed, they require very little tuning and can get an Amateur Station up and running on all bands within one hour of erection.

MyDEL Multitrap 80-10m. £89.95

MyDEL Megatrap 160-40m. £99.95

Just got onto H.F.? Buying a new rig and need a manual Antenna Tuner?

MFJ offer an excellent range of affordable tuners. Here are our best selling Top Three.

MFJ-949E

The MFJ 949 is a 300 watt antenna tuner. This T-circuit tuner cover 1.8ñ30 MHz. and features a peak and average reading cross needle SWR meter, built-in 300 ohm dummy load, eight position coax switch, and more. The tuner measures 25 W x 8 H x 18 D cm. and weighs 2.2kg. **Only £159.95**

MFJ-969

The MFJ 969 is a 300 watt antenna tuner which cover 160-6 meters. If features an air-core roller inductor with selfwiping contacts, mechanical roller inductor counter, 8 position antenna switch, built-in 50 ohm dummy load, crossneedle SWR meter which simultaneously indicates forward and reflected power as well as SWR-without the need for time consuming calibration. The tuner measures 3.5"H x 10.5"W x 9.5"D. **Only £199.95**

MFJ-971

Tunes coax, balanced lines, random wire 1.8-30 MHz. Cross-Needle SWR/Wattmeter has two switchable ranges: 30, 300 or user selectable 6 watt ranges. Tiny 6 x 6 x 2 inches, ideal for portable/mobile installs. **Only £99.95**

Power Supplies

Yaesu FP-1030A

If you want to invest in a power supply that won't let you down and you are fed up with cheap badge engineered rubbish, then take a look at this. The FP-1030A is over volts protected (so it won't blow up your rig!), has dual meters for Volts & Amps and is attractively designed. It features four separate outputs including a Cigar-Lighter socket for running handies via their car adapter lead. **Only £179.95**

MS-1228

Looking for that perfect lightweight PSU for your new FT-857/897 or IC-706? This compact design will supply 23 amps @ 13.8V DC and is not much bigger than the IC-706 itself. **Only £74.95**

Diamond Antenna Power/SWR Meters

SX Series. Installs between transmitter and antenna for measurement of forward and reflected average (CW) and SSB (P.E.P.) RF power, and SWR. Accuracy is approximately that of the Bird 43; carrier measurements ±5% (typical) of full scale depending on frequency and power. Illuminated meter, sensor switch and LED indicator. Power ratings listed below are for intermittent operation. For continuous mode (CW, FM etc.) maximum ratings vary with frequency and are listed in the instructions. All models have SO-239 connectors except SX-1000 with Type-N. SX600 and SX1000 have dual direction couplers. Requires 12 VDC if you wish to light meter. Size: 6'h x 2 1/2'w x 4'd. Weight: 2 lbs.

Model Number	Power	Freq. Range	Display	Price Each
SX100	3KW	1.6 - 60 MHz	30W / 300W / 3KW	£109.95
SX200	200W	1.8 - 200 MHz	5W / 20W / 200W	£79.95
SX400	200W	140 - 525 MHz	5W / 20W / 200W	£89.95
SX600	200W	1.0 - 160 MHz + 140 - 525 MHz	5W / 20W / 200W	£139.95
SX1000	200W	1.8 - 160 MHz + 430 - 1300 MHz	5W / 20W / 200W	£189.95

SX20C

Diamond SX20C and SX40C Watt meters. The Diamond SX20C and SX40C are compact Watt meters featuring cross needle meter for measuring power and SWR simultaneously.

Model Number	Power Settings	Freq. Range	Size	Price Ea.
SX20C	30w & 300w	3.5 - 150 MHz 3.5-30 / 50-54 / 130-150 MHz	3 5/16" W x 3 5/16" H x 3 3/4" D	£74.95
SX40C	15w & 150w	144 - 470 MHz	3 5/16" W x 3 5/16" H x 3 3/4"	£69.95

ML&S martin lynch & sons
Suppliers of Communications Equipment

0208 566 1120

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

ML&S are proud to co-sponsor this important HF 5-star DXers event!

Call us 6 days a week, mon-sat 9.30-5.30

By Brian Horsfall, G3GKG. West Mount, 183 Chester Road, Macclesfield, Cheshire SK11 8QA. E-mail: brian@g3gkg.fsnet.co.uk

The doublet de-mystified

Some basic information on this most versatile of antennas

Left: The doublet at G3GKG.

The doublet is the most versatile and trouble-free all-band aerial for use on the amateur HF bands. My own installation is shown in the photograph above.

It offers the facility to achieve perfect matching, ie an SWR of 1:1 (or, as I prefer to express it, zero reflected power), with high forward power efficiency, anywhere in the entire HF spectrum. Add to this the fact that, provided its inherent balance is maintained by feeding it from a properly-balanced matching unit, it also gives maximum immunity against interference, either incoming or outgoing. It is obvious why, wherever space considerations allow, experienced operators eventually abandon all other compromises and/or gimmicky aerial solutions, and adopt the simplicity and perfection of the doublet.

BASIC INFORMATION

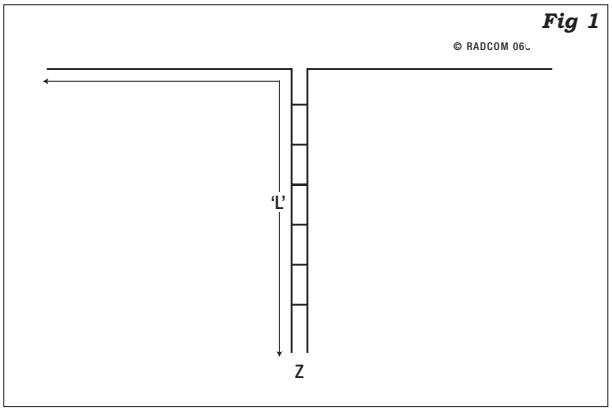
In its simplest and most all-round efficient manifestation, it consists merely of two equal lengths of wire, forming a top section of any convenient length, coming together in the centre, with spacers attached, so as to create a similarly random length of twin feeder. For maximum efficiency as a radiator, the actual length of the top section does, of course, matter and it should be at least equal to an electrical half-wavelength at the lowest frequency of intended use (so that the current maxima will then be in the top, rather than in the feeder). If space is restricted, bending the ends down (by no more than 90°) will have very little effect on the efficiency. Similarly, height above ground and orientation will be determined by whatever will fit the location and, on the lower frequency bands at least, will have little influence on the effective polar diagram; for inter-G working it's the signal that goes *upwards* that counts.

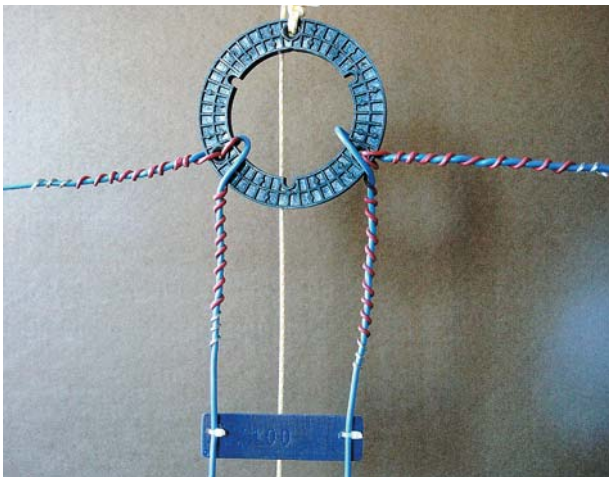
Whatever the individual lengths of the top section and the feeder, the natural fundamental resonance of the system as a whole is determined by the length, L (**Fig 1**), measured from either end of the aerial to the bottom of the feeder. It will, of course, be at a much lower frequency than the required band, but that is of no practical consequence. The noteworthy fact is that the impedance, Z, at the feed-point, ie at the bottom end of the twin feeder, will also depend on this same length. Neither the impedance at the centre of the top nor the nominal impedance of the feeder are of any real significance.

Actually *at* the resonant frequency, the impedance 'seen' by the transmitter or ATU, would be purely resistive and low in value but, at all other frequencies, the feed-point resistance itself is increased and reactance is introduced. As the operating frequency is moved away from resonance, both the resistive and reactive components of the impedance increase more and more rapidly (the reactance being capacitive (-j) if the frequency is lowered and inductive (+j) if it increases) until a frequency is reached where the total impedance is at a very high value (thousands of ohms) and, again, becomes purely resistive. Beyond this maximum, the sign of the reactance (j) suddenly reverses and the impedance decreases, quite quickly at first and then more gradually, until it is again low and purely resistive when, L is equivalent to three-quarters of one wavelength (3λ/4). At still higher frequencies, there will be any number (and parts) of such cycles.

So, if the doublet is to be used over a wide range of frequencies, the feed-point impedance in the shack, at any given frequency, may comprise any combination of resistance and reactance. It is important to realise that, at all frequencies, there will be standing waves along the entire length of both aerial and feeder. The only constant factor is that, at the far end of each half of the aerial there will be a voltage maximum and the standing waves could be plotted right back from there to the feed-point. Moreover, nothing done in the way of tuning or impedance matching at the bottom of the feeder will affect

Fig 1: The basic doublet configuration.





Above: The method used to support the bend. The centre insulator is a bit of DIY improvisation, being the hub from an NAB reel-to-reel tape spool. The spacers are likewise, using the packing pieces employed by plastic window installers.

Below right: Inside view of the ATU. The toroid/ switch assembly (top right) is to cater for an alternative, aperiodic feed directly to the receiver.

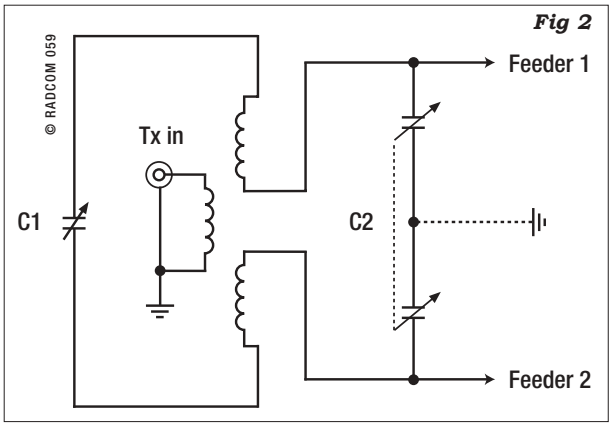
either the standing waves or the actual impedance at that point. The purpose of the matching circuit is to convert that balanced, random impedance so that the transmitter sees it as an unbalanced, resistive load of, say, 50Ω. If both the feed arrangement and the disposition of the two halves of the aerial maintain a true balance, the currents on the two legs of the feeder will always be in anti-phase and radiation from them, and pickup of any external interference on them, will cancel out.

My own doublet is constructed using just two 83ft (25.3m) lengths of heavy-duty, stranded, PVC-insulated wire, the centre of which is shown in the photograph above. The two outside ends are completely sealed against water ingress and the nearer 15ft (4.8m) of the two legs form the feeder, which comes right into the ATU; thus there are no joints or connections exposed to the weather.

BALANCED MATCHING

Although the two extremes of impedance mentioned in the above discussion correspond to the situations often referred to as requiring 'current feed' on the one hand and 'voltage feed' on the other, it is quite possible to make a matching unit that will cope with any combination of reactance and resistance to be found in any aerial which is suitable (ie long enough) for the band in use, provided the physical attributes of the actual components used are adequate. For several years, I have been using an aerial matching system (ATU) which I devised in about 1993, only to discover subsequently that, although generally neglected, it had appeared in print at various times as far back as 1955, and probably very much earlier. I have also more recently noticed that the same circuit appears to be quite a favourite of Pat Hawker, G3VA.

Fig 2: The matching unit.



The basis of this design, shown in **Fig 2**, is a sort of link-coupled, balanced π-coupler that does not require any tedious setting of taps on the coil. It uses one variable capacitor, C1, to tune the network and a second one, C2, to 'tune out' any reactance at the feed point and match the overall impedance - effectively performing the functions of both the second capacitor and the movable taps of the well-known ARRL circuit. The two controls do interact but it is very easy to obtain a perfect match by rotating them alternately.

Tune-up initially using low power; rotate each control until a decrease is observed in the reflected power (or SWR) reading. Then continue, slowly, in order to reduce reflected power to a minimum. With practice (and safe-cracker's fingers in some situations, see the next paragraph), it is possible to obtain zero reflected power, coincident with maximum forward power.

In general, the lower the impedance of the load the more capacitance will be required in C2 and, as the two capacitors are effectively in series as regards resonating the inductor, the lower will be the capacitance of C1. For either capacitor, the lower the capacitance when loaded, the higher will be the voltage across it at any given frequency and power. Also, the lower the reactance in the load, the broader will be the tuning - it is only with very high impedance and highly reactive loads that the tuning becomes quite sharp and critical.

PRACTICAL CONSIDERATIONS

There are three possible arrangements of the two variable capacitors. Either C1 or C2 can be a twin-gang type with the frame earthed, to provide a centre about which the feeders are balanced**,** or both can be single-gang types, completely isolated from earth so that the whole of the secondary circuit, including the aerial system itself, is floating. In virtually all amateur installations, the aerial will be more or less unbalanced anyway so there is a strong argument for using the floating method and letting the whole aerial/feeder system find its own 'balance'. (In either case, high-value resistors should be connected to earth from each side of the feeder to prevent static voltage build-up.)

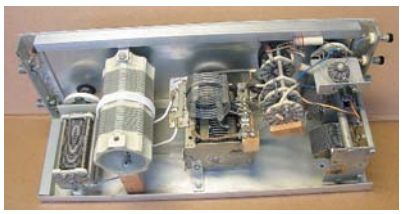
C1 will need to be fairly wide-spaced, but of reasonably low capacitance, whereas, provided steps are taken to avoid the higher feed-point impedances (at or near voltage maxima), C2 can often be an old-fashioned, close-spaced receiving type. It might be advantageous to use a twin-gang capacitor, with or without the earth connection to the frame, so that the two sections are in series (so as to double the voltage rating) but that, of course, reduces the capacitance swing to half that provided by one section. In any event, at the lower frequencies, particularly if the feed-point is at or near a current maximum (low impedance), the value of capacitance required can be quite high - necessitating either a multi-gang component with the sections in parallel, extra fixed capacitors to be switched in, or both. (However, the voltage rating of those particular fixed capacitors could be relatively low.)

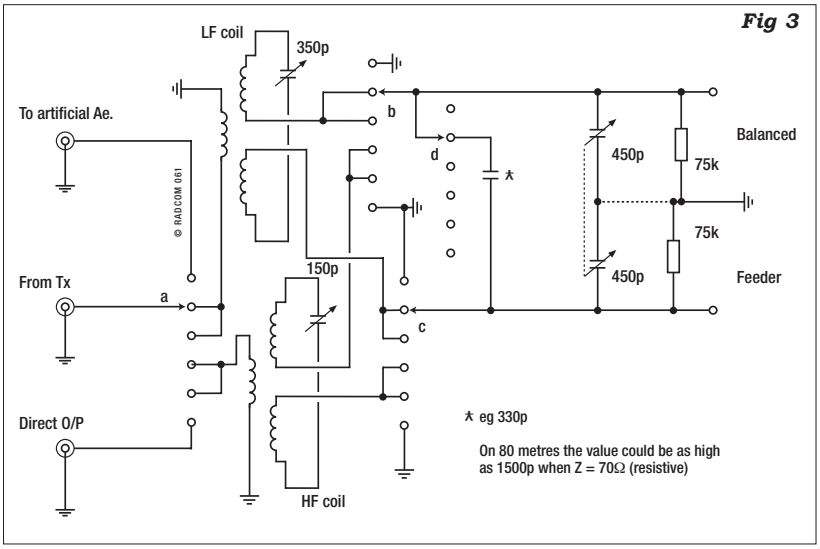
It is well worth giving some consideration to the total length of the feeder/aerial combination so as to avoid both extremes of feed-point impedance. However, if the aerial is intended to be used on all the amateur HF frequencies, it might well prove virtually impossible to avoid having a high impedance (and hence voltage) feed-point on one or more bands. Rather than going to extremes with ridiculously wide-spaced capacitors and switches when using relatively high power, there is a useful dodge which has, in fact, sometimes been proposed as the *sole* method of matching. That is, to add a few extra feet of feeder, which could be 300 or 450Ω, plastic type (rolled up in the shack) to be inserted in series on the troublesome band(s).

AS USED AT G3GKG

Fig 3 shows the ATU that I use. An inside view is shown in the photograph below. Details of the two coil assemblies are: LF (used for 80, 60 & 40 m bands) – (9 + 9) turns of 16SWG tinned copper wire on 2.25in-diameter former, with 3-turn link of PTFE-coated wire; HF (used for 20 to 10m bands) – (4 + 4) turns of B&W 1.75-in stock with 1-turn link between windings. The ceramic switch assembly a, b, c, d is a large, 4-gang, 6-way device. On one or more bands, the total capacity of C2, required to suit the particular aerial, is made up by switching in an extra fixed capacitor, the value of which is determined to suit the aerial by temporarily substituting a variable capacitor, and using low power. C2 itself needs only to be capable of providing coverage of each of the individual bands. The design could be simplified somewhat by using single-section tuning capacitors for both C1 and C2, when the frames would have to be well-isolated from the chassis/earth. Even when using a twin-gang variety, C2 should be treated similarly so as to give the option of balanced or floating output, as in my circuit.

This 'all-band' model uses only two coils to cover from 80 to 10m and avoids switching the 'hot' ends by having separate tuning capacitors for each inductor. The low frequency coil is wound on one of those old Eddystone ceramic formers with ribs which determine the turn spacing at about 1 turn's width. The two





main windings are spaced as far apart as the former allows, so that there is a gap about an inch wide between them in which the link is close-wound using thicker, PTFE insulated wire. Even at that, the coupling is closer than it needs to be and indeed, *must* be kept fairly loose so as to minimise capacitive coupling (which can produce in-phase current in the feeder). For virtually complete elimination of the capacitive effect, an earthed Faraday shield around the link could have been arranged.

TWO-BAND VERSION

This is a 40/80m tuner, shown in the photograph on the right, in which the only switching is performed by a ceramic, 2-pole switch which just adds the padding capacitors across *both* variable capacitors on 80m. By that expedient, the single-gang, wide-spaced variable capacitors are reduced to reasonable values and the only 'earth' connection is to the high value static bleed resistors.

It uses a slightly smaller ceramic former from one of the TU 6 type of wartime tuners and an optimised number of turns, 11 + 11, with a 3-turn link. To avoid trying to drill holes in the ceramic, and to provide anchor points for the inner ends of the windings, I devised a method I hadn't tried before, but which worked very well (see the photograph, right). It consisted of preparing a strip of fibreglass PCB cut to fit closely into one of the flutes in the former, with all the copper removed except for lands used as anchor points. It is fixed in place by solder tags held under screws using the two existing threaded holes in the former. The ends of the main windings are soldered to the copper anchor points on the PCB, leaving sufficient extra wire to form the connections to the capacitors.

A strip of thin polythene sheet (cut from the lid of a redundant 'Tupperware' box!) was wrapped around the interwinding space and held in place with polythene adhesive tape before winding the link over it using heavy duty, PTFE-insulated , silver plated stranded wire. The ends of this winding were twisted together before slipping a short length of heat-shrink tubing over them, as close to the former as possible, and applying a thin coat of acrylic varnish to fix it in place.

[I did a bit of experimenting using some of the larger iron-dust toroidal cores, eg T 300-2, for the inductor and had very promising results, which I passed on to the late G3IPZ. Dave developed the idea very successfully for even larger units, working on 40, 80 and 160m, but I'm afraid his findings died with him.]

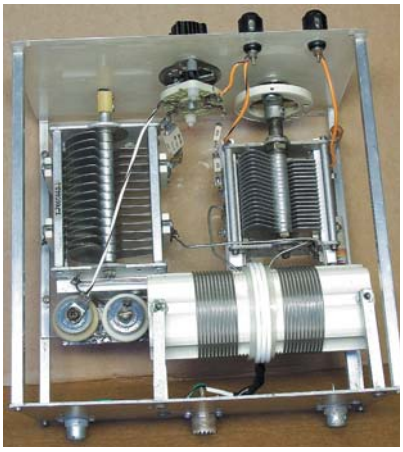
Having somewhat alleviated the problem of finding suitable variable capacitors, the next problem, although possibly less acute, may now be in finding appropriate fixed components. There are numerous types of capacitor available which claim to have high kilovolt ratings, but *beware* - a lot of them (eg the red and blue ones in the photograph below) are meant only to be used in pulse applications and will soon break down if subjected to the sort of high RF voltages likely to be encountered here. Other types (the ceramic disc and 'doorknob' types shown) may or may not stand the voltage strain, but are only intended for coupling and decoupling situations and are prone to large capacitance changes with temperature.

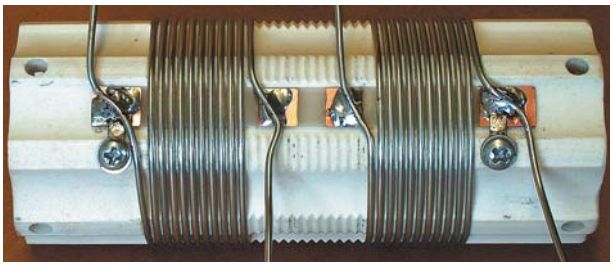
I have in the past had some unfortunate experiences with the old, wartime, moulded mica capacitors, from the American TU units (y'know, the ones we used to swear by!) rated at up to 5kV. On examination, I found the internal construction to be of an appalling standard, but there are now occasionally to be seen mica ones of more recent manufacture, with voltage ratings up to 3kV. Some of these do seem to be suitable, at least for medium-power units but one or two, even of the 3kV ones, have expired spectacularly when used at the full legal limit.

I am told that the tuning capacitors now being used in the so-called 'smart tuners' are rated for RF up to 6kV and come in a large range of fixed, binary-related values required by that application. I have no knowledge regarding the type of construction or, more importantly, where to obtain them.

The best ones to look out for are the large 'mushroom' types of capacitor specifically designed for RF and rated at about 10kV, made by Plessey and TCC among others, which come in values between 10 and 1300pF to my knowledge, but I've only found them at rallies, usually amongst the silent key 'junk'. They are ideal for any power up to at least the legal limit but, by the time you get up to 1000pF or so, they are *huge*. Another glazed-ceramic-encased type, which I have used in both my ATUs, came in two sizes, rated at 1kV and 2kV *RF*. They are very stable, produce no perceivable heat at full power and give no trouble whatsoever; the only two snags are that I only ever came across them once, at a rally some years ago (I think on Birkett's stand) and the only values were around 500pF, so parallel or series combinations are usually required. ◆

Fig 3: Schematic circuit of G3GKG's 'all-band' ATU. See the text for details of the two coil assemblies.





From top:

The two-band version of the ATU, interior view.

Securing the coil windings in the two-band version.

Capacitors. Left and centre: suitable types. Right: the ones to avoid.

QSL COMMUNICATIONS

UNIT 6 WORLE INDUSTRIAL CENTRE, COKER ROAD, WORLE, WESTON-SUPER-MARE, BS22 6BX.

TEL: 01934 512757

Email: jayne@qslcomms.f9.co.uk

QSL CARDS FOR SAMPLES AND PRICES SEND LARGE STAMP ADDRESSED ENVELOPE

QAP ANTENNAS

FIBREGLASS BASE STATION

V2000 6M/2M/70cm (2.15db/6.2db/8.4db/L2.5m) £69-95

BA6200 2M/70cms (6.0db/8.0db/L2.5m) £59-95

BA6100 2M/70cms (3.0db/6.5db/L1.3m) £39-95

MOBILE ANTENNAS

NR 627 6M/2M/70cms (2.15db/4.5db/7.2db/L1.5m) £34-95

DA770 2M/70cms (3.0db/5.5db/L0.98m) £21-95

Z200A 2M/70cm fibreglass (2.15db/3.8db/L0.62m) £24-95

DA7000 2M/70cms (2.15db/3.8db/0.47m) £21-95

AVAIR

POWER/SWR METERS

AV200	1.8-160	MHz	£49-95
AV400	140-525	MHz	£49-95
AV600	1.8-525	MHz	£69-95

ICOM

IC-7400	£1249
IC-718	£449
IC-706 MK2G	£789
IC-703	£569
IC-2725E	£305
IC-910H	£1299
IC-E90	£269
IC-R8500	£1149
IC-R3	£389
IC-R5	£169

YAESU

FT-1000MP MK5	£2399
FT-1000MP FIELD	£1749
FT-847	£1129
FT-857	£789
FT-897	£979
FT-817	£549
FT-8900	£349
FT-8800	£299
VX-7R	£299
VX-2E	£169
VR-5000	£569
VR-500	£199

KENWOOD

TS-2000	£1539
TS-570DGE	£853
TM-D700E	£439
TM-G707E	£279
TH-F7E	£249

AOR

AR-8600 MK2	£649
AR-8200 MK3	£385

EARTH RODS

4FT Long, adjustable Brass fixing SOLID COPPER £10-99

MOBILE BOOM MICROPHONE

KENWOOD £40

YAESU £40

ICOM £40

COMPLETE WITH SWITCHBOX & RADIO CONNECTION LEADS

PART EXCHANGE WELCOME

PHONE FOR P&P

500 QSL CARDS

£38-60 + £6 P&P INCLUDING ARTWORK & VAT

YOUR CALLSIGN HERE

YOUR ADDRESS HERE

To Radio.....

Confirming our.....MHz QSO

On.....At.....GMT

Ur SSB/FM/AM/CW Sigs were RST.....

Transceiver.....Pwr.....W

Antenna.....

PSE/TNX QSL

YOUR NAME HERE

2.4 GHz Antennas LMR Cables Pigtails Connectors WiFi

Planar Antennas

A range of highly Efficient Flat Planar antennas suitable for professional applications, Indoor or Outdoor.

24-HW-8080 9 dbi Wall or Pole Mount	£32.78
24-HW-4040 15dbi Pole Mount	£45.71
24-HW-4040 15dBi Wall Mount	£53.93
24-HW-3030 18dBi Pole Mount	£66.96
24-HW-3030 18dBi Wall Mount	£73.96
24-HW-2020 21dBi Pole Mount	£104.90
24-HW-2020 21dBi Wall Mount	£113.13

Omni Antennas

High Quality Omnidirectional 2.4 GHz Antennas. Designed for professional outdoor applications including community broadband wireless networks. Pole mounting Terminated with N-Female. Freq Coverage 2.4-2.485 GHz

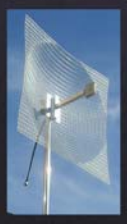
24-HW-1360	8dBi	64cm	£70.50
24-HW-2360	10dbl	108cm	£105.75
24-HW-3360	13dBi	170cm	£211.50

PRO Base Station

Professional Base station Antennas available in a Variety of Beam widths for Optimum coverage and frequency re-use. Excellent RF performance, Supplied with tilt Brackets. This is the antenna to use if you are building a broadband wireless network. Pole or wall mounting, N Female connector.

24-HW-3015	30° X 15°	17dBi	£176.25
24-HW-6008	60° X 8°	18dBi	£293.75
24-HW-6015	60° X 15°	15dBi	£129.25
24-HW-9008	90° X 8°	16dBi	£293.75
24-HW-9015	90° X 15°	13dBi	£129.25
24-HW-12008	120° X 8°	15dBi	£293.75
24-HW-12015	120° X 15°	12dBi	£129.25

Grid Parabolic Antennas



A Range of low cost high gain Grid Parabolic antennas. HDG Steel . 1"-2" Pole Mounting Optional tilt Brackets Available. Terminated with N-Male. Freq Coverage 2.4-2.485 GHz

24-HW-15	13dBi	45cm X 25cm	£23.50
24-HW-19	17dbl	51cm X 51cm	£25.85
24-HW-21	19dBi	61cm X 61cm	£32.90
24-SD-24	21.5dBi	76cm X 76cm	£44.65
24-SD-27	24dBi	91cm X 91cm	£52.88

2.4 GHz Yagi Antenna

12 dBi Gain Pole Mounting N-Female Connector Excellent Value £29.99

LMR 400 & LMR195 Cable

Cables always in stock. Pre terminated assemblies made to your requirements see WEB site for details.

Pigtails for connecting to WiFi)

RP-SMA plug to N-Male £9.99

Lucent (mcCard) to N-Male £9.99

See our WEB site for lots more Antennas Cables, Connectors, accessories

Hot Wireless Ltd. 1 High View House, Parnell, Morrison Park, West Haddon, Northamptonshire, NN6 7GJ

www.hotwireless.co.uk | TEL: 0845-1668397 | FAX:0845-1668398 |

Prices include VAT P&P (UK Only) Extra

By Peter Dodd, G3LDO, 37 The Ridings, East Preston, West Sussex BN16 2TW. E-mail g3ldo@ukonline.co.uk

Beat the declining sunspot cycle with this small beam design for 40 metres.

Antennas

Although there are a few who are able to put up beam antennas for the lower frequencies, for most of us it is out of the question. Most designs for reducing the size of an antenna use loading coils. Other designs achieve a reduced turning circle by folding the ends of the elements.

In recent correspondence, Andy Göens, YS1AG/G5AYU, said "...several years ago in 'TT', Pat Hawker described a 'VK2ABQ Mini-Beam' ('TT', May 87). I made one, but it had a very low Q and, with the first heavy rain, the wooden frame bent and it looked like a dead octopus. Now I have made a different one, a parasitic Yagi, which is much easier to tame".

THE YS1AG 40m TWO-ELEMENT BEAM

This design achieves a small element size by folding the ends of the elements back on themselves. The antenna is shown in **Fig 1** and, as you can, see the turning circle is only one third the size of a conventional 40m beam. But how does it perform? YS1AG claims "...on the air I have received consistent 2-3 S-unit reports over a local ham using a vertical. The front-to-back ratio is about 12dB. It is not the best antenna in the world, but it is much better than a dipole and very small indeed. The height of the antenna is only 14m until I can get a taller tower to obtain a lower angle of radiation."

Analysis of the antenna using *EZNEC3* indicates a maximum free-space gain of just over 4dBi and a front-to-back ratio of around 10dB, which agrees closely with the measured performance of the real antenna. Increasing the boom length from 0.078λ to 0.1λ results in an increase in gain to 5dBi and a front-to-back ratio of around 12dB. This would mean an increase of boom length from 3m (10.8ft) to 4.26m (14ft).

The feed impedance of such a small antenna is, as you might expect, very low, and *EZNEC* indicates a value of around 4 to 5Ω. The feed arrangement used by YS1AG utilises a gamma match, in which the gamma rod is 1.3m long made from 5 or 6mm OD tubing and spaced 180mm from the driven element. The series compensating capacitor comprises two tubes, one sliding inside the other to make up a variable capacitor with a maximum value of 180pF. A 100pF doorknob capacitor is connected in parallel to make up the required total capacitance. The measured SWR, using such an arrangement with 50Ω feeder, is 1.8:1 at 7MHz, less than 1.2:1 over the range 7.04 to 7.1MHz and 1.8:1 at 7.2MHz. For European use, the driven element could be tuned slightly lower.

CONSTRUCTION

The centre supports for the antenna were constructed by welding four lengths of 20mm OD aluminium tubes to a centre ring made from a short length of larger diameter tube (the diameter selected to fit the boom). The construction is not unlike a quad 'spider' except that the angles are 60°/120° rather than 90°/90°. The 12mm diameter elements were fitted to the 20mm tube of the spider at the feed-point end using reducers machined from aluminium bar. The high-voltage ends are insulated from the spider using hardwood dowelling and reinforced with fibreglass.

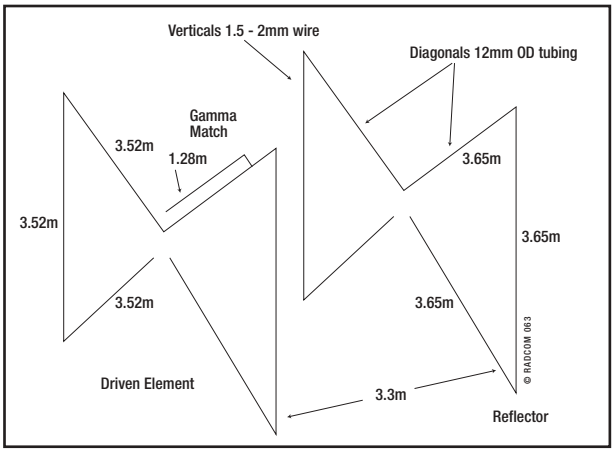
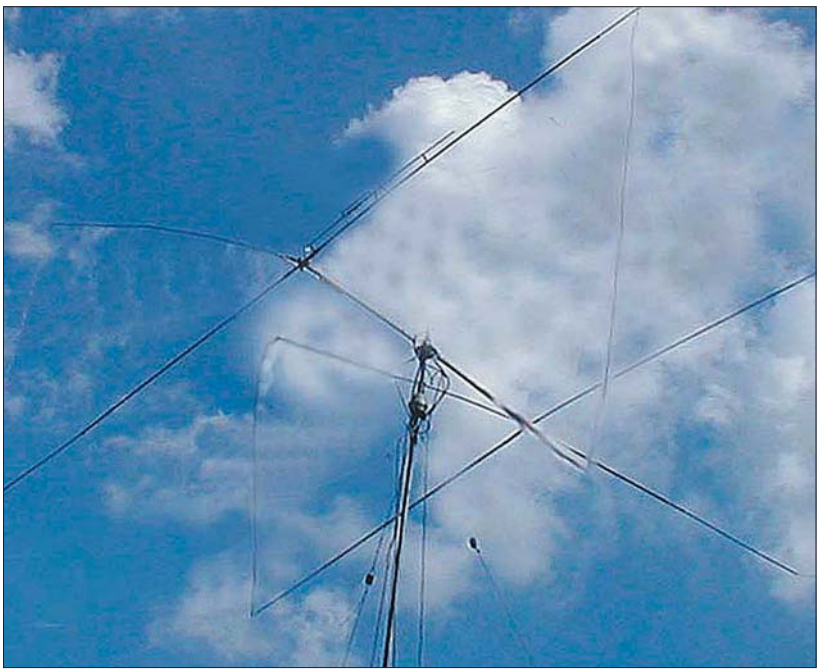


Fig 1: Diagram of the YS1AG 40m minibeam.

