Inside: the RSGB Annual Report for 2001-2002

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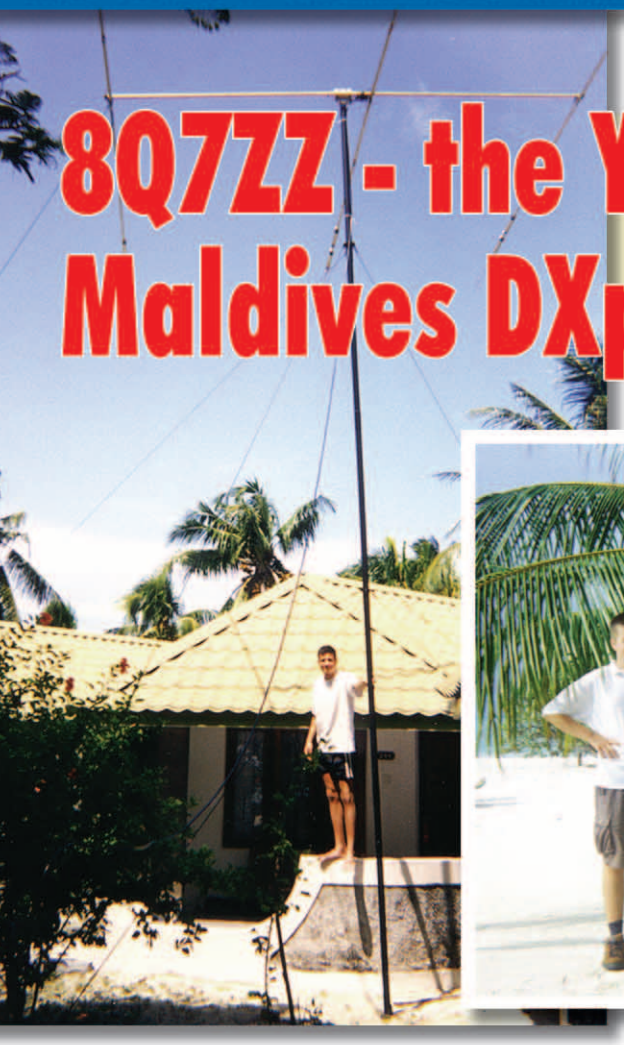
8Q7ZZ - the Youngsters' Maldives DXpedition



Build a Simple Remote-Reading Magnetometer

RSGB National Field Day 2002 - Full Report and Results

The Watson PBX-100 HF Portable Antenna Reviewed

WATERS & STANTON

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NEW

336 PAGES

JUST PUBLISHED

NEW 2003 RADIO COMMUNICATIONS GUIDE £2.95 carr. £1.25

PRICE MATCH

FT-1000MP MKV FIELD £2299

NEW

YAESU FT-897

NEW

100W HF 50W 2m and 20W 70cm
Plus 20W on (optional) Internal Battery

Available November

Power Tanks

FD-7021 **£24.95 B**

4 Ah supply with built-in 3/6/9V output plus 12V DC. Has built-in lantern and computer controlled battery state. Compact size: 180w x 85d x 210h mm, 3kg. Shoulder strap.

AC chargers included

FD-1217 **£59.95 B**

17 Ah supply with max currant of 250 Amps. Big enough to run a 100 Watt HF radio. Hunky enough to jump-start your car! Key operated for safety. 250w x 140d x 350h mm. 8kg.

UK's largest Selection of HF Transceivers

We will price match on any currently advertised in-stock items that are of UK origin. Beware of none UK sourced items. If the dealer cannot get supplies from the UK distributors, then there may be a reason! All our gear is UK sourced with full manufacturers warranties.

29 YEARS in THE BUSINESS
WINNER of KENWOOD 2002 AWARD
YAESU's LARGEST UK DEALER
PLAY SAFE, GO TO W&S

ICOM HF Transceivers

IC-756-PRO	160m - 6m 100W	£1799.95 C
IC-756-PROII	160m - 6m 100W 12V	£2495.95 C

IC-756-PRO II
The flag ship of the ICOM range. Lovely big easy to read display

SP-20	Speaker with filters	£164.95 B
SP-21	Speaker for IC-756	£74.95 B
SM-8	Base microphone	£129.95 B
SM-20	Base microphone	£144.95 B
PS-125	Icom tcvr PSU	£295.95 C
IC-7400	160m - 2m 100W 12V	£1499.95 C
IC-706	160m - 70cm Tcvr with DSP 12V	£849.95 C
IC-718	160m - 10m 100W 12V	£649.95 C

Yaesu HF Transceivers etc.

FT-1000mkV	160m - 10m 200W 230V	£2899.95 C
VL-1000	Quadra HF - 6m 1kW linear	£3999.00 D
FTV-1000	6m transvertor 200W	£799.95 C
FT-1000 Field	160m - 10m 100W 230V	£2199.95 C
MD-200ABX	Desk mic	£249.95 B
MD-100ABX	Desk mic	£110.00 B
FT-920AF	160m - 6m 100W 12V	£1099.95 C
FT-847	160m - 70cm 100W etc 12V	£1149.95 C
FT-817	160m - 70cm 5W Batt.	£595.95 B
FT-840	160m - 10m 100W 12V	£499.95 B

FT-817
All bands & All modes gives you a totally portable HF DX or VHF/UHF station. *Ours includes* battery and charger.

Kenwood HF Transceivers etc.

TS-870S	160m - 10m DSP 100W 12V	£1349.00 C
PS-33	AC power supply	£199.95 C
PS-53	AC power supply	£229.95 C
MC-60A	Desk mic	£117.95 B
MC-80	Desk mic	£72.95 B
MC-90	Desk mic	£187.95 B
TS-570DGE	160m - 10m 100W 12V	£849.00 C
YK-88CN-1	270Hz CW filter	£61.95 B
YK-88SN-1	1.8kHz SSB filter	£61.95 B
TS-50S	160m - 10m 100W 12V	£599.00 C
TS-2000	160m - 70cm <100W	£1695.00 C
TS-2000X	150m - 23cm <100W	£1999.00 C
TSB-2000	Computer controlled	£1549.00 C
RC-2000	Remote head for TS-2000	£199.95 B
ARCP-2000	TS-2000 software	£44.95 B

Waterproof 3-Band Radio 6m - 2m - 70cm **Yaesu VX-7R** **NEW**

The new robust handy from Yaesu

£329.00

MFJ-971 QRP Portable Antenna Tuner

The ideal QRP ATU to have on hand, a compact 160 x 150 x 60 mm.

£99.95

HL-50B Amplifier

£265.95

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

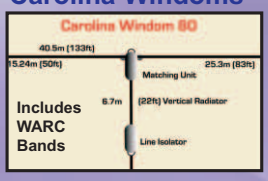
Triple Mag Mounts *Upgraded*

£39.95

Ideal for HF whips and large VHF whips. Amazing adhesion even at 70mph! SO-239 or 3/8" available

W-300T = 3/8" **W-300S** = SO-239

Carolina Windoms - DX from a wire!



Outperforms G5RVs and "Del-Boy" designs! The only antenna to give both high and low angle radiation even at 20ft above ground. Rated at 1kW, there's a model for you.

CW-160	160-10m 80.1m	£139.95 C
CWS-160	160-10m 40.5m	£134.95 C
CW-80	80m-10m 40.5m	£99.95 C
CWS-80	80m-10m 20.1m	£119.95 C
CW-40	40m-10m 10.3m	£94.95 C

Many more in our 2003 Radio Communications Guide 336 pages!
£2.95 plus post

FT-817 ADD-ONS

One Plug Power
1.8Ah pack module
80% capacity increase!

£79.95

One Big Punch
Speech processor. Dealer fit

£59.95

One Board Filter
Collins 500Hz & 2.3kHz dual filters fitted by us.

£259.95

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WE DON'T DISCOUNT..... THE ONLY THING WE CUSTOMER SERVICE

YAESU

FT-1500M 2m FM Mobile £159 C

SPECIAL OFFER SAVE £70

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

KENWOOD

TM-D700E 2m + 70cm FM £449 C

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

TM-G707E 2m + 70cm FM £289 C

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

TM-V7E 2m + 70cm FM £359 C

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

ICOM

IC-207H 2m + 70cm FM £279 C

A great budget class radio for VHF & UHF use.

IC-2800H 2m + 70cm FM £419 C

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

IC-2100H 2m FM Mobile £229 C

Rugged design with switched receive filters 12.5/25kHz

IC-910 2m + 70cm All Mode £1299 C

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

YAESU

FT-7100 2m/70cm Mobile £299 C

NEW

Just arrived is this new dual band radio that has extended rx. Power is 50/35W. Features dual in-band reception and detachable display (requires YSK-7100).

One of the Best Buys in Dual Bamd Mobile!

AV-40 VSWR METER £39.95 B

- 144 - 470MHz
- Impedance 50 Ohms
- Power 0 - 30W / 0 - 300W switched
- Measures forward / reflected power + VSWR
- Sensitivity 3W for full scale deflection
- Accuracy 10% at full scale
- Sockets SO-239
- Size 85 x 87 x 95mm • Weight 280g

KENWOOD

TH-D7E 2m + 70cm £299 C

DATA COMMUNICATOR

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

TH-F7E 2m + 70cm £249 C

NEW

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.

WEST MOUNTAIN

RIGRUNNER £109 B

The *RIGrunner* 12-way 13.8V DC distribution system with Over voltage, Normal and Under voltage indicators.

LINEAR AMPLIFIERS UK

CHALLENGER II	HF LINEAR AMP10-160m	£1795 D
RANGER-811H	HF LINEAR AMP10-160m	£895 D
DISCOVERY-2	2m LINEAR AMP 400-1000W OUT	£1395 D
DISCOVERY-6	6m LINEAR AMP 50-54MHz 400-1000W OUT	£1395 D
NEW DISCOVERY-70	70CMS LINEAR AMP 430-440MHz 50W IN/ 700W OUT	£1495 D

YAESU

YAESU VX1R 2m/70cm

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

£149 B

W-25SM 25AMP SWITCH-MODE POWER SUPPLY

THE QUIET ONE

£79.95 Carr. £6.00

Switched 230 / 115V AC input and fixed 13.8V output at 22 Amps continuous and 25 Amps peak. Over voltage and over current protected and fan cooled. Measures 180mm (W), 75mm (H) and 190mm (D)

IC-E90 £ASK

ICOM

NEW ICOM IC-E90 HANDHELD + SCANNER

IN STOCK NOW

YAESU VX5R

SPECIAL OFFER

£299

NOW £199

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

THE FAMOUS ZX MONO BAND YAGIS DESIGNED BY ON4UN BALUN MATCHED

Model	Elements	Gain	Price £
ZX10-2	2	6.3dB	£119.95 C
ZX10-3CL	3	9.1 dB	£129.95 C
ZX10-3DX	3	10.3dB	£159.95 C
ZX12-2	2	6.3sB	£109.95 C
ZX12-3	3	9.1 dB	£129.95 C
ZX12-4	4	11.4dB	£169.95 C
ZX15-2	2	6.3dB	£119.95 C
ZX15-3	3	9.1 dB	£159.95 C
ZX15-4	4	11.4dB	£199.95 C
ZX17-2	2	6.3dB	£129.95 C
ZX17-3	3	9.1 dB	£169.95 C
ZX17-4	4	11.4dB	£199.95 C
ZX20-2	2	6.3dB	£149.95 C
ZX20-3	3	9.1 dB	£209.95 C
ZX20-4	4	11.4dB	£269.95 C
ZX20-5	5	12.1 dB	£329.95 C
ZX20-6	6	12.7dB	£549.95 C
GP-3	-	0	£79.95 C
GP-2W	-	0	£79.95 C
GP-3W	-	0	£89.95 C
MN-2000	-	6.1dB	£339.95 C

NEW MINI-BEAM MN-2000

MN 2000 MINI BEAM

- *10 - 15 - 20m 1kW*
- *2m boom length*
- *Longest element 5m*
- *Gain 3.5 - 6.1dBd*
- *F/B ratio 8dB*
- *Mast 50mm max Weight 8kg*

This mini beam is designed to give good forward gain within the minimum of space. It has generous power handling and even with a small garden, the addition of a linear will make this a potent DX combination. But even at 100W you will find a big improvement over simple wire antennas and verticals.

WATERS & STANTON

PRICE MATCH

DISCOUNT CUSTOMER SERVICE THE ONLY THING WE WON'T

Freephone Orders 08000 73 73 88

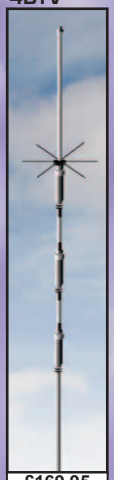
Get in Front with HUSTLER

CARRIAGE CHARGE CODES: A=£2.75, B=£6, C=£9, D: £12

5BTV

£209.95
Carr. £9.00

4BTV



£169.95
Carr. £9.00

HUSTLER®

BASE STATION ANTENNAS

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

These base antennas are very rugged and easy to set up. They can work well at ground level with just a good earth rod. Wire ground radials improve things. For mast mounting you need one quarter radial per band. No other antenna beats them at ground level! GREAT VALUE

HUSTLER Mobile Antennas

Model	Band	Bandwidth	Price
RM-10	10m	150-250kHz	£19.95 B
RM-11	11m	150-250kHz	£19.95 B
RM-12	12m	90-120kHz	£19.95 B
RM-15	15m	100-150kHz	£19.95 B
RM-17	17m	120-150kHz	£24.95 B
RM-20	20m	80-100kHz	£24.95 B
RM-30	30m	50-60kHz	£26.95 B
RM-40	40m	40-50kHz	£26.95 B
RM-80	80m	25-30kHz	£29.95 B

These antennas are are centre loaded so you you need one lower mast section, plus a resonator for each you operate on.

Model	Band	Bandwidth	Price
RM-10-S	10m	250-400kHz	£24.95 C
RM-15-S	15m	150-200kHz	£26.95 C
RM-20-S	20m	100-150kHz	£31.95 C
RM-40-S	40m	50-80kHz	£37.95 C
RM-80-S	80m	50-60kHz	£51.95 C
Lower mast sections			
MO-1	54" (FOLD @ 22")		£33.95 C
MO-2	54" (FOLD @ 27")		£33.95 C
MO-3	54" (NON FOLD)		£26.95 C
MO-4	27" (NON FOLD)		£22.95 C

The base of the antenna (lower mast) is fitted with a standard 3/8" stud. We can supply suitable 3/8" mounts - please ask

LDG USA

LDG AT-11MP £269.95 A

1.8MHz - 30MHz 150W

Requires no data leads - just 12V at 500mA . Just connect between transceiver and antenna. Handles all coax fed systems but with much wider impedance range than internal models. Should be OK for G5RVs etc.

CS-600 £12.95 A

2-way coax switch ideal for use in antenna systems and service departments. Provides a very positive method of switching between two coax systems and offers very low loss.

B1-2K Balun £25.95 A

This balun is designed for dipoles, inverted V antennas, and similar 50 Ohm feed designs.

B4-2K Balun £34.95 B

The B4-2K 4:1 voltage balun is ideal for folded dipoles, delta loops or other medium impedance balance antennas where ATUs are not required.

REM-BAL4 £49.95 B

The REM-BAL4 is is a 4:1 current type balun and is ideal for open wire to coax interfacing, especially external to the operating position. Unlike voltage baluns, current type baluns maintain output balance over a wide range of loads. Can be used with a transmatch.

WATSON

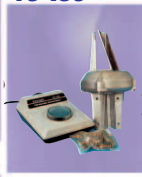
WEP-300B EARPIECES £2.95 A

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

WSA-1 PSK-31 Adaptor £39.95 B

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

YS-130 ROTATORS £79.95 B



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

REVEX L-20 15W DUMMY LOAD £21.95 A

- Range DC - 500MHz
- Power 15W/50W
- VSWR 1.15:1
- Connector PL-259
- 50 Ohms impedance
- Size 34 x 72mm
- Weight 70g

MASPRO VHF/UHF YAGIS

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

Take a look at our prices!

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

To compare with dBi figures, add 2.4dB

WATSON

QS-112 SPEAKER MIC £16.95 A

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

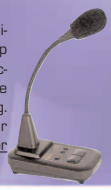
SPM-102 SPEAKER MIC £9.95 A

Incredible value!
Has 4-way 3.5mm plug for VX-1, VX-5, FT-50 and IC-Q7E Handies

Limited stocks.

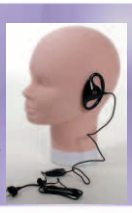
WM-308 BASE MIC £59.95 B

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



WCT-321 LAPEL TALKER £19.95 A

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



AVAIR VSWR OWER METERS

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

AV-200 1.8 - 200MHz 5/20/200/400W £49.95 B
AV-400 140 - 525MHz 5/20/200/400W £49.95 B
AV-600 1.8 - 525MHz 5/20/200/400W £69.95 B
All fitted with SO-239, PEP/RMS readings, 3W for FSD approx.

WATSON

CAPTURE THAT FREQUENCY!

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

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

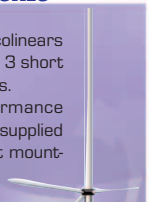
Hunter	10MHz - 3GHz	£59.95 B
FC-130	1MHz - 3GHz	£79.95 B
S. Hunter	10Hz - 3GHz	£149.95 B
S. Searcher	10MHz - 3GHz	£99.95 B

SPY CATCHERS

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

WR-5001 £99.95 WR-5002 £159.95

BASE VHF/UHF VERTICALS



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

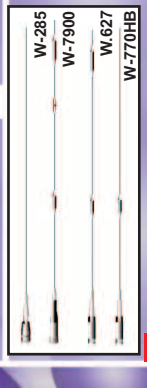
Dual Band 2m/70cms

W-30	3/6dB 1.15m long	£39.95 C
W-50	4.5/7.2dB 1.8m long	£49.95 C
W-300	6.5/9dB 3.1m long	£64.95 C

Triple band 6m/2m/70cms

W-2000	0/6/9dB 2.5m long	£69.95 C

GREAT VALUE MOBILE WHIPS



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

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

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

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

ALL WITH TILTOVER BASES

RSGB Matters

RADIO SOCIETY OF GREAT BRITAIN

THE NATIONAL SOCIETY WHICH REPRESENTS UK RADIO AMATEURS

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

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

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CRETAN HONEYMOON

CATHERINE PEARSON, *née* Liston, of the RSGB HQ GM and AR Secretariat, married Mark on 7 September. The couple spent their honeymoon at Rethymnon on the island of Crete. Catherine was given crystal champagne flutes, a vase, a cheque and gift vouchers from her colleagues and from the Society as wedding presents.

QSL BUREAU NEWS

EDDIE MURPHY, G0VVT, the RSGB QSL bureau sub-manager for the G6 three-letter series of callsigns, says he has thousands of unclaimed cards for G6 stations. He would be grateful if those amateurs could either send him SASEs in order to collect the cards, or contact him to let him know whether or not they wish to collect their cards. Eddie's address is correct in the *RSGB Yearbook*, his phone number is 07881 647 434 or he can be contacted by e-mail to: eddie@g0vvt.freeserve.co.uk

RECEIVER DATA SHEETS AT HQ LIBRARY

RSGB MEMBERS who require information on ex-government communications receivers may contact the Librarian at RSGB HQ. Geoff Wooster, G3YVF, has kindly donated over 100 circuits, information sheets and manuals to the RSGB library for the use of members.

NO ELECTION THIS YEAR

THIS YEAR, there were two vacancies on the Board and eight vacancies on the Regional Council. Since only two candidates have stood for election to the Board, and six candidates for election to the Regional Council (each in different Regions), all candidates are elected unopposed and therefore there is no need for an election this year. Turn to pages 60 - 63 in the *Annual Report* for further details.

BUMPER *RADCOM*

THIS ISSUE OF *RadCom* contains a bumper 116 pages instead of the usual 100. Inside is the Society's *Annual Report 2001 - 2002*, a 20-page pull-out supplement, which includes the end of year accounts and formal notification of the 2002 AGM. This year's *Annual Report* starts on page 49.

REMINDER - DON'T FORGET THAT THIS YEAR'S RSGB AGM WILL BE HELD AT 12 NOON ON 7 DECEMBER AT THE UNIVERSITY OF WALES IN SWANSEA. TURN TO PAGE 67 FOR FULL DETAILS

HQ BUILDING UNDERGOES FACELIFT

DUE TO ESSENTIAL maintenance and refurbishment work at RSGB headquarters, Lambda House, the headquarters' station, GB3RS, will be off the air until spring 2003. The public areas in Lambda House, the Museum and the Library, are also closed until further notice. The bookshop at HQ remains open to visitors.

The builders are in! Scaffolding surrounds Lambda House while the maintenance work continues.

NOTES FROM THE AROS COORDINATOR

BARRY Scarisbrick, G4ACK, the RSGB Amateur Radio Observation Service Coordinator, says that he is receiving heated correspondence regarding operating on parts of 40m. "Most of the problem, I believe, is interpretation of the band plan by some digimode, SSTV and phone operators." Firstly, note that band plans are *not* mandatory in Europe. The band plan on 40m allocates digimodes, including SSTV, 7035 - 7045kHz. However, it also permits phone operation above 7040kHz. "This is where the conflict arises," says Barry. "I have complaints by digimode operators about SSTV interference and vice versa. Also by phone operators of interference from digimodes and SSTV above 7040kHz. Some, apparently, follow phone stations up as far as 7055kHz in some cases, not identifying their callsigns. Some SSTV stations are removing their callsigns to avoid identification. BR68 states that stations should not cause interference to existing communications.

"There are also complaints of stations on 145.800MHz located in Scotland causing deliberate interference to the ISS downlink, contrary to *BR68* page 22 'Notes to the Schedule (c)'. Please note there are no officially allocated frequencies for nets or groups and international allocations take precedence overall."

Barry comments, "It seems to me that we need to review our operating practices. If we are to try to negotiate extra spectrum we need to be seen to be using what we have with self-discipline."

● Barry Scarisbrick, G4ACK, will be giving talks on the work of AROS at the **Poole RS** on **8 November** (details from Phil Mayer, G0KKL, tel: 01202 700903) and at the **Halifax & DARS on 19 November** (details from John, G0BXO, tel: 01422 365025). Barry is now also taking bookings for presentations in 2003, but has had to cut back to one talk per month due to pressure of other work. If your club would like to learn more about the work of AROS, please contact Barry Scarisbrick, G4ACK, QTHR or e-mail: barryg4ack@mbzonline.net

VHF AWARD NEWS

AFTER MANY YEARS away from the award scene Graham Badger, G3OHC (YO), makes a welcome return with a multi-part claim for 50MHz. Graham has been rewarded with a certificate and stickers for 10 and 20 Countries (2-way), and also with certificates and stickers for 25 and 50 squares. Both certificates were endorsed for SSB. He commented: "I've just moved to a new QTH and need something to go on the walls!"

Doug Rolph, G0UYC (NR), achieves the 'magic 500' squares total and also a sticker for 120 Countries (2-way). Malcolm Sadler, M0BHE (TA), gains a sticker for 75squares.

Heath Rees, GW3HWR (SA), tendered a multi-band claim which saw him rewarded with a sticker for 200 Squares at 50MHz and a sticker for 60/15 at 144MHz which included an impressive number of MS contacts.

Continuing to fly the microwave flag is Dave Robinson, G4FRE, although he has to do so as WW2R, he makes successful distance claims at 1296 and 2300MHz.

Congratulations to all recipients.

Details on all VHF, UHF and Microwave Awards can be obtained on receipt of an A4 or A5 SASE from the Awards Manager, Tony Jarvis, G6TTL (QTHR). They are also available on the RSGB website. Queries may also be sent by e-mail to vhf.awards@rsgb.org.uk

Summary of Award Recipients for September

50MHz: 25 Squares: G3OHC. 50S: G3OHC. 75S: M0BHE. 200S: GW3HWR. 500S: G0UYC.

10 Countries (2-way): G3OHC. 20C: G3OHC. 120C: G0UYC.

144MHz: 60Squares / 15 Countries: GW3HWR.

Microwave Distance: 1296MHz: WW2R. 2300MHz: WW2R.

'WHAT IS WEBPLUS'?

RSGB WEBPLUS IS an Internet service for RSGB members only. It contains the very latest news (often posted a few days in advance of the main site), *RadCom* articles, indexes, software, special offers, many links to UK amateurs' web sites - and much more.

How Do I Access Webplus?

Simply type your callsign or RS number, *in lower case*, in the 'user name' field. Then type your six-digit membership number in the 'password' field (your membership number appears on your *RadCom* plastic wrapper each month).

RSGB AT THE TELFORD RALLY

THE RSGB RAN A bookstall at the Telford Rally held at the RAF Cosford Aerospace Museum on 1 September. The RSGB stand was 'parked' underneath WWII bombers, which proved to be a popular location. The bookstall was manned by regional staff Roy, M0RLY, Regional Manager; Arnold, G3FZW; Jim, M0VGG, DRRMs, and Andy, M5ALA, with help from Kath, M1CNY (RRM Region 3) and husband Dave, G7OBW, and Liz, MW0ETU (RRM Region 6) - and especially Zoe, M3LIV, aged 11 (a Liverpool supporter) and Ryan, aged 8, a Manchester United supporter who hopes to become M3UTD having recently passed the Foundation Course.

Behind the counter, from left to right : Arnold Matthews, G3FZW, DRRM; Ryan; Jim Tricklebank, M0VGG, DRRM; Zoe, M3LIV; and Roy Clarke, M0RLY, Regional Manager.

The team ran out of receipts, trade was so brisk! Quite a number of new members joined the Society at the rally. According to the organisers, the rally attracted over 3000 visitors, significantly up on previous years. This was partly due to the good weather and partly due to admission and parking being free, whereas previously charges had been made, the organisers said.

RSGB MEMBERS ONLY OFFERS
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SCRIPT

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

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

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

Take a peek inside.....

...satisfaction guaranteed!

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

Subject: Miracle Whip

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

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

73 Bill W9WCR

RRP

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Front Cover:
The 8Q7ZZ Maldives DXpedition briefly brought the bands alive in August. Expedition leader Mark Haynes, M0DXR, reports on pages 44/45.
Below: Emma, 2E1BVJ, with the Watson PBX-100 portable HF antenna reviewed by her father Richard, G3UGF, on pages 34/35.

RadCom This Month
November 2002

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Details and membership application forms are available from RSGB HQ.

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RadCom NEWS

W&S @ Lowe Open Day

THE W&S Midlands Branch, at Lowe Electronics in Matlock, held its open day on 7 September. Ian Brothwell, G4EAN, wrote to say he had an enjoyable day out at the event: "For the open day a marquee had been erected in the car park and it housed stands by Yaesu, Kenwood and Icom. It also housed the bargains stand, presided over by Peter Waters, G3OJV. My wallet and I found that there really were good bargains on offer. As if this was not enough, the marquee also housed the refreshments table."

Waters & Stanton has recently released a 2003 product guide and catalogue - which features the GB4FUN RSGB amateur radio demonstration vehicle on the front cover. Priced at £2.95 (plus £1.25 P&P) the catalogue runs to 336 pages, and includes four money-saving vouchers.

A Miraculous Contact?

THE WINNER OF the RSGB / Martin Lynch & Sons 'Miracle Whip' competition (see March 2002 *RadCom*, p39) is Roy Charlesworth, DU9/G4UNL, of Koronadal in the Philippines. Roy, who retired to Koronadal with his Philippina wife Marie, made a contact with KU4UC in Fort Valley, Georgia, over an estimated distance of 8794 miles. Roy was using 5 watts SSB to a 'Miracle Whip' as his transmit antenna. The contact was made on 23 April at 1512UTC on 14245kHz and Roy exchanged RS 57/55 reports with KU4UC. Roy wins a Yaesu FT-817 HF - UHF transceiver, worth £799.

'Golden Antenna' Awarded

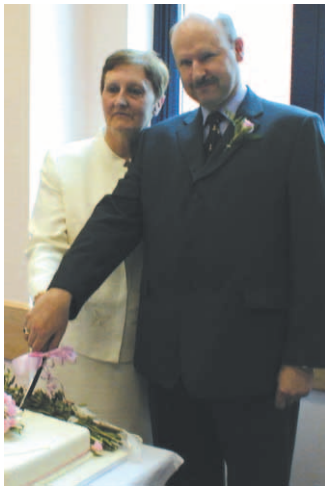
Eric Mackie, 9Z4CP, and Mr Alsmeier, the mayor of Bad Bentheim.

THE 'GOLDEN ANTENNA' award is presented in Germany each year for outstanding humanitarian deeds involving amateur radio. The recipient of the 20th Golden Antenna Award was Eric Mackie, 9Z4CP, from Trinidad and Tobago, who received it for his part in the rescue of the skipper of a Swedish sailing boat. The vessel was in Venezuelan waters when it was attacked by pirates who shot the skipper in the back. After the pirates left, his wife managed to call for help via amateur radio and it was Eric who responded to the call. Thanks to his action the seriously injured skipper was rescued and taken to the St Clair Medical Centre in Trinidad for treatment.

Eric Mackie was presented with the award by the mayor of Bad Bentheim on 23 August. Nominations for the 2003 Golden Antenna award are now being taken until 1 June 2003. Write to: Stadt Bad Bentheim, PO Box 1452, D-48445 Bad Bentheim, Germany, or e-mail: jueriens@stad-badbentheim.de

Illegal CB Fine

STEVEN RICHARDSON, a licensed radio amateur from Barrow in Furness, was fined £500 at Preston Crown Court on 16 September after pleading guilty to having illegal radio equipment available for use. He had been using a modified Kenwood amateur transceiver on 27.555MHz SSB and identifying his station as 26AT000.



Phil Manning, G1LKJ / M3LKJ, secretary of the Royal Naval Amateur Radio Society, married Jackie at St Matthews Church, Fulham on 5 July - Phil's 50th birthday. Congratulations to both.

Youngest Ham?

IN THE September *RadCom* (page 11) we suggested that Niall Topping, M3NWT, *might* be the UK's youngest licensed radio amateur. Now, Paul Wilton, M1CNK / M3CNK, says his son Daniel, M3DPW (pictured below), may be able to claim the title. Daniel passed the Foundation course at the Itchen Valley Radio Club on 13 April when he was 8 years and 6 months old (his birthday is on 12 November). He made his first QSO on 5 May when the licence was received. Daniel operates both HF and VHF and Paul says he has found that Daniel's younger voice can crack the pile-up better than he can. They are very impressed at the friendly reception Daniel has received: even in the middle of 2m contests, amateurs have stopped to chat rather than just give the exchange.

Tin Mine on the Air

What a location! The Geevor Tin Mine, home to M0TRG.

A NEW CLUB STATION - with a difference - is available for use by radio amateurs visiting western Cornwall. The Geevor Tin Mine, overlooking the Atlantic Ocean on the B3306 St Ives to Land's End road, is the largest mining heritage site in the UK. Local people put in a bid to operate the disused tin mine as a museum and heritage centre, with the objective of converting the site into a focal point for the community. The Trewellard Radio Group, M0TRG, set up a station at the mine, with a 99ft sloper antenna installed from the top of the head gear. Visiting amateurs wishing to use the station should contact H Andy Bluer, BEM, G3UUZ (QTHR), tel: 01736 786131.

RadCom NEWS

Happy 100th, G5FH!

AT 0840UTC ON 23 September there was a 'Happy Birthday net' on 3694kHz in honour of G5FH. Many nets wish their members a happy birthday, but this was a very special occasion, as it was Len's, G5FH, 100th birthday. Friends on the net included Winston, G4PEF; Ken, G3DPR; Les, G3RCX; Bill, G6NB; Steve, G0JFM; Tony, G4FTA; Bernard, G4HWY (a youngster at 93) and net controller Ken, G4RSZ (a mere 96 years of age).

Len now lives in a nursing home in the New Forest, but was sounding very well as he responded to the congratulations of the members of the net: there were times when he was heard to be enjoying the attention of three young nurses at his bedside, as much as the net!

ITU Says 'YES'

THE ITU (International Telecommunication Union) has announced the launch of its Youth Education Scheme (YES), a project to assist talented young people to continue their university studies in telecommunications. The ITU, in partnership with leading companies, will provide scholarships for young people who demonstrate that they are at the top of their university classes and who require financial assistance to complete their degrees. More information on YES can be found at www.itu.int/ITU-D/hrd/yes/index.html

A Wet Weekend in Wales?

WOULD YOU LIKE a wet weekend in Wales? Would you like to freeze in the forest? And not even see a rally? West Glamorgan Raynet is helping out again this year with the Network Q Rally, providing radio cover for St John Ambulance and the Red Cross in conjunction with the police, and is looking for more operators. Sounds interesting? The dates are **14 - 17 November** inclusive. Out of pocket expenses will be paid. For further details please contact Mike, tel: 01639 639745 or Graham, tel: 01792 541336.

A 'JU-BEAU-LEE' Weekend for West Midlands Scouts and Guides

Over 400 Youngsters Get an Amateur Radio Experience

THE Staffordshire and West Mercia Scouts 'JU-BEAU-LEE' 2002 Jamboree, celebrating the Queen's Jubilee, took place at the Beaudesert Camp Site in Staffordshire from 23 to 26 August. Special event stations GB2BJJ ('Beaudesert Jubilee Jamboree') and GB2JJB ('Jubilee Jamboree Beaudesert') were operated by members of the Cannock Chase Amateur Radio Society.

Over 400 Scouts and Guides aged 10 to 18 from the West Midlands, Malaysia, Swaziland and Trinidad and Tobago attended the Jamboree and *all* experienced amateur radio as part of their activities. They were sent round in groups of around 10 at a time and all were given the opportunity to send greetings messages, learn about amateur radio, the phonetic alphabet, Q-code, experience sending Morse, and how to tune a radio and find stations, all of which could count towards their Radio Communicator's badge. Each Scout or Guide who sent a greetings message was awarded a Certificate of Achievement by the club which was presented, on the first day, by Roy Clarke, M0RLY, the RSGB Regional Manager for the West Midlands. Several youngsters were keen on becoming licensed amateurs, and were given details of clubs and the Foundation Courses near where they live. Interestingly enough, it was the Guides who seemed most interested, asking questions, sending Morse on the practice key and being the most keen to send greetings messages.

Gary Boxall, 13, from Wolverhampton sending a greetings message to Marion, SP6CDP.

The station operators included Charles, G3NEU; Alec, G4ICE; Com, G4EVP; RSGB Deputy Regional Manager Arnold, G3FZW; Arthur, G4PFM; Ken, G4RJD; Brian, G8VPR, and Colin, G3URL. The antenna farm included a three-band minibeam atop a 60ft trailer tower kindly loaned by Strumech.

Beaudesert is the former home of the Marquess of Anglesey, and is located on Cannock Chase. In addition to amateur radio, other activities at the weekend included: archery, abseiling, canoeing, coracle sailing, mountain biking, rifle shooting and a royal carriage race.

London Show Relocates

AFTER 12 YEARS and 18 shows, the organisers of the London Communication & Computer Show finally had to wave goodbye to 'Picketts Lock' after their spring 2002 event. The venue has now closed down and is soon to be redeveloped as an indoor running track. The new location of the London Show is Wodson Park, which is at Ware in Hertfordshire. Being a few miles north of London, travelling by car to the new venue should be more comfortable. The organisers say that Wodson Park is rather like Picketts Lock, except newer and in nicer surroundings. As is customary, visitors to the show will find various trade stands, special interest groups, an RSGB bookstall and information stand, a bring & buy stand and on-demand Morse tests. For family members, the town of Ware with its museum and shopping centre is a short walk away, and there is a kiddies' playground on-site.

The first London Show at Wodson Park will be taking place on **23 / 24 November** and the dates for the spring London Show have already been confirmed as 26 / 27 April 2003.

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Covering 100kHz to 1300MHz with AM/FM/WFM and SSB. Complete with Nicads,Charger and rubber helical wide band antenna all for only £319.99 Add the Super Searcher (£99.95) and RT-R10 (£109.99) for reaction tuning to nearby transmitters

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This is Icom's entry level HF radio. offering 100W HF CW/AM/SSB and DSP. The performance is staggering for a budget radio! Only £649.00 with DSP

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The new TH-F7E dual band hand held transceiver with a built in multimode scanner (0.1-1300MHz)

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The Packet handheld that every one wants. Ideal for APRS on the move.

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AOR 5000

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AOR 7030

ML&S £749 ZERO DEPOSIT! 36 * £27.23

AOR 7030+

ML&S £879 ZERO DEPOSIT! 36 * £31.96

AOR 8600 MK II

PC Programmable

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This radio has set a new bench mark for all in one radios. Offering all bands,built in TNC,built in ATU this is a real communications station. You can chat on your local 2 meter repeater while tuning around HF for that elusive DX station on HF. You can also monitor the DX cluster and see the DX popping up on the main receiver. The features just go on and on. Call for a leaflet or email TS2000@hamradio.co.uk and we we email the brochure back to you. *Prices start at £1599 for the B2000 and £1649 for the TS2000.*

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KENWOOD B2000

zero DEPOSIT

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

ML&S £1599 , ZERO DEPOSIT! 36 * £69.42

YAESU FT1000MP MK5

zero DEPOSIT

This radio combines excellent DSP with top grade IF filters to give you the best DX performance available.

ML&S £2799 ZERO DEPOSIT! 36 * £101.76

YAESU QUADRA VL1000

zero DEPOSIT

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

ML&S £3999 ZERO DEPOSIT! 36 * £173.62

YAESU FT847

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This is a well established radio and was the original multi band base station. With Yaesu's constant upgrade policy the current batches are far better than early versions and it is still the only radio to offer 4 metres all mode operation. A shack in a box for only *£1199.00*

RRP £1699 ML&S £1199 ZERO DEPOSIT! 36 * £43.59

KENWOOD TMD700E

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

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KENWOOD TS570DGE

zero DEPOSIT

This is an excellent entry level DSP radio offering excellent features for newcomers and hardened DX'ers! 100 Watts HF with a built in ATU. Excellent value at only *£849.00*

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Options include: DSP and 23cms

zero DEPOSIT

ML&S £1249 STD UNIT ZERO DEPOSIT! 36 * £45.41

ICOM IC-7400

zero DEPOSIT

NEW ICOM RADIO!

With 32 bit DSP offering HF/6 & 2 at 100 watts on all bands this radio is an amazing radio at an bargain price! Features over 51 filter bandwidths, RTTY Decoder, Memory Keyer plus many more enhanced features this is much more than a replacement for the IC-746

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ICOM IC706 MK2G

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Covering 100kHz-2000MHz

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100Hz-1300MHz AM/FM and WFM, a good all round pocket scanner with World Broadcast AM reception and a host of new features for a budget scanner

YAESU VX-7R

New waterproof triple band hand-held with dual receive

'A PL259 Sir? - I don't think we stock that model!'

It seems that Martins policy of ONLY employing knowledgeable licensed staff both in front line sales right through to the customer support team, is paying off. It appears there are some suppliers out there who don't seem to know the difference between a PL-259 and a tin of baked beans. Next time you want to invest in a piece of equipment bear that in mind if you need vital telephone support.

Chris Gladman MOAWN has been with us for over a year now. Chris is an avid Constructer and QRP operator. Catch him on the bands operating CW with his FT-817. As part of the sales team Chris is always happy to discuss your radio needs!

A Very Important Date for your Diary!

Once again, the Lynchy Open Week-end starts on the 16th - 17th of November. We have negotiated special discounted prices with our suppliers and have been told NOT TO ADVERTISE THEM! Looks like you will just have to visit and get free refreshments thrown into the bargain.
Doors open at 9:30 both days, finishing at 5:00 on Saturday and 4:00 on Sunday. See you there!

Finally;

Crystal Ball for sale *(we know it works!)*

YAESU FTV1000

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

ML&S £799
CALL FOR A DEAL

YAESU FT840 FM

zero DEPOSIT

This is an excellent starter radio is sadly discontinued so we are offering the TS-50S from Kenwood at the same price or we have a few used units available.

RRP £799 ML&S £599
ZERO DEPOSIT!
36* £26.01

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This is a radio that every radio ham should own. As well as being an excellent portable radio this makes an ideal second receiver for the shack. Supplied ready to go at a new low price of £599

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With HF and six metres this radio is the most simple to operate DSP radio we stock. The large display is easy to read and the controls are large and well spaced for those who do not like the smaller radios. Now includes 500Hz CW filter

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YAESU FT100D

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

ML&S £899
ZERO DEPOSIT!
36 * £32.68

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zero DEPOSIT

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ZERO DEPOSIT!
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YAESU VX5RS

Our best selling hand held ever! Giving 5 Watts on 2/70 & 6 metres. With built in wide band receiver We have purchased our last batch from Yaesu in black for only £259

RRP £339
ML&S £259

YAESU VX1R

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

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ML&S
CALL FOR BEST PRICE

YAESU FT-7100

The latest dual band mobile from the Yaesu stable with all the usual features including detachable head.

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SUPER LOW PRICE!

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A 100W all-in-one HF Transceiver with built-in power supply and auto antenna tuner.

- *High Efficiency Cooling system*
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- *Twin Stacked VFO Registers*
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- *And MORE.....*

ML&S £2199
ZERO DEPOSIT!
36 * £79.95

LOOK! New Miracle Antenna has arrived!

MIRACLE WHIP

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

ML&S £129.95 IN STOCK!

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ALINCO

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Fully Featured Portable HF+6mtr Transceiver

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

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

~~£699.00~~ SPECIAL **£599.00**

ALINCO DX77E *HF Transceiver 'GREAT VALUE'*

The DX-77 is a design achievement that puts a HF desktop transceiver within your reach! And this is no 'bare bones' radio, nor is it a converted 'channelised' adaptation. The DX-77 was designed from the beginning to be a quality Amateur Radio, full of features to enhance its performance and your enjoyment.

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

~~£599.00~~ SPECIAL **£499.00**

EDX2

Auto Tuner

An automatic antenna tuner that matches a transceiver to a random wire antenna of over 3m in length (3.5MHz and above), or over 12m in length (1.6MHz and above). It comes installed with 5m of coaxial and control cables for instant operation with Alinco DX-70.

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

£289.00

HFM-1

A stainless steel, heavy duty HF mobile antenna complete with spring base. Covers 3.5 to 30MHz when used with the Alinco EDX-2 Automatic Tuner. Alternatively it may be base matched with any type of tuner for mono band or multi band use. Power handling with the EDX-2 is 150W.

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

£59.95

ALINCO DR-605E *Dual Band Mobile*

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

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

£299.95

DJ-X3

Ultra modern scanning receiver

- 100kHz - 1300MHz
- AM/FM/WFM
- 700 memory channels
- Steps: 5/6.5/8.33/10/12.5/ 15/20/25/ 30/50/100kHz
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- Bug detector
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- Attenuator
- SMA Antenna
- Battery saver cct
- Size: 56w x 102h x 23d mm
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- Supplied c/w: 3 AA dry cell battery case carrying strap

with 8.33kHz for airband

Optional extras

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

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DR135E

- TX: 144 - 146MHz RX: Expandable 118 - 174MHz
- 50/10/5 Watts power settings
- 100 memory channels
- Frequency Steps: 5, 8.33, 10, 12.5, 15, 20, 25, 30, 50kHz
- Optional internal TNC operates 1200, 9600bps
- Front panel GPS input for APRS
- Rear panel DSUB9 computer connection
- Ignition key on/off feature
- CTCSS and DCS encode + decode
- Super-wide 7 character display
- Wide/narrow (25/12½kHz) FM modes
- Theft alarm feature
- AM airband receive
- Ten auto dial memories
- Size: 142 x 40 x 174mm

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DJ 193E

GREAT VALUE 2 mtr Handheld

- New design 2m (144-146MHz) handheld
- Up to 5W VHF
- Wide RX possible (typical 135-173MHz)
- CTCSS + DCS enc/dec fitted
- 40 memory channels + 1 call channel
- Alphanumeric display
- DCS, Tone burst and DTMF
- 13.8V DC direct input facility with battery charge feature
- THEFT ALARM!
  Emits a tone when disconnected from power
- S Meter with easy to read display
- Audio dialler
- Call cloning facility
- Comp. programmable 3rd party software
- Experimental insect repellent feature!
  Can the DJ-193 actually repel mosquitoes?
  Activate the special tone and decide for yourself!

£139.95

DJ-596 NEW Dual Bander

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

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

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

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

£199.95

DJ 195E

2 mtr Handheld with Keypad

Alinco has created a new 2 meter HT that sets new standards in features, convenience and easy operation. The DJ-195 sports an alphanumeric display for easy memory management. It has an ergonomic design that's "user friendly" and the 5 watt output battery is standard. You'll be ready to travel the world with CTCSS encode+decode, DCS and European tone bursts, all included at no extra cost.

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

£159.95

DJ-G5EY Feature Packed Dual Bander

A brilliant twin band handheld that does everything including spectrum display of 4 adjacent channels. The receiver has a superb front end that does not suffer with breakthrough like other handhelds and has CTCSS/DTMF built in as standard.

- Spectrum channel display
- RX expandable 108-173.995AM/FM 420-479.995 + 800-920MHz
- Built in CTCSS tone encoder & decoder
- DSQ encoder/decoder as standard
- Optional receive to include Airband
- Full VHF/UHF Duplex
- 100 memories
- Over air cloning
- Cross band repeater function
- Up to 5W RF output
- NiCad battery
- Charger, Rubber Duck antenna and Belt clip

Advanced Channel Scope

- Monitor 5 freq activities in VFO/Memory modes
- Simultaneous monitor of VHF/UHF bands
- Real time monitor of 11 channels during mono band operation
- VFO mode
- Memory mode
- Sweep scan

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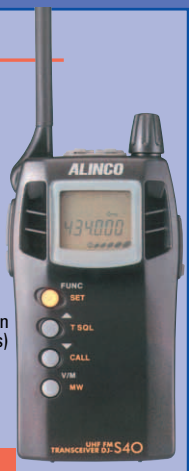
DJ-S40 CQ

UHF Pager Sized Handheld

Alinco has created a new UHF FM Hand held Transceiver that sets new standards in features, convenience and easy operation packed in a compact pager-size package. The DJ-S40T has an ergonomic design that's "user friendly" and capable of 1 watt output with optional Ni-MH battery pack. You'll be ready to travel the world with CTCSS encode/decode and European tone bursts, all included at no extra cost.

- Up to 1 W output (with 13.8V supply)
- Large illuminated display
- Loud clear speaker horn system
- 100 memories+1 call channel
- Multi Scan functions
- 38 CTCSS tones for selective calling
- S-meter
- Cable Cloning
- External device control feature (outputs 3Vdc 5mA signal from an accessory port when squelch opens)
- Additional features, including anti-theft alarm and experimental mosquito repelling tone!
- Huge selection of accessories available



£99.95

DJV5E

Compact Dual Bander

Alinco introduces an exciting new VHF/UHF handheld-transceiver that will change the way you think about communications. The new Alinco DJ-V5 can fill a variety of roles and it does them all well. Loaded with technical features, 5 watts of output power and a wide array of operator conveniences, the DJ-V5 is an attractive radio in a compact package.

- New dual band handy transceiver
- 5W/1W/0.5W output power
- Super wide receive (76-999MHz)
- Includes wide FM mode
- CTCSS Encode+decode, DTMF squelch and 4 different European Tone Bursts
- 200 memory channels +2 call channels
- Alphanumeric Display, up to 6 characters
- Autodial memories
- Up to 6 character alpha-tagging
- 4 scan modes, 5 programmable scan banks
- Input voltage display with over voltage warning
- Automatic high temperature protection feature

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PIC-A-STAR:

a Software Transmitter And Receiver

*Part four of the regular series by Peter Rhodes, BSc, G3XJP **

THIS MONTH covers the concept of Super VOX. This apparently innocent topic was picked as exemplifying how a large number of little tweaks can be made in DSP *at no incremental cost* to make a significant improvement to operating pleasure and practice. It is also time to practise your ironing skills on an easy one. Why 'Super'? Well, read on.

I suppose that if there is one thing I dislike more than long monologue 'overs', it is long 'doubles'. I have personally always operated VOX and, indeed, for many years did not bother to fit any PTT capability at all. Perhaps it would help the psychology if that switch on the microphone were known as 'Lift To Listen'.

The system has two elements, namely a timed solid-state switch for the various DC T / R lines and any relays, and an intelligent VOX system, implemented within DSP. But note that the Timer board has been designed as a flexible and stand-alone general solution to manage the T / R switching in any transceiver.

VOX PREREQUISITES

TO BE EFFECTIVE, *any* VOX system needs both T / R transitions to be free from clicks and thumps - electrical and mechanical. The first step to achieving this is to leave the maximum amount of circuitry powered up on both transmit and receive. Certainly all DC switching should be solid-state (hence the Timer Board), but the RF changeover can be more of an issue, especially at higher power levels. I use the circuit published in the 1988 *ARRL Handbook*, but hope to do better before the end of this series. Even if you use relays there are still significant benefits, though personally I just hate those acoustic rattling noises.

TIMER BOARD

THE T / R TIMER BOARD circuit is shown in **Fig 4** and manages both the R to T and the T to R transitions.

The benefit of this approach is that the two transition sequences and timing can be - as indeed they should be - different. This cannot be achieved with the typical window comparator approach.

This board has one significant input, namely T / R Status from the DSP Assembly. This is a +5V logic signal (or floating) when on receive - and grounded to 0V to switch to transmit.

The PIC is a 16F627 which has the benefit of not needing an external crystal if timing accuracy requirements are modest; as a result the two crystal pins can be used for digital I/O purposes.

There are five timed outputs - which have been arbitrarily named for their most obvious general use. The 'External Linear' and 'Local PA c/o' lines are grounded on transmit, can sink 500mA - and are thus suitable for relay or solid-state switch control. The other three lines are at +12V when active and are explicitly grounded otherwise. They can each source / sink 500mA. They behave as follows.

RECEIVE TO TRANSMIT (R / T)

The sequence for this transition follows, each step being followed by a timed delay:

External linear to Tx T1
Local PA c/o to Tx T2
12V Rx off T3
12V Tx on T4
Tx PA bias on

There then follows a re-triggerable hang time, T5. This whole transition is *not* interruptible, see below.

TRANSMIT TO RECEIVE (T / R)

For this transition the sequence is:

Tx PA bias off
External linear to Rx
Local PA c/o to Rx T6
12V Tx off T7
12V Rx on

This transition is interruptible after step 1.

That is, if you are part way through dropping back to receive when a transmit demand occurs, the T / R sequence will be aborted and the R / T sequence executed immediately. This interrupt logic is based on

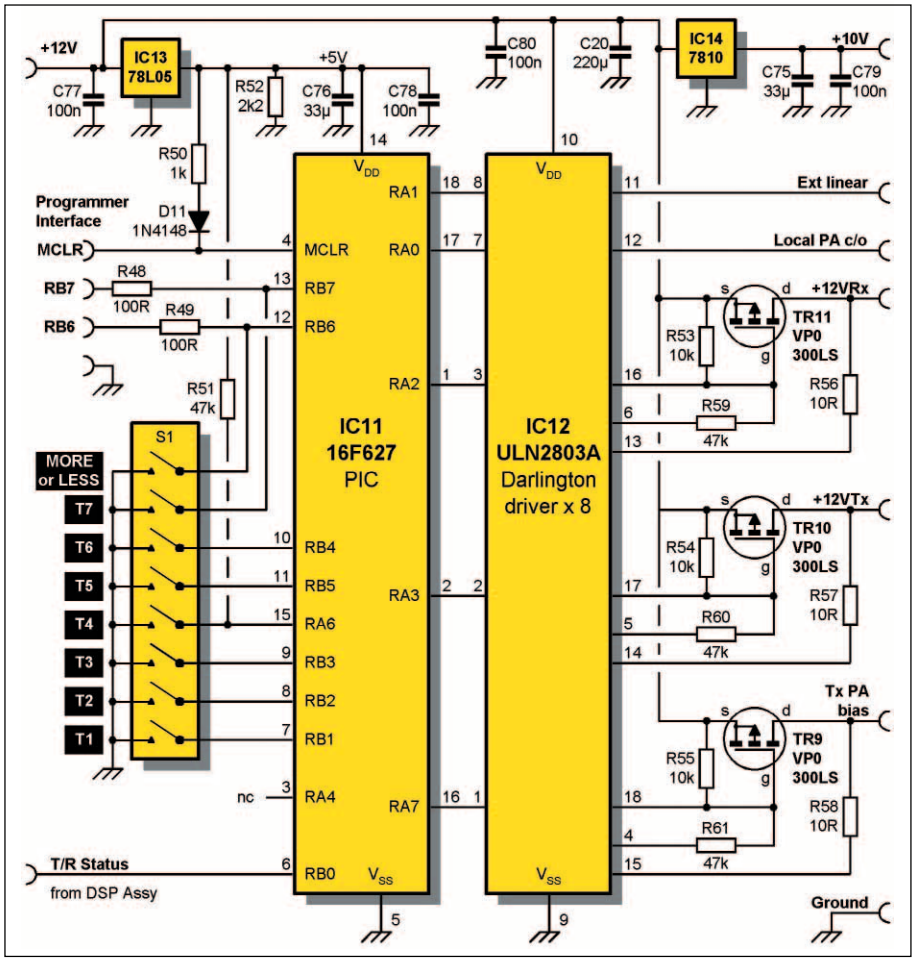


Fig 4: Timer board circuit diagram. This provides timed transitions between transmit and receive - in both directions. S1 allows you to set up the timing for your installation - and covers the range from slow relay-based RF T / R switching through to solid-state QSK.

* *Danvers House, Wigmore, Herefordshire HR6 9UF.*
E-mail: G3XJP@qsl.net

the view that it is always better to risk losing a moment of reception than to risk 'hot' switching.

Note that the 12V Tx and 12V Rx lines can never be energised at the same time.

Following a T / R transition, the PIC goes to SLEEP; that is, all dynamic activity ceases including its internal clock. Thus it can never act as a noise source to your receiver.

The process for adjusting the times for your installation will be covered later.

CONSTRUCTION NOTES

Fig 5 shows the PCB artwork ready for the iron-on process described last month. The 10V regulator chip IC14 provides power to the STAR DSP board and may be omitted (as in the photograph) if you don't require this unswitched rail. Mounting holes for IC14 and the board (optional) have not been specified.

Start by fitting IC13, C76, C78 and C80, soldering one lead to the top ground plane. Then fit the socket for IC11 and solder pin 5 to the ground plane, followed by the socket for IC12 with pin 9 grounded. The remaining construction sequence is not critical. Mount the otherwise symmetrical switch so that, with the switches set away from the PIC, they are open circuit.

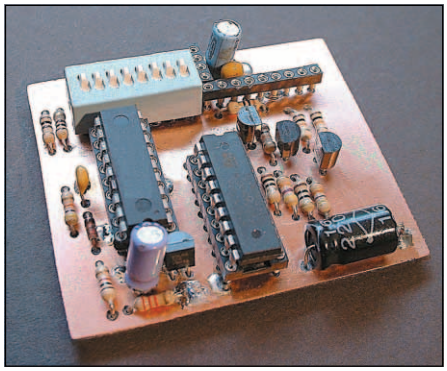
SUPER VOX IN DSP

THE CONCEPT used here was inspired by a conversation with Bill, W7AAZ.

Sadistically, I did not enable the PTT line on the STAR Beta build for some six months, so the whole VOX system - the only way to get to transmit - has had a good thrashing.

CONVENTIONAL VOX

When VOX detects the beginning of your speech, it initiates the R to T transition - which is going to take at least 3ms to complete. Further, if you have a T / R relay, the design must ensure the relay has settled in the transmit position before letting the RF through, typically adding a further 20 - 30ms. The result is that the leading edge of your speech is clipped off. Not by much in a good design, but often noticeable.



The Timer board, which will fit in a small corner in most transceivers and get rid of those DC switching relays.

To disguise this effect, a VOX hang time is incorporated which is set to drop back to receive if you pause for breath, which at least minimises the number of truncated words. The other workaround you often hear from VOX operators is that they do not answer a direct question with "Yes". They tend to say "um, yes", probably subconsciously - in order to avoid it coming over as merely "esss".

How much better it would be if your transceiver started the R to T transition in anticipation, ie just *before* you started to speak! Sounds fanciful? In effect, this is what Super VOX does. And by the way, it applies equally to QSK CW operation.

SUPER VOX

The idea is to trigger the R to T transition immediately on detection of your voice, but then delay the 'voice' in DSP for the time it takes for the transition to complete. Thus the leading edge can never be clipped off.