Below left: The YS1AG beam in position.



For those of us without access to aluminium welding equipment or a lathe, I suggest a method of construction that uses one-metre lengths of aluminium angle stock. This material has two holes drilled in the centre to take a U-clamp, the size of which has been selected to fit the boom as shown in [1]. Two lengths of angle material are clamped to one end of the boom so that they form a 60°/120° spider. A further two lengths of angle are then clamped to the other end of the boom. When the angle sections are correctly aligned, the feed-point end of the elements can then be fixed to the angle material with hose clamps (the antenna experimenter's friend!). The high-voltage end of the elements can be supported using hardwood dowelling, which is fixed to the angle material. The wires forming the vertical part of the elements can be fixed to the ends of the 12mm elements using hose clamps.

I find that trying to waterproof a Gamma-match variable capacitor is difficult. I prefer to insert a temporary variable capacitor, make all the adjustments necessary to match the element to the feeder, then remove the capacitor. I then measure the capacitance of the setting of the variable capacitor and replace it with a fixed capacitor of the same value (you may need two or more capacitors in parallel to get the correct value). Fixed capacitors are normally inherently waterproof, although a coat of grease prevents degradation of the outside insulation of the capacitor due to prolonged exposure to our weather. ◆

REFERENCE

[1] *Backyard Antennas*, RSGB books, Fig 8.9

By Ian White, G3SEK, 52 Abingdon Road, Drayton, Abingdon
OX14 4HP Website: www.ifwtech.co.uk/g3sek E-mail: g3sek@ifwtech.co.uk

In practice

LINEARITY FOR PSK31

This is a follow-up to the item in November 2003, where I explained the reasons why PSK31 requires a linear transmitter.

Peter Martinez, G3PLX (the inventor of PSK31), points out that the main source of non-linearity in PSK31 transmissions is the sound card output overdriving the audio input stage of the transmitter. Coincidentally, this problem has also been addressed in an excellent article in *QST* on 'The Ins and Outs of a Sound Card' by K1UHF [1]. Taken from that article, **Fig 1** shows the large number of software and hardware level controls that need to be set correctly in order to prevent the overloading that will cause distortion.

Fortunately, this isn't as difficult as it looks! The reward is that you'll then be set up to transmit almost any mode that involves the sound card.

The first control in Fig 1, **Xmit Level**, doesn't exist in all types of radio software, and if the program you're using does have this control, the default setting will probably be OK. The next two level controls, **Wave** and **Volume Control**, belong to the sound card and are found in the audio mixer window. **Wave** sets the input level from the Wave channel that almost all software uses to generate its sound output. **Volume Control** is the master control that affects all sound card channels. Set both of these controls about half-way up. You now have normal output settings for your software and sound card.

Next, turn to your transceiver and dig out the manual. Go right back to basics and follow the instructions for setting-up the correct normal levels for the **MIC GAIN**, speech **COMP**ressor and **RF POWER** controls. Even if you *think* you know how it should be done, read the manufacturer's instructions again. Even if you're *sure* you already know, do it anyway! You now have the correct normal settings for your transceiver in speech modes.

The function of your sound card interface is to convert a *normal* output level from the sound card to a *normal* input level for your transceiver. In the experience of both G3PLX and K1UHF, this is where most problems arise. The normal output from a sound card is around 1 volt; but the normal microphone input level into a transceiver is only a few millivolts. As Fig 1 shows, the problem stage is almost always the microphone preamplifier. As little as 10mV can overload the mic preamp of some transceivers, causing the distorted PSK31 signal that we saw in the November 2003 article. You cannot solve this problem by turning down the transmitter's **MIC GAIN**, because that control comes *after* the mic preamp stage, so it's too late to be of any help - the signal has already been distorted.

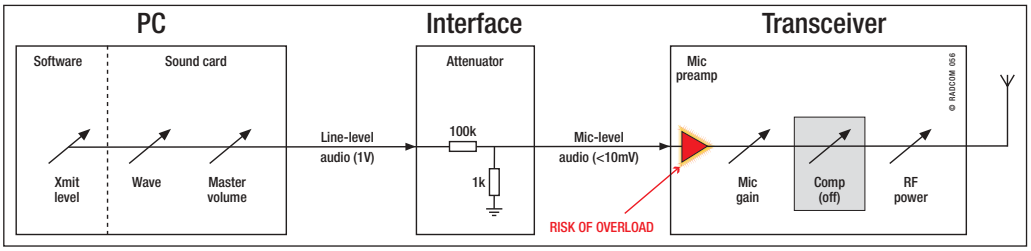


Fig 1: Signal level controls in your PC, sound card interface and transceiver.

That's why you need some kind of level reduction in your sound card interface, *before* the audio goes into your transceiver. All respectable interface circuits provide this facility, possibly as a preset or front-panel potentiometer adjustment, but it can be as simple as two small resistors tucked into a jack plug. The resistor values recommended in Fig 1, 100kΩ and 1kΩ, will attenuate a 1V signal from the sound card down to 10mV for the transceiver microphone input. The drive level to your transceiver will now be within the range where it can be comfortably controlled by the **Wave** or **Volume Control** settings of your sound card. This is *so* much better than trying to set the sound card sliders only a hair above zero! If the attenuated level is still too high, reduce the 1kΩ resistor to 500Ω or even less. If your transceiver has a rear-panel audio input at a higher level, then obviously you should use that instead. However, even a so-called 'high level' input may still need some attenuation to handle 1V from a sound card (possibly 10kΩ and 1kΩ in Fig 1). This attenuator can either be external to the transceiver, as in Fig 1, or there may be a preset input level adjustment inside the transceiver. Check your transceiver manual.

In all cases, the objective is to adjust the attenuation so that the *normal* output level of a sound card does not cause distortion. That will set your system up to handle almost any kind of software that uses a PC sound card.

What else must you do? First, find some way to mute the microphone when using the sound card. If the microphone is still live when you're typing, you will transmit 'clicks' over a 3kHz bandwidth as you hammer away at the keys! Some transceivers and sound card interfaces take care of microphone muting for you, but if all else fails, unplug the microphone when using the sound card.

Second, turn the speech COMPressor control off, because speech processing will cause distortion that may be tolerable on occasional speech peaks [2] but is not acceptable for many sound-card-generated modes digital including PSK31. (K1UHF notes that pure FSK, which transmits only one tone at a time, may work better with the compressor on; however, you still need to avoid harmonic distortion of the individual tones.)

Next, reduce the transmitter's PEP output level to about 50%. There are two reasons for doing this: to reduce intermodulation distortion in the later RF stages (particularly the power amplifier) and to avoid overheating the PA by long periods of operation at a high duty cycle. PSK operates at a duty cycle of 50% or more when transmitting, and FSK operates at 100%. The correct way to reduce the RF output is by reducing the audio level *at the sound card*, so that everything on the 'downstream' side in Fig 1 is operating at a lower level.

The percentage of RF power reduction that is actually required to reduce intermodulation distortion to a tolerable level for PSK31 is hard to quantify. 50% is only a frequently-quoted figure that seems to work for a lot of transceivers, but there are many complicating factors: how clean the audio input is (see above); how much the IMD levels generated by your transceiver improve when the power is reduced (many modern transceivers are barely acceptable at full power); whether your wattmeter indicates PEP or average power; and above all, what your fellow band-users will tolerate from you! Unlike SSB, PSK31 allows other stations to *measure* your IMD levels - so if you don't want a stream of complaints, you'd better play safe. And the stronger your signal is with other people, the cleaner it needs to be.

WHICH SIDEBAND?

This is a follow-up to the historical research in the July 2003 column, about the USB/LSB conventions on the amateur bands

The article [4] produced a lot of interesting correspondence and e-mails, much of it from people who were there when the early history of amateur SSB was being made. But first, I must note with sadness the death of one of the main informants, Bert Knott, G3CU, very shortly after the July item was published. Bert was a pioneer of SSB in the UK, and the *RSGB Bulletin*'s very first regular SSB columnist.

We had found that some of the reasons for transmitting USB on 14MHz and LSB on 3.5MHz were rooted in the technology of the published SSB exciters of that time... but two questions remained: how that became a fixed standard within amateur radio; and how the notional dividing line between 'USB bands' and 'LSB bands' became fixed at 10MHz.

Some enlightenment came in information kindly supplied by G3ISB and G3FHL. From the 1940s onwards, many telephone companies and postal authorities around the world used HF. The transmission mode was ISB (independent sideband, reduced carrier) which allowed the transmission of two separate phone conversations, one on each sideband. The ISB signal was assembled by generating separate USB and LSB signals with a common suppressed carrier frequency of 100kHz, combining the two signals and re-inserting a controlled low level of carrier. The resulting ISB signal was then converted (heterodyned) up to the final output frequency.

In those days before frequency synthesisers, the local oscillator (LO) signal for the final frequency conversion was a crystal oscillator, with switched crystals for each of the scheduled operating frequencies. For the lower part of the HF band, it was more convenient to have the LO on the high side of the operating frequency; but at higher operating frequencies a high-side LO would have required expensive overtone crystals and possibly a separate oscillator for each crystal. To avoid this problem, the transmitter designers decided that above a certain operating frequency, the LO would change over to the low side. But that would also invert the ISB signal, exchanging the two sidebands and also exchanging the two separate conversations on channels A and B. A dividing line had to be agreed upon, based on operating frequency, and the choice was 10MHz.

Geoff Bagley, G3FHL, continues the story.

"During the first two years or so (1950-51) there were roughly equal numbers of operators using filter-type and phasing-type exciters. Most filter-type exciters were confined to a choice of either one sideband or the other, while phasing-type exciters could easily be switched to the opposite sideband. On 80m, the initial standard [in Europe, but perhaps not in the USA] was the *upper* sideband.

"In commercial point-to-point radio, it was usual to designate the sideband furthest from 10MHz as channel A... [for the reasons explained above]. In about April 1952, amateurs made the change to the present convention, that is, the lower sideband on 160, 80 and 40 metres, and the upper sideband on all other bands (all of which lie above 10MHz).

Fig 2 Some of the SSB pioneers took their cause very seriously... (Source: PA0CX, with permission)

So there we have the explanation. At the critical time in 1951-52 when amateurs world-wide were coming to realise the need to standardise which sideband should be used, they were at least *aware* of the commercial ISB channel standard and the 10MHz dividing line. Another major factor at that period was the popular W1DX SSB exciter, published in 1949 [4], which automatically produced a sideband inversion between 80m and 20m. Those two factors, each of which originated from a minor technical design detail, came together to establish the amateur sideband convention that persists to this day.

Thanks once again to everyone who contributed to this brief digression into the technical history of amateur SSB. A contemporary cartoon by PA0CX (**Fig 2**) shows how controversial this new mode was, at the time... now half a century ago.

G3PLX remarked particularly about the widespread - but false - belief that if your ALC meter doesn't kick upward on transmit, then you must be OK. I hope you can now see why this is no guarantee of a clean PSK31 signal. The controls that affect the ALC reading are MIC GAIN, COMPressor and RF POWER. If the main source of distortion is the microphone preamplifier, which is ahead of all these controls (Fig 1), then the absence of an ALC indication doesn't say anything meaningful about IMD.

Finally, there's the question of how to check if your transmitted PSK31 is distorted. Here is a very simple test that you can make into a dummy load before you even put PSK31 on the air. Select the software's 'Tune' mode, which transmits a single full carrier. Now check each of the relevant controls in Fig 1, and see what effect each one has on the RF power output. Vary only one control at a time, for example the sound card's **Volume Control** slider. Try moving the slider upward: the RF power output should increase readily. At some higher level, you may find it harder to persuade the power output to increase - this is called 'limiting', and it means that your transmitter is non-linear [3]. Your normal level setting for this control *must* be well below the level where limiting starts to occur. Repeat the same check for each of the relevant controls in Fig 1, and make sure they are *all* set well below the limiting level.

That test is a pretty good assurance of a clean signal. The next step is to use the PSK31 software's facility to measure intermodulation distortion (IMD) levels from the received audio. You can readily do this on the signals you receive from other people, but some PSK31 software such as *DigiPan* will also let you monitor the IMD level of your own transmission on a separate receiver - see the software Help for details. However, that is really a facility for more experienced users. If you're a beginner, probably the best way is to check all the controls as described above *before* you go on the air, but then get together pretty soon with a strong local PSK31 user, and check each other's IMD levels over the air. Doing it that way, nobody needs any extra equipment, and by the end of a successful evening there will be *two* clean PSK31 stations on the air. ◆

NOTES AND REFERENCES

[1] 'The Ins and Outs of a Sound Card', by Del Schier, K1UHF, *QST*, October 2003. K1UHF is the designer of the RigBlaster sound card interfaces, and the full article is also available in PDF from the West Mountain Radio website - follow the link from the 'In Practice' site.

[2] 'In Practice' for May 2003 explains how speech processing creates distortion, and how to set up a speech processor so your signal is 'Loud and Clear'.

[3] At high power levels, don't leave your transmitter in this overdriven condition for more than a few seconds - just long enough to confirm where limiting starts to happen.

[4] 'In Practice', July 2003, 'USB or LSB'?

ICOM

IC-756PRO II

IC-756PRO2 HF/50MHz
The All-mode Transceiver with The Most Advanced DSP!

The IC-756PRO2 has achieved it's well-deserved reputation by offering a wide selection of features that includes a fantastic 32-bit floating point DSP, giving ultra-clear audio, plus 24-bit AD/DA converter, 4.9" colour TFT display, twin PBT, dual-watch and a lot more besides, just look...

ICOM

Not just for Christmas!

- 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 Colour
- Improved Readability
- Increase in Noise Blanker Performance
- 8 New Screen layouts with 7 font styles
- SSB/CW Synchronous Shift Function
- ...and *sooooooo* much more!!!

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!

SGC

NEW

DREAM OF AN ANTENNA .... ANY ANTENNA & MAKE IT WORK WITH SGC

MAC-200 £339.95

Welcome to the world's first Automatic ATU that can handle coax, end-fed wire, balanced feeder, and switch between five antenna systems. It can even memorise which antenna you use on each band! But there's more - - - ! Add lightning fast tuning, plus twin power/VSWR meters, and you have a complete antenna control system. A system that will match virtually any antenna you care to think of or design. Enjoy the freedom of open wire feeder (or 450 Ohm ladder) and erect a dipole capable of operating on all bands without traps and zero loss. Alternatively, experience the convenience of using a simple end-fed wire on any band you like. Or perhaps simply tune out the VSWR on your coax system. And remember, you don't even have to switch between antennas; the intelligent MAC-200 does it effortlessly for you. Just feed with 1.5 – 200 Watts on any frequency between 1.8MHz and 54MHz and let SGC do the rest.
A revolution in antenna tuners.

WATERS & STANTON

Main Store: 22 Main Road, Hockley, Essex, SS5 4QS. Tel:01702 206835/204965, Fax:01702 205843
E-mail:sales@wsplc.com, Web:www.wsplc.com
Midland Store: W&S @ Lowe, Chesterfield Road, Matlock, Derbyshire, DE4 5LE. Tel:01629 832375, Fax:01629 580020, E-mail:info@lowe.co.uk, Web:www.lowe.co.uk
Scottish Store: 20 Woodside Way, Glenrothes, Fife, KY7 5DF. Tel:01592 756962, Fax:01592 610451, E-mail:jayceecoms@aol.com, Web:www.jayceecoms.com

By Don Field, G3XTT, 105 Shiplake Bottom,
Peppard Common, Henley on Thames RG9 5HJ. E-mail: hf.radcom@rsgb.org.uk

HF

This month Don Field takes a look at the 'Logbook of the World'. Is this the beginning of the end of the QSL card as we know it? Don thinks not - read on . . .

With the ARRL's Logbook of the World ('LoTW') now live, there has been a lot of discussion about it on the various Internet reflectors and elsewhere. As always, many of the contributors seem to enter the fray without fully understanding the topic they are discussing. One of the recurring themes is that LoTW removes the need for paper QSLs, which will gradually disappear. Indeed, at least one DX station has now said that he will start uploading his logs to LoTW and will no longer offer paper QSLs. It seems to me that he and others like him have 'lost the plot'. LoTW is absolutely *not* an electronic QSL facility. It is a QSO-matching facility specifically for the purpose of allowing amateurs to apply for awards without the necessity of sending QSL cards. Initially it is aimed at the ARRL's DXCC suite of awards, but can be extended to other awards run by other sponsors, by arrangement with the ARRL. This is helpful for several reasons, not least of which is that many amateurs don't wish to risk their hard-won QSL cards to the postal service while applying for awards. If you still want a QSL card, which many amateurs do, to put on the shack wall, have as a keepsake, or whatever, then you will still need to apply for QSL cards in the time-honoured fashion. There is no facility, as with eQSL, which I have discussed previously on these pages, to print out a QSL card.

What, then, will be the impact of LoTW on the flow of QSL cards? I believe the data shows that about 7000 to 8000 amateurs are active in the DXCC programme, whereas the evidence from major expeditions such as D68C suggests that several times this number not only chase DX but actively seek QSL cards to confirm their contacts. Phil, G3SWH, the D68C QSL manager, tells me he has now confirmed some 91,826 QSOs (of the 168,000 in the log), with both bureau and direct cards still arriving to be answered. For 9M0C (1998) the total was 43,155 (or 65.8% of all QSOs), and this number has now just about plateaued. Other DXpeditioners confirm similar figures, ie that direct, bureau and, increasingly, e-mail QSL requests usually total something like 66 - 70% of QSOs made, for an expedition to a reasonably rare DXCC location (the figure will, of course, be lower for a 'holiday style' operation from somewhere like SV5 or EA6). There must be many millions of QSL cards exchanged each year, directly and through the world's QSL bureaus, of which something less than one million will ever find their way to the ARRL for DXCC purposes.

Whether I will be writing the same sort of thing in 10 years' time is another matter. Maybe by then we'll be more than happy to have a database of digitally-signed electronic verifications, accessible from our personal web pages, as an alternative to that bulky collection of QSL cards gathering dust in shoe boxes and incurring the wrath of the XYL. Only time will tell!

THE HUMBLE QSL CARD

While on the topic of the humble QSL card, one correspondent wrote to ask me what should be included on a card for it to be most useful to its recipient. I dare say this subject has been covered before in *RadCom*, but I'm happy to comment.

I suppose the major requirements are pretty obvious. Firstly, the callsign used, plus name of the DXCC country somewhere on the card (perhaps as part of the address). Then somewhere for the details of the contact being confirmed - callsign of station worked, date, time, band, mode, signal report. So far so good. If you're going to enter dates in the European format, it's worth the heading reading something like DATE (D-M-Y) or American recipients might misinterpret and be unable to cross check the contact in their log (I think everyone now realises that 9/11 means something very different in the USA to what it would have done here, for example). Time should always be in GMT, but make this clear in the heading – TIME (GMT). Again, make the units clear for band, whether Metres or MHz. Otherwise the entry "10" could mean 10 Metres (28MHz) or 10MHz (30m). Mode should somewhere indicate two-way, perhaps by using the heading MODE (2x). This is primarily because when the CW DXCC came in, people were having mixed-mode contacts where a non-CW operator might listen for some random dots and dashes from the other station, give a 599 report on SSB, and it was declared a QSO for the new award. The ARRL soon got wise to this, and look for a clear indication that CW contacts in particular were genuinely both way on that mode.

What else goes on our card? The full address is useful, and if this differs from the station location, then make that clear. Chasers of counties, for example, will get confused if your address is, say, Essex, whereas unwittingly they worked you in, maybe, Suffolk. An e-mail address is always useful these days, though many of us change our e-mail addresses more often than we reprint

COUNTRIES WORKED, 2003

(sorted this month by SSB totals, showing only those who have updated since August)

CALL	CW	SSB	DATA	MIXED
W1JR	256	238	155	283
M0AWX	0	233	81	237
G3YVH	219	172	0	246
GM0TGE	149	172	0	219
G4WXZ	166	169	0	218
G3XTT	230	165	133	246
G4KIV	158	165	2	202
M0CNP	12	149	43	152
M0BKV	1	141	66	148
GU4YOX	149	138	0	188
MU0FAL	154	133	0	173
G0GFQ	0	128	2	129
M5GUS	0	127	0	127
G3TBK	227	107	0	233
G4FVK	60	107	0	118
GU7DHI	9	106	0	106
G0LGJ/M	0	103	0	103
G4YWY/M	0	95	0	95
G6FCI	0	84	32	91
GM6MEN	1	76	0	77
MM0BQI	92	74	101	132
G4WFQ	213	70	100	232
G3LHJ	171	65	100	186
G7FSI	0	63	0	63
G3JFS (QRP)	93	57	55	117
G1UGH	0	56	0	56
G4DDL	69	40	22	71
G4OBK	149	24	69	160
G3TXF	231	16	0	231
G4IDL	103	14	0	114
G3SXW	237	0	0	237
G4KFT	212	0	0	212
G3VDL	185	0	0	185
G4EDG (QRP)	180	0	0	180
G0ARF	0	0	169	169
G3YMC (QRP)	134	0	0	134
M0BVE	132	0	0	132
GU0SUP	0	0	132	132
G4IFB	115	0	0	115
GW4ALG (QRP)	74	0	0	74
G3URA	0	0	71	71
G3WP	59	0	0	59
M5PLY	-	-	71	131

QSL cards! WAB square, IOTA reference where applicable (mainland UK is EU-005), *CQ* Zone, QTH Locator, etc are all helpful to at least some of the people who will receive your card. And, of course, any interesting additional material you choose to include about yourself, your station, your town, or whatever. And a PSE/TNX QSL tick box, or similar, to indicate to the recipient whether you are looking for his card in return, or that you have already received it (many contest stations these days send out QSL cards automatically, but specifically say they do not want your card in return).

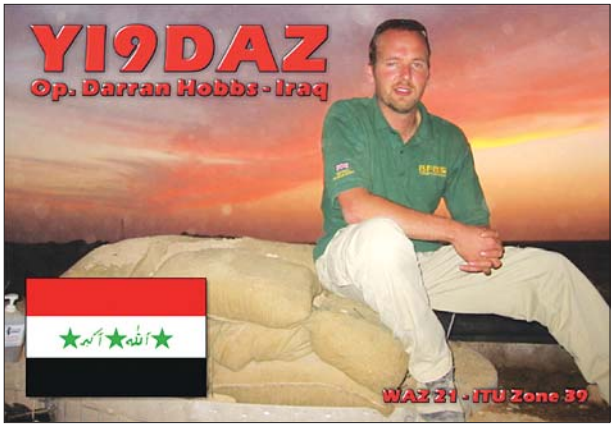
I always like to write out my cards and to sign them as well, to personalise them a little, but nowadays it is common to print the QSO data on to labels, and simply allow space on the card to affix the label. Many QSL managers who use this method use a rubber stamp to overprint the label, to confirm authenticity.

QSL cards have definitely become more elaborate over the years as printing techniques have improved, brining quality colour printing into the sort of price bracket many of us can afford. A nice photograph, or some interesting graphics is always nice. Make sure, though, that the recipient's callsign can be read clearly by the sorters at the QSL bureau, and also have space to show, even more clearly, if the card is to be routed via a QSL manager in another country, as otherwise your card may end up at the wrong distant bureau entirely.

Finally, I always ensure any QSLs I have printed also allow me to select "SWL Report" instead of "QSO" to be able to acknowledge properly any listener reports that come along, though these are certainly fewer than in days gone by.

DX NEWS

I was expecting to start this month's news with word about a January expedition to **Peter I Island** (3Y0/P). A large-scale three-week operation was promised, led by experienced DXpeditioner Bob Allphin, K4UEE. However, this one has now been postponed for a year for logistical (transport) reasons. In the meantime, we will have to be patient and find other DX to work.



QSL of YI9DAZ, operated by Darran, M1DAZ.

Andy, G0VUH, writes that he will be in **Gambia** from 16 to 30 January, and active as C56/G0VUH, operating all bands. QSL via his home call.

Gwyn, G4FKH, reports that he will once again be signing 3B8/G4FKH (**Mauritius**) from 3 to 23 January. Predictions indicate that the best time for the UK will be around 1600 on 20 or 17m, and as *RadCom's* propagation guru we have to assume this will be correct! The operation will be CW only, with a vertical antenna. QSL to his home call.

Tom, M3SDE, writes that Darran, M1DAZ, who is on active duty with the British Forces Broadcasting Service in **Iraq**, has obtained official authority to operate with the callsign YI9DAZ. Darran will have made his first trip to Iraq by the time this appears, but expects to be back on a regular basis during the months ahead. He expects to be especially active on PSK31, primarily so that he causes minimal interference to his room mate who is the presenter of the early morning radio show! He should occasionally be able to put in some time on other modes though. QSL via M3SDE.

Bill, G4CWA, writes that he is back in the **Philippines**, sporting the call DU3/G4CWA. Bill says, "Rosalinda and I recently had the pleasure of meeting Tom, T88ZX, and Jim, T88UG, on their recent DXpedition to Koror Island and in fact we picked

QTH Corner

3B9/PA0VHA	H Vernhout, PA0VHA, Philips De Goedestraat 54, 3132xr Vlaardingen, Netherlands.
3B9FR	Robert Felicite, PO Box 31, Port Mathurin, Victoria St, Rodriguez Island, Republic of Mauritius.
3C0V	Franz Langner, DJ9ZB, Benfelder Str 4, D-77955 Ettenheim, Germany.
3D2VB/R	Vladimir M Bykov, UA4WHX, PO Box 2040, 426000 Izhevsk, Russia.
3W22S	Eddy Visser, XV9DT, c/o Van Lennepstraat 84, 3881 WV Putten, Netherlands.
3XY1L	George Chlijanc, UY5XE, PO Box 19, 79000 Lviv, Ukraine.
4V200YH	Hans Uebel, DL7CM, Hartmannsdorfer Chaussee 3, D-15528, Spreenhagen, Germany.
5H3RK	Ralph Karhammar, VK4VB, 6 Sevenoaks Street, QLD 4068, Australia.
5I3A	Dar es Salaam Institute of Technology, PO Box 2958, Dar es Salaam, Tanzania.
5U5Z	Roger Western, G3SXW, 7 Field Close, Chessington, Surrey KT9 2QD.
5U7JB	Ghis Penny, ON5NT, PO Box 93, BE-9700 Oudenaarde, Belgium.
9M6AAC	Robert W Schenck, N2OO, PO Box 345, Tuckerton, NJ 08087, USA.
9M6OO	N2OO (see 9M6AAC).
9V1GO	Bob Marshall-Read, Potong Pasir Avenue 1, Block 115, Flat 11-882, Singapore 350115, Singapore.
A52SM	Per-Anders Andersson, SM7EHU, Froset Vastergard, 570 12 Landsbro, Sweden.
A61AJ	(non-US) Mario Lovric, DJ2MX, Kampenwandstrasse 13, D-81671 Munich, Germany.
BQ9P	Steve Wheatley, KU9C, PO Box 31, Morristown, NJ 07963-0031, USA..
C5Z	Arlen T Turriff, K6VNX, 8819 East Callita St, San Gabriel, CA 91775, USA.
CT9L	Walter Skudlarek, DJ6QT, An der Klostermauer 10, D-63697 Hirzenhain, Germany.
DU3/G4CWA	Rev Dr William Burton, 23 Purok 5, San Pedro II, Magalang, Pampanga, Philippines.
G4RCG/HI9	John Muzyka, G4RCG, 2 Engine Fold Cottages, Kirkhamgate, Wakefield, West Yorkshire WF2 0PP.
KI7VR/HI9	Bruce I Fleming, KI7VR, 7401 NW 16th Ave, Vancouver, WA 98665, USA.
MD4K	David Sharred, G3NKC, Chestnut House, 510 Crewe Rd, Wistaston, Crewe CW2 6PS.
PZ5A	Randy C Becnel, W5UE, PO Box 170, Kiln, MS 39556-0170, USA.
PZ5CQ	Darryl J Goldman, KD5CQT, 7905 Woodlake Ln, Ocean Springs, MS 39564, USA.
PZ5JR	John R Mantell, Jr, K3BYV, PO Box 2137, Brevard, NC 28712, USA.
S79NS	Norbert Strauch, DL2RNS, Brueckenstr 4, D-15732 Schulzendorf, Germany.
S9SS	Gerard N Rossano, N4JR, 798 County Rd 350, Hollywood, AL 35752-6731, USA.
T20MW	Manfred Przygode, DJ7RJ, Hoisdorfer Landstr 50, 22927 Grosshansdorf, Germany.
T88ZX	Thomas C Meier, K7ZZ, 13271 Woodland Ln, Turner, OR 97392, USA.
TA2ZF	Andrej Lyakin, UT2UB, PO Box 99, Kyiv-10, 01010 Ukraine.
TO4E	Didier Senmartin, F5OGL, PO Box 7, 53320 Loiron, France.
TO4WW	F5OGL (see TO4E).
TO6M	Soulet Serge, F6AUS, Les Hautes Rivieres, Sainte-Eanne 79800, France.
V26B	Samuel M Harner, Jr, WT3Q, 893 Narvon Rd, Narvon, PA 17555, USA.
V63UG	K7ZZ (see T88ZX).
V63ZT	K7ZZ (see T88ZX).
V8A	Ichio Ujiie, JH7FQK, 162 Shionosawa, Kohata, Towa, Fukushima 964-0203, Japan.
VK4FW	(new address) Bill Horner, PO Box 513, Nambour 4560, Australia.
VK9CD	Richter Gerhard, DJ5IW, Watzmannstrasse 1, D-83454 Anger, Germany.
VK9XG	Charles G Summers, Jr, W0YG, 6746 N Yucca Trl, Parker, CO 80138-6110, USA.
VK9XW	Thomas Hitzner, DL2RMC, Anton-Moosmueller-Str 1, D-84571 Reischach, Germany.
VK9XYL	Gwen Tilson, VK3DYL, 3 Gould Court, Mt Waverley, Victoria 3149, Australia.
XZ7A	Sigi Presch, DL7DF, Wilhelmsmuehlenweg 123, D-12621 Berlin, Germany.
YA1BV/P	Ito Sadao, JA1PBV, 3-8-12 Baraki, Ishioka-City, Ibaraki, 315-0042 Japan.
YJ0ATU	OM2SA (see YJ0MAY).
YJ0MAY	George Sipos, OM2SA, 93013 Trhova Hradska 550, Slovakia.
YM2ZF	UT2UB (see TA2ZF).
ZA1A	Martti Laine, OH2BH, Savasundintie 4c, Espoo, Finland 02380.
ZC4CW	Andy Chadwick, G3AB, 5 Thorpe Chase, Ripon, North Yorkshire HG4 1UA.
ZK1/AC4LN	UA4WHX (see 3D2VB/R).
ZM8CW	R W Wright, ZL1AMO, 28 Chorley Avenue, Massey, Auckland 1008, New Zealand.

them up at the airport at night much to their delight. We also managed to assist in finding them decent accommodation at the New Koror Hotel where the staff were most helpful. During their week in Palau Rosalinda had the opportunity to feed them a time or two with some of her best Filipino style cooking and they kindly took us out for a meal at one of the local hotels. A great pair of guys and a real pleasure to meet." Bill hopes make more contacts with the UK once he is settled in, and took out with him an Icom IC-7400 which will feed a double extended Zepp in lazy-H configuration, oriented to have one of its main lobes towards the UK.

Chris, GM3WOJ, will sign ZL1CT/4 from **Stewart Island** (OC-203), New Zealand, from 11 to 16 January. He will be on 40 and 20 CW and SSB with 400 watts to verticals. QSL via N3SL. Chris is emigrating to New Zealand, so expect some big signals as ZL1CT from his new permanent station in due course.

Richard, G3VGW, passes along news of the HAARP project in **Alaska**, which is set to quadruple its power to 3.6MW by 2006. HAARP is a major facility for ionospheric research, though at least some Alaskan amateurs maintain that HAARP not only probes the ionosphere, but that its high power actually affects the ionosphere and adversely affects HF propagation at those latitudes.

Hans, DL7CM, will be going back to **Haiti** this month, with activity expected from 28 January to 15 February. There will be three others with him. They will use the special callsign 4V200YH (Four Victor Two Hundred Years of Haiti). They will have three stations, operating all bands and modes around the clock. Antennas will include a 27m ground plane, 3-element 5-band beam and an HF9V. There will be further information on their web page. QSL to DL7CM.

John, G4RCG, and Bruce, KI7VR (ex-G3NDG), will be operating from the **Dominican Republic** as G4RCG/HI9 and KI7VR/HI9 between 17 and 31 January, all bands. G4RCG/HI9 will be taking part in the CQWW 160 CW contest and generally concentrating on 160 and 30m. QSL via home calls via bureau.

RCV (Radio Club Venezolano, YV5AJ) will be celebrating its 70th anniversary in 2004 and has announced plans to operate from Aves Island (YV0) in January or February. **Aves Island** (literally Bird Island) which lies about 600km off the Venezuelan Coast is just 580 by 150m, and was declared a wildlife sanctuary in 1978, making it somewhat difficult to get landing permission. Another factor is that the Venezuelan Navy maintains a small garrison on the island. Aves Island ranks 10th on *The DX Magazine's* 'Most Wanted' list. Plans are for activity on all bands and modes. A website is planned, and the callsign will be announced nearer the time. Incidentally, Aves Island, which counts as a separate DXCC entity, should not be confused with Las Aves Islands (YV5) which count separately only for the IOTA awards.

CORRESPONDENCE AND TABLES

Chris, G6FCI, writes that the recent massive solar activity (much commented on in the press) made the bands unworkable for long periods. His best DX for the period included 3B8/ON4LAC (Mauritius) on 15m BPSK31, and a few nice ones in CQWW Phone, while coping with the dreaded flu: PT0F (Fernando de Noronha) on 10, P40W (Aruba), WP2Z (US Virgin Is) and D44TD (Cape Verde) on 15, and PJ4T (Netherlands Antilles) on 20m. His note is about the only correspondence I received; maybe the early deadline caught some of you out!

Finally, there may just be time to book a trip to the 9th International Contest / DX meeting in Finland, from 16 to 18 January, always an excellent get-together. More information from the Contest Club Finland website.

And as a final, final (don't you just hate it when people end their contacts with that phrase?!) how about this for an HF antenna? 7J4AAL has erected a full-size 5-element 80m Yagi at 180ft. One can only imagine how well it will work. You can find pictures and specification on his website in case you want to try building one yourself (but perhaps just to ogle!). ◆

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 **February** issue by **20 December**.

WEB SEARCH

4V200YH:	www.qsl.net/dl7cm/haiti2.htm
7J4AAL Yagi:	www.nn.iij4u.or.jp/~mak-oxv/engtop.htm
Contest Club Finland:	www.qsl.net/ccf

HF F-Layer, Propagation Predictions for December 2003

	7.0MHz	10.1MHz	14.0MHz	18.1MHz	21.0MHz	24.9MHz	28.0MHz
Time	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220
(UTC)	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020
*** Europe							
Moscow	5.6...177677	...22471...	...56677....	...9999.....	...6999.....	....55......	.....
*** Asia							
Yakutsk	3.1...135444	...551.55...	...75.......	.....	.....	.....	.....
Tokyo	.......11.1.	...1...1....	...1........	.....	.....	.....	.....
Singapore	.......11...	......231...	......32....	.....151....	.....23.....	....122.....	.....1.....
Hyderabad	.....	.....221..	.....23....	...1.277....	...33573....	...7778.....	...3786.....
Tel Aviv	6.6....77646	...2..385...	...53477....	...2556.....	....542.....	.....	.....
*** Oceania							
Wellington	....24653...	....67761...	...17883....	....454.....	....242.....	....24......	.....
Well (NZ) (LP)	.....	.....	2.........11	...2....12..	...3........	.....	.....
Perth	.....	.....1.....	......21....	.....163....	.....251....	...1245.....	...11.......
Sydney	.....	......21....	.....24.....	....477.....	....465.....	...1665.....	.....
Melbourne (LP)	...2.....	...46.......	...28.......	....71......	....7.......	.....	.....
Honolulu	.....	.....1.1....	.....	.....	.....	.....	.....
Honolulu (LP)	.....	.....	.....	.....1....	.....2....	...11.......	...21.......
W. Samoa	.....	....3442....	....364.....	....131.....	.....2......	.....	.....
*** Africa							
Mauritius	1..........	.....	.....1.....	.....1.....	.....	.....	.....
Johannesburg	76......1677	52......4645	1......25311	.....21....	.....113....	...23666....	...12554....
Ibadan	232.....1222	677.....4454	...41..251..	...876688...	...887786...	...89889....	...797.8....
Nairobi	11.........	22......1111	..1....1331.	...111241...	...32245....	...44453....	...3126.....
Canary Isles	7762....7667	66.5...26566	...6211416..	...766667...	.....6775...	.....566....	.....332....
*** S. America							
Buenos Aires	2317......12	...5........	...2........	....1.......	....11.1....	.....1.1....	.....1.1....
Rio de Janeiro	...3........	...3........	...1........	....2...1...	....31.11...	....21.1....	....21.1....
Lima	.....	.....	.....	.....1.....	.....211....	.....321....	.....211....
Caracas	.....	...2........	....1.......	.....	.....111....	.....655....	.....552....
*** N. America							
Guatemala	.....	.....	.....	.....	.....	......1.....	.....
New Orleans	1.........1	...1........	.....	......542...	......66....	......76....	......43....
Washington	44.4......55	.1.......21.	.....2..1...	.....1346...	.....562....	.....45.....	.....11.....
Quebec	66.51....576	.........4..	.....2113...	.....5886...	......88....	......88....	......7.....
Anchorage	66.31..25334	....11..2...	.....	.....	.....	.....	.....
Vancouver	11..........	.....	.....	.....	.....	.....	.....
San Francisco	.....	.....	.....	.....1.....	.....1.....	.....	.....
San Fran (LP)	.....	.....	.....4.....	.....6.....	.....5.....	.....	.....

Key: Each number in the table represents the expected circuit reliability, e.g. '1' represents reliability between 1 and 19% of days, '2' between 20 and 30% 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 it is expected to be strong. The RSGB Propagation Studies Committee provides propagation predictions on the internet at http://members.aol.com/g4fkhgwyn. The page is updated monthly. The provisional mean sunspot number for November 2003 issued by the Sunspot Data Centre, Brussels, was 67.2. The daily maximum / minimum numbers were 132 and 9 on 27 November and 6 November respectively. The predicted smoothed sunspot numbers for January, February and March are respectively: (SIDC classical method - Waldmeier's standard) 60, 58, 57 (combined method) 60, 59, 58. Longpath predictions are shown with (LP) following the path name. Higher input power and superior aerials have been used for these predictions; less well-equipped stations may find the longpath predictions somewhat inaccurate.

RSGB MEMBERS ONLY CHRISTMAS OFFER

Ramsey FR-1 FM Broadcast radio receiver kit

The RSGB has negotiated a special purchase of this popular Ramsey Kit with their UK distributor Waters & Stanton. RSGB members can make a 20% or £9.00 saving on the normal advertised price of this excellent kit.

The kit contains everything to get you started including the case, front panel, control knobs, telescopic antenna and even the battery. A comprehensive instruction sheet is supplied and only the most basic home construction items such as a soldering iron are required to build the set. Once built, the radio covers 88 - 108MHz FM (10.7MHz IF) with 1µV sensitivity and provides 250mW audio output that will drive any 4 - 45 ohm speaker or headphones (not supplied).

ONLY £35.00

(plus £3.95 insured p&p)
Normal price £44.00 (plus p&p)

This is the perfect gift
or
a treat for yourself

NEW UPDATE

RSGB RADIO AMATEUR CALL BOOK

For the First Time you can get up to date UK call information on a CD with World Call data. Taking over from the Pegasus Flying Horse CD is the "RSGB Radio Amateur Call Book". Using the very latest UK, Europe and US call data, makes this the most up-to-date and very best World Call CD available. Requiring no hard disk installation this CD has an easy to use and effective interface. The "RSGB Radio Amateur Call Book" is comaptible with existing loging software and all operating systems from DOS to Windows XP.

£33.99 or £39.99 non-members Plus (p&p)

Order today from the RSGB Bookshop
www.rsgb.org/shop or Tel: 0870 904 7373

By Roger Balister, G3KMA, La Quinta, Mimbridge, Chobham, Woking, Surrey GU24 8AR. E-mail: g3kma@dsl.pipex.com

This month, news of the IOTA island group listings on the Internet and more on the 'IOTA 2004' activity programme.

IOTA

YAESU
YAESU, PRINCIPAL SPONSOR OF THE IOTA PROGRAMME

RSGB IOTA ISLANDS ON THE AIR

Great news to start IOTA's 40th Anniversary Year. The Society has agreed to the IOTA island group listings, complete with full titles, geographical coordinates and qualifying islands, being made available on Internet. To see them, go to the IOTA Manager's or the RSGB IOTA website.

IOTA 2004

JANUARY 2004		
OC-004	VK9	Lord Howe Island
OC-005	VK9	Norfolk Island
OC-010	V63	Pohnpei Islands
OC-011	V63	Chuuk Islands
OC-016	3D2	Viti Levu & Vanua Levu Group
OC-028	V73	Ralik Chain
OC-031	C2	Nauru
OC-032	FK	New Caledonia Island
OC-035	YJ	New Hebrides
OC-036	ZL	North Island, New Zealand
OC-047	H4	Solomon Islands
OC-049	A3	Tongatapu Group
OC-064	A3	Vava'u Group
OC-134	ZL	South Island, New Zealand
FEBRUARY 2004		
AS-007	JA1 etc	Honshu Island
AS-017	JA6	Okinawa Islands
AS-018	R0F	Sakhalin Island
AS-020	BV	Taiwan
AS-031	JD	Ogasawara Islands
AS-076	JA5	Shikoku Island
AS-077	JA6	Kyushu Island
AS-078	JA8	Hokkaido Island
OC-001	VK	Australia
OC-006	VK7	Tasmania
OC-012	V63	Yap Islands
OC-026	KH2	Guam Island
OC-034	YB9, P2	New Guinea
OC-042	DU1-4	Luzon Island
OC-086	KH0	Northern Mariana Islands
OC-130	DU8-9	Mindanao Island
OC-146	YB8	Celebes Island
MARCH 2004		
AS-006	VR2	Hong Kong Islands
AS-015	9M2	Pinang State group
AS-019	9V	Singapore
AS-042	R0B	Severnaya Zemlya
AS-053	HS	Malay Peninsula West group
AS-075	XX	Macau Islands
AS-094	BY7	Hainan Island
OC-002	VK9X	Christmas Island
OC-003	VK9C	Cocos (Keeling) Islands
OC-021	YB0-3	Java Island
OC-022	YB9	Bali Island
OC-088	YB7/9M/V8	Indonesia Kalimantan/East Malaysia/Brunei
OC-143	YB4-6	Sumatra Island
APRIL 2004		
AF-006	VQ9	Diego Garcia Island
AF-017	3B9	Rodrigues Island
AS-003	4S	Sri Lanka
AS-005	R0B	Kara Sea Coast West group
AS-013	8Q	Maldives
AS-083	R9K	Kara Sea Coast East group

Table 1: Some of the regularly-activated island groups counting for premium points in January to April 2004.

Posting on the Internet brings key programme information to a much wider audience. It has the added advantage of enabling the listings to be kept up to date as new group reference numbers and qualifying islands are added. The RSGB maintains the copyright to this data and requires that any downloading should be for personal non-commercial home use only unless prior written permission has been given.

Following this policy change the IOTA Committee has amended the requirement in the rules that applicants must purchase their own copy of the paper IOTA Directory in order to enter the programme. The emphasis has now shifted to ensuring applicants use, as far as possible, current information in preparing their submissions. So, the new wording adopted is that you should use the island group listings now on line on Internet or, alternatively, in an IOTA Directory no earlier than IOTA Directory 2000 - this could be your own or a friend's. The Directory will continue to be published.

IOTA 2004

The announcement of the IOTA 2004 activity programme (RadCom November 2003 page 39) has been received enthusiastically. A number of island operations are already at the planning stage. For example, the major month-long 3B9C operation from Rodrigues Island, which the Five Star DXers Association (FSDXA) announced at the RSGB HF & IOTA Convention at Manchester, stretches 12 days or so into April when contacts will score premium points. I'm sure that the operators will welcome all those additional contacts in the last few days! Information about premium contacts and everything else about this year-long activity programme can be found at the CDXC website.

A MURPHY MULTI-STRIKE

Maria Island lies at the western end of the Austral Island chain in French Polynesia. To say that it is remote with few visitors is an understatement. An expensive boat charter is the only way for anyone to get there and this rather focuses the mind on the reasons for going. In late September three Italian amateurs, Nando, IT9YRE; Claudio, I1SNW; and Alfio, IT9EJW, targeted

Two of the three team members on the Maria Island expedition (see text). Note the size of the tent / operating position!

Maria Island for an IOTA 'New One'. It was an ambitious project, but they had successfully activated other similar islands in recent years. However, on this occasion they reckoned without Murphy packing his bags and going with them.

The team arrived in Tahiti to find that Nando's luggage with his transceiver and antennas had been left behind by the airline. So, two days delay. Then, a drop in wind-speed caused their hired catamaran to lose a further two days getting to the island. The weather deteriorated on arrival and made navigation through a narrow pass in the reef very difficult. This took its toll. Two transceivers, one antenna and a generator went in the water, some not to be recovered. In the event they managed to get on the air by using a battery from the boat but this only allowed them 20 hours operation. Despite everything FO/IT9YRE, FO/I1SNW and FO/IT9EJW made a creditable 1850 QSOs from OC-264. Another instance of things not always going to plan . . . bad enough but, thank goodness, it wasn't even worse.

ANNUAL UPDATE

A reminder that the last date for mailing applications or updates to checkpoints for inclusion in the 2004 Honour Roll and other performance tables is 1 February 2004. If postmarked after that date, they will be processed in the normal way but the scores will be held over to the following year. Listing in the 2004 tables will be restricted to those members who have updated their scores since 1 February 1999. ◆

NEW REFERENCE
OC-264 FO
Maria Island
(Austral Islands)

WEB SEARCH

RSGB IOTA Programme:	www.rsgbiota.org
IOTA Manager's website:	www.g3kma.dsl.pipex.com
IOTA Contest rules:	www.rsgbhfcc.org
CDXC:	www.cdxc.org.uk

RSGB IOTA PROGRAMME, PO BOX 9, POTTERS BAR, HERTS EN6 3RH; E-MAIL: IOTA.HQ@RSGB.ORG.UK

Automatic Antenna Tuners From LDG

The world's most popular desktop autotuners!

AT-1000 High Power ATU
- 1000 Watts SSB • 750 CW • 500 Dig.
- Back-lit cross needle power meter
- 100 Watts 50 MHz • Requires 12 V DC

£ 499.95

RC-1000 Remote Control
- Allows remote operation of AT-1000 ATU
- LED Forward Power and SWR Meters
- Mounting Bracket • Powered from ATU

£ 89.95

AT-11MP Desktop ATU
- 5 to 150 Watts • Fine tune controls
- Back-lit cross needle meter
- 241w x 64h x 210d mm • 12 V DC

£ 199.95

Z-11 QRP Desktop ATU
- .1 to 60 Watts • LED Status indicators
- Power not required once tuned
- 127w x 32h x 216d mm • 12 V DC

£ 129.95

Z-100 Affordable Desktop / Portable ATU
- .1 to 125 Watts • Nil current once tuned
- LED status indicators • 9 to 16 V DC
- 133w x 45h x 140d mm • 397 Grams

£ 129.95

RT-11 Remote Mounting ATU
- Water resistant ABS Plastic case
- .1 to 125 Watts • 50 Watts on 50 MHz
- Requires interface or Remote Control

£ 179.95

AT-897 Bolt-on ATU
- Mounts on the Yaesu FT-897
- .1 to 100 Watts • Powered from Radio
- Covers 50 MHz • Virtually off once tuned!

£ 199.95

Optional Interfaces:
Radio interfaces are available for the AT-11MP, RT-11, and Z-100 for certain Icom, Alinco, and Kenwood radios

All LDG Autotuners Feature:
Switched "L" matching network • Precision microprocessor control • 1.8 to 30 MHz continuous coverage • Will match impedences of 6 to 800 ohms • Designed for coax-fed dipoles, verticals, and beams • Use a 4:1 Balun for long wires

Radioworld
42 Brook Lane, Great Wyrley
Walsall, West Midlands WS6 6BQ
Phone: 01922 414796 Fax: 01922 417829
Web: www.radioworld.co.uk
E-mail: sales@radioworld.co.uk
All prices include VAT, P & P additional

LDG ELECTRONICS

Support and Information:
E-mail: ldg@ldgelectronics.com
Website: www.ldgelectronics.com

Want to Stop Spam?
Want end-to-end Email Security?
Want to Break Free from your Web Host?

SnugServer — From £39.95

SnugServer is an Email Server, Web Server, FTP Server, List Server and News Server, 'all-in-one'.
Anti-Spam, Anti-Virus, Encryption built-in as standard
Website: http://www.snugserver.com
Email: support@heidi.ie
Tel: 00353-1-201-7924

The Sidcot TCVR

New small specialist CW rig for 80m
Direct Conversion with strong mixer
Narrow bandpass RF and AF filters
1.5 Watts, or 10W with optional linear
Complete for £44 plus £2 P and P

Send SSAE or visit: www.users.globalnet.co.uk/~walfor

WALFORD ELECTRONICS
Upton Bridge Farm, Long Sutton, Langport, Somerset TA10 9NJ

G1MFG.com

The best amateur television gear in the world...

NEW microwave video receiver

Highly sensitive, full-featured receiver with 10 memories, scanning, backlit LCD frequency readout and much, much more! Operates from 12V DC, has a SMA RF input and phono outputs for video and demodulated audio.
23cm (covers 800-1800 MHz).....£125.00
13cm (covers 2.20-2.70 GHz).....£125.00

Microwave-band antennas

800-1800MHz (Tx 23cm band only).....£55.00
2200-2700MHz (Tx 13cm band only).....£47.00

Both antennas have a gain of around 13dB in their Tx band, are supplied with full mounting hardware and have SMA sockets.

Antenna downleads

3m SMA male - SMA male.....£12.99
5m SMA male - SMA male.....£14.99
10m SMA male - SMA male.....£17.99

With green backlight.....£49.99
Without backlight.....£42.00

LCD controller

Connects to Rx and Tx to make a full-featured ATV transceiver. 3 Tx VFOs and 3 Rx VFOs, all tuning in 125kHz steps. Adds wide band receive: 23cm version tunes 800-1800MHz, 13cm tunes 2.2-2.7GHz. Transmitter is limited to amateur band only.
Specify type when ordering.

Receiver accessories

SMA-N RF input adapter.....£3.95
SMA-BNC input adapter.....£2.95
13cm rubber duck antenna.....£9.00
13cm magmount antenna.....£55.00
Phono-phono AV leads.....£3.50
Phono-SCART AV lead.....£4.95
Mains 12V PSU.....£6.50
Cigarette lighter lead.....£4.95

ATV transmitters

23cm - covers 1240-1367MHz in 500kHz steps, 50mW (nominal) power output, transmits video and audio, runs from 12V DC, DIP switches set frequency.....£42.50
13cm - covers 2304-2559MHz in 1MHz steps, 20mW out.....£42.50
70cm AM - 100mW nominal output at 435.5MHz.....£69.99

FM ATV receivers

23cm Platinum - covers 1240-1367MHz in 500kHz steps, includes CCIR de-emphasis, video and audio, DIP switches set opperating. frequency.....£60.00
13cm - covers 2304-2559MHz in 1MHz steps.....£55.00
ENG - covers 2200-2700MHz in 2MHz steps.....£55.00

All prices include UK P&P. Visit our large and informative web site at **www.G1MFG.com** for more details on these and many other items, including power amplifiers, microwave coaxial relays, more receivers, and lots and lots of data!
TO ORDER: Send a cheque or P.O. **payable to G Read** to G1MFG.com, L'Eglise, Durley Street, Durley, Southampton, SO32 2AA. Telephone 01489 860 318 (11am - 8pm), email sales@G1MFG.com

By Bob Treacher, BRS32525, 93 Elibank Road,
Eltham, London SE9 1QJ. E-mail: brs32525@compuserve.com

Bob Treacher bemoans the apparent reduction in SWL activity - and issues a challenge!

UK SWL activity and contests

Welcome to the first 'SWL' of 2004. There will be some changes to the column this year. I have agreed with the editor that because contributions from listeners were much reduced in 2003, the column will now appear every two months. I am quite disappointed that 'SWL', a monthly feature for the last 20 years, is reverting to every two months.

I cannot say categorically what the reason for the reduction of SWL news is. There is probably more than one reason. Part of it may be to do with the number of listeners who have joined our transmitting colleagues with the advent of the Foundation Licence. I do know of a reasonable number of listeners who have moved on to become licensed radio amateurs. This is good for amateur radio, but may well have been a retrograde step for this column! Other reasons may be connected with poor conditions, lack of interesting news, lack of SWL activity - or just pure complacency, thinking that the column would continue to flourish without your support.

The next move is entirely yours. The column can either revert to its monthly slot (by a sizeable increase in contributions) or it can take a further retrograde step by becoming a quarterly column (if the level of contributions does not increase) - the fate of the column is firmly in your hands.

SWL CONTESTS

While I am discussing reduced contributions, my mind turns to the apparent disinterest in SWL contests. A few years ago, SWL contest participation was at an all-time high. Entries to most contests were well supported, I was asked to write an SWL column for 'CQ Contest', and there were around 100 entries for my 'CQWW SWL Challenge'. Times have clearly changed. SWL entries are now the exception rather than the rule, with entries to all contests being poor or non-existent.

I would be interested to hear your views on contest participation. With your feedback, it will be possible for the society's contest committee, and others, to decide whether organising SWL sections to contests, or arranging SWL-only contests should continue. Assuming there are still listeners who enjoy contesting, the rules to the Cray Valley low bands contest appear in the column. The level of participation will decide if the event continues.

YI/NG5L QSL (see text).

Contest participation is a great way to add to your DXCC totals or improve your perception of band conditions and propagation, but it is more than that. It is a way of preparing the SWL for the day when he wants to, or is able to, take part in a contest as a transmitting amateur. Contesting is great fun. It is also an art, and requires great skill and expertise. An SWL, when newly licensed, cannot walk straight into a transmitting contest and expect to be competitive without first having listened to the operating skill and experience that taking part in SWL contests bring.

You either like or dislike SWL contests: there is no 'half-way house'. Let me know your point of view so others can shape an SWL calendar for the future - no comments, no contests. Once again, it's up to you.

MORE SWL VIEWS

Just space to refer to the letter received from Douglas Johnstone, BRS54163. His letter was his first to the column, having returned to SWLing after 17 years. Douglas uses Icom 700R and Yaesu FRG-7000 receivers. His shack is a small 4 x 3m room which also houses his antennas. That may be a problem for some, but Douglas is able to obtain good copy from VKs on 14MHz at our breakfast time.

I have been asked which publication would provide a list of all the amateur radio prefixes currently in use. There is no need to look further than the Society's own Yearbook, available from RSGB Sales for just £14.44, assuming you're an RSGB member! ◆

CRAY VALLEY SWL CONTEST 2004

RULES

The idea of the contest is to hear as many stations and multipliers as possible on 7, 3.5 and 1.8MHz.

WHEN: 1600UTC 10 January 2004 to 1100UTC 11 January 2004

BANDS: 7, 3.5 and 1.8MHz **ONLY**

MODES: Section A: Single Operator SSB (**NO** external help allowed).
Section B: Multi Operator SSB (more than one SWL; use of Packet Cluster or DX Summit.
Section C: Single Operator SSB, no external assistance – 6 hours only.
Section D: Single Operator CW (**NO** external help allowed)
Section E: Multi Operator CW (more than one SWL; use of Packet Cluster or DX Summit.
Section F: Single Operator CW, no external assistance – 6 hours only

SCORING

7 & 3.5MHz - 5 points for any station heard from outside the SWLs own continent, 2 points for stations heard from the SWLs own continent. **1.8MHz** - 10 points for any station heard from outside the SWLs own continent; 3 points for stations heard from the SWLs own continent. Any station heard will count for points, except /AM and /MM stations. All stations logged **MUST** be in QSO.

MULTIPLIERS

Each country heard on each band will count as 1 multiplier point. The call areas of Canada, Japan, Australia and New Zealand will each count as a separate multiplier. All other countries will be determined using the ARRL DXCC Countries List.

LOGS

Logs should show: Date, Time (UTC), Station heard, Station being worked, RS(T) of station heard at SWL's QTH, Multipliers, Points. If both sides of a QSO are heard, they may both be claimed for points. Each station **MUST** be shown in the station heard column. A separate sheet showing multipliers heard on each band **MUST** be submitted. Computer generated entries, especially those using EI5DIs *SDL* software will be welcomed but please remember to include a Multiplier Check Sheet.

ENTRIES

Entries should be sent to **Cray Valley Radio Society, c/o 93 Elibank Road, Eltham, London SE9 1QJ, ENGLAND. E-mail logs will be accepted if sent to brs32525@compuserve.com** All entries **MUST** be postmarked no later than 28 days from the end of the contest.

AWARDS

Cray Valley Radio Society will issue certificates at their discretion. All decisions made by the Society will be final.

Contest

The HF Contests Committee, this year, has taken the opportunity to introduce a new series of contests, on 80m under the banner of the 80m Club Championship. The series runs from January to July and includes phone, CW and datamodes events. [See the article on pages 85 - 89 this month for more on these contests - *Ed.*] By accepting e-mail entries only, processing of the results should be much quicker and it is intended to have a rolling listing of results on the www.rsgbhfcc.org website.

Shorter contests seem to be gaining in popularity, given the increasing pressure on peoples' time, so we hope that these contests will prove a popular addition to the HF Contests Calendar.

CONTEST CALENDAR

HF CONTESTS

Date	Time	Mode	Contest	Bands	Exchange
3/4 Jan	1800-2400	DATA	ARRL RTTY Roundup	3.5-28	RST+SN
5 Jan	2000-2130	CW	RSGB 80m Championship	3.5	RST+SN
10 Jan	1400-2000	CW	PA YL	3.5-28	RST+SN
11 Jan	0800-1400	SSB	PA YL	3.5-28	RST+SN
11 Jan	1400-1800	CW	RSGB Affiliated Societies	3.5	RST+SN
14 Jan	2000-2130	SSB	RSGB 80m Championship	3.5	RST+SN
18 Jan	1400-1800	SSB	RSGB Affiliated Societies	3.5	RST+SN
22 Jan	2000-2130	Data	RSGB 80m Championship	3.5	RST+SN
24/25 Jan	0000-2359	CW	CQ 160m	1.8	RST+Prefix
24/25 Jan	0600-1800	CW	REF	3.5-28	RST+SN

VHF CONTESTS

Date	Time	Mode	Contest	Bands	Exchange
6 Jan	2000-2230	All	RSGB 144MHz Activity & Club Championship	144	RST+SN+Locator
11 Jan	1000-1200	All	RSGB 70MHz Cumulative	70	RST+SN+Locator+QTH
13 Jan	2000-2230	All	RSGB 432MHz Activity	432	RST+SN+Locator
20 Jan	2000-2230	All	RSGB 1.3/2.3GHz Activity	1.3/2.3G	RST+SN+Locator
25 Jan	1000-1200	All	RSGB 70MHz Cumulative	70	RST+SN+Locator+QTH
27 Jan	2000-2230	All	RSGB 50MHz Activity	50	RST+SN+Locator

70MHz CUMULATIVE CONTESTS, 2003

This popular series of contests attracted good levels of activity in most sessions. For most entrants the second, third and fifth sessions had better conditions than the first and fourth sessions. Robert Ferguson, GD4GNH, established a dominant position in the single operator fixed station section, winning every session. Second place was closely contested between Pat Moore, G3IKR, and Stewart Cooper, GM4AFF. Stewart realised just before the last session that he had an antenna problem. He fixed it and in his words "suddenly started hearing things". Fourth and fifth places were equally closely contested between David Gilligan, G1OGY, and John Hall, G0ODQ.

In the All Others section, Flight Refuelling Amateur Radio Society, G4RFR, once again returned to their winning ways. The runner-up in this section, Ross Wilkinson, G0WJM/M, managed to activate a different site in each session this year. The winners and runners-up in each section will receive certificates.

IAN PAWSON, G0FCT

SINGLE OPERATOR FIXED

Pos	Callsign	12/01/03 Score	26/01/03 Score	09/02/03 Score	23/02/03 Score	16/03/03 Score	Norm Total	QSOs
1*	GD4GNH	11364	13449	11700	12270	12621	3000	206
2*	G3IKR	4321	4860	4087	4395	4066	1099	180
3	GM4AFF	2858	3709	3577	4615	4764	1058	49
4	G1OGY	0	3726	0	3101	4409	878	74
5	G0ODQ	2957	4174	2232	2966	3688	862	131
6	G3TCU	3116	3887	2474	2992	2929	806	137
7	G0ORG	2447	3033	2742	2512	2599	674	83
8	G1KHX	2831	2994	2022	2419	2410	668	95
9	G0GCI	1878	2964	2816	2017	0	625	66
10	G1EHF	1921	2309	2124	2241	2621	570	105
11	G4SJH	1813	1547	1587	1955	2143	487	83
12	G8EFU	1851	1366	1505	1807	2048	471	85
13*	G7NBE	1017	1026	590	588	1247	263	38
14	GM4DIJ	343	685	0	817	327	146	16
15	G6UBM	488	521	168	383	489	118	42

ALL OTHERS

Pos	Callsign	12/01/03 Score	26/01/03 Score	09/02/03 Score	23/02/03 Score	16/03/03 Score	Norm Total	QSOs
1*	G4RFR	5228	6070	4910	4948	5418	3000	175
2*	G0WJR/M	2615	2553	2969	2362	4166	1872	84
3	M0BPQ/P	0	0	0	0	1916	353	18

* Certificate

ROPOCO RESULTS

Gremlins crept in last month and we managed to mix up the publication of the RoPoCo 2 results. Our apologies for this error, especially to the adjudicator; Clive, GW3NJW, whose fault it certainly wasn't! The RoPoCo 2, 2003 results are published in full this month.

ALL'S FAIR IN LOVE, WAR - & AFS!

Two of the most fiercely-contested events in the domestic UK HF Contests calendar take place in January, in the shape of the two

RoPoCo2, 2003

Conditions on the day were not kind and many entrants commented on the poor and noisy propagation coupled with very few stations to work after the first hour. Scores in the bottom half of the table were noticeably lower than in the first contest but the leaders actually managed more QSOs than in the April event. Rather surprisingly, the number of perfect logs received went up from 6 to 10.

There was the usual crop of severely corrupted postcodes, but these appear all to have been introduced by stations that did not submit entries. One competitor noted this and went so far as to suggest that it might be a deliberate tactic! In those exchanges which were checkable (around 80% of the total) the most common causes of lost points were confusing 'H' with '5', and 'V' with '4'.

Congratulations not only to the award winners, but to all those who participated in what is arguably the most difficult and demanding of all RSGB contests.

STEVE KNOWLES, G3UFY

Posn	Callsign	Score	Error-Free
1	G0CKP *	670	
2	G4BJM +#	660	
3	G0MTN +	650	
4	G3RSD	600	
5	G3ZRJ +	590	Y
6	G2AFV	560	Y
7=	G3OLB	540	
7=	G3XTT	540	
7=	G4CZB	540	
10=	G4PIQ/P	530	
10=	GW0GEI	530	
12	G4CWH	510	Y
13=	G3LIK	490	
13=	G3ZGC	490	
15=	G4EBK	470	
15=	G4XPE	470	
17	G0VQR	460	
18	G2HLU	420	
19=	G3GLL	400	Y
19=	G3JJZ	400	Y
21=	G3LHJ	390	
21=	G4OGB	390	
23=	G3MA	380	
23=	G3VYI	380	
25	G2FSR	370	
26	G0DHZ	360	
27=	G3JSR	350	
27=	G3SET	350	
27=	G3VQO	350	Y
30=	G0IBN	340	
30=	G4RLS/P	340	
32	G3IZD	330	
33	G0WBC	320	
34=	G3VDF	310	Y
34=	G4PTE	310	Y
36	G3ZDD	250	
37	GW3SB	240	
38	G3WYW	230	
39=	G0IVZ	220	Y
39=	G3GMS	220	Y
41=	G3GMM	190	
41=	G4BUO	190	
43	G3CQR	180	
44	GM3UM	160	
45	G3ILO	140	
46	GW4KVJ	80	

* G3XTJ Memorial Trophy, # G5MY Trophy (highest aggregate score with RoPoCo1 2003). + Certificate of Merit. Check log received with thanks from G3XNG.