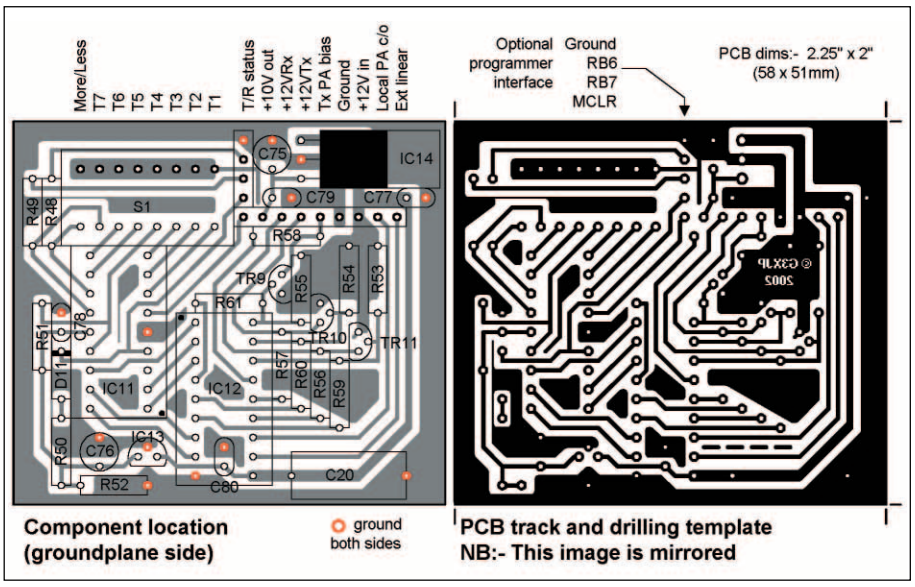


Fig 5: Timer board PCB - with the component side unetched. Countersink the ungrounded holes on the component side. The input/output connector (if any) is not specified, but is 0.1in pitch. I used SIL plug / socket strip for this - and all other arbitrary connectors.

Critically, this means in turn that you need no hang-time, since there is now no desire to minimise the number of transitions. Of course your delayed voice is still coming 'out of the antenna' for a few milliseconds after you stopped talking so you need to stay on transmit for that time - but absolutely no longer.

The net effect is that at a normal conversational speaking speed, you drop back onto receive not between breaths and sentences, but between every word - and often enough, between *syllables* - and if your T / R transitions are fast enough, you can listen through. Equally, someone listening to your transmission would be totally unaware that you were spending a significant percentage of your over on receive - in short, but very frequent, bursts.

The overall effect is very close in sensation to full duplex as in a normal (and therefore interruptible) conversation and, if widely practised, would do much to turn many a QSO into a conversation rather than a series of speeches.

ANTI-VOX

This normally works by comparing the microphone input with the speaker output - and if the same, concludes that it is *not* you speaking. STAR incorporates a further refinement in that the microphone input is compared with the output that *did* come from the speaker 4ms earlier. Why 4ms? Because this is the time it takes sound to travel 4ft in air, an assumed reasonable distance between the speaker and microphone. The improvement is noticeable and is worth having because the few extra lines of code don't cost anything.

AGC IMPLICATIONS

Normally, the AGC voltage decays to nothing shortly after you go to transmit. The result is that the receiver comes back on full gain in VOX gaps - which is not very comfortable in an 'S9' QSO.

The approach adopted by STAR is to retain the AGC level established by the last 2s period of continuous receive - and apply that level during the gaps. It is important to ignore AGC levels established during the gaps for this purpose, so 2s was chosen as an arbitrary interval which is clearly longer than a casual pause. If, at any time, somebody other than you starts speaking, the normal AGC attack takes care of any adjustment in a few milliseconds.

So this is, if you like, extended-hang AGC - where the 'hang' is extended over periods of transmission.

THE SOUND OF SUPER VOX

On the RSGB Members-Only website (www.rsgb.org/membersonly), you will find a number of .WAV files, so you can hear what a STAR sounds like in action. One of these gives a good feel for the VOX operation. ♦

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MRQ525 2m/70cms, 1/4 wave & 5/8, Gain 2m 0.5dB/3.2dB 70cms (Length 17") S0239 fitting commercial quality **£19.95**
MRQ500 2m/70cms, 1/2 wave & 2x5/8, Gain 2m 3.2dB/5.8db 70cms (Length 38") S0239 fitting commercial quality **£24.95**
MRQ750 2m/70cms, 6/8 wave & 3x5/8, Gain 2m 5.5dB/8.0dB 70cms (Length 60") S0239 fitting commercial quality **£39.95**
MRQ800 6/2/70cms 1/4 6/8 & 3x5/8, Gain 6m3,OdBi/ 2m 5.OdB/70 7.5dB (Length 60") S0239 fitting commercial quallty **£39.95**

SINGLE BAND MOBILE ANTENNAS

MR 214 2 Metre 1/4 wave
(3/8 fitting) **£3.99**
(SO239 fitting) **£5.00**
MR260S 2 Metre 1/2 wave 2.5 dBd Gain (Length 43")
SO239 fitting **£24.95**
MR258 2 Metre 5/8 wave 3.2 dBd Gain (3/8fitting) (Length 58") **£12.95**
MR 650 2 Metre 5/8 wave open coil (3.2 dBd Gain) (Length 52") (3/8 fitting) **£9.95**
MR268S 2 Metre 5/8 wave 3.5dBd Gain (Length 51")
SO239 fitting **£19.95**
MR280S 2 Metre 6/8 wave 5.8dBd Gain (Length 58")
SO239 fitting **£29.95**
MR 614 6 Metre loaded 1/4 wave (Length 56") (3/8 fitting) **£13.95**

SINGLE BAND END FED BASE ANTENNAS

70 cms 1/2 wave (Length 26") Gain 3.5dBd **£24.95**
2 Metre 1/2 wave (Length 52") Gain 3.5dBd. **£24.95**
4 Metre 1/2 wave (Length 80") Gain 3.5dBd **£34.95**
6 Metre 1/2 wave (Length 120") Gain 3.5dBd **£44.95**
6 Metre 5/8 wave (Length 150") Gain 5.5dBd **£49.95**
(All above end fed antennas are without ground planes)

PROFESSIONAL MOBILE GLASS MOUNT ANTENNAS

GF151 2mtr (Length 20") **£39.95**
GF401 70cms (Length 11") **£39.95**
GF233 23cms (Length 9") **£44.95**
GF270 Dual band 2/70 (Length 31") **£59.95**

VHF/UHF VERTICAL CO-LINEAR FIBREGLASS BASE ANTENNAS

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

BM100 Dual-Bander **£29.95**
(2 mts 3dBd) (70cms 6dBd)
(Length 39")
SQBM100 Dual-Bander **£39.95**
(2 mts 3dBd@ (70oms 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)
(Length 100")
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 100/200/500/1000 are Polycoated Fibre Glass with Chrome & Stainless Steel Fittings. 2 years warranty.

2 METRE VERTICAL CO-LINEAR BASE ANTENNAS

BM60 5/8 wave, (Length 62"), 5.5dBd Gain **£49.95**
BM65 2 x 5/8 Wave, (Length 100"), 8.0 dBd Gain **£69.95**

70CMS VERTICAL CO-LINEAR BASE ANTENNAS

BM33 2 x 5/8 wave, (Length 39") 7.0 dBd Gain **£34.95**
BM45 3 x 5/8 wave, (Length 62") 8.5 dBd Gain **£49.95**
BM55 4 x 5/8 wave, (Length 100") 10 dBd Gain **£69.95**

ROTATIVE HF DIPOLE

RDP-3B 10/15/20 Mtrs Length 7.40m **£99.95**
RDP-40M 40Mtrs Lengh 11.20m **£139.95**
RDP-6B 10/12/15/17/20/30 Mtrs Boom Length 1.00m Length 10.00m **£199.95**

MINI HF DIPOLES

MDO20 20mtr version approx only 11ft **£39.95**
MDO40 40mtr version approx only 11ft **£44.95**
MDO80 80mtr version approx only 11ft **£49.95**

HAND-HELD ANTENNAS

"New Lower Price"

MRW-300 Rubber Duck TX 2 Metre & 70 cms RX 25-1800 MHz (Length 21cm) BNC fitting **£12.95**
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 H/held antennas.

HB9CV 2 ELEMENT BEAM 3.5dBd

70cms (Boom 12") **£15.95**
2 Metre (Boom 20") **£19.95**
4 Metre (Boom 23") **£27.95**
6 Metre (Boom 33") **£34.95**
10 Metre (Boom 52") **£64.95**
6/2/70 Triband (Boom 45") **£64.95**

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 l0dBd) **£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 l0dBd) **£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**

YAGI COUPLERS

YC-6M For 2 x 50MHz Yagi **£29.95**
YC-2m For 2x144MHz Yagi **£24.95**
YC-7M 2x70cms Yagi **£19.95**

HALO LOOPS

2 Metre (size 12" approx) **£12.95**
4 Metre (size 20" approx) **£18.95**
6 Metre (size 30" approx) **£24.95**

MULTI PURPOSE ANTENNAS

MSS-1 Freq RX25-2000 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

All fittings Stainless Steel

	FULL	HALF
Standard	**£22.95**	**£19.95**
Hard Drawn	**£24.95**	**£22.92**
Flex Weave	**£32.95**	**£27.95**
PVC Coated Flex Weave	**£37.95**	**£32.95**
Deluxe 450 ohm PVC Flexweave	**£49.95**	**£44.95**

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

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

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OPENING TIMES:
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G5RV INDUCTORS

"New Lower Price"

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

SHORT WAVE RECEIVING ANTENNAS

MD37 SKY WIRE £39.95
(Receives 0-40MHz)
Complete with 25 mts of enamelled wire, insulator and choke Balun Matches any long wire to 50 Ohms. All mode no A.T.U. required. 2 'S' points greater than other Baluns.
MWA-H.F. (Receives 0-30MHz) £29.95
Adjustable to any length up to 60 metres. Comes complete with 50 mts of enamelled wire, guy rope, dog bones & connecting box.

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 *(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 £4.95
1 1/2" Mast Sleeve/Joiner £8.95
2" Mast Sleeve/Joiner £9.95
Solid copper earth rod £9.95
Pole to Pole clamp 2"-1.5" £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 (H/Duty) £2.00

POLES H/DUTY (SWAGED)

1 1/4"Single Ali Pole £7.00
1 1/4"Set of four £24.95
1 1/2"Single Ali Pole £10.00
1 1/2"Set of four £34.95
2"Single Ali Pole £15.00
2" Set of four(set of 4) £49.95

REINFORCED HARDENED FIBRE GLASS MASTS (GRP)

1 1/2" Diameter 2 metres long £16.00
1 3/4" Diameter 2 metres long £20.00
2" Diameter 2 metres long £24.00

GUY ROPE 30 METRES

MGR-3 3mm (max. load 15 kgs) £6.95
MGR-4 4mm (max. load 50 kgs) £14.95
MGR-6 6mm (max. load 140 kgs) £29.95

10/10 METRE VERTICALS

G.A.P.12 1/2 wave aluminium
(length 18' approx) £19.95
G.A.P.58 5/8 wave aluminium
(length 21' approx) £24.95

COAX

RG58 best quality standard per mt 35p
RG58 best quality military spec per mt 60p
Mini 8 best quality military spec per mt 70p
RG213 best quality military spec per mt 85p
H200 best quality military coax cable per mt £1.10

PHONE FOR 100 METRE DISCOUNT PRICE.

CONNECTORS & ADAPTORS

PL259/9 ..... £0.75
PL259/6 ..... £0.75
PL259/7 for mini 8 ..... £1.00
BNC (screw Type) £1.00
BNC (Solder Type) £1.00
BNC for 9mm (RG213) £2.50
N TYPE for RG58 ..... £2.50
N TYPE for RG213 ..... £2.50
SO239 to BNC £1.50
PL259 to BNC £2.00
N TYPE to SO239 ..... £3.00
BNC to N Type £2.50
SMA to BNC £3.95
SMA to SO239 ..... £3.95
SMA to PL259 ..... £3.95
SMA to BNC (male) £3.95
SO239 chasis socket round £1.00
N-Type chasis socket round £2.50
SO239 (double female) £1.00
N-Type (double female) £2.50

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 £24.95

RIBBON LADDER USA IMPORTED

300 Ohm 20 mtr pack £15.00
450 Ohm 20 mtr pack. £15.00

(other lengths available please phone for details)

TRI/DUPLEXER & ANTENNA SWITCHES

MD-24 (2 Way Internal Duplexerl (1.3-35 MHz 500w) (50-225 MHz 300w) (350-540 MHz 300w) insert loss 0.2dBd SO239 fittings £22.95
MD-24N same spec as MD-24 'N-type' fitting £24.95
MD-25 (2 Way external/Internal Duplexer) (1.3- 35 Mhz 500w) (50-225 MHz 300w) (350-540 MHz 300w) insert loss 0.2dBd £24.95
MX2000 Tri-plexer 1.6-60MHz (800w) 110-170MHz (800w300-950MHz (500w) SO239 fitting £49.95
CS201 Two way antenna switch, frequency range 0-IGhz, 2,5 Kw Power Handling SO239 fittings £18.95
CS201-N same spec as CS201 'N-type' fitting £28.95

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

ROTATOR CABLE

3 Core ..... 0.45p per metre
7 Core ..... £1.00 per metre

(please phone for 100 metre discount price)

MOUNTS

Turbo Magnetic Mount 7inches 4 mtrs coax/PL259 3/8 or SO239 ..... £14.95
Tri-Magnetic Mount 3x5 inches 4 mtrs coax/PL259 3/8 or SO239 ..... £39.95
Hatch Back Mount (stainless steel) 4 mtrs coax/PL259 3/8 or SO239 fully adjustable with turn knob £29.95
Gutter Mount (same as above) £29.95
Rail Mount (aluminium) 4 mtrs coax/PL259 suitable for up to 1 inch roof bars or poles ..... 3/8 fitting £12.95
..... SO239 fitting £14.95
Gutter Mount (cast aluminium) 4 mtrs coax/PL259
..... 3/8 fitting £9.95
..... SO239 fitting £12.95
Hatch Back Mount 3/8 4 mtrs coax/PL259 ..... £12.95
Roof Stud Mount 4mtrs coax/PL259 3/8 or SO239 fitting £12.95

BEST QUALITY ANTENNA WIRE

The Following Supplied in 50 metre lengths

Enamelled 16 gauge copper wire £9.95
Hard Drawn 16 gauge copper wire £12.95
Multi Stranded Equipment wire £9.95
Flex Weave £27.95
Clear PVC Coated Flex Weave £37.95

TRAPS

10 Metre trap 400W £23.95
15 Metre trap 400W £23.95
20 Metre trap 400W £23.95
40 Metre trap 400W £23.95
80 Metre trap 400W £23.95

HF BALCONY ANTENNA

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

HF DELTA LOOP

DLHF-100 10/15/20 Mtrs (12/17-30M) Boom Length 4.20m Max Height 6.80m Weight 35 KG Gain 10dB £399.95

VISA SWITCH MasterCard

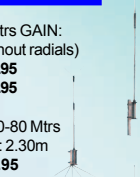
HF YAGI

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: 8dBd BOOM 4.42m
LONGEST ELE: 8.46m POWER: 2000 Watts £269.95

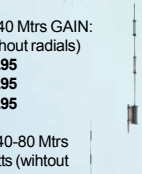
ADEX-6400 6 BAND 4 ELEMENT TRAPPED BEAM
FREQ: 10-12-15-17-20-30 Mtrs GAIN: 7.5dBd BOOM: 4.27m LONGEST ELE: 10.00m POWER 2000 Watts ... £499.95
40Mtr RADIAL KIT FOR ABOVE £99.95

HF VERTICALS

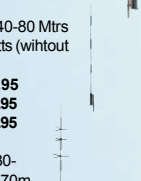


VR3000 3 BAND VERTICAL FREQ: 10-15-20 Mtrs GAIN: 3.8dBd HEIGHT: 3.80m POWER 2000 Watts (without radials)
POWER: 500 Watts (with optional radials) .. £89.95
OPTIONAL 10-15-20 Mtr radial kit £34.95

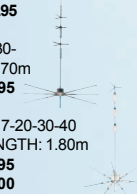
VR5000 5 BAND VERTICAL FREQ: 10-15-20-40-80 Mtrs GAIN: 3.5dBd HEIGHT: 4.00m RADIAL LENGTH: 2.30m (included) POWER: 500 Watts £169.95



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



EVX5000 5 BAND VERTICAL FREQ: 10-15-20-40-80 Mtrs GAIN: 3.5dBd HEIGHT: 7.30m POWER 2000 Watts (wihtout radials) POWER 500 Watts
(with optional radials) £139.95
OPTIONAL 10-15-20 Mtr radial kit £34.95
OPTIONAL 40 Mtr radial kit £14.95



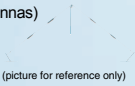
EVX6000 6 BAND VERTICAL FREQ: 10-15-10-30-40-80 Mtrs HEIGHT: 5.00m RADIAL LENGTH: 1.70m (included) POWER: 800 Watts £249.95

EVX8000 8 BAND VERTICAL FREQ: 10-12-15-17-20-30-40 Mtrs (80m optional) HEIGHT: 4.90m RADIAL LENGTH: 1.80m (included) POWER: 2000 Watts £269.95
80 Mtr radial kit for above £79.00

(All HF verticals require grounding if optional radials arenot purchased to obtain a good VSWR)

TRAPPED WIRE DI-POLE ANTENNAS

(Hi Grade Heavy Duty Commercial Antennas)



(picture for reference only)

UTD160 FREQ: 160 Mtrs LENGTH: 28m POWER:1000 Watts £44.95
MTD-1 (3 BAND) FREQ: 10-15-20 Mtrs LENGTH: 7.40m POWER: 1000 Watts £39.95
MTD-2 (2 BAND) FREQ: 40-80 Mtrs LENGTH: 20m POWER: 1000 Watts £44.95
MTD-3 (3BAND) FREQ: 40-80-160 Mtrs LENGTH: 21.5m POWER: 1000 Watts £79.95
MTD-4 (3BAND) 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 £69.95

(MTD-5 is a crossed di-pole with 4 legs)

TELESCOPIC MASTS
(aluminium and fibreglass options)

TMA3 - 3" to 11\4" Heavy Duty Aluminium Telescopic mast set, approx 40ft when erect 6ft collapsed £149.95
TMA2 - 21\2" to 11\4" Heavy Duty Aluminium telescopic mast set, approx 30ft when erect 6ft collapsed £129.95
TMA1 - 2" to 11\4" Heavy Duty Aluminium telescopic mast set, approx 20ft when erect 6ft collapsed £99.95
TMAF - 2" to 11\4" Heavy Duty Fibreglass telescopic mast set, approx 20ft when erect 6ft collapsed £99.95

WINDOM WIRE DI-POLE

MWD-3 Freq: 10/20/40 Length: 20mtrs Power:500 watts Balun: 6:1 included Socket: SO329 ..... £44.95
MWD-5 Freq: 10/20/40/80 Length: 36mtrs Power: 500 watts Balun: 6:1 included Socket SO239 ..... £54.95

MISCELLANEOUS ITEMS

CDX Lightening arrestor 500 watts £19.95
MDX Lightening arrestor 1000 watts £24.95
AKD TVI Filter £9.95
Amalgamating Tape (10mtrs) £7.50
Desoldering Pump £2.99
Alignment 5pc kit £1.99

All prices plus £6.00 per order

THE CDG2000 HF TRANSCEIVER

Part six, by Colin Horrabin, G3SBI, Dave Roberts, G8KBB, and George Fare, G3OGQ *

CONSTRUCTION of the synthesiser is straightforward if a tad fiddly. The VCO is built mainly from surface-mount components on a section of the board with very fine tracking as can be seen in the photograph at the bottom right of p21 last month. The DAC R-2R ladder is also formed of surface mount components mounted closely together underneath IC3 and IC4.

The PCB is a single-sided board with a ground plane. The tracking is shown in **Fig 29** and the component layout in **Fig 30** (opposite). Drill the board and ensure that the diecast box can be fitted correctly. The idea is to drill four holes in the PCB corresponding to the four screw holes in the corners of the box. File off the lip on the edge of the box so that the screws are long enough to bolt the lid under the board, through the board, to the box on the top. Do not remove the lip of the lid, because the space it forms between the lid and the bottom of the board will contain the surface-mount components of the VCO. You will notice that there are several tracks that pass under the edge of the lid, and the lip of the lid may short these to ground. File a slot in the lip to clear these.

If you are mounting the board in a tin box, seam-solder it in – *but not until you have sorted out the apertures for the I²C and DDS buses, power and output signals*.

The board has been designed so that right-angle 10-way IDC connectors may be fitted such that they protrude slightly into the tinplate box. If you use a right-angle 10-way box header, check the orientation, as it may differ from the board layout shown. The best way of attaching the output signal is to drill a hole in the box above the output pad, take a small connector such as a PCB-mounting SMC, snip off the four ground pins and solder the connector flush to the surface of the box with the signal pin protruding into the enclosure through a hole. This can be seen on the right hand side in the first photograph last month. A short wire can later be used to connect it to the PCB. The power can be run either through two feedthrough capacitors into the box, or via a right-angled 3-way PCB connector. Referring again to last month's first photograph, a small heatsink can also be seen running from the two voltage regulators to the edge of the box. If a tinplate box is not used, an alternative means of heat removal must be employed.

All ICs may be mounted on turned-pin sockets with ground pins soldered direct to the ground plane or with standard sockets with pins to ground bent out at 90° and soldered to the ground plane.

Now assemble the VCO. Before assembling the rest of the circuitry, it is worth checking the VCO operation and putting it approximately on frequency. Make sure that the diodes are mounted the right way round. The two coils, two FETs and the 100µF capacitor are the only components mounted on the ground-plane side of the VCO.

The DDS, its clock and DAC should be assembled and tested next. To do this, you will need the controller or a test program that can configure the DDS chip. A clean sine wave between 90 and 150kHz should be obtained at the output of the low-pass filter (pin 3 of IC5) and the signal from the DAC itself should show no discontinuities that might indicate a fault in the R-2R ladder. In order to program the DDS, a 32-bit serial bit stream is clocked into the device and, when all 32 bits have been loaded, it is transferred to the accumulator latch using a single pulse on the load signal. This is shown in **Fig 31**.

Now assemble the remaining components. Check that all supply voltages are clean. Check that the VCO signal is being correctly buffered. In the absence of I²C, check that grounding the control lines from the PCF8574 (if used) correctly selects the VCO output or the VCO output divided by 2, 3, 4 or 5, and that the VCO control lines select the correct range. You can safely ground the output lines of the PCF8574 if fitted, as the output lines have high impedance pull-ups. In adjusting the VCO coils, keep the cores at about the same position in the formers as each other.

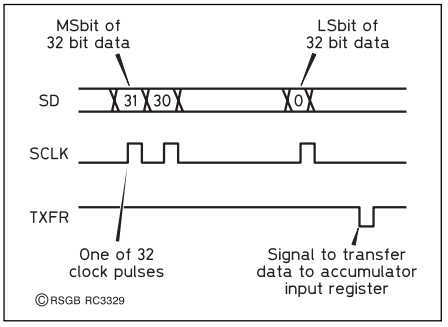


Fig 31: DDS programming.

In operation, the VCO tuning range should be from 3 to 18V (approx) according to band and frequency. Check all supply voltages with an oscilloscope. Apart from low levels of signal from the VCO (it gets everywhere), no signs of noise or instability should be found on any supply voltage or the VCO control line.

An indication of lock is found when small further adjustment of L1 and L2 shows no frequency change, even though the control voltage may continue to change.

MEASUREMENTS

UNLESS YOU POSSESS some really good test gear, measuring the VCO phase noise is best done using the completed receiver. A good way to do it is as follows (see **Fig 32**).

Two signal generators are used. One is a

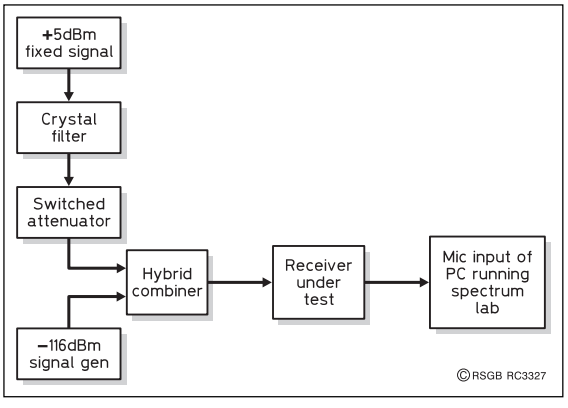


Fig 32: Phase noise measurement.

* *1 Old Hall Close, Higher Walton, Warrington WA4 6SZ.*

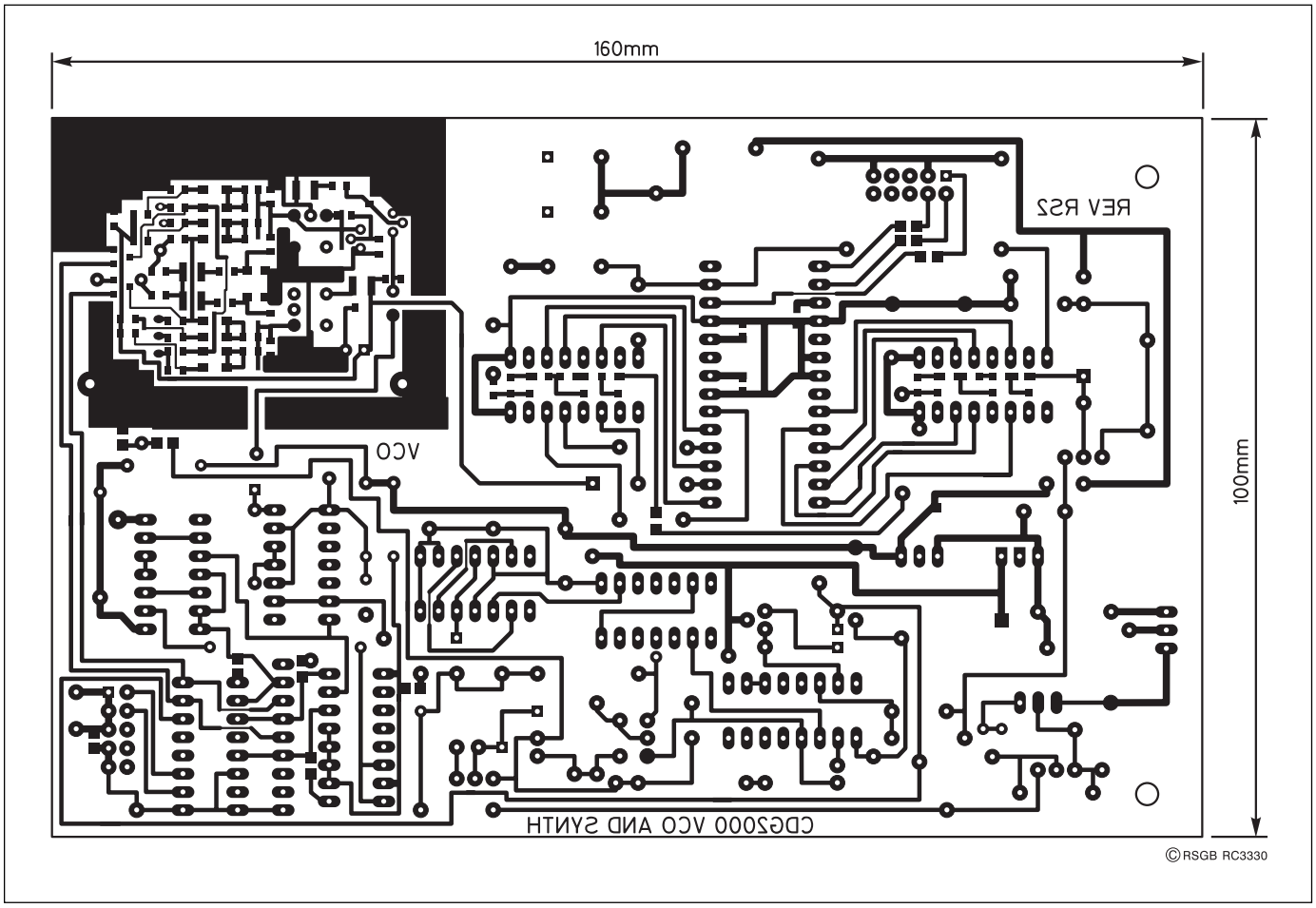


Fig 29: PCB tracking for the synthesiser board, viewed from the component side. Actual size.

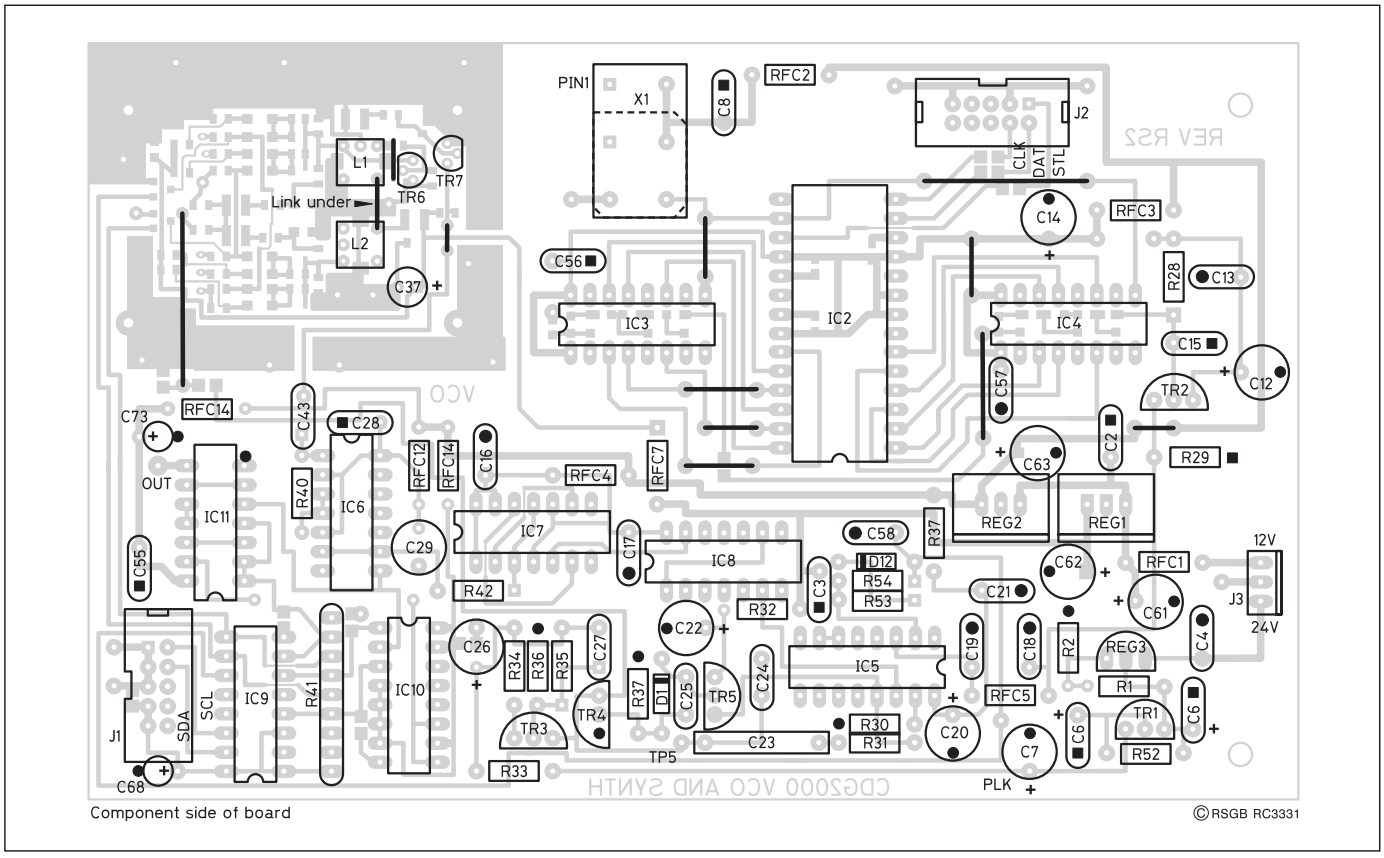


Fig 30: Component placement. Actual size.

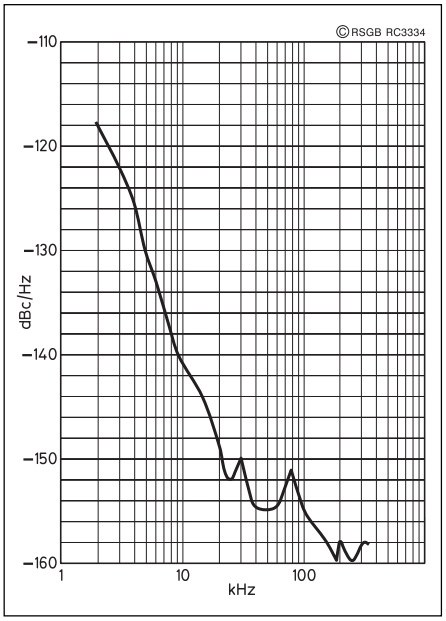


Fig 33: The phase noise.

source of a large, clean signal, the other provides a small signal to which the receiver is tuned. The large signal needs to be cleaner than the VCO of the receiver – so start with a clean signal generator such as the HP8640B or a custom-made low noise crystal oscillator, then feed it through a crystal filter. Now feed this through a switched attenuator and into a hybrid combiner. The other input to the combiner comes from the second signal generator. This configuration allows a small signal to be applied, such that a 10dB SNR can be created. When the 'large' signal is applied, it will cause the noise floor to be raised by reciprocal mixing between the VCO's phase noise and its own – hence it needs to be cleaner than the VCO. When the SNR degrades by 3dB, the noise due to reciprocal mixing equals that of the receiver noise floor and the phase noise (in dB) will be equal to the difference between the signal generator levels plus 10dB, corresponding to the 10dB of the SNR. If the receiver is using an SSB filter of 2.2kHz, the SSB phase noise of the VCO in dBc/Hz will be this value plus 34dB. The external attenuator is important – when the output levels of most signal generators are adjusted, it is not just passive attenuators that are changed; switched amplifiers are also involved and the signal generator noise level will change.

For the CDG2000, 10dB SNR was measured at -121dBm. The loss of the hybrid combiner was 5dB, so the low-level signal was set to -116dBm and a 10dB SNR was observed. The crystal filter had a loss of 5dB also, so the HP8640 output was set to +5dBm so that the large signal into the attenuator was 0dBm. Hence, for NdB of attenuation, the SSB

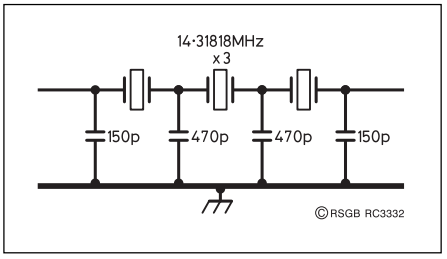


Fig 34: The test bandpass filter.

phase noise is 116 + 10 + 34 - NdBc/H or (160 - N)dBc/Hz. The 34dB is derived from the bandwidth of the signal (10 x $\log_{10}$(BW)). Hence 2200Hz gives 34dB.

Starting 2kHz away from the large signal, confirm that 10dB SNR is being obtained, then adjust the attenuator to give a 3dB degradation in SNR. Record the attenuator setting, N.

Doing this for Dave's receiver, with the large signal at 14.31858MHz, gave the results in **Fig 33**.

Why choose 14MHz? Mainly because a cheap crystal filter can be made from standard components to perform the measurements. Farnell sells very cheap 14.31818MHz crystals (about 70p each) and four make a good filter on 14.31858MHz. A suitable circuit for a 50Ω bandpass filter is shown in **Fig 34** and its performance is shown plotted in **Fig 35**. One method of construction is to use a small diecast box with BNC connectors at each end.

This begs the question of how to measure SNR. One way is to use an audio 'true' power meter to measure the noise from the audio output. Another is to use a PC to calculate it directly. The program used for the above measurements was *Spectrum Lab* by DL4YHF [23]. The microphone input of the sound card running it was connected to the output of the receive product detector. With a -116dBm signal applied to the hybrid combiner, a display similar to the photograph on p29 of the July *RadCom* was obtained. To calculate the SNR, *Spectrum Lab* was asked to measure the normalised noise (dB / Hz) between 1000 and 2000 Hz, subtract this from the signal level and add 34dB to correct for the fact that we are measuring through an SSB filter. *Spectrum Lab* can be instructed to do this every second by asking it to execute the following as a periodic action every second:

print(peak_a(1000,2000)-34-noise_n(1000,2000))

Analysing the above, the function 'peak_a(1000,2000)' asks the program to locate and measure the largest peak signal in the range 1000 to 2000Hz (ie the signal from the signal generator). The function 'noise_n(1000,2000)' asks it to measure the normalised noise in this range, ignoring the signal. A direct display of SNR (more precisely, S / N *not* (S + N) / N, but the difference is minor) will be given in the command window.

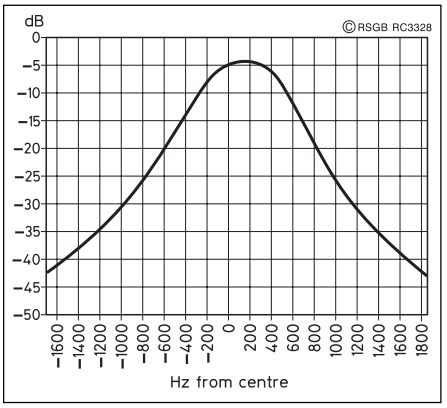


Fig 35: Response of the 14.31858MHz filter shown in Fig 34.

Being sceptics, we decided not to trust any of this stuff at face value. In order to check that the PC was performing as it should, the SNR was also measured directly using an audio power meter and filtering out the signal. The same results were obtained.

Out of curiosity, we also tried a couple of other methods. In one, just one signal was used and the noise was directly measured using the receiver S-meter (which displays dBm). In the other, the AGC of the receiver was disabled by removing the two CA3046 chips and the log output of the IF again used to measure the signal. In all cases, the results were within 3dB of each other. Measurements were repeated at different times with the equipment connected in slightly different configurations. Measurements were averaged by asking *Spectrum Lab* to average four FFTs for each display.

The two-signal method was found to be reliable and repeatable. According to John Thorpe, it has been adopted as a standard test method by the British Standards Institution.

The reader will notice a small noise peak at 80kHz in Fig 33. This is not due to the PLL reference signal leaking through – it is broadband noise. Initially, it was found to be some 15dB higher in level – this is when we discovered that AC logic gates are good modulators! The capacitor on IC10 pins 1 and 3 caused almost a 10dB improvement. Decoupling the 5V from the I²C bus with 220µF and IC11 with 10µF made a further 4dB change. At this point diminishing returns started to set in. Colin astutely observed, however, that the level of this is below that needed for a 113dB SFDR (the performance of the front end) and fruitless poking around ceased.

The PLL reference frequency does leak through, but its level is low (between -90 and -107dBc). Higher gain in the loop

Bit(s)	Function	Setting for 14MHz band
0, 1	Set 74AC163 divide ratio from 2 (both high) to 5 (both low)	N/A
2	If low, hold 74AC163 reset when not being used	Low
3	Select direct output of VCO (if high) or divided by 74AC163 (if low)	High
4, 5	VCO range selection	Both high
6	PLL lock detect	High so controller can read it
7	Unused	Not applicable

Table 6: VCO configuration for 14MHz.

Band (MHz)	VCO range (MHz)		Rx LO (MHz)		DDS setting (Hex)		Control word
	Min	Max	Min	Max	Min	Max	
1.8	64.800	66.000	10.800	11.000	01033333	01080000	C4
3.5	75.000	76.800	12.500	12.800	012C0000	01333334	C4
7	64.000	64.400	16.000	16.100	01000000	0101999A	C5
10	76.400	76.600	19.100	19.150	01319999	01326667	C5
14	46.000	46.700	23.000	23.350	00B80000	00BACCCD	F8
18	54.136	54.336	27.068	27.168	00D88B43	00D95811	D8
21	60.000	60.900	30.000	30.450	00F00000	00F3999A	E8
24	67.600	68.000	33.800	34.000	010E6666	01100000	C8
28	74.000	78.000	37.000	39.000	01280000	01380000	C8

Table 7: Settings by band.

amplifier, or changing the PLL divider ratio from 512 to 256 and doubling the DDS output frequencies might help, but it is low enough already not to be worrysome.

Some other remarks about noise need to be made. Noise from the DDS leaks out – there are several small spurii on all bands, some of which are obviously DDS-related, as they tune at different 'rates'. The series resistors in the input control lines to the DDS from the controller reduce leakage through that port. Noise from outside will leak in – for example, in Dave's model the LCD display was lit by a CCFL backlight and the inverter for it modulated the VCO.

One spurious signal that could annoy some is caused by the choice of 32MHz as the reference clock – it causes an S4 spur just above 14MHz – obvious with hindsight. It is just a couple of kHz above the band edge.

PROGRAMMING

PROGRAMMING THE SYNTHESISER is straightforward. For a given band such as 14MHz, the band edges are 14,000 and 14,350kHz. With the local oscillator on the high side, it needs to be 9MHz higher, or 23,000 to 23,350kHz. The mixer is driven at twice this frequency so the synthesiser needs to deliver 46,000 to 46,700kHz. From Fig 3, the VCO range needed will be the lowest one with both switched capacitors in circuit, so the two switching transistors must be on (bases driven high). No additional division of the VCO frequency is needed, so the AC163 needs to be held reset and the multiplexer needs to be set for direct output. Combining this data, the settings for the output of the PCF8574 need to be as shown in **Table 6**.

In binary, MSbit first, the required set-

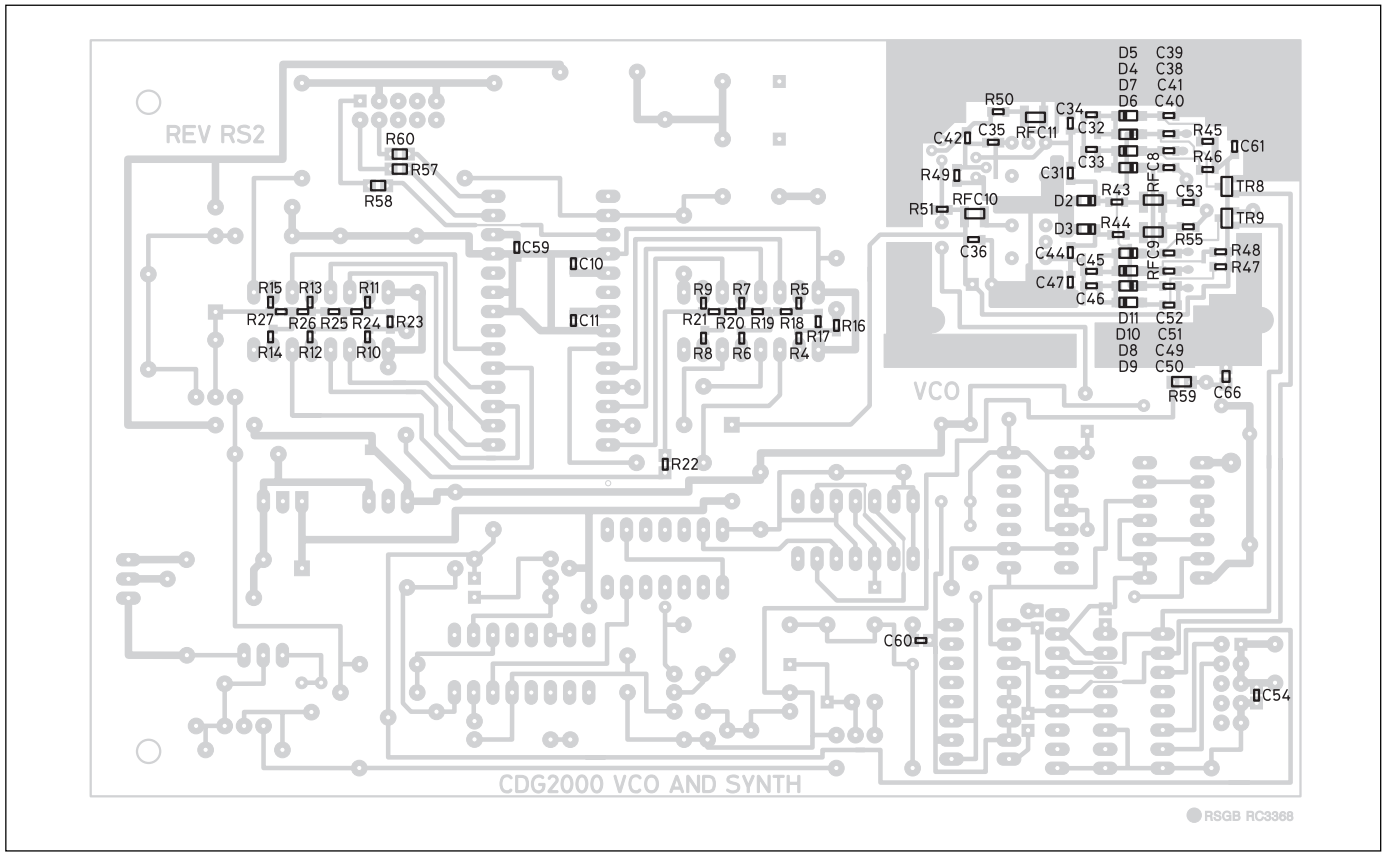


Fig 36: Component layout *on the track side.* See the third photograph on p21 last month.

ting would be x111 10xx where 'x' denotes any value. On the basis that the troublesome modulators called AC logic devices should have pins driven by a low impedance, and that the unused bit 7 might as well be high, the setting should be 1111 1000, or in hex notation, 0xF8.

The DDS needs to deliver an appropriate frequency for phase-locking and, as the PLL divisor is 512, the DDS needs to deliver 89.84375 to 91.2109375kHz.

The way that a DDS works is that, for a clock frequency of f_cHz, with a 32-bit accumulator, to deliver an output of f_0Hz, the DDS register should be set to

$$2^{32} \times \frac{f_0}{f_c} .$$

Hex notation is easiest here so, for the range stated above, with a 32MHz clock the DDS needs to be set to values in the range 0x00B80000 to 0x00BACCCD. Note also that, with a 32MHz clock, the smallest DDS step would be

$$\frac{32 \times 10^6}{2^{32}} \approx 0.00745\text{Hz}.$$

The divide-by-512 'multiplies' this into a smallest tuning step of 3.8 Hz. Fig 31 shows the way the data is sent to the DDS.

One thing to note. When the AC163

COMPONENTS LIST FOR THE SYNTHESISER

Capacitors

47p	ceramic plate	C15
1n	multi-layer ceramic	C43
1n5	polystyrene	C18
2n7	polystyrene	C19
100n	multi-layer ceramic	C2,8,13,16,17,21,27 28,55,56,57,58,64,65,69
100n	polyester	C24
220n	multi layer ceramic	C3,4
1µF	polyester	C23
1µF	16V tantalum	C6
10µF	16V tantalum	C5,7,25,63,73
22µF	16V tantalum	C20,22,26,62
100µF	16V tantalum	C14,29,37
220µF	16V tantalum	C1,68
470µF	16V tantalum	C12

Capacitors, surface mount 0805 NPO (COG)

3p3	C34
10p	C32,45,47
15p	C42
18p	C33,46
47p	C31,44
1n	C35
10n	C38,39,40,41,49,50,51,52,53,66

Capacitors, surface mount Y5V multi-layer ceramic, 50V

100n	C10,11,36,54,59,60,61

Resistors, 0.25W metal film 1%, MF25 series

100R	R42
470R	R29,32,33,37
590R	R1
1k	R53
4k7	R31,34
9k1	R2
10k	R52
15k	R28
68k	R35
100k	R54
220k	R30
1M	R36,40

Resistors, surface mount 0805 0.063W 1%

100R	R43,44
270R	R49,50
470R	R51
1k	R56,57,58
2k2	R45,46,47,48
4k7	R55,59

Resistors, surface mount 0805 0.1% 10ppm/°C

7k5 (Farnell 554 844)	R16 - 27
15k (Farnell 555 137)	R4 - 15

Resistors SIL pack

100k	R41A - E

Inductors

6µ8 SMC (Farnell 200 542)	RFC8,9
22µH SMC (Farnell 200 578)	RFC10,11
470µH axial (DC 4Ω max)	RFC3,4,7
1mH axial (DC 4Ω max)	RFC5
TOKO A700 9550W custom	L1,2 (limited supplies available from G3OGQ, £1.20each)
5 turns 30SWG enam on F bead	RFC1,2,6,12,13,14

Semiconductors

HSP45102	IC2
74HC174	IC3,4
74HCT9046 (Quarndon)	IC5
74AC86	IC6
74AC74	IC7
74HC393	IC8
PCF8574	IC9
74AC163	IC10
74AC00	IC11
32MHz crystal oscillator (Farnell 221 685)	X1
BA782	D4 - 11 (limited supplies available from G3OGQ, £1.10 each)
BB619 (Electrovalue)	D2,3
1N4148	D12
4V7 0.25W Zener	D1
J310	TR5,6,7
2N3904	TR1,2,4
2N3906	TR3
MMUN2115LT1 SOT23 digital (Farnell 473 625)	TR8,9

Voltage Regulators

7808	REG1
7805	REG2
LM217LZ	REG3

Sundries

3 Pin header	J3
10 Way IDC header	J1,2
Screening Box (Eddystone 11451P with M3.5 x 16 long screws)	1 off

divider is used, the tuning rate changes and the controller needs to take account of this to maintain the same tuning rate on each band.

For the amateur bands, the values are shown in **Table 7**, assuming a 32MHz clock.

The CDG2000 software needs to be configured for the DDS clock and band settings, hence no fine adjustment of its frequency is needed. Indeed, as all parameters are configurable, it will cope with any DDS clock and band settings without the need to modify the software.

ALIGNMENT

THERE'S NOT MUCH to say here. There are only two things to adjust – the VCO coils. Basically, ensure that the voltage swing across all bands keeps away from voltage rails. This can be monitored at TP. Calibration for the DDS clock frequency is achieved in software on the CDG2000 controller, as are the control latch settings, band edge limits and tuning rate. This is covered in the controller user guide.

COMPONENT AVAILABILITY

MOST OF THE components in the synthesiser are readily available from suppliers such as Farnell. Some, however, are harder to find. The DDS chip is stocked by RS Components. The 74HCT9046 is available from Quarndon [24]. The PIN diodes used are becoming hard to find - any similar type of VHF bandswitching diodes (R_{on} = 0.6Ω at 3 - 4mA) will do just fine. A limited quantity of the specified diodes is available from the authors. The only hard part to find is the coil in the VCO. Two identical coils are needed. The AR7030 used custom-made coils and the special part number is given. A limited quantity is available from the authors (see the Components List on p24).

One thing to be borne in mind. Where 74AC logic is used, we mean it - don't try to use 74HC logic as, quite simply, it ain't up to it. Similarly, where 74HC logic is specified, don't use 74AC logic.

ACKNOWLEDGEMENT

OUR THANKS must go to Mark Sumner of AOR UK and to John Thorpe for the VCO coils and their support for the project.

NEXT MONTH

THE CONTROLLER is the last unit of CDG2000 to be described at length in this series. It manages all aspects of the transceiver.

REFERENCES

[23] Use of DL4YHF *Spectrum Lab* program also described in *RadCom* July 2002 pp24, 29.

[24] Quarndon, Slack Lane, Derby DE22 3ED. Tel: 01332 332 651. ♦

Book Review

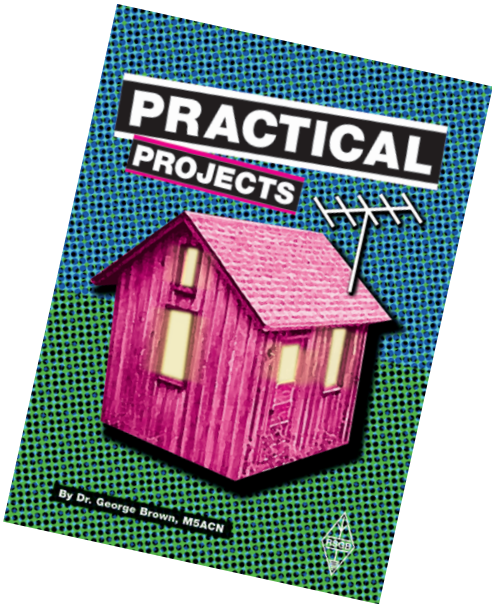
PRACTICAL PROJECTS
edited by Dr George Brown, M5ACN

THE RSGB's *Radio & Electronics Cookbook*, published some time ago, proved very popular both with newcomers to the hobby and with 'old hands' who wanted to try something not too difficult with a technology that was not around in their formative years. *Practical Projects*, compiled and edited by *RadCom* Technical Editor George Brown, M5ACN, is the natural successor to the *Radio & Electronics Cookbook*, providing a host of new 'weekend projects' for newcomers and the experienced alike to get their teeth into.

The subjects covered are many and varied: from a loop antenna for use with hearing aids to an 80m CW transceiver and a QRP transistorised AM transmitter for topband via noise reduction circuits and a simple electronic Morse keyer. There's plenty for antenna experimenters too, with designs for a quad and Yagi for 6m, a frame antenna for HF reception, an HF antenna with gain, VHF verticals made of feedline, and designs for T-match and L-match ATUs.

Practical Projects is a collection of projects and ideas that have been previously published in the NZART magazine *Break-In* and *RadCom*. The contribution and help of the *Break-In* editor, John Walker, ZL3IB, is acknowledged in the introduction of *Practical Projects*.

This new book differs slightly from the *Radio & Electronics Cookbook* in that it also addresses the problem faced by all constructors at one time or another: "Now that I've built it, what do I do with it?" This question is answered by a reference section at the end of the book which gives some ideas, and provides information on specialised components and techniques, along with the much-neglected subject of safety in the shack. An article on getting started shows just how little money needs to be spent to get an effective amateur radio station on the air. Articles for beginners to using a repeater and to HF contests provide useful tutorials for those wishing to dip their toe in the water of these new activities. Nevertheless, the major portion of the book is devoted to weekend projects. Choose your projects carefully according to your needs and experience, and you will derive a great deal of pleasure from their construction and use. You will also find *Practical Projects* a great source of ideas for other projects, and isn't that one of the things that amateur radio is all about?



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6M6L	6 el Yagi	12.4D	7.22mtr	n/a	£225.00
6M7LDX	7 el Long Yagi	13.31dBi	9.6mtr	13 Kg	£249.95
Lightweight Economy Range					
TR 6-3	3 el Economy	8.2dBi	1.9mtr	tba	£75.00
TR 6-5	5 el Economy	10.20dBi	3.6mtr	tba	£99.95
2 Metres					
2M5L	5 element	12.24dBi	2.50mtr	2.2Kg	£85.00
2M7L	7 element	14.19dBi	4.40mtr		£99.95
4 Metres					
4M3L	3 element	8.70dBi	1.48mtr		£85.00
28MHz Yagis					
10M3L	3 element Std	7.41dBi	3.0mtr	6.5Kg	£129.95
10M4LDX	4 el Long Yagi	9.42dBi	5.40mtr	11Kg	£189.95
21 MHz Yagis					
15M3L	3 element Std	8.21dBi	4.40mtr	tba	£225.00
15M4L-DX	4 el.Long Yagi	10.6dBi	8.20mtr	17.5Kg	£255.00
17 MHz Yagis					
17M3L	3 element Yagi	8.21dBi	tba	tba	tba
17M4L	4 element Yagi	tba	tba	tba	tba
14 MHz					
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	2.2 Kg	£129.00
LP1830	18 - 30 MHz	7.8 dBi	3.0mtr	16Kg	£399.00
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2M258	144 MHz 2 x 5/8	8.5dBi	3.20mtrs long		£69.95
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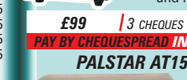

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Page 27 is part of the spread above

RSGB National Field Day 2002

by Dave Lawley, G4BUO*

FIELD DAY was cancelled in 2001 because of the foot and mouth outbreak, but regular entrants keen to get back to the NFD tradition had to compete with several distractions in 2002. As well as the focal point of Golden Jubilee celebrations, the first weekend of June also saw the opening of the football world cup. Furthermore, the RSGB Jubilee Contest had been placed on the weekend following NFD and many operators found that they could not commit two weekends in a row to radio contesting.