By Tim Kirby, G4VXE, Willowside, Bow Bank, Longworth, Abingdon, Oxfordshire OX13 5ER. E–mail: tim@g4vxe.com

Affiliated Societies Contests. One event is on phone and the other is CW. I'm expecting that the phone event will, in particular, have a new complexion this year, with the availablilty of lots of stations who haven't previously been able to take part. The CW event takes place on 11 January and the SSB event on 17 January. The contests run from 1400 - 1800UTC on 80m. They are usually tremendous fun, with lots of activity going on. It's also a great opportunity to have a short 'new year's contact' with friends old and new! To do well in AFS, you don't necessarily need to have a good DXing station. You will need a good receiver – and a good signal over the UK. A high dipole may not necessarily achieve the result that you are looking for. Some have had success with lower antennas over the years. Do have a go – you'll have lots of fun.

CONTESTS THIS MONTH

Need some practice for the datamodes contests in the 80m Club Championship? The ARRL RTTY Roundup on 3 / 4 January makes a great place to start. We've often had great fun in this event from MW2I and once or twice been well placed too! The 24 / 25 January bring the *CQ* 160m CW Contest which is one I haven't done for a while, but have fond recollections of. If conditions are good activity in this contest can be tremendous. I was lucky enough to take part one year from VE3EJ's super station and some of the trans-Atlantic openings sounded like 20m. Whatever conditions are like, it's a great opportunity to work on a fascinating band. ◆

The CQ WW SSB C5Z team at Radio Syd's location one mile from Banjul, Gambia. Radio Syd, the first commercial broadcast station in Africa, closed down in 2002 after the antenna tower was damaged by a storm. From left: Foday, a local TV / radio repairman who may become a ham; John, K6AM; Marty, N6VI; Terry, K6JL; Dick, N6AA; Jorma, OH2KI; Art, W6XD; Phil, N6ZZ; John, AB6BH; Larry, K5OT. The majority are members of Southern California Contest Club, even the photographer.

PHOTO: HENRYK KOTOWSKI, SM0JHF / K6JHF

432MHz AFFILIATED SOCIETIES CONTEST, 2003

Most entrants reported fair activity and average conditions. Several QSOs at over 600km were made by the leading stations, though. A number of entrants remarked on the good support for this contest by mainland European stations. Ten logs were error-free, though eight of these incurred minor score changes from distance re-calculation. The Five Bells Contest Group repeated their overall win this year, with the Harwell Amateur Radio Society 'A' team taking second place. Congratulations, too, to G4ODA and G1ZJP for taking first and second place in the single operator fixed section with 2E1GUA being the highest placed intermediate licensee. G8OHM and G3WHK took first and second place in the multi-operator section, with G4CQR/P taking first place in the single operator open section. Disappointingly there were no entries in the AFS section received from clubs outside of the English Midlands and Home Counties.

ROGER PIPER, G3MEH

Single Operator Fixed

Pos	Call	QSOs	Score	Best DX	Dist
1 *	G4ODA	69	17573	DF2VJ	624
2 *	G1ZJP	64	15344	DF2VJ	632
3	G3MEH	78	11359	DF2VJ	599
4	G8VHI	61	10778	DF2VJ	691
5	M0CUL	54	7391	DJ6JJ	567
6	M0DDT	50	6676	DG1KJG	588
7	G0GCI	36	4947	DG1KJG	474
8	G4WYJ	51	4909	DG1KJG	515
9	G8HGN	31	4716	DF2VJ	523
10 *	G4APJ	18	3729	G4CQR/P	366
11	G0ODQ	40	3609	F8BRK/P	300
12	G8IYS	36	2996	DJ6JJ	486
13	G8JXV	34	2518	PA5DD	349
14	G0TXL	37	2091	PA5DD	343
15	M1PIA	23	2028	G4APJ	241
16	G4HLX	20	1797	F8BRK/P	307
17	G3YJR	10	1638	G4CQR/P	320
18	G4VPD	12	1542	F8BRK/P	393
19	M0ZZO	13	1522	DF2VJ	492
20	G4KIY	13	1294	G3OLX	139
21 *	2E1GUA	13	942	F8BRK/P	305
22	G8FBG	13	745	PA5DD	368
23	G6UBM	10	659	G8OHM	201
24	G3JJZ	10	439	G4ODA	153
25	G4FFY	6	83	G3MEH	55

Single Operator Other

1 *	G4CQR/P	49	9507	DL3YEL	582

Multi Operator

1 *	G8OHM	60	10416	DF2VJ	711
2 *	G3WHK	70	7016	DG1KJG	516
3	G3OLX	46	3564	G8BNE	313
4	G1WAC	19	2456	F8BRK/P	393

432MHz TROPHY 2003

Conditions were dreadful for this contest, but in spite of this entries were up for the second year in a row, and it was especially good to see some good activity from Scotland. The entries from GM3HAM/P and GM4V make the table below, but Clive O'Hennessy, GM4VVX/P, was also active from the far north in IO78. However, he heard only one signal briefly in four hours and never managed to complete a contact, so at 1800, he called it a day! Thanks for trying Clive!

Logging standards were variable with the stations at the top of the table having pretty clean logs, but one or two stations who should have known better, losing 20% or more of their score.

Congratulations to Roger Piper, G3MEH, for winning the Single Operator fixed section this year, putting David Gilligan, G1OGY, in the runner-up position. The Five Bells Contest Group, G5B, take the trophy, with the Flight Refuelling ARS operating from the deep south being in second place. Leading low power single antenna station was Ken Punshon, G4APJ; James Beatwell, 2E1GUA, maintains his position as leading Intermediate licensee, and 14-year old Kevin Coyne, M3KGC, wins the award for the leading Foundation licensee in his first contest. Lets hope to see more of Kevin in future events.

ANDY COOK, G4PIQ

Single Operator Fixed Section

Pos	Call	Loc	Points	QSO	Pwr	Ant	Best DX	km
1*	G3MEH	IO91QS	11087	53	250	2 x 23Y	DF2VJ	599
2*	G1OGY	JO01GR	9942	49	300	4 x 21Y	DF2VJ	524
3	G8SRL	JO01ED	6074	31	80	2 x 21Y	PI4GN	496
4	G3YDY	JO01FQ	5005	20	50	19Y	DL0GTH	729
5*	G4APJ	IO83UP	2547	13	25	19Y	PA6NL	469
6	M0DDT	IO91JR	1585	15	80	21Y	GD0EMG	353
7*	2E1GUA	JO01FR	1566	12	10	19Y	DF2VJ	530
8	M1DUD	JO02QC	924	8	2.5	6Y	PA6NL	189
9	G3YJR	IO93FJ	762	5	10	19Y	PA6NL	413
10*	M3KGC	IO93FJ	17	1	10	19Y	G3NEO/P	17

Open Section

Pos	Call	Points	Loc	QSO	Pwr	Ant	Best DX	km
1*	G5B	JO03CE	23283	76	400	8 x 28Y	DK6AS	716
2*	G4RFR/P	IO80UU	12587	51	400	QLY	EA1DDU	851
3	G8OHM/P	IO92GB	9635	52	400	4 x 19Y	DF2VJ	664
4	GD0EMG	IO74QD	8794	40	400	4 x 20Y	PA6NL	632
5	GW1ATZ/P	IO82KW	4181	30	50	18Y	PA6NL	502
6	GM3HAM/P	IO85SS	1911	13	400	2 x 37QLY	M0DDT	457
7	G4LOO/P	IO91RU	1640	14	200	3 x 36Y	PI4GN	517
8	GM4V	IO85NR	787	7	40	24Y	G5B	346
9	G1ORC/P	IO83WN	115	4	3	2 x 9Y	GW1ATZ/P	96
10	G3ZME/P	IO82QL	114	3	200	17Y	G3PHO/P	114

* Certificate Winner

HF CHAMPIONSHIP 2002

All callsigns of UK stations appearing in at least two of the following contests, in accordance with the HF Championship rules: 1st 1.8MHz, Commonwealth, RoPoCo1, Jubilee, IOTA, RoPoCo2, 21/28 SSB, 21/28 CW, 2nd 1.8MHz.

BOB RAZEY, G0ADH

Pos	Callsign entered	No of events	Total Points
1	GW3NJW	7	8435
2	G0IVZ	6	7432
3	G3LET	3	7030
4	G3BJ	3	6968
5	G0CKP	6	6666
6	G4BUO	6	5643
7	G3LIK	6	5494
8	G3GLL	6	5078
9	GW0GEI	4	4880
10	G2HLU	7	4606
11	G3RSD	6	4104
12	G3ZGC	7	4090
13	GM4SID	4	3977
14	G4CZB	4	3833
15	GM3POI	3	3773
16	G3RFH	5	3712
17	G4BJM	5	3607
18	G3SXW	3	3567
19	G4RCG	5	3534
20	G3WPH	4	3492
21	M0AJT	7	3447
22	G4OGB	5	3360
23	G4IIY	4	3312
24	G3TXF	4	3259
25	G3JJZ	4	3024
26	G3KKP	3	2970
27	G3LHJ	4	2832
28	G4EBK	5	2823
29	G3JJG	4	2731
30	G3UFY	5	2686
31	G3TJE	3	2646
32	G3SJJ	3	2628
33	G4CWH	4	2603
34	G3LZQ	2	2494
35	GU3SQX	3	2475
36	G3GMM	7	2461
37	G3KHZ	2	2377
38	GW4MVA	3	2276
39	G3IAF	2	2240
40	G4TSH	2	2226
41	G3YEC	3	2199
42	G2QT	2	2176
43	G3GMS	6	2152
44	GM3JKS	2	2076
45	G3VYI	4	2069
46	G3KZR	3	2064
47	G3PJT	2	1991
48	G3JKY	2	1976
49	G3MPB	3	1864
50	GW3WWN	4	1839
51	G0MTN	5	1785
52	G3TBK	2	1746
53	G3VQO	5	1699
54	GW3SB	3	1578
55	G3MA	3	1472
56	G3ZDD	5	1449
57	GM3CFS	3	1408
58	G3KLH	2	1393
59	G2AFV	2	1337
60	G4XPE	5	1293
61	G0VQR	4	1163
62	G0DHZ	2	1118
63	G3YAJ	2	1105
64	G4ARI	2	1070
65	G4IRN	2	1016
66	G4OBK	2	988
67	G4PTE	2	933
68	GM3UM	3	928
69	G3YMC	4	913
70	G0DCK	2	853
71	G3HKO	2	824
72	G3KKQ	2	804
73	MU0FAL	3	724
74	G0RDO	2	624
75	G3COR	2	593
76	G4ZME	2	482
77	G4EDR	3	443
78	G3XTT	2	426
78	G8OO	2	426
80	G4PIQ	2	391
81	G0UKX	2	379
82	G3WRR	3	345
83	G4DDX	2	316
84	G0AJH	2	273
85	M0DDT	2	167
86	G4DDL	2	101
87	GM4HQF	2	84
88	M0BAO	3	71
89	G3FNM	2	61
90	G0MRH	2	35

By Norman Fitch, G3FPK, 40 Eskdale Gardens,
Purley, Surrey CR8 1EZ. E-mail: g3fpk@compuserve.com

VHF/UHF

Extraordinary solar activity at the end of October led to spectacular visual and radio auroras, as Norman Fitch discusses…

A very Happy New Year to all readers and contributors and let's hope we can look forward to greater activity in 2004. Even when conditions seem to be flat with little activity, it's always worth putting out a few CQ calls. Also, with more operators exploring WSJT software, QSOs are now possible on what may seem to be a dead band, so give it a try.

This month's theme just *has* to be about solar activity, since the Sun has been behaving in a very energetic way during the period covered by this report. At this stage in a declining sunspot cycle we would expect the daily 10.7cm solar flux to be around 100 units or less and with few sunspots. However, this time, from 17 October the solar flux rose steadily from 99 to peak at an exceptional 298 on the 26th, remaining above 200 for a further six days before dropping back to 98 by 6 November.

The Space Weather News bulletin on 28 October read, "One of the most powerful solar flares ever recorded erupted this morning near giant sunspot 486. The explosion hurled a coronal mass ejection (CME) directly toward Earth." By the 29th, the sunspot number reached 330, the kind of figure we might have seen at the peak of this cycle back in 2001.

Those fortunate enough to have clear skies were able to see some beautiful auroral displays right down to southern England with one newspaper report mentioning their being observed in Streatham in South London. If true, that would be remarkable considering the high level of light pollution in the metropolis. In case you were unable to see a display, Colin Smith, GM0CLN, has kindly provided a super picture of what he saw from the Edinburgh area.

This CME triggered off tremendous visual and radio auroral activity. On 28 October the middle latitude A-index at Fredericksburg was 15 but next day it reached 199, a truly amazing value. Next day it was 144 and on the 31st it was 73 but on 1 November it had dropped back dramatically to 16. A few days later the massive sunspots had rotated out of view and the Sun was virtually spotless with the sunspot number dropping to just 11 on 7 November.

For the record, the sunspot area in millionths of the visible disc was recorded as 5690 on 30 October but had dropped to a mere 50 by 8 November.

All that said, this was not a unique event since records show that the biggest flares in a sunspot cycle can occur a couple of years after the maximum. This is explained in detail in a NASA Science News posting - see the panel.

BEACON NOTE

Ted Warne, G3YJX, is keeper for the GB3MCB beacons in Cornwall whose antennas are on a mast at the site operated by Gridcom. The lease was to have terminated on 20 December but has now been extended to April 2005 when another review will take place. The 70cm beacon is still QRT due to the loss of the antenna and feeder and the 23cm beacon has been stolen.

AURORAL ACTIVITY

Starting with 70cm, John Quarmby, G3XDY (JO02), concluded that conditions were not quite up to the standard of the 'mega aurora' of March 1989 as signals were less stable and the real DX didn't seem to be making it into East Anglia. He lists his 12 best QSOs completed in the 29-31 October period, ODX being OK1DFC (JN79) at 961km. Other grids worked were JN36, 39, JO42, 43, 46, 51 and 63.

Next to 2m where John was also QRV and on the 29th he worked ES6RQ (KO28). In the early hours of the 30th he highlights 9A6WW (JN86), YU7EW (KN05), IK1SPR (JN34), ES5PC (KO38 and ODX at 1745km), LY2BJ (KO25), LY3OD and LY2BIL (KO24). In the early hours of the 31st he worked through a pile-up of DL, HA, OK, S5 and SP stations before QRT at 0145.

On the 29th, David Butler, G4ASR (IO81), lists 52 CW QSOs made between 1458 and 2324, ODX being US5WU (KO20) at 1900km using antenna headings (QTE) of 20-70°. Between 0055 and 1556 on the 30th another 16 contacts were completed, ODX being HA5KG (JN97) at 1666km. Total country tally was 20.

John Lemay, G4ZTR (JO01), runs 200W to a 16JXX2 antenna and was QRV in the 29-30 October period. He lists his best 10 contacts as SM5DFF (JO88) and LA7XK (JP50) both new grids, HA5OV (JN97), F5VHX (JN04) as well south, HA0HO (KN07) the furthest east, IK2GSO and I2FAK (JN45), IK1PSK (JN34) a long way south, I1TJQ (JN35), YU7BCL (KN05) a long way south-east and 9A2VR (JN95).

Mike Johnson, M5MUF (IO92), lists 41 CW and SSB QSOs completed in

A spectacular aurora photograph taken by Colin Smith, GM0CLN, looking west from near Kirknewton in West Lothian, just after 0000UTC on 30 October. Note the reflection of the aurora on the car roof at the bottom of the picture!

METEOR SCATTER

First a reminder about the Ursids meteor shower, details of which were mentioned on page 46 in the December 'VHF/UHF' column. The first significant shower in 2004 will be the Quandrantids which should peak at about 0430 on 4 January with a predicted zenithal hourly rate (ZHR) of 111. The peak is usually quite sharp and at this time the north/south and north-west/south-east paths are the best directions for reflections.

M5MUF found a flurry of activity on 9 November on 6m and completed random QSOs using JT6m FSK mode with SM3LE (JO99) at 0950, OE5MPL (JN78) at 1045 and OK1DDO (JO60) at 1104. On 2m Mike used FSK441 to complete with S51AT (JN76) on 20 October, OM5UM (JN98) and S53J (JN75) on the 21st, OE5MPL (JN78) and S51AT again on the 22nd, TM5CRO (JN32) on the 24th, EA2KP (IN83) and OK1DFC (JN79) on the 26th. In November, on the 5th he completed with OE3FVU (JN78), SP4MPB (KO03) on the 6th and ES6DO (KO27) at 1799km on the 9th at the third attempt for his new ODX; not bad for 30W. GW8IZR completed on FSK441 on 25 October with TM5CRO.

the 29-31 October period. ODX were HA0HO at 1694km for a new grid and SP7ASQ (JO91) at 1406km for a new country. The most southerly contact was with F5LRL (JN26). The second night's event started with a QTE of 50° and most of the DLs and the SP7 were worked at 90°.

Bob Harrison, G8HGN (JO01), started off at 2255 on the 29th with MI0RDX (IO65) for his 200th grid on 2m. Over the period he completed 28 QSOs with DL, F, G, GI, HB9 and PA stations at QTE 30-60°. Ian White was staying in a holiday cottage near Wigtown so operated as GM3SEK on the 29th. The only antenna he had was a G5RV for the HF bands which he managed to tune up on 2m, though with much loss, yet made 18 QSOs including an OK and a couple of SPs. The aurora was overhead the next night and the sky was clear.

Now to 4m where John Armstrong, G3JRL (IO80), contacted G4FUF (JO01), OZ2LD (JO54) and OZ2ZW on CW on the 29th. He also heard EIs and GMs. His QTH is only 30ft ASL and the ground to the north rises up to 550ft so normally he has great difficulty with auroral contacts. He runs 100W to an 8-ele log-Yagi antenna and has always been very active on the band.

Lastly to 6m where G4ASR lists 10 CW QSOs on the 29th and 30th with DL, EI, G, GM, LA and PA stations. A contact with LA6XF (JP50) was on SSB via Auroral-E mode. QTEs were 10-45°. Gavin Stirling, GM0WDD (IO85), was using a 40m dipole antenna in the attic of his top floor apartment in Edinburgh and was amazed to copy G4ASR, GM8EOG, LY2BAW, PA4PA and G4DEZ on the 29th. Next day he copied OH6YF* and ES5AM via auroral-E mode.

At 1815 on the 29th, Ted Collins, G4UPS (IO80), first heard the aurora when EI3IO was copied on SSB then went on to make about 20 QSOs, a mixture of auroral and auroral-E propagation. Stations worked included SM7AED* (JO65), SP6GWB*, ES2RW* (KO29), OH0RJ* (JP90), LA8HGA (JO59), LY2BAW* (KO25) and SP3MGM (JO73). On the 30th Ted's first contact was with SM3GSK* (JP82) at 1936 followed by OH7PI* (KP32), OZ3ZW* (JO54), SM7FJE (JO65), OZ4ADX (JO75), DJ4SO* (JO44) and OZ4VV* (JO46). The last DX was SP5ZCC (KO02) at 2227 and he went QRT at 2315.

David Whitaker, BRS25429 (IO93), heard 11 countries between 1720 and 1836 on the 29th then, 2228-2309, copied eight countries, best grids being IO62, 64 67, JO53 and 76. Next day he heard stations from DL, GM, ON, OZ, PA and LX1LX.

MOONBOUNCE

The editorial comment in the November issue of the *432 and Above EME News* states, "There appears to be almost universal agreement (at least in the Northern Hemisphere) that the October leg of the ARRL EME Contest was a good one. The Spitzbergen DXpedition really turned around the activity on 432 producing comments as 'The best contest weekend in 10 years.' SM2BYA and SM2LTA have the gratitude of the entire EME community for a great DXpedition."

Peter Blair, G3LTF (IO91), agrees but reports variable conditions on 70cm with lots of polarisation spread. He completed 79 QSOs. On 13cm he had seven contacts but wonders where all the US activity is these days? He made 36 QSOs on 23cm, 34 on 70cm and two on 2m. New initials on 70cm were DL3HRT and OM6AA bringing his total to 197. On 70cm JW/SM2BYA and SM2ILF were new bringing the total to 376.

Dave Dibley, G4RGK (IO91), has completed the main part of his rebuilding work and is now back in the shack. He just managed to get the station operative in time for the contest and his first QSO on 70cm was with JW/SM2BYA. Subsequent QSOs were with F6KHM, SM3AKW, DK3WG, DL9KR, K2UYH, K1FO, OH2PO, SM2CEW and N9AB.

Howard Ling, G4CCH (IO93), was QRV on 23cm in the contest and completed 56 QSOs with a 25 multiplier. New initials were DL3HRT, JH1KRC and JR4ZZS bringing his totals to 182 in 35 DXCC entities, 28 fields and 131 grids. Back in September, the highlight was working PY5ZBU* on the 28th after several years of waiting. M5MUF has continued listening on 2m with his 17-ele rope Yagi and has heard more and some smaller stations on his IC-706 and BF981 set-up, such as OE3FVU with 1.2kW and two 5-wavelength Yagis; by 'heard' he means decoding a full callsign in JT44 mode.

A suitable January activity weekend would be the 10/11 when London latitude stations will have 28.5 hours of Moon time. The declination ranges from +20.92° to +11.57° and the 144/432 sky temperature varies from 203/15K to 229/17K. The signal degradation referred to perigee ranges from -1.29dB to -0.87dB.

BAND REPORTS

50MHz

In the morning of 19 October G4UPS reports a brief Es opening to Italy which faded out by 1105. Things livened up on the 25th when there was Es propagation to southern Spain and Morocco. Next day brought numerous contacts from 0923 till 1240 with HB9, OE and S5 stations, Spanish stations in the 3 and 5 regions, Italians in the 1, 3 and 4 districts but the pick of the bunch were SV8CRI* (KM39) and YO2BP* (KN05). On the 27th at 1033, Ted reports that G3HBR heard EH5AX working VK4ABW. On 4 November at 1410 a G station was heard working TU2OJ who was only RS33 at best with at G4UPS.

M5MUF caught the Es on 26 October completing SSB QSOs with IV3GBO (JN66), IV3GTH (JN65), S53J (JN75), EH2AGZ (IN91), EH5FY (IM99) and EH1EAU (IN70). On the 28th Mike worked IW1AZJ (JN53) and IW4FUA (JN45) then next day EH5AGR (IM88). From 2058 on 11 November GM0WDD copied some OH6, 7, 8 and 9 stations, SMs and an LA in what was probably an auroral-E opening.

GW8IZR did well in the 26 October Es opening working 28 stations on SSB in the 0930-1154 period. The highlights were S51DI (JN76), SP9UOP (JO90), T72EB (JN63), 9A1CAL (JN86), YU1EU (KN04 and ODX at 2009km) and 9A6R (JN83). Other countries worked were EH, HB9, I and OE. BRS25429 heard Scandinavians from 2200 on 21 October in an auroral-E opening that lasted for about 35 minutes.

144MHz

On 6 November there was an excellent tropo opening mainly to Scandinavia and Bryn Llewellyn, G4DEZ (JO03), worked 34 SMs, 19 OZs, two OHs, six LAs and a few DLs, but the most unusual was S5. M5MUF has been continuing his mainly QRP experiments with JT44 mode on tropo and lists 16 stations worked in the 16 October through 9 November period. ODX was DJ3LE (JO44) at 745km on 25 October when Mike was using 25W and the German 750W. Over the same period he lists 29 normal tropo contacts on CW and SSB including 11 in the Marconi Memorial Contest on the 1/2

ANNUAL VHF/UH.F TABLE - JAN TO DEC 2003

	50MHz		70MHz		144MHz		430MHz		1.3GHz		Total
Callsign	Dist	Ctr	Dist	Ctr	Dist	Ctr	Dist	Ctr	Dist	Ctr	Points
G4DEZ	96	69	27	7	107	28	55	13	24	10	436
G3FIJ	35	29	40	4	56	10	24	4	-	-	202
M5MUF	22	42	34	8	48	19	-	-	5	3	181
G4APJ	20	18	-	-	42	7	37	8	-	-	132
G6TTL	2	28	-	-	59	11	17	7	3	2	129
M3CLY	4	12	-	-	14	8	5	2	-	-	45
G8RWG	-	-	-	-	27	18	-	-	-	-	45
G1UGH	2	10	-	-	6	2	-	-	-	-	20

The District Codes are the 124 listed on page 56 in the January 2003 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 2003 totals is 13 January.

November weekend and 11 in the UK Activity Contest on the 4th.

Stephen O'Malley, G7ANV (IO95), runs 160W to a 9-ele Yagi 150m ASL with an excellent take-off to the east. He copied strong beacon signals from LA and SM in the morning of 7 November but SSB activity was sparse. Later in the day just before bedtime he had a listen on SSB and heard RA3LE (KO64) in a big pile-up. After three calls they exchanged RS59 reports, a QRB of 2161km and later on he worked EW6FS (KO35). Subsequently he received an e-mail from RW3PF (KO93) to say that Peter had copied Stephen, a QRB of 2584km.

Stefan Heck, LA0BY (JO59), runs 180W to a 9-el Yagi 7m AGL and was QRV in the tropo opening on 7 November making 97 QSOs with stations in 50 grids and 14 countries. ODX was RU3EC* (KO92) at 1955km, the remaining top 10 contacts being with RW3PF, RU3ACE* (KO95), RA3PG*, RX3PR* and RU3FA* (KO84), RA3DCI* (KO96), UA3ARC, RN3AP* and RA3AQ* (KO85). He says it was the most fantastic tropo opening he has ever experienced and that many contacts were on FM mode with strong Es-like signals.

430MHz UP

Tony Jarvis, G6TTL, the RSGB VHF Awards Manager, writes that he has received a claim for a 23cm Distance Award from John Wood, G4EAT (CM), for 1394km. The QSO took place on 14 September 2003 with SK0UX (JO99). John was running 40W to an array of four 23-ele Yagis and Tony says that, as far as he is aware, this is the furthest distance claimed for award purposes.

G4DEZ was QRV in the UK Activity Contest on 11 November and worked five OZs, including OZ1CTZ (JO46) for a new grid on 70cm, and SK7MW. On 19 October, G8HGN contacted F1EZQ (JN27) on 70cm in the French contest.

LA0BY was QRV on 70cm on 7 November to take advantage of the tropo lift. Stefan ran 120W to a 13-ele Yagi 5m AGL and completed 20 QSOs with stations in 14 grids and seven countries. ODX was RW3PF at 1831km. The other QSOs in his top 10 list were with UA3PTW (KO93), UA3ARC, RA3LE (KO64), RA3LW (KO54), SP7EXY* (KO00), EW6FS, LY2BAW (KO25), YL85GDF (KO26) and LY2CI (KO14).

FINAL JOTTINGS

Thanks to the UK Six Metre Group for the October issue of its quarterly journal *Six News*, edited by Chris Deacon, G4IFX. As always it includes lots of DX news, technical articles, photographs and the All-time Operating Table. The UKSMG has a website - see the panel.

The deadline for copy for the March issue, when I'll need your final 2003 Annual Table scores, is **13 January** and for the April issue it's **10 February**. My CompuServe ID is g3fpk and the telephone answering and fax machine is on 020 8763 9457. ◆

WEB SEARCH

NASA: http://science.nasa.gov/headlines/y2003/12nov_haywire.htm?list59127
UKSMG: http://www.uksmg.org

Continued from page 30

The Maldol HVU-8 HF/VHF/UHF base station vertical

large vertical on the HF bands. What it will do, however, is allow those amateurs who for whatever reason cannot put up full-size antennas - even the flat-dweller who might otherwise be totally QRT - to be active on no fewer than eight bands. Bearing in mind the small size of the antenna, I believe it gives a good performance which would probably compare favourably with, for example, a typical mobile installation using an antenna of a similar length.

After its initial assembly, the HVU-8 can be assembled and dissembled quickly, making it an ideal antenna for multi-band portable use. It is ideal too for those who have one of the new all-band transceivers such as the FT-817 and who wish to explore all the bands offered.

Maldol is one of the brand names of Hokushin industries and, with Diamond, is one of the longest-established Japanese manufacturers of amateur antennas. Maldol antennas are imported by Martin Lynch & Sons (tel: 0208 566 1120) and the HVU-8 is available from them for £199.95. ◆

Before adjustment		After adjustment	
Freq MHz	SWR	Freq MHz	SWR
3.579	5.5:1	3.550	3.0:1
7.236	2.7:1	7.060	2.6:1
14.017	1.2:1	14.230	1.0:1
20.787	1.1:1	21.070	1.0:1
27.850	1.8:1	28.170	1.2:1
51.110	1.0:1	51.110	1.0:1
144.930	1.0:1	144.930	1.0:1
430.000	-	430.000	-

Table 1: SWR measurements of the HVU-8 before and after adjustment of the whip lengths.

		HVU-8	Reference
7MHz	G	S9+	S9
	GM	S9+	S7
	DL	S9+	S9
14MHz	SP8	S8	S9
	VK6	S4	S6
	HV5	S5	S7
21MHz	DL	S3	S3
	LZ	S6	S6
	T9	S8	S8
	XE	S3	S3
	W4	S3	S5
	FP5	S3	S5
28MHz	6W	S3	S2
	ON	S1	S1
	I	S1	S1

Table 2: 'Real life' comparison reports between the HVU-8 and reference antenna (see text).

By Simon Lewis, GM4PLM, Creoch Farm, Ochiltree, Ayrshire KA18 2QH. E-mail: uwave.radcom@rsgb.org.uk

News this month of the recent Microwave Round Table, some beacon news, and a report of the change of microwave representation in the UK.

This summer and autumn has seen some of the best tropo conditions for many years. A culmination of high summer temperatures and stable weather has allowed some excellent ducting to form and many tropo records have been broken. As I write this, another high pressure system has formed over Europe and some excellent DX is being worked from between central and Northern Europe. I hope that many of you were able to take advantage of the conditions.

NEW JOB - NEW OPPORTUNITIES

A change of job for me has led to some new adventures this summer. I am now the proud owner of DL4PLM, and I am working extensively in the beautiful city of Düsseldorf, Germany. Of course, my time here has coincided with some of Europe's finest radio events, and it was a great pleasure to make my first visit to Weinheim this year. I also visited the huge flea market at Interradio in Hannover and will be paying visits to many of the big events in Europe during this coming year - so it is not all work and no play! Keep sending in those reports, particularly of the activity over the past few months!

MICROWAVE ROUND TABLE

The Microwave Round Table is the UK's biggest regular annual microwave event and is held at the British Telecom laboratories at Martlesham, near Ipswich. This year will probably be remembered as the best ever, and certainly had the biggest attendance from overseas for a long time. Overall, the two-day event on 8/9 November saw more than 100 microwavers gather together at Ipswich for one of the best events in Europe.

I persuaded Klaus, DL3YEE, and Stefan, DG9BDI, to make the trip across to the UK with me taking advantage of some cheap flights from Düsseldorf to London Stansted. The Saturday evening dinner in the hotel had around 30 well-known microwavers enjoying an excellent meal before retiring to the bar.

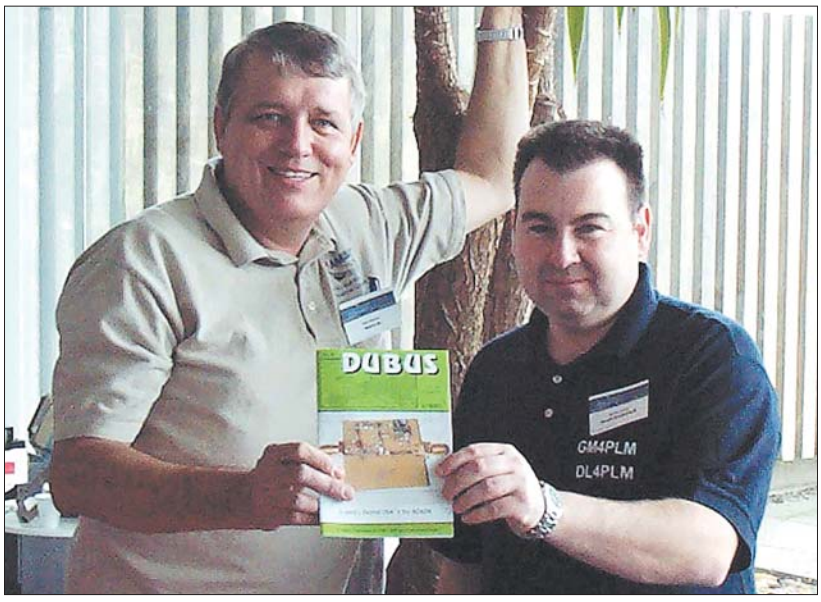
Sunday morning saw an early start for breakfast and a short drive to the labs at BT just a few miles away from Ipswich. A small flea market was running for most of the day and a series of excellent lectures also took place. The very well-equipped test area was as popular as ever, and John, G3XDY, and his team were kept very busy. As always, refreshments were available through the day, which is a good job, given all the talking that went on! Thanks to the team for their hard work there. It was a good opportunity for the overseas amateurs (including 9H1LO, DB6NT, DF6NA, DG9BDI, DL3YEE, DL4MUP, EI2AK, WB5VJB, PA4ZP and ON6UG) to meet everyone; they enjoyed themselves so much they want to come back next year! I can see me bringing a bus from Europe next time. East met West when I met fellow *DUBUS* columnist and well-known US microwaver, Kent Britain, WA5VJB. Kent is a real 'larger than life' character and kept the whole event buzzing with his infectious Texan humour. Thanks, Kent. A big thanks to all at the BT labs radio club who organised the event and all the team that made the event such a success. Put this event in your diary for next year (13/14 November) and keep the weekend clear. It really is a 'must not miss' weekend. See you all next year!