"I'm a celebrity, get me out of here!" says Uri Geller as he helps the Reading &DARC, G3ULT/P, bend their signals off the ionosphere.

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In view of all this, the HF Contests Committee was pleased to receive 46 notifications from groups intending to take part in this year's field day, and in the end 42 entries were received. Those who couldn't compete this year missed a real treat: conditions were good, and levels of activity were very high. Ten stations made over 1000 QSOs in the 24-hour period, not bad for 100 watts, and many groups reported their highest ever score. Weather conditions were also superb: the sunny weather enjoyed by Jubilee revellers also blessed the NFD operators, though one or two got caught by showers as they were packing up to go home on Sunday.

One of the success stories of this year's contest was the number of entries in the QRP section. The 10W power limit and restriction to 12 hours maximum operation makes it possible for groups with few operators to take part. Another notable feature was the appearance of two entries from Guernsey, and unusually there was also an

Above: Sunrise over the GU3HFN/P quad antenna on the coast of Guernsey. Inset: G3KNU works the night shift at the Scunthorpe Steel ARC, G4FUH/P. Below: Ken, G0ORH, at the Newbury &DARS, gives the operating aid his thumbs up. It obviously worked, because G5XV/P came in in top place. Bottom: For the first time, two NFD entries from Guernsey: Bob, GU4YOX, and Mike, GU4EON (GU3HFN/P), with mainland visitors Roger, G3SXW; Ian, G3WVG; and Nigel, G3TXF (GU0AAA/P).

QRP INNOVATION

QRP ACTIVITY HAS grown with the appearance of rigs such as the Yaesu FT-817 and especially the Elecraft K2. The latter is a very high performance QRP transceiver, available as a kit, with a receive performance better than anything produced by the 'big three' Japanese manufacturers. The design of the K2 takes care to minimise power consumption on receive, and the purchase of one of these rigs by G3YMC of the Bracknell Club led to the thought that they could enter the low power section without needing to bother with a generator. Dave Sergeant, G3YMC, describes their experience: "What a mavellous NFD! The significant factor was that G4BRA/P was a totally battery-powered event, and our results should be an encouragement to other groups, especially those considering a low power section entry. The station was not only easy to put up, but worked flawlessly, and it showed just what a superb rig the Elecraft K2 is. Operation was from G3NCN's camping trailer, and the transformation of this from an innocent trailer behind his car to a spacious tent was in itself an experience. Power from the trailer's own 12V car battery powered lighting and the logging laptop (an ancient Zenith, but it runs off 12V). Cooking and heating was from camping gas.

"The K2 was powered separately from Gel cells. We brought two 4AH units and two 7AH units. As it happened we had oodles of power and could have managed with just one 4AH - the 7AH ones went back unused! The antenna was similar to what we have used in the past, but had been rebuilt. A classic NFD antenna in fact, and it certainly worked. The convenience of the K2's ATU was great, instant band change! There is a lot to be said for 5W, and I regret the increase to 10W a few years ago. One of our operators was keen for us to run the full 10W but he was overpowered. I did feel we might need to do that on topband, but in the event 5W was more than adequate - and it was the first real test of my K2 on that band.

"The antenna was a doublet with 204ft top, there is nothing significant in this length, but it is in fact a double size G5RV and so can be expected to give a sensible impedance match on all bands. Feeder was 40ft of open wire line using electrical conduit for the spacers. The internal tuner (KAT2) of the K2 has a wider matching range than many of the other auto ATUs, and can match most things anyway. The switched balun was a single balun with a toggle switch to switch between 1:1 and 4:1 options, and we did this to cater for any unexpected bad matches. In fact we could match the antenna in either position, and used the 1:1 for all bands because it gave us a slightly better match on some bands. The worst SWR was 1.6:1, most bands were 1:1 - and of course the SWR / power meter is built into the K2 as well. Leaving the balun in the one position allowed true instant band change, a luxury we have never had in NFD before.

"We had no problems working people - in fact we were amazed at some of the weaker stations we did work. Calling CQ, however, was mostly fruitless. Comment has been made that low power entrants should delay starting until after the initial rush. If we had done that we would have missed the continental opening on 10m at the start. We feel our choice of time (5pm - 5am local in a single session) is the best compromise - all the double points on both 10m and topband. Of course you don't know when (or if) 10m will open. Thrilled with the success of this year's attempt, we can't wait for next year."

There is a more detailed writeup on the club's web page at www.dsergeant.btinternet.co.uk/barc.htm and I am grateful to G3YMC for supplying the desciption of the Bracknell club's station.

entry from the Isle of Man. Will it ever happen that all seven G countries are active at the same time in field day?

OPEN SECTION

CONGRATULATIONS to the team from Newbury & District ARS who, after many years near the top using their old club callsign G3WOI/P, changed to G5XV/P and put in a super effort to win NFD 2002 by an appreciable margin. They used a TB3 tribander and dipoles 65ft high, and were able to run for long periods on the HF bands to build a substantial score averaging 51 QSOs per hour. Congratulations to operators G3RVM, G3ZGC and G0ORH who will receive the NFD Shield.

East Notts CG, G3TBK/P, is another group always close to the top, but they will have to settle for second place this year and the G6ZR Memorial Trophy. Congratulations to operator G3TBK assisted by G4LPD and G0GDU. They used a TH7 at 60ft, phased dipoles on 40m and dipoles on 80 and 160m. Past winners Lichfield ARS, G3NKC/P, take third place this time, due perhaps to lower scores on the double point bands of 10m and 160m. They also used a TH7 tribander and the operators were G4PIQ, G3NAS, G3NKC, G3VHB, G0MTN and G3ZBE. The De Montfort University ARS team, G3SDC/P, are regulars on 20m and they again win the Frank Hoosen, G3YF, Trophy.

RESTRICTED SECTION

IN BOTH THE Open and Restricted sections, the top three cards in the pack from NFD 2000 were shuffled to give this year's places. Two years ago the Three As trip to GD gave them second place behind GM3POI/P, but this time the visit to Guernsey made by G3SXW, G3TXF and G3WVG gained them the Bristol Trophy with a win by a narrow margin over another regular contender for the top spot, the Mid Beds CA, GQ5LP/P.

Mid Beds were unique among the 42 field day entrants in adopting the GQ prefix in celebration of the Golden Jubilee. Most groups probably felt that it would be more trouble than it was worth to have to explain what the prefix meant, and since the DLs count DXCC countries as multipliers in their field day, there might be frequent requests to clarify which country the GQ callsign represented. Although Mid Beds did not know it when they made the

SOAPBOX

"Fun weekend, superb weather for a change! Club BBQ on Saturday extremely well supported, 81% of members present!" G0RGH/P. "Our thanks to the HF Contests Committee for the time and effort spent organising and adjudicating" G3ASR/P. "Aerial problems at start, never really resolved. Didn't hear as many G stations as normal, but enjoyed the fine weather" G3GLL/P. "Great to have NFD back on the map. High electrical noise especially on Sunday with thunderstorm, team saturated during strip-down" G3IZD/P. "Our first attempt at Restricted, enjoyed it very much, not so much hard work as with big antennas" G3NJA/P. "Only the second Stevenage club NFD entry (discounting those made pre-1970, although we still have some members who took part then, but didn't feel up to it for this event) . . . great fun! No real problems except for the other part of the club who were doing the 6m Trophy from the same site and managed to blow up their amplifier consequently grinding the generator and us to a halt" G3SAD/P. "Had a bad start, with 40 over 9 QRN from the generator. Managed to get hold of another before the contest. Conditions were great on the lower bands. Some Sporadic E on 10m Saturday and Sunday afternoon helped with the points. See you next year" G3ULT/P. "Brilliant WX, well-mannered participants and thoroughly enjoyed by all" G3WKX/P. "Pat, G3MA, was one of our operators, he has taken part in every NFD since 1934" G4AYM/P. "Remarkable weather, and apart from the usual set-up problems (no voltage from diesel generator, blown fuse on distribution board, u/s computer monitor and learning again to use an unaccustomed rig) we had a trouble free contest" G4BP/P. "Good to have some openings on 10m. Weather excellent. See you next year" G4FNL/P. "Very enjoyable weekend although disappointing turnout for assistance. We extended the weekend and used GQ4FOX/P for the two bank holidays" G4FOX/P. "Working party split by Scout activity, still, all had a great weekend, made better by having best ever score" G4FUH/P. "Nice weather for a change, no major problems apart from building the tent up and finding that we had placed it in the middle of a pile of dog mess! We had the smell all weekend" G4NOK/P. "Another enjoyable NFD" G8FC/P. "First portable event by our recently-formed group, and all went well. Beautiful weather and 20m open to the States all night - what more could we want?" G4STV/P. "K index of 3 for about six hours took its toll and we did not get the best of the Es. Nice to see the increased activity from UA and DL, its a great shame that no one in GW could put a station together" GM3POI/P. "Operated from the north-east tip of Guernsey with a clear sea take-off to the North / North-East. The weather was perfect (warm and sunny) apart from a torrential downpour about one hour before the end of the contest. We had to QRT for 15 minutes or so for fear of a lightning strike" GU0AAA/P. "It's good to be back" GU3HFN/P.

RSGB National Field Day 2002 - Results

Open Section

Pos	Group	Callsign	160m	80m	40m	20m	15m	10m	Total QSOs	Total Points
1	Newbury & DARS*	G5XV/P	140/1002	124/429	232/764	330/1048	210/673	192/1286	1228	5202
2	East Notts CG*	G3TBK/P	140/1012	180/611	227/759	261/830	159/500	193/1290	1160	5002
3	Lichfield ARS*	G3NKC/P	134/986	153/523	250/827	326/1058	190/637	145/936	1198	4967
4	North Wakefield RC	G4NOK/P	123/812	84/302	210/703	271/873	167/558	147/936	1002	4184
5	Addiscombe ARC B	G3SJX/P	122/880	131/454	192/669	255/833	142/467	126/828	968	4131
6	Scunthorpe Steel ARC	G4FUH/P	126/944	124/438	171/607	193/629	158/530	89/584	861	3732
7	Oxford & DARS	G5LO/P	93/684	105/383	187/665	231/735	206/637	77/516	899	3620
8	Melton Mowbray ARS	G4FOX/P	97/704	65/220	205/700	154/545	159/542	70/476	750	3187
9	Edgware & DRS	G3ASR/P	118/818	104/383	156/479	177/564	84/251	96/594	735	3089
10	Ilford RSGB Group	G3XRT/P	140/1010	68/262	148/530	140/458	68/208	69/444	633	2912
11	Clifton ARS	G3GHN/P	166/1118	44/164	--	42/125	--	170/1007	422	2414
12	De Montfort Univ ARS A*	G3SDC/P	--	--	--	742/2150	--	--	742	2150
13	Hadley Wood CG	G4STV/P	--	--	--	609/1859	--	--	609	1859
14	De Montfort Univ ARS B*	G3RIR/P	191/1314	--	--	--	--	--	191	1314
15	Dundee ARC	GM4AAF/P	35/280	44/156	76/288	73/256	46/153	10/84	284	1217

Restricted Section

Pos	Group	Callsign	160m	80m	40m	20m	15m	10m	Total QSOs	Total Points
1	Three As CG*	GU0AAA/P	144/1046	151/524	241/821	285/947	175/563	126/836	1122	4737
2	Mid Beds CA*	GQ5LP/P	156/1086	153/519	289/940	285/937	185/596	98/626	1166	4704
3	Orkney ARC*	GM3POI/P	141/1022	156/565	151/556	388/1251	254/838	67/470	1157	4702
4	Torbay ARS	G3NJA/P	142/1030	110/398	190/648	262/820	206/663	161/1038	1071	4597
5	Park Air CG*	G3KHZ/P	164/1162	105/389	227/754	208/689	141/458	162/1098	1007	4550
6	Sussex Downs CG*	G4FNL/P	119/856	134/476	213/746	188/607	185/578	174/1118	1013	4381
7	Cumbria CG	G3IZD/P	83/632	154/539	213/702	243/787	160/529	55/406	908	3595
8	Windmill CG	G0FBB/P	112/826	116/407	173/605	171/570	94/313	113/772	779	3493
9	Addiscombe ARC A	G4ALE/P	110/832	119/425	162/561	181/587	134/442	91/640	797	3487
10	Maidenhead & DARC	G3WKX/P	128/920	70/264	179/606	170/541	133/419	82/562	762	3312
11	Tollesbury CG	G3GLL/P	114/832	77/298	197/670	171/577	31/102	89/584	679	3063
12	Scarborough ARS	G4BP/P	89/692	131/462	193/660	112/371	110/363	32/198	667	2746
13	Havering & DARC	G4HRC/P	95/682	102/336	183/563	119/360	70/208	37/208	606	2357
14	Harwich ARIG	G0RGH/P	72/520	75/271	178/591	121/399	51/163	38/244	535	2188
15	Guernsey ARS*	GU3HFN/P	--	--	--	614/1858	--	--	614	1858
16	RAFARS	G8FC/P	60/452	40/148	89/324	104/332	50/164	51/304	394	1724
17	Guildford & D RS	G5RS/P	70/492	--	81/254	51/151	14/41	104/538	320	1476
18	Glenrothes & D ARC	GM4GRC/P	41/260	43/156	104/374	113/373	58/175	14/78	373	1416
19	Telford & D ARS	G3ZME/P	--	--	--	203/689	--	--	203	689

Low Power Section

Pos	Group	Callsign	160m	80m	40m	20m	15m	10m	Total QSOs	Total Points
1	Echelford ARS*	G3UES/P	101/772	64/232	100/366	82/266	33/114	20/120	400	1870
2	Bracknell ARC*	G4BRA/P	95/756	90/331	67/244	4/14	28/95	54/364	338	1804
3	Reading & DARC A*	G3ULT/P	78/596	69/264	135/462	17/54	1/3	32/216	332	1595
4	Stevenage & DARS	G3SAD/P	37/288	35/126	120/420	80/279	23/85	30/200	325	1398
5	Isle of Man ARS	GD4IOM/P	--	--	37/133	152/434	131/434	20/128	340	1129
6	Leicester RS	G2AA/P	--	36/134	59/198	81/264	48/167	45/296	269	1059
7	Reading & DARC B	M0EEE/P	23/164	--	54/200	43/137	24/87	33/200	177	788
8	Gloucester ARS*	G4AYM/P	--	--	163/528	--	--	--	163	528

Checklogs acknowledged with thanks from G3GMM, G3JNB, G3WDS, GQ3VQO, GQ4LZP, GW4ALG/P, M5MDX/P, K3ZO*, VK8AV*, YU7LS*.
* = certificate winners.

decision, they were the only entrant using the GQ prefix and the novelty of this callsign probably paid dividends. Operators G4BJM, G4BWP and G5LP will receive the Gravesend Trophy. Behind them by the closest of margins are past winners GM3POI/P, who this time have to settle for third place but have the consolation of receiving the Scottish NFD Trophy. The top four claimed scores in this section were within just 61 points, and Torbay, G3NJA/P, should be congratulated for coming close without the benefit of an attractive prefix.

It is noticeable that the Restricted Section leaders all did better than those in the Open Section on topband, while the situation was reversed on 10 metres. It is a great advantage to have a beam up high to make the most of 10m, but too much time spent on the HF bands can be counter-productive, as it is essential to make the most of the double points available on topband.

LOW POWER SECTION

PAST WINNERS Echelford ARS returned to the QRP Section and although they only operated for a little under 11 hours in a total of five sessions, they made exactly 400 QSOs to win the Reading QRP Trophy. Congratulations to G3KKQ, G4IRN and G3NOH. Like all QRP entrants they found 10m very tough going but they made a quarter of their contact total, and 40% of their score, on topband.

Second place QRP goes to the innovative entry from Bracknell ARC, G4BRA/P, with QRP regulars Reading, G3ULT/P, taking third place. They must watch out for Stevenage, G3SAD/P, who almost doubled their score from 2000 and promise to improve further next year. Stevenage were visited by the mother of one of the club members and, at 96 years of age, she had not forgotten any of the Morse she learnt to receive whilst at Bletchley Park.

LOGGING

ONLY TWO GROUPS submitted paper entries this year, and one of them apologised that their computer expert was busy completing his university studies so couldn't look after the technology side of things this time. Most groups used *SD* by EI5DI. Whichever logging software is in use, keep an eye on the country display in the software and ask yourself if the callsign can really be correct. One group logged FW6CU/P on 80m - it was of course EW6CU/P. Maybe this was a callsign misread from a paper log keyed in after the event or maybe it was logged in real time, but either way the operator should realise it is not possible to work the Pacific at 2100UTC on 80m. Other unlikely callsigns noted included M4SKW, M0UA, U73WW, H4HRC/P, R58U/P, DL2GG/YU5.

The checking process was helped this year by the use of a new program, *SDR*, by EI5DI. This uses the same scoring routines as *SD* and rescores an entire log. All entries were run through *SDR* before checking began, to remove any scoring anomalies. Following this, the logs were processed by G3VHB's checking programs, which produced nearly 1700 lines of potential errors which had to be reviewed by hand, and score adjustments were then applied to a spreadsheet to produce the final results.

A small number of inspections was carried out this year, and no problems were found. Although not actually counting as an inspection, the Reading club site was visited by Uri Geller who lives very close to the field used by the club and he seemed very interested in the field day station. The team hoped that his presence would help their signals to bend around the ionosphere.

NEXT YEAR

WITH NO JUBILEE celebrations or World Cup to get in the way, the RSGB HF Contests Committee looks forward to an increased entry in next year's field day. The Bracknell ARC (see panel, 'QRP Innovation' on page 29) has shown that you can have a lot of fun and run up a good score with a minimalist station, and it is no longer essential to register your intention to take part, though you cannot receive a certificate or trophy if you happen to win a band or section but have not registered. ♦

RadCom Helplines FOR MEMBERS

● Michael, G8MOB, is looking for a manual in order to repair a dead **Solartron True RMS Voltmeter, type VM1484**. All copying expenses paid. G8MOB, QTHR. Tel: 07751 838 760.

● Barry, MW0BUD, needs a manual and data cards for a **Taylor 45D valve tester**. Any help would be greatly appreciated and all costs would be met in advance. MW0BUD, tel: 01974 202 899. E-mail: ffesoj@aol.com

● Mr T A Kazancioglu, TA1CAK, has a major problem with his old **Standard C510A dual-band hand-held transceiver** and is desperately seeking a circit diagram. He has the usual owner's manual, but it is no help. Costs will be reimbursed. Please contact TA1CAK by e-mail to ta1cak@yahoo.com or drtak@superonline.com

WHATEVER NEXT

STEVE WHITE, G3ZVW
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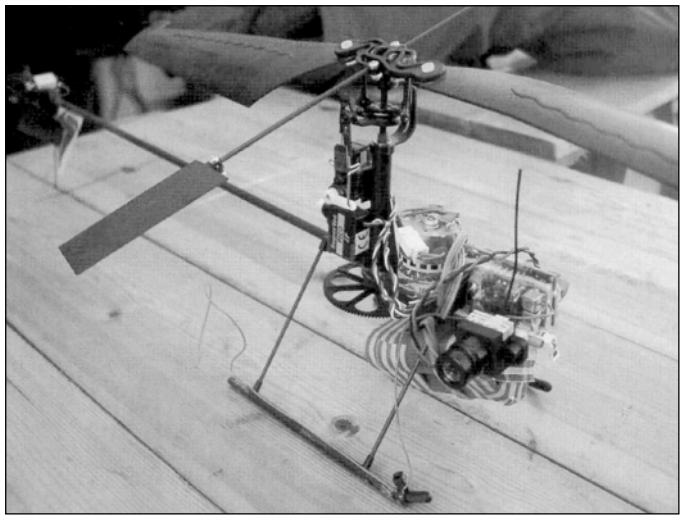
e-mail: steve.white@rsgb.org.uk

WHEN I WROTE the original item entitled 'Free Instruction Manuals' (*RadCom*, May 2002) I didn't think that the subject would create much mail, let alone rumble on as much as it has. I produced an update to it in the August edition, and this in turn resulted in e-mail messages from Brian George, G3ZOH, and Peter Tuck, G8YNC. They both mentioned the site of the same person – Charles Johnston, AB7SL. When I first investigated it this site it was up and running and working fine, but recently it vanished. More importantly, it has not re-surfaced with a different URL, which underlines Internet resources as non-permanent in nature.

However, Peter Tuck also mentioned 'hamradio.online', a Russian resource that was most definitely working at the time this column was written. It contains a wide variety of manuals, some as Zipped images, some as PDFs and some in DjVu format (with a link that takes you a site where you can freely download the DjVu reader). Much of this site is in English, so you don't need to be fluent in Russian to take advantage of it.

AIRBORNE AMATEUR RADIO

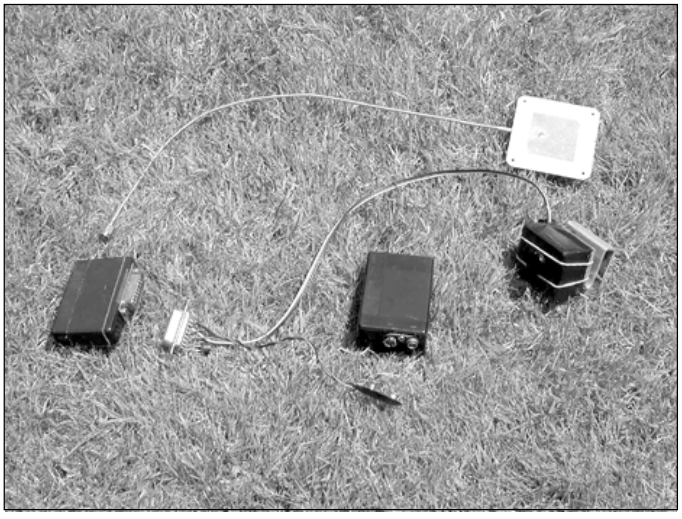
WITHIN HOURS of the October edition of *RadCom* dropping on my doormat, I received an interesting and well thought-out e-mail from John Wilson, G8KIS. Referring to my column, in which I detailed the activities of a couple of American groups who use weather balloons to carry amateur radio equipment aloft, he says "From a safety point of view, there are clearly more problems in an area like the UK with its congested airspace. I, as the pilot of light aircraft, would not want to hit even a 100mW transmitter dangling from a balloon.



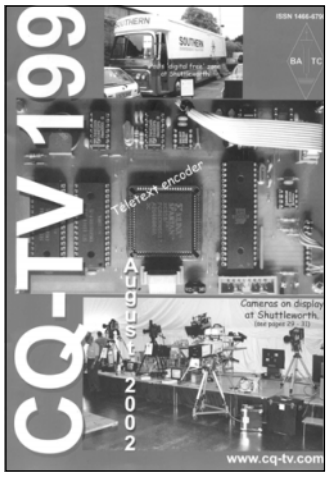
The model helicopter with camera mounted on the side and video sender slung underneath. (Source: *CQ-TV*)

Having advance warning of the launch of such things through the usual aviation channels - NOTAMS - would seem to be a necessary and sensible precaution, at least for things likely to fly above 1000ft.

"What I can't understand is why the RA (or the military) should worry about small transmitters on model aircraft or kites. The maximum weight and height of these devices are already regulated by the CAA, so adding a bit of amateur gear hardly ups the stakes. Whether with the blessing of the RA or not, many amateurs already transmit pictures from airborne devices – see *CQ-TV*, August 2002, p31. Logic would suggest that a transmitter on a model aircraft is no different from a transmitter on a tall mast or a high hill." The feature that G8KIS refers to is one where a camera and licence-free video sender were mounted on a model helicopter and flown. Typically, licence-free video senders transmit on 2413, 2432, 2451 and 2470MHz, all of which are inside the shared portion of the 13cm amateur band. A couple of friends, one of whom is a member of BATC, told me that they too had flown a model aeroplane that carried a miniature camera and licence-free transmitter. They had purchased the parts from Bitz Technology. The total weight of their video-transmitting payload was 200g – which apparently is well within the capability of the model plane they used.



Lights, camera, action! The equipment used in the model plane flown near Hertford. The antenna at the receive end was a hand-held helical beam.



Front cover of edition 199 of *CQ-TV*, the BATC's quarterly magazine. It contains a feature about radio amateurs flying a licence-free video sender on a model helicopter.

"An interesting further question is whether there are any legal implications in flying QRP devices operating on licence-free bands? Once you'd got CAA approval for your balloon flight, there'd presumably be nothing illegal about attaching one of the many ISM band data-transmitting devices that are readily available?" This is a very interesting point, and one on which I would appreciate further information.

"Another altogether different issue concerns the use of amateur gear on board manned air-

A video still of Hertford, taken from a model plane. The signal was transmitted in the shared portion of the 13cm amateur band using a licence-free video sender.

craft. Here (to my way of thinking), the only real issue is whether the use of amateur gear would prejudice the safe operation of the aircraft. To be sure, RF can affect navigation equipment, and no one questions the rules relating to the use of radiating devices onboard commercial aircraft. Nor would any responsible private flier try to plot a course in controlled airspace while having a ragchew on 2m. Nevertheless I, for one, would welcome the ability, legally, to carry aloft a QRP transmitter for such 'hands-off' purposes as transmitting ATV, testing microwave propagation, providing a temporary SHF repeater, transmitting 'live' meteorological data, and a host of other possibilities that would advance the cause of amateur radio."

G8KIS concludes: "I shall watch developments with interest." So shall I, but in the meantime I would point out that a kite [1] is not a vehicle [2]. Therefore, there seems no reason why an amateur radio transmitter or transponder cannot legally be carried on one.

SINGLE CHIP PHONE

MOBILE PHONES currently require four processors and a host of additional components, but Texas Instruments now believes it has a clear lead in developing a single-chip mobile phone - the 'holy grail' so far as the communications industry is concerned. Apparently Intel Corporation is also developing a chip for the same purpose, but TI claim it is up to three years ahead in the development race. Motorola and Japanese companies are also developing similar technologies.

The advantages of a single-chip mobile phone are clear – it will be cheaper to build, smaller, and more power-efficient than current models. TI expects to offer phone makers a two-chip solution next year and a single-chip solution by 2004.

Tom Engibous, TI's Chairman, President and Chief Executive Officer said: "TI will continue to outpace competitors in the wireless semiconductor market due to its aggressive silicon integration road map, which includes development of a single-chip cell-phone in the next two years", adding "By combining TI's advanced process technology and its complete systems understanding, it will enable its customers to deliver wireless phones and PDAs with voice, data and multimedia without increasing size and power consumption."

The company does not explicitly list a power amplifier for driving a mobile phone's antenna. Nor is mention made of Bluetooth in the single-chip phone, although TI's BRF6100 is a Bluetooth transceiver that integrates a digital RF processor, Bluetooth digital and analogue basebands, power management and memory on one chip. It is the first implementation of TI's digital RF architecture and is produced in a 130nm copper CMOS manufacturing process. In addition, TI has recently announced its 90nm process technology, which will enable low-power DSP-based devices to process voice, video and data two to three times faster without any sacrifices to battery life.

Single-chip phones are considered a prerequisite for phone manufacturers to begin fully to exploit the broadband wireless communications systems that are now starting to be installed, but chips that include analogue and digital functions are difficult to implement on a single piece of silicon. Apparently it has taken a major and risky development effort by TI to begin to crack the many problems that single-chip phones present.

A CRISPER PICTURE

ACCORDING TO Philips, the company has been inventing and re-inventing televisions since 1925. Philips produced its 100 millionth TV in 1984 and followed a year later with the introduction of the first 100Hz TV, which reduced flickering and allowed for natural motion. In the 1990s it was one of the first companies to market flat screen televisions.

The Philips 32PW9527. Twice the horizontal resolution and 33% more vertical resolution than other TVs.

Their latest TV innovation is 'Pixel Plus' technology (introduced this year), which incorporates image-processing improvements that bring "incredible sharpness, detail and depth to the picture". Pixel Plus technology doubles the horizontal resolution of standard TVs and increases vertical resolution by one third, resulting in "amazingly sharp pictures with clear and natural detail for all types of input, from normal TV images and VCRs to DVD".

Philips have incorporated this new innovation into their model 32PW9527, which has received the European Imaging and Sound Association (EISA) European Television of the Year 2002-2003 award. EISA, which is comprised of 50 influential audio, video and photography magazines drawn from 20 European countries, cited that the 32PW9527 sets "a new quality standard for the reproduction of DVD movies, broadcasts and all forms of digital video". However, there's more to it than that. The tube that Philips use in this television incorporates a kind of electron gun which can significantly reduce the diameters of the electron beams, to resolve better the increased number of pixels.

DICTIONARY DEFINITIONS

[1] *Kite*: A light frame covered with a thin material flown in the wind at the end of a length of string.

[2] *Vehicle*: Any conveyance in or by which people or objects are transported. ♦

WWW.

On-line manuals	http://hamradio.online.ru/sch_eng.html
British Amateur Television Club	www.batc.org.uk
Bitz Technology (licence-free video)	www.bitztechnology.com
Single chip mobile phone:	
(TI)	http://www.embedded.com/story/OEG20020904S0032
(Intel)	http://www.pcmag.com/article2/0,4149,43,00.asp
Philips 'Pixel Plus'	www.philips.com/newscenter

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

Newcomers' News

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

A TRIP AROUND some of England's best-known cities seems to be the theme of this month's mailbag. Thanks for all the letters and e-mails and please keep in touch, wherever you are.

COURSES IN PRESTON

ERIC EASTWOOD, G1WCQ, has been running continuous amateur radio training courses at the Preston Amateur Radio Society for some time now. The Society has also been busy with Foundation Morse Assessments for existing Class B licence holders and preparation for the five words per minute Morse test.

The group now has five Foundation instructors, three Intermediate instructors and two more for the Full RAE. More recently, the Society has registered as an RSGB satellite examination centre in order to satisfy the demand for all three levels of examination.

Eric and the rest of the gang are obviously doing something right as the pass rate at Intermediate level remains at 100%. Eric uses cuttings from back copies of *RadCom* and the sadly missed *DIY Radio* magazine to illustrate the various topics and expand on the *Novice Student's Handbook*. It is perhaps worth mentioning that the majority of the construction articles from the old *DIY Radio* magazines have been republished in the *RSGB Radio and Electronics Cookbook*.

The Preston Radio Amateur Society club callsign, G3KUE, is on the air most Thursday evenings on HF, VHF and UHF. Members who have passed their tests often use Morse and seeing the 'old hands' working in the shack is seen to be a big encouragement to the newer students.

Not content with all their educational achievements, the Society also activates the club call for special events such as the Guides' Thinking Day on the Air and Jamboree on the Air with the Scouts. One of the last special events was to mark the occasion of Preston (my birthplace, by the way) gaining city status.

If only every town and city had such an active club! Well done guys, keep it up.

DOVER FOUNDATIONS

JIM CAIRNS from the Dover Amateur Radio Club sends us news of the Foundation Licence courses that have been running at the club. So far, two courses have been completed and, by the time you read this, the third should be done and dusted.

Each course has had 10 students with 10 of the successful candidates now eager to progress by taking the Intermediate course. In the meantime they are all active on the various amateur bands thanks to lead instructor David Harding, G0DQI, Brian Joyner, G8ZYZ, and Norman Whitehead, G4HL, the instructors and not forgetting Cecil, G0OJZ, who acts as the exam invigilator. Another great team effort!

The chairman of the Dover club, Ian Keyser, G3ROO, says that the club offers Morse Assessments 'on demand'. The club meets every Wednesday evening during term time at the Dover Boys' Grammar School.

Tracey F, Tracey Q and Penny planning for the next emergency (see 'BANES Planners').

BANES PLANNERS

WITHIN THE LAST year another two members of the Emergency Management Unit for Bath and North East Somerset (BANES) Council have gained their amateur radio licences.

In July of this year Penny Le Hellay, M3PLH, joined Tracey Quinn, M1ZZY, and Tracey Fielding, 2E1GQB, in being able to operate amateur radio equipment from their offices in the historic Guildhall.

The team can be called upon in emergencies and for events such as the Bath Half Marathon and the Queen's Jubilee visit to the city. They also take part in regular communications exercises in conjunction with other local authorities in the Avon area. Attending the radio classes has given them a better understanding of the technical side and more opportunity to practice their operating skills.

The Emergency Management Unit is a link between the voluntary agencies and the emergency services. Together with the local Raynet groups they work effectively to connect essential services to ensure their most effective use.

The Raynet groups in the area have worked in co-operation with the Unit to prepare and train members to be able to communicate in most situations.

Congratulations go to the BANES ladies. I wonder if there are any other similar Units in other councils as well provided with in-house amateurs?

The June Foundation Course and tutors (see 'Dover Foundations').

TEACHING TIPS

IN THE SEPTEMBER column I asked for any ideas that tutors might like to share in helping to make the amateur radio training material easier to understand. I have already had some excellent ideas but if you have any more, please keep them coming.

David Buddery, G3OEP, has been providing Novice / Intermediate RAE courses in Great Yarmouth for some time. He has sent in several ideas for demonstrations, including one that uses Lecher lines to measure the wavelength of a VHF transmission. He also provided details of several ways to make an absorption wavemeter more sensitive.

Although the wavemeter had pride of place in the harmonic detection tool kit for many years, there is a growing view that they are of little use in today's ultra-sensitive EMC environment.

Another harmonic demonstration tool was sent in by George Davis, G3ICO. George takes a slightly different tack and instead of making the wavemeter more sensitive he makes the harmonics stronger. George's 'Harmonic Generating Tx' uses a 3.5MHz band crystal oscillator with a FET amplifier to produce lots of harmonics at a strength that can be easily detected by any old wavemeter. Not what you would want from a real transmitter, but excellent for showing what can go wrong! ♦

* *5 Sydenham Buildings, Lower Bristol Road, Bath BA2 3BS; e-mail: newcomers.radcom@rsgb.org.uk*

Down To Earth

The Watson PBX-100 Portable HF Antenna Reviewed

How About Trying Some HF Portable Operation? Richard Constantine, G3UGF* Reviews a Portable HF Antenna

THERE'S NO substitute for metal in the sky. The laws of physics haven't changed, yet amazing DX is worked every day using QRP, compromise antennas and mobile whips. Antenna theory is fine in helping to predict the likely outcome of any antenna design, but there comes a time when you just have to stop computer modelling, poring over the Smith's charts, and get out there and just do it.

The Watson PBX-100 antenna allows you to do just that. It offers simultaneous five-band operation, with the option of single WARC band performance on 10, 18 and 24MHz if required.

With an assembled length of 1.8 metres (6ft approx) and packed length of 0.85m (33.5in) it appears to be the ideal solution for backpackers and casual portable operators, but how suitable is it really, and how does it perform, under real conditions?

PUTTING IT TOGETHER

ALL THE instructions needed to assemble and use the antenna are contained on two easy-to-understand A4 sheets.

Interestingly, all but one of the assembly and tuning dimensions are given in feet and inches, with no metric alternative. Would-be operators therefore need two vital additional tools for successful operation, ie a mallet for the heavy combined steel ground stake and base, plus an 'English-speaking' tape measure for adjustments in inches.

Ground mounting is quick and simple, with just a single ground spike welded to an oversize steel tube, into which the two-section alloy mast slides and locks with a simple thumbwheel.

The two base sections can be used as a stand-alone 6-metre vertical, but the instructions fail to make clear if the HF coils need to be removed in order to resonate the antenna on 6 metres.

Five coils and telescopic whips of various lengths are supplied and once you have worked out which whip goes with which coil, it is a simple matter to arrange them horizontally in a logical order around a threaded centre ring, with the 80 metre coil in the vertical position.

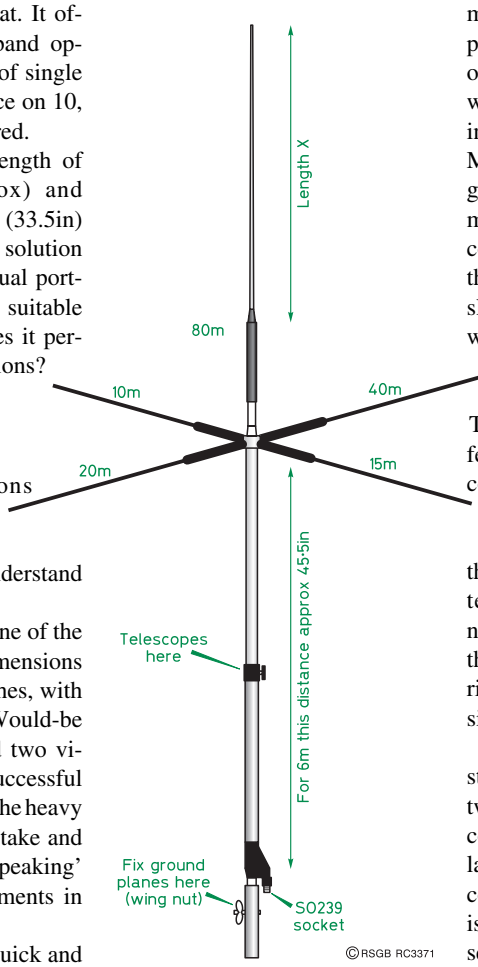


Fig 1: The PBX-100 antenna. The length X is adjusted for resonance on 80m, from 25in for 3800kHz to 34in for 3500kHz.

From its picture, I expected the centre securing ring for the coils to be a milled, friction fit to the main mast. For simplicity it is an oversized, thick wall tube, held in place by two M3 bolts. The gap between the mast and the coil ring causes the ring to rock slightly and the whole thing can appear to tilt. This has no effect on the performance but it could be better made and it is annoying to the keen-eyed.

The PBX antenna, with radials, mounted on a portable mast at a weekend cottage.

The start of one of the threads on the test model was temperamental and care was needed to prevent the steel coil thread from stripping the alloy ring socket. This was corrected simply by a very careful reaming.

An attempt has been made to stop water entering the joint between the tuning whips and the coils by fitting rubber boots, similar to those found on some BNC connector leads. Whilst the idea is to finish the job off nicely it seems frustratingly impossible to keep them in place.

The female coil socket is too deep. Screwing the telescopic whip fully home, for a good mechanical and electrical contact, forces the shroud off and back down the whip. In a number of small details the antenna betrayed an ever so slightly 'home brew' feel, even down to measured pencil marks on the base insulator. The coils are well made.

Care must be taken not to damage the telescopic whips, and a fisherman's rod bag, with separate sections like a tool roll, would be a good idea for easy transportation. If the worst happens, replacement telescopic whips and other parts are available separately, which is a bonus.

Mechanically speaking, the PBX is intended for occasional use, rather than as a permanent

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fixture. Close inspection reveals that there are several junctions of dissimilar metals: chrome, steel, brass and alloy. It must be thoroughly clean and dry before leaving stowed for long periods to avoid oxidisation at these junctions which would result in reduced performance.

THE TUNING PROCESS

AN APPROXIMATE tuning guide is provided for simple adjustments to be made, eg using a VSWR meter and low power. The smaller an antenna becomes, in relation to a true half-wavelength sized dipole or quarter-wave vertical, the more critical and precise adjustments become. The usable bandwidth reduces with the physical size and whereas the antenna under test gave acceptable readings over a range of 60kHz on 10 metres, it was as little as 10kHz on 80 metres. However, this is only to be expected with an antenna this small.

The instructions recommend the additional use of counterpoise radials cut for each band and connected to a wing nut on the base section of the mast, although they do not recommend how many to use per band. The wire provided is quite small gauge, sufficient only to make one counterpoise wire for each waveband and contact terminals are not included. I would suggest new radials of different-coloured wire for each band. These should be fitted with ring or spade terminals, soldered and crimped for long life. If using full ring terminals I strongly recommend that you paint the wing nut in fluorescent paint and carry a spare, for easy retrieval in long grass!

Radials are a science in themselves, but the perceived wisdom in this department is 'the more the merrier'. Unless backpacking, make at least two or four per band, or even more. Space on the radial tag bolt is limited, but doubling up radials to each tag, or adding a short tail can sort out that difficulty. Making them in pairs to a single tag allows a lot of flexibility to transport what you can carry, with the option of more for a favourite band.

On the subject of earths, the ground stake is lightly painted and cannot be relied on to provide sufficient earthing alone. Slight surface corrosion became evident after only short use and needed some attention. Better to have the option of an additional copper earth rod and radials, as this oft-neglected part of the system is critical for success, especially with such a compact antenna.

Whilst the PBX is simple to stow and quick to assemble, tuning prior to operation requires more effort. Careful set-up at ground level is no guarantee of a successful transfer to a mast. The pre-tuned 'window of operation' quickly changes the higher you go, dropping LF at an alarming rate, typically 100kHz on some bands for an elevation of just three metres. It all depends on the surroundings, the ground type and the angles of the radials. A telescopic mast is vital to avoid deep frustration in such circumstances! Backpackers would do well to scrap the portable mast idea, fabricate a lighter ground stake and climb a bit higher up the hill to ensure a clear take-off.

IN USE

THE PBX opens up a world of possibilities for simple effective operation. Being supplied with in-line alloy mounting brackets, for up to a 6cm diameter mast, makes it possible to elevate the antenna, or secure it to a verandah rail, for example. This proved invaluable on a recent break to a cottage (see photo opposite) with a high-walled garden, surrounding buildings and unexpected overhead power lines that all but precluded wire antennas. [Extreme caution must always be taken when putting up any aerial near power lines. If in any doubt at all, do *not* do it! - *Ed.*]

Working out the efficiency of this shortened antenna is complex. By placing the loading coils at the centre, or on some bands arguably the top, the designer has sought to improve the relative radiated power over that of a simple, short, base-loaded whip, and thereby improve its efficiency. Much of the radiation takes place from the 1.15m vertical section. The position of the coils suggest that they need more turns than normal to resonate and this brings with it some small coil resistance losses. The all important 'hidden' capacitance to ground also decreases the higher the coil is placed in the radiating system. Thus the telescopic whips are being used like variable capacitance plates to earth to obtain resonance. The whole thing reminds me of my favourite of all mobile antennas, the good old G-Whip 'Selecta'.

The PBX antenna, ground mounted on Holy Island (Lindisfarne), Northumberland. G3UGF/P in QSO with EA7PA on 14060kHz.

Performance wise, don't expect it to outperform a single-band dipole a half wavelength above ground. Measured in real terms, against a selection of real portable alternatives, such as a 14MHz dipole, an inverted-V with an 8m high centre and a 66ft random sloping wire to a tree plus auto tuner, it held its own. Received signals were typically down by 2 S-points and signal reports down by around 2 - 3 S-points. Wary of reaching snap conclusions, as real signals arrive at many differing angles from the ionosphere, it was necessary to have comparison vertical and horizontal antennas on hand for every band, firstly to establish the polarisation of signal arrival and then to make a comparison.

It really struggled under poor band conditions, and QRP operation on the lower frequencies, where the losses are greater, was hard work at times. The system is rated at 100 watts (or 200 watts PEP on SSB) so you could grab an S point or two if the power supplies permit.

The PBX proved to be great fun to use and contacts were always most rewarding. All in all it represents cost-effective value and is an ideal extra for portable addicts and for use in temporary locations. However, I still believe that there is still no substitute for metal in the sky!

Watson is a brand name of Waters & Stanton. The PBX-100 antenna is available from Waters & Stanton plc, tel: 01702 206835. At £99.95 including VAT it represents reasonably good value for such a potentially versatile unit. Thanks to Anthony, G0WFG, for the kind loan of his antenna for evaluation. ♦

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Packing Up the Yaesu FT-817

The last part of the 'FT-817 Accessories' trilogy, by Tony Lifton, G0PEH *

AFTER MAKING the operating stand [1] and the antenna bracket [2] for the Yaesu FT-817, it occurred to me that, with all the extras needed to operate in the field, a means of carrying the rig and its accessories together would be a good idea.

The following is my way of doing this. I do not intend to give definitive construction details this time, but rather some hints and tips to help you to do something similar.

Firstly, I bought a plastic carry case of the kind sold to contain tools or parts from a DIY store.

FITTING IT ALL IN

THE SIZE for the case is best determined by laying out the rig and all the extras together to give an appreciation of what is needed. By changing the relative positions of the items, you can also work out how you will partition the case. This part of the exercise, although apparently trivial, is crucial to the overall success of the project.

Remember that, when operating, you will need not only the rig but the microphone, antennas, and the rig's own rubber antenna for 6m, 2m and 70cm. If you're like me and do lots of QRP CW work, you will need your Morse key and your headphones.

If you intend to work HF, don't forget that coil of counterpoise cable for the band to be used.

PARTITIONING

WHEN YOU MAKE the partitioning you can use aluminium sheet, as I did, or thin plywood.

If you're making the inside with aluminium and pop-riveting the dividers, start with a flat sheet that fits the inside base of the case and, after making four holes through the corners of the sheet and case, you can hold these together using screws and nuts.

Now remove the aluminium sheet; make and glue in four spacers to give a gap between the base of the case and the sheet. I used squares of 5mm Perspex. Now you have a solid base to fix in your partitions, with only four screw heads showing outside the case and all the pop rivets inside.

In the lower half of the lid of the case, which has a depth of about 30mm, I have fitted a piece of 25 x 38mm plastic mini-trunking (as used by electricians) which carries the rig's rubber antennas. These are held in place by three 25mm lengths of the trunking lid.

I use two of these lid sections set above the FT-817 position lying in its operating stand, so when the lid is shut they retain the rig safely in the case.

The size of the case you choose will determine how you arrange this fixing and perhaps some extension of this will have to be constructed. Perhaps pieces of foam or rubber glued to the lid sections would be the answer.

MY LAYOUT

FITTED BELOW the mini-trunking in the lid of my box is a piece of aluminium strip with two clips to take a Mizuho vertical antenna or similar. The one shown in the photographs is for 40 metres.

The photograph of my case shows the charger for the NiCad batteries also. This is included so that I can't possibly forget it when I pack everything when going on holiday. Incidentally, the white card in the lid of the case contains a list of some items in the rig's menu as an *aide mémoire*.

All packed up and ready to go.

I hope this has given you some help in designing and making your own carry case for your take-anywhere rig and, of course, it can be modified to suit whatever your favourite rig happens to be.

REFERENCES

[1] 'A Stand for the Yaesu FT-817', by Tony Lifton, G0PEH, *RadCom* January 2002, pp36/7.

[2] 'An Antenna Bracket for the FT-817 Stand', by Tony Lifton, G0PEH, *RadCom* April 2002, p36. ♦

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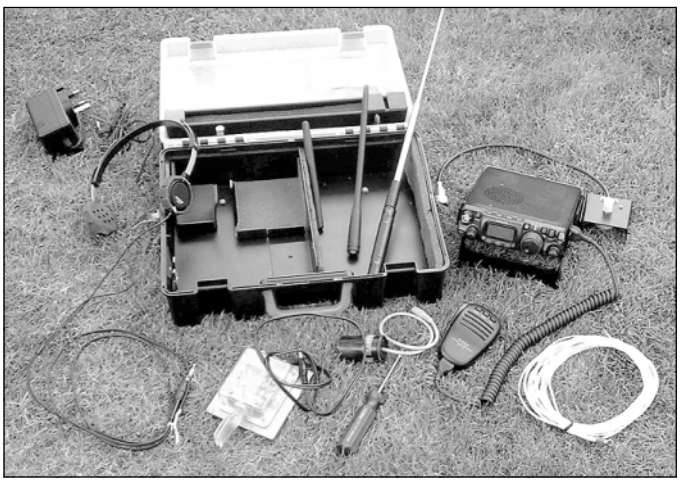
The partitioned case and its contents. Notice the NiCad charger and the counterpoise wire - two easily-forgotten items!


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We asked members when renewing their membership to include a donation to help to continue to finance the GB4FUN mobile amateur radio demonstration vehicle. The following is the list of those members who have kindly sent in a donation by the deadline date for this issue. Contributions continue to be wanted: if you would like to help, please send your donation to 'GB4FUN', c/o RSGB HQ.

DONATION FROM IOMARS

ALAN CROWTHER, GD0MWL, the Hon Treasurer of the Isle of Man Amateur Radio Society, GD3FLH, wrote to say, "Please accept the enclosed cheque to help towards the cost of running GB4FUN, the amateur radio demonstration vehicle. The committee and membership of IOMARS are pleased to support this venture and wish it every success. Additionally, we should like you to know that the Foundation Licence has been enthusiastically received on the island and as a result the membership of our small society has increased significantly. In particular, the hard work and enthusiasm of John Butler, GD0NFN, has been paramount in promoting MD3 licensing."

The RSGB is pleased to acknowledge the generosity of the committee and the membership of the Isle of Man Amateur Radio Society.

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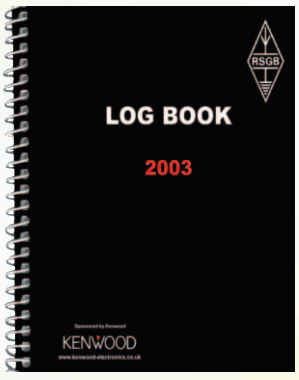

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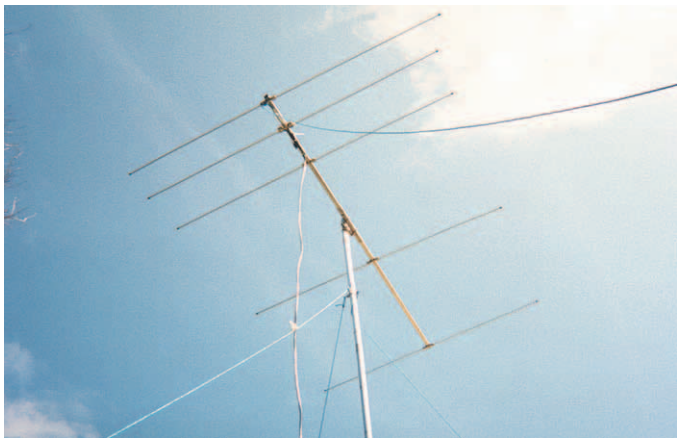
- To show that it is possible for a group of youngsters to organise and run a DXpedition and to encourage similar future operations.

The 8Q7ZZ Maldives DXpedition was led by 18-year old Mark M0TTT; 18-year old Fabian, DJ1YFK; and Tony, EA2AIJ,

The youngest team member was Robert, M0TTT, seen here at the 8Q7ZZ main operating position.

Hotel manager Ibrahim with Mark, M0DXR.

SATURDAY 27 JULY was one of the most unbelievable days of my life. The next day I was off to the Maldives, leading a team of four young DXers on a two-week DXpedition. Frights such as "have I remembered everything?" and "what happens if...?" were running through my mind - at the same time as being extremely excited. Over a year of planning and finally it's going to happen, the very first DXpedition of the Crystal Clear DX Group - 8Q7ZZ Maldives 2002.



Above: the Trident 5-element beam for 6m.

The Cushcraft A3S triband Yagi was raised between the bungalows.

This was the take-off towards Europe, across the lagoon at Lohifushi Island.

GROUP'S MALDIVES EXPEDITION

Haynes, MODXR. The other operators were 15-year old Robert, who is in his 30s. Mark, MODXR*, takes up the story . . .

The Cushcraft A3WS beam for 12 and 17m, with an extended driven element for 30m, was raised between the palm trees and rotated by pulling round the rope attached to the reflector.

THE JOURNEY

I REMEMBER waking up on the Sunday morning with butterflies in the stomach. My father Keith, G3WRO, collected our rental van and I went off to collect the Spanish team member Tony, EA2AIJ, from Stansted Airport. Once all was loaded and checked, we made our way to Gatwick where we met up with other expedition members Robert, M0TTT, and Fabian, DJ1YFK.

At check-in for Male', we were approached by a Monarch Airlines check-in supervisor. He saw all 300kg of equipment and his words were "would you like to explain this please, sir?" Once I produced the letter permitting our weight allowance from the Managing Director of the airline, things changed somewhat and we were bumped to the front of the queue!

The 11-hour long flight to Male' dragged. On arrival it was 32 °C and 85% humidity, which was quite a shock. We had challenges of all sorts at the airport. Questions such as "what is all this?", "do you have permission?", and "who is representing you?" were asked. It took a good two hours to get through customs and a further three-hour wait for our transfer. The speedboat journey to Lohifushi Island, our operating site to be, took just 30 minutes. On arrival, we met the hotel manager, Ibrahim, who warmly welcomed us and offered his help.

SETTING UP

THE NEXT MORNING, 30 July, the team carried out a site survey for the antennas. First impressions were not good, with the whole area practically surrounded by palm trees. However, after a team meeting, we decided that it wasn't that bad after all - we could fit the main HF antennas between the huts as opposed to in front of or behind them. This meant that the take-off to Europe, North America, and Japan was good, at the same time as minimising the disturbance to other hotel guests.

It took around seven hours to build and erect the four antennas, an A3S 10 / 15 / 20m tribander, A3WS 12 / 17 / 30m tribander, both loaned by the Five Star DXers Association, a Trident 5-ele 6m Yagi supplied by Nevada and sponsored by the UK Six Metre Group, and a Carolina Windom, donated by Waters & Stanton.

The stations were two Yaesu FT-900s loaned by the RSGB IOTA Committee, one IC-756PROII loaned by Icom UK, and one SRW Loudenboomer amplifier for the main station, loaned by Steve, G4JVG.

ON THE AIR

BY 1300UTC we were ready to go. I made the first QSO with a station in European Russia on 15m and before long the pile-ups were huge. The expedition averaged around 300 QSOs per hour for the first night of operation.

The 6m station ran in continuous CQ mode on 50.110MHz CW with a hand-held link transmitting the receive audio from the rig. This meant that the operator could lie on the beach while monitoring 'the magic band', which was quite nice!

We had a lot of success on 6m - 330 QSOs, mainly into Japan, but on one of the last days we had a very big opening to Europe and managed to work 70 stations, of which 10 were in the UK. Other 6m DX included most of the northern European countries.

On the HF bands we worked all over the globe including many in the most difficult areas such as Central and North America. Signals from Japan and Europe were generally very strong.

Around lunchtime, all bands died and there was little activity, but by 1300UTC the bands opened and the pile-ups returned.

After 10 days and nights on the air, 8Q7ZZ shut down on HF shortly after midnight local time (1900UTC) on 10 August, the last QSO being with a station in Hawaii. The 6m station was still running on the Saturday whilst the team dismantled antennas - and a good job too, as there was a big opening to Japan! We went QRT that afternoon when we made the 25,434th QSO. By Saturday evening, all was packed and ready to go home.

On the Sunday, the team had a relaxing visit to Male', the capital city. The island measures only 2 x 1km and is a fascinating place. The people are so friendly and willing to offer their assistance, not expecting anything in return.

On Monday, we braced ourselves for the long journey home, although I was quite looking forward to the flight, as I have an avid interest in aviation.

On arrival back in the UK, we were greeted by my father, G3WRO; Andy, M5ZAP (Robert's father), and Stefan, 2E1HAX. By this time all team members were very tired and I really felt sorry for Tony and Fabian who both had to catch connecting flights to Spain and Germany about six hours later.

In conclusion, on behalf of the Crystal Clear DX Group, thank you to everyone who helped this operation and to everyone who worked us - here's to a bright future for amateur radio and DXing. ♦

* *34 Pear Tree Mead, Harlow, Essex CM18 7BY.*

Make a Simple 'Magnetometer'

Detect the effects of solar flares with this clever idea from R G (Danny) Dancy, G3JRD *

AS ALL HAMS know, radiation from the sun is responsible for creating the ionosphere. This, in turn, obligingly reflects some of our transmitted HF signals back to earth, so that they do not disappear for ever into space, thus enabling us to work DX. The same solar radiation also affects the earth's magnetic field and, during periods of high sunspot activity, the variations on both the ionosphere and the magnetic field can be quite considerable.

This article shows how to build a simple magnetometer and some electronic gear to go with it, and will hopefully encourage an interest in the fascinating field of geomagnetism. Perhaps 'magnetometer' should be in inverted commas, because this device does not measure the *value* of the magnetic field, but it does detect *variations* in the field direction. The design is not claimed to be refined, and there is plenty of scope for you to exercise your imagination and technical skills.

After studying an article by John Rowlands in the May 2002 issue of *Astronomy Now*, I have been conducting some very interesting experiments.

The first attempt was roughly as described by John, plus some ideas gleaned from the Internet; the latter were found by searching for 'Geomagnetism'. The information which trundled back down the line to my shack included the Danish Meteorological Institute's report on over 20 sophisticated magnetometers that they have operated since 1981 in Greenland.

Several simple designs for magnetometers are based on the idea of suspending a small magnet attached to a mirror on a fine thread, letting it swing freely in the earth's magnetic field, and using a beam of light reflected from the mirror onto a scale a metre or two away. The longer the distance from the mirror to the screen the more sensitive the detecting process is. The light beam is deflected by twice the angle of rotation of the mirror, which automatically doubles its sensitivity to changes in the field. By the time the light beam reaches the screen, moderate darkness is needed to see the narrow band of light reflected by the mirror.

DEVELOPING THE IDEA

AFTER SOME EXPERIMENTS (referred to by the XYL, predictably, as "Playing with the new toy"), the following can be recommended as a working basis for experimentation. **Fig 1** shows the overall layout for the sensing part of the magnetometer. It gives a mirror full-scale deflection sensitivity of approximately ±0.6°.

THE LIGHT SOURCE

Several light sources were tried, the best so far being as illustrated in **Fig 2** - a 21W festoon lamp (the type with a straight filament, often used for car interior lights and readily available at your local friendly car accessory shop). It is mounted vertically, using 8mm copper pipe. The lower length of tubing was longer, flattened and bent at right angles for mounting to the base. Take care to handle the bulb gently so that you do not have to go out and buy a replacement (as I did, being a clumsy oaf).

The electrical supply to the bulb must be AC, via a step-down transformer, as DC would generate a steady magnetic field. For the same reason any ferromagnetic material near the sensor should be avoided.

The lamp was enclosed in a length of 1½in diameter plastic water pipe, with kitchen foil inside to reflect light. The pipe was split longitudinally with a small hacksaw, and two small pieces of wood about 1/8in across wedged at top and bottom to form a slot down the length of the tube. Having obtained a light source, now for the 'compass'.

MAGNET AND MIRROR

Again, several variations were tried. In the end, the best results were with the smallest magnet available, to keep the inertia of the unit as low as possible. As suggested by John Rowlands, a discarded CD makes a good mirror, easily cut with a small hacksaw. Make the distance from the mirror to the screen at least two yards. I use a baseline of 10 feet, but this is a point open to experiment.

To get some idea of the optimum curvature of the CD, a festoon bulb mounted without the surrounding tubing can be used as a light source, and by holding the CD behind it to project onto a wall the right

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E-mail: robertdancy@lineone.net

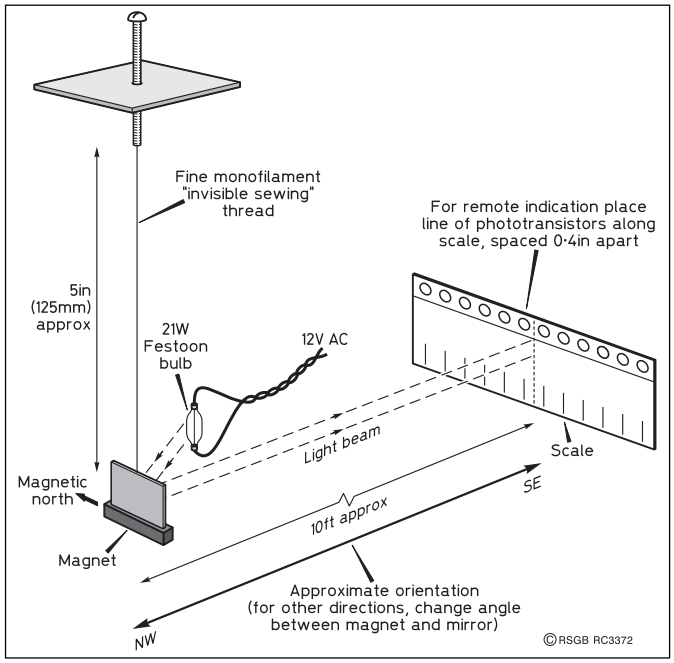


Fig 1: Overall layout of the sensor system - not to scale.

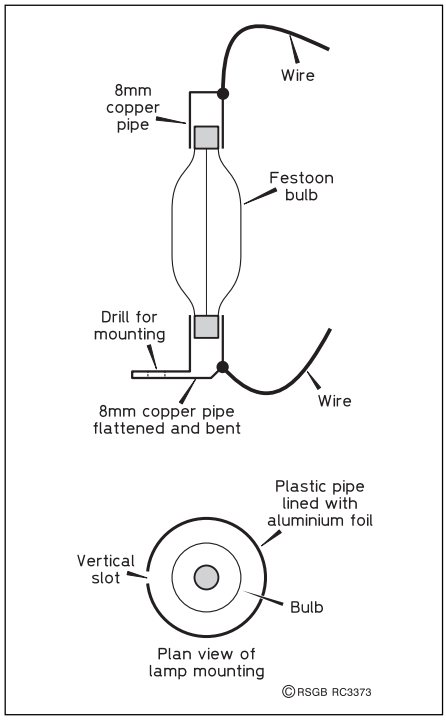


Fig 2: Plan and elevation views of the lamp unit.

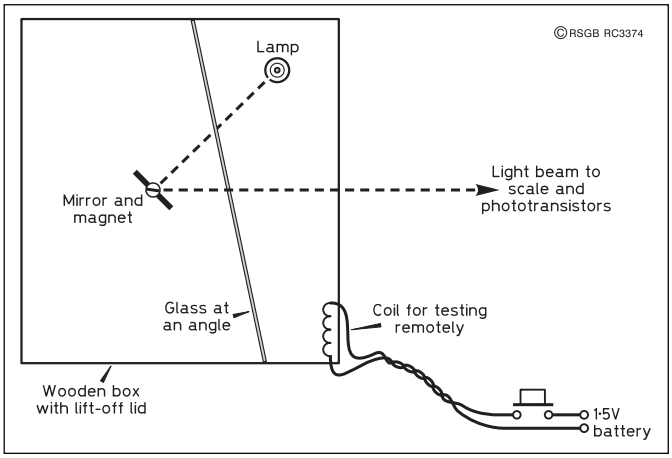


Fig 3: Plan view of lamp and suspended magnet and mirror assembly.

distance away and flexing it gently into a slight curve [*about an axis parallel to the filament* - Ed], a narrow line of light should be seen vertically on the wall. The lamp should be about four inches away from the mirror. Only a very small curvature is required.

Unfortunately, a CD does not stay like that without the application of some heat. Wait until the lady of the house is out of the way, and use a gas ring to heat the CD gently. [*Younger experimenters are urged very strongly to have an adult present during this process, or to have the adult perform the heating and bending* - Ed.] The temperature necessary is above the boiling point of water, but be careful not to heat it too much. Hold the CD in a piece of cloth to avoid burning your fingers. Once the correct heat is obtained, if you are lucky the CD will stay in a nice, very slightly curved shape after it cools.

Having achieved what looks like a consistent curve, check with the test rig, and find the area on the CD which gives the sharpest line of light on the wall, and cut out an area of about an inch square (25 x 25mm). Cement the small magnet underneath the mirror (Maplin have one which is suitable, coded FX71, (18 x 3 x 3mm). I used 'Plastic Metal', made by the Plastic Padding people to stick the magnet to the piece of CD, but any good permanent adhesive could be used.

HOUSING THE SENSOR

To avoid draughts, which can be a big nuisance, the magnet and mirror must be mounted in some sort of container. Glass jars have been used by some people, mainly schools when demonstrating to children. I did not find this very satisfactory, and preferred to use a wooden box with a small sheet of glass on one side, with the bulb just outside it, as I was worried that any convection currents which would be set up by the heat of the lamp would disturb the detector unit. The glass is best mounted at an angle sufficient to avoid reflected light being transmitted onto the scale. **Fig 3** shows this. Painting the inside of the box matt black also reduces unwanted light reaching the scale.

THE THREAD

I tried suspending the sensor using several different threads, and found that a very thin monofilament was the best. This was obtained from the XYL's sewing box, and comes under the description of 'Invisible Sewing' thread. Monofilament is superior to any twisted thread for stability, as even the small weight of the magnet and mirror seems to make the multistrand type unwind, causing a small, but annoying, rotation.

Gluing the thread with a small dollop of impact adhesive at the end of a brass woodscrew gave a useful method of adjusting the height of the sensor, and once that is correct, it allows a fine adjustment of the direction in which the mirror faces in order to get the beam onto the middle of the screen. Setting the whole contraption up so that the reflected light beam runs roughly from the NW to the SE gave the best results for me; choose a suitable orientation according to your setup. It is necessary to find the best spot for the light source before fixing it. Experiment!

Having made up a working unit in the shack, which is about 36ft away from our quiet road, I was surprised that most passing cars caused a significant disturbance of the field direction. Magnetic

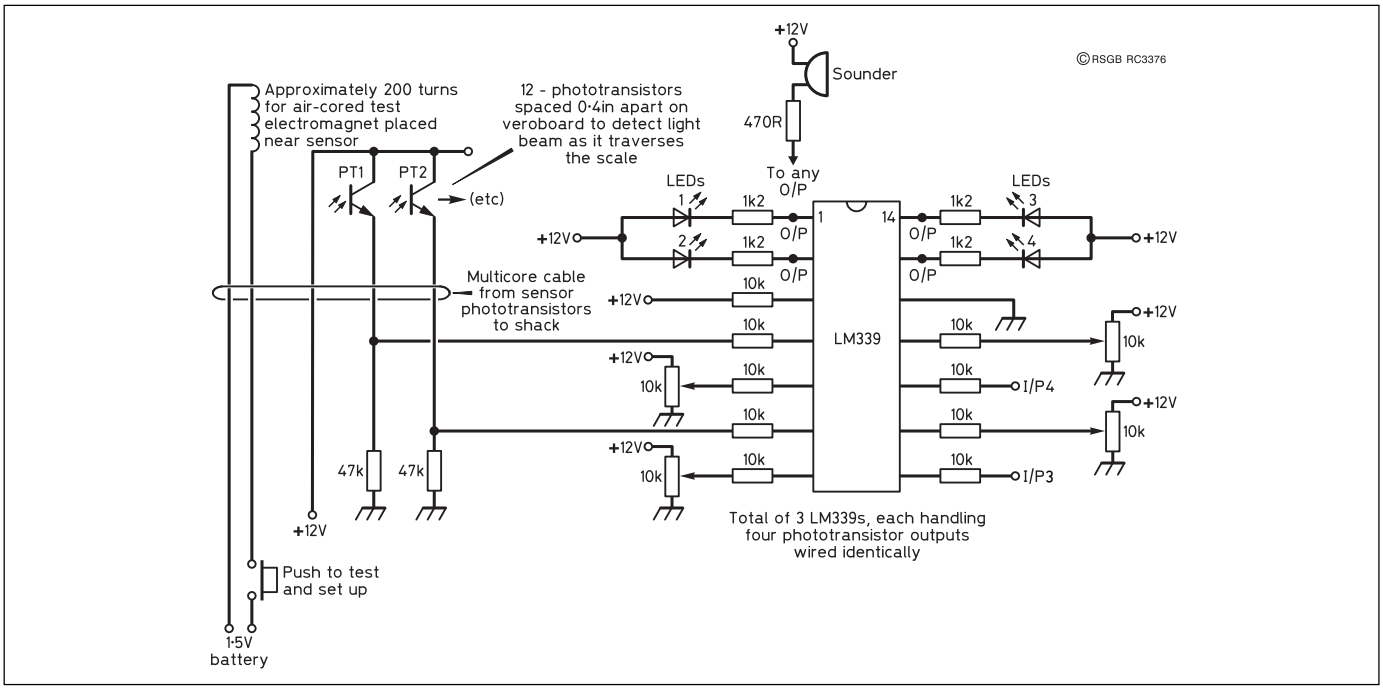


Fig 4: Circuit diagram of the system, showing the disposition of the photo-transistors and testing coil (in the attic) and the indication circuitry (in the shack). The author has used several types of photo-transistor (PT1 - PT12) with equal success, the Siemens SFH309 (Maplin CY86) and the Siemens SFH300-2 (Maplin NP64) being two of these. Each of the 12 channels has a 10kΩ sensitivity control associated with it. These controls can be individually adjusted in the shack to ensure that each LED will illuminate when the associated photo-transistor is active. The relay leads to the lamp and transformer in the attic are not shown.

storms caused much larger swings, and the simple setup so far described would be enough to give some indication of geomagnetic variations. For those who want something a little more elaborate, read on.

A REMOTE INDICATOR

TO REDUCE the interference from passing cars, to save space in the shack, and to install the sensor in a dark place, the attic was an obvious choice. This required some sort of remote indication of the light beam's deflection, and a series of photo-transistors was used in the circuit shown in **Fig 4**. These worked better than the cadmium sulphide photoresistors I had previously tried.

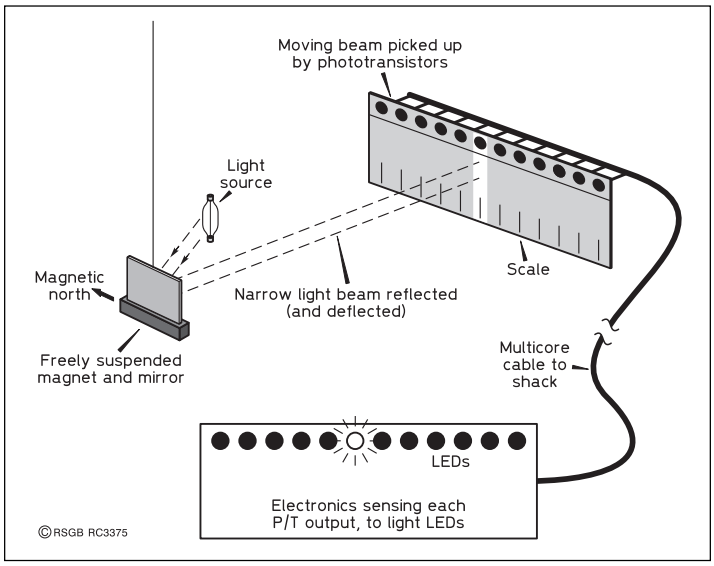


Fig 5: Diagrammatic representation of the remote indicator system.

The sensor was positioned on a shelf in the attic, and it was easy to have a nice long base-line of 10 feet in a position as far away from the road as possible. A spot about 55ft away from the interference of passing cars was achieved though, surprisingly, even this distance was not enough to eliminate the unwanted deflections entirely. Multicore cables were run down to the shack, using two lengths of Maplin CW45, 4-pair cables, which happened to be the cheapest I could find, but any telephone cable would do.

For testing and setting-up purposes an air-cored coil was wound on a piece of 1in plastic pipe. About 200 turns of 0.3mm diameter enamelled copper wire were used, and the coil placed about 6in away from the sensor. Via a pair of wires to the shack, a 1.5V battery connected for about one second generates a field for a time sufficient to make the sensor swing backwards and forwards over the full scale. The 10kΩ sensitivity potentiometers can then be adjusted so that each LED lights momentarily as the light beam swings past each phototransistor.

Small sounders connected to the output pins of the voltage comparators give audio alerts when there is some activity. Only two were found to be necessary, one indicating small swings and the other more extreme changes. Which pins to use is a matter of individual choice. On each IC, you have a choice of pins 1, 2, 13 and 14. It is possible to connect a counter to any of the outputs to count the number of times a particular level has been reached, but so far this refinement has not been attempted.

Fig 5 shows the disposition of equipment in the attic, in the shack, and its interconnection.

RESULTS

WHAT WERE the results of all this pottering around? Firstly a lot of fun, and secondly, after several weeks of waiting when nothing very much happened, an exciting time when a magnetic storm caused the system to go crazy, swinging backwards and forwards over the whole length of the scale: **Fig 6**.

Most days are fairly quiet, as you would expect, though there does seem to be a shift between 0800 and 2200 each day, with a slow change of about 10 minutes of arc, sometimes in one direction and sometimes in the other. A pattern might be found after a time.

When there is a magnetic storm, the system goes mad, at times dashing backwards and forwards over the whole scale. It is not possible to determine how much the change is, as the system is so freely suspended that it oscillated for a minute or two before settling down, and is certainly not deadbeat. Damping the sensor by immersing the magnet in a small pot of water (what else!) was tried, but it was difficult to see if it reduced the sensitivity at all.

These experiments are continuing, and there could be many improvements to the setup described here. In theory, the perturbations should be an indication of radio conditions at the time they occur, but at this early stage it hasn't been possible to relate them positively. It is an open field for anybody who wants to dabble in some electronic experiments related to ham radio, and I would be very interested to hear of other people's experiences. Despite being a decrepit old-timer, I am up-to-date enough to be on e-mail, so please let me know how you get on. ♦

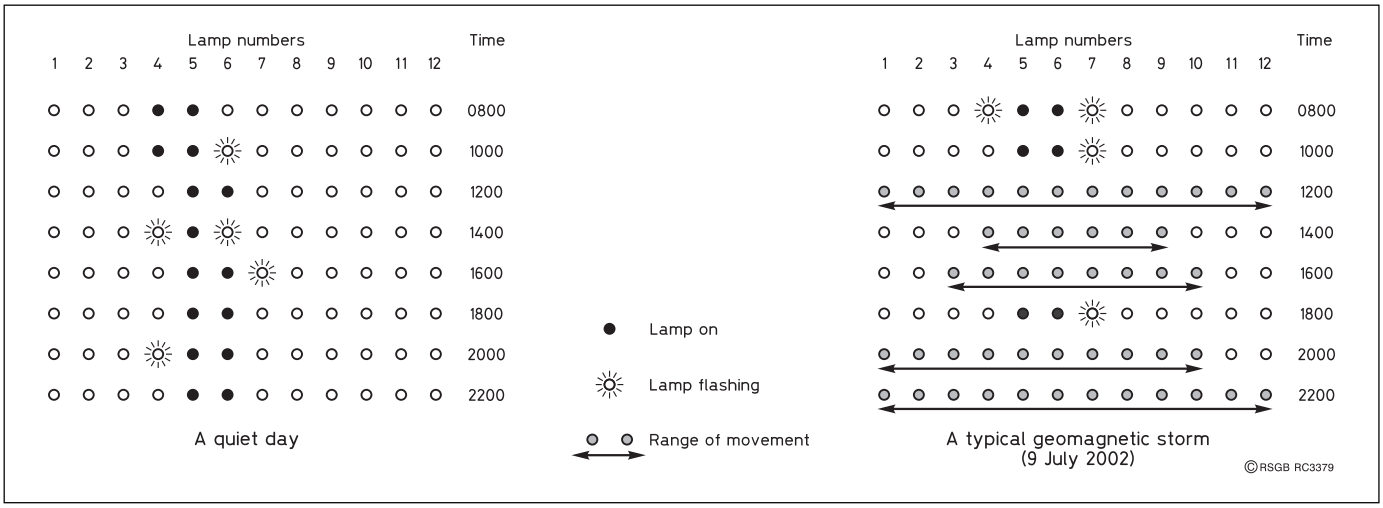


Fig 6: An illustration of the behaviour of the system on an average day and on a day where there is marked geomagnetic activity.

Radio Society of Great Britain

Annual Report 2001 - 2002

REVIEW OF THE YEAR BY THE PRESIDENT

THE LAST 12 months have seen significant positive changes in amateur radio in the UK. We have had a number of major successes in our programme to reach out to the public and opinion formers. The attendance of our Patron HRH Prince Philip, The Duke of Edinburgh, at the GB50 exhibition at Windsor Castle for the Jubilee celebrations was a highlight. The Marconi Centenary at Poldhu and at the RA HQ in London gave us excellent media and political exposure, amateur radio being the only live communications activity featured. There have been many public demonstrations mounted round the country and I thank all of you who have helped in such vital promotional work.

GB4FUN, our demonstration vehicle, has been used extensively this year on some 40 to 50 public visits including Northern Ireland, Wales and England and at a wide variety of events from county shows to sea front exhibitions, schools and Scout camps etc. I would like to extend my thanks especially to those who have contributed equipment and funds to keep the show on the road.

The launch of the Foundation Licence has been an outstanding success. I expect by year end there will be nearly 2500 completely new radio amateurs on the air. This has been achieved through the efforts of nearly 500 instructors in hundreds of clubs across the country. HQ staff have distributed thousands of information packs, examination papers, licence information and taken many hundreds of calls from interested candidates. In all a fantastic team effort of which the UK amateur community should be proud. Despite those who said that this would lead to the end of amateur radio as we know it, the reverse has happened. Our new Foundation Licensees are a breath of fresh air; with good operating manners, bringing in new ideas and helping us to regenerate amateur radio clubs.

But there are still many threats which continue to nibble away at our privileges and spectrum. Commercial pressures on our spectrum are coming from both industry and government. Through the efforts of the RSGB it has been possible to obtain a ministerial letter that spectrum pricing will not be applied to us. This is to be welcomed. But despite our best efforts, no decision has been made concerning the standards to be applied to Power Line Telecommunications. Japan has recently recognised the incompatibility of PLT with HF users and does not intend to permit this invasive technology to be deployed due to its impact on HF spectrum users. More subtle limitations to our privileges come through local attitudes to planning and masts and here the RSGB has continued to give advice to members and town planners faced with such problems. The growth of all sorts of domestic electronics continues apace. Not only do many consumer products have poor immunity to RF but they can also be potent emitters of broadband noise. Concern about the safety of permitting mobile communications using hand-held cellular phones threatens to lead to the introduction of legislation which could limit our freedom to operate mobile. We continue to monitor and act as appropriate on such threats.

There is still considerable uncertainty concerning the policies which might be enacted by OFCOM. The Society maintains close links with the officials involved.

Despite these problems, 2002 has proved to be a year when amateur radio made some spectacular progress.

We now expect to have the new Intermediate licence up and running early in 2003. The syllabus is finalised, the pilots have started. The WRC Conference in June 2003 should confirm the planned changes to the amateur radio regulations with respect to the mandatory Morse requirement and might even give us some indications as to possible progress on 7MHz.

How has this rejuvenation process been achieved? I would like to acknowledge our partnership with the Radiocommunications Agency. Without their vision and support few of these changes would have been possible. But most of all the partnership between the HQ staff and you the members, the instructors, the examiners and sponsors has enabled us to go forward with these exciting and vital projects to rejuvenate amateur radio.

Bob Whelan, G3PJT
2002 President

INTRODUCTION FROM THE GENERAL MANAGER

IT HAS BEEN another eventful and successful year in the life of the RSGB. It began with much work being undertaken to modernise the Society's Memorandum and Articles of Association and the rewriting of the Society's Bylaws. At the same time that this was underway a new structure to improve the RSGB's regional representation, aimed especially at improving communications with the members was also being commissioned. Both projects came on stream on the 1 January 2001. Early indicators show the new regional organisation is adding to the life of the Society, which is very encouraging.

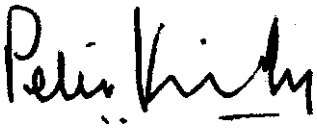
The second half of the year has been very much focussed on the negotiations with the RA, which has led to the recent licence change announcement and the introduction of the new Foundation licence. The Society's team, which was mainly volunteers, and the RA spent many man-hours working on this project and I believe they should receive our congratulations and thanks for coming up with an innovative licensing structure that will serve the UK amateur well both pre and post WRC2003.

Commercially we have held our own in what is becoming an extremely challenging arena to work. Membership levels throughout the year have been relatively stable.

Once again reading through the committee reports I'm amazed at the level and diversity of the work undertaken by the Society's volunteers in any one year. We are again indebted to them for their continued commitment.

This has been a busy year but there is still much to do and many challenges to face. The next 12 months will see our minds focussed on preparation for the IARU Region 1 conference in November 2002 and WRC2003. Closer to home we will be undertaking a proactive promotional programme aimed at promoting amateur radio to a wider audience. GB4FUN, our newly commissioned demonstration vehicle, will have a key role to play in this.

This report as always gives you a full and interesting insight into the work of the Society. The strength of the RSGB is its members. Thank you for your support and I hope you enjoy reading it.



Peter Kirby, G0TWW
General Manager

RSGB Committees' and Officers' Reports for the Year ending June 2002

Amateur Radio Development Committee (ARDC)

THE ARDC WAS set up in 2001 to fulfil the following objectives:

- to consider the privileges, structure, examinations and training required for amateur radio over the next few years;
- to promote amateur radio, with the objective of increasing the number of UK radio amateurs;
- to identify possible commercial sponsorship of amateur radio, suggesting how promotional activities might be exploited.

The first of these tasks has been the major focus of the Committee's activity since its formation. This is because the current structure of the UK amateur radio licensing system provides three separate and unconnected routes into the hobby. The Committee is working with the Radiocommunications Agency to develop a new series of integrated courses, where each level will lead logically into the next.

In a year from now, a completely revised set of examinations and assessments will be in place. The practical work, which has been a highly praised cornerstone of the Foundation and Novice / Intermediate courses, will be retained and revised. The academic standard of the Radio Amateurs' Examination will be maintained.

By the end of 2003, the Morse test requirement for HF access is likely to be abolished as an international requirement. The UK will then be in a position to offer an attractive and challenging range of options for anyone who is interested in learning about radio. The RSGB is playing a full part in this development.

Several initiatives have been started to promote amateur radio, and to give the hobby a higher profile. We know that former methods of recruiting radio amateurs are not working, and that public awareness of amateur radio is virtually zero. Major effort is currently being put into the GB4FUN bus (see photograph below), which takes amateur radio to schools and public events. Other projects are in the planning stage.

Sponsorship and other forms of fund-raising will form a part of the development activities. The raising of public consciousness of amateur radio will require more resources, and the Committee is developing methods by which we can seek help from outside sources.

Amateur Radio Direction Finding (ARDF)

THE OUTBREAK of foot and mouth disease in February 2001 and the consequent closure of most of the countryside for the rest of the year had a devastating effect on ARDF in this country. No Qualifying Events or National Final were held. This is the first time since the inauguration of the Council Trophy in 1951 that this has happened. A topband contest, a 'fun' event run in the Bournemouth area by Brian Bristow, G4KBB, was held in the traditional end of September slot. The winning team were Colin and Rosie Merry, G4CDM and G8YDB, from Dartford Heath.

Topband events have restarted this year and it is hoped that a full year of events will take place.

2m direction finding was much less affected, with regular events being run by groups in Basingstoke, Nottingham, Swansea and many others.

Look out for the GB4FUN amateur radio demonstration vehicle at a town or school near you soon!

On the International ARDF scene, British teams competed in the Belgian and German National Championships and in the 13th IARU Region 1 Championship held in La Salvetat sur Agout, France. Competitors were Geoffrey Foster, G8UKT; Phil Smith, GW1XBG; Graham Taylor, G3MDC; and Bob Titterington, G3ORY.

Teams also took part in the Belgian and German 'Foxoring' Championships, in which competitors have to find 16 low power transmitters which are audible over a range of 50 - 100 metres. The RSGB team scored its first international success with Robert Vickers, G3ORI, winning the German event.

Preparations are in hand to hold the first event to be run to International ARDF rules in Great Britain on 22 June 2002. Bob Titterington, G3ORI, has put a lot of work into this (including the building of six transmitters and antennas).

Amateur Radio Observation Service (AROS)

AROS WILL HAVE BEEN in existence for 25 years in September 2002. During this reporting period, activity has generally been in 'cruise' mode. 24 cases have been opened as a result of reports or complaints, 19 closed and five cases remain open. The following is the current situation report:

- Downlink jamming of ISS by some GM licensees - RA aware and active
- Foul language - passed to RA for further action
- Racial remarks on a 40m-net, band-edge operating splashing out of band. Targets under surveillance by AROS Observers prior to escalation to RA
- On-air abuse to 'B' Class by 'A' Class on 2 metres. Further investigation
- Abuse on *UI-View* Southern England - RA aware in London and Bristol Regional offices

AROS presentations have continued during the report period. Visits have included: Shefford, Lincoln, Horndean, Swindon, Maidenhead, Trowbridge, Basingstoke, Farnborough, North Wales RR, Derby, Kidderminster, Hoddesdon, Newbury, Vange, Cheshunt, Oxford, Colchester and Silverthorn clubs. These have been extremely well received. It was surprising to note the numbers in our hobby unaware of AROS, or who didn't know what AROS is doing, or who thought that AROS was RSGB 'secret police'!

The visit diary is now closed for 2002 and bookings may be made for 2003.

It must be stated that the co-operation between the Society and RA on AROS matters is second to none. There are now approximately 60 anonymous volunteer observers in place and it is due to their support that cases are resolved by AROS without having to escalate to the RA. The RA prefers us to handle matters within house, rather than them initiating lengthy investigations and expensive litigation.

All cases reported infringing *BR68* are seriously considered. A lot of licensees are still not conducting themselves in the spirit or letter of BR68. All who infringe BR68 are potential targets for RA revocation or worse. It is for this reason that AROS attempts to resolve matters prior to escalation.

Data Communications Committee (DCC)

THE PAST YEAR has seen the Data Communications Committee sharply focussed on the two high profile areas of 'internet linking' and 'high speed wireless data'. Both of these areas have required significant effort in negotiations with the Radiocommunications Agency, and our close working relationship with that organisation continues to be helpful in the extreme.

Earlier this year we received the first permit to operate a relatively high power unattended digital node in the 2.4GHz band which will operate at 802.11b specifications. In parallel, work continues with the 'long haul' 115Kbps point-to-point 1.3GHz equipment. An upgrade solution which will allow packet radio users to increase their speed from 1200 to 2400bps at very low cost has been developed, and full details are available via the Committee's website.

Currently there are 245 Notices of Variation (NoV) in effect to allow operation of Internet voice gateways in the 2m and 70cm bands. At the time of writing (early July) agreement had just been received from the Radiocommunications Agency that it will also issue NoVs for this kind of operation in the 51 - 52MHz band. It is therefore expected that the first 6m Internet voice gateways will begin operation at the end of July 2002. It is apparent that the simplified web-based application process (which is housed on the Committee's website) for these permits is a major contributory factor to the popularity and success of this experiment.

EMC Committee (EMCC)

THE EMC Committee continues to work on a full range of activities in support of RSGB members and in defence of amateur radio. The structure for the EMC Committee activities comprises the committee of full members, a set of corresponding members and the EMC co-ordinators. The Committee also has the support of the RSGB Honorary EMC Consultants, Hilary Claytonsmith, G4JKS; Robin Page-Jones, G3JWI; Richard Marshall, G3SBA; Fred Robins, G3GMV, and the author of the *RadCom* 'EMC' column, David Lauder, G0SNO.

A new Chairman, Angus Annan, C Eng, MIEE, MM1CCR, was appointed in February 2002, and John Pink, G3OQB, joined the Committee in June as Secretary.

The Committee liaises with the EMC groups of other national amateur radio societies and also with the IARU.

To address the rising level of challenge in EMC matters, the EMC Committee is currently looking at ways to give an improved and more proactive service to RSGB members and this, together with other EMC issues relating to the rollout of broadband network services, will be the main lines of the EMCC business during the forthcoming year.

There are continuing concerns about the possible EMC impact of broadband network services on HF radio communications. There are commercial pressures for the adoption of xDSL and Powerline Telecommunications (PLT) services, and it is vital that the interests of amateur radio should be protected. EMC Committee members are involved in committee work at national and European levels on the EMC issues and to try to ensure that appropriate standards are put in place in relation to RF emission and RF susceptibility for these new network technologies. The work has included BSI committees, the OFTEL PNO-IG Working Group and close co-operation with the RA. G4JKS, representing the RSGB, has attended the meetings of the CEPT/ERC SE35 Working Group, and was instrumental in focusing the issues for other HF spectrum users and in organising a symposium on the EMC issues of PLT at the Friedrichshafen Ham Radio event in June. These matters are complex, both on the technical and political levels, and the work will continue.

The activities in support of RSGB members are managed by Charles Elliott, G4UJW, working with the EMC Co-ordinators. The workload in this area continues to grow. The threat of intrusion on to the amateur radio bands continues and is not expected to diminish. Also, the complex nature of EMC problems because of the variety of both industrial and domestic electrical equipment continues to cause difficulties due to varying degrees of lack of immunity to amateur radio transmissions.

It is also noticeable that many of the newer entrants to our hobby do not have sufficient technical knowledge to be able to cope with complex EMC related problems without some assistance. However, thanks to the excellent team of voluntary EMC Co-ordinators who give their valuable time and energy in helping RSGB members with a huge variety of EMC problems, effective support has been available and all cases raised during the year by members have been satisfactorily resolved.

In some areas there is a shortage of EMC Co-ordinators. Following a plea in *RadCom* a good response was received for the GW area but there are still no EMC Co-ordinators in the GI area. The Committee is most grateful to both our new and longer serving volunteers for all their hard work.

One of the many duties of the HF Awards Manager is approve UK applications for overseas awards. Here, Fred Handscombe, G4BWP (above left), with his team checks QSLs for the ARRL DXCC award.

The EMCC website has proved to be an effective means of providing EMC information and it is recommended that any RSGB member with an EMC problem should first check this site. The website now provides information on a wide range of known EMC problems and a full set of the EMC leaflets. It also provides advice on the choice of filters. All of the EMC leaflets on the website have been recently updated by David Lauder, G0SNO.

The Committee wishes to acknowledge the important work undertaken by the RSGB Honorary EMC Consultants.

GB2RS News Manager

THE GB2RS News Service continues to provide an on-the-air news broadcast for radio amateurs and short wave listeners on nine amateur frequency bands. These are 1.9, 3.6, 7.0, 29.0, 50, 70, 144 / 145, 433 and 1308 / 1316 MHz. There are around 140 volunteer radio amateurs providing this service on Sundays, and we are grateful to them for contributing their time and providing this much-appreciated service. In addition to Packet radio distribution, the news is also displayed on the RSGB's website. The Internet is employed increasingly to distribute the news, and over 70 of our newsreaders now receive their scripts by direct e-mail. Within the next two years it is hoped that Internet distribution of the script to newsreaders will predominate. We may then have to consider whether we should develop a facility to distribute an audio version of the news to our readers. If this should happen, our news presenters would become news relayers, and we shall need to have discussions with the appropriate radio regulatory authority - as well as our news team - before we could bring this about on a national basis. In the meantime one of our presenters, Jeremy Boot, G4NJH, continues to deliver an audio version of the GB2RS news to the Internet, and we are looking at the question of limited re-broadcasting of this via Internet Voice Gateways where existing coverage is not good.

HF Awards Manager

OVERALL, THE NUMBER of applications for awards in the year in review has dropped, although applications have again been received from all over the world. A total of 30 certificates and 11 endorsement stickers were issued during the past year. The most popular awards this year were the IARU Region 1 Award - 19 were issued this year - and the DX Listeners' Century Award for short wave listeners, with three certificates and four endorsement stickers being issued. In addition, 17 WAC award applications were verified and forwarded to IARU HQ, and nine applications by RSGB members for other overseas awards were checked.

Peter Hart, G3SJX, submitted a large box of QSL cards and claimed Supreme plaques for the Commonwealth Century Club and the Worked ITU Zones awards, as well as several other endorsements for the WARC and 160m bands.

The DXLCA Award continues to attract interest among SWLs. Once again this year Gim Dawans, ONL7681, from Belgium maintained his top SWL spot by increasing his score to 330 countries. This award is well supported by overseas SWLs but less so by UK-based listeners.

The rules for the HF Awards were all reviewed during the year, and rules for a special award to celebrate the Queen's Jubilee were formulated. John Gould, G3WKL, has been very helpful in publishing and updating the HF Award information on his website (linked from the main RSGB site).

Award checking was carried out during the HF Convention in October as well as the VHF and GB7YDX Conventions. The RSGB has continued its participation in the ARRL Field Checking Programme for the DXCC Award. Ian Capon, G0KRL, joined the UK field checking team during the year. In addition to award claims, many items of correspondence were dealt with in order to assist members with their award hunting problems. Once again, the proportion of these arriving by e-mail has increased, and now represents more than 50% of the enquiries received. The e-mail address is hf.awards@rsgb.org.uk

Members can assist the smooth operation of the awards programme by ensuring their applications conform to the current set of rules and are sent to the correct address.

HF Committee

THE COMMITTEE HAS been working with the Ministry of Defence and the Radiocommunications Agency towards the granting 'on loan' of five spot frequencies in the 5MHz band. The purpose of this domestic allocation is primarily to arrange and conduct intra-UK propagation tests for use in times of possible disaster and emergency relief scenarios, and to assist the various Cadet Forces with communications training. This arrangement will be for an initial four-year period and will be subject to review. Operation on these frequencies will be by means of a Notice of Variation on individual licences and details have already been published by the RA and RSGB.

WRC-03 looms closer with a number of Amateur Service items being on the agenda, of specific interest being the possible expansion of the 7MHz band in Regions 2 and 3. Whilst proposals are still being finalised there is very strong support within Europe for this re-alignment which will favour both the Amateur Radio and Broadcasting services.

The events of 11 September were reflected in the attendance at the 2001 HF Convention in October. A number of keynote speakers due to travel to the UK for the event cancelled their visit and the overall attendance was down in comparison with recent years. Donations to the DXpedition Fund suffered as a result of the smaller take-up of the raffle during the event and as a result the Committee was unable to provide as much support as it would have liked. The Convention itself, however, was still considered a success and financially broke even.

Activity continues on 73kHz although the use of this band will be withdrawn at the end of June 2003. The experiments on this band during the last six years has brought about some new thinking when it comes to LF operation.

136kHz operation continues to flourish and more and more countries are becoming active. The Nevada Trophy was awarded to Mike Dennison, G3XDV, in recognition of his work carried out in connection with this band. At the time of writing, the US FCC had issued a Notice of Proposed Rule Making (NPRM) seeking comments in the possible release of 136kHz to US amateurs.

The G5RP Trophy, awarded jointly by the Vale of White Horse Amateur Radio Society and the RSGB HF Committee for rapid progress in HF DXing, was awarded to Dominic Smith, M0BLF. The ROTAB Trophy for outstanding and consistent DX work was not awarded during this period.

The committee continues to work on matters affecting the LF to HF bands and new committee members with specific interests are always welcome.

HF Contests Committee

STARTING IN THE latter half of 2001 the HFCC began to take on a review of the RSGB HF contest programme. Following consultations the decision was taken to remove the 7MHz CW and 'LF' Cumulative contests. Poor support from newer licensees was a key part of the decision to remove these events. The committee is actively looking at ways to build interest in contesting amongst newcomers to the hobby and further changes to the contest calendar may follow as a result.

One of the pressing issues for the committee has been the redesign of the certificates for HF contests. The design stage is finally complete and the new style certificates should start being issued late this year or early in 2003.

For the 2001 IOTA Contest the full results and commentary was made available to all entrants as a printed booklet. We also took this opportunity to promote the Jubilee Contest in June which proved to be quite successful and at the time of writing over 400 entries have already been received. In future years the results booklet for the IOTA Contest will be made available via the Internet and e-mail.

The submission of entries by e-mail has proven to be difficult to manage at times and occasionally logs go missing. During the next year we hope to be able to start using the log server robot as used for *CQ* and ARRL contests to automate the receipt of e-mail entries for some or all RSGB HF contests. This should go a long way to relieve the burden currently handled solely by Richard, G4ZFE, and the HFCC is grateful to Trey, N5KO, for offering this service. It is hoped that this service will be initially available for the 2002 IOTA contest.

The Special Contest Calls came up for renewal at the end of 2001. While some clubs have not yet renewed their call some new applications have been received and the total number of calls issued currently stands at 69.

Intruder Watch

THE PERIOD COVERED by this report has included the usual mixture of broadcast station spurii, unidentified carriers, and accidental transmissions from military and civilian sources. The number of broadcast station problems appears to be slightly down on previous years; Portugal, Russia and Canada were all asked to attend to transmitter faults which were causing problems in the 14 and 18MHz bands. The notification of a problem on our behalf by the RA Monitoring Station at Baldock is usually received in a positive manner by the broadcaster involved. The broadcast station is usually unaware of the problem and appreciates the information being given. A change of transmitter or antenna is usually the first action taken and the problem often disappears immediately.

One of the more unusual signals on the band is the group of tones which appears around 18090kHz when propagation is open to the Caribbean. It was thought to be a new digital mode when reports were first received but signal analysis and DF bearings confirmed the reappearance of the 'Havana Gurgler'. This is a harmonic of a Cuban jamming station which operates on 6030kHz. Requests for the Cuban authorities to operate their jammer on one frequency only have not met with any noticeable success.

Another unusual signal was found on the 21MHz amateur band earlier this year. This was a slow ticking noise which was about 100kHz wide. It was not the Over The Horizon Radar (OTHR) transmission from Cyprus which occupies rather less bandwidth and has a high pulse frequency. Direction finding from a number of different stations confirmed a location in the Adriatic Sea, between Italy and Albania. It disappeared rapidly when enquiries were initiated and its true purpose has not yet been discovered.

IOTA

2001/2002 WAS A YEAR of consolidation after the significant changes made to the IOTA island listings and rules in *Directory 2000*. There is now a good understanding of the changes and broad acceptance of the re-introduced rule requiring island names to be printed on the card.

The steady inflow of new IOTA members continues and among these it is worth noting an increasing number of amateurs who have completed DXCC and are now looking for a new challenge. IOTA is firmly established as an *activity programme* rather than just an award programme. Each year hundreds of amateurs experience for the first time the delight of an IOTA DXpedition: the fact that so many now make it a regular event in their holiday plans indicates the enjoyment it gives. On-air activity is the best method of promoting IOTA - that this is increasing at such a rate illustrates its success.

The major task for the IOTA Manager is the day-to-day running of the programme. The dynamic nature of the programme means that it cannot run itself. In the 12 months under review the Manager replied to more than 3000 e-mails, many involving considerable research and most a decision. The IOTA Manager maintains a careful watch on all opera-

tions from new and very rare groups, establishing and maintaining contact from the initial planning stage through to receipt of documentation confirming presence on the island (validation). It is of note that almost without exception every expedition asked complies fully with the requirements as laid down, many in an exemplary fashion.

The Manager's job also includes liaison with other national societies on IOTA matters, including licensing, with ARRL where there is a DXCC / IOTA joint interest, with national island award sponsors and, generally, with other similar bodies.

While most of the award issuing side of IOTA is carried out by checkpoints liaising directly with the HQ IOTA Co-ordinator, Sylvia Manco, queries relating to the acceptance of particular operations and cards have to be referred to the IOTA Manager for decision. This is a significant part of his duties, generating much correspondence and need for re-search.

A major task of the year under review was the editing of material for the *IOTA Directory - 11th Edition* published in May. This involved updating *Directory 2000* and the prepa-ration of a significant amount of new material. A particularly valuable new feature was a checked list of valid calls from the rarest 500 IOTA groups, a great help when researching old cards and in preparing a first IOTA application.

With the structure of IOTA and list of valid islands now firmly established, the single most important task remaining is the establishment of a regime for regular systematic cleansing of the data on the database. This is essential for the maintenance of programme integrity to ensure the long-term future of the programme.

Yaesu sponsorship continued and the current agreement has one more year to run. The Yaesu money, together with a contribution from *Directory* sales, is paid into the IOTA Development Fund managed by RSGB HQ.

The general information leaflet supplied with Yaesu HF rigs was redesigned and rewritten and extra copies should be available for future conventions.

Committee members once again organised an IOTA stream at the Windsor HF & IOTA Convention in 2001 and compered the IOTA Buffet, and are preparing an IOTA stream at the 2002 Convention. The IOTA Committee Chairman attended the Dayton Hamvention and Friedrichshafen Ham Radio exhibition to promote IOTA at no cost to the Society.

Software development work continued. Several improve-ments have been made to the HQ and Checkpoint pro-gramme. A Windows version of the members' software is being purchased from an overseas amateur and is now almost ready for distribution. G0UIH continues to maintain the RSGB IOTA website.

Good liaison was maintained with the Islands Radio Expedition Foundation (IREF) and the task of channelling some of the available IOTA Development Fund money to deserving expeditions was again out-sourced to IREF.

During the year a dossier was received from the Dragon Amateur Radio Club in Anglesey seeking reinstatement of the island on the IOTA list for the Welsh Coastal Islands (QSOs continue to count for the Welsh coastal group until February 2005). The evidence supplied by the Dragon Club suggests that, although the Ordnance Survey maps are inaccurate, the island separation is less than the requisite 200m at a mean low tide. The IOTA Manager and / or the IOTA Committee Chairman have agreed to visit the Menai Strait in an attempt to make an actual measurement - it is hoped that this can take place in 2002.

Remaining copies of the IOTA Year 2000 *Directory* were purchased at cost price from the Society by the IOTA Development Fund and have been distributed free of charge as a promotional measure to interested amateurs in a number of Asian and East European countries where, for economic reasons, there are usually no *Directory* sales.

The Society owes a debt to a body of people many of whom neither live in the UK nor are Society members, whose efforts, voluntarily given, have enabled IOTA to consolidate its position as a world ranking activity programme, second only to DXCC.

A happy Japanese visitor at the 2001 RSGB International HF and IOTA Convention, the last to be held at Old Windsor. The 2002 Convention moves to the Savill Court Hotel and Conference Centre at Egham, just across the border in Surrey.

Licensing Advisory Committee (LAC)

A CONSIDERABLE fraction of the committee's workload involves defending our existing facilities and responding to consultative documents and proposed legislation, in addition to progressing new topics. The increasing commercialisation of the spectrum, while not aimed directly at us, continues to result in more constraints on our operation in shared VHF / UHF / microwave bands. Consultative documents responded to include the Cave report regarding establishing a market value for spectrum allocations, a proposal to allow the provision of commercial services using short range devices in the 2.4GHz band, and a proposal to publish some details of licence holders. All these proposals were aimed primarily at commercial spectrum users, but may well have some incidental effects on amateurs.

The committee produced a paper for RA / CEPT expressing its concerns regarding proposals for the use of automotive radar in and around our allocation at 24GHz, an allocation to Galileo (a European GPS system) around 1270MHz, the continued pressure from the earth exploration satellite service for an allocation in the 430MHz band at WRC-03, and the committee re-iterated to the RA its concerns regarding the inadequacy of standards for RF immunity for receivers. On the more positive side, at WRC-03 there are proposals for the expansion of our 7MHz allocation and we have supported a Dutch proposal to allow the amateur satellite service downlinks in the 1.3GHz band. Two technical papers were produced at short notice and accepted for a joint RA / IEE conference on spectrum utilisation.

Several topics are ongoing. Discussions regarding allow-ing the use of amateur radio in connection with radio controlled models and on high altitude balloons continued, and equipment has been supplied to the RA for measure-ments. The RA is in the process of granting us access to some frequencies around 5MHz in the UK, and details of the changeover to allocations above 71GHz were discussed.

Microwaves

THE COMMITTEE continued to monitor and respond to the commercial pressures on the microwave bands. Most of the work this year has been directed towards defending our allocations, at the national and international level, against recent new proposals particularly in the 1.3 and 24GHz bands. Almost all the business has been conducted by e-mail.

In the 23cm (1.3GHz) band there is a plan, sanctioned by the European Parliament, for a European GPS system which could cause problems for both amateur services, in the sections of the band used for terrestrial and satellite activities. This threat, due to its very nature, affects all the ITU / IARU regions and has been the subject of liaison with IARU Region 1 and IARU Region 2 (via ARRL).

In the 24GHz band there is a proposal to introduce what is described as Short-Range Radar (SRR, automobile anti-collision radar), despite the fact that this service already has allocated to it a band near 47GHz. A paper has been prepared and submitted to the RA for consideration at ITU level, pointing out the fact that this is one of the few amateur microwave bands in which there is an Amateur Primary allocation and that amateur equipment is now capable of EME, terrestrial DX, and space satellite operation. Any station of this capability could be badly affected by the general rise in 'background' noise caused by broadband radars and spurii produced by them, as well as the reverse effect from strong amateur transmissions.

There are also ongoing negotiations with the RA and the Home Office on the use of the 2.4GHz (13cm) and 10GHz (3cm) bands, particularly with regard to the compatibility of amateur transmissions with the Primary User Services.

The Amateur Services' allocations above 47GHz are due to be moved to new frequencies in 2004 and will lose their Amateur Primary Exclusive status, although Amateur Pri-mary status will be maintained. We have requested that this move be made as soon as possible, meanwhile maintaining the current bands and releasing (for interim use), those Secondary bands that have never been implemented in the UK. Early changes will help in harmonising usage across IARU Region 1.

Liaison is ongoing with the RA and the Primary user to resolve the constraints on unattended operation of beacons and repeaters in the 2.3 and 10GHz bands, and some measurements on equipment are planned.

A paper was produced for IARU on bandplanning of 24GHz and the changed allocations above 71GHz, and the need to seek Primary status segments in our microwave allocations.

Some new designs were considered for certificates for the operating and contest awards, and the contest programme was reviewed, although both contests and the programme of microwave round tables were curtailed last year by foot and mouth disease. However, a round table was held at Martlesham and a VHF / Microwave meeting at Rease Heath in Cheshire. The *Microwave Newsletter*, under the able editorship of Peter Day, G3PHO, continues to flourish.

Novice Scheme Co-ordinator

THE PAST YEAR has seen a number of major changes to the format of amateur radio training and licensing. The uptake in Intermediate RAE courses has been in decline. A major problem has been finding centres willing to run the exam; not every club was able to take advantage of the RSGB Satellite Centre Scheme due to venues being unsuitable or not available. It is hoped that, with the new scheme being piloted towards the end of 2002 ready for introduction in January 2003, along with the new RAE syllabus being planned for January 2004, decline in the number of Intermediate and Full licence holders will be arrested.

The introduction of the Foundation Licence in January 2002, particularly with the exam on demand facility, was a major change and has seen a rapid growth in the number of people being introduced to the hobby. The growth of interest in the Foundation Licence resulted in over 3200 Foundation Licences being issued by the end of May 2002, of these over 1200 were to new licence holders.

The number of clubs and also independent instructors running courses has been welcome although there are still a number of areas and regions where more courses are re-quired. The links into both schools and youth organisations such as Cadet Forces, Scouts, Guides etc, means that there is a chance to ensure that younger people are being welcomed to the hobby. There have been concerns raised that the practical aspects of the course could make the courses difficult for the less-able student. However, suitable consid-eration has been applied to ensure that people are not at a disadvantage when it comes to the assessment of practical skills.

The work of the Amateur Radio Development Committee should be fully recognised, as it is its work, alongside that of the Radiocommunications Agency, that has introduced the changes to the amateur licence structure. If any clubs would like to have either details for their magazines / newsletters or a talk to introduce the new licence scheme, they can contact Robert Snary, G4OBE (QTHR).

Planning Advisory Committee (PAC) and Panel

DURING THE YEAR the committee has continued to make available the member's *Planning Advice* booklet, which is the PAC's main product. The booklet is much in demand, and feedback from members suggests its advice is accurate, helpful and user friendly. Obtaining a copy of the booklet from headquarters before any dealings with the planners is highly recommended. The booklet is now also available in Adobe Acrobat format from the members-only section of the RSGB website.

Our second main service is to supply advice directly to members to help them with their individual dealings with the planners, or to provide advice generally about planning matters. About 50 members were directly helped by the Panel. Such help includes general advice, drafting of letters and statements and so on. In addition, the chairman dealt with a similar number of requests for initial advice by e-mail, which either came via the Society website or by referral from HQ.

The committee continues to operate within its key objec-tives and has once again under-spent its budget allocation. We were represented at the HF Convention. A reflector has been established to enable Panel members to share knowledge and experience more easily for difficult cases.

Wider public concern about the perceived health effects of cellular masts continues to be reflected in neighbour objec-

tions to members' applications, but government advice on this is firm and it is not expected to become a significant factor in any refusals of permission. Mobile masts are regarded by some councils as immune from planning control and by others as requiring permission. Any member intending to use such a mast is recommended to seek advice from a Panel member before doing so.

Extra Panel members are being recruited at present; new Panel members have been appointed to cover Northern Ireland and Scotland. Lastly, M5GAC, G0IID and GM0TFQ are thanked for their work on behalf of the Society. All decided to leave the Panel during the course of the year. Thanks are also due to Catherine Liston, who has efficiently handled most of the PAC work at HQ.

Propagation Studies Committee (PSC)

ONE OF THE PSC's continuing principal activities is the provision of information to members and radio amateurs / listeners generally on a range of propagation-related matters. This year, as last, these included the solar report and propagation forecast for GB2RS, updated on Saturday evenings for newsreaders and on the web; the propagation prediction feature in *RadCom*, updated and complemented by predicted propagation curves on the web and the web-links feature on the Committee's website. This brings together at one location a comprehensive listing of sources, including many introductory features which should be particularly helpful to those preparing for the Foundation or Intermediate licences, whether as learners or instructors. PSC members contributed *RadCom* articles, made presentations at conventions, continued publication of *The Six & Ten Report* and *SunMag*, spoke at local radio clubs and fielded queries from Society members. The HF-Beacons mailing list, operated by the Secretary, extended its subscribers among an international group with interests in operating or monitoring beacons and in encouraging high technical standards. The Chairman continued as IARU Region 1 HF Beacon Co-ordinator and in that capacity maintained the beacon lists that are widely consulted directly on the web and reproduced by a growing number of national societies.

In addition to PSC's continuing service and educational activities, individual members were engaged in a range of projects which were discussed by the Committee. These included G3NYK's work on VLF, the team led by G4FKH which is working towards improving the algorithms underlying HF propagation prediction programs (now reaching its conclusion) and G0KYA's new project on 'greyline' propagation - a topic on which there has been considerable misunderstanding and misinformation. The Committee's other major project, the multi-band beacon, made no progress during the year due to the excessive delay in securing a response from the RA. It is hoped that the project can be progressed in a somewhat different form during the coming year.

Repeater Management Committee (RMC)

IT HAS BEEN a very busy year for the Repeater Management Committee. The introduction of Internet-linked repeaters has increased the committee's work load substantially. The continuing challenges of spectrum efficiency implementation, as well as the proposed future changes to use CTCSS as primary access control for all speech repeaters, have meant constant discussions with users, keepers and the Radiocommunications Agency.

The committee has actively sought involvement from the amateur community to assist in highlighting issues that may be problematic within the UK repeater network, this consisting mainly of overlapping coverage on the same frequency, which with re-planning and co-operation of the repeater keepers can be fairly easily resolved.

The Radiocommunications Agency has provided the RMC with a very extensive coverage prediction program, which will be used in the initial stages of an application to enable us to provide the applicant with an estimated coverage map from the intended site. It will also be used when calculating overlapping coverage and will allow the RMC to suggest various alternatives when fine-tuning an application to give the best coverage available.

Throughout the year the RMC has continued delivering club lectures, discussing relevant changes before they happen with repeater users as well as keepers, and attending as many venues as possible to ensure that every interested person gets the opportunity to meet with the committee and exchange their views.

The 2001 RSGB AGM, held at the Strathclyde Fire Brigade HQ in Hamilton, Scotland, was one of the most successful on record.

In the continued development of Internet-linked repeaters, two 24-hour 7-day unattended links have been authorised by the Radiocommunications Agency and it is now the intention of the Agency, with the assistance of the RMC, to undertake a review of the current licensing procedure for Internet linked repeaters which will take into account information gathered from users and operators of the system.

The RMC has also been dealing with some of the primary users of the 70cm band to try to ensure that we can happily co exist. This has also become a discussion issue with other spectrum users higher up in frequency who, as the demand for spectrum use increases, are looking at some of the secondary use applications with a higher degree of scrutiny.

The loss of high sites to repeaters has had the knock-on effect of some repeaters being relocated to private addresses. This seemingly logical step in the case of 70cm units has caused a rather difficult EMC issue which the RMC with the assistance of the Radiocommunications Agency is trying to prevent escalating.

Technical and Publications Advisory Committee (TAPAC)

DURING THE YEAR the committee has seen some changes to its membership: Dr Clive Smith, G4FZH, has resigned after several years' service, but has now been joined by Dr Mike Addlesee, M0BLP. Clive has been a valuable member of the committee and will also be known to many RSGB members and others as the author of several RSGB publications, especially *Test Equipment for the Radio Amateur*.

The main work of the Committee continued to be the review of technical articles for publication in *RadCom* and the generation of nominations for four trophies and prizes (Ostermayer, Courtney-Price, Norman Keith Adams and Wortley-Talbot). It is perhaps an indication of the changes that have taken place in the hobby that it is often difficult to find suitable nominations for all four trophies and prizes.

With 16 members and their very wide geographic distribution, TAPAC operates as a wholly corresponding Committee. Nearly all members have e-mail facilities and this is proving a very effective means of communication although it is still necessary on occasions to revert to 'snail-mail' or the telephone.

In the last annual review I commented that few members were taking advantage of one of TAPAC's functions, that of providing technical advice. Although it could hardly be claimed that the comment caused an avalanche of requests, some were received and, hopefully, answered satisfactorily. Perhaps I can reiterate that the membership of TAPAC encompasses a wide range of technical knowledge. Although we cannot guarantee answers to all questions, we do try to help where possible.