BEACON NEWS

The two highest frequency beacons of the South Coast microwave beacon complex, GB3SCX on 10GHz and GB3SCK on 24GHz, are now operational again after a major rebuild of both units. Both have had output powers increased, raising them by at least 10dB over their previous nominal values. GB3SCK has been retuned to transmit on 24048.905MHz in order to comply with the new 24GHz bandplan which will come into force at the beginning of 2004. GB3SCC on 5760.905MHz has had its keying duty cycle adjusted - it now transmits callsign and location details, followed by plain carrier for a total of 45 seconds, then stops transmitting for 15 seconds to assist thermal management. This keying sequence will be maintained over the winter period and will be reviewed when warmer weather returns in the spring. As a precautionary measure, the beacon complex will remain operating with its mast at reduced height for a while, until the continued reliable operation of the rebuilt units is assured. This reduced height should only affect propagation in a north-west / south-east direction, due to slight shading from local trees. Reception reports should be sent to John Fell, G0API, whose details are correct in the current *RSGB Yearbook*.

RSGB MICROWAVE COMMITTEE GOES QRT

As of the 31 December 2003, the Radio Society of Great Britain's Microwave Committee will cease to exist. The Society is working at providing continued support to microwavers through the UK Microwave Group (UKµG), another group that supports UK microwavers. The group's recent AGM at Martlesham showed a great deal of membership support for this move. Several RSGB Microwave Committee members were elected as committee members and, pending RSGB agreement, it was hoped that the UKµG would accept the business activities for which the Committee was previously responsible. I will have more news next time round on the changes. ◆



Right: Kent Britain, WA5VJB, meets your 'Microwave' columnist, GM4PLM, at the last Microwave Round Table.

Microwave

By John Heath, G7HIA/M3BBX, Chestnuts, Desford Lane, Kirkby Mallory, Leicestershire LE9 7QF. E-mail: g7hia@amsat.org

For 37 years, the *Soyuz* spacecraft has been the workhorse of the Soviet and Russian space programmes. Read here about Soyuz and its designer. We also have prospects of earthquake warnings from space, while FEC is providing error-free data from *AO-40*.

Soyuz – space veteran

A genuine Soyuz on display at The National Space Centre, Leicester.

Below: The Soyuz biography.

Since 1966, the *Soyuz* spacecraft has been the basis of the entire Soviet and Russian manned space programme. It has been flown in Earth orbit, Lunar orbit, to the Mir and Salyut space stations and is the primary rescue craft for the *ISS*. The recently-published book *Soyuz* – a Universal Spacecraft, by Rex Hall and David Shayler [1], gives a comprehensive and detailed account of *Soyuz* in all its different manned and unmanned versions. The authors are experienced writers and researchers, and have drawn on Russian and Western archive material to produce a volume packed with a wealth of information, technical detail, pictures and diagrams. Running to 450 pages, the book is dedicated to the man who was the remarkable genius behind the Russian space programme, Sergei Korolev [2], chief designer of the OKB-1 bureau where *Soyuz* was conceived.

We are particularly fortunate, at the National Space Centre in Leicester, to have on display the most complete *Soyuz* anywhere in the west. The exhibit is presented so that it can be viewed from all angles. Take a moment to stand on the upper walkway, and you will be just a few feet away from a remarkable three-man spacecraft, the longest serving and most reliable manned spacecraft design in the world.

The future prospects for *Soyuz* look good; regular missions to the *ISS*, and a new life in space tourism. Two space tourists, Dennis Tito and Mark Shuttleworth, have already flown in a *Soyuz*, aboard scheduled missions to the *ISS*. There is serious interest by a commercial company, Space Adventures, in purchasing a *Soyuz* which will orbit the Earth with a commander and two space tourists.

QUAKESAT

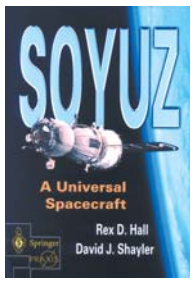
Researchers have shown that Extra-Low Frequency (ELF) magnetic signals are detectable in advance of earthquakes. Can these signals be detected from space? A Stanford University team decided to fly a magnetic detector on their *Cubesat*. The data (1.5MB per day) are being analysed to understand the general background of magnetic signals, an essential first step towards isolating any quake-related data. The Stanford team hopes to evaluate the possibility of creating a global satellite monitoring system to predict earthquakes. Radio amateurs can receive the satellite telemetry beacon on 435.672MHz sending 9K6 AX25 packet. To do this, set *KISS* ON, TRACE ON AND MON ON, then save the ASCII data to a text file. Andy Thomas, G0SFJ, sent me a DOS program, *QSTELEM*.exe, that will read the ASCII file and display the telemetry values. Contact me if you would like a copy. You can find up-to-date Keplerian elements at Dr Tom Kelso's excellent 'Celestrak' site. (*Quakesat* is in the 'Science' section, the other *Cubesat*s being in the 'Engineering' section.)

ERROR-FREE TELEMETRY FROM AO-40

At the 20th AMSAT Space Symposium in 2002, Phil Karn, KA9Q, suggested that Forward Error Correction (FEC) techniques would be valuable on *AO-40*. Using the second computer on *AO-40*, FEC has been tried with great success. In the current system, each 512 byte block of telemetry data contains a Cyclic Redundancy Check (CRC). A block received with a checksum error can be easily detected and discarded. Using FEC, no data blocks need be discarded, and no valuable information lost. The data stream is manipulated mathematically and extra bits added, making it possible for the receiving software to reconstruct the original. To protect against fading, the data stream is interleaved.

This may be understood as follows. The 5200 bits are arranged in an 80-column by 65-row grid. Bit-stream data, as received, are deposited along the rows, row after row. But they are read out for processing by column. In this way a fade, which may have spanned several rows, is 'smeared' thinly by the readout process and its effects are easily dealt with by error-correction systems. (Thanks to James Miller, G3RUH, for this easy-to-understand explanation of interleaving.)

How well does it work? How about error-free reception of *AO-40*'s beacon with just a patch feed and no dish? FEC is a complex subject, and the maths is somewhat impenetrable. We can receive error-free telemetry from *AO-40*, thanks to the work of several radio amateurs including, amongst others, James Miller, G3RUH, and Stacey Mills, W4SM, who has modified his excellent *P3T* software to incorporate FEC. A soundcard version may be available soon, and Jonathan Naylor, G4KLX, who wrote the FEC encoder in the *IPS* language for the spacecraft in two days, never having seen the language before. See 'FEC solutions' for the latest information. ◆



REFERENCES

[1] *Soyuz* – a Universal Spacecraft, by Hall & Shayler, Springer Praxis, ISBN 1- 85233-657-9.

[2] *Korolev*, by James Harford, John Wiley, ISBN 0-471-14853-9.

WEB SEARCH

Soyuz:	www.russianspaceweb.com/soyuz
Quakesat:	www.ssdl.stanford.edu/LM-cubesat/Team4
KA9Q (FEC):	www.ka9q.net/ao40/
FEC solutions:	www.amsat.org/amsat/sats/ao40/ao40-tlm
National Space Centre:	www.spacecentre.co.uk
Space Adventures:	www.spaceadventures.com/orbital
Keplerian elements:	www.celestrak.com

All Reasons All Seasons

The **SG-2020 ADSP²** delivers reliable HF operation with no confusing menus, and just two step operation. Get peak performance in a compact, back to basics design, packed with all the features you need for **base, backpack** or **business trips.**

Match the **SG-2020 ADSP²** transceiver to the right companion to customize your application

And take advantage of our **SPECIAL**

Limited Time Offer

Receive a **$50.00 factory rebate**
PLUS a **free SGC Multimeter** ($50 Value)
when you buy an **SG-2020ADSP²** and any **SGC Smartuner**, **MAC-200**, or **STEALTH Kit.***

* Available thru SGC dealers only. Expires January 31, 2004. Call SGC or visit **www.sgcworld.com** for full details. Products must be purchased on the same invoice. Offer excludes items **SG-239** and **SG-237PCB**.

Pick Your Perfect Match

Use the **STEALTH Kit** for rapid antenna set-ups in the field or in uncertain environments. Erected in just minutes, in any condition, the **STEALTH Kit** is an ideal travel antenna, which also works perfectly in restricted antenna locations.

SG-237 one of our popular Smartuners™ matches any antenna. Its small size makes it the perfect travel mate for the **SG-2020ADSP²** on the go.

The **MAC-200** is your base station control center. Select and tune up to 5 antennas automatically; the **MAC-200** selects the right antenna and the right tune settings quickly and accurately.

www.sgcworld.com

phone us at
+1.425.746.6310
SGC, Inc. 13737 SE 26th St,
Bellevue, WA 98005 USA

SGC
Your HF Solution

HF

SGC
Your HF Solution

Smartuner™

+

SG-2020

Smart Choice! Smartuner!

Visit **www.sgcworld.com** for more information on the entire line of SGC solutions. Or phone us at **425.746.6310**

By Trevor Brown, G8CJS.
E-mail: chairman@batc.org.uk

ATV representation on the RSGB Spectrum Committee; a review of the magazines; revitalising ATV on 70cm.

ATV

Several of you have written to me regarding concerns about the new RSGB Spectrum Committee. The concerns all centre on ATV having representation.

I have been in contact with Peter Kirby, G0TWW, the RSGB General Manager, and have been assured that ATV will have representation on this new broad committee and that Graham Shirville, G3VZV, will be invited to continue his RSGB liaison roll on it. I have the highest regard for Graham and, although this is a difficult time for ATV, I can think of no-one better qualified and more able to face the challenges ahead.

IN PRINT

CQ-TV 204 went to press with a record of 68 pages. This caused a few headaches in the stapling process for the printer. It would seem that the flow of quality ATV articles reaching the editor's desk is at a record high. The articles range from that of Mike Cox, who is still at the digital frontier with his 'Serial Digital TV Production Mixer'. Giles Read, G1MFG, defies gravity and launches an ATV-equipped balloon into the upper atmosphere. Ian Bennett, G6TVJ, investigates using digital set top boxes for DATV. Steve Anderson explains why you should not junk that old VCR and comes up with a novel adaptation for the drum motor to receive NBTV pictures. Peter Stonard has researched the beginnings of the single-tube colour camera; there were many variations and technical solutions from various manufacturers and it is interesting to compare the results and techniques used. Bruce Carter looks at using high-speed op-amps for video switching, and Brian Kelly, G6BWX, investigates TV handsets.

The German ATV magazine TV Amateur also has excelled itself with some brilliant articles. Members of the AGAF have been up in a manned Zeppelin airship running ATV. On the constructional front, Rainer Muller, DM2CMB, has produced a constructional article for a wobbulator or sweeper, which covers 100 to 230MHz, 320 to 600MHz, 1000 to 1800MHz and 2050 to 2650MHz. The unit has a PC interface to display the output and store the information. I hope we will be able to reprint this article in a future CQ-TV.

ATV ON 70cm

Ian Waters, G3KKD, has also written to me reflecting on the position of ATV and the 70 cm band. ATV activity on this band often gets overlooked but, after all, ATV started here in the 1950's. By the 80s, the bandwidth required for colour TV and the advent of FM, along with ATV repeaters, promoted a move to 23cm and above. Since then, 70cm has been little-used. This is a pity, as it offers longer distance simplex QSOs, with sound/talkback on 2m.

Ian lives near Cambridge, and has developed some modern 70cm equipment. By suitable choice of carrier frequency and careful bandwidth-shaping in both the transmitting and receiving circuits, black and white (with slightly reduced horizontal resolution) pictures can be used on 70cm, avoiding interference both to and from other band users. Picture quality is adequate for communications purposes.

It has proved possible for Ian to receive the GB3SUT beacon, on 432.890MHz, about S1 at 88 miles with no interference while, at the same time and through the same aerial, receiving a P5 picture on 437.25MHz. No QRM is caused to the local repeater channels below and above the TV signal.

Ian's receiver contains a dual-purpose unit which acts as a receiver with a 2MHz wide IF delivering a video output. It also contains an up-converter to enable the picture to be seen on a TV set. The narrower bandwidth receiver is better if QRM is encountered. A sync detector gives audible warning of the presence of a picture even if it is too weak to be seen on the screen.

While, in the longer term, digital TV offers colour and sound in a 2MHz bandwidth on 70cm, cost and complexity may make this simpler technique attractive, at least in the short term.

Anyone interested in more details, or who would like to try 70cm ATV QSOs, should contact G3KKD, whose details are correct in the current RSGB Yearbook, and whose e-mail address is given in the box.◆

Above: The Solent viewed from Giles's balloon.

Below left: Edge of space: an ATV picture from Giles's balloon. Both the images were sent on 2.4GHz, a JFMG licensed programme-making and special-events channel.

Below: G3KKD's 70cm ATV receiver.

WEB SEARCH

Ian Waters:	ian.waters@freenet.co.uk
Graham Shirville:	gshirville@btinternet.com
BATC:	www.batc.org.uk

WIRELESS AND ELECTRONIC SURPLUS

VHF MARINE BAND TRANSCEIVER Nesco type WR1025. 20 watts Tx. Uses Maxon radio PCB. Strong case size 10 x 10 x 5". Separate marine control unit with digital display set for 12, 14, 16 and 20 channels. Sizes 12 x 6 x 3". Used condition radio very clean due to second casing. Headset operation. Provision for speaker. Recently out of service. Needs 13.5V DC power supply and DC power lead. Price **£42.50** carriage £12.50.
A DIGITAL HAND-HELD LCR METER Measuring inductance, capacitance and resistance. 3.5 digit, 1999 count. I.c.d. display, inductance range 2Mh to 20H, capacitance range 2000pF to 200µF, resistance range 2000K to 20MK. Brand new and boxed with test alligator clip leads and user manual. **£44.00** + £4.00 P&P
VALVE BASES Octal B7G B9A. All **50p each**. B9G bases for EF50, etc. **£1.00** each
HIGH VOLTAGE CAPACITORS 0.1 1000V wkg mixed dielectric axial. .05 600V wkg axial. 0.68 800V wkg myler dipped axial. All **60p** each. 1µF 250V wkg axial type. 10 for **£2.00**.
HIGH VOLTAGE ELECTROLYTICS 10µF 400V wkg axial. 22µF 250V wkg axial. 47µF 385V wkg radial. All **50p** each.
HIGH VOLTAGE ELECTROLYTICS 32µF 350V wkg CAN type. 2 for **£4.00**. 32µF + 32µF 450V wkg **£5.00** each P&P 75p. 2 for **£10.00** incl post.
VINTAGE CARBON ONE WATT RESISTORS Useful values. Pack of 50 **£3.00**
VINTAGE CARBON ¼ WATT RESISTORS Pack of 50 **£2.25**
VALVE OUTPUT TRANSFORMERS Single ended, 4W. **£4.00** P&P £1.00
FILAMENT TRANSFORMERS 6.3V at 1.5 amp. **£5.95** P&P £2.00. 6.3V I amp. **£4.95** P&P £2.00
MAINS TRANSFORMERS Type A. mains input. output 230V at 45mA. 6.3V at 1½ amp. **£7.50** P&P £3.50. Type B mains input. output 215V at 100mA, 6.3V at 2amp **£9.50** P&P £4.50
ACORN VALVES Type 954. Brand new and boxed **£4.50** each. 2 for **£8.00**
RAF PERISCOPIC SEXTANT MK2 Ex Canberra/Vulcan. Used on high speed aircraft to determine astro position lines/heading. Sextant complete and in very good condition. Mounted in conical metal transit case approx 18" x 10" x 4". Casing has slight signs of usage. 24V D.C. operation original cost over £800. Price **£59** – carriage £13
LOG POTS WITH SWITCH 500K. 1 Meg. 2 for **£4.50**
WIREWOUND RESISTORS 10ohm to 20K. 3W to 10W. 30 mixed valves **£4** P&P £1
WW2 HANDHELD MICROPHONE BAKELITE TYPE NO. 3 WITH JACK PLUG Good condition **£6.00** P&P £2.00. 2 for **£15.00** inc. post.
WW2 ARMY HEADPHONES TYPE DLR NO. 5 WITH JACK PLUGS Good condition **£5.00** per set. P&P £2.50. 2 sets **£13.50** inc. post.

BOOKS AND MANUALS

R1155 RECEIVER DATA 47 pages **£12.50** including P&P
MULLARD VALVE DATA AND EQUIVALENTS HANDBOOK Over 300 pages of valve data, base connections, characteristics and operating conditions for Mullard valves and their equivalent makes. Facsimile reprint. **£16.50** + £3.50 P&P
EDDYSTONE COMMUNICATIONS RECEIVER DATA 1950-1970 A facsimile reprint of the circuit diagrams, general description and some service notes. 50 pages. **£11.50**
JANES MILITARY COMMUNICATION 12th EDITION 1991-1992 Over 800 pages, contains much recently released military wireless equipment **£25.00** P&P £8.50
POWER VACUUM HANDBOOK by J. C Whittacker. Pub. 1999. 710 pages of info on power vacuum tube applications including designing circuits. Microwave power tubes. The generation of RF in the HF regions and above includes research for power grid tubes (triodes, tetrodes, pentodes, keystrones, magnetrons etc.) Published at over £50 **Our price £25 P&P £7.50**
THE WINNING EDGE 1939-1945 NAVAL TECHNOLOGY This new book presents descriptions of WW2 technical developments of numerous devices including ASDIC, SONAR, RADAR, HF/DF. Includes details of sensitive listening stations relaying enemy message to cryptographs. 235 pages **£11.50 P&P £3.50**
RADAR Ps. Hall (et al). An absorbing and informative study by authors from The Royal Military College of Science. Covers the origin, development and operation of military radar from Chain Home to Patriot etc. Numerous photos and illustration of equipment and its principles of operation. 170 pages. Published by Brassey, Weapon Technology series at £25 **Our price £8.50 P&P £3.75**
A.T. SALLIS 'GOVERNMENT SURPLUS RADIO SALES CATALOGUE' 1959 An excellent catalogue containing 200 photos and details of Government surplus, wireless items including components, receivers, equipment and accessories. 92 pages. Facsimile copy. **£9.50** incl P&P
T1154 SERIES TRANSMITTER MANUAL 54 pages. **£14.75** inc P&P

P&P £2.00 under £12.00. OVER FREE UNLESS OTHERWISE STATED

(Dept R.C.) CHEVET BOOK SUPPLIES
157 Dickson Road, BLACKPOOL FY1 2EU
Tel: (01253) 751858 Fax: (01253) 302979
Email: chevet@globalnet.co.uk Telephone orders accepted

Curtis Communications Ltd.

CB RADIO, AMATEUR RADIO, PMR446 SCANNERS & ACCESSORIES BOUGHT AND SOLD P/X NO PROBLEM
Tel 01633 866 488 or 07973 430 430
Unit 119 Springvale Ind. Est., Cwmbran NP44 5BG

Curtis Communications Ltd. The Number 1 Radio Outlet in Wales 2004
Open 10am-5.30pm (closed Wed/Sun)

New Aerials Very Special Offers!!!!

Top quality Monoband mobile aerials by Thunderpole Power rated, 250w 3/8x24 thread, typical VSWR 1:1.5 wide bandwidth. Whip detaches from base without removing fiddly grubb screw for easy storage (unlike some other similar designs).
A wide range of bands 10m/ 12m/ 15m/ 17m/ 20m/ 40m/ and 80m are available at a great low price! Why not try two or more for a compact rotary dipole that is both lightweight discreet and works great as a base or portable aerial…

Thunderpole Monoband Mobile Aerial Special Radcom Offer only £15.99 + £6.00 P+P! or Buy any 2 for £30 + £8 P+P!

Very high quality G5RV's, imported here from the USA... They have 450ohm feeder, proper high quality insulators, stainless steel center connections, and thick twisted wire elements.... They can handle high power and will not easily snap, stretch or corrode like the cheap G5RV's often on offer - as they say "you get what you pay for!" Full size covers 3.5 thru 30 Mhz bands with only one antenna without any loss in traps and coils... Overall length is 102ft.... Half size covers 7 thru 30 Mhz bands with only one antenna without any loss in traps and coils... Overall length is 52ft.... Great for keen Shortwave Listeners and Amateurs alike!

U.S.A. High Power Full Size G5RV only £35.00 + £6.00 P+P
U.S.A. High Power Half Size G5RV only £30.00 + £3.50 P+P

See Our Website for many more items!!
http://www.curtiscommunications.co.uk

Masts for sale

Domestic and commercial applications
Available direct from Tennamast or from Waters & Stanton plc.

Prices from £262.00
The demonstrator Adapt-A-Mast will be on display on the W&S stand at various shows around the country.
Quality products from quality companies.
Tennamast and Waters & Stanton are registered to ISO 9000 quality standards.
Ordering a mast has never been easier.
CONTACT W&S ON 01702 206835
VINE ANTENNAS ON 01691 831111.
PHONE, FAX OR E-MAIL FOR FURTHER INFORMATION.

Tennamast (Scotland) Ltd,
81 Mains Road, Beith, Ayrshire KA15 2HT.
Tel/Fax: 01505 503824 - 24 hrs.
Email: nbrown@tennamast.com or see www.tennamast.com

WILSON VALVES

(PROP JIM FISH G4MH)

Over 2500 different types stocked, Ham Radio, Military, Audio.
6146B £23.50, **6JS6C** £35.25, **6LQ6** USA Types £29.38, **6JB6A** £35.25,
6KD6 £35.25, **12BY7A** £14.68, **6HF5** £23.50,
572B/T160L £37.60, **3-500ZG** £185.67, **811A** £14.10.
6146W G.E (MilSpec) £17.63 ea.

Matched pairs available * VAT included
Plus £2.35 pp & ins * Most major credit cards, Many more available.

WANTED NEW BOXED 4CX250B VALVES
28 Banks Avenue, Golcar, Huddersfield, West Yorkshire HD7 4LZ.
Tel: +44 (0)1484 654650/649380 Fax: +44 (0)1484 655699
Email: wilsonv@zoo.co.uk
(send SAE for list) For Pre & Post war domestic valve sales ring
Roger Walker on 01484 650725 Mobile: 07733 283084
OPENING TIMES: Mon-Fri 9am to 6pm, Sat 9am to 12.30pm

LINEAR AMP UK

Field Head, Leconfield Rd, Leconfield,
Beverley, E. Yorks HU17 7LU
t. 01964 550921 f. 01964 550921
e. sales@linamp.co.uk www.linamp.co.uk

CHALLENGER III
1500W of real power from a single GS35 triode. 10-160m, including all the WARC bands. Easy tuning with the slow-motion drives on the tune and load capacitors. Well protected by the specially designed G3SEK control board.
Great value at £1795

RANGER 811H
The most popular 800W HF amplifier. Ideal for any shack and robust enough for a contest. Recently used by the GB100MAS special event station. 4 x 811A valves make it very cheap to run.
The Ranger is very affordable at £895

DISCOVERY range of VHF amps
There are several models available, 6m, 2m and 70cm. The standard model of the 2m or 6m Discovery uses a GS31 to produce 1200W and high power version uses a GS35 to give 1500W. The 70cm amplifier is only available with the GS31 and has an O/P of 700W.
• 2m (GS31) **£1395** • 2m (GS35) **£1595** • 70cm **£1495**
• 6m (GS31) **£1395** • 6m (GS35) **£1595**

MOBILITE hands-free microphones
For safer hands-free driving, the MOBILITE has models for nearly every mobile radio. The neckband microphone is comfortable and efficient even on the longest journeys. The control box is small enough to be placed conveniently anywhere within easy reach in the car.
Drive safely for only £49.95 (p&p £2)

By Jeremy Boot, G4NJH.
E-mail: jp.boot@ntlworld.com

DAB for Christmas?

DAB coverage, as illustrated on the World DAB website.

DAB radio – a 'must-have' for the inquisitive amateur? We look this month at what information is available on the Internet.

Reading this article, either just before or just after Christmas, I wonder whether it will have crossed your mind to invest in one of the new DAB radios? I confess I gave in to this particular urge last September. I am very pleased with it and immediately started an Internet search to see what was of interest.

The BBC site will give you an overview of just what digital radio is and where you can find it - satellite TV, cable, the Internet or – what we are interested in here – through Digital Audio Broadcasting receivers. Follow the links, and you end up on the DAB page which gives general information and coverage – not all the UK is covered yet - and then it refers you elsewhere. "Companies like Pure-Digital, Arcam, PersTel, Cambridge Audio and Goodmans have developed the sets for home use. These range from tuners and personal 'pocket' radios to 'transistor-style' kitchen radios. In the next few months there will be a wider range of kitchen-style radios from Bush and Roberts – including, for the first time ever, a radio with a 'rewind' digital recording facility," we are told. There follows a list of links to DAB sites, including those of the named manufacturers. I would love to get hands on that Roberts 'rewind' system (built-in memory) but haven't found one to date (October) to play with.

LIMITED MODELS AND OUTLETS

It surprised me that, despite all the hype of the last year, only a relatively few models seemed available in the UK. By Christmas many more will have appeared. The prices have reduced from over £500 some years ago (and in the rarest of specialist outlets), to little more than £100 and up now. One of the reasons for this small output is explained in part, I think, by the fact that the world standards for frequencies etc are far from agreed. We are used to Europe adopting common standards and frequencies, but this has not yet happened, or perhaps hasn't been implemented, for DAB. Indeed, it may come as a surprise that in the UK, the frequencies used are within the old Band III which used to be VHF ITV band in the days of 405-line TV. The big high street names are not going to be too keen to play to an uncertain market. Some have jumped, others have not. Nevertheless, the potential for sales of new radios in Europe alone is about 400m, so the market is there. The pace of production will speed up considerably if only because EU governments are aiming at switching off analogue signals by 2015 or earlier.

THE WORLD PICTURE

Next is the World DAB site. You can find that "Over 285 million people around the world can now receive more than 550 different DAB services and these statistics are changing rapidly as more licences are awarded and more countries adopt DAB as the future of radio." You will find many countries' services, but when you go to a linked site, DAB Ensembles Worldwide, this is where the trouble becomes apparent. An 'ensemble' is cluster or multiplex or interleaved data stream – that is where several stations share the same frequency, hence the economy of digital systems over band-hungry analogue.

Band III schemes use 174.928MHz - 239.200MHz and these countries include the UK, but other countries use 1452.960MHz - 1490.624MHz; Canada uses a similar frequency range but with different block allocations. The US doesn't seem to know what it's doing yet, although there are some experimental stations. One hesitates to suggest that this is, as one site put it, another example of the 'not invented here' syndrome. The rest of us all use the Eureka 147 system. We use vertical polarisation in the UK. Denmark, Croatia and Estonia use our frequency range, the Netherlands and Portugal too. But France and Italy use L-band, as do some other countries, who presumably still have TV transmissions on VHF. So don't bother packing the new DAB radio for French holidays! In all this confusion, I was pleased to come across the Arcam site, which explains things quite well. The Portuguese RTP site (a national broadcaster) was impressive (but in Portuguese only). An Australian Government working document, *Strategies for Digital Radio*, is quite readable and full of information. It reviews the DAB scene, especially the UK experience. A good reference point for available UK equipment is the DAB UK Info page.

MY OWN EXPERIENCE OF DAB

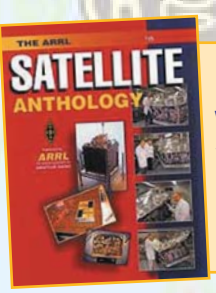
The advantages of DAB from a technical point of view are shared frequencies for many stations, thus releasing spectrum for other uses. The quality of the sound produced is first class and is comparable to a CD. The data rate varies according to need. So BBC Word Service is 64Kb/s mono, whereas Classic FM, Radio 3 and similar, are 128Kb/s stereo. Sets, portable or hi-fi add-ons, usually allow you to plug in the output to your own hi-fi setup if you want to. You can certainly tell the difference by ear from FM stations: no interference, no background hiss at all etc. A weak signal though has the familiar motorbike popping before it just refuses to decode at all. I opted for a portable set – although, annoyingly, it is not battery-operated – and because reception is good here, I do not need an external antenna (Band II aerials are quite useless, of course, for DAB). I can just about pick up Radio Leicester, which is not on our local ensemble, but clearly I would get more than the current 27 stations with an installed antenna. It would not improve the quality of the sound, since digital is an 'all or nothing' system.

I wonder if any reader has any thoughts on how eventually this might impact on amateurs. Before dismissing the idea, one thinks of that famous remark in the 1950s, "The transistor has no obvious use in radio". Let that not be said of DAB. It's here to stay. Try it. ◆

WEB SEARCH

BBC:	www.bbc.co.uk/digitalradio/
World DAB:	www.worlddab.org/
DAB Ensembles Worldwide:	www.wohnort.demon.co.uk/DAB/index.html
RTP Portugal:	www.rdp.pt/geral/dab/index.htm
Arcam:	www.arcam.co.uk/support/digitalradio/index.cfm
Strategies for Digital Radio:	www.aba.gov.au/radio/research/projects/digitalradio/implementation_strategies03.pdf
UK DAB info:	www.qsl.net/dchf/

ARRL SELECTION



SATELLITE ANTHOLOGY

With several new amateur satellites in orbit, you'll want to 'read all about them' and this book is the best way to do just that.

Members Price £9.34

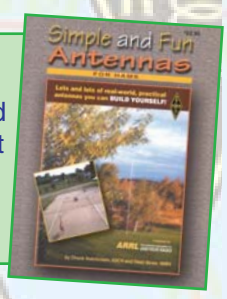
Non-members Price £10.99

SIMPLE AND FUN ANTENNAS FOR HAMS

Simple & Fun Antennas for Hams is designed not only for newcomers to amateur radio, but also for anyone overwhelmed with the theory.

Members Price £14.44

Non-members Price £16.99



W1FB's QRP NOTEBOOK

Construction projects for QRP transmitters and receivers. Experience firsthand the thrill of making contacts using equipment you built.

Members Price £7.64

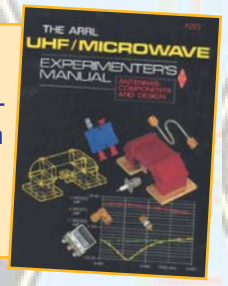
Non-members Price £8.99

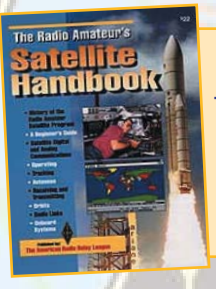
UHF/MICROWAVE EXPERIMENTERS MANUAL

Written for the growing number of radio amateurs who are discovering that there is life on our frequencies above 420 MHz.

Members Price £15.29

Non-members Price £17.99





THE RADIO AMATEURS SATELLITE HANDBOOK

The most comprehensive book ever written about amateur satellites!, you'll find what you're looking for in this book

Members Price £16.99

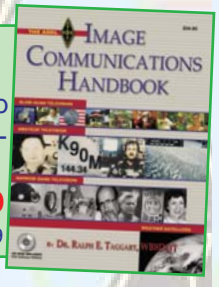
Non-members Price £19.99

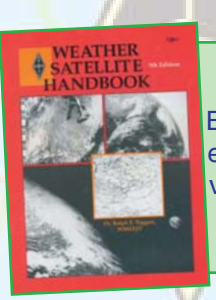
IMAGE COMMUNICATIONS HANDBOOK

Explore the possibilities of using Amateur Radio to see and talk with other hams. With home computers, and available software, its much easier.

Members Price £16.99

Non-members Price £19.99





WEATHER SATELLITE HANDBOOK

By Dr Ralph Taggart, WB8DQT, is a popular and easy-to-use reference for anyone interested in viewing our world from space.

Members Price £15.29

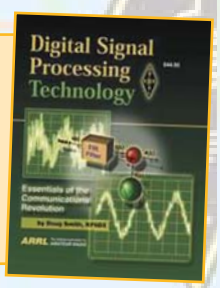
Non-members Price £17.99

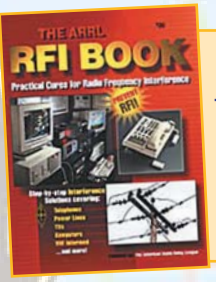
DIGITAL SIGNAL PROCESSING TECHNOLOGY

A complete, readable presentation on Digital Signal Processing (DSP) in communications technology.

Members Price £29.74

Non-members Price £34.99





THE RFI BOOK

There are two kinds of hams: Those who don't have interference problems and those who get on the air!

Members Price £15.29

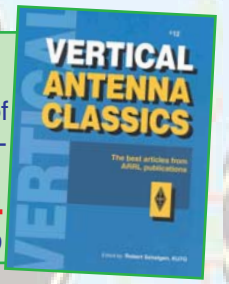
Non-members Price £17.99

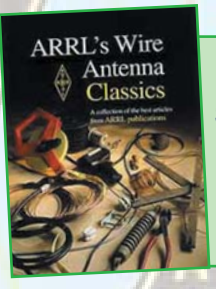
VERTICAL ANTENNA CLASSICS

Vertical Antenna Classics is a compilation of previously published articles on the art and science of the vertical antenna.