VHF Awards Manager

THE PAST YEAR has been one of setting new records. 173 awards have been issued, an increase of 80 over the previous year.

Six metres continues to be the most popular of our bands, seeing 142 separate awards and thus probably reflecting overall activity levels.

A number of selected claimants have been tendering parts of their claims in electronic form and this is likely to continue and expand in future.

'VHF Award News' has appeared most months in *RadCom*, whenever space is available, and is also on my website (linked from the main RSGB site).

VHF

PREPARATIONS WERE MADE for the IARU Region 1 Conference being held in November 2002. Several papers for the conference in San Marino have been prepared and include a 50MHz Code of Conduct, extension to the beacon sub-band on 70MHz and PSK31 and FSK441 (WSJT) frequency allocations on the VHF bands. A paper has also been prepared regarding the emergence of digital narrow-band weak-signal modes such as JT44 and FSK441 and the requirements to re-write the bandplans to accommodate these new digital modes within the conventional CW and SSB sub-bands.

A new style of VHF Convention was organised by the VHF Manager, a number of RSGB Committees and the UK Six Metre Group as a replacement for the Sandown / Bletchley type trade event. The convention was held at the Rease Heath Agricultural College near Nantwich in Cheshire and comprised a series of lectures given by high-profile DXers and technical experts. There was a small number of invited specialist traders present along with the RSGB bookstand. A dinner took place in the evening. It was a very successful event and next year's event at the same location is already in the planning stage. The VHF Committee awards were not presented at this event as no suitable candidates had been proposed.

The committee has endorsed a number of DCC proposals received during the year for increased frequency designations for such facilities as Internet linking. These allocations have been announced in the *RadCom* as appropriate.

Several applications for Special Research Permits were considered during the year. These were well thought-out and well presented proposals and they have all been recommended for approval.

There has been one change to the committee during the year. Peter Burden, G3UBX, resigned as a full committee member after many years of service but remains a corresponding member. Three new members have been invited to join the committee and will be attending the next meeting early in the autumn.

The continued high use of e-mails has allowed the committee to reduce the number of meetings during the year with an appropriate reduction in the committee budget.

The VHF Manager's work is carried out at both a national and international level. From a national perspective the majority of work was dealing with enquiries from members, non-members and RSGB HQ. The subject matter has been far-reaching and has covered many aspects of VHF operation.

Any queries relating to VHF operation and practice can be sent to the RSGB VHF Manager by e-mail: vhf.manager@rsgb.org.uk

VHF Contests Committee (VHFCC)

DURING THE LAST year the VHFCC has continued to make progress with reviewing its portfolio of contests. A major goal now is trying to align many of the cumulative events with our European counterpart events. The latter was achieved this year by deleting the autumn cumulative range of contests in favour of joining the growing countries participating in the Tuesday night activity events. The new calendar includes events from 50 to 2320MHz which are concurrent with similar events in Europe. Early indications are showing gradual increases of stations participating. A full review will be held before setting the calendar for next year.

The claimed scores page on the committee's website has been a major hit and encourages entrants to submit logs when the realisation sets in that their efforts are competitive.

Although foot and mouth disease is now past, it has taken several months for activity to have risen back to its pre-outbreak levels. The signs have been encouraging for VHF NFD, with a good turn-out this time.

The automated adjudication system has now been debugged to provide a quick and simple way for the adjudicators to turn around results. We hope that once this is rolled out to all committee members it will significantly speed up the overall process and ensure all logs are treated fairly and efficiently.

Most of the committees have their own web sites: go to www.rsgb.org, navigate to 'The Society' and then 'RSGB Committees' and 'Honorary Officers'

RADIO SOCIETY OF GREAT BRITAIN

(A Company Limited by Guarantee Registered in England No 216431)

Report of the Board for the Year Ended 30 June 2002

The Board of the Radio Society of Great Britain ("the Society") presents its Annual Report and the audited financial statements for the year ended 30 June 2002.

Principal Activities

The principal activities of the Society are to provide services to members who are radio amateurs, short wave listeners or others with interests in radio communication. The Society represents the interests of all UK licensed radio amateurs to the regulatory authority in the UK, the Radiocommunications Agency (RA) and via the IARU to other international bodies.

Review of the Year

The reorganisation of the Regional organisation has made it possible to offer more support to regional events and clubs. Regional Managers and their deputies have been able to respond more effectively to members.

The demonstration vehicle, GB4FUN, has visited many parts of the UK and has excited visitors, young and old.

A number of high-profile public events has taken place serving to publicise amateur radio to a wider audience. The demonstration station at Windsor Castle, GB50, on the occasion of the Queen's Jubilee, was visited by the Society's patron, HRH The Duke of Edinburgh.

The big success of the year has undoubtedly been the launch of the Foundation Licence. With over 2,000 completely new entrants into amateur radio the Foundation Licence has provided the kick start to enable amateur radio to regain its place as the leading technological pastime. The Foundation Licence has been very effective in attracting the younger enthusiast, those under 21 years old.

The Foundation course for newcomers together with examinations on demand has provided clubs with the opportunity to rebuild their membership.

The membership of the Society on 30 June 2002 was 24,627 compared with 25,329 at the start of the year.

During the year negotiations with the Radiocommunications Agency and the Ministry of Defence were successful in releasing a number of frequencies around 5MHz for experiments in short range propagation and inter-operating with the cadet forces around the UK.

The Society continues to monitor the implications for amateur radio arising from the Treasury studies on spectrum pricing. Some undertakings have been given by the RA and DTI that such pricing will not apply to amateur radio.

The EMC threats of Power Line Telecommunications (PLT) and xDSL systems continue to give concern.

Financial Report

The operating result for the year after non-recurring items and interest income, was a surplus of £8,414 compared with a surplus of £2,901 in the prior year. Subscription Income shows an increase over last year mainly due to the full year effect of last year's increase in subscription rates. Advertising income again came under pressure, and steps are being taken to widen the scope of our portfolio of advertisers. Tighter control of *RadCom* publishing costs and income from the Foundation Licence net of costs together with improved contribution from books, all improved the contribution from core activities. Despite the absorption of inflation, the improved cost structure allowed overheads to be at last year's level. The re-organisation shifts some costs from other cost centres into administration costs. The low interest rate reduced interest income, and the non-recurring costs were those incurred as a result of the re-organisation.

The Society always plans for a break-even position which, despite budget contingencies, can be affected by non-recurring items. For the year to 30 June 2003, this objective continues. The operating result for the year before non-recurring items, but after interest income, was a surplus of £9k. Non-recurring revenue of £3k resulted in surplus of £12k in the Statutory Accounts.

The Society always plans for a break-even position which, despite budget contingencies, can be affected by non-recurring items. For the year to 30 June 2001, this is the current plan.

Outlook

We expect to continue to extend and enhance the public presentation of amateur radio. A more comprehensive visit programme for GB4FUN and an enhancement of the equipment onboard is planned.

The Society is currently seeking charitable status in setting up a Trust to encompass all our work in the field of education and training. It is hoped that the trust will be established by the start of the next financial year.

It is also planned to carry out some essential maintenance and refurbishment work on the Society's headquarters building. The cost of this work may impact on the financial results of this current financial year.

The IARU conference in November 2002 represents an opportunity for the Society to raise a number of amateur radio issues of concern to UK amateurs and the Society intends to play as full a role as possible in IARU matters.

The Society awaits the results of the WRC 2003 conference in June 2003 as there are a number of amateur radio issues being discussed, such as the status of Morse as a mandatory qualification and the extension to 7MHz for example.

To meet these goals a secure financial base for the Society is essential and the Board will continue to keep all aspects of the Society's commercial activities under close review.

Personnel

The Society maintains a headquarters establishment of 24 salaried staff. The Society gives full and fair consideration to employment applications from disabled persons and has implemented the necessary requirements for Stakeholder pensions.

The Society is supported by a large number of unpaid volunteers who work tirelessly for the benefit of members. Their efforts are greatly appreciated.

All references to "The Board" throughout these financial statements should be considered to be equivalent to "The Directors" under the Companies Act 1985.

Bob Whelan, G3PJT — ***President***

Ken Ashcroft, G3MSW — ***Treasurer***

Board and Regional Council Members from 1 July 2001 to 30 June 2002

President	D F Beattie, G3BJ	1 July to 31 December 2001
	Dr R C Whelan, G3PJT	From 1 January 2002
Hon Treasurer	K Ashcroft, G3MSW	
Board of Directors		
G L Adams, G3LEQ		
D F Beattie, G3BJ	Stepped down 31 December 2001	
R H Biddulph, M0CGN	Retired 31 December 2001	
E Cabban, GW0ETU	From 1 January 2002	
R Constantine, G3UGF	From 1 January 2002	
G W Dover, G4AFJ		
F Handscombe, G4BWP	From 1 January 2002	
R Horton, G3XWH	Retired 31 December 2001	
T W G Menzies, GM1GEQ	Retired 31 December 2001	
R M Page-Jones, G3JWI		
P R Sheppard, G4EJP	Retired 31 December 2001	
J D Smith, MI0AEX		
E Taylor, G3SQX	From 1 January 2002	
R C Whelan, G3PJT		
Regional Council		
R S Atterbury, G4NQI	Co-opted until 31 December 2002	
E Cabban, GW0ETU	Co-opted 1 July to 31 December 2001. Elected to serve a three year term from 1 January 2002.	
R Clarke, M0RLY	Co-opted 10 May to serve until 31 December 2002.	
G Darby, G7GJU	Co-opted 1 July to 31 December 2001. Elected unopposed to serve three year term from 1 January 2002	
G Hunter, GM3ULP	Co-opted 21 January 2002 to serve until 31 December 2002	
W Jenkins, MM0WKJ	Co-opted 21 January 2002 to serve until 31 December 2002	
B Llewellyn, G4DEZ	Co-opted 14 June 2002 to serve until 31 December 2002	
S Lloyd Hughes, GW0NVN		
J Martindale, GM4VPA	Co-opted. Stepped down December 2002	
T W G Menzies, GM1GEQ	Retired 31 December 2001	
R Piper, G3MEH	Resigned December 2001	
I Rosevear, G3GKC	Co-opted 21 January 2002 to serve until 31 December 2002	
A Ross, G1SQB	Co-opted 10 May 2002 to serve until 31 December 2002	
M Salmon, G3XVV	Co-opted 1 July to 31 December 2001. Elected unopposed to serve a three year term from 1 January 2002	
P R Sheppard, G4EJP	Retired 31 December 2001	
J D Smith, MI0AEX		
K Wilson, M1CNY	Co-opted 1 July to 31 December 2001. Elected unopposed to serve a three year term from 1 January 2002.	

Political and charitable contributions

The Society made no political or charitable donations during the year (2001: £nil).

Annual General Meeting

The 76th Annual General Meeting of the Society will be held at University of Wales, Singleton Park, Swansea on 7 December 2002, commencing at 12.00 noon.

Auditors

KPMG were re-appointed auditors on 29 September 2001. However, since that date their business was transferred to a limited liability partnership, KPMG LLP. Accordingly, KPMG resigned on 9 May 2002 and the directors thereupon appointed KPMG LLP to fill the vacancy arising. A resolution for the reappointment of KPMG LLP as auditors of the company is to be proposed at the forthcoming Annual General Meeting.

By order of the Board

Dr R C Whelan, BSc MSc PhD, Chairman

Statement of the Director's responsibilities

Company law requires the Directors to prepare financial statements for each financial year which give a true and fair view of the state of affairs of the Society and of the surplus or deficit for that period. In preparing those financial statements, the directors are required to:

(a) select suitable accounting policies and then apply them consistently;
(b) make judgements and estimates that are reasonable and prudent;
(c) prepare the financial statements on the going concern basis, unless it is inappropriate to presume that the Society will continue in business.

The directors are responsible for keeping proper accounting records which disclose with reasonable accuracy at any time the financial position of the Society and to enable it to ensure that the financial statements comply with the Companies Act 1985. The directors have general responsibility for taking such steps as are reasonably open to them to safeguard the assets of the Society and to prevent and detect fraud and other irregularities.

START OF AUDITED ACCOUNTS

Income and Expenditure Account for the Year Ended 30 June 2002

	note	2002 £000	2001 £000
Gross income from all sources	3	1,547	1,515
Direct costs (cost of books and products sold)		(197)	(171)
Gross surplus		1,350	1,344
Administrative expenses:			
Sales and distribution expenses		(258)	(348)
Other operating expenses:		(1,101)	(1,011)
Operating deficit		(9)	(15)
Other interest receivable and similar income	6	17	20
Interest payable and similar charges	7	-	(2)
Surplus on ordinary activities before taxation	4	8	3
Tax on surplus on ordinary activites	8	-	-
Retained surplus for the financial year	12	8	3

All income and expenses for both years have been derived from continuing operations. There were no recognised gains or losses other than the surplus for the year. There is no significant difference between the above and the historical cost profit. The movement in the income and expenditure account is shown in note 12.

Balance Sheet at 30 June 2002

	note	2002 £000	2001 £000
FIXED ASSETS:			
Tangible assets	9	513	544
CURRENT ASSETS:			
Stocks	10	86	120
Trade debtors		62	59
Prepayments and accrued income		64	76
Cash at bank and in hand		430	353
		642	608
CREDITORS: amounts falling due within one year			
Trade creditors		(57)	(68)
Obligations under finance leases	11	(10)	(13)
Other taxation and social security		(17)	(20)
Other creditors		(393)	(383)
Accruals and deferred income		(127)	(121)
		(604)	(605)
NET CURRENT ASSETS		38	3
TOTAL ASSETS LESS CURRENT LIABILITIES		551	547
CREDITORS: amount falling due after more than one year			
Obligations under finance leases	11	(1)	(10)
NET ASSETS		550	537
CAPITAL AND RESERVES:			
Income and expenditure account	12	370	362
Restricted funds	12	8	3
Revaluation reserve	12	172	172
MEMBERS' FUNDS		550	537

These financial statements were approved by the Board on 28 September 2002 and signed on its behalf by Dr R C Whelan BSc MSc PhD (President), K Ashcroft FCA FCMA (Treasurer).

Report of the auditors to the members of the Radio Society of Great Britain

(A company limited by guarantee)

We have audited the financial statements on pages 55 to 58.

Respective responsibilities of directors and auditor

The directors are responsible for preparing the directors' report and, as described on page 55, the financial statements in accordance with applicable United Kingdom law and accounting standards. Our responsibilities, as independent auditor, are established in the United Kingdom by statute, the Auditing Practices Board and by our profession's ethical guidance.

We report to you our opinion as to whether the financial statements give a true and fair view and are properly prepared in accordance with the Companies Act 1985. We also report to you if, in our opinion, the directors' report is not consistent with the financial statements, if the Society has not kept proper accounting records, if we have not received all the information and explanations we require for our audit, or if information specified by law regarding directors' remuneration and transactions with the Society is not disclosed.

Basis of audit opinion

We conducted our audit in accordance with Auditing Standards issued by the Auditing Practices Board. An audit includes examination, on a test basis, of evidence relevant to the amounts and disclosures in the financial statements. It also includes an assessment of the significant estimates and judgements made by the directors in the preparation of the financial statements, and of whether the accounting policies are appropriate to the Society's circumstances, consistently applied and adequately disclosed.

We planned and performed our audit so as to obtain all the information and explanations which we considered necessary in order to provide us with sufficient evidence to give reasonable assurance that the financial statements are free from material misstatement, whether caused by fraud or other irregularity or error. In forming our opinion we also evaluated the overall adequacy of the presentation of information in the financial statements.

Opinion

In our opinion the financial statements give a true and fair view of the state of the Society's affairs as at 30 June 2002 and of its surplus for the year then ended and have been properly prepared in accordance with the Companies Act 1985.

KPMG LLP, Chartered Accountants, Registered Auditor

Notes (forming part of the financial statements)

1. STATUS

The Radio Society of Great Britain is a private company limited by guarantee and does not have a share capital. Every member of the Society undertakes to contribute to the assets if it should be wound up while he is a member or within one year after he ceases to be a member for payment of the liabilities of the Society contracted before he ceases to be a member. Every member also undertakes to contribute to the costs, charges and expenses of winding up the same, and for the adjustment of the rights of the contributories amongst themselves, such amount as may be required not exceeding one pound.

2. ACCOUNTING POLICIES

The following accounting policies have been applied consistently in dealing with items which are considered material in relation to the Society's financial statements. The company has adopted FRS17 'retirement benefits' and FRS19 'deferred taxation' in these financial statements. The financial statements have been prepared in accordance with applicable accounting standards and under the historical cost accounting rules, modified to include the revaluation of land and buildings.

The Society revalued its land and buildings in the year ended 30th June 1999. The difference between the depreciation based on the historical cost and revalued amount is not material. As a result no note of historical costs profits and losses has been shown.

The company is exempt from the requirement of Financial Reporting Standard No 1to prepare a cash flow statement as it is entitled to the filing exemptions as a small company under sections 246 to 249 of the Companies Act 1985 when filing accounts with the Registrar of Companies.

Fixed assets and depreciation: Depreciation of tangible fixed assets (except freehold land which is not depreciated) is calculated to write off the cost or revalued amount less estimated residual value on a straight-line basis over the estimated useful lives of the assets. The annual rates used are as follows: Freehold buildings: 2%; Fixtures and fittings: 10%; Furniture and equipment: 20%-25%;Computer hardware and purchased software: 20%-33%; Leased assets (motor vehicles): over the period of the lease.

Stocks: Stocks and work-in-progress are stated at the lower of cost and net realisable value.

Taxation: The charge for taxation is based on the surplus for the year and takes into account taxation deferred because of timing differences between the treatment of certain items for taxation and accounting purposes. Deferred tax is recognised, without discounting, in respect of all timing differences between the treatment of certain items for taxation and accounting purposes which have arisen but not reversed by the balance sheet date, except as otherwise required by FRS19.

Leases: Assets acquired under finance leases are capitalised and the outstanding future lease obligations are shown in creditors. Operating lease rentals are charged to the income and expenditure account on a straight line basis over the period of the lease.

Pensions and post retirement benefit: The Society contributes to group personal pension policies to provide benefits for employees on a defined contribution basis.The assets of the policies are held separately from those of the Society in independently administered funds. The amount charged against income represents the contributions payable to the policies in respect of the accounting period.

3. ANALYSIS OF INCOME

	2002 £000	2001 £000
Subscription income	864	839
RadCom advertising income	177	186
Book sales	354	333
Other income	152	157
	1,547	1,515
Other income comprises the following:		
Morse tests	18	10
Novice licence	10	10
Rallies and exhibition fees	20	42
Repeaters	25	25
Foundation Licence	27	-
Mailbox agreement	22	7
Special event callsigns	5	5
Newsletters	2	3
Sundry income	23	23
Radio Today	-	32
	152	157

4. SURPLUS ON ORDINARY ACTIVITIES BEFORE TAXATION

This is stated after charging:	2002 £000	2001 £000
Auditors' remuneration:		
Audit	9	10
Other services	8	2
Depreciation and other amounts written off tangible fixed assets:		
Owned assets	28	38
Assets held under finance leases	17	15
Hire of plant and machinery - rentals payable under operating leases	-	2
Board and Committee expenses:		
Board expenses	11	14
Committee expenses	22	21
Other expenses	12	7
Total Board and Committee expenses	45	42

5. INFORMATION REGARDING EMPLOYEES AND DIRECTORS

Directors serve in a voluntary capacity and are not remunerated for their services.

The average number of persons employed by the Society during the year was as follows:	Number of employees 2002	2001
Headquarters	24	25

The aggregate of payroll costs of these persons were as follows:	2002 £000	2001 £000
Wages and salaries	458	468
Social security costs	40	42
Other pension costs (see note 14)	16	17
	514	527

6. OTHER INTEREST RECEIVABLE AND SIMILAR INCOME

	2002 £000	2001 £000
Bank deposit interest	17	20

7. INTEREST PAYABLE AND SIMILAR CHARGES

	2002 £000	2001 £000
Finance charges payable in respect of finance leases and hire purchase contracts	-	2

8. TAX ON SURPLUS ON ORDINARY ACTIVITIES

UK corporation tax	-	-

The Society is liable to corporation tax on its investment and book sales income, less attributable expenses. However, due to tax losses brought forward there is no corporation tax charge for the year.

9. TANGIBLE FIXED ASSETS

	Freehold land & buildings	Computer equipment	Fixtures & fittings	Furniture & equipment	Motor vehicle	Total
Cost or valuation:	£000	£000	£000	£000	£000	£000
At beginning of year	490	203	66	112	47	918
Additions	-	7	-	7	-	14
At end of year	490	210	66	119	47	932
Depreciation:						
At beginning of year	18	185	48	105	18	374
Provided during the year	8	14	3	3	17	45
At end of year	26	199	51	108	35	419
Net Book Value						
30 June 2002	**464**	**11**	**15**	**11**	**12**	**513**
30 June 2001	472	18	18	7	29	544

Freehold land included above and not depreciated amounts to £ 207,000 (2000: £207,000)

On a historical cost basis, land and buildings would have been included as follows:	2001 £000	2000 £000
Cost	422	422
Depreciation	(49)	(47)
Historical cost net book value	**373**	**375**

The freehold land and buildings (comprising Lambda House, Cranborne Road, Potters Bar, Hertfordshire EN6 3JE) were professionally valued on 30 June 1999. The valuation was performed by AC Marriott, FRICS ACIArb of Wright and Partners Chartered Surveyors. The valuation was in accordance with the RICS Statements of Asset Valuation Practice and Guidance Notes. Based upon that valuation, the Board concluded that the property should be valued at £490,000. Of the above assets, all motor vehicles are held under finance lease. The Directors are not aware of any material changes in value and therefore the valuations set out above have not been updated.

10. STOCKS

	2002 £000	2001 £000
Consumable stock	1	-
Work in progress	-	8
Goods held for resale	85	112
	86	120

11. OBLIGATIONS UNDER FINANCE LEASES

	2002 £000	2001 £000
Gross obligations under finance leases	13	27
Less: finance charges allocated to future periods	(2)	(4)
	11	23
Due within one year	10	13
Due within the second to fifth years inclusive	1	10
	11	23

12. RECONCILIATION OF MOVEMENTS IN MEMBERS' FUNDS

	Restricted funds £000	Income and expenditure account £000	Revaluation Reserve £000
Opening members' funds	3	362	172
Surplus for the financial year	5	8	-
Closing members' funds	8	370	172

13. COMMITMENTS

There were no unprovided capital commitments at the end of the financial year (2001 : nil)

14. PENSION SCHEME

The company operates a defined contribution pension scheme. The pension cost charged for the year represents contributions payable by the company to the scheme and amounted to £15,757 (2001 : £17,308). There were no outstanding contributions at the year end (2001 : £nil).

END OF AUDITED ACCOUNTS

Prize and Memorial funds

RESTRICTED FUNDS

	Balance on 30 June 2002 £	2001 £
The J Fraser Shepherd Prize Fund	958	933
DXpedition Fund	1,325	866
K M Bennett Legacy Fund	1,018	1,013
Radio Communications Foundation	4,756	-
Total Restricted funds	8,057	2,812

TRUST FUNDS

	Balance on 30 June 2002 £	2001 £
The Pilot Officer Norman Keith Adams Prize Fund	905	872
The Legacy fund	11,884	11,689
Total Trust funds	12,789	12,561

Income & Expenditure Account for the Year ended 30 June 2002

	30 June 2002 £	£	30 June2001 £	£
Income				
Subscriptions	864,106		839,080	
RadCom Advertising	177,444	1,041,550	186,245	1,025,325
Books and Products for Resale		356,302		364,850
Other Services		148,882		124,853
Total Income		**1,546,734**		**1,515,028**
Contribution from Subscriptions, Radcom Publication and Other Activities				
Subscriptions net of RadCom Publication Costs	656,875		642,902	
Amateur Radio Costs	(115,679)	541,196	(113,914)	528,988
Books and Products for Resale		139,637		115,730
Other Services with a revenue implication		19,563		23,281
Total Contribution from Activities		**700,396**		**667,999**
Less Non Activity Specific Overheads				
Commercial Costs	(150,153)		(162,896)	
Administration	(313,224)		(288,405)	
Despatch	(47,876)		(57,662)	
Office Costs	(121,491)		(127,339)	
Landlord Costs	(47,494)	(680,238)	(45,165)	(681,467)
Net Surplus/Deficit from Activities		20,158		(13,468)
Interest Income		16,756		20,296
Non-recurring expenditure		(28,500)		(3,927)
Retained Surplus for the Financial Year		**8,414**		**2,901**

Notes: Activities refer to publications and amateur radio services operated in the normal course of the Society.
Simplification of the published accounts is confined to this section of the results.

FORMAL MINUTES

OF THE

75th ANNUAL GENERAL MEETING

OF THE

RADIO SOCIETY OF GREAT BRITAIN

Held on 1 December 2001 at the Strathclyde Fire Brigade HQ, Bothwell Road, Hamilton, Scotland.

Resolution 1: To receive and, if approved, confirm the minutes of the 74th Annual General Meeting.

Proposed: D Johnson, G1GNS

Seconded: R H Biddulph, M0CGN

The motion was carried on a show of hands with one abstention.

Resolution 2: To re-appoint the auditors KPMG and to authorise the Board to fix their remuneration.

Proposed: The President, D F Beattie, G3BJ

Seconded: T W G Menzies, GM1GEQ.

The motion was carried on a show of hands with one abstention.

A report of the informal proceedings of the meeting was published in the March 2002 edition of *RadCom*.

Peter A Kirby, G0TWW
Company Secretary

Seen at the 2001 AGM . . .

Top row, left to right:

'The top table' Hon Treasurer Ken Ashcroft, G3MSW; 2001 President Don Beattie, G3BJ; General Manager Peter Kirby, G0TWW.

Peter Kirby, G0TWW, on the mic . . .

. . . Receiving warm applause from the audience.

Middle row, left to right:

Hans Berg, DJ6TJ, accepts the Calcutta Key (awarded for outstanding service to international frienship through amateur radio) on behalf of Fred Johnson, ZL2AMJ.

Bob Whelan, G3PJT, took over the Presidential Chain of Office from Don Beattie, G3BJ.

Tom Menzies, GM1GEQ, was awarded the Jack Wylie Trophy for his work in promoting amateur radio in Scotland.

Bottom row, left to right:

John Hey, G3TDZ, with the splendid Wortley-Talbot Trophy, awarded to him at the AGM for his *RadCom* article 'Cave Radio, the Story So Far'.

Members in the Strathclyde Fire Brigade headquarters lecture hall.

AGM stalwart Harry Bellfield, G3SBV, made the long journey from Kent to ask his questions of 'the top table'.

Regional Managers' Elections

GORDON HUNTER, GM3ULP (DOB 08.03.43)

(CANDIDATE FOR ELECTION AS REGIONAL MANAGER FOR REGION 1 - SCOTLAND WEST & THE WESTERN ISLES)

CURRICULUM VITAE: Building crystal sets and simple valve receivers at the age of 12 years promoted a life-long interest in radio. Licensed as GM3ULP in 1965. Studied Science and Technology with the Open University, graduated in 1980 and now employed as a Lecturer in Electronics at Motherwell College. Was active on 70cm Amateur Television as GM6ADR/T and Oscar Satellites. Was 80m GB2RS Newsreader, RSGB Regional Liaison Officer for Strathclyde and past Secretary of Mid-Lanark ARS. Foundation Licence Instructor and Morse Assessor. RAE Instructor. At present, co-opted as Regional Manager for West Scotland.

PERSONAL STATEMENT: I have now almost completed my year of co-option as Regional Manager for Scotland West and Western Isles and this has been a period during which I have become more aware of the current and future requirements of amateur radio in this extensive region of the country. One area of concern requiring attention is the loss of several well-established radio exhibitions; these are events where members can meet representatives of the national Society and discuss relevant matters. The introduction of the Foundation / Intermediate amateur radio licence is now attracting a reasonable intake of candidates and courses are being organised at various clubs throughout the region. As a Further Education lecturer, I work with students of all ages and take the opportunity to publicise AR as much as possible. If re-elected as Regional Manager, I would endeavour, along with the team of DRMMs, to further the cause of amateur radio.

Nominated by:	Town:	Known for (yrs)
Jim Stirling, GM3UWX Secretary Paisley (YMCA) Amateur Radio Club; Morse Test Service Examiner; Registered Foundation Instructor; Deputy Regional Manager - District 14.	**Bishopton**	**35**
Alex Irvine, GM7OAW Committee member - Central Scotland FM Group; Repeater Keeper GB3PA.	**Bishopton**	**5**
Elvin Bailey, GM8BBA Chairman Mid-Lanark ARS; Chairman Strathclyde Fire Brigade Amateur Radio Group; Organiser of RSGB AGM 2001.	**Bellshill**	**30**
John Gallacher, GM8FHK Former Treasurer Mid-Lanark ARS; Former Secretary Mid-Lanark ARS; Former RAE Tutor Mid-Lanark ARS.	**Carluke**	**35**
Tom Wylie, GM4FDM Ex Regional Rep Region 14; Member HFCC; Secretary West of Scotland ARS; Chairman West of Scotland ARS; Secretary Paisley (YMCA) ARC; Chairman Paisley (YMCA) ARC.	**Elderslie**	**20**

BILLY JENKINS, MM0WKJ (DOB 28.04.64)

(CANDIDATE FOR ELECTION AS REGIONAL MANAGER FOR REGION 2 - SCOTLAND EAST & THE HIGHLANDS)

CURRICULUM VITAE: MSc and C& G qualified engineer 1985, 20-plus years experience in training, management and development with various global companies and specialists. Declined opportunity to take the RAE as part of university degree but managed to assist 20-plus successful candidates before taking the plunge myself in 2001. In my first 12 months as an amateur I have passed RAE Morse test, became a Morse examiner, trained and assisted 100 candidates through the RAE, Morse test, Foundation Course and Morse assessment. My only regret is that I didn't do it all sooner.

PERSONAL STATEMENT: If elected to the Regional Council after my co-option earlier this year, I aim to give the same level of commitment to promoting amateur radio to all as I have over the past few months. In my short time as an amateur I have seen the best that the hobby has to offer as a newcomer and hope to keep that flame of enthusiasm burning in all who enter into the world of radio. Amateur radio has much to offer to those that take an active interest in it. I see my role as a Regional Manager as one of igniting the flame in those who thought they could never be, to becoming the fires that keep the hobby burning into the future.

Nominated by:	Town:	Known for (yrs)
Duncan J Archibald, GM0LEW Senior Morse examiner for Lothian Region	**Livingston**	**2**
Alexander McTaggart, MM0CJT Was the club secretary until recently.	**Livingston**	**1**
Tom Menzies, GM1GEQ Former Zonal Council member for central Scotland, then East Central Scotland before that RLO, East Lothian.	**Edinburgh**	**2**
William Tait, MM0BHY Member.	**Midlothian**	**3**
Iain Elder, MM0DIS Member, RSGB, Livingston club. RAE and Morse trainer.	**Bathgate**	**5**

ROY CLARKE, M0RLY / G8AYD (DOB 25.02.44)

(CANDIDATE FOR ELECTION AS REGIONAL MANAGER FOR REGION 5 - WEST MIDLANDS)

CURRICULUM VITAE: Callsigns held: G8AYD, 1967 (Current); G6AEF/T, 1969 TV only; ON8IC, 2m only 1972; PA9TX, HF, 1972; G8AYD/LX, HF, 1972 (DXpedition); M5AYD, 2001, M0RLY, 2001 (Current). Positions held: Ashton-under-Lyne & DARS, President - three years; Northern Radio Societies Association (now NARSA) 2-day rally at Belle Vue, founder business manager - three years; co-opted RSGB Regional Manager - Region 5 in 2002. Other: RAE lecturer for five years, amateur radio website started in 1992 (still going), regional website started 2002 (50k hits per week). Societies: current member RSGB & ARRL. First joined RSGB in 1964 as BRS26070.

PERSONAL STATEMENT: I have been involved in amateur radio since 1963, and am still enthusiastic about promoting amateur radio and electronics. Professionally, I am a consultant in the field and have served on many international committees regarding electrical safety, television broadcasting standards and EMC issues. I represented the UK manufacturing industry regarding the standards for satellite TV broadcasting to EU Commissioner Pandolfi. Prior to becoming a consultant, I was in charge of R & D laboratories in the UK, USA, Taiwan and Thailand. I have previously taught electronics and the RAE and feel I have much to offer the Society and its membership.

Nominated by:	Town:	Known for (yrs)
Edward Matthews, G3FZW Member RSGB since 1948; Area rep 1953; Member (later Hon Sec) RSGB RAEN (Raynet) Committee; LRO Staffordshire 1997 - 2000; DRRM 51 - 2000; Hon Sec Channock Chase ARS (Past President); Chairman Association Of Mercian Affiliated Radio Societies; Member RAIBC; RSARS; CDXC; WAB.	**Lichfield**	**4 months**
John Bumford, G0GTN Secretary of Salop Amateur Radio Society.	**Shrewsbury**	**1**
Wayne Faulkner, M5WJF Publicity Officer - Salop ARS; Asst County Controller Shropshire County Raynet; TARRG Committee Member; Raynet HF Team Member; Member of RSGB.	**Shrewsbury**	**3**
Malcolm Element, G0EBD Chairman SARS; Committee Member SARS; Committee Member TARRG; Asst County Controller Raynet.	**Shrewsbury**	**1**
Charles Baker, G0NOL Secretary of Aldridge & Barr Beacon Amateur Radio Club and founder member.	**Walsall**	**1**

Regional Managers' Elections

JEFF SMITH, MI0AEX (DOB 09.02.41)

(CANDIDATE FOR ELECTION AS REGIONAL MANAGER FOR REGION 8 - NORTHERN IRELAND)

CURRICULUM VITAE: Currently Regional Manager for Northern Ireland and Director of Membership Services (Finance) RSGB. I have held the posts of Treasurer, Amateur Repeater Group Northern Ireland (ARGONI), Chairman, GI Packet Working Group and Belfast RSGB Group, and am a member of the Committee and previous Chairman, Bangor and District Radio Society. In 2002 I brought GB4FUN to Northern Ireland to enable Schools, Youth Groups and Clubs to see and experience this excellent initiative. I am a lead instructor for the Foundation Licence and a Foundation Morse Assessor. I operate a packet switch node for GB7HMI. I am active in Raynet.

PERSONAL STATEMENT: If re-elected I will continue to work as a member of the Regional Team endeavouring to ensure that every amateur and every club are kept informed of all developments in amateur radio and are encouraged to participate in activities in the region. I will continue to visit clubs, whenever invited, to discuss all aspects of the hobby whether local, national or international and to act as a conduit from clubs and members to the Board of the Society. From time to time I have sought out specialist advice for members and will ensure that individual requests for advice and / or assistance will continue to be met. I am a member of IRTS and have, when requested, represented as Regional Manager, the interests and viewpoints of NI amateurs in discussions with colleagues in that Society and will continue those representations whenever asked. I now seek your support and your vote.

Nominated by:	Town:	Known for (yrs)
Peter Lowrie, MI5JYK Deputy Regional Manager - Region 8	**Co Antrim**	**8**
Harry Squance, GI4JTF Hon Sec Bangor and District ARS	**Co Down**	**6**
W H Chambers, GI3ONZ	**Portrush**	**6**
Jimmy Hamill, GI4ORI	**Coleraine**	**7**
S Currie, GI3NYJ Deputy Regional Manager - Region 8.	**Co Down**	**7**

BARRY SCARISBRICK, G4ACK (DOB 25.05.41)

(CANDIDATE FOR ELECTION AS REGIONAL MANAGER FOR REGION 11 - SOUTH WEST & CHANNEL ISLANDS)

CURRICULUM VITAE: Married to Kathy, 61 years old. Started as SWL in 1953, my mentor being the late G3HID. Took RAE 1962, G8DIW 1968, G4ACK 1971. 22 years RAF wireless then electronics many years as instructor - Number One Radio School RAF Locking. DX calls ZC4BS, MP4MBS, past Chairman Radio Clubs RAF Episcopi (Cyprus) 1967/8, RAF Masirah (Oman) 1971/2 & RAF Gan (Maldives) 1974/5, retired RAF 1983 (Chief). 1984 joined Cable & Wireless - teaching contract, then 10 years Customer Support Manager, Thorn EMI Electronics. Retired 1996. Served RAFARS Committees, latterly RAFARS Council Member. Currently RSGB AROS Co-ordinator. Active most bands.

PERSONAL STATEMENT: I have the following to offer the Society and Regional Members. I gain the impression there is still room for better RSGB / Member / RSGB communications and would endeavour to improve this. It is my intention to support as many events as time allows. I will hopefully arrange county / club seminars to improve relationships within the hobby. I will utilise my management skills gained over many years in the Royal Air Force as an SNCO and commercial skills gained in the electronics industry. I believe I have the impetus to be proactive in this position if given the opportunity and would ask for Regional support to secure this. I intend to remain as AROS co-ordinator, my presentations will be reduced from two / three per month to one per month now that the backlog of invitations has receded.

Nominated by:	Town:	Known for (yrs)
L J Avory, G2FQP Past chairman Weston-Super-Mare Radio Society, 1960; Active member Royal Air Force Radio Society since 1946.	**Kingswood, Bristol**	**5**
Brian Jewell, M0BRB Club secretary of Appledore and District ARC for the last five years.	**North Devon**	**5**
Hugh Pearson, G7KET Bristol Channel Repeater Group committee member, 1990s; Mendip Repeater Group committee member, late 1990s; City of Bristol RSGB Group committee member mid 1990s; EMC co-ordinator (RSGB zone D - SW England) 1997 onwards.	**Bristol, Backwell**	**7**
Brian Whittaker, G3LUW Secretary Rotarians of Amateur Radio (ROAR) - Current.	**Devon, Lifton**	**10**
Eric Palmer, G3FVC Secretary RSGB Education Committee; Town Representative, RSGB, Bath (1948); RAFARS Council, 1985 - 2001 (*QRV* Editor); Area Representative (Oxon) RAFARS; Secretary Maidenhead District Amateur Radio Club (1965 - 1984); Holder of G3XPL callsign (Slough College / Langley College).	**Somerset**	**4**

BRYN LLEWELLYN, G4DEZ (DOB 22.12.41

(CANDIDATE FOR ELECTION AS REGIONAL MANAGER FOR REGION 13 - EAST MIDLANDS)

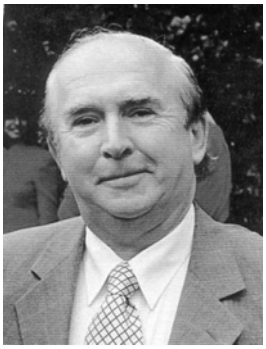
CURRICULUM VITAE: Member of RSGB for 30 years. Previously held post of VHF Contest Committee Chairman. Mainly interested in VHF, UHF DX working. In the past taught RAE and Morse classes. Keen contester on VHF, UHF and HF. I am always available on air to anybody with an operational problem or query and always willing to help small stations to work DX.

PERSONAL STATEMENT: I hope to help newcomers to the hobby to not have to 're-invent the wheel' by passing on 'best practice' either by word of mouth on in print. I aim to be a spokesman for all amateurs in my region so that they have a voice when policy is being decided. Many amateurs have complained that they feel that nobody listens, this needs to be addressed at high level.

Nominated by:	Town:	Known for (yrs)
John Purcell, G0WUU	**Carlby**	**1**
Colin Guy, G4DDI Keeper GB3FR and GB3SO 1979 - 1991; Currently Technical Service Fenland Repeater Group; Committee member Spalding & District ARC; Committee member FRG above; Committee member Vintage & Military ARS.	**Stickford**	**1**
A Rhodes, G1XWD	**Theddlethorpe**	**1**
John Petters, G3YPZ	**Long Sutton**	**2**
John M Charles, M1BTR Member of RSGB; Member of AMSAT UK; Member of UKSMG.	**Louth**	**1½**

Board Elections

GORDON ADAMS, G3LEQ (DOB 05.06.38)
(CANDIDATE FOR ELECTION AS BOARD MEMBER)



CURRICULUM VITAE: Born June 1938. Started in schools' CCF network. First licensed G3LEQ in 1956 as teenager and member of the RSGB ever since. Founder member of BARTG. Founder Secretary in 1975, later Chairman and now President UKFMG(W). Founder and Committee Member North Cheshire RC, Past East Cheshire Raynet and CARES controller. RSGB slow Morse sender starting 1956. GB2RS newsreader since 1972. Currently GB2RS News Manager and Board Spectrum Director. Served on RMG for North West. Zone 'A' Council Member for 1996 to 1998. RAE lecturer since 1979 and past Senior Instructor Cheshire. Previous employment Royal Signals and Diplomatic Wireless Service.

PERSONAL STATEMENT: If elected I would represent the interests of radio amateurs throughout the UK by making myself available via telephone, facsimile, e-mail and radio - as well as by giving talks on RSGB matters. I am particularly keen to see the RSGB consulting more with members prior to making decisions on matters that affect the future of our hobby. In this connection I have supported the new Regional Structure which the RSGB has put into place, and which is now seeking closer links with radio clubs throughout the country. I would continue to encourage recruitment activities and to support the maintenance of entry standards into the hobby.

Nominated by:	Town:	Known for (yrs)
Frederick Ward, G2CVV	**Littleover**	**32+**

Hon Sec / Treasurer Derby & District Amateur Radio Society 1947 - 1983; RAE Lecturer Derby & District College of Technology 1947 - 1971; RSGB Town Rep Derby 1952; Region 4 Rep - 1960; Council 1969 / 1975; President 1971 HVP 1983; GB2RS newsreader 1960 to date; President NBTVA 1975 - 1977 (First Pres). President RAOTA 1991 - 1994; Served on Finance & Staff - Education Committee; Keen supporter of many amateur radio clubs & club movements; Holder of callsign 2CVV 1937; G2CVV 1946; other calls held G2BZF; G7AK; G2DJ; G3ERD; G8DBY; GB3CTS; GB3ERD; GB2WS; GB8DBY.

Richard Constantine, G3UGF — **Hebden Bridge** — **5+**
RSGB Director of Education & Training; Trustee of STELAR.

Elizabeth Cabban, GW0ETU — **Llanrwst** — **1**
RSGB Board Member - Membership Services; RRM - North Wales.

Jeffrey Smith, MI0AEX — **Kirkistown** — **4**
Director Membership Services; Treasurer NI Repeater Group (ARGONI); Chair Belfast RSGB Group.

Paul Gaskell, G4MWO — **St Helens** — **23**
RSGB Radio Communications Voluntary Services National Co-ordinator; Secretary, North-West Raynet association and former Chairman; Secretary, Raynet HF team; Secretary, founder member and former Controller St Helens Raynet; Committee representative for the NW at national Raynet level from 1983 - 1994; International Liaison Member IRTS Emergency Comms Sub Committee; Founder member and former secretary, St Helens & DARC; Member, UK FM Group Western; Member, G QRP Club.

Steve Richards, G4HPE — **Royston** — **4**
Reader of GB2RS on 160m; Past controller of North Hertfordshire Raynet.

Kathleen Wilson M1CNY — **Sandbach** — **11**
RSGB Regional Manager - Region 3; Membership Secretary UKFM Group Western; Membership Secretary Widnes & Runcorn ARS.

Martyn Phillips, G3RFX — **Clifton** — **6**
Secretary, City of Bristol RSGB Group; Vice Chairman RSGB HF Committee; Member RSGB HF & IOTA Convention Committee; GB2RS newsreader since 1995.

Michael Dixon, G3PFR — **Frodsham** — **23**
Currently Microwave Manager; Member of LAC; Formerly Chairman Microwave Committee.

Dave Wilson, G7OBW — **Sandbach** — **11**
Chairman, UK FM Group (Western); Treasurer, Widnes & Runcorn ARS; Member, RSGB Repeater Management Committee; Member Amateur Radio Development Committee; Senior Novice / Intermediate Instructor, Cheshire; RSGB Deputy Regional Manager Cheshire / Merseyside; Intermediate / Foundation Instructor.

DAVID HICKS, G6IFA (DOB 16.11.43)
(CANDIDATE FOR ELECTION AS BOARD MEMBER)

CURRICULUM VITAE: I've had an interest in radio since the age of eight as an SWL. This interest progressed, via operating in army cadets and TA through CB and the RAE in the 70s and 80s. I joined Chester & DRS, working on the committee and as Chairman for 10 years; was awarded honorary membership for services to the society. I'm interested in Emergency Radio; a member of Raynet, held positions of Group and County Controller in Cheshire and currently Chairman of Northwest Raynet Association, Zone 10 (Northwest) Co-ordinator, National Director of Publicity and Trustee of the Radio Amateurs' Emergency Network Charity.

PERSONAL STATEMENT: If elected to the Board of the RSGB, I would consider the wishes of the membership and try to serve them to the best of my ability. In particular, I would wish to further the Society's work in promoting the hobby and all its many facets to the general populace, especially to the young. I would also promote the idea of Emergency Radio to the RSGB membership, which is not only the shop window of amateur radio, but extremely important to the security of us all in times of emergency and disaster.

Nominated by:	Town:	Known for (yrs)
Ian Kyle, GI8AYZ/MI0AYZ	**Lisburn**	**5**

Chairman GI6YM 1967 - 1971; RSGB Area Rep 1974 - 1978; RSGB Regional Rep 1978 - 1981; RSGB Council Member 1981 - 1984, 1992 - 1999; RSGB President 1997 - 1998; Life Vice President RSGB - 2000.

Martin Harrison, G3USF — **Keele** — **15**
Chairman Propagation Studies Committee; IARU Region 1 HF Beacon Co-ordinator; Controller Staffordshire Raynet.

Trevor J Groves, G4KUJ — **Watford** — **7**
Secretary of South West Herts UHF Group from 1974 to 2000 - operated GB3HR and GB3BH 70cm and 23cm repeaters, also GB3SWH 10GHz beacon; County Controller Hertfordshire Raynet since 1983; Member of Emergency Planning Team of the Radio Amateurs' Emergency Network.

David V Hardman, G0VLV — **Bolton-Le-Sands** — **10**
Country Controller, Lancashire Raynet; Deputy Group Controller, North Lancashire Raynet; RSGB Corporate Member since 1983.

Brian J R Davies, G3OYU — **Lingfield** — **5**
County Controller Surrey Raynet; Group Controller Surrey Raynet; Quartermaster Surrey Raynet; Liaison Officer Surrey Raynet; Newsletter Officer Surrey Raynet; Committee member Clifton Amateur Radio Society (1963).

Christopher G Hampson, G8RXA — **Bransgore** — **9**
RSGB corporate member 22 years; Treasurer, Christchurch Amateur Radio Society 13 years; County Controller, Dorset Raynet 15 years; Raynet Zone 7 Co-ordinator 12 years.

A G Wallis, G4YMU — **Lanchester** — **12**
Committee member Derwentside Amateur Radio Club; County Controller Durham Raynet.

D Gowland, G4LGA — **Consett** — **6**
Chairman Derwentside ARC; Vice Chairman Derwentside ARC; Treasurer Derwentside ARC.

Geoff Darby, G7/M3GJU — **Chester-le-Street** — **10**
RSGB Regional Manager - North East 04; WAB President; Derwentside ARC Secretary.

Thomas Hanratty, G0JRT — **Consett** — **8**
Deputy Controller NW Durham Raynet.

RADIO SOCIETY OF GREAT BRITAIN

(A Company Limited by Guarantee. Registered in England No 216431)

LAMBDA HOUSE, CRANBORNE ROAD, POTTERS BAR, HERTS EN6 3JE

Election of Board and Regional Council for 2003-2005

There are two vacancies on the Board and eight vacancies on the Regional Council. There being two candidates for election to the Board, and six candidates for election to the Regional Council (each in different Regions), no election is called this year. The following members are therefore elected:

Board

(a) Gordon Adams, G3LEQ, Elected Unopposed

(b) David Hicks, G6IFA, Elected Unopposed

Regional Council

Region 1 (Scotland West & the Western Isles) - Gordon Hunter, GM3ULP, Elected Unopposed.

Region 2 (Scotland East & the Highlands) - Billy Jenkins, MM0WKJ, Elected Unopposed.

Region 5 (West Midlands) - Roy Clarke, M0RLY / G8AYD, Elected Unopposed.

Region 8 (Northern Ireland) - Jeff Smith, MI0AEX, Elected Unopposed

Region 11 (South West & the Channel Islands) - Barry Scarisbrick, G4ACK, Elected Unopposed.

Region 13 (East Midlands) - Bryn Llewellyn, G4DEZ, Elected Unopposed.

Note 1: No nominations were received for the vacancies in Region 9 (London & the Thames Valley) and Region 10 (South & South East).

Note 2: Region 3 (North West), Region 4 (North East), Region 6 (North Wales), Region 7 (South Wales), and Region 12 (East & East Anglia) all have sitting members, therefore no election is called in those Regions this year.

P A Kirby, G0TWW
Company Secretary

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Back of Election Form

RADIO SOCIETY OF GREAT BRITAIN

(A Company Limited by Guarantee. Registered in England No 216431)

Proxy For Use At RSGB Annual General Meeting

I,* ..... Call/RS .....

of .....

a member of the above named Society hereby appoint

..... Call/RS .....

of .....

or failing him/her ..... Call/RS .....

of .....

*** Full name and address to be inserted in block capitals.**

as my proxy to vote for me on my behalf at the Annual General Meeting of the Society to be held on Saturday 7 December 2002 and at any adjournment thereof as indicated below.

In the event of no proxy being named or of your nominated proxies failing to attend the Annual General Meeting the proxy will automatically revert to the chair of the meeting.

Please indicate with an 'X' how you wish your vote to be cast; otherwise the Proxy will abstain or vote at his or her discretion.

ANNUAL GENERAL MEETING	FOR	AGAINST
RESOLUTION 1 To receive and, if approved, confirm the minutes of the 74th Annual General Meeting as circulated to all members with the November 2002 *RadCom*.		
RESOLUTION 2 To appoint the auditors KPMG LLP and to authorise the Board to fix their remuneration.		

Signature ..... Dated 2002

NOTES

1 Members may appoint any member OR non member as their proxy holder. However the following are willing to act as proxies: The President Dr R C Whelan, 36 Green End, Comberton, Cambridge CB3 7DY,
The General Manager and Company Secretary P A Kirby, G0TWW, RSGB, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE

2 The proxy form must be signed by either the fully paid up corporate member or by his or her attorney duly authorised in writing.

3 Articles 37 to 49 inclusive refer to proxy votes and the calling of a poll.

4 In order to be valid this form MUST reach the Society's registered office not later than 11.00am on Thursday 28 November 2002. It should be posted to: The Company Secretary, Radio Society of Great Britain, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE.

Cut along the dotted line

Back of Proxy Form

RADIO SOCIETY OF GREAT BRITAIN

(A Company Limited by Guarantee. Registered in England No 216431)

Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE

Annual Meeting

Annual General Meeting

NOTICE IS HEREBY GIVEN that the 76th Annual General Meeting of the Radio Society of Great Britain will be held at Taliesin Arts Centre, the University of Wales, Swansea, on Saturday 7 December 2002 at 12 noon for the transaction of the undermentioned business:

Agenda

1 To receive and, if approved, confirm the minutes of the 75th Annual Meeting circulated to all members with the November 2002 edition of *RadCom*. (Resolution 1)

2 To receive and consider the accounts for the year ending 30 June 2002 and the reports of the Board and auditors thereon.

3 To announce the names of members to serve on the Board and Regional Council for the year 2003.

4 To call for volunteer scrutineers for the 2003 Board and Regional Council Election.

5 To appoint the auditors KPMG LLP and to authorise the Board to fix their remuneration. (Resolution 2)

Notes

(1) Members are asked to attend no later than 11.50am. Doors will open at 11.30am. Refreshments will be available.

(b) A Society bookstall will be open from 11.30am - 2.00pm.

(c) The Society will make available for sale an audio tape recording of the proceedings. The use of video recording equipment will not be permitted at the meeting.

(d) Members entitled to attend and vote at the meeting may appoint a proxy to attend and, on a poll, vote on his or her behalf. The proxy need not be a member of the Society, but is not allowed to speak at the meeting other than to join in the demand for a poll.

By Order of the Board –
P A Kirby, Company Secretary
1 October 2002

On completion of the AGM

1 Presentation of awards

2 President's address

A buffet lunch will be available at 1.00pm. Lunch tickets, price £3.50, will be available on the day.

Open Forum

The Open Forum will commence at 2.00pm and end at 4.00pm. Items for discussion at the Forum will include:

1 Amateur radio in the 21st century.

2 The launch of 'EMC Aid'.

3 The Radio Communications Foundation.

4. *RadCom.*

2002 Amateur Radio Dinner

The 2002 Amateur Radio Dinner will be held in the Cafe West Restaurant, First Floor, Fulton House, the University of Wales, Swansea, commencing at 7.30pm. Tickets, price £20.00, are available from RSGB HQ, tel: 0870 904 7373. **Please book as soon as possible and by Tuesday 19 November *at the latest***. Open to members and non-members.

Maps showing location of venue for AGM: the University of Wales, Swansea.

The Committees of the Board

The name and callsign of each Chairman is shown in **bold**. *Corresponding or liaison members are shown in italics.*

The President is an ex-officio member of all committees. Committee members listed served during the period 1 July 2001 to 30 June 2002.

AMATEUR RADIO DEVELOPMENT: Ed Taylor, G3SQX; S Hartley, G0FUW; A Betts, G0HIQ; P Steed, G0VEP; Dr J Craig, G3SGR; D Cutter, G3UNA; J Linford, G3WGV; J Wayman, G4DRS; D Wilson, G7OBW.

ARDF: Geoff C Foster, G8UKT; *C Mott-Gotobed, G4ODM; G Nicholls, G4DLB; D C Holland, G3WFT;* D Pechey, G8NMO; C D Plummer, G8APB; D A Burleigh, G4WIZ; G W Dover, G4AFJ; M P Hawkins, G3WMM.

DATA COMMUNICATIONS: Iain Philipps, G0RDI; J M Green, G1DVU; S A Morton, G8SFR; M J Salmon, G3XVV; P R Maile, MI0BME; R G Harris, G3ZFR; D J Koopman, G1TLH; J Flynn, G7OCD; R W Compton, G1ZPU; *R G Whittering, G3URA; A R Horsman, G0MBA; A C Talbot, G4JNT; R M Page-Jones, G3JWI (Board Liaison); F C Handscombe, G4BWP(Board Liaison).*

EMC: Angus Annan, M1CCR; D M Lauder, G0SNO; R M Page-Jones, G3JWI; R C Marshall, G3SBA; D W McQue, G4NJU; C Elliott, G4UJW; M J Culling, G8VCP; S N Lloyd Hughes, GW0NVN; R D Watson, G0MKG; *K J Hendry, G0BBN; A Armstrong, G0FBW; P Daly, G0GTE; K N Watkins, G3AIK; G Halse, G3GRV; R P Smith, G3SVW; A D Maish, G4ADM; R D Scott, G4KVQ; R P Harrison, G4UJS; H A Pearson, G7KET; L J Parry, G8AMK; E S Ellis, GD3LSF; S T Dimmock, GD8COH; T W G Menzies, GM1GEQ; D Cossar, GM3WIL; D E Morris, GM3YEW; R Adam, GM4ILS; G G Brooks, GM4NHX; Rev S J G Bennie, GM4PTQ; Dr C Barnes, GW4BZD; R A Gilchrist, G0TVE.* **EMC COORDINATORS:** K J Hendry, G0BBN; A Armstrong, G0FBW; P Daly, G0GTE; K N Watkins, G3AIK; G Halse, G3GRV; F G Sawyer, G3SLN; R P Smith, G3SVW; A D Maish, G4ADM; R D Scott, G4KVQ; R P Harrison, G4UJS; G A Vallely, G4YRS; H A Pearson, G7KET; L J Parry, G8AMK; E S Ellis, GD3LSF; S T Dimmock, GD8COH; G Brown, G4ICD; T W G Menzies, GM1GEQ; D Cossar, GM3WIL; D E Morris, GM3YEW; R Adam, GM4ILS; G G Brooks, GM4NHX; Rev S J G Bennie, GM4PTQ; Dr C Barnes, GW4BZD; R A Gilchrist, G0TVE; H D Kernaghan, GI3USK; P A Bertram, G8PVL.

HF: Colin Thomas, G3PSM; M Phillips, G3RFX; K Kahn, G3RTU; Dr J Gould, G3WKL; Dr R Nash, G4GEE; S Kahn, G0STU; J Butcher, G3LAS; F Handscombe, G4BWP; C Cummings, G4BOH; P Maile, MI0BME; G L Adams, G3LEQ (Board Liaison).

HF CONTESTS: Justin Snow, G4TSH; D Lawley, G4BUO; A Hydes, G3XSV; L Volante, G0MTN; J Fisher, G0IVZ; S Knowles, G3UFY; L Mason, G4HTD; *D Field, G3XTT (IOTA Contest Manager); D Sharred, G3NKC; M Platt, G4XUM; H Owen, G2HLU; T Wylie, GM4FDM; T Kirby, G4VXE; R Everitt, G4ZFE; R Treacher, BRS32525; D Beattie, G3BJ; G Dover, G4AFJ (Board Liaison).*

INTRUDER WATCH: Chris Cummings, G4BOH; R Wilkin, G0UKX; W J Bolton, G3FBN; D G Pinnock, G3HVA; N Thompson, RS174906.

IOTA: Martin Atherton, G3ZAY; R Balister, G3KMA (IOTA Manager); M Pregliasco, I1JQJ; D Chamberlain, W9DC; J Kellaway, G3RTE; S Lawman, G0UIH; A Williamson, G0NWG; R Williams, G4LVQ / EA7FGS; *G Dover, G4AFJ (Board Liaison).*

LICENSING ADVISORY: Julian Gannaway, G3YGF; *I Philipps, G0RDI; Peter Kirby, G0TWW;* J Greenwell, G3AEZ; T I Lundegard, G3GJW; R J Hughes, G3GVV; J Bazley, G3HCT; M W Dixon, G3PFR; C J Thomas, G3PSM; P Chadwick, G3RZP; M S Appleby, G3ZNU; B H Scarisbrick, G4ACK; M J Adcock, GW8CMU.

MANAGEMENT: John Butcher, G3LAS; Bob Whelan, G3PJT; Ken Ashcroft, G3MSW; Dave McQue, G4NJU; R Horton, G3XWH, Ed Taylor, G3SQX; D F Beattie, G3BJ (to 31 December 2001); Peter Kirby, G0TWW, General Manager, RSGB HQ; Mark Allgar, RSGB HQ; Marilyn Slade, RSGB HQ.

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PASSIVE GRID

I'M TRYING TO build a tetrode HF amplifier with a 50Ω 'passive grid' resistor, but I can't get a good input match at 30MHz. How can I cure this without any band switching? The tube is a Russian 4CX800A.

THE 'PASSIVE GRID' circuit is a very good choice for tetrode amplifiers, at least as high as 50MHz, because it provides a good input match to the exciter, and in principle it requires no band-switched input network. **Fig 1** shows the basic circuit, which has appeared in many handbooks. If the tetrode is operated in Class AB1 with no grid current, it essentially requires only a voltage swing and absorbs very little drive power.

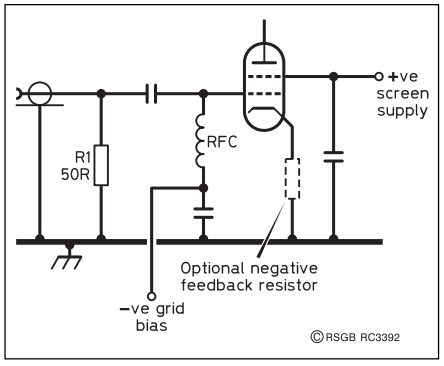

Fig 1: Outline of 'passive grid' tetrode input circuit. Grid voltage swing is developed across R1, which also provides a stable load for the exciter. Also shown is the optional negative feedback resistor in the cathode.

The necessary voltage swing is developed across the 50Ω resistor, R1, which absorbs almost all the input drive power and provides a stable load to the transceiver. Even if the tube is driven into a small amount of grid current (Class AB2), causing its input impedance to fall to maybe a few kilohms, R1 still dominates and stabilises the load seen by the transceiver. This low-value 'swamping' resistor, connected directly across the input, also gives stability against oscillation and usually avoids the need for neutralisation.

A 50Ω grid resistor is the right load for the transceiver, but the voltage swing developed by the full output of a 100W transceiver may be too high for many modern ceramic-metal tetrodes. For example, the 4CX800A / GU74B requires a negative grid bias of about 56V, and this peak voltage can be obtained across 50Ω at a power level of only 31W [1]. The data sheet suggests using resistive negative feedback in the cathode (about 30Ω, as shown dotted in Fig 1) which increases the RF voltage swing required [2], and thus increases the drive requirement to 45 - 50W. This is actually quite convenient, because Peter Hart's reviews show that many transceivers, particularly the ones with 12V transistor finals, have rather poor intermodulation distortion figures at the 100W level. However, the distortion often improves dramatically when you ease back the RF POWER control to 50W output or less. With a power amplifier that doesn't need a lot of drive and also doesn't add too much distortion of its own, the result will be a signal that is both stronger *and cleaner* than it was with the 'barefoot' 100W. The penalty is that you *must* use Automatic Level Control (ALC) fed back from the amplifier to the transceiver, to make certain that the tube is never overdriven with the full 100W. This applies particularly to modern tetrodes whose delicate grid structures must be protected from excessive power dissipation.

Now what about the input matching problem? The clue is that it is only serious at 30MHz, and not at lower frequencies. Whenever there is a problem that increases with frequency, you can bet that some parasitic capacitance or inductance is to blame. ('Parasitic' is one of those fancy engineers' terms for something they'd forgotten to account for.) In this case it's the grid-cathode input capacitance of the 4CX800A which, according to the data sheet, is 51±5pF. This appears in parallel with the 50Ω load resistor. At low frequencies its reactance is so high that it makes no practical difference - the SWR at 1.8MHz is only 1.03. But at 30MHz, the reactance is much lower, so the SWR has risen to 1.6, a value that will make many transceivers complain.

So what's the solution? Obviously you could parallel-resonate the capacitance with a shunt inductor, but that would only fix the problem on a single band. The broadband solution is to use the tube's input capacitance as the 'C2' of a π-network at the input, as shown in **Fig 2**. Electrically, this is an ordinary three-component π-network, but you only need the two extra components, C1 and L1. Another way to think of a π-network is as a low-pass filter. If we design this little filter to be matched somewhere near 30MHz, it will be almost transparent to lower frequencies, so that will achieve our goal of a 'flat' input match across the whole of HF.

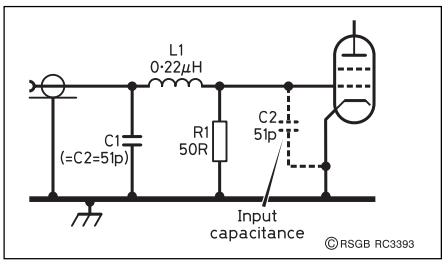

Fig 2: Additional components C1 and L1 form a low-pass p-network which 'absorbs' the parasitic input capacitance of the tube (other components from Fig 1 omitted).

We're looking for a 1:1 impedance transformation, so straight away we know that C1 = C2. It only remains to calculate L1. I won't trouble you with the calculation here, because the value can easily be scaled from the 0.22μH value shown in Fig 2. **Fig 3** shows a set of computed SWR curves for C=51pF and various values of L1 from 0.20μH to 0.23μH. Increasing the inductance will move the frequency of the perfect match downwards, and at the same time reduce the small SWR bump in the middle of the HF band. Clearly, the value of L1 is not critical, because all the values tried give an SWR of 1.1 or below, right across the HF band. The optimum value is about 0.22μH, which sacrifices matching at the top end of 10m band for the sake of better matching on all lower bands.

The component values in Fig 2 are specific to our example of 51pF input capacitance for the 4CX800A. To scale these values to a different input C, simply make C1 equal to that new value, and multiply L1 by (51/C). That doesn't give the mathematically correct new value for L1, but it's close enough because, in practice, you'll need to make some small adjustments.

The recently-introduced TO-220 thick-film power resistors are ideal for a passive-grid input load ('In Practice', June 2002). Two 100Ω 50W units in parallel should handle the average drive power very well, if you bolt them down to an area of the chassis that is well cooled by the blower. However, these resistors will add some input capacitance of their own, and that's why you need to make some adjustments. C1 can be a combination of fixed silvered-mica capacitors and a mica 'postage-stamp' trimmer, and L1 can be a small self-supporting coil which you can squeeze, stretch or change. You can safely measure the input SWR with the tube in its socket but completely unpowered. Adjust C1 and L1 in turn until the SWR is a minimum at a spot frequency, either 28.0MHz or even better around 25MHz if your transmitter isn't locked out. You should be able to get a perfect match at your chosen frequency. Then switch to the other bands and confirm that the SWR is still good.

Obviously there are some interesting variants on this little circuit. For example, you could extend the SWR compensation up to

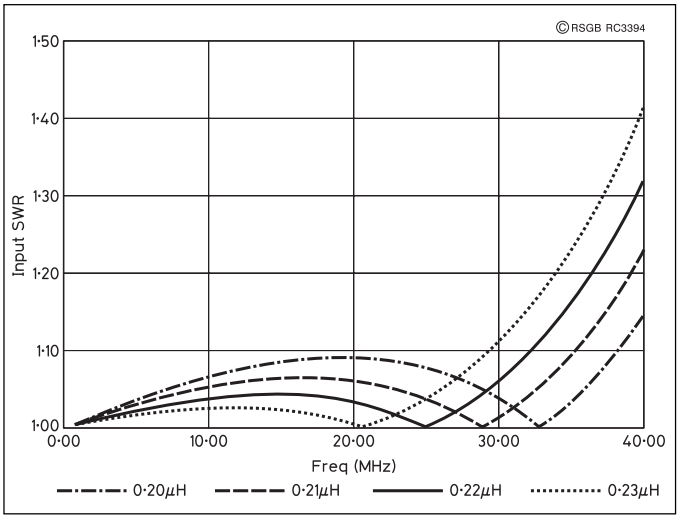

Fig 3: Effect of different value of L1 on the input SWR. The optimum value is around 0.22μH, but is not critical.

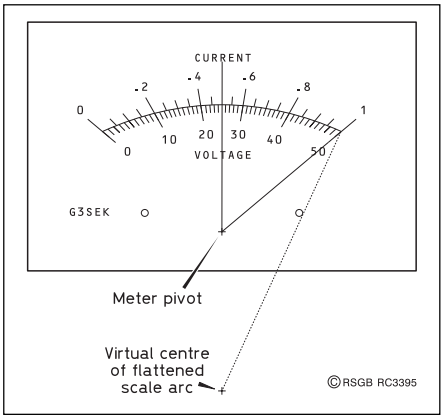

Fig 4: On-screen preview from WB6BLD's program for drawing meter scales. Note the flattened scale arc, very typical of modern meters, with its virtual centre below the meter pivot point. Everything you see is definable to your requirements.

50MHz, though at the expense of a larger SWR bump at lower frequencies (probably the best frequency for the perfect match would be around 40MHz). For tetrodes that require less grid bias, and therefore also require a smaller grid voltage swing, you might find yourself having to turn the drive power down very low. If this is too finicky to adjust, a solution would be to build a power attenuator as detailed in the June 2002 column, and/or to tap the grid connection down the load resistor.

METER SCALES AND PANEL LABELS

THE QUESTION OF how to draw custom meter scales keeps coming around, as also does the question of how to make neat-looking labels for front panels. Here's an update.

PREVIOUS APPROACHES to meter scales have included:

- Ruler, compasses and Letraset - but only if you're an expert draughtsman of the old school. Otherwise the results look... well, 'amateurish' is probably the kindest word!
- Editing an existing scale using an eraser and Letraset - acceptable if you need to make only minimal changes; but that's not always possible.
- Using a precision computer drawing package such as *AutoCAD* or *AutoSketch*, as suggested in the March 1996 column. The result can look very good indeed, but it takes a lot of time to measure-up the scale very accurately, then lay out the arcs and all the intermediate calibration marks, and finally add the numbers and labels at the correct angles.

As image scanners have become very common accessories to home computers, you now have some further options. One is to scan-in the existing meter face at high resolution, edit the image, and print it out again. This is the high-tech equivalent to the eraser - Letraset option above, but makes it much easier to get good results. If you need to make a lot of changes, a variant of this method is to start another 'layer' in the drawing package, and draw a new scale by tracing over the scanned image as a guide. This can avoid many of the problems of starting completely from scratch. Eventually you delete the drawing layer containing the scanned image, leaving your newly-drawn scale.

Yet another option is to find a software package that will draw a new scale according to your instructions. The best I've seen is *METER.EXE* from Jim Tonne, WB6BLD. This program lets you specify all the details of the meter scale you want, including the mounting plate, and it displays an on-screen version of the scale for your approval (**Fig 4**). The final printout from an HP-PCL5 or HPGL compatible printer is much better quality than the preview [3]. We haven't tried to reproduce it here, because we couldn't do it full justice. Just about everything is user-definable, from the overall size of the meter plate down to the size and style of the smallest tic-marks. One of the best features of WB6BLD's program is that it understands modern 'flattened arc' meters, where the virtual centre of the scale arc is below the meter pivot as shown in Fig 4. WB6BLD's *METER.EXE* understands all these details, and handles them painlessly.

When printed on smooth, thin white paper, the new scale can be stuck on the rear of the original one, using the edges to line it up. Then run around the cut-out at the bottom with a sharp-pointed craft knife, and prick through the mounting holes. The result will be a very professional-looking meter scale, exactly to your requirements.

The graph paper software by Philippe Marquis, mentioned in previous columns, also has facilities for drawing various dial scales (see WWW). With a *Windows* graphics package such as *PaintShop Pro*, you can capture the image of a dial from one program and paste it across to make a complete labelled dial, or even a complete panel layout. All you need then is some means of transferring the layout to a panel. A recent development is the Quick-laser label system, which is a self-adhesive polyester sheet that can be run through an ordinary laser printer. The sheets are available in silver, white or yellow, and the A4 size is large enough to make a whole front panel for many projects. Also available is a laminating film to protect the printing from being rubbed off. The Quick-laser products are sold in packs of 10 by Rapid Electronics, or in larger quantities by Mega Electronics (both in the 'In Practice' directory of suppliers - see WWW). They aren't cheap, but they are probably the least expensive way of making a professional-standard finish for a project that you're proud of.

NOTES

1. From $P = V_{RMS}^2/R$, and $V_{PEAK} = V_{RMS} \times \sqrt{2}$.
2. As the grid voltage goes more positive, the cathode current increases. If there is a feedback resistor in the cathode, this makes the cathode voltage rise, and that reduces the change in grid-cathode voltage. Therefore more input voltage swing (measured from grid to ground) is needed to achieve the required grid-cathode voltage. For a different approach to negative feedback, see the interesting contribution from G3LNP in 'Technical Topics', February 1989.
3. Unfortunately, this program will not drive most inkjet printers that are not compatible with HP Graphics Language and version 5 of the HP Printer Control Language (HPGL and HP-PCL5). K8CU's web site (see WWW) suggests some practical work-arounds, which also allow you to produce coloured scales if you wish. ♦

WWW.

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Philippe Marquis	**http://webperso.easynet.fr/~philimar/graphpapeng.htm**

If you have new questions, or any comments to add to this month's column, I'd be very pleased to hear from you by post or e-mail.

Please remember that I can answer questions through this column only, so they need to be on topics of general interest.

RadioSport NEWS

A New "Picketts Lock"

London Show finds new home

With the closure of Lee Valley Leisure Centre, the traditional home of the **London Communication & Computer Show**, the organisers were presented with the challenge of finding a new venue that wouldsuit all parties. After a long and exhaustive search, they came across a place which not only met all the criteria but is conveniently located off junction 25 of the M25, the motorway junction that many visitors to London Shows have used for years.

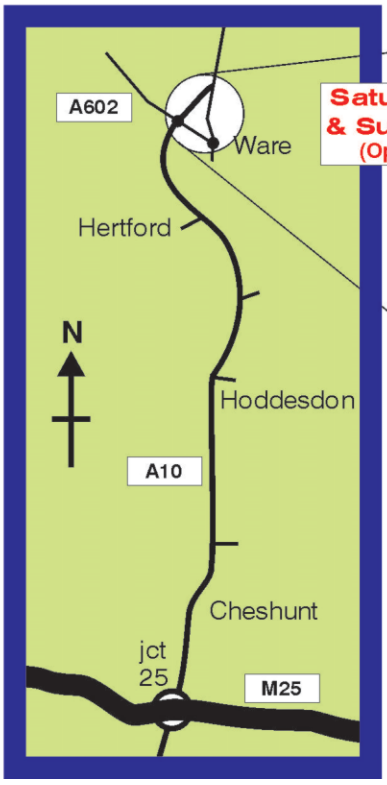
Their efforts have already been rewarded, with exhibitor bookings practically filling the venue several months before the event.

THE NEW VENUE

Wodson Park is a leisure centre that is similar in many ways to Picketts Lock, except that it is located a few miles outside the M25. Getting there is every bit as easy, indeed the journey time from the M25 is practically the same as it is to Picketts Lock. Talk-in stations will be operational on 2m & 70cm, and when you arrive you will find plenty of free parking. Full travel details can be seen on www.radiosport.co.uk

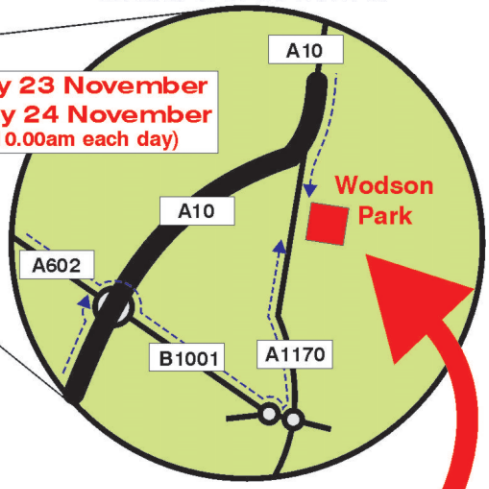
Wodson Park is quite new, so it has all the facilities you would expect - brightly-lit halls, a good sized catering outlet, two bars, a passenger lift and facilities for the disabled.

All-in-all it should be well worth visiting.



London COMMUNICATION & COMPUTER SHOW

Saturday 23 November & Sunday 24 November
(Opens 10.00am each day)



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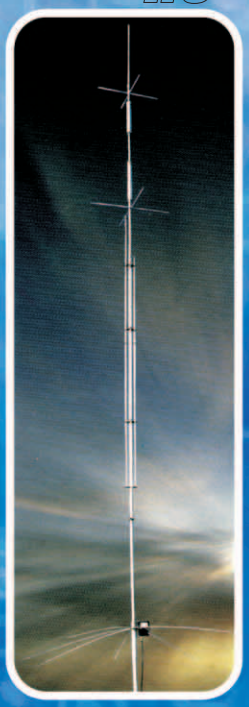
CUSHCRAFT

COMMUNICATIONS ANTENNAS

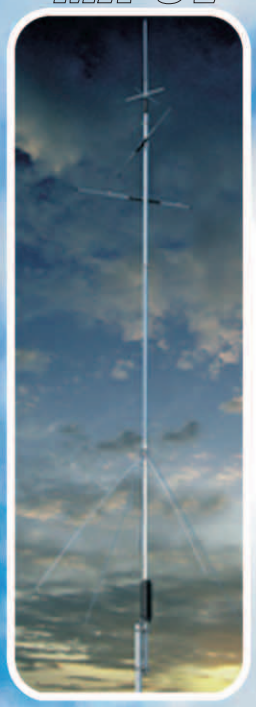
WORLD CLASS PERFORMERS

R8



- Bands: 6, 10, 12, 15, 17, 20, 30, 40m
- Gain: 3dBi
- Power rating: 1.5kW
- VSWR: 1.2:1 (typical)
- Bandwidth (2:1) varies with band
- Height: 8.7m
- Weight: 10.5kg

MA 5V



- Bands: 10, 12, 15, 17, 20m
- Gain: 1-2dBi
- Power rating: 250W (PEP)
- VSWR: 1.2:1 (all bands)
- Bandwidth (2:1) varies with band
- Height: 4.48m
- Weight: 2.95kg

MA 5B

- Bands: 10, 12, 15, 17, 20m
- Gain: varies with band
- Front to back ratio: 10, 0, 12, 0, 22dB
- Power rating: 1.2kW
- VSWR: 2:1
- Bandwidth: varies with band
- Boom length: 2.2m
- Longest element: 5.2m
- Turning radius: 2.7m
- Weight: 12kg

CUSHCRAFT MULTIBAND HF ANTENNAS			A270-6S	2m/70cms 3 element beam 7.8db gain 0.85m long	£79.95	C
MA5V	10,12,14.17.20m compact vertical 500W	£229.95 C	AR-270B	2m/70cms vertical 5.5/7.5db gain 2.3m high dualband Ringo	£99.95	C
MA5B	10/12/15/17/20m 3 element mini beam with balun	£349.95 C	AR-270	2m/70cms vertical 3.7/5.5db gain 1.13m high dualband Ringo	£89.95	C
X7	10, 15 & 20m 7 element yagi 2KW 5.48m long 12.5-13db gain	£699.95 D	124-WB	2m 4 el Yagi	£89.95	C
X740	40m add on kit for X7	£299.95 C	13-B2	2m 13 element beam 15.8db gain 4.57m long	£159.95	C
A4-S	10, 15, & 20m 4 element yagi 8.9db gain 2KW 5.48m long	£599.95 D	17-B2	2m 17 element beam 18db gain "N" 9.45m long	£269.95	C
A-744	7 MHz/10 MHz add on kit for A4S	£159.95 C	26-B2	2m 26 element beam 18.8db gain 4.75m long	£429.95	D
A3-S	10, 15, & 20m 3 element yagi 8db gain 2KW 4.27m long	£499.95 D	A144-10SN	2m 10 element beam 13.2db gain 3.6m long "N" socket	£79.95	C
A-743	7 MHz/10 MHz add on kit for A3S	£159.95 C	A148-3S	2m 3 element beam 7.8db gain 0.85m long	£54.95	C
A3-WS	12 & 17m 3 element yagi 8db gain 2KW 4.27m long	£399.95 D	A148-20S	2 x 10 ele beams c/w stacking frame & harness 16.2db 3.6m	£219.95	C
A-103	10 MHz add on kit for A3-WS	£159.95 C	A148-20T	2m 10 ele (each) crossed beam 11.1 db gain 3.3m long	£149.95	C
R-8	40-6m vertical 1.5kW 8.7m long	£529.95 C	AR-X2B	2m vertical 7db gain 4.3m high	£69.95	C
R8-GK	Guy kit for R-8 vertical	£49.00 C	AR-X2	2m vertical 5.5db gain 2.8m high	£59.95	C
R-6000	6, 10, 12, 15, 17 & 20m vertical 5.8m long	£349.95 C	AR-2	2m vertical 3.75db gain 1.2m high the original Ringo	£49.95	C
ASL-2010	13.5-32MHz 8 element log periodic 6.4dbd gain 5.48m long	£799.95 C	A430-11S	70cms 11 element beam 13.2dB gain 1.35m long	£79.95	C
D-3	14/21/28 MHz 2KW 7.86m long	£249.95 C	719B	70cms 19 element beam 15.5dB gain 4.1m long	£159.95	C
D-3W	10/18/24 MHz 2KW 10.37m long	£249.95 C	A50-3S	6m 3 element beam 8db gain 1KW 1.8m long	£114.95	C
D-4	7/14/21/28 MHz 2KW 10.92m long	£339.95 C	A50-5S	6m 5 element beam 10.5db gain 3.7m long	£179.95	C
D-40	40m 2KW 12.88m long	£299.00 C	A50-6S	6m 6 element beam 11.6db gain 6.1m long	£299.95	C
TEN-3	10m 3 element beam 8dbd gain 2.44m long	£219.95 C	617-6B	6m 6 element beam	£399.95	C
AR-10	10m vertical 3.75db gain 5.36m high	£79.95 C	AR-6	6m vertical 3.75db gain 3.1m high	£69.95	C
CUSHCRAFT VHF/UHF ANTENNAS			***CUSHCRAFT ACCESSORIES***			
ASL-670	6/4/2/70cm log periodic 250W	£269.95 C	PD-2	Power divider for 2 x 13B2	£54.95	B
A6270-13S	6m/2m & 70cm yagi	£189.95 C	PD-4	Power divider for 4 x 13B2	£69.95	B
A270-10S	2m/70cms 5 element beam 10db gain 1.9m long	£99.95 C	22N-SK	Stacking harness and power divider for two 17-B2	£139.95	C

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And now for something completely different. No, maybe *different* is the wrong word. Stand by for something that is *REVOLUTIONARY* . . . . .

Here it is - a dipole, or 2 or 3 element yagi that can be tuned remotely from the shack for any frequency between 14 and 54 MHz (yes ANY frequency, with no gaps). This antenna has stepper motors on the boom which vary the length of copper tape tracks inside the fibreglass element housings. If you like, you can maximise the yagi for gain, or alternatively maximise it for front-to-back ratio, from the shack using the desk-top controller. The antenna length may also be adjusted by an optional transceiver interface which changes the elements as you change the frequency or band. No more setting the antenna for "Broadband" or "Phone" settings. Optimise it where you want it to be! Of course this is a dream for BC SWL's too. If you want a yagi to listen to Radio Costa Rica's broadcast on 15039 kHz, just implement it in a few seconds without even leaving the shack. Other user benefits include 3 second beam reversal, and bidirectional mode. Contact us for more details of the SteppIR antenna range.

Vine now stocks OPTIBEAM from Germany

We are delighted to be appointed UK dealer for this excellent range of trapless optimised multi-band yagis from Germany. There are models from just 4 elements, up to a big 16 element yagi on a 33ft boom. Mechanical construction is particularly excellent. All fittings are stainless steel, and mechanical details have been implemented in the most thorough way. Prices start at just £315. Contact us for more details for the *Mercedes-Benz* of multi-element HF antennas

ACOM 1000 *HF+6m* Amplifier

- Up to 1kW output
- 160-6m inc WARC
- Matches up to 3:1 SWR loads
- Easy-Tune aid
- Fully protected
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- Mil-spec quality

This amplifier, and the automatic 2000A, were described by Peter Hart in March 2001 RadCom as "**highly recommended**", and "**beautifully constructed and engineered**". ACOM 1000 is £1,675, ACOM 2000A £4,295, ACOM 1006 (6m only) £1,395.

TO COME - ACOM 1.5kW manual tuning amplifiers for 160-10, and for 2m

Rotators & Filters

PST rotators have a worm-wheel which drives the final gear directly, unlike other worm-drive units that drive planetary gears. This gives a **non-reversible brake, and enormous torque.** All gears are in ball or roller bearings in an oil-bath. No other amateur rotators come near this quality of engineering. Control units are all digital-readout with preset control. Priced from £399 (medium duty HF) to £1095 (EME + 80m yagis!) there is a model for everyone. PST 2051 and the preset controller - £529 - are pictured here.....

PST have recently introduced a range of **elevation rotators** for 90 and 180 degrees travel, as well as a control unit with direct RS-232C output for computer control, and a speech synthesiser for operators with a visual impairment. It is the only **talking rotator** in the world!

I.F. Filters from International Radio make a good radio really superb!. Models are available for nearly all transeivers. Still available - kits to improve the **FT1000MP (and FT1000MP MkV)**. For **just £54.95**.

Mast and Towers

Did you know that we are authorised agents for **Versatower and Tennamast?** We are happy to discuss your operating preferences, neighbour and XYL constraints, and recommend the best antenna / rotator / mast system to suit your pocket. We've also assisted many amateurrs to progress insurance claims after a storm / accident damage. Call us - we can help.

New - HF mini-beams

From Germany, the **Optibeam OB6-3M** consists of a Moxon Rectangle for 20m, and yagis for 15 and 10m. Maximum performance is packed into a turning radius of only 14ft, with a 10ft boom. Optibeam's low-SWR feed system gives a VSWR of less than 1.6 to 1 at band edges. An external tuner also gives acceptable results on 17 and 12 metres.

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Technical Topics

PAT HAWKER, G3VA
37 Dovercourt Road, London SE22 8SS

LOW-NOISE 5MHz VFO

THE APRIL, 2002 'TT' item 'The Quest for Low-Noise Oscillators' stressed the growing recognition that, once good strong-signal performance has been reached, the current limiting factor of high-performance receivers is usually the phase-noise of the local analogue VFO or the digital frequency synthesiser. The April item discussed the excellent results achieved by Colin Horrabin, G3SBI, using his 'double-tank' FET oscillator as the VHF VCO of a hybrid DDS / PLL synthesiser, and that of the basically similar approach used by John Thorpe for the AOR AR7030 HF receiver.

But, in addition, 'TT' also reported the views of Mike Hall, G3USC, who was concerned that, by renewing interest (November 2001) in the long-established G3PDM 5MHz VFO, more attention needed to be paid these days to its phase-noise performance, so important for low reciprocal mixing. He wrote: "I do not believe that in this respect the G3PDM VFO can be anything to write home about. That 4k7 gate resistor and the low resistance presented to the circuit by the buffer amplifier must be affecting its close-in noise fairly significantly, not to mention the effect of the high flicker noise corner frequency of the 2N3819 FET."

G3USC disclosed that he had begun developing a new VFO design, the result of coming across a forgotten 30-year-old Plessey transceiver board in his junk box, that originally was intended to use an RCA FET Colpitts VFO design of that period. In his professional capacity, G3USC has available high-quality phase-noise plotting equipment.

Following the publication of the May 'TT', G3USC wrote further, expressing some doubts as to whether the double-tank approach would be suitable at 5MHz, since tracking of the ganged-variable capacitor might prove a problem. He provided an interim report on his own experiments, including noise plots of four designs, one based on an FET and three using medium-power bipolar transistors, which promised to give superior results.

In late August, G3USC wrote again to provide his "final phase noise plot". He writes: "I didn't after all take the FET design any further because, close in, it is beaten by the medium power bipolar, and I ran out of time (and interest!). The phase noise plot of the finished and boxed bipolar medium power VFO is shown in **Fig 1**, together with that of the prototype FET VFO for comparison. Alongside the plots are their respective jitter computations, which could be useful if the circuits are ever required for digital application…The hump at 150kHz is due to a measurement problem of some kind.

"In comparing these plots with others, say that of CDG2000 transceiver local oscillator (*RadCom*, June 2002), while the plot of either of my circuits would result in lower close-in reciprocal mixing, one cannot make a judgement about the relative 'goodness' of oscillators without taking account of their carrier frequencies. Since phase noise power increases with the square of the carrier frequency, one needs to apply the formula 20 x log ($f1/f2$). The CDG2000 plot was at 14MHz and the local oscillator injection 9 + 14 = 23MHz, while mine were at 5MHz. There is thus a 13.25dB difference. So if one compares the plots at an offset of 2kHz where the CDG2000 shows -118dB, my oscillators need to show lower than -131.25dB to be superior, which they both do. At 9kHz offset, I need to show lower than -153.25dB which mine do not. However, I think engineers would argue that it is the close-in figures that are the real measure of oscillator performance. But certainly, what the comparison really illustrates is that, [strictly] in terms of local oscillator phase noise, the simple approach [HF rather than VHF VFO, no frequency synthesiser] to receiver design is best."

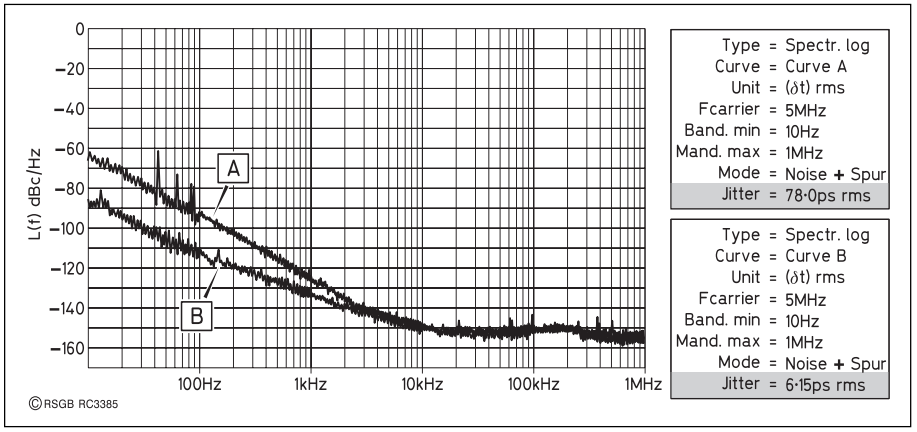

Fig 1: Noise plots of G3USC's low-noise 5MHz VFO. A shows the plot of the prototype oscillator using an FET device. B is the plot of the final VFO using a medium-power bipolar transistor providing superior close-in performance. Both plots represent excellent low-noise characteristics that would provide excellent reciprocal mixing on receive and very little SSB phase noise on transmission.

TEMPERATURE COMPENSATION

G3USC has also provided a detailed account of how he set about providing temperature compensation for his free running 5MHz VFO: "Temperature compensation of the circuit (**Fig 2**) was fun - *I don't think!* The oscillator, its buffer and supply regulator were built on one board, with the FM audio amplifier, the IRT and compensation circuit on another, each sited either side of the Jackson 'Polar' tuning capacitor. It was all a very tight fit and I wish now that I had started out using surface mount components exclusively … but I already had a good stock of leaded components that I didn't want to see go to waste. Component changes following temperature band-runs therefore meant a laborious dismantle and reassemble procedure, with the possibility of damage to components while doing so.

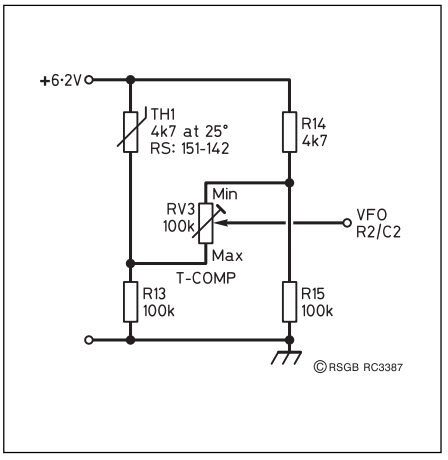

Fig 3: Temperature compensation circuit for the 5MHz VFO.

"But I learned a bit about the temperature compensation of VFOs, although I am still no expert. I found that capacitors from the same batch of ceramic N150s are not in fact N150, some having a far from N150 straight-line temperature coefficient (TC); also, that replacing the coil slug with an apparently identical one also had a significant effect. Compounding the problem was the fact that the temperature characteristics of the fully-assembled and enclosed VFO were quite a bit different from those of the bare PCBs within a forced-air environmental chamber. To be fair to the N150 capacitors, they were just standard Philips ceramic plate types having a nominal N150 TC, and not specifically acquired as such. 0805-size chip capacitors were used for the NP_0s since

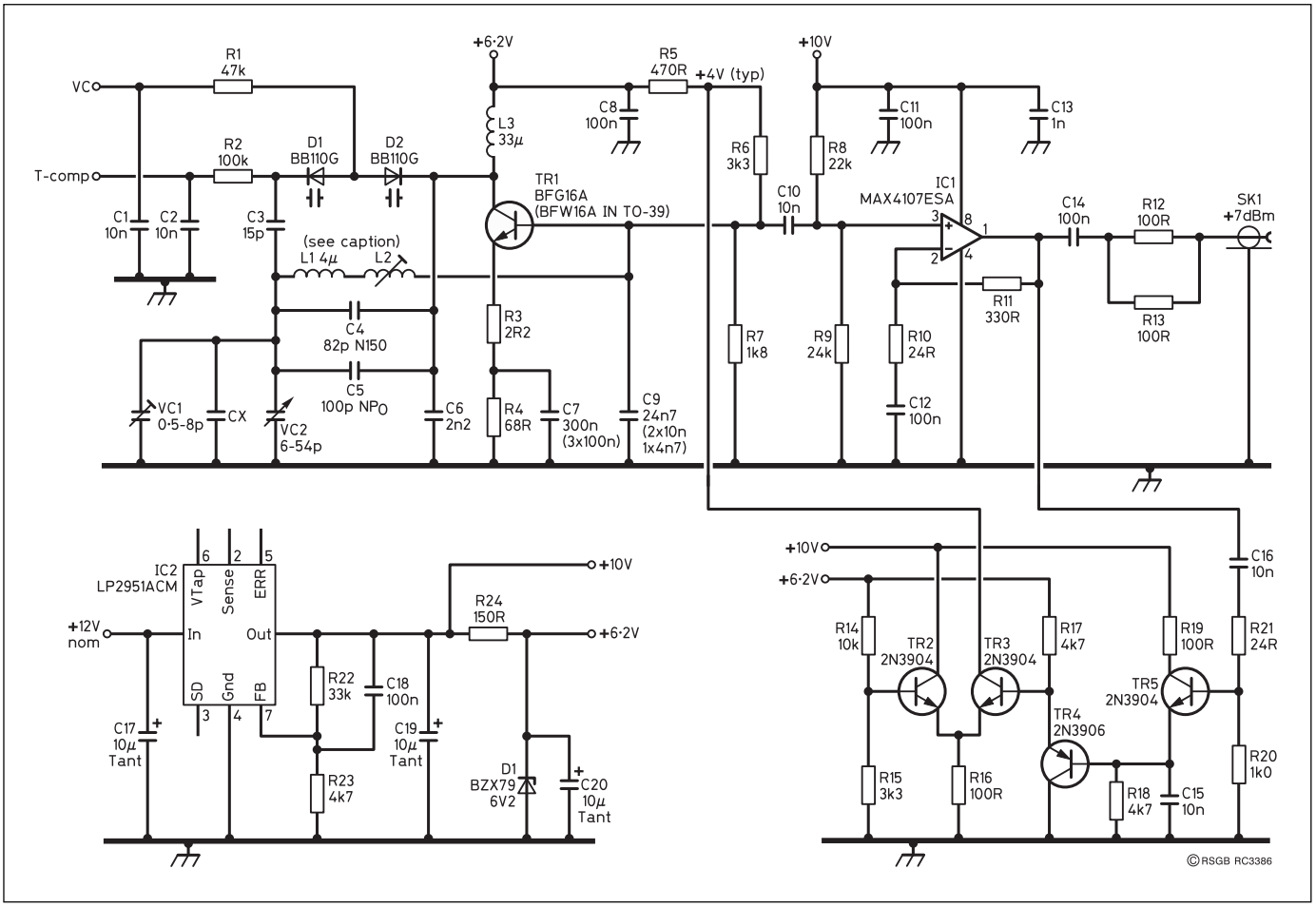

Fig 2: Circuit of G3USC's low-noise 5MHz VFO using medium-power bipolar transistors. C4 + C5 = 180 to 190pF. CX is just a few picofarads which can be adjusted to compensate for their variation or, alternatively, VC1 can have a larger swing. VC2: 6 - 54pF Jackson 'Polar'. L1: 16 turns 0.315mm spaced one diameter on a 10.5mm slugged former (F804). The slug is secured at maximum inductance. L2: 8 turns 24SWG spaced one diameter on a 4.5mm slugged former on the PCB.

this is the most common TC for this type up to about 470pF.

"Cutting a very long story short, I have replaced the four 1N27 diodes used originally with a thermistor (**Fig 3**), which now produces a greater range of compensation. See the curves of **Fig 4** which are smoothed plots of the data points at 5° intervals. A soak of 15 minutes was given at each temperature to allow conditions within the box to stabilise reasonably. With full compensation, the plot is far from straight and it indicates that maybe I could have tried 100pF N150 and 82pF NP_0 for C4 and C5 to advantage, but I became fed up with dismantling and rebuilding.

"While not quite within the meaning of the tens of Hertz deviation that I originally hoped for at full compensation, the performance of the VFO still bears comparison with a 'donkey' crystal oscillator, and I am quite pleased with it. Sitting on the bench at an ambient temperature of somewhere between 20 and 25°C, with minimum compensation and after allowing a few minutes to reach thermal equilibrium, the unit seems to stick at the same frequency, give or take a few Hertz.

"My advice, therefore, to anyone trying to duplicate this approach would be to fit the components suggested for C4 and C5, and

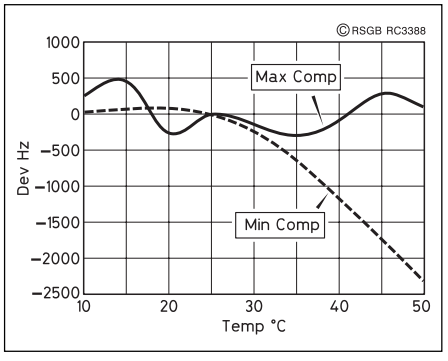

Fig 4: VFO temperature stability plots for the 5MHz VFO using thermistor (RS151-142).

to use only minimum compensation unless the metalwork in which the VFO enclosure is bolted greatly exceeds 30°C. The drift in the first few minutes after switch-on should not be used as an indication of the optimum setting of the compensation pot because internal equilibrium will not have been reached."

G3USC has also sent along notes on other circuits he has designed for this transceiver, including those on the pre-mix board to provide operation on bands other than 3.5 and 14MHz which are covered directly by a 5 - 5.5MHz VFO with a 9MHz IF. Basically, this board consists of a set of crystal oscillators and bandpass filters and an additional Anzac MD108 or Minicircuits SBL-1 mixer. He has also provided the audio circuits of a redesigned microphone amplifier. Details of these will have to be held over until space is available. G3USC confesses that, although he has already prototyped individual parts of the pre-mix board, it is going to be many months before the transceiver is completed.

SMALL ANTENNAS: STAY OPEN TO NEW IDEAS

PROFESSOR Mike Underhill, G3LHZ, has, for several years, been actively investigating the performance of a variety of compact transmitting loops. With varying degrees of success, he has attempted to convince professional antenna specialists, as well as radio amateurs, that there is much more to be learned about small antennas both in free space and in an environment, whether they be dipoles, monopoles, loops, coils, toroids, CFAs, CFLs or whatever. He strongly believes that investigations should be supported by practical experiments rather than purely simulated.

"RF measurements and experiments on antennas are not difficult, provided you are observant and logical, and keep your wits and common-sense well to the fore. Rarely is expensive equipment needed, although it

sometimes (not always) adds credibility and a professional presentation to the results obtained. Cheap or home-made equipment is better than no equipment. Computer simulation is an aid to, but no substitute for, practical experiments."

G3LHZ stresses "We all want progress and should not remain too dogmatically rooted in the past. We should remain open to new ideas, if demonstrated by practical experiment and repeatable results. We cannot reject them simply if they do not agree with this or that theory or this or that simulation. In my view, this is a sure sign that the theory or simulation is at least in need of careful examination, if not a full upgrade. Even if a theory and a simulation agree exactly, it could be that both are 'exactly wrong'. We should reject results only if they prove incontrovertibly to be unrepeatable; this is the 'scientific method'. It is only by measurements and results that a new theory or a computer simulation can be validated, not by comparison of the theory with the simulation. Remember that science is not a democratic process; the *truth* remains the *truth* no matter how many experts vote for or against it. We need progress not stagnation. We need plenty of *quod erat demonstrandum* but I would add *per experimentum ad scientiam* (through experiment to knowledge)."

For two years, G3LHZ has been demonstrating to several amateur radio clubs a 2-turn, 1m-diameter loop which has a 2-gang tuning capacitor and gives continuous overlapping multi-resonant operation from 1.8 to 30MHz and for restricted bands above 30MHz. He uses a switchable pair of twisted gamma matches. [Although not unlike the CFL in appearance, there is apparently no suggestion that it is based on Poynting Vector Synthesis (PVS), on which G3LHZ sits firmly on the fence – *G3VA*].

On PVS, G3LHZ comments: (a) "If PVS 'works' for one antenna, it works for all antennas; (b) the difference between stored energy and power flow is always a 90° phase difference in at least one component of the electromagnetic field, no matter how you feed the antenna; (c) the debate is all about semantics. It does not make the slightest difference to the question of whether a particular antenna works or not!

Much of the professional controversy surrounding G3LHZ's own work seems to arise from how you define and measure the '(theoretical) efficiency' or the more-meaningful 'effectiveness' (ie performance) of an antenna. Do you take into account the significant power loss when matching into antennas of extremely low radiation resistance? The absorption in nearby objects, or their distortion of radiation patterns? Ground-losses extending far beyond the immediate area (particularly important for vertically polarised antennas)? The differences (non-homogenity) in ground-conductivity of the earth that is not reflected in 'average' conductivity (as noted in the 1980s by Arch Doty *et al* while investigating the use of elevated radials rather than earth mats)? The effective height of an antenna over earth, remembering that the earth-reflection may be from well below the surface at higher frequencies?

Antenna 'efficiency' of amateur antennas is often calculated on the basis of total power reaching the element less the RF dissipated in the physical resistance of the element. For a half-wave dipole, radiation efficiency can closely approach 100%. But for electrically-short antennas, where the radiation resistance will often be less than the physical-resistance, radiation efficiency will be greatly reduced, with 'antenna-gain' a significantly negative figure in dB.

However, standard professional tests for broadcast antenna efficiency are based on the ground-wave signal measured a standard distance from the antenna where ground losses have the effect of reducing the signal at low elevations more than at the higher angles that are important for HF skywave transmission: **Fig 5**. The only way of actually plotting the vertically-radiated power and thus calculating the total radiated power of an HF antenna is by flying a helicopter or aeroplane all around the area, which is why so much dependence is now put on *NEC* simulations.

In practice, there are very significant

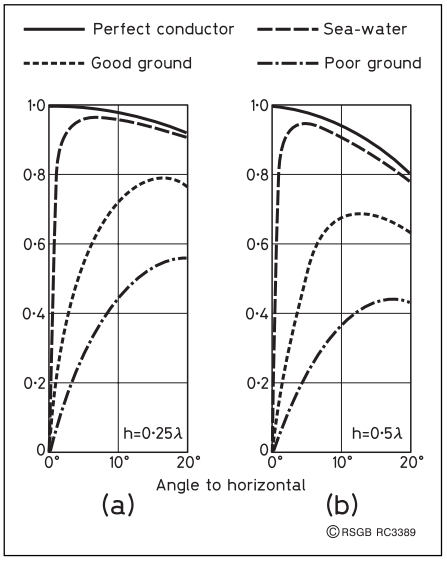

Fig 5: Effect of the ground on the vertical radiation pattern of (a) quarter-wave monopole antenna and (b) half-wave vertical dipole antenna. Based on theoretical calculations at 750kHz MF by P Knight (BBC) in the 1970s. Shows that, assuming a perfect earth mat for (a), the large-area gound losses have more effect on a vertical half-wave dipole than a monopole but in both antennas the field strength of ground-wave signals will be much reduced over poor earths and there will be appreciably less radiation at elevation angles of less than 10°.

losses in the matching network when feeding an electrically-short antenna having a very low radiation resistance. Les Moxon, G6XN, has warned strongly against attempting to compare the performance of an antenna on the basis of local field-strength-meter measurements, as they give highly misleading near-field readings. In his valuable *HF Antennas for All Locations* (RSGB), G6XN stresses "The ultimate criterion of performance in the case of antennas, as of most other devices, is how well they do their job… There are right and wrong methods of assessing the 'job performance' of an antenna and a number of possible pitfalls… In checking a new antenna against its predecessor, a number of comparative signal reports averaged over periods of a week or more is desirable and, of course, the more the better." His section 'The ultimate test' in the chapter 'Making the Antenna Work' should be required reading! For the amateur, actual performance is far more meaningful than trying to determine 'radiation efficiency', since even a few watts transmitted along a desired ray path can be much more effective than hundreds of watts radiated at the wrong solid angle! Nevertheless, the question of the theoretical efficiency of compact loop antennas is fascinating and of practical importance.

G6XN wrote his book before the use by amateurs of computer simulations became widespread (and is none the worse for that!). Nevertheless, it must be recognised that the development of *NEC* programs based on 'Method of Moments' theory has revolutionised the process of calculating radiation patterns, directivity and antenna-gain of HF antennas. The early *MININEC* programs had severe limitations. *NEC3* and *NEC4* have overcome most of the these, and have been shown to be dependable, at least for uncluttered sites and average earth-conductivity, even when dealing with electrically-small loops, etc (though for small loops, G3LHZ would not agree!). But with the wide variations in site-factors etc found in amateur radio practice, it cannot be taken for granted that *NEC* radiation patterns, input impedance, directivity gain etc will always be validated in practice. An outline 'Advances in *MININEC*' was given in 'TT', January 1996 (see *TTS 1995-1999*, p72) showing the benefits of using, for example, *ELNEC* by W7EL or *MN-PRO* by K6STI.

It thus remains to be seen whether G3LHZ will be able to convince his fellow antenna experts of the validity of the form of 'scientific' definition of efficiency that he uses for his small loops and that seems to throw doubt on the Chu-Wheeler and *NEC* approaches. His forthcoming contribution to the IEE's *Electronics Letters*, with his student, Marc Harper, may prove of some significance to radio amateurs. According to

G3LHZ: "It briefly reports how loop radiation and loss resistances can be measured and separately extracted over a wide range of frequencies in a simple, but repeatable and therefore accurate, way. From these measurements we can state with confidence what the intrinsic efficiency of a given loop actually is. For example, for loops of no less than 1m in diameter, typical efficiencies are well in excess of 80%" [Over what range of frequencies? - *G3VA*]. G3LHZ is currently writing (with Marc Harper) a professional paper "about small antenna examples that contradict the Chu-Wheeler criterion. This proposes some much milder criteria and these confirm that small antennas, and even loops (!) are significantly more efficient than the present theory suggests. We have five examples for possible inclusion, so far." It remains to be seen what response there will be among the professional antenna experts, but I guess that by now G3LHZ must be used to controversy.

I would stress that there is a world of difference between G3LHZ's carefully conducted experiments, openly disclosed and subject to professional (often unduly destructive) scrutiny, and the marketing of patented antennas based on a possibly fallacious hypothesis. Incidentally, G3LHZ, who strongly believes that no antenna can be better than its environment, suggests that the claimed good performance for the CFA broadcast antenna near Cairo could well be the result of being erected over sandy soil (virtually a dielectric). Less convincing is his questioning of the long-established Chu-Wheeler Q-criterion generally used to provide a measurement of the radiation efficiency of electrically-small antennas and his disbelief in *NEC* applied to small loops. G3LHZ is also planning an article for *RadCom* about loops. We await further developments with interest!

EXTENDED RANGE FOR FREQUENCY COUNTERS

STUART JONES, GW3XYW (not GW3XYZ as given incorrectly in the August 'TT'), writes: "A surplus analogue satellite TV receiver front-end usually contains a prescaler chip that divides the local oscillator frequency down to a value that can be handled by logic for channel selection. The prescaler is contained in the tuner unit and the division ratio is usually 256. The local oscillator frequency can be in excess of 1.5GHz. This makes these chips useful for checking the calibration of 23cm equipment.

"In my case I had a surplus Astec module type AT1020 originally used for TVRO and ATV experiments, but now found useful for extending the range of my frequency counters. In or order to use the prescaler, **Fig 6**, the original local oscillator pick-up loop is removed and an input is applied via a length of RG174 coax. The divided output for the counter is taken from the original output on pin 6. A single +5V supply is applied to pin 5 of the Astec module from a 78L05 regulator IC. The prescaler chip has its identification erased, but seems to be similar to the Plessey SP4750."

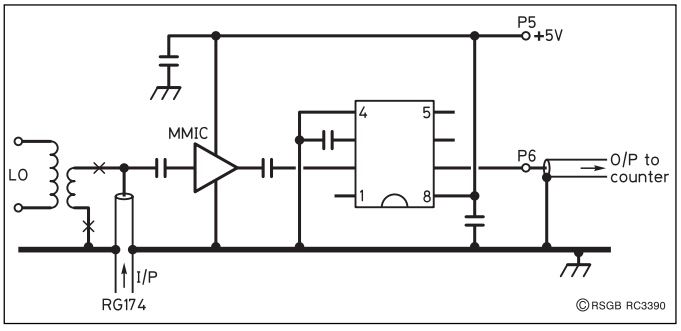

Fig 6: How GW3XYW uses a TVRO prescaler to extend the frequency range of his digital counter to cover 23cm. Existing wires cut at X.

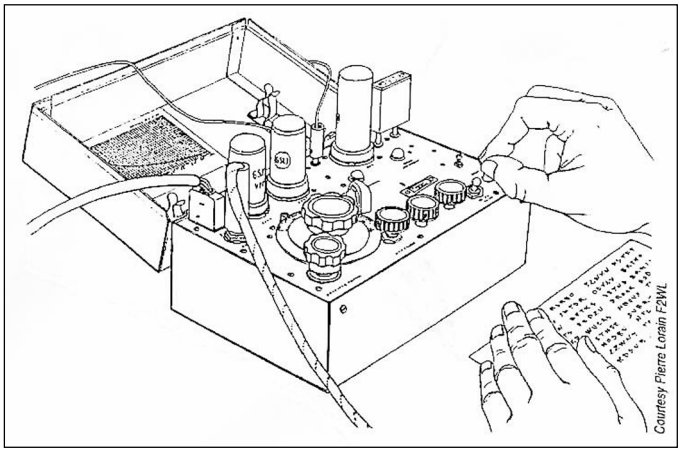

Fig 7: An example of one of the many excellent drawings made by the late F2WL for his book *Secret Warfare* (English text by David Kahn). This one shows the simple Whaddon (SCU) Mk VII ('Paraset') transmitter-receiver with 6V6 crystal oscillator, two 6SK7 valves as a straight receiver. Operator is using the inbuilt 'silent' Morse key.

HERE & THERE

IT WAS WITH much regret that I learned from F8LT of the passing of Pierre Lorain, F2WL, the author of *Armement Clandestin, France 1941-1944* (1971), better known in the UK as *Secret Warfare – The Arms and Techniques of the Resistance* (English adaptation by David Kahn, 1983). This book includes many accurate drawings by Pierre (an architect) of the secret radios of SOE, the London Poles, and SIS (eg **Fig 7**), and the weapons of SOE. It has forewords by Brigadier F W Nicholls. SOE's Director of Signals and Gilbert Renault-Roulier ('Remy' of BCRA). Remy's CND Intelligence network was in regular radio contact with Weald. After arriving in England from Brittany on one of Cdr Slocum's Secret Flotilla of converted French fishing vessels, he became the main French organiser of the joint SIS / OSS / BCRA 'Sussex' intelligence operation for the 1944 Normandy campaign. *Secret Warfare* (reviewed in *Radio Communication,* November 1984, p969) has long been recognised as *the* outstanding book on the clandestine radio sets of WW2, although Pierre himself was not directly involved. Many summers he could be heard working a B-2 'suitcase set' from his holiday home, often in contact with G3ZWH.

ANOTHER LINK with WWII clandestine radio has been severed by the recent death in Anchorage, Alaska, of J W ('Mac') McQueen, KL7AVX, who, in 1942-43, was one of four Americans (three of them radio amateurs) of the Civilian Technical Corps looking after the transmitters at Calverton, near Whaddon. These were keyed from the SCU (SIS Section VIII) control stations at Weald and Nash working to radio agents in Western Europe. 'Mac' married a local girl (Evelyn) whose brothers and sister worked for SCU, and who survives him in Anchorage. Post-war, KL7AVX frequently visited and operated in England and was a member of the RSGB.

THE ORIGIN OF almost all the 'radioese' abbreviations used in amateur radio is long lost in history, many derived from the early days of landline telegraphy. But, as shown in *QST*, September 2002, p76, there can be little doubt that one E C Adams, a staff-member of ARRL, originated the use of 'YL' to stand for female operators whether young or old. This seems to have been coined in May 1920 as testified in a letter he wrote to Marion Adaire Garmhausen, 3BCK, a 20-year-old who had contributed an article 'How to Build a Wireless Station' (published in July 1920). She lived all her life in Baltimore and died in the late 1990s. Who added the X to form XYL must remain a mystery! Marion Garmhausen, a skilled operator, was not the first American YL amateur, but they were still at the time virtually unknown in the UK. 'Clarry' (John Clarricoats) in *World at Their Fingertips*, says that Barbara Dunn, G6YL, licensed in 1927, remained Britain's only YL transmitting amateur until 1932 when Nell Corry doubled the number by becoming G2YL. ♦

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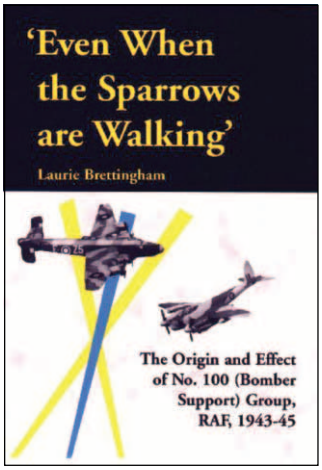

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Scrutiny of the text reveals that a number of radio amateurs were involved (eg Vic Flowers, G8QM; George Morley, G0OXH etc) although callsigns are not given.