Members Price £11.04

Non-members Price £12.99





WIRE ANTENNA CLASSICS

So many wire antenna designs have proven to be first class performers! This book devoted to wire antennas, from the simple to the complex

Members Price £12.99

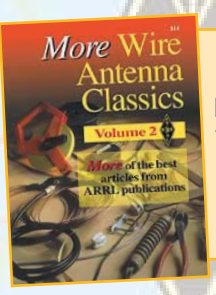
Non-members Price £11.04

THE BEST OF THE NEW HAM COMPANION

Here's a book that's chock-full of the ham information you need and want. Your companion in search of adventure,fun and new friends

Members Price £8.49

Non-members Price £9.99



MORE WIRE ANTENNA CLASSICS - VOLUME 2

Now you can enjoy even MORE wire antennas! This book is filled with innovative designs from the pages of QST and other ARRL publications.

Members Price £11.04

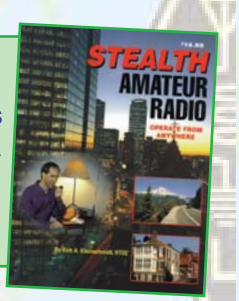
Non-members Price £12.99

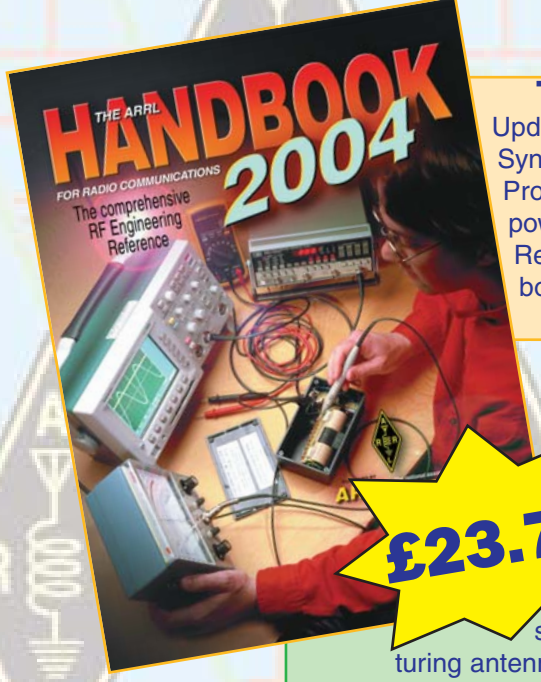
STEALTH AMATEUR RADIO - OPERATE FROM ANYWHERE

Adventure into the world of hidden stations and invisible antennas! Set up and operate a station without calling attention to yourself.

Members Price £11.04

Non-members Price £12.99



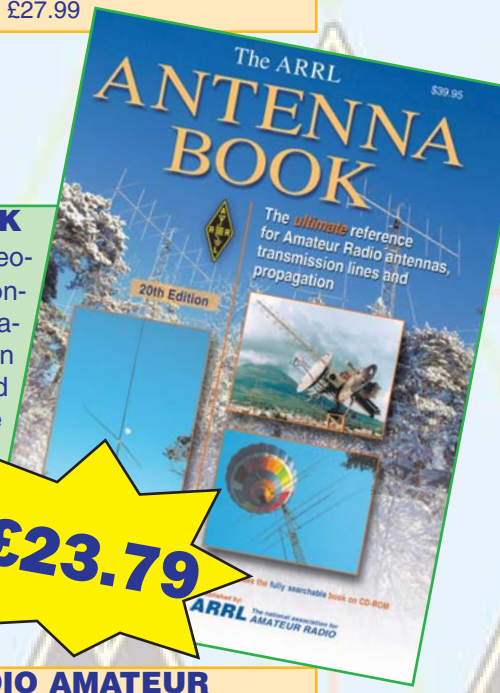


THE ARRL HANDBOOK FOR THE RADIO AMATEUR

Updated and comprehensive information on AC/RF Sources (Oscillators and Synthesizers) Revised and comprehensive information on Digital Signal Processing (DSP) technology. A new commercial-quality, high-voltage power (plate) supply. A high-performance easy-to-build passive CW filter. Revised and updated information on cellular technology. An updated handbook Address List with URL information.

Non-members Price £27.99

£23.79



THE ARRL ANTENNA BOOK

THE SOURCE for current antenna theory and a wealth of practical, how-to construction projects. Extensively revised, and featuring antenna designs enhanced by the latest advances in computer modeling. 944 pages! In depth coverage of antennas, feed lines, and propagation. Design, build and install any imaginable type of antenna!

Non-membersPrice £27.99

£23.79

HINTS AND KINKS FOR THE RADIO AMATEUR

Hints & Kinks for the Radio Amateur is the first place hams turn for information about new modes, new projects, and the latest tips. You'll find something on every page to solve problems, improve your operating, and simply have more fun on the air: PLUS more emphasis on computers and software, PLUS a newly updated list of suppliers, AND feature articles from the popular QST column The Doctor is IN

Non-members Price £10.99

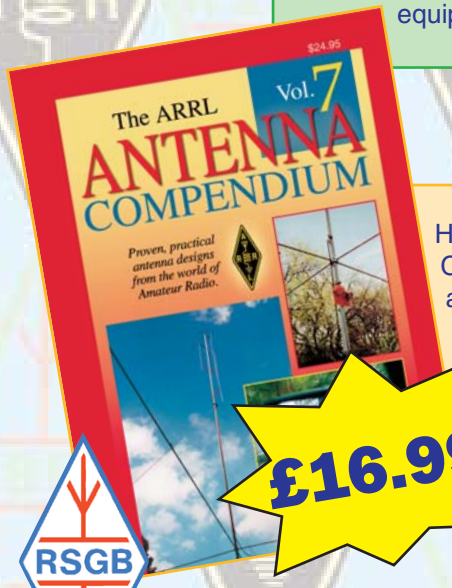
£9.34

EXPERIMENTAL METHODS IN RF DESIGN

Immerse yourself in the communications experience by building equipment that contributes to understanding basic concepts and circuits. Explore a dynamic range, low distortion radio equipment, direct conversion and phasing methods, and digital signal processing. Build and measure equipment at both the circuit and the system level.

Non-members Price £34.99

£29.74



THE ARRL ANTENNA COMPENDIUM VOLUME 7

Hooray for antennas! This is the seventh in the very popular ARRL Antenna Compendium series. Inside, you'll find articles covering a very wide range of antenna-related topics.

And, this volume includes even more articles on low-band antennas and operating, and great designs for operating on the road-from cars, vans or motor homes.

Non-members Price £19.99

£16.99

Order today from the RSGB Bookshop
www.rsgb.org/shop or Tel: 0870 904 7373

RSGB SHOP
www.rsgb.org/shop

By Andy Cook, G4PIQ, Knaves Acre, Brantham Hill, Brantham, Manningtree CO11 1TA; e-mail: vhfcc.chairman@rsgb.org.uk
and Lee Volante, G0MTN, 25 Baccabox Lane, Hollywood, Birmingham B47 5DD; e-mail: g0mtn@qsl.net

2004: the RSGB HF and VHF contesting year ahead

Andy Cook with news of exciting new RSGB Club Championship contests on 80m and 2m, while Lee Volante shares secrets of how to improve your contest results year on year

Another year has come around and it's time once again to look to the next year's contesting calendar. Unfortunately, this year we've been unable to print the entire rules in *RadCom*, but people should find enough details to plan their annual contesting exploits from the extended calendars which are included in this issue. The full rules are available on the HF and VHF Contest Committees' websites: see 'Websearch' below. However, if you don't have Internet access, not to worry: an A4-sized SASE in the post to the Amateur Radio Department at RSGB HQ will bring you a paper copy of the complete rules.

CLUB CHAMPIONSHIPS

As usual, a number of changes have been made to the rules for 2004, responding to the comments that we receive from you, the entrants. The biggest changes, however, are the introduction of new Club Championships on both 2m and 80m, based around short weekday evening contests. With these events we hope to encourage more interest in contesting inside clubs. Both sets of events allow Affiliated Societies to combine the scores from as many stations as they can get active in a session to an overall club score. Because of this it's good for the club to encourage as many stations on for a session as possible.

2m and 80m run as completely separate championships, but both will award a trophy to the most successful club at the end of the year, along with a selection of certificates to the leading individual stations in each major licence category. The 2m sessions run throughout the year every first Tuesday, and build on the already popular UK Activity Contests (UKAC) where all modes are allowed, but where SSB tends to be the focus. The 80m sessions will run three times per month between January and July, alternating between CW, SSB and data modes (RTTY and PSK31/63).

There are many different aspects to amateur radio - some people like only CW, some only SSB, and some people are dedicated to operating the data modes. There are also people who like building equipment and antennas, those who are never happier than when sitting in front of a PC, and those who are born organisers. We hope that these sets of contests will allow clubs to involve members with *all* these skills and more. In order for a club to come out high up the table, it will take much more than just a few people coming on occasionally to do some operating: good organisation, effective stations and effective operating will all be necessary. This may sound like a bit of a challenge, but the club environment is the ideal place to get all these aspects together. Members who are the experts in one area can help others along.

Entries can be single operator or multi operator, so you can focus your clubs efforts whichever way suits you best. You could even have a mix of more experienced single operator stations doing their own thing, along with some multi-operator entries to train the less confident operators. These events should provide a particularly good easy entry into contesting, and be ideal for new folks to get their feet wet.

80m is a remarkably equitable band when it comes to making QSOs mostly around the UK. The contest power limit has been set at 100W (with a 10W option as well), and big antennas really aren't necessary. In current short 80m UK contests, stations running 100W and very restricted antennas (for example a random wire around 10ft off the ground) can make over 80% of the QSOs that the '400W / big antenna' leaders make. We expect that this pattern will continue in these events - 80m is a great band for stations in restricted domestic set-ups: almost any antenna that you can cram into your garden can be made to radiate effectively around the UK. This should be something that the former Class B licensees with new HF privileges can get into.

The Colchester Radio Amateurs' impressive antennas for VHF NFD in July 2003.

There's no hiding that at VHF, the quality of your location - and by that I mean how clear a take-off you have, as opposed to what part of the country you are located in - plays such a strong role that it's completely impossible to provide any sort of a level playing field. Because of this we haven't pretended to try to create one, and have left the contest structured around the existing 2m UK Activity contests which have no equipment restrictions associated with them. Provided that you don't live right in the extremes of the country, you'll be able to get well into the action with a single Yagi and just a few tens of watts. If you want to be ultra-competitive then by all means build up a bigger station and / or go portable to a better site: lots of people do this already on Tuesdays. However, the great thing about VHF is that it is just plain

Phil Catterall, G4OBK, enjoying some CW contesting during the 2003 IARU HF Championship.

unpredictable. Changing conditions have a much greater effect on what you work in a 2m session than they do on 80m, and there's always that excitement of what unexpected stations will crawl out of the woodwork in this session. The 1st Tuesday of the month sessions are co-ordinated with other European VHF contests and there's always a decent level of activity from Europe as well as the UK which adds to the spice.

We want to make these events as much of a live competition between clubs as the year goes on as possible, and not just to have the final tables drop out of nowhere at end of the sessions. To make this work, we plan to run close-to-live scoreboards on our websites, but need your help to make this work. The 80m events require that all entries are submitted electronically in order to turn around results as soon as possible. However, for the 2m events, we are still prepared to accept paper entries, but please only do so if you really can't submit electronically - paper logs have to be typed up by the adjudicator and this does slow down the whole process of getting the results out to you.

There's free software available for both of these events. Paul O'Kane, EI5DI, has kindly added support for the 80m UK Club Championship to his *SuperDuper* ('*SD*') software. For these events and the 80m AFS contests, you do *not* have to be a registered *SD* user. Note also that the 80m datamodes sessions should be logged in *SD* as CW, and the 'Data' option chosen when preparing the Cabrillo entry file using *SDCHECK*. *SD* can be downloaded from Paul's website (see 'Websearch' below). It supports all RSGB contests, and is particularly well suited to those new to computer logging due to its straightforward user interface.

At VHF, Mike Goodey's, G0GJV, free logging package supports this and all other RSGB VHF contests, as does *TACLOG*, and also EI5DI's *SDV* software. Links to these logging packages are available from the RSGB VHFCC website. If you're having trouble getting an electronic entry together, hopefully there is someone else in your club who can help out.

This is the first year that we've run these events. We've tried to keep the rules pretty straightforward, but will look at them again next year in the light of what we learn this time around. So - come on - we look forward to seeing a wide variety of clubs, hopefully some familiar to the contest scene, and some just dipping their toes in for the first time! You don't need to have hundreds of stations active to get on and enjoy the fun - one single station is a great starting point.

CLUB TALKS

If your club starts to enjoy contesting through these Club Championship events, don't forget there are some other great club-orientated events run throughout the year. The Affiliated Society contests on 80m, 2m and 70cm are rather like a larger scale club championship, and the HF and VHF Field Day events are superb opportunities to combine a social club event in the summer with some fun operating. And then if you're really keen there are all the other RSGB events - most of which have multi operator sections (especially at VHF) - plus all the international events too!

If you have any queries about these Club Championships or any other part of this year's rules, please contact the appropriate committee chairman at hfcc.chairman@rsgb.org.uk or vhfcc.chairman@rsgb.org.uk As part of the support we're trying to offer for these events, and to show people what they can get out of contesting and how to be effective without building 'mega-stations', members of the contest committees are offering to come and give talks at your clubs. If you're interested in this, please contact me at vhfcc.chairman@rsgb.org.uk or by tel: 0870 740 7909 and I'll try to co-ordinate something.

To make room for the 80m Club Championship the QRS Cumulatives have been discontinued, but the 80m CW events do have a 'QRS corral' at 3550 - 3570kHz. Other than this, the HF programme of events looks much

MICROWAVE CONTESTS

The full rules for the RSGB Microwave contests are available on G3PHO's website (see 'Websearch') and in the January 2004 Microwave Newsletter (subscription details available from RSGB HQ).

Most of the changes introduced in 2003 were well received, especially the combined 5.7GHz and 10GHz Cumulatives, and the combined 1.3 / 2.3 / 3.4GHz events. These encouraged a lot of new activity on these bands, and are repeated in the same format for 2004.

24GHz reverts to being combined with 47GHz, after experimenting with separate events in 2003. Often the same dish is used for both bands, and 24GHz is often used to align this dish before a 47GHz contact is attempted, so that a number of operators expressed the wish that they were once again combined. 76GHz is not included as an event in the calendar: operation on this band tends to be more individual tests, arranged to suit the weather and individual operators, rather than a specific contest date.

In planning the year's contests we have tried to avoid clashes and adjacent weekends with major VHF contests and events such as rallies and microwave meetings but, inevitably, this has not been possible in all cases.

Microwavers in Europe are most welcome to join in the RSGB contests. There is already a core of French, Dutch and Belgian stations who appear regularly in our summer contests. We would like many more to do the same!

Steve Davies, G4KNZ

MICROWAVE CONTEST CALENDAR 2004

Dates, 2004	Time UTC	Contest name	Sections
26 Jan	0900 - 2100	All-band Activity Day	Non competitive
22 Feb	0900 - 2100	All-band Activity Day	Non competitive
28 Mar	0900 - 2100	1.3GHz/2.3GHz/3.4GHz	Open
4 Apr	0900 - 2100	1st 24GHz Cumulative	Open
4 Apr	0900 - 2100	1st 47GHz Cumulative	Open
1 May	1400 - 2200	10GHz Trophy	See VHFCC Rules
9 May	0900 - 2100	2nd 24GHz Cumulative	Open
9 May	0900 - 2100	2nd 47GHz Cumulative	Open
23 May	0900 - 2100	1st 5.7GHz Cumulative	Open, Restricted
23 May	0900 - 2100	1st 10GHz Cumulative	Open, Restricted, WB
6 Jun	0900 - 2100	3rd 24GHz Cumulative	Open
6 Jun	0900 - 2100	3rd 47GHz Cumulative	Open
20 Jun	0900 - 2100	2nd 5.7GHz Cumulative	Open, Restricted
20 Jun	0900 - 2100	2nd 10GHz Cumulative	Open, Restricted, WB
22 Jul	0900 - 2100	3rd 5.7GHz Cumulative	Open, Restricted
22 Jul	0900 - 2100	3rd 10GHz Cumulative	Open, Restricted, WB
22 Aug	0900 - 2100	4th 5.7GHz Cumulative	Open, Restricted
22 Aug	0900 - 2100	4th 10GHz Cumulative	Open, Restricted, WB
19 Sep	0900 - 2100	5th 5.7GHz Cumulative	Open, Restricted
19 Sep	0900 - 2100	5th 10GHz Cumulative	Open, Restricted, WB
5 Sep	0900 - 2100	4th 24GHz Cumulative	Open
5 Sep	0900 - 2100	4th 47GHz Cumulative	Open
17 Oct	0900 - 2100	6th 5.7GHz Cumulative	Open, Restricted
17 Oct	0900 - 2100	6th 10GHz Cumulative	Open, Restricted, WB
28 Nov	0900 - 2100	1.3GHz/2.3GHz/3.4GHz	Open
26 Dec	0900 - 2100	All-band Activity Day	Non competitive

RSGB HF 2004 Contest Calendar

Month	Time (UTC)	Contest	
January	t2000-2130	80m Club	5th – CW; 14th – SSB; 22nd – Data
11 Jan	1400-1800	AFS CW	3510-3590kHz, RST+serial
17 Jan	1400-1800	AFS SSB	3600-3750kHz, RS+serial
February	2000-2130	80m Club	2nd – SSB; 11th – Data; 19th - CW
14/15 Feb	2100-0100	1st 1.8MHz	1820-1870kHz, RST+serial+district
March	2000-2130	80m Club	1st – Data; 10th – CW; 18th - SSB
13/14 Mar	1200-1200	Commonwealth	3.5-28MHz, RST+serial
April	2000-2130	80m Club	5th – CW; 14th – SSB; 22nd - Data
4 Apr	0700-0900	RoPoCo 1	3520-3570kHz, RST+postcode received
May	2000-2130	80m Club	3rd – SSB; 12th – Data; 20th – CW
June	2000-2130	80m Club	7th – Data; 16th – CW; 24th – SSB
5/6 Jun	1500-1500	National Field Day	1.8-28MHz, RST+serial
July	2000-2130	80m Club	5th – CW; 14th – SSB; 22nd - Data
18 Jul	0900-1200; 1300-1600	Low Power Field Day	3510-3580;7000-7040kHz, RST+serial+power
24/25 Jul	1200-1200	IOTA	3.5-28MHz, RS(T)+serial+reference
1 Aug	0700-0900	RoPoCo 2	3520-3570kHz, RST+postcode received
4/5 Sept	1300-1300	SSB Field Day	3.5-28MHz, RS+serial
3 Oct	0700-1900	21/28MHz SSB	21150-21350; 28400-29000kHz, RS+serial+district
17 Oct	0700-1900	21/28MHz CW	21000-21150; 28000-28100kHz, RST+serial+district
13 Nov	2000-2300	Club Calls	1870-1990kHz, RS+serial+club info
20/21 Nov	2100-0100	2nd 1.8MHz	1820-1870kHz, RST+serial+district

the same as last year's. As a result of this we've also moved the 4m Trophy and the 4th 2m Backpackers. We've had a number of requests to introduce 4m to the series of UK activity contests, and have done this by making every 5th Tuesday of the month (when there is one) the 4m UKAC. The microwave UKAC on the 3rd Tuesday will revert to being 23cm and 13cm only, since the higher bands were very poorly supported during 2003.

As an experiment to try to improve activity on 23cm in VHF NFD, we've also added the option of groups in the Open section running on up to all five bands and after the event we will score the entry based on their best four. We've also brought some more elements of the VHF and HF rules into line by increasing the distance limit for clubs in AFS to 50 miles and allowing groups to enter VHF NFD without pre-registration, although only those who have registered will be eligible for awards.

SET YOUR OWN GOALS

But of course, contesting goes much further than just the RSGB events that we've already talked about. Lee Volante, G0MTN, has written on how to make the most of contesting from a normal domestic station. Lee writes this with HF in mind, but most of the ideas are equally easily applied to VHF.

"There's a big contest on next weekend. I've only got a few hours to spare, and I've only got a G5RV at 20ft so I might as well not bother." This seems to be the lament of many operators within the UK. Some feel that without a tower, large antennas, a linear amplifier and a completely free weekend, you're simply not competitive and so contesting isn't fun. But that's just not true, and there are stacks of excitement and success possible for the average UK operator.

Whilst the big guns will be battling away for the overall number one position in a particular contest, there are usually many other equally hard 'contests within a contest' being won and lost lower down in the tables.

Most contests have different sections to cater for power levels, or the types of antenna being used and larger contests will list entrants from each country separately as well. This type of breakdown makes it possible for 'normal' UK stations to reach the position of "No 1 G station - low power" for example, and furthermore there are often certificates on offer for this level of achievement.

If your antennas are really best suited to European QSOs (a typical low wire antenna story), there are many 'Europe only' events in the calendar. Also, there are many contests where you just need to chase Scandinavians, or Swiss, or Polish stations, which is easy for even the smallest of stations. In some events, there may be little support from the UK, and you'll find yourself become a rare multiplier and be asked to move from band to band! Also, don't forget that many RSGB contests have sections for 100W stations with restricted antenna systems, and will also reward leading Foundation and Intermediate Licensees.

If it's unlikely you'll win overall, why not set yourself a personal target of 100 QSOs (or 1000 QSOs), a points target, or a DXCC target, or to do 25% better than someone else in the club? Some of the larger contests such as *CQ* World Wide have all-time records for particular band / power combinations. Reaching the all-time top G (or GW etc) score for one of these records can be an ideal goal to set yourself. If you are limited for time, your own challenge could be to work 50 or 100 stations in an hour.

If you are a member of your local club, why not suggest some antenna designs for your club members? Show them that 1.8 MHz or 3.5MHz need not be beyond their reach if they have a small garden if you have a bit of imagination. Roll an antenna project and a contest activity into one. For example, if you're unhappy with the performance of your multiband dipole or vertical, a single band antenna is likely to take up the same space and will be a lot more effective. A great example of this is when Justin Snow, G4TSH, set a G record score for the 40m band in a recent *CQ* World Wide CW contest using a pair of verticals - and his garden is only 30 x 10ft in size! Your antennas are the most important part of your station, and will make more of a difference in the results than what equipment you have available in the shack. As contests are relatively short, perhaps consider putting up antennas temporarily for events you'll be taking part in. You'll be able to get away with more substantial antennas this way, and they will cause you less problems with your family and neighbours than if they were a more permanent installation.

The back garden of Justin, G4TSH, proves you don't need acres of land or fancy antennas for contesting success.

Right: Contesting as a club activity can be great fun: this is the station of the Newbury &DARS, G5XV/P, in HF NFD, June 2003, with Douai Abbey, Berkshire, in the background.

Inside the shack, it's not just about buying the most expensive radio you can: spend the money on antennas as far as you can! Adding additional filters, voice keyers, some new contest logging software, and even a new comfy chair will all bring their own rewards in boosting the overall score. The biggest aid to operators developed in recent years has been the use of a computer to keep a log, check for dupes, and even send CQ and voice messages for you. If you've not tried this yet, ask a local contester for some help.

IMPROVING YOUR SCORE

So how can inexperienced contesters best improve their contest scores? The best way to learn is to get stuck in and get more experience. By taking part and listening to the more experienced operators, you'll start to pick up their good operating habits.

Over time you'll start to recognise the callsigns of the usual contest stations, and they will start to recognise you. This will save time and improve accuracy next time you're trying for a contact when there's a lot of QSB or QRM. To start with, you may not call CQ at all, and just be tuning to find other contest stations, but how fast you 'Search and Pounce', as this procedure is called, up and down the bands is a very important skill to learn - especially if your signal is not really strong enough to let you 'run' well.

For contests where the organisers can offer feedback on your performance, check this data to find out where things are going wrong. Many top contesters are also willing to share their techniques. After a contest, claimed scores, rate sheets and sometimes a lengthy blow-by-blow account are written up and posted on the Internet contest-based reflectors such as UK-CONTEST, CQ-CONTEST or 3830 - you'll find these all at www.contesting.com These can offer fascinating insights into what the successful guys were doing. Check out their QSO and multiplier totals and find out where you need to improve first. You can find out about the strategy the winners adopt, and then learn how you can adapt that to make it work for you.

Bob Beebe, GU4YOX, operating the Guernsey ARS station GU3HFN/P.

Shortage of free time is a common problem in today's busy times, but there are many events which can fit in with a busy lifestyle. The RSGB 80m AFS, Club Calls, RoPoCo, and 1.8MHz contests are all four hours or under, and the new Club Championship events last only 90 minutes. The four annual European Sprint contests are growing in popularity and also just four hours long. At VHF, all the UK Activity Contests and Cumulatives are 2.5 hours long, and there is a six-hour section in the major contests where you pick the six hours that you want to operate from the full 24-hour period. With this collection, it should be possible to arrange a list of contest activities that will meet with your family's approval. In major HF contests, a single band entry is also often a good option for those who don't feel able, or don't have time, to try to stay at the radio for 24 or perhaps 48 hours. Depending on the band chosen and the contest, this choice gives plenty of time for sleep and domestic duties.

SEND IN YOUR LOG!

Whilst the serious contesters will be very thankful for each contact you give them, equally the contest organisers will be glad of your log entry. Submitting your contest log gives the organisers an impression of the overall level of activity and support for the event. This is very important in helping to decide if the contest should continue, or how it should be changed to improve it for the entrants. More UK logs actually entered for both domestic RSGB and international contests will give a positive impression of the UK contesting scene. In a recent DX contest, top USA stations were noted as being overwhelmed by the number of new HF operators from the UK during the contest itself (Foundation Licensees and former Class B Intermediate and Full Licensees). Unfortunately, only a small fraction of those are likely to submit logs and so appear as official entrants.

Log submission also helps with the cross checking done by the adjudicators. So, no matter how small your log is, or how little time you had to operate, your log will still be welcomed. Especially if you're using computer logging, the log preparation can be done in minutes. For those with an Internet connection they can use or borrow, the log can be sent with very little cost. For those without, a floppy disk sent in the post is the other solution.

If you submit your logs, when the results are announced, you'll see your callsign in the results tables. Now you'll have a real target to aim at for the next year. If you've improved your operating technique or CW speed, added some more radials to your ground system, or managed to get your antennas a few extra feet higher, this is where you'll start to see the benefits. You'll be competing directly with yourself here - the very essence of self training that is the core of amateur radio.

The easiest way to overall success is to find small improvements to make each time. Some will be operator tactics, some will be station improvements. Now it's up to you to take up the challenge and start entering! ◆

WEB SEARCH

RSGB HF Contests Committee:	www.rsgbhfcc.org
RSGB VHF Contest Committee:	www.blacksheep.org/vhfcc
EI5DI SuperDuper (SD) software:	www.ei5di.com
Internet Contesting reflectors:	www.contesting.com
G3PHO (Microwave contest rules):	www.g3pho.free-online.co.uk

Radio Society of Great Britain VHF Contests Committee

2004 Contest Calendar

Date	Time (UTC)	Contest	Sections
Every 1st Tuesday	2000-2230 LOCAL	144MHz Activity & Club Championship	SF, O
This contest is scored 1 pt/QSO with QTH locator multipliers (M2) Activity Contest (S8). The Guildford Cup will be awarded to the leading Foundation Station in the year's 2m activity contest.			
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 /2.3 GHz 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)			
Every 5th Tuesday	2000-2230 LOCAL	70MHz Activity	SF, O
This contest is scored 1 pt/QSO with QTH locator multipliers (M2) Activity Contest (S8)			
11th/25th Jan, 8th/22nd Feb, 14th Mar	1000-1200	70MHz Cumulatives	SF, O
Full QTH Information to be sent (S2). Cumulative contest rules apply (S5)			
1st Feb	0900-1500	432MHz AFS	SF,SO,M
AFS rules apply (S3), 3 stations per team, only fixed stations count towards AFS tables.			
6th/7th Mar	1400-1400	March 144 / 432MHz	SF,SO,M, 6S,60
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.			
11th Apr	0900-1300	1st 70MHz	SF,SO,M
Full QTH Information to be sent (S2)			
25th Apr	0900-1300	50MHz	SF,SO,M
Postcode, Country & QTH Locator Multiplier (M3)			
1st/2nd May	1400-1400	432MHz - 248GHz	SF,O
1st May	1400-2200	10GHz Trophy	O
Country & QTH Locator Multiplier (M4). This contest runs concurrently with the first 8 hours of the 432 MHz - 24 GHz event (S6). The 10 GHz Trophy is awarded to the winner of this contest.			
1st May	1400-2200	432MHz Trophy	SF,O
This contest runs concurrently with the first 8 hours of the 432 MHz - 24 GHz event (S6). The 1951 Council Cup is awarded to the overall winner of this contest.			
9th May	0900-1200	70MHz CW	SF,O
Postcode & Country multiplier (M1). Full QTH Information to be sent (S2)			
15th/16th May	1400-1400	144MHz	SF, SO, M,6S,60
Postcode/Country Multiplier (M1)			
16th May	1100-1500	144MHz Backpackers #1	S, M
Postcode, Country & QTH Locator Multiplier (M3). See separate Backpackers rules.			
6th Jun	1100-1500	50MHz Backpackers #1	S, M
Country & QTH Locator Multiplier (M4). See separate Backpackers rules.			
13th 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 Practical Wireless QRP contest.			
19th / 20th Jun	1400-1400	50MHz Trophy	SF,SO,M, 6S,60
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.			
3rd/4th Jul	1400-1400	VHF NFD	
4th Jul	1100-1500	144MHz Backpackers #3	S, M
Country & QTH Locator Multiplier (M4). See separate Backpackers rules.			
11th Jul	1100-1500	50MHz Backpackers #2	S, M
Postcode, Country & QTH Locator Multiplier (M3). See separate Backpackers rules.			
18th Jul	1100-1500	144MHz Backpackers #4	S, M
Postcode, Country & QTH Locator Multiplier (M3). See separate Backpackers rules.			
7th Aug	1400-2000	144MHz Low Power	SF,SO, M
25W maximum output from the transmitter. Postcode, Country & QTH locator multiplier (M3)			
8th Aug	0800-1200	432MHz Low Power	SF,SO,M
25W maximum output from the transmitter. Postcode, Country & QTH locator multiplier (M3)			
22nd Aug	0900-1500	70MHz Trophy	SF,SO,M
Postcode & country multipliers (M1). The VHF Managers Trophy is awarded to the winner of section 'M' and the Four Metre Cup to the winner of section 'O'.			
4th/5th Sep	1400-1400	144MHz Trophy	SF,SO,M, 6S, 60
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.			
5th Sep	1100-1500	144MHz Backpackers #5	S, M
Country & QTH Locator Multiplier (M4). See separate Backpackers rules.			
19th Sep	0900-1300	2nd70 MHz	SF,SO,M
Full QTH Information to be sent (S2)			
2nd/3rd Oct	1400-1400	432MHz - 248GHz IARU	SF, O
Co-ordinated with IARU contest (S7)			
2nd Oct	1400-2200	1.3 / 2.3GHz Trophies	SF, O
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 1.3 GHz contest, and the G6ZR Memorial Trophy to the winner of the 2.3 GHz event.			
17th October	0900-1300	50MHz	SF,SO,M
Postcode, Country and QTH locator multiplier (M3)			
6th/7th Nov	1400-1400	144MHz CW Marconi	SF, O
The RSGB and European Marconi Memorial events run concurrently (S7)			
7th Nov	0800-1400	6-hour 144MHz CW	SF, O
This event runs in the last 6 hours of the European contest (S7)			
5th Dec	0900-1700	144MHz AFS	SF,SO,M
AFS rules apply (S3), 5 stations per team, only fixed stations count towards AFS tables.			
26th/27th/28th/29th 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 hours others
Logs should be submitted within 16 days of the end of the contest by e-mail to vhf.entry@rsgb.org.uk, or by post to VHFCC, c/o 5 The Howsells, Lower Howsell Road, Malvern WR14 1AD.