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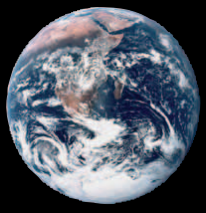

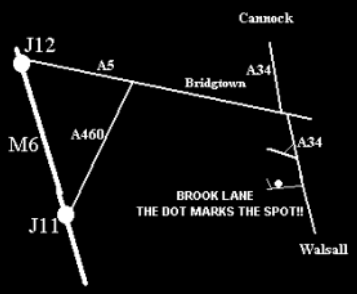

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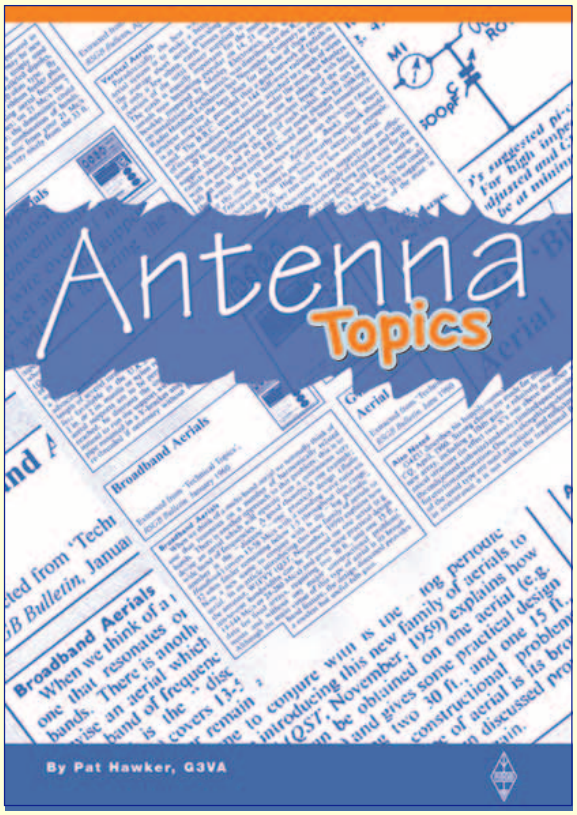
YAESU	FP700	POWER SUPPLY	£100.00
YAESU	FP-757HD	HEAVY DUTY POWER SUPPLY	£120.00
YAESU	FRG-100	HF RECEIVER	£300.00
YAESU	FRG-7700	HF RECEIVER	£220.00
YAESU	FRG-8800	RECEIVER INCLUDES CONVERTER	£399.00
YAESU	FRG-9600	RECEIVER	£200.00
YAESU	FT-1000MK5 £2,000.00	200W DSP HF TRANSCEIVER	
YAESU	FT-1000MP	BASE TRANSCEIVER	£1,300.00
YAESU	FT-1000MP AC	HF BASE DSP TRANSCEIVER (Late serial no)	£1,550.00
YAESU	FT-1000MP V	200W DSP HF TRANSCEIVER	£1,900.00
YAESU	FT-101Z	MINT CONDITION!!	£250.00
YAESU	FT-101ZD mkIII	HF TRANSCEIVER inc FM	£375.00
YAESU	FT-225RD	2M BASE MULTIMODE CLASSIC!	£399.00
YAESU	FT-23R	HANDY TRANSCEIVER	£180.00
YAESU	FT-2500M	MOBILE TRANSCEIVER	£190.00
YAESU	FT-290RMKII	2M ALL MODE TRANSCEIVER	£180.00
YAESU	FT-290RMKII	MOBILE 2M MULTIMODE TRANSCEIVER	£275.00
YAESU	FT-41R	HANDY TRANSCEIVER	£120.00
YAESU	FT-470	2/70CM HANDY TRANSCEIVER	£140.00
YAESU	FT-650AC	26-50MHz 100w BASE SAATION TRANSCEIVER	£599.00
YAESU	FT-690RMKI	6M MULTIMODE MOBILE TRANSCEIVER	£250.00
YAESU	FT-690RMKII	6M PORTABLE	£375.00
YAESU	FT-726R	2 / 70 / HF TRANSCEIVER	£400.00
YAESU	FT-726R	2 / 70 / 6m TRANSCEIVER	£575.00
YAESU	FT-730R	70CM MOBILE TRANSCEIVER	£120.00
YAESU	FT-736R	2m / 70cm TRANSCEIVER	£650.00
YAESU	FT-736R	2m / 70cm / 6m TRANSCEIVER	£750.00
YAESU	FT-747GX	TRANSCEIVER	£299.00
YAESU	FT-757GX MKII	TRANSCEIVER	£395.00
YAESU	FT-757MK1 GX	HF TRANSCEIVER	£375.00
YAESU	FT-767GX	HF BASE 100watt built-in ATU	£599.00
YAESU	FT-77	INCLUDES FM MINT!	£275.00
YAESU	FT-790R	70CM MULTIMODE MOBILE TRANSCEIVER	£225.00
YAESU	FT-80C	0-30MHz COMMERCIAL RANSCEIVER	£375.00
YAESU	FT-847	HF / 2 / 6 / 70cm BASE TRANSCEIVER	£900.00
YAESU	FT-920AF	HF/6M BASE WITH DSP	£899.00
YAESU	FT-ONE	HF BASE TRANSCEIVER	£450.00
YAESU	FTV-901	TRANSVERTER Inc 2m Mod	£165.00
YAESU	FV-707	VFO UNIT	£99.00
YAESU	MD-100A8X	DESK MICROPHONE	£80.00
YAESU	MH-34B4B	SPEAKER MICROPHONE For VX5R VX-1R	£15.00
YAESU	MH-35	SPEAKER MICROPHONE	£10.00
YAESU	MMB-16	MOUNTING BRACKET	£20.00
YAESU	NT-29	CHARGER	£30.00
YAESU	PA11U	PSU FOR FRG-100	£20.00
YAESU	VR-120	RECEIVER FM /WFM/AM	£99.00
YAESU	VR-5000	TOP RANGE SCANNER RECEIVER	£450.00
YAESU	VX-1R	HANDHELD TRANSCEIVER	£120.00
YAESU	VX-5R	2 / 70 / 6 HANDIE 5W	£220.00
YAESU	XF-114SN	2KHz SSB FILTER	£60.00
YAESU	YO-100	SCOPE VERY RARE!	£150.00
YAESU	FT-7100	2M / 70CMS DUALBAND TRANSCEIVER	£249.00
YAESU	FT-480R	2M TRANSCEIVER	£199.00
YAESU	FT-100	HF / VHF / UHF ALL MODE TRANSCEIVER	£599.00
YAESU	FT-840	HF TRANSCEIVER	£425.00
YUPITERU	MVT-225	AIRBAND SCANNER	£150.00
YUPITERU	MVT-7300	MULTIBAND HANDHELD SCANNER	£199.00
YUPITERU	OP-90	CASE	£10.00
YUPITERU	VT-125	AIRBAND SCANNER	£120.00

Please note, the equipment listed may have been sold / updated, please ring 01922-414796 to check availabilty

NEW

LATEST PUBLICATIONS FROM THE RSGB

Antenna Topics by Pat Hawker, G3VA



If you are interested in antennas this book is a goldmine of information and ideas on the subject. Pat Hawker has been writing his "Technical Topics" column in Radcom since 1958 and has produced much excellent work in this time. This book is a chronological collection of cuttings of Pat's words over the years. Hundreds of areas and subjects are covered and many a good idea is included. Carefully indexed this book is not only a great reference work but also a history of over forty years of antenna design.

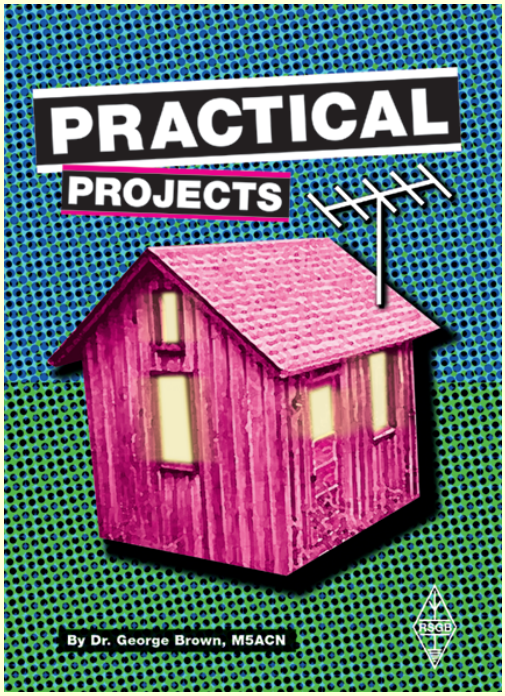
ONLY £16.14 + p&p (£18.99 non-members)

Please note that the price of this product was incorrect in the October issue. Please accept our apologies for any inconvenience caused.

297x210mm

PRACTICAL PROJECTS

Packed with around fifty "weekend projects" Practical Projects is a book of simple construction projects for the radio amateur and those just interested in electronics. A wide variety of radio ideas are covered with everything from an 80m Transceiver, Antennas, ATUs and simple electronic keyers all included. Other simple electronic designs are such as dry battery testers, mobile microphones and various meters and monitors are also added. The book also contains a handy section on "now I've built it what shall I do with it?" questions answered. This book is excellent for those just looking for interesting ideas to construct and for the newcomers to the hobby looking to expand their knowledge.



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Members' Advertisements

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 of *RadCom*. Please do not send members' advertisements to Janice Forde in the Advertising Sales Department.

The closing date for copy is the first day of the month prior to publication, eg the deadline for the March issue is 1 February.

Warning: *Members are advised to ensure that the equipment they intend to purchase is not subject to a current hire purchase agreement. The 'purchase' of goods legally owned by a finance company could result in the 'purchaser' losing both the goods and the cash paid.*

Members' Ads also appear on the Members Only website: www.rsgb.org/membersonly/membersads

EXCHANGE

WOULD like to swap my Kenwood TH-D7E for a Kenwood TH-F7E. G0FAJ, QTHR, 01202 460 174 (Poole). E-mail: les.g0faj@ntlworld.com

FOR SALE

2kW 80-10m auto-ATU, Daiwa CN2002, 2-way ant switch, dummy load crossed-needle SWR, £150 ono. FDK multi 750E, 2m 10W FM/SSB/CW mobile, £180 ono. SML 25 SWR/pwr meter 3.5-150MHz, £10 ono. Cordless digital answerphone, cordless phone, offers? G0GCD, 01536 711 625 (Kettering). E-mail: john@nn14.co.uk

80m add-on kit for Hustler 4BTV vertical, £25. 2 x GP3 vertical with flexiweave radials, 20-15-10m, £45. Cushcraft ARX2B vertical 7 dB gain, £45. Hansen FS5 SWR meter, boxed, leaflet, £10. 01529 413 547 (Sleaford).

ACORN A3010 computer & HDD, £40. Kenwood TS-9130 2m multimode, £220. Kenwood TS-9500 70cm multimode, £220. Cushcraft R7000 vertical ant, £150. Fibreglass 10m ½-wave ant, £25. KW202 Rx, £25. KW204 Tx, £40. KW109 ATU, £80. Fibreglass 2m/70cm dual-band ant, £20. Dual-beam scope Philips D60, £50. Dual-beam scope D775, £50. KR-400 rotator (boxed), £100. 2m X-Y Yagi Jaybeam (boxed), £20. Collins auto-ATU, £20. Preselector unit, £20. Star LC24 dot-matrix printer & paper, £20. HP690 inkjet printer, £40. Many radio/electronics books, £20. 01638 662 887 (Newmarket). E-mail: john.mullin4@btopenworld.com

AERIAL rotator KR-400, £100 ono. Yaesu FT-708R 70cm h/held, £100 ono. FT-208R 2m h/held, £100 ono. 023 9258 0114 (Gosport). E-mail: rakf@rforster.freeserve.co.uk

AKD 4m tcvr 5/25W FM, £50. John, G4JRC, 01223 565 060 (Cambridge). E-mail: john.lander@ntlworld.com

ALINCO DR-112EM 144MHz in original box as new with h/book, mounting kit etc. John, G0SNF, 01844 275 152 (Aylesbury). E-mail: cullingj@aol.com

ARGONAUT 515 nearest to £200 secures. SEM Z-match with 'easy-tune', £50 ono. Steel pole ex-army 20ft, £20. Honda generator, offers? 01234 711 538 weekends (Newport Pagnell).

ARTICLES for sale, all in vgc, prices include p&p. Q-Tek Penetrator antenna, £90. 2-metre antenna (Moonraker 6.5dBi gain), £10. MFJ-418 pocket Morse tutor, £55. Hy-Gain (10 - 80m) tape doublet portable antenna, £50. Datong active antenna AD170, £20. 40m of 6-core (suitable for mics/TNCs), £12. MFJ-557 Morse practice key, £15. MFJ-1796 6-band antenna (12ft high), £120. M0PGW, QTHR, 0191 284 8618 (Newcastle-upon-Tyne). E-mail: peterm0pgw@hotmail.com

AVO model 40, leather case, vgc, £40. QQV03-20A, £20, two for £35. Boxed, unused valves, £2. Box of 30, £35. Advise what you need. Eric, GU3HKV, QTHR, 01481 247 278. E-mail: ericpeg13@hotmail.com

COLLINS 390A, vgc, man, £350. Racal RA1772, first class cond completely overhauled, £250, inspect, collect. 020 8813 9193 (Middlesex).

CUSHCRAFT R7000 vertical antenna, 40-10m, does not require radials, immaculate cond, only used two days, £175. KW EZmatch antenna coupler, identical to Z-match coupler in *Radio Communications Handbook*, 6th edition p12.52, covers 80-10m, £65. Voice keyer MFJ-432, £45. Kantronics KAM TNC, £95. 01527 541 502 (Redditch). E-mail: g3kwkroger@aol.com

EDDYSTONE 730/4 gen cov comms rcvr in vgc, h/book and circuit diagram, £120. Eddystone replica 7in round loudspeaker, £40. Mike, G3YGM, 023 8084 8268 (Southampton).

FOR sale still due to time-wasters. Hy-Gain VR3 vertical, £15. 70cm vertical, £20. 10m fibre glass vertical, £20. 5-ele 6m Yagi, £20. G-1000DXC rotator unused, £350. T2X Tailltwister rotator as new, £400. 4BTV vertical, new, was £169, asking price, £100. New Icom 775, £1800. Used Icom 775 c/w all filters, SP-20 spkr, £1800. All equipment as new, mint (non smoker). 2 x 10m FM radios, £20 each. 2 x antenna switches SA450 and CS201. Trev, G2KF, 07974 892 179 (Delabole).

FT-101Z, TS-530, both inc WARC bands in short daily use, £175 each. 01758 712 675 (Abersoch).

HEATH SB104A tcvr, SB644 ext VFO, SB604/HP1144 ls/pwr, SB230 lin amp, RF1U sig gen, OS1 scope, all mans, Telewave wattmeter 5/500W, 50 ohm 20/1000MHz, PYE T4002, R4002, tcvr VHF, glass-fronted cabinet for above, Hitachi V1100A oscilloscope 10MHz, PYE TMS2 transmission set, Motorola R2000/HS comms system analyser, Racal G009 mod meter FM/AM, Racal 9839 UHF frequency meter, offers plus carriage. GM2BMJ, QTHR, 01387 710 530.

HEATHKIT HW9 QRP CW tcvr, some mods, h/book. Offers please for this rare 8-band rig. G8QM, QTHR, 0191 488 1070 (Tyne & Wear). E-mail: g8qm@thersgb.net

HRO-M with PSU and 7-14.2MHz coil, £75. HRO-M rack-mounting with PSU and 6 coils, £110. AVO 8 MkVI with probes and leather case, £50. Rack-mount PSU ±15V, ±12V, ±5V, £30. Bird Termaline with 2-30MHz element, £85. Ultra violet light box, no timer, £50, carriage extra on all items. Pascal, GI0SFT, 028 7135 2804 after 5pm (Londonderry). E-mail: pascalmcd@aol.com

HY-GAIN TH3 3-band 3-ele beam, £125. Kenpro KR-600C rotator and controller c/w 40ft control cable, £125, £200 for both. All dismantled, buyer inspects and collects. Re-advertised due to timewaster. G4ACK, QTHR, 01749 677 326 (Wells). E-mail: barryg4ack@mbzonline.net

ICOM 706MkII, £575. Kenwood TS-690S, £525 both Tx 50MHz only mint. Yaesu FT-51R & accessories, £150. Sony 7600, £75. 01202 861 130 (Poole). E-mail: zgi@manor97.fsnet.co.uk

ICOM 756PRO, £1150, boxed, mans. Diamond GSV3000 PSU, boxed, £85. Kenwood SM-220 station monitor, £165. MFJ Versatuner III 962D, £75. Yaesu SP-767 speaker, £75. Adapt-a-Mast complete with Yaesu G-400 rotator and Cushcraft MA5B 5-band mini-beam, £300. Moving QTH, 07801 706 927 (St Helens). E-mail: mike.jack@btinternet.com

ICOM IC-706 MkII 160m-2m tcvr with UT-106 DSP option, £525. Additional IF filters, FL1-00 (500Hz), FL101 (250Hz), £25 each. Buyer inspects and collects or carriage extra. Alan, G3XAQ, QTHR, 01227 738 520 (Canterbury). E-mail: g3xaq@hotmail.com

ILL health sale, Yaesu 757GX MkII, hand & MC-60 desk mic, mint, £450 ono. Icom IC-7100 rcvr, 0-2GHz, mint, £500. 2 SP-901 speakers, £20 each. Above items, few hours use only, from new, original packing & mans. FT-470 h/held, 2m & 70cm, spare batt, charger etc, £60. Altai sig gen TE-20D, £75. Meteor 600 freq counter, £40. 2 Shure mics, £15 each. Turner 500 CB desk mic, £20. Carriage extra. G1GTP, 01429 293 414 (Hartlepool).

JAYBEAM VHF Yagis, unused, boxed 4Y/4m, £35. Also storage-damaged, boxed 8Y/2m, £20, both clean condition. G3TQY, 01403 822 334 (Horsham). E-mail: mandj@mtknights.fsnet.co.uk

KENWOOD TM-G707E 144/430MHz dual-bander plus extended receive coverage, in original box, as new with h/book, mounting kit and external speaker, £200. John, G0SNF, 01844 275 152 (Aylesbury). E-mail: cullingj@aol.com

KENWOOD TS-530 SP, two spare output valves, mint cond, £350. Steve, M3BUJ, 01793 320 384 (Swindon).

MFJ-269 Antenna analyser used once, absolute bargain, £280. Alan, G7CDK, 01763 262 443 (Royston). E-mail: alan.florence@tinyonline.co.uk

MOONRAKER VR5000 HF 5-band aerial, new, unused, still boxed, £125. John, 01449 721 225 (Ipswich).

MUIRHEAD frequency analyser 30Hz to 30kHz, £30. Sinclair Spectrum with printer, micro drive, 4 interfaces, 6 reels of paper, £40. Memotech MTX computer, £15. Eddystone Rx M680X, £60. Scopex 456, £25. McMichael – 50s console, £20. Record player, £10. G0IPT, 020 8374 9070 (London).

RACAL RA1792 backlit vgc, ex-BBC with ATU (Mizuho KX3) and external loudspeaker also including PC running DOS with keyboard and colour monitor. PC fitted with Universal Radio M-1200 decoder card which decodes Morse, Baudot, ASCII, SITOR, ARQ, FEC, Packet, Fax, PacTOR, POCSAG, ACARS, Golay, CTCSS and DCS, complete station, £700. 01276 685 279 (Camberley).

STANDARD C5608D dual-band mobile, man, circuit, bracket and box, exc working order, £185. Yaesu CTCSS board, FTS-16, unused, £10. Alinco DJ-X1 scanner, h/held, case, man, boxed, vgc, £90. G6AQC, QTHR, 01865 243 634 after 7pm (Oxford).

STRUMECH 40ft PM galvanised heavy-duty 2-section telescopic tiltover with 4ft head unit, KR-600RC rotator, control unit, 3-ele 3-band TB3 HF beam and all cables. Buyer to remove. 0161 439 4952 (Stockport). E-mail: james.france@btinternet.com

TEN-TEC Corsair II tcvr, matching PSU/speaker, vgc, silent key, non smoking owner. P Bond, G3BEG, £250. 01276 678 758 (Camberley). E-mail: honey60967@aol.com.uk

TEN-TEC Scout with 9 modules, £375. FT-847 with auto-ATU & PSU, £925. TS-120, £150. Icom 240, £75. 01609 772 702 (Northallerton). E-mail: h3kjx@sagainternet.co.uk

TOKYO Hi-power 144MHz all-mode amplifier model HI-110V, 2W in 110W out, £50. Kenpro model KR-400RC rotator medium weight with controller and cable, used only in loft, £65. G0ELH, 01256 473 508 (Basingstoke).

TS-440S HF tcvr, built-in ATU and voice frequently readout, good cond, little used, £325 ovno. Desk mic MC-85 (3 inputs, pre-amp and other features), £35 prefer buyer collects or we meet. 01268 728 396 (Basildon).

TS-680S, mic, immac, £380. TS-8305, mic, exc, £300. VFO-240, SP-230, £25 each. KW202 Rx, KW204 Tx, KW77 Rx, wkg, mans, £50 each. Barlow Wadley XCR-30 Rx, mans, £25. David, G4IPI, 01420 563 993 (Alton).

VINTAGE PSU 234A, £7. CR100/8MOD, £55. BC348N, £55. R208, £35. Advance D1D signal generator, £20.

CONGRATULATIONS

to the following whom our records show as having reached 50 or 60 years' continuous RSGB membership this month:

50 years		*60 years*	
G3INL	Mr A A Chisholm	G3GBN	Mr S H Feldman
G3JKF	Mr K V Franklin		
G3JQS	Mr J Guttridge		
G3LZG	Mr E Griffiths		
G8IDL	Mr D A D Smith		
GM3KAM	Mr D Mather		
GM3LGU	Mr R I Pryde		

Our congratulations also to Mr J H Lepper, G3JHL, who joined the Society in March 1952, and was omitted from a previous list.

Codar PR30 preselector, £12. Wavemeter class D, No 1, MkII, £8. IF strip 373, £7. Woden UM3 mod transformer, £10. Roband RO50A oscilloscope transformer, maintenance man, £10. 0118 979 1488 (Wokingham).
E-mail: cacooper@iee.org

VINTAGE wireless, 4-valve in beautiful mahogany cabinet, lockable doors and lid, drawer, power pack, coils, horn speaker and frame aerial, £200. 3-valve Telsen components, speaker, frame aerial and power pack, £100. 2-valve SW, plug-in coils, Ericsson headphones, £40. 1-valve ditto SGB headphones, £20. G3BAC, QTHR, 01474 812 049 (NW Kent).
E-mail: g3bac@tesco.net

YAESU FT-101 SSB tcvr, FV-101 ext VFO, gwo, good cond, spare PA valves, mans, £175 ono. 01444 232 974 (Burgess Hill).

YAESU FT-221R VHF multimode, man etc, £175. Yaesu CPU-2500R 2m FM tcvr, £50. Wanted! Icom IC-701 HF tcvr, must be vgc! Also copy Icom IC-251E man or buy, expenses paid. Ray, G4OWY, 01305 777 691 after 6.30pm (Weymouth).
E-mail: g4owy@aol.com

YAESU FT-221R, £175 ono. Yaesu CPU-2500 2m FM tcvr, £50 plus carriage. Wanted, Icom IC-701 HF tcvr. Ray, G4OWY, 01305 777 691 after 6.30pm (Weymouth).
E-mail: g4owy@aol.com

YAESU FT-847 tcvr, £900. Diamond 40A PSU, £80. MFJ-941E ATU plus MFJ-260C dummy load, £95. Diamond V-2000 plus MX-2000 triplexer, £95. Deluxe Morse key, brass with wooden base, £25. G2DYM 1:1 balun, £25. Watson W-620 SWR/power meter 1.6-530MHz, £70. Carriage extra. 0191 416 2606 or 07713 579 640 (Washington).
E-mail: allsoppjohn@hotmail.com

YAESU FT-990 late model boxed with man, 500 & 250Hz CW filters, MH-1 mic, auto-ATU, £599. Yaesu VX-1 dual band, boxed, man, £100. 07802 205 761 (Bedale).
E-mail: paul.rollin@whsmithnet.co.uk

YAESU FT-One gen cov all-mode solid-state tcvr in exc cond, c/w mic, operating man and technical man, £350. Buyer collects please. G3RDG, 020 8455 8831 any time.
E-mail: kennethb@btinternet.com

YAESU VX-5 triple band h/held, spk/mic, barometer unit, leads, man, box, £170. CFA 9 band, HF, Tx/Rx, loop, vgc, £95. 01455 449 602 (Hinckley).

YAESU VX-5R tri-band h/held tcvr with wide-band scanner AM/FM/WFM, good cond, boxed with extras, £170. Also a palm colour PDA with 8MB of RAM, leather case, boxed as new, £100. Chris, G7UWR, QTHR, 01963 370 279 (Templecombe).
E-mail: pah999@aol.com

WANTED

EARLY crystal and valve wireless wanted; anything to do with early wireless is of great interest, especially Marconi items. Also looking for top-end valve comms rcvr and early AM Txs by Johnson, Collins, Hallicrafters and other US makers. G4ERU, QTHR, 01202 510400 (Bournemouth).

A Kenwood TS-9505DX, must have all options and be in exc cond c/w original packing. John, 020 8561 3837 before 9pm appreciated (Hayes).
E-mail: john@pepps.demon.co.uk

AMSTRAD TV tuner as used with early computers, Microvitec monitor with video input, working or not. 01609 772 702 (Northallerton).
E-mail: h3kjx@sagainternet.co.uk

CHOKES L64, L65 for B28 CR100 rcvr PSU 120mA, 225 ohm, 8H. G3LYU, QTHR, 0116 287 6459 (Leicester).

CONTROLLER for Yaesu rotator type G-800 or rotator system for quad. Yaesu FT-847. 01527 541 502 (Redditch).
E-mail: g3kwkroger@aol.com

DISABLED fan of old days seeks unwanted QSLs, log books etc and pre-1970 magazines. Mike, 8 Windsor Road, Reydon, IP18 6PQ.

FT-241 Xtals - plug-in for around 7.027, 7.028 and 7.029MHz for HRO restoration project (associated Tx). G3YVR, QTHR, 01293 883 253 (Crawley).
E-mail: geoff@g3yvr.freeserve.co.uk

HRO-MX (HRO-5) bandspread type coil boxes wanted, scratches or dents no problem.
E-mail: dl2ecl@aol.com

KENWOOD/Trio VFO-240. SEM iambic keyer. G3JFC, 01529 413 547 (Sleaford).

MARCONI 365 type Morse key or similar ex-Merchant Navy type, G3UKH, QTHR, 0191 274 4115 (Newcastle upon Tyne).

MORSE signalling lamps, AVO and/or Mullard (or other) valve testers. Field telephones, preferably in pairs for small museum. 01505 502 503 (Beith).

REES Mace 619 Tx and CAT Rx. Creed 75 teleprinters, unused spares and tools. Rohde & Schwarz Polyskop SWOB IV. Racal Speedrace MA275 oscillator coupling unit. Racal valve radio equipment, mans and sales literature bought for cash. Nigel, G0UGD, 01323 486 822 (Eastbourne).
E-mail: nigel@classicracal.info

SILENT Key clearout or just not needed, I collect QSL cards for their historic interest and a research project, especially from periods before 1970. Can collect or arrange collection. 0113 269 3892 (Leeds).
E-mail: g4uzn@qsl.net

SWAN 350 or Swan Cygnet, must be in gwo, maybe Drake TR4C, in good order. G3WBX, QTHR, 01603 812 129.
E-mail: v.kathrens@virgin.net

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 ☐
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SILENT KEYS

WE REGRET to record the passing of the following radio amateurs:

G0NCG	Mr A F Broadbent	13/08/02
G0VON	Mr K Cummings	26/08/02
G0WBH	Mr M R Knights	
G2BY	Mr H E Whatley	20/08/02
G2CDT	Mr F H Martin	07/02
G2CPM	Mr W N B Mansell	07/07/02
G3ATH	Mr H Pain	01/09/02
G3UFZ	Mr C H Foulkes	
G4DVH	Mr J Barnes	
G4FJO	Mr G Gwilliam	04/02
G4HFL	Mr D T Busby	31/08/02
G4HWU	Mr B A Osbourne	
G4RD	Mr F Briggs	07/08/02
G4XZD	Mr R W Goodall	
G5PW	Dr B Crisp	12/09/02
G6NRA	Mr B L Goodall	26/08/02
G7FCE	Mr M J Warren	28/08/02
G7MAO	Mr G Byron	
G7VYM	Mr R Hewison	28/07/02
G8KNM	Mr A Broomfield	11/08/02
G8OWN	Mr D Miller	08/02
GI4SVO	Rev H L F Bolster	06/09/02
GM0OYV	Mr C N L Cowper	18/08/02
GM4YJL	Mr R J Turner	31/08/02
GW0WLH	Dr D Shewring	
KL7AVX	Mr J W McQueen	
ON4UV	Mr M Gilissen	
RS186023	Mr J M Coriat	11/08/02

Rallies & Events

2 NOVEMBER 2002

RAEN Annual General Meeting - National Space Centre, Leicester. Details from g_griffiths@compuserve.com

2 / 3 NOVEMBER 2002

16th NORTH WALES RADIO & ELECTRONICS SHOW - North Wales Conference Centre, Llandudno. OT 10am, £2, accompanied under-14s free. Clubroom, B&B. Muriel, GW7NFY, tel/fax: 01745 591 704.

3 NOVEMBER 2002

NORTH DEVON RADIO RALLY - Holsworthy Memorial Hall. OT 10am. B&B, etc. G8MXI, QTHR, 01409 241 202.

9 / 10 NOVEMBER 2002

MARTLESHAM MICROWAVE ROUND TABLE 2002 - Adastral Park, Martlesham Heath. Saturday visit to RAF Air Defence Radar Museum at RAF Neatishead - £3. Book early on-line. Evening dinner at County Hotel, Copdock, Ipswich. Book on-line or contact G3XDY. Accommodation at the same hotel, quoting Group No 784, 01473 209 988. OT Sunday, 9am. Pre-registration obligatory at least seven days in advance - register on-line. FM, LEC, UK Microwave Group AGM, C. John, G3XDY, 01473 717 830, g3xdy@btinternet.com [www.btinternet.com/~jewell]

10 NOVEMBER 2002

12th GREAT NORTHERN HAMFEST - Metrodome Leisure Centre, Queen's Road, Barnsley, less than 2 miles from M1 jn 37, and 5 minutes' walk from train and bus stations. Follow the brown 'Metrodome' signs from all directions. OT 10am, £2.50. DF, TS, SIG, B&B, TI via GB3NA on 145.675MHz. Ernie, G4LUE, 01226 716 339 or 07787 546 515 (6 - 8pm) or e-mail ernest.bailey1@virgin.net

KEY

Rallies & Events
TI - Talk-In; **CP** - Car Park; **£** - admission; **OT** - Opening Time - time for disabled visitors appears first, eg (10.30/11am); **TS** - Trade Stands; **FM** - Flea Market; **CBS** - Car Boot Sale; **B&B** - Bring and Buy; **A** - Auction; **SIG** - Special Interest Groups; **MT** - Morse Tests; **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.

17 NOVEMBER 2002

COULSDON ATS CATS Bazaar - 4th Purley Scout HQ, Lion Green Road, Coulsdon. OT 10am. Andy, G0KZT, 01737 552 139 or andyg0kzt@hotmail.com

MIDLAND AMATEUR RADIO SOCIETY Radio & Computer Rally - New venue: King Edward's Grammar Camp Hill School, Vicarage Road, King's Heath, jn A4040 & B4122. OT 10am, £1. TS, Clubs, SIG, CP free, C, B&B. Peter, G6DRN, 0121 443 1189.

23 / 24 NOVEMBER 2002

LONDON COMMUNICATION & COMPUTER SHOW - New venue - Wodson Park, Ware, Herts. OT 9.45/10am, £3, concessions/under 14s, £2.50. TS, B&B, TI (2m & 70cm), CP free, SIG, MT, MA, LB, C, DF. RadioSport 01923 893 929. [www.radiosport.co.uk]

30 NOVEMBER 2002

ROCHDALE & DARS Traditional Radio Rally - St Vincent de Paul Catholic Church Hall, Caldershaw Road, off the A680 Edenfield Road, about 2 miles west of Rochdale. This is a **Saturday** rally! Follow orange arrows from M62 jn 20. OT 10.15/10.30am, £1. TI on S22, CP free, TS, B&B, C. John, G7OAI, 01706 376 204 (eve) or radars@mbc.co.uk

1 DECEMBER 2002

BISHOP AUCKLAND RAC Rally - Spennymoor Leisure Centre. OT 10.30/11am, £1, accompanied under-14s free. TI on S22, DF, TS, CP, B&B, C, LB, MT, FAM. Mark, G0GFG, 01388 745 353 or Brian, G7OCK, 01388 762 678.

8 DECEMBER 2002

WEST MANCHESTER RADIO CLUB Red Rose Radio Rally - Lowton Civic Hall, Lowton, nr Leigh, jn 23 M6. OT 10.45/11am. CP, LB, Santa Claus. Stephen, G6BVN, 01942 888 900.

WORCESTER RADIO RALLY - Worcester Rugby Club, on B4538, just off M5 jn 6. OT 10am, £2. CP free, TS, SIG, LB, C, WIN. John, G8MGK, 01527 545 823 or 07762 203 355. [www.qsl.net/gb2tcr]

26 JANUARY 2003

FENLAND RG Horncastle Winter Amateur Radio Rally - Horncastle Youth Centre, The Old School, Cagthorpe, Horncastle, Lincs (nr Horncastle Police Station). OT 10.30am, £1. C, MT, TI on S22. Chris, G0PXB, 01526 860 320 or Tony, G3ZPU, 07778 274 535. [www.fenlandrepeater.org.uk]

OLDHAM ARC Rally - New venue - Clayton Arms Sports Club (next to Oldham Athletic's stadium). Steve or Hazel, 01706 848 092 or m5aeg@btinternet.com [www.oarc.zen.co.uk]

2 FEBRUARY 2003

SOUTH ESSEX ARS Canvey Island Radio & Computer Rally - Brian, G7IIO, 01268 756 331 or briang7iio@yahoo.com [www.southessex.ars.btinternet.co.uk]

9 FEBRUARY 2003

HARWELL ARS RADIO & COMPUTING RALLY - Ann, G8NVI, on 01235 816 379 or ann.stevens@btinternet.com [www.hamradio.harwell.com]

16 FEBRUARY 2003

CAMBRIDGE & DARC Rally - [www.cdarc.org.uk]

23 FEBRUARY 2003

SWANSEA ARS Amateur Radio & Computer Show - Roger, GW4HSH, 01792 404 422.

2 MARCH 2003

18th RAINHAM RADIO RALLY - Martin, M0AAK, martinm0aak@yahoo.co.uk

8 MARCH 2003

CRYSTAL PALACE RADIO & ELECTRONICS CLUB Spring Radio Fair - Bob, G3OOU, 01737 552 170. [www.members.aol.com/rfcburns]

9 MARCH 2003

BLACKMORE VALE ARS Valve Day - Tony, 01258 860 741.

16 MARCH 2003

NORBRECK Amateur Radio, Electronics & Computing Exhibition - Peter, G6CGF, 0151 630 5790.

25 - 27 APRIL 2003

SCANDINAVIAN HAMVENTION 2003 - Gothenburg. [www.scandiham.com]

26 / 27 APRIL 2003

LONDON COMMUNICATION & COMPUTER SHOW - RadioSport 01923 893 929. [www.radiosport.co.uk]

5 MAY 2003

DARTMOOR RC Dartmoor Radio Rally - Ron, G7LLG, 01822 852 586.

18 MAY 2003

MIDLAND ARS Drayton Manor Radio & Computer Rally - Norman, G8BHE, 0121 422 9787 or 07730 132 726. [http://midamradio.members.beeb.net]

1 JUNE 2003

SPALDING & DARS Annual Rally - Ray, M0CTM, 01775 711 953, or John, G4NBR, 07946 302 815. Replaces original date of 8 June. [www.sdars.org.uk]

15 JUNE 2003

NEWBURY & DARS Amateur Radio Boot Sale - [www.nadars.org.uk]

22 JUNE 2003

EPSOM RADIO & ELECTRONICS FAIR - Paul, M0CJX, m0cjx@lineone.net [www.epsomrally.co.uk]

10 AUGUST 2003

FLIGHT REFUELLING ARS Hamfest - hamfest@frars.org.uk [www.frars.org.uk]

24 AUGUST 2003

TORBAY ARS Communications Fair - Anna, anna.cok@btinternet.com

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 QSL Bureau sub-managers for special event station callsigns are as follows:

GBxAAA-MZZ - Mike Evans, 322 Heol Gwyrosydd, Penlan, Swansea SA5 7BR, e-mail mw0cna@ntlworld.com

GBxNAA-ZZZ - Graham Ridgeway, 37 Highfield Gardens, Blackburn BB2 3SN, e-mail m5aav@zetnet.co.uk

Will organisers of special event stations please ensure that they lodge plenty of envelopes with their sub-managers?

1 Nov	GB4RN: Royal Navy. Waterlooville, Hants. (G3LIK)
11 Nov	GB4FAA: Fleet Air Arm. Pembs. LH2 (GW4XQK)
15 Nov	GB0CIN: Children In Need. Stoke-on-Trent, Staffs. LH27 (M5DAD) GB1CIN: Children In Need. Stoke-on-Trent, Staffs. 27 (G7MWS) GB2KIN: Kids In Need. Shoreham, Sussex. L (G3NDJ)
22 Nov	GB4YOU: Youlbury Scout & Guide Radio. Oxford. TLH27P (G0RJX) GB4YOU: Youlbury Scout & Guide Radio. Oxford. TLH27P (G0REL)

Club & Regional NEWS

Region 1: Scotland West & Western Isles

PAISLEY (YMCA) ARC

13, What is IOTA? 27, Safety in the shack. Jim, GM3UWX, 01505 862817.

Region 2: Scotland East & the Highlands

COCKENZIE & PORT SETON ARC

15, 'HF car aerial systems, Dave Stockton, GM4ZNX. Bob, GM4UYZ, 01875 811723.

DUNDEE ARC

19, 'Victory in Europe' 6th Enigma Lecture, Ken McConnell C Eng, FIEE. Donald, GM0PIV, 01382 455771.

LOTHIANS RS

11, Getting started on 6 & 4m, Peter Bates, GM4BYF. 27, Royal Observatory visit (members only). Peter, 0131 446 0155.

Region 3: North West

FYLDE ARS

14, Junk sale. 28, Construction competition. Ken, G3RFH, 01253 407952.

SOUTHPORT & DARS

18, North West Ambulance Service. Don, M1BUL, 01704 227726.

THORNTON CLEVELEYS ARS

4, Quiz night (bring three questions). 11, Soldering techniques. 18, On air. 25, IRLP Basics. Jack, G4BFH, e-mail: jack@jduddington.fsnet.co.uk

Region 4: North East

HALIFAX & DARS

19, Amateur Radio Observation Service, Barry Scarisbrick, G4ACK. Tom Kay, M0TKA, 01484 715079 (new).

HORNSEA ARS

6, AGM. 20, 30th Anniversary. 27, Antennas. Andy, G0VRM, 01482 643660

YORK RC

7, Repair night. Alex, G0WUY, 01904 423871.

Region 5: West Midlands

CHELTENHAM ARS

1, Test equipment evening, Richard, G4ERP. Ivan, G4BGW, 01452 731956, ivan@g4bgw.freeserve.co.uk

GLOUCESTER AR & ES

4, Bring and show: handhelds. 11, HF verticals workshop, on air. 18, Club analyser testing. 25, Workshop, on air. Tony, 01452 618930 office hours.

KIDDERMINSTER & DARS

5, 'Ham Radio and the Internet', by former *RadCom* 'WWW' columnist Andy Gayne, G7KPF. Tony, G1OZB, 01299 400172.

MID-WARWICKSHIRE ARS

12, 'Homebrew' evening. 26, Book reviews by members. Bernard, M1AUK, 01926 420913.

STRATFORD UPON AVON & DRS

11, DXing, Andy Brown, G4EZT. 25, DF techniques, Geoff, G8UKT. Ron, 01789 267430.

TELFORD & DARS

6, Open evening, on air. 13, New PIC project: another useful gadget from G0VXG. 20, Electrolytic capacitors, by Phil White. 27, Telford AR Rally Group AGM (TBC). Mike, G3JKX, 01952 299677.

Region 6: North Wales

NORTH WALES RS

7, Foundation Morse and Novice. 14, Annual junk sale. 21, Retuning commercial antennas, Graham Ogle, GW8RAK.

NORTH WALES RS (Cont.)
28, Foundation Morse and Novice. Edward, GW0DSJ, edward@eshipton.fsnet.co.uk

Region 7: South Wales

BARRY ARS
5, Beer & chat. 12, Planning for Foundation & Intermediate Licence classes. 19, SSTV demo. 26, Operating & tracking UO-14, Ken Eaton, GW1FKY. Brian, GW0PUP, 029 2083 2253.

SWANSEA ARS
7, Mini Morse sender, construction project pt 1, Tim, GW4ADL. 9, Club Calls Contest. 21, Mini Morse sender, construction project pt 2, Tim, GW4ADL. May, GW3OMN, 01792 582059, mj33@btinternet.com

Region 8: Northern Ireland

BANGOR & DARS
6, Annual surplus sale. Mike, GI4XSF, 028 42772383.

Region 9: London & Thames Valley

CHESHAM & DARS
6, General meeting. 13, Quiz night. 20, On air. 27, AFS contest planning. Terry, terence.thirlwell@eds.com

CHESHUNT & DARC
6, Members' forum. 13, AGM. 20, Junk sale. 23, 24, London Communication & Computer Show, Ware. Jim, G0JXN, 01992 468204.

COULSDON ATS
11, Croydon Airport, Derek Hills, G6MFM. Steve, G7SYO, 01737 354271.

CRAY VALLEY RS
21, 'SOTA', M0BGR. Bob, BRS32525, 020 82657735 after 8pm & weekends.

CRYSTAL PALACE R & EC
1, Morse instruction. 15, Surplus equipment sale. Bob, G3OOU, 01737 552170 or Victor, 020 8653 2946.

EDGWARE & DARS
14, DIY, Terry, G3WUX. 28, 'Boolean Logic', John, G3SJE. Hank, G0FAB, 020 8205 1023.

MAIDENHEAD & DARC
7, 'DX Holidays', Tim Kirby, G4VXE. 19, 'GB50', Dave Chislett, G4XDU. John, G3TWG, 01628 525275

NEWBURY & DARS
13, Committee meeting. Mark, M0CUK, 01635 36444.

Region	RSGB Regional Manager
1. Scotland West & Western Isles	Gordon Hunter, GM3ULP
2. Scotland East & the Highlands	Billy Jenkins, MM0WKJ
3. North West	Kath Wilson, M1CNY / M3CNY
4. North East	Geoff Darby, G7GJU / M3GJU
5. West Midlands	Roy Clarke, G8AYD / M0RLY
6. North Wales	Liz Cabban, GW0ETU
7. South Wales	Simon Lloyd Hughes, GW0NVN
8. Northern Ireland	Jeff Smith, MI0AEX
9. London & Thames Valley	Alan Ross, G1SQB
10. South & South East	Ivan Rosevear, G3GKC
11. South West & Channel Islands	Dick Atterbury, G4NQI
12. East & East Anglia	Malcolm Salmon, G3XVV
13. East Midlands	Bryn Llewellyn, G4DEZ

RSGB Regional Managers as of 3 October 2002.

RS OF HARROW
3, GB2DHH operating day. 8, Visual Basic interface for FT-747, David, G0CAG. 23, 24 Stand at London Communications & Computer Show, Ware. Jim, G0AOT, 01895 476 933 or 020 7278 6421.

READING & DARC
14, TBC (for details please check GB2RS for 10 Nov). Pete Milton, G8FRC, peterw.milton@btinternet.com

SILVERTHORN RADIO CLUB
1, AGM. 15, 'The Vulcan', Richard Clarkson, Vulcan Restoration Trust. David, G0KHC, 020 8504 2831.

SOUTHGATE ARC
14, G6QM construction contest, slides of Dayton rally, Steve, G3ZVW. 28, Demonstration of winning entries for G6QM. Mike, M0ASA, 020 8366 0698.

SURREY RCC
4, Video evening at RA Whyteleafe. Ray, G4FFY, 020 8644 7589.

SUTTON & CHEAM RS
21, 'Satellite Broadcasting' Dave Sparks of Sky Television. John, G0BWV, 020 8644 9945.

THREE COUNTIES ARC
14, Weather satellite data reception, Frank, G7CND. Damian, KammDP@btinternet.com

WIMBLEDON ARC
8, Surplus equipment sale. Fred Plant, G7VCQ, fredplant@btinternet.com

Region 10: South & South East

BASINGSTOKE ARC
4, 'Dealing with Interference', Ian Hubball of RA enforcement section. 24, 'Foxhunt'. Peter, M1DGQ, 0118 983 6545.

CRAWLEY RC
27, Horsham Challenge. Derek, G3GRO, 01293 520424.

FAREHAM & DARS
6, On air. 13, Another mystery talk, Ron, G3XPH. 27, Standard frequency transmissions, Steve, G7HEP. Steve, G7HEP, 01329 663673

FARNBOROUGH & DRS
13, AGM. 27, Chairman's evening. Norman, G0VYR, 01483 835320.

HASTINGS E & RC
20, Enigma encryption machine, John Elgar Whinney. R C Gornall, G7DME, 01424 444466.

HORNDEAN & DARC
5, Social meeting. 26, 'Forgery and the British Currency', Geoff Tilley. Stuart, G0FYX, tel: 023 9247 2846.

HORSHAM ARC
7, NASA's *Cassini* mission to Saturn. David Miller, G4JHI, 01403 252221.

MID SUSSEX ARS
1, Public safety communications, John, G8JBJ. Geoff, G6MJW, 01273 845103.

OXFORD & DARS
14, Oxford Raynet Group, Bill Seeney, G8RFN. Dave, G3BLS, 01865 247311.

SOUTHDOWN ARS
4, Wire Aerials, Chris, G0GMC. Foundation Licence: details from John, G3DQY, 01424 424319.

SWINDON & DARC
7, 'History of the Morse Key', Dennis, G3LLZ. 21, 'Hi-Tech Catering', Dave, G8ELH. Den, M0ACM, 01793 822705.

TROWBRIDGE & DARC
6, Judging entries for G2BQY Memorial Constructor's Cup. Ian, G0GRI, 01225 864698, evenings/weekends.

WORTHING & DARC
6, Discussion on current topics. 13, RA meeting report. 20, Thermionic devices. 27, 'The French Connection', G4XRU. Roy, G4GPX, 01903 753893

Region 11: South West & Channel Islands

APPLEDORE & DARC
18, Bring & buy sale. Brian, M0BRB, 01237 473251.

BLACKMORE VALE ARS
5, VHF on air. 12, Construction evening overseen by Tim Walford, G3PCJ. 19, HF on air. 26 Kit completion (from 12th). Tony, G0GFL, 01258 860741.

BRISTOL RSGB GROUP
25, Video evening at Bristol Lawn Tennis and Squash Club. Martyn, G3RFX, 01179 736419.

CORNISH RAC
1, Bring and buy. 11, Computer section. John, G4LJY, 01872 863849.

SOUTH BRISTOL ARC
6, Morse Assessment. 13, Commencement of Christmas raffle. 20, AGM. 27, Winter 'Bring & Buy' sale. Len, G4RZY, 01275 834282.

TORBAY ARS
22, 'Around Britain on a Harley', Chris, M1DVJ. Walt, G3HTX, 01803 663200.

WEST SOMERSET ARC
5, Video. Jean, G0SZO, 01984 633060.

YEOVIL ARC
7, 'The club project', G3PCJ. 14, 'Building on the Foundation': a look at forthcoming changes to the UK amateur exams, *RadCom* 'Newcomers' News' columnist Steve Hartley, G0FUW. 21, 'My DXpedition to Ascension Island & St Helena', Keith, G3TTC. 28, On air. Derek, M1WOB, 01935 414452.

Region 12: East & East Anglia

BROMLEY & DARS
19, Construction contest. Alan, G0TLK, alangm4@clara.net

CAMBRIDGE & DARC
1, Preparing for equipment sale. 9, Annual club dinner. 22, High power klystrons in UHF transmitters, Roy, M1GRT. 29, Video evening. Ron, G3KBR, 01223 501712.

CHELMSFORD ARS
5, Homebrew 2.4GHz antennas for ATV/WLAN, Paul Prior, G8IXC, Kent ATV Group. David Bradley, M0BQC, 01245 602838.

COLCHESTER RAC
7, Les Sayer: thumping a key since 1926. Andy, M1MOD, 01206 735122.

FELIXSTOWE & DARS
11, Speaker from the Microwave Round Table. 25, RSGB video evening. Paul, G4YQC, tel: 01394 273507.

IPSWICH RADIO CLUB
6, Surplus equipment sale. Keith, G7CIY, 01394 420226.

LEISTON ARC
6, AGM and boot sale. Paul, M3MIG, & Diana, M3VDT, 01728 746044, m3mig@aol.com

MAIDSTONE YMCA ARS
1, Junk sale. 8, RAE reactance & impedance & HF station operating. 15, 'Mini antennas'. 22, RAE resonance, in shack RTTY & PSK31. 29, Quiz night. Andy, M0CST, 01622 661035.

NORFOLK ARC
6, Informal Morse practice and instruction. 13, Power supplies, Doug, G0UYC. 20, Informal Morse practice and instruction. 27, SSTV demonstration, Colin, G7UVY, and Rex, G0CLR. Peter, G3ASQ (no contact details provided.)

Region 13: East Midlands

EAGLE RADIO GROUP
12, 'Locks and Security', Malcolm, G3ZUI. G0SWS, 01507 478590.

LINCOLN SHORT-WAVE CLUB
6, Talk by Ian Hickling, Lancaster Pilot. 20, Construction Contest. 27, 'The Cold South', by Anita Wright. John, G1TSL, 01522 793751.

LOUGHBOROUGH AND DISTRICT ARC
5, Unusual or Novelty Radios: bring something along. 12, HF rig night. 19, Navigational anecdotes, John, G8JMG. 26, On air, SSTV? Chris, G1ETZ, 01509 504319.

SHEFFORD & DARS
7, Digital photography, Ken, G4YRF. 14, Mystery objects: please bring unusual or interesting item. 21, Technical discussion.28, TBA, Terry, G4OXD. Derek, G4JLP, 01462 851722.

NEWS FROM THE CHELMSFORD CLUB

ALTHOUGH THIS YEAR'S **Chelmsford Amateur Radio Society** table-top sale was held during the height of summer, the attendance was an all-time record. Waters & Stanton were represented by Mike 'Zippy' Wheaton, G4ZPE, who came with the usual abundance of worthwhile 'goodies' which were eagerly snapped up. Another visitor was Eric Hayes from BHI Ltd, who showed the new, fully adaptive electronic noise eliminator. Members were able to test out this product which cancels up to 20dB of noise. Dave Penny, G3PEN, brought along an engraving machine and the many new amateurs in the club kept him busy all evening making callsign badges.

The club will be running Foundation evening courses starting Thursday 24 October 2002 and 9 January 2003. Both courses run for six weeks.

Past president of the RSGB Peter Chadwick, G3RZP, recently presented the first two Chelmsford Awards to club members Jim, 2E1GUA, and Martyn, M3VAM. The Chelmsford Award is open to all amateurs and SWLs and for every award issued a donation will be made to Essex Air Ambulance, an emergency helicopter service funded entirely by sponsorship and fund raising events. Further details about the award may be found on the club's website www.g0mwt.org.uk For more information about the club contact the secretary David Bradley M0BQC, tel: 01245 602838 or e-mail: cars@g0mwt.org.uk

The Kilmarnock & Loudoun Amateur Radio Club, GM0ADX, claims the record for using the oldest tent for Field Day contest activities! The tent, which is used every year, is a 1942 model which saw active service in North Africa. Can any club beat that? The tent has had very few alterations to it throughout its 60-year life span and is still very functional. It is seen here being erected by Dave, GM4SQM; Bill, GM3ZRT; and Eddie, GM6WTH, during this year's RSGB SSB Field Day.

A TITANIC SHOW

MEMBERS OF THE **Dundee Amateur Radio Club** were kept busy in August when, in addition to their major presence at the city's *Titanic* exhibition, they simultaneously put on a special event station at North Carr for the International Lighthouse / Lightship Weekend.

GB2MGY at the *Titanic* exhibition ('MGY' was the callsign of the *Titanic*) made around 1000 contacts, with members of the public young and old being fascinated by the Morse code they heard. There were also displays of the *Titanic's* radio operators Jack Phillips and Harold Bride, which drew much favourable comment from the visiting public. Over 8000 visitors flocked to see the hundreds of displays at the exhibition, amongst them 90-year old Millvina Dean, the youngest of the remaining three survivors of the *Titanic* disaster, who signed the GB2MGY log book.

SWL Peter Deans points out the 'Marconi Room' on the *Titanic*.

LEEDS & DARS CELEBRATES BRAILLE

MEMBERS OF THE **Leeds and District Amateur Radio Society** ran special event station GB2BRL on 17 August from Shire View, the Leeds Centre for Blind and Partially Sighted People. Louis Braille, the inventor of the tactile reading / writing system for blind and partially-sighted people, died 150 years ago. John Britten, M0ALD, Manager of Braille and Large Print Services based at Shire View, who is himself a blind operator, used a Kenwood TS-570 and Yaesu FT-736 both fitted with speech synthesisers. John said, "The aim of the day was to celebrate the life of Louis Braille and to promote the Foundation Licence and amateur radio to blind and partially-sighted people, and show them that it is possible to use the equipment". The Leeds Centre for Blind and Partially Sighted People is based in Headingley, just outside the city centre. It offers a range of facilities and activities. For information about the centre contact them on tel: 0113 214 4544.

FULL HOUSE AT GOBEN FAMILY

IT WAS A DAY of justified family pride when Sarah Louise Goben passed her Foundation Course at **Finningley Amateur Radio Society**. With the rest of her family already licensed, 14-year old Sarah Louise had a lot to live up to as she prepared to sit the Foundation exam. She had nothing to worry about and, like her sister Jane, returned a high score in the exam. "It's going to be fun allocating a rota system for the family rig," said dad Philip, G0EPX.

The Finningley club continues to run Foundation and Intermediate courses: details on the club's website at www.geocities.com/g0ghk

Seen celebrating with Sarah are her mum, Kim, M3APM; brother Mark, M3EMP; dad Philip, G0EPX; granddad Peter, G4BVV; and 8-year old sister Jane, M3JEG.

NEW ISWL CLUB CALL

THE **INTERNATIONAL SHORT WAVE LEAGUE** (ISWL) has introduced a second club callsign. MX1SWL/P is available to ISWL members on a monthly basis in the same way as its existing club call, GX4BJC/P. MX1SWL/P is clearly for use above 30 MHz and is available to both Class A and Class B members, although Class Bs have priority. Tom Read, M1EYP (G-20843), operated MX1SWL/P during August. Using only 230mW of power (-6dBW in the logbook!) he worked 135 stations during the month. With this power level, locations had to be suitable, so a Standard C108 handheld was taken up and down many hills in the Peak District and Staffordshire moorlands. There was even one night's operation from Great Orme's Head in Llandudno as MC1SWL/P.

SUCCESS FOR 'THE FRIENDLY RALLY'

THE 34TH ANNUAL Colchester Radio, Computer and Electronics Rally organised by the **Colchester Radio Amateurs' Club** was held at St Helena School, Colchester. Graced with glorious sunshine and soaring temperatures, the whole of a small wooded area was given over to shady seating, with food, licensed bar and ice cream available. There were over 70 traders and car booters on the field, while in the hall Waters & Stanton, Moonraker, Barenco, Greenweld and the RSGB bookshop rubbed shoulders with special interest groups and other societies.