Experimenter - Ham - Amateur

Cellcom Ireland Ltd

LOOK at our Fantastic New Years Offers!!! IRELAND ONLY

ICOM		EURO € EX-VAT	STG £ INC
IC-756PRO	HF TCVR	€1900	£1693
IC-756PRO2	HF TCVR	€2825	£2289
IC-746	HF TCVR	€1480	£1296
IC-7400	HF TCVR	€1750	£1421
IC-718	HF TCVR	€725	£588
IC-910	VHF/UHF TCVR	€1480	£1200
UX-910	1200Mhz Module	€350	£286
IC-2100H	VHF 2m TCVR	€277	£225
IC-T3H	VHF handie	€185	£150
IC-PRC100	RX	€277	£225
IC-R5	RX	€198	£162
IC-R10	RX	€367	£298
IC-R75	RX	€798	£645
ICR8500	RX	€1540	£1248

OTHER BRANDS	EURO € EX-VAT	STG £ INC
AH 4 ATU suits all HF TCVRS	€400	£225
PS 85 power supply 20A	€237	£192
MFJ 945 Antenna Tuner	€179	£144
MFJ 890 Beacon Receiver	€ in stock	
Yaesu 2M handie-used-	€150 good condx	
Yaesu FT 230R UHF-used	€130 good condx	
Drake TR7 HF TCVR	€400 good condx	
Racal Signal Generator 9800	€1000 used	
Tennadyne Log Periodic T6 T8 & T10	€ in stock	
Ameritron Lineras	€ in stock	
Create Rotators	€ in stock	
Rig Blaster Plus	€ in stock	

Call us NOW to avail of these great prices:

CELLCOM IRELAND LTD Deerpark, Oranmore, Galway. www.cellcom.ie
Phone: +353 (0)91 790222/4 E-mail: info@cellcom.ie Fax: +353 (0)91 790223

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/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

RCQ Communications

Save Money! - Second Hand! - Secure Warranty!
******* NO RISK *******

www.cqhamradio.net

e-mail g3rcq@supanet.com

ANTENNA TUNERS	
REVEX COAX SWITCH DC-1GHZ	£40.00
ROTATOR K-400C	£175.00
STRUMECH 30FOOT MAST + CAGE	£395.00
MFJ 931 ARTIFICIAL GROUND	£50.00
MFJ-207 HF ANALYZER BOXED	£55.00
GLOBAL AT-1000 SWL ATU	£65.00
AT-940 INTERNAL ATU	£150.00
ICOM AH-2 WITH CONTROLLER	£225.00
ICOM AT-150	£175.00
TEN-TEC 254	£125.00
SPC-300 AAA/CAPCO	£150.00
MORSE KEYS	
HI-MOUND MARBLE BASE HK-702	£40.00
DATONG MORSE TUTOR	£45.00
G4ZPY PADDLE	£45.00
OLD PUMP HANDLE KEY	£15.00
BENCHER CHROME PUMP KEY	£70.00
VIBROPLEX SQUEEZE KEY NO 69206	£100.00
HF TRANSCEIVERS	
ICOM IC-740 REALLY MINT	£425.00
KENWOOD TS-930	£450.00
KENWOOD TS-60 50MHZ	£425.00
KENWOOD TS-450S	£450.00
KENWOOD DSP 100	£150.00
TEN-TEC ARGO 535	£395.00
TNC & DATA COMMUNICATIONS	
PAKRAT TINY 2 MK2 WITH INFO	£75.00
MFJ-1272B MIC/TNC SWITCH	£25.00

TEST EQUIPMENT	
MFJ-203 DIP METER 1.8-30MHZ	£55.00
RS LCD FREQ COUNTER 10HZ-200MHZ	£85.00
GREENPAR 88100 SWITCHED PROBE	£15.00
RS LCD DIGITAL MULTIMETER TM 351	£65.00
TNC & DATA COMMUNICATIONS	
PAKRAT TINY 2 MK2 WITH INFO	£75.00
MFJ-1272B MIC/TNC SWITCH	£25.00
TRANSVERTERS	
R&N 144 TO 6M	£75
VHF/UHF TRANSCEIVERS	
KENWOOD TM-702E DUAL BAND FM	£185.00
KENWOOD TM-255 MULTIMODE FOR 2M	£275.00
TRIO TS-711E 2M 25W BASE MULTIMODE	£295.00
TRIO/KENWOOD 9130 2M MULTIMODE	£195.00
FDK 750 2M MOBILE FM/SSB 10W	£150.00
AKD 2M FM 25WATTS	£75.00
KENWOOD TM-221E 2M FM BOXED MINT	£100.00
SWR	
TRIPLEXER MX-2000	£30.00
REVEX COAX SWTCH DC-1GHZ	£35.00
MFJ-264 1.5KW DUMMYLOAD	£45.00
MFJ-267 DUMMY LOAD/SWR	£80.00
WELZ SP-200 1.8-160MHZ TO 1KW	£65.00
REVEX 1.8-200MHZ W520 NEW	£50.00
DAIWA CN-103L 140-525MHZ CROSS	£45.00
VHF SWR/POWER METER	£15.00

MANSON EP-925	£70.00
MICROSET P120 24AMP 13.8V	£65.00
REVEX P-300 30AMP 13.8V	£70.00
SMALL 13.8V PSU	£15.00
13.8V 10AMP SWITCH MODE PSU	£30.00
DIAMOND GSV 3000 25AMP PSU	£100.00
RECEIVERS - FILTERS - SCANNERS	
STANDARD AX-700 BANDSCOPE	£195.00
KENWOOD R 5000 + VHF CONVERTER	£495.00
NRD-525 HF RECEIVER	£225.00
YUPITERU MVT-7000 SCANNER	£95.00
SPEAKERS	
KENWOOD SP-31	£60.00
KENWOOD SP-50B NEW UNUSED	£25.00
ACCESSORIES	
CB HANDIE TRC-1014 SMALL	£50.00
ERICSSON T-300 PAY + CAMERA	£95.00
OSARIS OREGON PC LIKE PSION	£45.00
DATON ASP RF SPEECH PROC	£45.00

VISA

MAIL ORDER

RCQ COMMS. PO BOX 121 WISBECH CAMBS PE14 7YW TEL: - 079 408 37 408

Members' ads

FOR SALE

AMERITRON AL811 linear amplifier, used twice, £275. Daiwa CAN-2002 2.5kW PEP automatic antenna tuner, £175. GM0WJY, QTHR, 01620 893 584 (North Berwick). E-mail: trevorcallaway@clara.co.uk

ANTENNA – single-band 160m whip, suitable magnetic base connection, £25. Buyer collects. G0JWE, 01332 675 657 (Derby). E-mail: d.cliffe@ntl world.com

CLEARANCE –Yaesu FT-900 tcvr, Yaesu FP-800 PSU. ETM4C electronic key. Yaesu SP-7 spkr, Junkers key, Outbacker whip. TB2 tribander plus tower, cables & accessories. Icom T-2ZE tcvr + charger. All to be sold (and more). GM4FQG, 01368 863 200 (Dunbar). E-mail: r.mclaren@talk21.com

COMPUTER printer, 'Doctor' programme. Make and store those auxiliary commands that many printers do, but do not appear on the printer drivers. Handy little tool, £4.20. Font generator and paintbox programme, very good for ordering your components, £9.99. G8WCQ, 01297 23421 (Seaton). E-mail: poisonpen@poisonpen.freeserve.co.uk

FT-847, eight months old, boxed, £820. FC-20 ATU for 847, £150. Watson PSU W-25AM, £45. NE10 DSP speaker, £50. Fairhaven 500 scanner, unused, £600. Yaesu MD-100 base mic, £50. Tektronix dual-channel four-trace 0-100MHz oscilloscope, vgc, man supplied & probes, £350. Racal 9916 UHF frequency counter with man & leads, £45. Micronta FET analogue multimeter boxed, mint cond, large meter scale (AVO size). MFJ-464 CW keyer/reader, new, £80. Many other items, books etc. John, 2E0MIM, 01262 606 212 (Bridlington).

FT-847, nine months old, hardly used, boxed & mans c/w CTCSS, mic, used for 2/70 only. Have TS-870 so radio wasted, accept £800 or do a deal with an Icom IC-910, must be same cond, ie mint. Terry, 2E1TJB, QTHR, 07970 431 528 (London). E-mail: terry.barnes@hagemeyer.co.uk

HF vertical antenna Diamond CP-6, 3.5 50MHz, 200W max, 4.6m high, as new, £175. Daiwa ATU CNW-727, dual 144/432MHz – 200W max, as new, £60. Dummy load DL-600 SWR 1:1, range up to 350MHz – 600W max, £30. BNOS linear amp, LPM-144-10-100, SSB/FM inc, pre-amp, exc cond, £75. Alan, G7CDK, 01763 262 443 (Royston). E-mail: aj.flo@virgin.net

ICOM IC-7400 for sale, only a few months old, as new in box. £1000 + delivery £10 for UK mainland. Paul, M0CJX, 01737 279 108, 9 to 5pm weekdays. (Surrey). E-mail: m0cjx@ntlworld.com

ICOM IC-746 c/w full SSB IF filter set and VHF WX/airband mod, as new, in box, £850 + delivery £10 for UK mainland. Paul, M0CJX, 01737 279 108, 9 to 5pm weekdays. (Surrey). E-mail: m0cjx@ntlworld.com

ICOM IC-R7100 wideband rcvr, complete with mains pack and telescopic antenna, exc cond, £595, ono. Nick, 01280 847 980 (Buckingham).

ICOM PCR-1000 0-1300MHz, exc cond with software, £100. G4WJJ, QTHR, 07974 022 964 (Crediton).

ICOM-2410 2m/70cm mobile, 25W. Skiptech 14A mains PSU. Diamond dual-band mobile antenna and mag mount. Maldol dual-band vertical base antenna, pole and brackets. Complete setup, all one owner, as new, £205. G0WAJ, 01625 422 382 (Macclesfield).

KENWOOD tcvr TS-520SE, with h/book, sensible offers only. Proceeds will be donated to Scouts HQ refurbishment fund. Buyer inspects/collects, but delivery possible within reasonable range. John, G4PSG, QTHR (South Bucks). E-mail: jonmar@tesco.net

KENWOOD TS-440 (int ATU and voice module but no additional filters fitted), vgc, prefer buyer inspects, £350. G3ZYL, 01566 782 463 (Launceston). E-mail: g-j-bowhay@beeb.net

KENWOOD TS-440S, MC-60 mic, SP-23 lspkr and matching 240V PSU, £350 + postage. Yaesu FT-230R 2m FM rig, £90 + postage. M0CYZ, 01677 423 349 after 65pm (Bedale).

KENWOOD TS-50 HF mobile tcvr in near new cond with man (no bracket), £350. Icom IC-211E home base 2m multimode tcvr with matching IC-RM3 remote controller with mans, £200. Both in nearly-new cond. Buyer pays carriage. MFJ-784B outboard tunable DSP filter with man in vgc, £100. G4WNG, 01670 822 172 (Northumberland). E-mail: thomas.furness@ntworld.com

KENWOOD TS-530S 9-band HF, valve PA, one owner vgc, original packing, extension spkr, KW Eze-Match. Selling due to illness, reasonable offer plus carriage or test and collect. Mary, 01539 620 203 evenings (Garsdale).

KENWOOD TS-570D £450, ono. G3NXQ, QTHR, 01905 20264 (Worcester). E-mail: tony@bodenham.fsmet.co.uk

KENWOOD TS-790E VHF/UHF tcvr, £700. Kenwood TS-50 tcvr, £500. Also: Atlas 215x tcvr; Yaesu freq counter, YC-355D; AEA PK-232 m-mode controller; CDE rotator & controller (outdoor) complete; KR-500 elevator & controller (not used outdoors). Antex 660TC soldering station; EP-925 variable power supply; various panel meters (6); FDK Multi-2700 VHF rcvr. For satellite enthusiasts: Echostar 8700 satellite analogue rcvr; Echostar D2500IP digital satellite rcvr; Channel Master 1.2m dish c/w LNB, Echostar 18in jack (to move dish). Various radio books and magazines – phone for details. Silent key sale (G8MTO), so sensible offers, please. Joan, 01892 833 260 or 01892 837 680. E-mail: joanedelman@onetel.net.uk

KENWOOD TS-870S as new, never used on HF, £800 no offers. Kenwood TS-140 HF tcvr, £500 ono. Kenwood 2m tcvr, £100, ono. Kenwood ATU AT-230, £80 ono. Kenwood MC-60 mic, £60. Yaesu rcvr VR-5000, as new £500 ono. Yaesu auto ATU for FT-847 etc, £200. AKD-7003 70cm tcvr, £50. Naval 30W 2m linear 12V. £10. Revex PSU 20-25A, £50. Kent straight Morse key, £40 ono. Jaybeam vertical multi band HF. Free. G4VVQ, QTHR, 01245 233 566 (Chelmsford). E-mail: G4VVQ@aol.com

KENWOOD TS-950S digital tcvr, 150W, man, vgc, £850. Huge list of ham, antenna, test, video, audio, tools and photographic equipment for sale. Please e-mail for the latest list. Prices well below trade, collect or Parcel Force. G3AAG (Beaminster). E-mail: G3AAG@aol.com

MAINS transformers, 2850-0-2850V at approx 750mA. 2000-1500-0-1500-2000V at 1.75kVA. 1800-0-1800V at 1100mA. First sensible offers. G3JSY, QTHR, 01726 73827 (St Austell).

MFJ 1025, New unwanted gift, (have one already), Exc noise reduction, £100. Global 2000 SWL ATU, £50. Post paid UK. G3RHM, 01404 850 461 (nr Exeter).

MFJ-1786 Super Hi-Q mag loop control unit (new) £50. Kenwood TR-751E 2m 25W SSB/CW/FM tcvr, includes mic, owners man, original box, £250. Mast safety belt, £20. G3XVF (Norwich). E-mail: g3xvf@btinternet.com

MFJ-259B analyser HF/VHF, £125. Time-wave audio filter DSP-599ZX, £150. Both mint cond + postage. E-mail for list – other items for sale. G0HIN, 023 9246 1982 most evenings (Hayling Island). E-mail: g0hin@aol.com

OLD *RadComs*. Jan 1988, Sept, Oct, Dec 1987, June 1985, Feb, March 1983. All 1974 & 1975, Feb - Dec 1973, July, Aug 1971, June 1969. Feb Special 1988 (1913-1988). July Special 2003 (1913-2003). Offers? Postage extra. G0SIV, 01268 728 396 (Basildon). E-mail: g0siv@clara.co.uk

QTH bungalow in north Shropshire 1000ft ASL views over six counties complete with mast and beam, £275,000. Check web site: www.radioham.freeserve.co.uk

RSGB Members wishing to place an advertisement in this section should use the official form printed in ***RadCom*** each 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. Please do not send members' advertisements to Manning Publishing Ltd (advertising agents). **The closing date for copy is the first day of the month prior to publication, eg the deadline for the May issue is 1 April.**

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. Members' Ads also appear on the members-only website:***
www.rsgb.org/membersonly/membersads

SILENT KEYS

We regret to record the passing of the following radio amateurs:

2E1AMJ	Mr B Woolis	03
G0BXF	Mr R L Tilley	03
G0HKH	Mr A L Pacitto	10/03
G0JLH	Mr W A Newman	09/03
G0OZD	Mr D J Tanner	03
G1YLH	Mr R D K Fisher	23/10/03
G3AIU	Mr K A H Rogers	06/11/03
G3DHE	Mr N Nelson	09/09/03
G3ESA	Mr J H Oakes	12/09/03
G3MY	Dr G M King	02/11/03
G3PTN	Mr Z T Chowaniec	26/09/03
G4BIO	Mr A Chivers	27/08/03
G4DLK	Mr L Jones	08/11/03
G4DOK	Mr A R Eden	06/06/03
G4NTS	Mr J Ashton	15/08/03
G7EEU	Mr H W Skinner	19/10/03
G8JDE	Mr J D Earle	11/03
G8MTO	Mr D Cox	12/08/03
LA4ND	Mr S R Barlaug	11/11/03
M0AJS	Mr R Davey	23/11/03
M0CZD	Mr M J Good	30/10/03
M3FUM	Mr C Thomas	13/09/03
RS3003634		
Lord Wallace of Coslany		11/11/03

We apologise for the incorrect callsign attributed to Mr A R Wilson last month. It should be G4CZV not G4CZU as printed.

G0JFM, 01691 777 688 (Oswestry). E-mail: stephen@radioham.freeserve.co.uk

QTH move. Tennamast 18 months old, as new, £450. Cushcraft A4S beam, £295. IC-746 as new, boxed & mans, £795. G-800SDX rotator with leads, £95. Vargarda 2m long Yagi with rotator and leads, £80. Rotary dipole 12/17/30, £80. Linear amp 2m Discovery, £925. Yaesu SP-767, £60. MFJ DSP filter 784B, £55. MFJ aerial analyser 259B, £195. IC-756PRO MkI, £1100. All carriage extra at cost or collect. G0JFM, 01691 777 688 (Oswestry). E-mail: stephen@radioham.freeserve.co.uk

SANDPIPER vertical aerial, 160-10m, approx 19ft high, can be ground-mounted, has been used for test purposes only. Buyer collects, £100. MFJ Iambic Morse key, (twin paddle) as new, £40. AVO model 8 MkIII in leather case with AVO test leads, £35 (worth a lot more). Service man for Kenwood TM-241 144MHz FM tcvr, 57 pages of info, £15, all. G3IWE, QTHR, 01208 77061 (nr Bodmin).

SHACK clearout bargains. Kenpro KR-5400 Az/El rotator + auto tracking PC card & interface, £250. Kenwood TM-732E 2m/70cm 50W/35W mobile trcvr, £150. AEA DSP-2232 digital multimode dual-channel data controller, £130. Yupiteru MVT-5000 scanner, £65. MM amplifier LPM144-10-100, £85. MM amplifier LPM432-10-100, £95. MM MMX-1268 2m/1268MHz tx converter, £35. Yaesu MD-1 mic £35. Standard CSA-160 desk charger 110V i/p, £15. MM MMX-1268 2m/1268 tx converter, £35. W9GR Quantics Audio DSP unit 12V, £15. Emotator 502SAX Med/HD rotator (working, but head unit dismantled), £50. Kenwood YK-88CN-1 CW filter, £30. Cushcraft A14410N 2m 10-ele Yagi (nearly new), £35. 6m 5-ele Yagi, £35. Pair of 4-channel Maxon VHF h/helds + desktop charger units, £15. Buyer collects or pays postage. Roger, G3XFA, 01832 273 123 (Peterborough). E-mail: g3xfa@aol.com

SILENT Key Sale – GM0DYV. Rcvr JRC NRD-525 boxed with man, £300. Buyer collects or carriage extra. GM3KIG, QTHR, 0131 332 5168 (Edinburgh). E-mail: wjh.eaton@btinternet.com

SILENT key sale, Icom 756PRO, inc man & box, £1050. Icom 820H VHF/UHF, inc man £475. MFJ-1278B, multimode data controller, £200. Tonna 20505 5-ele, 6m Yagi, £45. Cushcraft 10-ele X-Yagi, 2m, £50. All items in vgc. Peter, G3HEE, 01780 755 001 (Stamford). E-mail: p.fan court@btinternet.com

SILENT key, G3SYC. Icom IC-746 boxed, mint, £725. CW filter FL-53A 250Hz, 455kHz, £80. Watson WS-25SM 22A switch-mode PSU, £50. Yaesu FT-690R2, 6m portable rig, £200. Kenwood TR-751E 2m all mode QRO rig. PacComm Tiny-2 MkII packet interface, £75. SMC 545L14 UHF h/h, offers? Kent single paddle & G3KHZ keyer, £35. G3MCK, QTHR, 01572 756 444.

SILENT-key sale ('Cress' Titley, G3BGG). Yaesu VHF 2m all-mode base-station tcvr, model FT-221. Old, but in quite good working cond, could do with a little TLC. Runs off 12VDC or 115VAC, £100 ono. Heathkit HF tcvr, model SB-101, CW/USB/LSB, covers 80, 40, 20, 15 and 10m (no WARC bands), 100W. Built from a kit by a Chartered Electrical Engineer, and with a matching mains PSU. Sensible offers please for this collectors' item. Yaesu VHF 2m FM mobile tcvr, model FT-2B (old). Crystal controlled, with several popular channels, and with matching mains PSU, £30 ono (2m on the cheap). Bench oscilloscope, dual beam, 25MHz bandwith, Goldstar model OS-9020A, in original box and as-new cond, £150 ono. 01427 752 284 after 20 December (N Lincs).

TEKTRONIX 465B oscilloscope, dual-channel four-trace 100MHz, exc cond with man, £350. Racal VHF frequency counter 9916 40MHz – 520MHz, vgc, £65. Peak Atlas electronic component analyser, as new, £25. Watson W-25AM PSU, as new 25A, £45. Manson EP PSU, 0-30V at 2.5A, plus 12V and 5V o/p, £40. MFJ-564 Iambic chrome paddle, unused, £40. MFJ CW Keyer/reader, £85. John, 2E0MIM, 01262 606 212 (Bridlington).

TRANSVERTERS - MM 70cm, original style, £60, later style, £85. RN Electronics 6m 25W, hardly used, £120. PMR, Dymar & Norgas 2m, Pye Europa 70cm, £30 each. Crystals, £15/pr, used, £6/pr. Icom IC-551 rare 6m m/mode with matching IC-251, £350. Yaesu FT-767GX, with all modules, hence £650. FT-726R, rare HF module + 2m/70cm modules, £500. Both exc cond, must collect. FT- 480R, recently serviced, £165. FT-227R, £95. YH-2 VOX headset, hardly used, £25. Other items, lots of junk. Keith, G0OZK, 07974 953018 after 6pm (Stockport). E-mail: keith_g0ozk@yahoo.co.uk (not collected daily).

TS-850SAT, vgc, extra CW filters & voice synth + hand mic £675 ono. Buyer inspects and collects or pays carriage. Keith,G0KWD, 01514 286 351 (Liverpool). E- mail: g0kwd@aol.com

YAESU FT-757 GX HF xcvr, £275. Yaesu FL-2100Z linear, £350. Pair 572B/T160L unused valves, £100. Eddystone 990 VHF comms rcvr, £150. Marconi TF-2008 sig gen, £100. Marconi TF-2303 mod meter, £50. Rohde & Schwarz EB-100 comms rcvr, £250. Cushman model CE-31A test set, £300. Yokogawa model 3201 100kV m/meter, in case, £50. Logimetrix 925 50kHz-80MHz sig gen, £50. Bird 2kW HF Termaline, £200. Racal 2-12MHz synthesised manpack, £250. G4HKP, 07812 174 133 (Oakley). E-mail: cggt@fsmail.net

YAESU FT-757GX MkII, HF 1-30MHz, very short use, then packed away from new, beautiful looking rig, immaculate, original packing and mans, bargain £375 + p&p. Kenwood MC-60 desk mic, £45 + p&p. Altai sig gen model TE-200, £45 + p&p. All must go due to ill health. G1GTP, 01429 293 414 (Hartlepool).

YAESU FT-901DM, £200. FV-901DM, £90. SP-901, £30. FC-902, £100. KW-1000, £150. LG-300, £30. KW-107 Super-Match, £60. Welz CT-300 dummy load 1kW peak, £40. Datong FL3, £25. Datong auto speech processor, £30. Bird Thruline 43, £80. Bird elements £50 each. Bird Termaline 8141, £85. NAG 144XL, £100. E F Johnson Roller Coaster, offers? Microwave Modules tvtrs MMT-1296/144, £70. MMT-432/144, £60. MMT-144/28, £40. MML-432/50 linear, £60. Ampere APB-57A 10W/45W 2m linear, £55. QM70 50W 2m linear, £50. 2m 40W amplifier, £40. Bert, G3AZI, 01772 337 815 (Preston). E-mail: g3azi@btinternet.com.

YAESU FT-920AF HF/6m tcvr, mint cond c/w MD-100ABX mic, boxed with man, £750. Icom ICW-32E h/h 2/70 wide Tx/Rx boxed, £100. Lowe EP-925 25A PSU, £30. ERA Microreader, RTTY/Morse reader + man, £30. Buyer collects. Mike, M0MFC, 01722 502 877 (Salisbury).

YAESU HF tcvr FT-102 with spare PA valves, relays replaced, £200. Yaesu VHF multimode FT-290 with new nicads leather case, mobile mount, Mutek SLNA 145sb preamplifier fitted, £175. G0FJB, QTHR, 01787 247 423 (Sudbury). E-mail: john@rosieperkins.co.uk

WANTED

ALL Racal or Watkins Johnson items wanted by enthusiast and collector in any condition. Any rcvrs, accessories, spares, or mans, WHY? Especially looking for an RA17 LF converter and SSB adaptor, RA-1772, RA-1217 or RA-1218. Also R1155/T1154 & accessories, tall 19in equipment racks to house my radios. Can arrange collection from anywhere. G8WKA, QTHR, 01252 795 234 (Surrey). E-mail: richardreich@aol.com

ALL WWII spy sets wanted by collector. British A3, A6, A MkII, 3 MkI, MkXV, Mk217. Russian, Nabla, Tensor, Sewer, Jack 1-5, Signal 3, Belka M-2, or WHY? All letters answered. Bill, G8PUJ, QTHR, 020 8505 0838 (London).

AZDEN PCS-4000 2m tcvr for spares. Particularly interested in PA block and optional tone burst unit. Tom, GM4DOZ, QTHR, 01292 671 807 (Prestwick). E-mail: tom@gm4doz.co.uk

CANON printer wanted model Number BJ-10SX. G3IJL, 020 8749 1454 (London).

CIRCUITS for Telequipment Serviscope Minor. Advance sig gen SG C2. Rapid Electronics scope 7020. Zenith, data systems ZVM-1240E. 020 8376 9070 (London). E-mail: den49@tiscali.co.uk

DISABLED fan of old days, seeks pre-1975 QSL cards, logs etc and *CQ* mags, same period. Mike, 8 Windsor Road, Reydon, Southwold, Suffolk IP18 6PQ.

EDDYSTONE 750 or 888. GW4JQQ, 01639 638 653 (Neath). E-mail: rongw4jqq@yahoo.com or rongw4jqq@tiscali.co.uk

FOR 1930s Civilian airline restoration project (HP 42). Wanted Marconi AD37 Tx, AD38 Rx and AD32 DF Rx, or any similar civilian AD series equipments (AD6, AD41, AD63 etc) or bits in any cond. Also any information/documentation (particularly cct diags) for copying, or kit in any cond, or any accessories such as trailing aerial drum/weights, rotary power supplies, 12V wind generators, CW key etc, would be very much appreciated! Lawrie, G4FAA, QTHR, 020 8300 1894 (Sidcup). E-mail: lawrie@g4faa.freeserve.co.uk.

GERMAN HF rcvr, Rohde & Schwarz EK-56, EK-085, EK-890 series or Telefunken/AEG, E-1700, E-1800. Have high cash or PX Racal-3701; all

options if interested. G3YFK, 01743 884 858 (Shrewsbury). E-mail: pat1mca@aol.com

KENWOOD TS-530S accessories, SP-230 speaker, VF-240 remote VFO, MC-50 mic. Pete, M0PRK, 01275 856 549 (Nailsea). E-mail: prkilpin@aol.com

MORSE keys wanted please. Early brass keys, especially by Marconi, GPO etc, but all considered. John, G0RDO, 01626 206 090 (Newton Abbot). E-mail: john@morsemad.com

NATIONAL NC-183 or 173, dead or alive, or for major restoration. Tape deck for Elizabethan Major tape recorder. Still looking for Stern-Clyne kit-built Mullard 5-10 amplifier and 2-valve preamplifier with black perspex facia, Stern-Clyne AM FM tuner. Tony, G4HHZ, 023 8027 0785 (Chandlers Ford). E-mail: tony@nicholrdfsnet.co.uk

OFF-air frequency standard, Advance OFS2B or similar, non-worker no problem if complete. Jake, 01304 373 788 (nr Dover).

POWER supply unit for Canadian Wireless Set No 52. The 1300V Western Electric Dynamotor alone would do. Palomar TX-5310 amplifier, fine if not working. Xtal in 10X size for 7010 Harris RF-625 long-wire adapter. G4GEN, QTHR, 01825 712 205 (Nutley). E-mail: mohawk@clara.co.uk

R1155 rcvr, prefer good cond & connectors. Please advise on price required. James, G8YFK, 023 8061 5113 (Southampton). E-mail: jsbmason@yahoo.co.uk

SILENT key clearout or just not needed. I collect QSL cards for their historic interest preferably from periods before 1970. Please don't throw them away. I can collect or arrange collection. G4UZN, 0113 269 3892 (Leeds). E-mail: g4uzn@qsl.net

TENNAMAST tower with or without ground post or brackets. Needs to be over 40ft. Can collect, no silly prices please – on a budget. Also want 3-ele beam for HF. Terry, 2E1TJB, QTHR, 07970 431 528 (London). E-mail: terry.barnes@hagemayer.co.uk

VINTAGE ham radio gear - Codar, Collins, Drake, Eddystone, KW, especially AM/CW txs from Labgear: LG-300, Minimitter etc. Also looking for KW-201, KW-2000E. Please let me know WHY? Paul, G4CCZ, 01932 342 927 (Woodham). E-mail: g4ccz@6metres.com

VINTAGE ham radio gear Codar, Collins, Drake, Eddystone, KW, especially AM/CW transmitters from Labgear LG-300, Minimitter. Also looking for KW-201, KW-2000E. Please let me know what you have for sale. Paul, G4CCZ, 01932 342 927 (Surrey). E-mail: g4ccz@6metres.com

WANTED £20 offered for a set of system disks for Acer Travelmate 505 series laptop. Originals, copies or on loan. G3IRM, QTHR, 01284 754 318 (Bury St Edmunds). E-mail: plumb@clara.net

YAESU FT-70 HF/SSB tcvr, 2-30MHz, in working order, reasonable price paid. M3BXB, 07754 010 767 (Ipswich). E-mail: john.hawkins@tesco.net

YAESU FT-847, must be in exc cond. Chris, M3MTS, QTHR, 01584 891 332 (Shropshire).

YAESU FTS-8 CTCSS PCBs as used in 4700RH d/bander etc. Ideally require two, good price paid. Andy, G7PSQ, 01453 886 466 (Stroud).

RALLIES & EVENTS

18 JANUARY 2004

OLDHAM ARC Rally - Oldham Sports Centre, Lord Street, Oldham. OT 10.30 / 11am. TS, B&B, C, TI on 145.550MHz via GB4ORC from 7.30am. Hazel, 01706 848 092, or m5aeg@btinternet.com [www.oarc.zen.co.uk]

25 JANUARY 2004

Horncastle Winter Amateur Radio Rally - Horncastle Youth Centre, The Old School, Cagthorpe, Horncastle, Lincs (nr Horncastle Police Station). OT 10.30am, £1. C, DF, TI on 145.550MHz. Chris, G0PXB, 01526 860320 or Tony, G3ZPU, 01507 527835. [www.fenlandrepeater.org.uk]

1 FEBRUARY 2004

SOUTH ESSEX ARS Mobile Radio Rally - The Paddocks, Long Road, Canvey Island, Essex, at the southernmost extremity of the A130. Radio, computers and electronics. OT 10.30am. C (home-made), CP free, DF, TS, MT, MA (book with examiners before midday for both exams). Brian, G7IIO, 01268 756 331 or briang7iio@yahoo.com [www.southessex .ars.btinternet.co.uk]

8 FEBRUARY 2004

HARWELL ARC Radio & Computing Rally - Didcot Leisure Centre, Mereland Road, Didcot, Oxon. Signposted from A34. OT 10.15 / 10.30am, £1.50. B&B, C, LB, TS, SIG, DF, TI on 145.550MHz, CP free. Ann, G8NVI, 01235 816 379 or ann.stevens@btinternet.com [www.hamradio.harwell.com]

15 FEBRUARY 2004

WAKEFIELD & DRS 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, £2. B&B. John, G7JTH, 01924 251 822 or g7jth@wdrs.org.uk [www.wdrs.org.uk]

RADIOSPORT Communication & Computer Show - Stevenage Leisure Centre. RadioSport 01923 893 929. [www.radiosport.co.uk]

Worked All Britain Awards Group AGM - Radiosport Communication & Computer Show, Stevenage Leisure Centre. Begins 12.30pm. Geoff, G7GJU, 0191 370 2032.

22 FEBRUARY 2004

SWANSEA ARS Amateur Radio & Computer Show – Afan Lido, Aberavon seafront, Port Talbot. OT 10.30am, £1.50, children 50p. TS, B&B, SIG, repeater groups, TI on 145.550MHz. Roger, GW4HSH, 01792 404 422.

29 FEBRUARY 2004

CAMBRIDGE & DARC Rally - Britten Arena, Wood Green Animal Shelter, King's Bush Farm, London Road, Godmanchester. [www.cdarc.org.uk]

BREDHURST RTS Rainham Radio Rally - Rainham School for Girls, Derwent Way, Rainham, Kent. Exit M2 jn 4, on to A278, follow RRR arrows. OT 9.30 / 10am, £2, under-14s free. TI on 144.550MHz (GB4RRR), TS, SIG, ATV, Kent RG, RNARS, digital comms, C, CP off road. Martin, 01634 365 980. [www.the-brats.net]

SWANSEA ARS Amateur Radio & Computer Show - *** **Venue closed – now on 22 Feb at different venue** ***. Roger, GW4HSH, 01792 404 422.

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; **MA** – Foundation Morse Assessments; **LB** – Licensed Bar; **C** – Catering; **DF** – Disabled Facilities; **WIN** – prize draw, raffle; **LEC** – LECtures/ seminars; **FAM** – FAMily attractions; **CS** – Camp Site.

GB CALLS

These 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 only QSL Bureau sub-manager for special event station callsigns is as follows: GBxAAA-MZZ – Mike Evans, 322 Heol Gwyrosydd, Penlan, Swansea SA5 7BR, e-mail mw0cna@ntlworld.com. Will organisers of special event stations please ensure that they lodge plenty of envelopes with their sub-manager?

2 Jan GB4BLC: Bedworth Lions Clubs. Warwickshire. TLH2 (G8GMU) **10 Jan** GB5RSR: Ribble Steam Railway. Preston, Lancs. LH2 (G1PIE) **15 Jan** GB2ACR: Air Cadet Radio. Rochester Kent. (G4EVY); GB4YOU: Youlbury Scout & Guide Radio. Oxford. TLH27P (G0RJX); GB4YOU: Youlbury Scout & Guide Radio. Oxford. TLH27P (G0REL)

The Members' Ads order form is now published here. If members do not wish to cut the form out of the magazine, photocopies will be accepted, as will recent copies of the form from previous months, or recent copies of the 'carrier' sheet. *As a last resort*, members may also send in their advertisements on separate sheets of paper, but if you choose to do this, you *must* supply an accurate word count - and, of course, the correct fee in the normal manner.

RSGB MEMBERS' ADS ORDER FORM

Application form for one For Sale, Exchange or Wanted advertisement. Do not mix classifications on this form; separate applications must be made.

Please ensure you read and understand the conditions of acceptance of these subsidised Members' Advertisements, printed at the top of the Members' Ads page of the current *RadCom*.

FOR SALE ☐
EXCHANGE ☐
WANTED ☐
Tick one box

I enclose a cheque/PO for £ ..... or please charge to my credit account below

CARD No EXPIRY DATE

Issue No (Switch only) .....

Signed: ..... *Date:* .....

FREE ENTRIES TOWN PHONE E-MAIL

RATES: UP TO 20 WORDS £5.50; 21-40, £6.50; 41-60, £7.50

CLASSIFIED

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 of the month prior to publication.

Copy to: David Thompson, Manning Publishing Ltd, The Irwin Centre, Scotland Road, Dry Drayton, Cambridge CB3 8AR
Tel: 0870 904 7377 Fax: 0870 904 7378 E-mail: adsales@rsgb.org.uk

Payment to: RSGB, Lambda House, Cranbourne Road, Potters Bar, Herts, EN6 3EP

EQUIPMENT

REPAIRS to all amateur and vintage RX/TX cost effective service phone or call in for details. Medway Aerials rear of 14 Luton Road, Chatham, Kent, ME4 5AA 01634 845073

MONEY BACK GUARANTEED if G2DYM anti-tv, anti-interference aerials don't outperform any other commercial wire aerial. For information and testimonials send Large S.A.S.E:- G2DYM, Uplowman, Devon, EX16 7PH. 01398 361215 Anytime.

AERIAL POLES, 6.7m telescopic fibreglass. £17.95 each including P&P. Cheques to SOTA Beams, 89 Victorial Road, Macclesfield, SK10 3JA

FOR SALE

FIBREGLASS TUBE High strength tube, square box, rod, and other sections all from stock in 6m lengths.
Engineered Compositions, Chester.
Tel: 01244 676000
e. barbara@engineered-composites.co.uk
www.engineered-composites.co.uk

CARDS & DESIGNS

G4TJB QSL CARDS printed to your specification, send a 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

FULL COLOUR QSL CARDS plus personally designed conventional cards. SAE for samples. The Standfast Press, South Drive, Inskip, Preston, PR4 0UT

HOLIDAY

HAM VACATION QTH GRAN CANARIA
www.qsl.net/ea8azc

EA8 HAM AND ASTRONOMY vacation on the island of La Palma. Traditional countryside cottage, up 2100 feet with Elecraft K2-100, Sommer XP-707 beam and 10" telescope. www.8gh.com +34 922 491 053

ACCOMMODATION

IDEAL HOME FOR RADIO AMATEUR
Unique spacious quality 4 bedroom 1987 Bungalow. 45ft Versatower, Hygain TH3el with full planning permission. 250ftasl. One acre. semi-rural setting. Susex. Details from G3XJN QTHR email hduncombe@iee.org

COMPUTER SOFTWARE

PAPER CHASERS' LOG Tracks more awards than all the other QSO logging programs combined. Some of the 100+ awards tracked are: Worked All Britain, Celtic People, Commonwealth Century Club, Great Britain Counties and Regions, IOTA British Islands and Irish Counties. NØOKS Software. www.n0oks.com

SHACKLOG 5.5 - probably the most popular UK written logging software £32.00 with IOTA addons £42.50. Alan Jubb, G3PMR, 30 West Street, Great Gransden, Sandy, SG19 3AU. Tel: 01767 677913 www.shacklog.co.uk

MISCELLANEOUS

KINGS PATENT AGENCY LTD Patents - Trade Marks - Designs. Literatures and fees on request. Tel: 020 7404 7788 www.kingspatent.co.uk

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

G3LLL- PARTS Old Yaesu, also repairs for callers (Morecambe). Details g3lll@onetel.net.uk

Business Cards

The last word

Reissued callsigns

Patrick Allely, GW3KJW, finds much to bemoan the reissuing of callsigns. If he had the foresight to check some facts before 'shooting from the hip' he could have saved himself from being "nauseated". Firstly, he can only have been on the receiving end of someone 'pulling his leg' with regard to his comments about people having selected calls from an obituary column (maybe he 'rises to the bait' a bit too easily?) As was mentioned in the editorial in the December edition, it is a mandatory requirement to have next-of-kin approval before a callsign can be reassigned. It simply isn't possible to pick a call from an obituary list and get it reissued.

Secondly, he states, "there was a time when licences were not reissued", no doubt in the utopia of Mr Allely's "more sensitive age". Again, his assumptions are simply not correct. The previous holder of my callsign held the callsign G4VZ before taking up the reissued G2YT. This was at some time shortly after resumption of the Amateur Radio Service post-war. Just because it wasn't common that callsigns were reissued didn't mean that it wasn't possible or didn't happen. It evidently was and did. When G2YT was reissued to the previous licence holder, it was already a reissue from a Mr F J Rumary living in Bristol. I understand the date of this first reissue was in approximately 1938.

Mr Allely appears to draw only one possible conclusion for someone wanting to hold a reissued call. Unsurprisingly his view is less than charitable. What he deems not to consider is that there may be other considerations surrounding a reissue. In fact it was not I who sought the reissue of my present callsign. The next-of-kin of Mr Cris Redshaw, the previous holder, asked me if I could, or would like to use "Dad's old callsign", when they realised that I was a radio amateur. They understood full well the importance of radio to him (us all), and their comment was that "he would be sitting on a cloud, puffing his pipe with a big smile on his face" at the thought of G2YT being on the air again. The few amateurs I have met who knew Cris have concurred with this comment. From a personal standpoint, I find it impossible to believe that Cris Redshaw would be unhappy at his family's wishes that 'his' callsign be reissued, as it was reissued to him in the first place!

Peter Fox, G2YT

. . . I feel that GW3KJW is being incredibly offensive to those of us who have the callsigns of greatly missed, close relatives. I have been licensed for two years and after passing my Morse code test in 2002 I was granted my late grandfather's callsign, G3BV (GW3BV). My callsign GW3BV is greatly cherished by me as a way of remembering my grandfather. As I type there are photographs on my shack wall of a very young G3BV at work in his shack. This call was taken not out of vanity, but out of respect for a man I love and miss very much. I will probably never have the technical skill or know-how that my grandfather had, and no doubt in GW3KJW's view I am a poor operator, yet I feel great pride in having this callsign and always aim to the degree of technical skill that my grandfather possessed.

To suggest that this practice be stopped for all, that there is a vanity aspect and, worse, something morbid about having my callsign, is upsetting and "nauseating" in the extreme. I would be delighted if in 40 or 50 years the callsign GW3BV lives on in my grandchildren, and I will be just as happy if my daughter takes my first callsign, MW1SZC, as it consists of her initials.

Yes, a callsign is as personal as a given name, but how many people have a parent or grandparent's name as their middle or first name? Please RSGB and RA tighten the rules on reissued callsigns, only close relatives, but don't give in to GW3KJW and remove the option altogether.

Quentin Cruse, GW3BV

[The RSGB recognises that there are two sides to every story but had received a large number of complaints and therefore asked the RA to formulate some rules to prevent abuse of the system. If the next of kin approaches an amateur with the wish that a callsign is taken over by a relative or family friend, there can of course be no objection to that callsign being reissued - Peter Kirby, G0TWW, General Manager.*]*

The new exam structure

I read with dismay Peter Kirby's reply to Andy Talbot's, G4JNT, letter. I too believe that the insistence to complete a course is not necessary. When I became interested in the hobby I was working long hours to support my young family, an impossible situation to be able to commit myself to a club course on a regular basis. I spent many an hour teaching myself from the *RAE Manual*, mostly at times when the clubs would have been long closed.

My career has nothing to do with radio or electronics but I managed to achieve two distinctions in the exam and I hope become an average operator. If compulsory courses had been in existence at this time my call would certainly have been held by someone else and my son would not have obtained his licence some years later as a consequence of this.

Is Peter Kirby saying that all of us previously licensed are poor operators for not taking a course, or perhaps he thinks we are superior in that we can achieve what the new entrants into our hobby are incapable of? Please remember this is a hobby with the emphasis on self-training, not compulsory training courses.

I believe the three-tier system is a good system since it allows for a staged progression through the hobby, but without the compulsion of courses. If someone has the ability to self train themselves then I see no reason why he / she shouldn't be allowed to, especially as the exam is the mechanism which is supposed to determine your required knowledge of the hobby, or I assume a ticket would be supplied with course completion.

I have heard many amateurs say they would not sit and be taught by someone who is inferior in technical knowledge (which is probably the case if they are electronics professionals) and I myself feel that I would resent being taught how to wire a plug.

B P Young, GW6TYO (ex-MW0TYO)

. . . I was pleased to see Andy Talbot open up the 'Competent Candidate' debate in December's *RadCom*. As a Foundation and Intermediate instructor this is something that has troubled me for some time. A 'competent candidate' in licence-exam parlance is someone who wants to become a radio amateur with a full licence and who already has most of the skills needed, normally because they are a professional engineer or similar. We need these people. They provide the resource that lets the RSGB argue sensibly on subjects such as power line communications and spectrum allocations.

The three licence scheme is doing a fantastic job of making amateur radio accessible to a greater number of people. At the same time, though, it has made it more awkward for a competent

LETTERS PUBLISHED in 'The Last Word' do not necessarily reflect RSGB policy. It is a condition of publication that all letters may be edited for grammar, length and/or clarity. Due to the limited space available, please keep letters as short as possible. Letters not published in RadCom may be published on the RSGB members-only website at rsgb.org/membersonly/lastword 'Last Word' letters may be e-mailed to **radcom@rsgb.org.uk**

candidate to obtain a full licence. That is simply a factual statement. It is now necessary to take three exams rather than one. If we make the licensing process more troublesome, we attract fewer competent candidates and vice versa. That is also a factual statement. It is, after all, the logic behind the introduction of the three licences in the first place.

Why not address all of this by having a 'competent candidate exam' that lets someone obtain a full licence in one sitting? It wouldn't be difficult to do - it could just contain questions from all three current exam papers. It is really just a way to avoid the bureaucracy of having to take three exams in quick succession. It would save the candidate's time, the instructor's time and the RSGB's time. That way we have the best of both worlds. If someone wants to progress through three licences because that suits them best then fine. If not, why force them?

Duncan Westland, M0DJW

[My reply to Andy Talbot's letter created quite a stir and it is refreshing to enter into a healthy debate. I have met many amateurs who have told me that on passing the RAE they felt ill-equipped to take to the bands; 'all theory and no practical' being the main problem. The new examination structure is designed to ensure that future amateurs are confident to operate from day one, know the rules and are safe and competent. May I close the debate by saying, rather tongue in cheek, that you can have a degree in mechanical engineering and build your own car, but you still need to take the driving test before you can drive it! - Peter Kirby, G0TWW, General Manager.*]*

What became of GMT?

We Brits have long been well known for resolutely maintaining all things British. Dare anyone even suggest scrapping the pound in favour of the euro and all hell would break loose. Conversion to metrication in the UK was begun on 1 January 1969 and was expected to be completed in all sectors by 1975. After nearly 35 years most of the population still refuses to adopt it. So why, without a murmur of protest, have most of you rolled over, kicked your heels in the air and allowed Greenwich Mean Time to be replaced by UTC (Universal Co-ordinated Time)? The RSGB among many organisations has forsaken GMT in favour of UTC.

Why has this happened? I haven't seen or heard of any directive from the EEC or elsewhere demanding conversion to UTC. It seems to have just been assumed, perhaps as a matter of fashion. Both time standards are based on the Greenwich meridian and for amateur radio purposes UTC is no more accurate: your shack clock is only going to be correct to the nearest second or two. Even radio-controlled clocks timed by signals from Rugby or Frankfurt will be subject to propagation delays of the radio waves plus whatever logic circuitry delays exist between the caesium atomic standard and your clock readout. Thus your shack clock, though keeping time to five seconds in a billion (10 to the minus 9) will be some fractions of a second behind true UTC.

The BBC World Service is one of the few organisations continuing to use GMT. What can be done? If you want a New Year's resolution you can easily keep, why not join me and resolve to resurrect GMT?

Denzil Roden, G3KXF

Club publicity

I am pleased to enclose details of the Kidderminster & District ARS's activities for the first three months of 2004, for inclusion in *RadCom* and on GB2RS. May I thank you for the publicity over the past year - we always seem to appear, without fail, in *RadCom* and our news is broadcast via GB2RS regularly. This has proved very valuable in publicising our activities alongside local press coverage.

Phil Harris, G4SPZ, Publicity Manager, KDARS

Choke baluns and the Spider Beam

Congratulations to DF4SA for his superb work on his Spider Beam (*RadCom* November 2003). A minor point on baluns: DF4SA rightly states that a choke balun made from an arbitrary coil in the coax feedline may give mediocre results. But highly satisfactory results can be obtained by winding the coax on a former in the manner of a proper solenoid coil. I have lost my reference to the experimental work on this, but it is certainly true in practice.

Barry 'Baz' Kirkwood, PhD, ZL1DD

Minimise risk, yes - but it is still there

As an experienced hill-walker and rock-climber I would like to add a warning to the words of the Summits on the Air (SOTA) management team (*RadCom* 'News' November 2003) regarding the dangers of the mountains following the tragic death of Richard Baker, M3RWB. The Arans are not usually considered to be a particularly hazardous range. Being essentially a north-south ridge with largely grassy western slopes and craggy eastern slopes they do not lend themselves to circuits: you ascend, walk the ridge, walk back, and descend - no chance of getting lost, no particular difficulty, but great views.

About 25 years ago I was doing this ridge with a companion on a bright but breezy day. We traversed the ridge and started back. Near the summit of Aran Fawddwy and without any warning the wind instantly increased to a degree of violence which I had never experienced before (or since!) We were both blown off our feet and I was actually rolled along the ground until I fetched up against a rusty old fence guarding the drop to the eastern crags. Whilst lying there trying to gather my wits I watched pebbles the size of 50p coins being lifted and blown past me and over the edge. The wind ceased as quickly as it had come and we got to our feet and retired from the hill as fast as we could go. Without that rusty old fence I doubt that I would have survived the experience, and with all my experience I could not have predicted that hazard and avoided it - like rockfall it struck without warning and was survived by chance alone.

The moral, if there is one, is that with experience and good tuition you can minimise the risks inherent in venturing into the mountains, but you cannot entirely eliminate them. Despite the words of the SOTA management team (and this is not a criticism but a gloss) you do not travel safely in the mountains. You travel with as much control of the risks as you can reasonably achieve, but they are still there. You judge the pleasure to be worth the risks, and you continue. It's as simple as that.

Brian Carter, G8ADD

Ignore the 'Lids'

Is it not strangely indicative of the times we live in now, that down through the years countless columnists writing for amateur radio publications have cried out for restraint and 'common courtesies' by those who, for reasons best known to themselves, simply cannot resist the temptation to treat the pursuit of DX as a life and death struggle! A case in point is the plea from G3XTT ('HF', *RadCom* November 2003). However welcome his observations are, I think most of us know that unfortunately it ain't going to make much of a difference - such cries for responsibility and respect for other users, whether they be in a contest or not, usually fall on stony ground. You see, some people just can't help themselves - they just gotta press that mic button or thump that Morse key whatever the outcome. The only recourse is to ignore the actions of what is becoming year by year a much larger minority.

Ray J Howes, G4OWY

GD / MD activity

I read with interest the short piece in Club & Regional News (*RadCom* November 2003) regarding the Isle of Man Radio Society's 100% success in its Foundation Licence course, to which may I add my own hearty congratulations to both the Society and Candidates. Maybe with such an influx of potential licences on the IoM, we may see an upturn in VHF activity from the island, particularly during contests? I am a member of the VHF contest team of the Torbay Amateur Radio Society, and we have commented in the past with regard to the apparent inactivity from the island over the last couple of years.

I look forward to hearing MD3 down here in the South West, maybe during the short VHF activity contests, and perhaps the longer ones next year.

Colin Coker, G4FCN

WATERS & STANTON

GENERAL ENQUIRIES: 01702 206835/204965
FREEPHONE ORDERLINE: 08000 73 73 88

AUDIO

HEIL GOLDLINE HAND MICS

Goldline professional quality dynamic microphone. Three versions available, GM-4 with Studio & HC-4 elements, GM-5 with Studio & HC-4 elements and GM-V Vintage Goldline with Vintage Studio high impedance element, for older valve rigs such as Drake & Collins. Includes stand threaded holder. Requires CC-1 adaptor £29.95.

GM-4	Goldline HC-4 hand mic	**£129.95**	B
GM-5	Goldline HC-5 hand mic	**£129.95**	B
GM-V	Goldline Vintage Hi-z hand mic	**£159.95**	B

SPECIAL OFFER!

Free
SB-1 Boom worth £38 with every Goldline Mic sale.

HEIL CLASSIC DESK MICS

The Heil Classic studio quality microphone, exact replica of the 1930's RCA 74B type of broadcast microphone. Inside it has the benefit of modern technology. Two inserts are provided, one for broadcast studio quality and a choice of one other Heil insert. Includes base stand, soft-touch PTT back panel switch and cover for microphone. Requires CC1 adaptor.

HCL5	Classic retro-look HC-5 desk mic	**£259.95**	B
HCL4	Classic retro-look HC-4 desk mic	**£259.95**	B
HCLic	Classic retro-look IC desk mic	**£259.95**	B

HEIL TRAVELER HEADSETS & BOOM MICS

PORTABLE OR MOBILE

The Traveler lightweight single side headset with boom mic. Many models to choose from. Supplied with an interface cable. Choice of extra interface cables, for modular or 8-pin.

HST-817	Traveler single side headset for FT-817	**£89.95**	B
HST-706	Traveler single side headset for IC-706	**£89.95**	B
HST-IC8	Traveler single side h/set for ICOM 8-p	**£89.95**	B
HST-K8	Traveler single side h/set for Kenwood	**£89.95**	B
HST-KM	Traveler single side h/set for Kenwood	**£89.95**	B
HSTA-817	Extra interface cable for FT-817	**£24.95**	B
HSTA-706	Extra interface cable for IC-706	**£24.95**	B
HSTA-IC8	Extra interface cable for IC 8-pin	**£24.95**	B
HSTA-K-M	Extra interface cable for K mod	**£24.95**	B
HSTA-K-8	Extra interface cable for K 8-pin	**£24.95**	B

HEIL PROSET HEADPHONES & BOOM MICS

Top quality headphones with boom microphones. Choice of mic. elements, HC-5 ideal for "rag chewing" or HC-4 for DX communications. Icom models fitted with IC element. Choice of AD-1 (£16.95) interface leads for most makes of rigs.

PRO-SET-PLUS	Large H/phones with HC-4 & HC-5	**£199.95**	B
PRO-SET-PLUS-IC	Large H/phones with IC & HC-4	**£219.95**	B
PRO-SET-4	Large H/phones with HC-4 element	**£129.95**	B
PRO-SET-5	Large H/phones with HC-5 element	**£129.95**	B
PRO-SET-IC	Large H/phones with ICOM element	**£149.95**	B

HEIL Quiet Phones NEW

Active Noise Cancelling Headphones

Ambient noise drops away as you switch NR unit on. Amazing reduction! Fitted 3.5mm / 1/4" jacks. Requires 1xAA battery.

£99.95 B

AUDIO

WATSON SP-2000 SPEAKER £19.95 A

No where to place your mobile speaker then consider the SP-2000. This can be easily clipped out the way to your sun visor. 8 Ohms, 1W max, 3m lead, 3.5mm mono plug

WATSON SP-160 SPEAKER £9.95 A

Low cost mobile speaker with adjustable mobile bracket. Also useful in the shack for base rigs. 8 Ohms, 1.5W max, 3m lead, 3.5mm mono plug

WATSON HP-100 HEADPHONES £19.95 B

Excellent lightweight communication headphones with tailored response ideal for the modern tranceiver or receiver.
8 Ohms 200-9,000Hz, adjustable headband, 3.5mm stereo plug, 1/4" stereo adaptor

CREATE ROTATORS

Japan's Rugged Rotators from CREATE

RC5-1 Ideal for 3 element HF beams, Break torque 80kg/m, vertical load 400kg, Horizontal load 800kg. Mast size 48-63mm. Flat mounts. **£349.95 C**
MC-2 Optional lower mast clamps **£59.95**

RC5-3 Similar to the RC5-1, but control box has adjustable preset positions. Motor is identical **£449.95 C**

RC5A-3 Ideal for larger 4+ element HF beams, Break torque 200kg/m, vertical load 700kg, Horizontal load 1000kg. Mast size 48-63mm. Flat mounts. **£649.95 C**
MC-2 Optional lower mast clamps **£59.95**

SECONDHAND LIST

Glenrothes (Tel: 01592 756962)

TS-2000 HF/6m/2m/70cms	£1275.00
FT-847 HF/6M/2M/70cms As New!	£899.00
IC-706 MK2 Hf - 2m	£485.00
FT-840 HF Transceiver	£440.00
FC-20 AUTO ATU	£159.00
FT-1000MPAC HF Transceiver	£1299.00
IC-R8500 Receiver As New	£850.00
LINCOLN 10M Multimode	£150.00
IC-718 HF Transceiver	£399.00
R-2000 G.C Receiver plus VHF convertor	£295.00
IC-72 HF Receiver	£385.00
IC-R71E All mode receiver	£375.00
WIN 1550i Computer receiver	£275.00
LOWE HF-225 HF Receiver.	£150.00
TM-G707E 2m/70cms	£195.00
TR-751E 2M SSB/FM	£199.00
TM-751E 2M SSB/FM	£235.00
FT-1500M 2m	£130.00
IC-T8E 6/2/70 Handy	£199.00
TS-711E 2m Base Multimode	£375.00
IC-T3H 2M Handy Transceiver	£110.00
FT-11R 2m Handy.	£90.00

Matlock (Tel: 01629 832375)

AR-7030 HF Receiver	£475.00
IC-R75 HF Receiver	£475.00
IC-726 HF Transceiver	£395.00
IC-2000 2m Multimode	£130.00
AT-180 IC-706 Auto ATU	£245.00
HL-37VSX 2m Linear	£95.00

Hockley (Tel: 01702 204935)

IC-2100H 2m Mobile	£169.00
TM-451E 70cm FM mobile	£249.00
TM-V7e Dual band mobile	£279.00
TR-751E 2m Multimode	£329.00
DJ-G5 Dual band handy	£169.00
FT-11R + DTMF 2m handy	£119.00
IC-R71E HF receiver	£329.00
Lowe HF-150 receiver	£199.00
Lowe HF-225 receiver	£249.00
Lowe HF-250 receiver	£329.00
Sony ICF-SW55 receiver	£179.00
Sony ICF-SW100E	£115.00
IC-R7000 Wideband receiver	£449.00
WR-1550e PC receiver	£329.00
AR-8200 Scanner	£249.00
AR-8200II Scanner	£299.00
IC-R2 Scanner	£99.00
VR-500 Receiver	£150.00
SG-230 Auto ATU	£289.00

Phone respective branch for more information

SGC - All-bands Auto ATU's

Wire Antenna

Remote ATU

Just attach wire to ATU and feed with 50 Ohm coax. You need a 12V feed at approx 500mA. ATUs are weather resistant, so can be remotely mounted.
All bands - No Hassle!

SG-237

1.8 - 60MHz. 3 - 100W pep (40W CW). Min wire length, 7m. 50 Ohm feed. Needs 12V at approx 300mA.

£299.95 c

SG-231

1 - 60MHz. 3 - 100W pep (50W CW). Min wire length, 7m. 50 Ohm feed. Needs 12V at approx 900mA.

£359.95 c

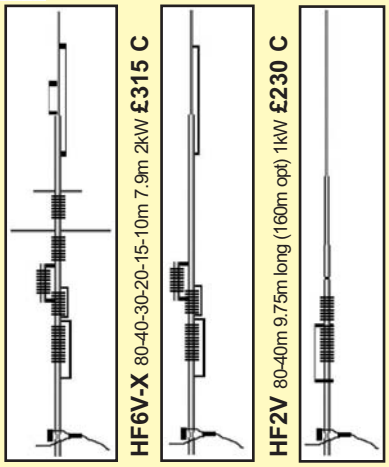
SG-230

1.6 - 60MHz. 3 - 200W pep (80W CW). Min wire length, 7m. 50 Ohm feed. Needs 12V at approx 500mA.

£359.95 c

Butternut Antennas from Bencher inc, USA

HF9V-X 80-6m 7.9m long 1kW PEP **£365 C**
HF6V-X 80-40-30-20-15-10m 7.9m 2kW **£315 C**
HF2V 80-40m 9.75m long (160m opt) 1kW **£230 C**



CPK Counterpoise Kit Acts as missing half of dipole, allows HF6V & HF9V to operate more efficiently. Bolts onto base, each side 2.5m. **£129 C**
STR-II Resonant Radial Kit 4 radials for 40, 20, 15 & 10m. Each radial is 9.5m long **£115 C**
RMK-II Roof Mount Kit Includes tripod/STR-II/hardware **£155 C**
TBR-160S 160m Resonator Kit **£115 C**
A17-12 17 & 12m adaptor for HF6V-X **£115 C**
A-6 6m Resonator for HF6V-X **£15 B**
30-MRK 30m Resonator for HF2V **£89 C**
TLK Top Loading Kit Increased band width on 80 & 160m, 4x7.62m wires + fixing bolts. For HF2V **£38 B**

WEB ORDERING www.wsplc.com

PRICE MATCH

THE ONLY THING WE WON'T DISCOUNT • CUSTOMER SERVICE

WATSON W-25XM PSU NEW £99.95 B

A compact sized switch mode power supply that will run your base HF station with ease. *Output voltage 10-18V *Output current 22A/25A peak *Over current protected *Switchable dual Voltage input

WATSON W-25SM PSU £79.95 B

Very popular budget switch mode power supply. *Output voltage 13.8V DC *Output current of 22A (25A peak) *Front panel output terminals *Over current & voltage protection *Quiet operation

WATSON W-25AM PSU £89.95 C

DC power supply for the shack & esp. for use with 100W transceivers. Separate voltage and current meters. *Output voltage 0-15V DC *Output current of 25A (30A peak). *3 sets of output terminals *10A cigar socket. *Over current protection

WATSON W-5A PSU £29.95 B

DC power supply for the shack and low power QRP transceivers. *Output voltage 13.8V DC *Output current of 5A (7A peak) *Front panel output terminals *Over current protection

MANSON EP-925 PSU £99.95 C

A general purpose 3-15V DC, 25A (30A peak) power supply able to provide the needs of the modern 100W HF transceiver. *Dual analogue meters *Over current protection *Large power terminals for rigs *Quick snap connectors for ancillaries

AVAIR VSWR Meters

AV-200 £49.95 B

Ideal for HF and VHF operation. It features high power handling up to 400W * 1.8-180MHz * 5W, 20W, 200W, 400W * Av or PEP

AV-400 £49.95 B

Ideal for VHF and UHF operation. It features high power handling up to 400W * 140-525MHz * 5W, 20W, 200W, 400W * Av or PEP

AV-600 £69.95 B

Two sensors used for HF and VHF/UHF operation. * 1.8-160MHz, 140-525MHz * 5W, 20W, 200W, 400W * Av or PEP

NEW SGC Master Antenna Controller

MAC-200 £339.95 C

* Automatic ATU
* 1.8-60MHz
* 5-Way Selector
* Coax or Balanced
* Long Wire

The MAC-200 will work with any HF transceiver up to 200W output. It has 3 outputs for coax and one each for wire and balanced - all switch selected. 168 revolving memory bins lets it remember for quick QSY. With an impedance range from 2 - 5000 Ohms, and built-in VSWR and power metering, it is all you are ever likely to need! Requires 12V DC.

WEST MOUNTAIN RIGBLASTERS

RIGblaster pro	Data interface 8-pin/mod, Cd & cables	£299.95	B
RIGblaster Plus	Data interface 8-pin/mod, Cd & cables	£139.95	B
RIGblaster M8	Data interface 8-pin, software & cables	£109.95	B
4T8-KIT NEW	Conversion Kit from M8 or Plus to 4pin	£19.95	A
RIGblaster nomic8P	Data interface 8-pin, software & cables	£59.95	B
RIGblaster nomicRJ	Data interface RJ, software & cables	£59.95	B
FT100-CBL	Adapts all units to FT100 input	£12.95	A
RB-CD	Standard RIGblaster program CD	£9.95	A

FREQUENCY COUNTERS

WATSON

The **FC-130** is an ideal frequency counter for the shack, mobile or portable use. Supplied complete with Ni-Cads, charger and telescopic whip.

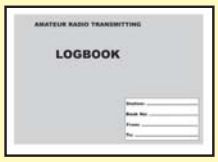
Super Searcher	RF finder & freq. cnter 10MHz-3GHz	£99.95	B
Super Hunter	Frequency counter 10Hz-3GHz	£149.95	B
Hunter	Frequency counter 10MHz-3GHz	£59.95	B
FC-130	Frequency counter 1MHz-3GHz	£59.95	B

OPTOELECTRONICS

Top-of-the-range product from Optoelectronics, the **X-Sweeper** is a fully featured nearfield receiver that displays frequencies analogue signals in spectrum format on a 64x128 graphical display. It has 20 memory banks storing 100 freqs in each.

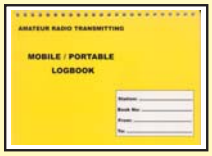
X-Sweeper NEW	Nearfield Receiver 30MHz-3GHz	£1699.95	C
Xplorer	Freq. cnter / CTCSS/DTMF decode	£849.95	B
Digital-Scout	Digital Freq. counter 60MHz-2.6GHz	£529.95	C
Scout	Freq. finder 10MHz-1.4GHz	£379.95	B
Mini-Scout	Freq. finder (no memories)	£199.95	B
Micro-Counter	Micro freq. counter 10MHz-1.2GHz	£119.95	B
Cub	Mini counter 1-2.8GHz	£134.95	B

TRANSMITTING LOGBOOK £4.99 A



Traditional Logbook for Radio Amateurs, A4 spiral bound for ease of use plus updated Prefix List and room for extra notes. A logbook is a legal requirement for any radio station.

MOBILE LOGBOOK £4.99 A



You've asked for one so here it is - the Radio Amateurs Mobile/Portable Logbook. A5 size, it also contains relevant repeater information. A mobile logbook is not a legal requirement.

Coax Switches

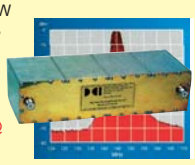
CS-600 2-way coax switch rated over 1kw (HF) and up to 600MHz @100W. Fitted SO-239 sockets. **£12.95 A**

MFJ-1704 4-way coax switch rated over 1kw (HF) and up to 600MHz @100W. Fitted SO-239 sockets. **£69.95 A**

DCI High Performance Bandpass Filters

Razor sharp VHF & UHF filters

Simply place in antenna feed and clear up reception problems related to strong out of band signals. These are commercial grade filters with up to 68dB rejection.



DCI-145 2M Band Pass Filter. 200W handling. -68dB @ 136MHz, -55dB @ 155MHz. SO-239 **£99.95**
DCI-145-2HN "N" sockets **£109.95**

DCI-435 70cm Band Pass Filter. 200W. -47dB @ 415MHz, -50dB @ 455MHz. "N" sockets. **£119.95**

5 WAYS TO BUY WITH CONFIDENCE

1 Scotland & Borders
WATERS & STANTON @ JAYCEE
20 Woodside Way, Glenrothes, Fife, KY7 5DF
Tel:01592 756962 Fax:01592 610451
closed mondays

2 Midlands & North
WATERS & STANTON @ LOWE
Bentley Bridge, Chesterfield Rd, Matlock, Derbyshire, DE43 5LE
Tel:01629 832375 Fax:01629 580020

3 South
WATERS & STANTON HEAD OFFICE
Spa House, 22 Main Rd, Hockley, Essex, SS5 4QS
Tel:01702 206835/204965
Fax:01702 205843

4 WEB MAIL ORDER

www.wsplc.com

5 TELEPHONE MAIL ORDER

FREEPHONE
08000 73 73 88

FT-8800E

144/430 MHz Dual Band

- The Ultimate Dual-Band Mobile
- Independent Two-Channel Operation
- User Programmable Mic Keys
- Wide Band Receive
- Remote Head Mounting

TWO NEW STARS

VX-2E

144/430MHz Wide Band RX

- The World's Smallest Dual-Band
- High Output Power
- Over 1300 Memories
- Ultra Thin Lithium-Ion Battery
- Wide Band Receive
- Wires™ Internet Linking

YAESU
Choice of the World's top DX'ers

Visit us on the internet! http://www.yaesu.co.uk