Known locally as 'the friendly rally', the organisers went to some length to broaden the scope of the traditional-style rally. There was a large display of old military radio apparatus and a 'try before buy' station to allow testing of equipment. There were also several features aimed at newer licence holders, including a 'what next?' helpdesk advising on further training possibilities, a station (GB2CRR) available for assisted on-air use, and experts on hand to advise on equipment needs and use.

Members of the Lowestoft and District club presenting a cheque to Frank Mortimer, G0ULS, Senior Officer of the Lowestoft Coastwatch, in appreciation for the use of the lighthouse for the International Lighthouse / Lightship Weekend in August.

RUTHIN FLOWER SHOW

ON 17 AUGUST GB2RFS was set up at Ruthin Flower Show in Denbighshire, North Wales. The annual show, which as well as extensive flower and produce displays, included everything from vintage cars to miniature ponies, was very well attended and there was considerable interest in the amateur radio station by the public. Even the weather cooperated by being hot and sunny, which helped bring out the crowds. GB2RFS was set up by a group of local and not so local hams and worked well, making a considerable number of contacts world-wide throughout the day. The station was visited by the local mayor and her deputy.

Thanks to Patrick Roberts, GW4WSU; Peter, GW4IGF; Graham, GW0HUS; Shirley, GW1GOE; Rod, MW3ROD; Mike, G1CZU; Arthur, G7BQY; John, GW3RBM; Liz, GW0ETU; and Tony, G3TRL, for making the day a success.

Left to right at GB2RFS: Graham, GW0HUS; Mike, G1CZU / M3CZU; Patrick, GW4WSU; Arthur, G7BQY; Rod, GW7TKZ / MW3ROD; and Tony, G3TRL; with Liz, GW0ETU in the foreground.

4X4 IN STOKE

Leigh Preece, M5GWH, on 40m - part way through another pile-up.

MEMBERS of the **Stoke on Trent ARS**, operated GB4XF from the National 4x4 Rally at Trentham Gardens in Stoke from 29 August to 1 September. GB4XF was activated for 40 hours non-stop from G4PMY's Russian-built Zil R161 communications truck. Although a 'mobile' set-up, the truck's valve PA amplifiers are capable of high power output and guaranteed pile-up after pile-up on 40m. The Russian military radio equipment did not have the usual controls normally found on a modern HF radio. "All we had was a volume control, PTT button and a headset", said club secretary Leigh Preece, M5GWH, who was one of the operators, along with Joe, G4PMY; Cliff, G3ISX; Reg, M0CJI; John, G0OFB, and Mark, M3MAX.

Two 60ft masts made sure that visitors could see the truck. Over 800 contacts were made on 40 metres. 6m and 2m SSB and CW were also in operation, as well as some HF CW. The goings-on were beamed to local ATV enthusiasts over the weekend by Albert, G4DHO, directly into GB3UD, the local TV repeater at Mow Cop. More photographs of the event can be viewed on the club's website at www.qsl.net/g3gbu and information on the truck can be found at www.bellradio.co.uk

PETERLEE CARNIVAL

THE **PETERLEE AMATEUR RADIO CLUB** puts on a special event station at Peterlee Carnival in early September every year.

The carnival is co-ordinated by the town council at Peterlee Showground. The council kindly provided club members with a big marquee and power for the duration at a prime location at the main entrance. The club operated as GB0PC for the full 36 hours of the carnival on HF, VHF, UHF, packet and SSTV. Many members of the public visited the station in the marquee and showed a lot of interest in what was going on.

KIDS IN NEED APPEAL

MEMBERS OF THE **Moorlands and District Amateur Radio Society** will be taking part in a 24-hour 'radiothon' for the Children in Need charity event on **15 / 16 November**. Last year members of the club raised over £1100 for the charity. This year, using the callsign GB0CIN, they hope to beat that figure, but are looking for support or help. Anything would be appreciated, from a few pens to equipment. Any large items will be put into the club's auction. All funds will go to the Children in Need charity. If you can offer some help please contact Paul Stevenson, M5DAD, Club Secretary, Moorlands And District Amateur Radio Society (MADARS), e-mail: paulm5dad@aol.com

Items for club news should be sent to the *RadCom* Office at HQ to arrive by the 26th of the month, ie approximately a month before publication (eg 26 January for the March Issue). News items should be sent in writing (fax, letter or e-mail gb2rs@rsgb.org.uk) by the club secretary or the person responsible for publicity. Post cards for this purpose are available from RSGB HQ. A database of all meetings is shared between *RadCom* and GB2RS, so information only needs to be sent once.

Club News is a service for clubs and societies affiliated to the RSGB. The announcements are intended to notify non-members and potential members of your club of specific events, therefore 'informal', 'committee meeting', 'natter night' and 'ragchew evening' etc will only be included if space permits. Basic, unchanged details about RSGB-affiliated clubs are published annually in the *RSGB Yearbook*.

VHF/UHF

NORMAN FITCH, G3FPK
40 Eskdale Gardens, Purley, Surrey CR8 1EZ.
E-mail: g3fpk@compuserve.com

CONTESTANTS IN the RSGB 144MHz Trophy / IARU Region 1 VHF Contests over the 7/8 September weekend enjoyed a good aurora. The Prague EME Conference was a great success in spite of the severe flooding in the vicinity.

All times are in UTC, ODX indicates best DX and QTHR signifies that the operator's address is in the current *RSGB Yearbook*. An asterisk (*) after a callsign denotes a CW contact, (CT), (ME) etc refers to the postcode area and (IO78), for example, is the Maidenhead grid.

DUBUS NEWS

JOACHIM KRAFT, DL8HCZ, advises on the *DUBUS* website - see the list - that the health of the chief editor Rainer Bertelsmeier, DJ9BV, "... suddenly got really worse", so much so that he will be unable to do any work for the magazine in the future. As Joe writes, "This causes a big hole for *DUBUS* because it will be almost impossible to substitute for Rainer", who has been the technical editor since issue 4/1988.

He is probably best known for his superb articles on Yagi antennas and state-of-the-art preamps. Many of the world's leading DXers use his Yagi designs, popularly referred to simply as 'BV Yagis'.

Joe has suggested building a team of technical editors and so far Ian White, G3SEK, and Michael Kuhne, DB6NT, have agreed to be part of it. He invites other previous *DUBUS* authors, and new ones, to join the team and funk-telegramm@t-online.de is his e-mail address. Meanwhile he will do his very best to continue to make it an interesting magazine. Issue 2/2002 will be late and publication was expected by the end of September. Issue 3/2002 will include a poll about the content and future of *DUBUS*.

Joe ends with, "Finally I want to say a strong thank you - and also in the name of all VHF/UHF/SHF amateurs - to Rainer, DJ9BV, for all his outstanding work for us during the past 13 years." Hear, hear to that.

GEOMAGNETIC AND SOLAR ACTIVITY

THE SUN CONTINUES to remain quite active and in the 29 days up to 10 September the middle latitude A-index was in the unsettled range on 12 days. The highest value at Fredericksburg was a sub-storm 23 on 4 September. As would be expected, the high latitude figures at College in Alaska were much greater with 11 sub-storm days and two storm ones in September, 56 on the 4th and 66 on the 7th, which latter triggered off the 'contest' aurora. At Fredericksburg a K-index of 6 was recorded in the early hours of the 8th.

In the 30 days to 10 September, the SESC sunspot number exceeded 200 on 18 days with a peak count of 308 on 18 August. The 10.7cm radio flux also peaked on that day at 241 units. The minimum value was 161 on 27 August and the average works out at 194.8, nearly 6% above the previous month's figure. 38 new sunspot groups were recorded and their areas in millionths of the Sun's visible disc were in the high 2000s on 10 days, peaking at 3420 on 19 August, the highest value for some time.

PROPAGATION

THE JUNE ISSUE of *The Six and Ten Report* includes a short piece by co-editor Dr Steve Reed, G0AEV, comparing the 1MeV proton fluence values and the Sporadic E (Es) area counts for 50MHz for the month. He presents these data in graphical form as a matter of interest as he is always seeking the possible correlation of Es with other measures. He concludes, "However, what this correlation means and whether it is real and significant or due to chance needs more time and data than this casual appraisal."

Activity in the month was neatly described by contributor Eric Parvin, G2ADR (YO), as, "Quantity yes, but quality?" The dominant propagation mode was single-hop Es, but hidden amongst the noise some reporters found two- and three-hop Es and some Es links to F/TEP (F-layer and transequatorial propagation). There are also reports on meteor scatter (MS), tropo and auroral events, although the latter were rare since June was a magnetically quiet month.

There are the usual pages of solar, geomagnetic and particle data, beacon news and reports from outside of Europe. The *Report* is an activity of the RSGB's Propagation Studies Committee (PSC), and is edited by G0AEV and Prof Martin Harrison, G3USF. Subscription inquiries should be addressed to Steve (QTHR) whose e-mail address is g0aev@explore.force9.co.uk

The July edition of *SunMag* begins with an interesting article about the Earth's orbit stating that we were at aphelion - farthest from the Sun - on 4 July. But Roy Spencer, of NASA's Global Hydrology and Climate Center (GHCC), points out that the average temperature of the whole Earth is actually 2.3ºC *higher* than it is at perihelion and goes on to explain the reason. There are other pieces about auroras, the Perseids, the International Space Station and an asteroid.

There are graphs of monthly proton events for sunspot cycles 20 to 23 so far and an interesting histogram showing how the July events compare in the four cycles. 22 and 23 have double the numbers of events than do 20 and 21. There are the usual pages of daily solar, geomagnetic and particle data, seven pages of sunspot group data and a solar flare list. *SunMag* is compiled and distributed by Neil Clarke, G0CAS (QTHR). Telephone him on 01302 531925 (Doncaster) for subscription details. His e-mail address is neil@g0cas.demon.co.uk and he has a website - see the list.

MOONBOUNCE

ROY REED, G3ZIG (JO02), has nothing much to report in the summer months, "too busy in the garden," but in recent weeks on 2m new initials were PA0PVW, YO4FRJ, N7OV and K6PF. He was pleased with his fourth place in the *DUBUS*/REF contest earlier this year. He missed the Prague conference and is trying to improve his EME system.

Howard Ling, G4CCH (IO93), completed on 23cm CW with OK1UWA, K5JL, F5VHX, N2UO and OZ6OL on 31 August. Next day there were more CW QSOs with GW3XYW, F2TU, SM2CEW operated by VK3UM, W7SZ and IK3COJ. On 7 September he completed with DL8OBU*, F6KHM, PA3CSG,

ANNUAL VHF/UHF TABLE - JAN TO DEC 2002

	50MHz		70MHz		144MHz		430MHz		1.3GHz		
Callsign	Dist	Ctr	Dist	Ctr	Dist	Ctr	Dist	Ctr	Dist	Ctr	Total Points
G4DEZ	70	76	31	7	98	22	36	9	19	5	369
G3FIJ	35	27	24	6	52	9	28	3	6	1	191
G4APJ	12	9	-	-	44	7	38	4	-	-	114
G6TTL	15	43	-	-	-	-	10	5	-	-	73
G7CLY	3	8	-	-	6	7	4	3	-	-	31
G8RWG	-	-	-	-	16	12	-	-	-	-	28

The District Codes are the 124 listed on page 52 in the January 2002 *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 next issue is 8 November.

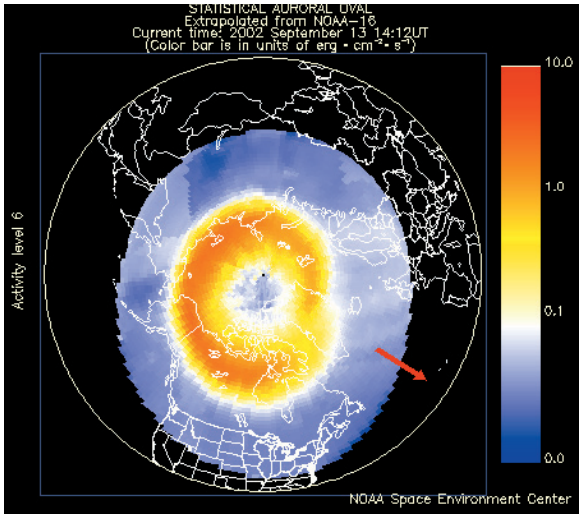
N2UO* also on SSB, and DF4PV with W2UHI and SM2CEW heard. Next morning brought DL8OBU* and K0YW* with KA0Y, N2IQ and F6ETI heard.

On 2m G4YTL worked SV1BTR* who was using his new 4-Yagi array, the previous one having been destroyed in storms. David was using his normal EME system of four 5-wavelength DJ9BV Yagis and maximum licensed power. Using JT44 mode he completed with K7XQ who was using 400W to four 3-wavelength Yagis, while he was running similar power to a single 5-wavelength Yagi at his moonset.

On 70cm his most exciting contact was with K7XQ on JT44. David was running six 11-wavelength Yagis with 500W and Jeffery was using only 150W to two 9-wavelength Yagis. David says, "This, and the 2m QSO with my single Yagi, shows what JT44 can achieve, and I hope it will encourage more people to try EME." Stuart Jones, GW3XYW (IO71), was QRV on 23cm on 4 August and completed CW QSOs with OH2DG, G4CCH, OZ6OL, K5JL and SM2CEW.

The main November event is the second leg of the ARRL EME Contest scheduled for the 23/24 weekend. London latitude stations will have about 32.5 hours of Moon time. During the weekend, the declination maximises to +25.82° with the minimum at the end of +24.30°. The 144/432MHz sky temperature ranges from 547/42K at the start to 255/19K at the end. The signal degradation varies from -1.23dB to -0.80dB referred to perigee. The Sun offset at Saturday midnight is -135°.

In the Technical part of the September *432 and Above EME Newsletter* Al Katz, K2UYH, discusses the question of Doppler frequency calculation. While the accuracy of such calculations is of lesser concern on 2m, as we go up in frequency it becomes an increasing problem. During a visit to Philippe Pierrat's, F2TU, station with Franck Tonna, F5SE, he compared the Doppler shifts calculated by the F5EHN, VK3UM, WSJT and F5SE's own programs.



View of the extent and position of the auroral oval in the northern hemisphere, as at 1238UTC on 13 September, from a polar pass of the NOAA POES satellite. Picture from the NASA website: http://sohowww.nascom.nasa.gov

While listening to F2TU's echoes on 3cm, differences of more that 3kHz were noted. On 23cm, errors of 300Hz were found which could be a factor when using JT44. Al now uses a TS-2000 directly on 23cm and is finding an error between the Doppler echo frequency predicted by his WSJT software and that observed. The difference is usually about 800-1000Hz. On 70cm the difference is around 200Hz, much smaller, and he wonders if others have seen this phenomenon or have an explanation?

BAND REPORTS

50MHz

Robin Burrows-Ellis, M1DUD (JO02), made 30 contacts in July and early August using just 200mW of SSB with his FT-690 transceiver. His normal antenna is a 3-ele Yagi 5m AGL but during contests he uses a 5-ele at 6m AGL. He completed Es QSOs on 7, 8, 15 and 16 July and enjoyed the long opening on 4 August to Latvia and Poland. Between 1435 and 1540 he worked into JO92, 93, KO05 and 25. SP4JCQ (KO13) was a new grid. ODX was LZ2LZT (KN23) at 2035km. Around 1900 there was an opening to Scandinavia with lots of OHs calling: he was called by and worked OH3NWQ at 1940.

Graham Wright, G4FUJ (IO81), was QRV in VHF NFD and new grids were IN71, IM56 and IM59. In a recent 50MHz activity evening he also picked up IO83 and IO93. Mick Kerry, GW1SXT (IO81), contacted SP6BCA, SQ8GKQ and YU7AU on 22 July and CT1BXT (IM59) on 11 August.

On 1 August, Ted Collins, G4UPS (IO80), worked SM6CMU/3* (JP63) for a new grid. From 1816 he contacted SM7FJE (JO65), SM3BIU* (JP73), LA1YKA (J059), SM6CMU/3 and IK1HWG* (JN44). Thereafter he was QRT from Hemyock until the 23rd. On the 24th beacon OE3XLB* (JN87) was S7 on 50.058MHz. From 1008 on the 28th he completed QSOs with SM5BMD (JO99), SM5CEU* (JO78) and OH2TP (KP20). At 0900 on the 30th he worked S52LW* (JN76) with fade-out at 0915. At 1822 the SV1SIX* beacon was S7 and some Is and an S5 were heard.

Ted was QRV from his caravan in IO90 using an IC-706Mk2 and 2-ele HB9CV antenna 15ft AGL. SM6CMU/2* (JP95) was a new grid at 1816 on 3 August and QSOs with LA4LN (JP50), DL1RNW/SM3 (JP72), LC7QBT (JP50) and SP5XMU/P (KO01) followed till fade-out at 1925.

The 4th was a good day starting with early morning QSOs with ES5MC/0 (KO18), ES6RQ (KO28), ES1CW (KO29), YL3AG/P (KO26), SM7HQD* (JO87), OH0LQK* (KP00), SM1TDE (JO79) and OH4RH* (KP31). At 1728 OH4BC* (KO19) was the last contact with fade-out at 1750.

The morning of the 5th saw the band open again to Scandinavia and brought contacts with LA2PH (JP50), OH5LK (KO30), MM0/DJ6AU (IP60), LB1NE* and LA8WF (JO59), OY9JD (IP62) by 1215. From 1424 Ted had QSOs with EH1KV* (IN52), PE1OLM (JO23) and EH4BPJ (IN72). Early evening saw ES7FU* (KO28) and SP2JWR/2 (JO94) in the log.

On the morning of the 10th he worked SM7AED* (JO65), while the afternoon brought QSOs with HB9BOS* (JN37), HB9AVI/mm (JN47 on Lake Lucerne), F1DZF (JN38) and S57MTA (JN76) at 1845. The next day SMs, EHs and S5s were heard.

70MHz

During NFD, G4FUJ worked into new grid IN79. G4YTL runs 150W to a 3-ele Yagi and David reports that the main September event was the excellent aurora on the 7th when he worked EI3IO* (IO63), GM4BYF* (IO85), GM3YWL* (IO75) and GW4VEQ (IO73).

144MHz

Angie Sitton, G0HGA (IO91), reports that the Monday CW activity night is getting popular and that there are around 67 members in the 2m CW group, which has a new URL. Since the group is now open to all VHF bands they might be changing the name to vhfcw. She has a website - see the list for both.

Bryn Llewellyn, G4DEZ (JO03), worked his first Spanish station from his 'new' QTH on 2 September, EB1HAL (IN63) at S9 both ways. Next day he contacted MM3ERP (IO87) and GM0HTT (IO89) in the evening. He remarks that there are a lot of old calls coming back on the band, many saying that he is their first SSB contact in years. He mentions that a lot of newcomers are using vertically polarised antennas and wondering why reports are low and activity seems poor at the DX end of the band.

G4FUJ added new grids IO86 and IO74 and in the Es opening on 11 August worked EA9IB (IM85). Earlier, in NFD, he added IN79. G4YTL writes that the aurora during the contest on the 7/8 September weekend was the most interesting event of the month. He got the impression that many contest groups con-

PRAGUE 2002

MOONBOUNCE ENTHUSIASTS gathered in the Czech capital Prague at the end of August for the 10th biennial EME Conference. It proceeded without any real hitches despite the concerns over the disastrous floods in Central Europe. More than 100 EME operators and 80 spouses attended from all continents except South America.

The following is compiled from notes sent by David Hilton-Jones, G4YTL. A major topic was the new digital modes starting to be used on 70cm and above by EME-ers. Joe Taylor, K1JT, announced a new version of his JT44 software to be available shortly with an echo test mode.

Leif Asbrink, SM5BSZ, is developing computer-processing techniques that allow copy of normal CW at signal levels lower than the human ear can detect. His approach can be considered as the creation of 'super audio filters.' He gave an almost continuous demonstration of his *LinRad* software. Leif advocates simultaneous reception of vertically and horizontally polarised signals separately and recombining them to produce optimum polarisation. This approach is applicable to 144MHz and 432MHz where linear polarisation is used and Faraday rotation is a problem.

Doug McArthur, VK3UM, spoke about new regulations concerning exposure to RF. He has developed a program to calculate the safe exposure limits around an EME antenna array.

I am grateful to Ian White, G3SEK, the official Chairman of the Conference, for sending the document 'Forum Discussion - Digital EME Communications' which runs to four pages: the following is a short précis. The discussion was about modes such as JT44, PUA43 and any successors which are designed for DX working, use a narrow bandwidth (typically 500Hz or less) and computer decoding as distinct from the human ear and brain.

An opinion poll was held based on three proposals made by the Conference organisers. On frequency allocation, bearing in mind the different IARU Regional band plans, that they try to find somewhere for digital DX modes in the first 100-150kHz of each band. On sequencing for digital EME communications that it follows the usual EME convention that the Eastern station starts first. On awards that they try to distinguish between contacts made by 'analogue' modes (CW and SSB) and 'digital' modes. The poll resulted in 43 attendees voting for - of whom three suggested frequencies higher than 150kHz above the band edge - five against and eight 'don't knows'. 19 of those who voted had experience with digital EME communications and 37 had not.

A very long discussion followed after the results of the poll were announced during which nobody raised any objection to the basic validity of digital EME QSOs. The Forum could not make a definitive decision on frequencies because it only represented EME interests and is in contravention of the current IARU band plans. During a lunchtime discussion a group identified common frequencies that were available in all continents on 2m, 70cm and 23cm. When the full discussion resumed it was agreed that a centre of activity for JT44 could not be in an area of high SSB activity and most people felt that it should not be in the areas of most EME CW activity.

Finally 144.150MHz was agreed by a large majority. On 70cm, N6TX's proposal for 432.044MHz, and similarly for all higher bands, was agreed in a 38/10, for/against vote. It must be stressed *that these are temporary recommendations subject to later change through the IARU*. This matter is due to be discussed at the IARU Region 1 VHF Managers' meeting this November. Ian stresses that these recommendations are for *EME only* and are *absolutely not* a precedent for non-EME use of JT44 and other DX-orientated digital modes in the CW sections.

The Conference was a great success and it was a great tribute to the OK radio amateurs who organised it, especially in the exceptional weather conditions. It was announced that the 2004 conference will be returning to Trenton, New Jersey, USA, after 14 years and that N2UO will head the planning committee.

tinued on SSB tropo so didn't take advantage of what was on offer. The main event was from 1630 to 1915 during which David worked into GM, SM, LY, OK and OM all on CW. Many DLs were on and his ODX was LY2BIL* (KO24).

Stefan Heck, LA0BY (JO59), forgot to take his microphone to his portable QTH in Tryvasshoegda so made 122 CW QSOs, almost all via the aurora. He was QRV from 1600 for 11 hours and there were periods of static rain. There was good activity and from some rare grids, too. He was using an IC-821H, 180W PA, 2 x 9-ele Yagis 6m AGL at 500m ASL. He worked 70 grids and 17 DXCC countries, ODX being OM0C (JN99) at 1311km. He reckons he could have worked many more stations in Central Europe if they had bothered to turn their beams to the North and operate on CW.

This created some interesting comments on the vhf-dx-discuss reflector on the Internet. John Lemay, G4ZTR, agrees but makes four points. First, that it can be slower than working the usual run of tropo contacts and that has to be balanced against the greater distances worked via aurora. Second, that you may or may not work the same stations on tropo next day. Third, that some groups didn't know there was an aurora and fourth that some groups didn't have a CW operator on site.

Peter Bowyer, G4MJS, a member of the G8T team, agrees with John but reckons that the moment there is a sniff of an aurora, at least half those who would otherwise be interested in working a G station in JO01, will turn their antennas to the North. This is particularly the case with non-contest stations. They found very poor pickings in the usual directions during the aurora so were glad to accrue auroral points. He agrees that many groups don't have a CW operator and he was G8T's only one, so he was kept very busy!

430MHz UP

Little to report on the UHFs this time. G4FUJ missed out on IN79 grid on 70cm in the NFD as they were buried under a local sproggie. G4YTL had been hoping to get on 23cm for some time and David has now completed a DB6NT 144/1296MHz transverter and a GH Engineering PA with a Mitsubishi M57762 module producing about 18W. It was his first experience of using SMT components but the gear worked first time. His antenna is a single 35-ele M^2 Yagi with a WD5AGO masthead preamp. He made his first QSOs on 8 August with G4BRK and G4PBP and eventually hopes to get on EME. He is looking for a suitable ex-commercial dish antenna.

FINALE

DEREK HILLEARD, G4CQM, has split his website so that information on VHF/UHF Yagis is now on the site in the list. His aim is to promote the idea of home brew Yagi construction.

That's it for this month. Don't forget to send any photographs of yourselves, stations, etc, as we are always keen to publish suitable ones.

The deadline for the January issue is quite early, **Friday 8 November** and copy for the February column should reach me by **10 December**, a 'normal' Tuesday. My CompuServe ID is g3fpk and the telephone answering and fax machine is on 020 8763 9457. ♦

WWW.

DUBUS	**http://www.dubus.org**
***SunMag* (G0CAS)**	**http://www.g0cas.demon.co.uk/main.htm**
2m CW reflector	**http://groups.yahoo.com./group/2metrecw**
G0HGA website	**http://www.qsl.net/g0hga/2mCW.htm**
G4CQM Yagis	**http://www.g4cqm.btinternet.co.uk**

CONTEST

TIM KIRBY, G4VXE
11a Vansittart Road,
Windsor SL4 5BZ
E-mail: tim@g4vxe.com

DAVE LAWLEY, G4BUO, has asked me to remind people about the uk-contest e-mail reflector, which is an e-mail list of interest to contesters in the UK. Generally the list contains claimed scores for UK-based contests, together with some interesting debate around the structure of RSGB contests. Most discussion is of HF contests, but VHF interest and discussion is also welcomed. To subscribe to the list, visit http://lists.contesting.com/mailman/listinfo/uk-contest and fill in the form.

CONTESTS THIS MONTH

TIME TO GET the topband aerial tuned up again! Two RSGB events this month focus on 1.8MHz. The very popular Club Calls Contest takes place on 9 November. This is an event that can be used to introduce newcomers to contesting, perhaps in a club station environment. It also presents an opportunity for you to show support for your club, by getting on the air and making lots of contacts. Some clubs seem to do an amazing job of mobilising their members for this event - and there is an award for doing so!

On 16 / 17 November the 2nd 1.8MHz contest takes place. This is a CW event and has a focus of trying to work as many district codes around the UK, and as many countries as possible. If you are in a rare district area - and you'd be surprised how many are really quite rare - try to come on and give the participants a new multiplier. They will certainly be very appreciative of your trouble.

Of course, the major event of the year for CW contesters, the *CQ* World Wide (CQWW) DX CW contest takes place on 23 / 24 November. This is a great way to work new countries, practise your CW contesting and try to beat a personal best, or even a country or continent record. Have a look at http://cqww.com to see the records (note that these are a little out of date - but should give you some idea of what can be done).

At VHF, the focus is again on CW, with the European coordinated Marconi Memorial 144MHz CW contest on 2 / 3 November and the 6hr event on 3 November. This contest often offers an opportunity to work some DX and is thus popular with VHF DXers as well as pure contesters.

Darenth Valley Radio Society, G0KDV/P, combined their efforts with the Cray Valley Radio Society, G3RCV/P, and the North Kent club, G4CW/P for VHF NFD. Darenth Valley ran the 2m station, Cray Valley 6m and North Kent set up a 4m station on Sunday morning. The stations were set up at Harvest Field Crockenhill, Kent. Bob Treacher's, BRS32525, children, Simon and Clare made sure the gates were unlocked and locked before letting members in and out of the field.

CONTEST CALENDAR

HF Contests

Date	Time	Mode	Contest	Bands	Exchange
2 November	*0600-1000 & 1400-1800*	*CW*	*Int Police Assn ARC*	*3.5-28*	*RST+SN*
3 November	*0600-1000 & 1400-1800*	*SSB*	*Int Police Assn ARC*	*3.5-28*	*RS+SN*
9 November	2000-2300	SSB	RSGB Club Calls	1.8	RS+SN+Club data
9/10 Nov	*0000-2359*	*RTTY*	*Worked All Europe*	*3.5-28*	*RST+SN*
9/10 Nov	*1200-1200*	*CW*	*OK/OM*	*1.8-28*	*RST+SN*
16/17 Nov	*1200-1200*	*CW*	*LZ DX*	*3.5-28*	*RST+ITU Zone (G=27)*
16/17 Nov	2100-0100	CW	RSGB 2nd 1.8MHz	1.8	RST+SN+DistrictCode
23/24 Nov	*0000-2359*	*CW*	*CQ WW DX CW*	*1.8-28*	*RST+CQ Zone (G=14)*

VHF Contests

Date	Time	Mode	Contest	Bands	Exchange
2/3 Nov	1400-1400	CW	RSGB 144MHz CW	144	RST+SN+Locator
3 November	0800-1400	CW	RSGB 144MHz CW 6Hr	144	RST+SN+Locator
5 November	1900-2130	ALL	RSGB 144MHz Activity	144	RST+SN+Locator
12 November	1900-2130	ALL	RSGB 432MHz Activity	432	RST+SN+Locator
19 November	1900-2130	ALL	RSGB 1.3/2.3Ghz Activity	1.3/2.3	RST+SN+Locator
26 November	1900-2130	ALL	RSGB 50MHz Activity	50	RST+SN+Locator

Microwave Contests

Date	Time	Mode	Contest	Bands	Exchange
24 November	0900-2000	ALL	RSGB All-Band Activity Day	All	Non-competitive

The full rules of RSGB HF, VHF/UHF and Microwave contests were published in the RSGB Contesting Guide in January 2002 *RadCom*. Brief rules for non-RSGB contests, which are listed in italics above, can often be found in the 'HF' and 'VHF/UHF' columns. The HF and VHF Contest Committees both have websites from which comprehensive details are available. These are www.rsghhfcc.org and www.blacksheep.org/vhfcc RSGB Microwave Contest rules can be found on the Internet at: http://www.g3pho.free-online.co.uk/microwaves/calendar2002.html

432MHz Affiliated Societies Contest, 2002

SUPPORT FOR the 432MHz AFS contest continues with very similar numbers of entrants to the various sections compared with last year's contest. Several entrants complained about the poor conditions and high winds and the Five Bells station, G4SIV, reported that these winds had prevented them from using the "full array". However, despite this, their score in winning the multi-op section was nearly twice that of the runner-up, South Birmingham RS, G8OHM. Who knows what the score would have been had they managed to use their full system?

Frank L Laanen, PE1EWR, continued his support of RSGB contests and got third highest score in the single operator section the winner of which was Roger Piper, G3MEH. Reg Woolley, G8VHI, who came second reported that "there is still a brick wall north of the M62"; this being borne out by there being no GM stations logged by any contestant. Similarly GW8AWM was the only station active from Wales. However there was some DX to be found with 16 stations active from Germany, 7 from France and a handful from Belgium and the Netherlands. Furthest DX of the day was the G8VHI contact with DL8OBU (799km). Next came the contact between G3MEH and F5HGO (716km) and no less than 9% of contacts logged were 300km or over. D Wood, G4CQR/P, amassed 12,223pts from his 56 contacts to win the single op other section ahead of Les Allwood,G3VQO/P, who operated for a brief spell "atop a hill" to give his '847 an airing on 70cm. G4APJ receives a certificate as leading fixed station using 25W or less to a single antenna.

The Affiliated Societies section proved a closely fought out battle between the winners, Five Bells Contest Group, and runner-up Chesham & District Amateur Radio Society. The leading societies in the RSGB regions, who each receive a certificate, were as follows: Midlands (districts 17-20) Five Bells Contest Group, London & Central (districts 33-36) Chesham & District ARS, South & SE (districts 37-40) Harwell ARS 'A', and East & East Anglia (districts 45-48) West Kent ARS.

Ian L Cornes G4OUT

432MHz Affiliated Societies Contest, 2002

Multi Operator Fixed Station Section

Pos	Callsign	Dis	Points	QSO	Loc	Ant	Pwr	Best Dx	Km
1*	G4SIV	18	16063	68	IO92	4x28	400	DL8OBU	683
2*	G8OHM	17	8395	55	IO92	4x19	400	DG1KJG	651
3	G3WHK	36	4242	57	IO91	24el Y	160	PA5DD	347
4	G8CUL	37	2125	29	IO91	21el	40	PE1EWR	328
5	G1WAC	17	1963	16	IO92	21el	75	PE1EWR	385

*certificate winners

Results of other sections are shown opposite

March 144/432MHz, 2002

THIS CONTEST traditionally tests the stamina and resolve of entrants. This year was no exception with cold weather and one entrant operating from above the snowline. Conditions were regarded as flat to atrocious! Many stations commented on the lack of activity, particularly from the UK, and the reduced number of portable stations. On 432MHz the activity was exceptionally low with stations finding it difficult to make contacts. Some entrants operated in parallel in the ARRL SSB contest to increase their activity.

Some stations had spent their year of enforced inactivity during 2001 to build enhancements to their stations. Others suffered the usual crop of cable and amplifier related problems. One station discovered that plastic cable ties become brittle and fail in freezing conditions.

The event showed an increase in entries over the previous years and some entrants resorted to ingenious tactics to increase their scores such as claiming high numbers of multiplier contacts! Logging standards were generally high, however a number entrants lost significant points due to careless errors on callsigns and locators. It should be noted that entrants to the six-hour section must use the same 6-hour period on both bands.

Congratulations go to the Five Bells, who continue their dominance of this event by winning both bands; Roger, G3MEH, for repeating his overall win in the single operator section; Peter, G7ULL, and Colin, G6FQZ, for their joint win in the six-hour single operator fixed section; Gordon, GW8ASA/P, for winning the six-hour open section; and all the other band winners and runners-up who together with stations marked (*) will receive certificates.

Roger Dixon, G4BVY

March 144/432MHz 2002

144MHz Multi-operator

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX Loc	km	Pwr	Ant	Group
1 *	G5B	JO03CE	350	131911	DG3FK	JN59OP	857	400	6*12 ele	Five Bells
2 *	GW6YB/P	IO81KW	347	90508	GM0HTT	IO89JC	797	400	2*10+1*10	Bristol Contest Group
3	G4Z	JO03AE	126	42328	DG3FK	JN59OP	868	400	2*12	
4	G3YNN	JO00EU	133	27426	DL0FS	JO41GJ	573	100	12 ele	Herstmonceux Megacycles
5	M0XXX/P	IO81UN	110	15938	DJ2QV	JO31PG	665	50	17 ele	Yate Contest Group
6	G8SAD	IO91WU	52	14052	DL0PVD	JN49BO	633	50	9 ele	Stevenage & DARS
7 *	G5UM	IO92KP	30	5702	LX/PA1TK/P	JO30BB	579	15	19 ele	Leicester Radio Society

144MHz Single Operator, Fixed

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX Loc	ODX km	Power	Ant
1 *	G0XDI	IO91RP	191	55047	DF0CI	JO51CH	745	400	9 ele
2 *	G3MEH	IO91QS	197	47019	DK0ES	JN48TN	812	400	2*10 ele
3	G8IZY	IO91VC	64	21059	DK5TX	JO41PU	661	250	9 ele
4 *	M1DUD	JO02QC	46	12491	DL0PVD	JN49BO	550	2	5 ele
5 *	G1TWS	JO01HO	41	7075	F5SGT/P	IN87KW	478	25	11 ele
6	M0BPQ	IO93HD	31	6389	LX/PA1TK/P	JO30BB	621	100	9 ele
7	G4MAD	IO92FG	31	3613	F5SGT/P	IN87KW	495	100	7 ele
8	G4BRK	IO91DP	14	3316	DL6YEH/P	JO31QX	626	40	9 ele
9 *	2E1GUA	JO01FS	22	2773	DL0KM	JO31BC	400	10	13 ele
10	G4APJ	IO83UP	14	2716	F8BRK/P	IN98SW	538	25	9 ele

144MHz 6hr Other

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX Loc	ODX km	Power	Ant	Group
1 *	M0AFC/P	IO84SA	69	16201	LX/PA1TK/P	JO30BB	733	25	13 ele	
2 *	GW8ASA/P	IO81FP	63	13214	DJ2QV	JO31PG	751	25	5 ele	
3	M1PIA	IO91IN	54	10490	DL6YEH/P	JO31QX	598	400	17 ele	Harwell ARS
4	G3VQO/P	IO91VG	6	282	G1TWS	JO01HO	69	50	Whip	

144MHz 6hr Single-Operator

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX Loc	ODX km	Power	Ant
1 *	G7ULL	JO01AK	75	11700	GI6ATZ	IO74AJ	519	150	15 ele
2 *	G8ZRE	IO83NE	66	10016	F5SGT/P	IN87KW	584	25	8 ele X/Y
3 *	G0TPH	IO92IO	39	9285	DK0HN	JO31PP	595	25	9ele
4	G0TXL	IO91WI	37	5543	DJ2QV	JO31PG	515	20	9 ele
5	M5W	IO92BJ	21	3548	LX/PA1TK/P	JO30BB	614	25	17 ele
6	G3YJR	IO93FJ	22	2115	ON1YW	JO11LC	398	2.5	9ele
7	G4XPE	IO92GU	8	1967	ON4BAX/P	JO20MW	494	25	10 ele
8	M0BAO	IO80PT	9	1065	G3MEH	IO91QS	179	25	8 ele

432 MHz Multi-operator

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX Loc	ODX km	Power	Ant	Group
1 *	G5B	JO03CE	102	36146	DL1SUZ	JO53UN	763	400	8 * 28 ele	Five Bells
2 *	G4Z	JO03AE	39	11857	DK9ZQ	JO41RB	684	400	2*28	
3	G6FBB/P	IO81UN	32	3240	PE1RLF/P	JO32BF	582	50	37 ele	Yate Contest Group
4	G8SAD	IO91WU	14	2032	F1FEM/P	JN19BC	349	50	19 ele	Stevenage & DARS
5 *	GW6YB/P	IO81KW	16	1876	PA6NL	JO21BX	497	10	21 ele	Bristol Contest Group
6 *	G2AA	IO92KP	6	886	ON6ZT	JO10SS	383	15	19 ele	Leicester Radio Society
7	G3YNN	JO00EU	3	48	G0MSA/M	JO00CX	18	10	18 ele	Herstmonceux Megacycles

432MHz Single-Operator, Fixed

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX Loc	ODX km	Power	Ant
1 *	G3MEH	IO91QS	61	11292	DJ9KH/P	JO42OX	681	250	2 * 23 ele
2 *	G4BRK	IO91DP	21	7854	DF2VJ	JN39LI	664	400	21 ele
3	G0XDI	IO91RP	31	6883	DF2VJ	JN39LI	588	80	2*21
4 *	G4APJ	IO83UP	10	1621	G0XDI	IO91RP	252	25	19 ele

432MHz 6hr Single Operator

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX Loc	ODX km	Power	Ant
1 *	G6FQZ	IO91JR	20	3055	ON7WR	JO20ET	401	100	21 ele
2 *	G3YJR	IO93FJ	14	1205	PA6NL	JO21BX	413	10	19ele
3 *	M5W	IO92BJ	6	757	PA6NL	JO21BX	412	25	21 ele
4	G0TPH	IO92IO	2	58	M5W	IO92BJ	46	5	7 ele

432MHz 6hr Other

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX Loc	ODX km	Power	Ant	Group
1 *	GW8ASA/P	IO81FP	19	2502	PA6NL	JO21BX	528	25	23 ele	
2 *	M1PIA	IO91IN	20	2298	PA6NL	JO21BX	376	100	21 ele	Harwell ARS
3 *	M0AFC/P	IO84SA	15	2094	PA6NL	JO21BX	495	25	19 ele	

432MHz Affiliated Societies Contest, 2002 (Cont)

Single Operator Other Section

Pos	Callsign	Points	QSO	LOC	Ant	Pwr	Best DX	km
1*	G4CQR/P	12223	56	JO00	18el	100	DL8OBU	699
2*	G3VQO/P	626	14	IO91	whip	50	G1ZJP	181
*	certificate winners							

Affiliated Societies Section

Pos	AFS	Dis			Norm			Norm			Norm	Total
1*	Five Bells Group	18	G4SIV	16063	1000	G1ZJP	7725	1000	G4NPH	3997	866	2866
2*	Chesham & DARS A	34	G3MEH	10151	632	G0XDI	5577	722	G0ODQ	4618	1000	2354
3*	Harwell ARS A	37	G3NNG	5355	333	G6FQZ	3265	423	G8CUL	2125	460	1216
4	Sutton & Cheam RS	36	G3WHK	4242	264	G3OLX	3079	399	G0TXL	2384	516	1179
5	De Montford "A"	19	G8VHI	8753	545	G3RIR	4398	569	G0TPH	166	36	1150
6	Surrey Radio CC A	36	G4WYJ	4305	268	G8IYS	2395	310	G3ZPB	1351	293	871
7	South B/ham R S	17	G8OHM	8395	523							523
8*	West Kent ARS	48	G0GCI	3470	216							216
9	Cray Valley RS	48	G3JJZ	2361	147							147
10	Chesham & DARS B	34	G0VFW	2065	129							129
11	Wythall Radio Club	17	G1WAC	1963	122							122
12	Reigate ATS	36	G8JXV	1775	111							111
13	Harwell ARS B	37	G0AOZ	1461	91							91
14	De Montford "B"	19	G3HRH	912	57							57
15	Surrey Radio CC B	36	G4FFY	126	8							8

* certificate winners

Single Operator Fixed

Pos	Callsign	Dis	Points	QSO	LOC	Ant	Pwr	Best Dx	km
1*	G3MEH	34	10151	72	IO91	2x23	250	F5HGO	716
2*	G8VHI	19	8753	56	IO92	2x23	100	DL8OBU	779
3*	PE1EWR	-	8058	32	JO11	2x21	130	GW8AWM	444
4	G1ZJP	18	7725	38	IO92	4x21	400	DL8OBU	683
5	G0XDI	34	5577	59	IO91	2x21	80	DF2VJ	588
6	G3NNG	37	5355	50	IO91	17el	100	PA5DD	438
7	G0ODQ	34	4618	49	IO91	2x21	150	PE1EWR	307
8	G3RIR	19	4398	34	IO92	20el	50	F6CBH	423
9	G4WYJ	36	4305	50	IO91	21el	90	DF2VJ	553
10*	G4APJ	11	4264	20	IO83	19el	25	G4CQR/P	366
11	G4NPH	18	3997	32	JO02	8x18	100	F6CBH	366
12	G0GCI	48	3470	33	JO01	2x21	100	DG1KJG	474
13	G6FQZ	37	3265	37	IO91	21el	100	PA5DD	408
14	G3OLX	36	3079	45	IO91	21elT	25	G4APJ	295
15	G8IYS	36	2395	36	IO91	21el	30	PE1EWR	248
16	G0TXL	36	2384	34	IO91	21el	20	PE1EWR	255
17	G3JJZ	48	2361	28	JO01	19el	25	F6CBH	275
18	G0VFW	34	2065	28	IO91	21elT	35	PE1EWR	284
19	G8JXV	36	1775	23	IO91	48el	120	PA5DD	349
20	G3YJR	16	1695	13	IO93	19elY	10	G4WYJ	249
21	G0AOZ	37	1461	50	IO91	15el	50	G4RRA	197
22	G3ZPB	36	1351	28	IO91	11elY	35	G4SIV	162
23	G3HRH	40	912	7	IO91	4x11el	20	F8BRK/P	238
24	G8ACR	17	344	6	IO92	18o18	25	G3WHK	160
25	G0TPH	19	166	4	IO92	7el	5	G4SIV	81
26	G4FFY	36	126	8	IO91	Vrt-Col	10	G3MEH	55

* certificate winners

OVERALL RESULTS

Multi-Operator

Pos	144MHz	432MHz	Total	Call/Group
1 *	1000	1000	2000	Five Bells
2 *	686	52	738	Bristol Contest Group
3	321	327	648	G4Z
4	121	90	211	Yate Contest Group
5	208	1	209	Herstmonceux Megacycles
6	123	58	181	M0AFC/P
7	107	56	163	Stevenage and District ARS
8	43	25	68	Leicester Radio Society

Single Operator, Fixed

Pos	144MHz	432MHz	Total	Call/Group
1 *	854	1000	1854	G3MEH
2 *	1000	610	1610	G0XDI
3	60	696	756	G4BRK
4	383	0	383	G8IZY
5	227	0	227	M1DUD
6	49	144	193	G4APJ
7	129	0	129	G1TWS
8	116	0	116	M0BPQ
9	66	0	66	G4MAD
10	50	0	50	2E1GUA

6hr Single Operator

	144MHz	432MHz	Total	Call/Group
1= *	1000	0	1000	G7ULL
1= *	0	1000	1000	G6FQZ
3	856	0	856	G8ZRE
4	794	19	813	G0TPH
5	181	394	575	G3YJR
6	303	248	551	M5W
7	474	0	474	G0TXL
8	168	0	168	G4XPE
9	91	0	91	M1BAO

6hr Other

	144MHz	432MHz	Total	Call/Group
1 *	816	1000	1816	GW8ASA/P
2 *	647	918	1565	Harwell
3	17	0	17	G3VQO/P

* certificate winners

HF HF HF HF

DON FIELD, G3XTT
105 Shiplake Bottom, Peppard Common, Henley on Thames, RG9 5HJ.
e-mail: hf.radcom@rsgb.org.uk

THE national weather service of Germany, Deutscher Wetterdienst, is due to celebrate its 50th anniversary on the night of 8 to 9 November. A special cross-band event will take place between amateur radio stations and the weather service's longwave transmitter DDH47 on 147.3kHz from 2230 until 0530. Amateur radio stations are encouraged to call DL0SWA/DDH47 on 3565, 7025 or 14052kHz according to the announcement made in transmissions from DDH47. The crew of DL0SWA (Seewetteramt) will listen for callsigns on the above-mentioned HF frequencies and reply on longwave 147.3kHz and shortwave (7025kHz, 1 watt). QSL cards will be printed and distributed after the event via the DARC bureau.

Members of club stations LX5A and LX4B plan to operate special event station LX0LT between 30 November and 8 December. The team will put this special call on the air for 24 hours a day in a marathon to help generate financial support for scientific research against genetic illnesses. The group has three sponsors who will donate one cent each (three cents total) for each QSO. A goal of 20,000 QSOs has been set. Look for activity on all bands and modes.

Andy Chadwick, G3AB (ex-G4ZVJ), will be in Freetown, **Sierra Leone** during November / December. He hopes to be active on all HF bands mainly CW. Callsign not yet known. QSL via his home call.

Juha Valimaki, OH9MM, says he will be celebrating his 30th birthday in **The Gambia** during November. 10 other people, not all amateurs, will join him. Juha plans to be near Banjul from 20 November to 1 December. While there he will run a multi-single or multi-multi entry in the *CQ* WW CW Contest. There will be activity both before and after the contest on all bands and modes.

Phil, G3SWH, reports that he will be in **Madagascar** again from 5 to 19 November and expects to be active with his 5R8HA call. This is a holiday operation, initially from the main island (AF-013) but also, towards the end of the trip, from Nosy Komba (AF-057).

Chris, G0TQJ, who has been operating as YA/G0TQJ from **Afghanistan** reports that cards for his operation are now being accepted by the DXCC desk. Chris is able to QSL direct (via his callbook address) or via the RSGB bureau. I also received a phone call from a reader asking about YA5T. He wasn't sure whether the station was a pirate, as it was so loud! YA5T is the call used by a number of UN personnel from Kabul, and has already been worked in the UK on all HF bands from 160 to 10m. Yes, they have indeed been putting out excellent signals!

Kazu, JA1RJU, will be active 9M6JU (East Malaysia), 18 to 25 November. QSL to his home call.

Bill Dawson, W7TVF, who has operated as ZK2VF and 5W0VF, says arrangements are made and confirmed for him and his wife to go back to Apia, **Samoa**, 18 November to 9 December. He plans to operate all bands as usual and will try to improve his RTTY and PSK31 skills so he can operate those too. If you need 5W on a particular band or mode you can e-mail Bill at bill.w7tvf@air-internet.com before he leaves for the Pacific.

An operation from **Sable Island** as CY0MM is scheduled for 15 - 25 November. This would appear to be a reasonably large-scale all-band all-mode effort.

I have no recent confirmation, but earlier in the year there was an announcement to the effect that a joint European / Mexican group including DJ9ZB and XE1BEF would activate Socorro Island (NA-030, **Revilla Gigedo** for DXCC) sometime during November.

Joeke, PJ/PA0VDV, will be on from **Curaçao**, CW only, 9 November to 1 December. QSL to his home call.

IOTA ACTIVITY

RSGB IOTA WEBSITE Manager Steve, G0UIH / VK2IAY, will be back in VK as VK2IAY/P in November and December. Steve says the three-week stay from 22 November until 15 December is 100% radio. He hopes to activate IOTA Groups OC-137, OC-142, OC-160, OC-171, OC-172 and OC-187. His trip may also include a visit either to one of the Vanuatu Island groups or to one of the Fijian Groups. QSLs go to Steve's home call, direct or via the RSGB bureau.

AWARDS

THE DXCC DESK reports that cards from 7O/OH2YY (Yemen) are now being accepted for DXCC credit. However, cards from 7O1YGF are still unacceptable, as no documentation has been forthcoming to show that the Yemeni authorities approved this operation.

Further to my earlier remarks about e-QSLing ('HF' December 2001 and February 2002), I have received a press release from the eQSL team to the effect that the first eDX100 (e-QSL equivalent to DXCC) has been awarded to Dov Gavish, 4Z4DX. The award is made on the basis of eQSLs exchanged through the eQSL.cc system. Dov will be able to print an eDX100 certificate on his own printer, but will also receive a full-colour certificate and a walnut plaque in the mail. To qualify for the eDX100 award, a person must have received eQSLs that are marked Authenticity Guaranteed from at least 100 different entities (based on the ARRL DXCC Entity List). Authenticity Guaranteed status is awarded to a user of the eQSL.cc system whose identity has been verified either by inspection of his licence, through use of an authentication code mailed to his official address, or through three volunteers who vouch for his identity. Through this mechanism, eQSL.cc can prevent fraudulent entries and, so it claims, make its electronic QSL cards actually more reliable and secure than traditional, mailed QSL cards. eQSL.cc has several other awards, including an electronic Worked All States award, called 'eWAS', and an award for 25 or more countries that can also be earned by SWLs, called 'eDX'. An award based on Grid Squares is also in the works. All of these awards require the use of Authenticity Guaranteed electronic QSLs for confirmation.

The press release also reports that eQSL.cc currently has over 17 million electronic QSL cards in its database, and over 1200 new 'cards' are being added by members every hour. The system uses the ADIF standard for log uploads, and can also interface several logging programs in a real-time mode, allowing eQSLs to be generated at the same time the QSO is taking place. Users do not need to know e-mail addresses or hunt down the recipients of their cards. They simply set up their profiles, design their cards, and upload their logs.

CONTESTS

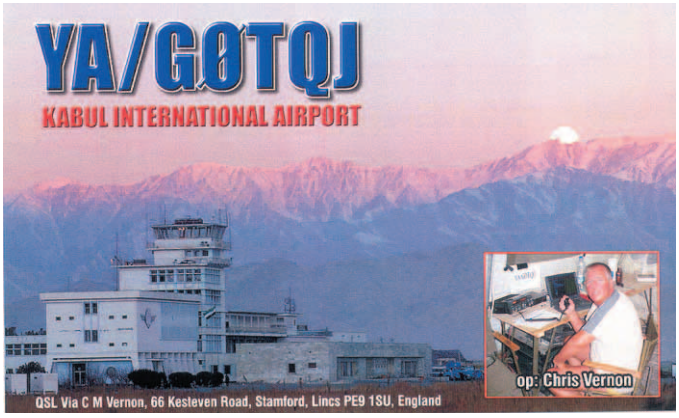
IN THE CQWW CW Contest (23 / 24 November), W7EJ will be active as CN2R (Morocco), JE1JKL will be single-band 15m as 9M6NA (East Malaysia), DU1/N2NL (Philippines) will be low-power all-band, CT1BOH will be high-power all-band as P40E (Aruba), Tom, W2SC, will

be 8P5A, all-bands from Barbados, 8N1OGA (Ogasawara) by JA team, D44TD (Cape Verde) multi-single by Italians, EA8ZS (Canaries) multi-multi by EA8/OH team, IG9A (African Italy) 80m by IT9GSF, IH9P (African Italy) 40m by OL5Y, JW5E (Svalbard) multi-single by JW5NM and others, MJ0ASP (Jersey) 20m by F5SHQ, P40W (Aruba) SOAB by W2GD, PJ2T (Netherlands Antilles) multi-multi by a large US team, S9 (Sao Tome) SOAB by K1XM, V26K (Antigua) SOAB by AA3B, VP2E (Anguilla) multi-single by US team, VP9/W6PH (Bermuda) SOAB, WP2Z (US Virgin Is) by US team, VE3BW will be V47CA (St Kitts), a large UK and US group will once again activate XT2DX (Burkina Faso) in the multi-multi category, a large international group will operate multi-multi as PT5A (Brazil), and your columnist will be joining a multinational team at the HC8N (Galapagos) station, also in the multi-multi category. There will, of course, be many others too.

ARRL 10m Contest 2001

First letter: A=Mixed, B=Phone, C=CW
Second letter: A=QRP, B=Low Power, C=High Power

G0WMW	361,896	A	B
G0MTN	128,380	A	B
G4EDR	19,456	A	B
GM4UYZ	10,176	A	B
G3ORY	781,728	A	C
G4IUF	100,300	A	C
G3FNM	36,900	B	A
G3VAO	372,650	B	B
G0AEV	364,000	B	B
MW5EPA	127,012	B	B
GW0AJI	49,612	B	B
GI0OUM	13,970	B	B
M/N2FF	1,428	B	B
GM4YXI	836,022	B	C
G4OJH	378,358	B	C
G3VMY	84,660	C	A
G3RSD	273,280	C	B
G3KKP	265,960	C	B
M0CFW (op JK3GAD)	252,968	C	B
G3ZRJ	169,680	C	B
G3TJE	161,160	C	B
GW0KJN	81,648	C	B
M5AMD	62,856	C	B
M4T (op G0VQR)	62,832	C	B
G4ZME	48,888	C	B
GU4YOX	28,028	C	B
G3JKY	25,676	C	B
GM3POI	1,086,016	C	C
GW3NJW	548,000	C	C
GM3CFS	256,932	C	C
G2QT	237,148	C	C
G4BUO	153,600	C	C
G3TXF	96,832	C	C
G4BJM	91,168	C	C
M5W (ops M0COP G0EYO G0MTN)	74,778	D	B
M5X (ops G0IVZ G4TSH)	1,986,468	D	C
M2V (ops M0TTT M5ZAP)	1,339,712	D	C
G5X (ops G4RCG G4OSY G0RUZ)	1,151,016	D	C
MM7I (ops MM0ERK GM4AFF)	725,904	D	C
GM2T (ops GM0CLN MM0CCC GM4ZRR)	679,780	D	C
GW7X (ops GW4BLE GW0RYT)	625,260	D	C
G3SSO (ops G0HVQ G3LVP)	203,072	D	C
MM0BQI (+ packet)	101,920	D	C



QSL from Chris Vernon, G0TQJ, who was active as YA/G0TQJ from Kabul, Afghanistan, from April to July 2002.

Results of last year's ARRL 10m Contest appear in the table. High UK finishers include GM4YXI (DX 4th, High-power Phone), G3VAO and G0AEV (DX 7th and 9th, Low power Phone), G3FNM (DX 7th, QRP Phone), GM3POI (DX 2nd, High-power CW), FM/G3SQX (DX 2nd, Low power CW) and M5X (DX 7th, Multioperator).

In the ARRL RTTY Roundup last January, UK scores were: Single-op, low power - G4WFQ 40,158, G0KRL 35,002, G0URR 33,150, G0MTN 24,948, GU0SUP 24,300, G0/N9LYE 6,950, M0BEX 5,684, M0COP 4,512, MU3EFB 4,400, M0AEJ 3,735; single-op, high-power - M0SDX 96,672, GW4KHQ 38,608, GI4KSH 27,692; Multi-op, high-power - MW2I (ops: M0FRE, G4FRE, GW5NF, GW4JBQ, G4VXE) 105,160.

The IPA (International Police Association Radio Club) Contest takes place over 2 / 3 November, CW on 2 November (0600 - 1000, 1400 - 1800) and SSB the following day (same times). Work only within the specified frequency ranges, and after band changes stay on the new band for at least 15 minutes. Exchange RS(T) plus serial number. Members of IPARC add IPA to the exchange.

The Ukrainian DX Contest takes place on 2 / 3 November (1200 - 1200), CW, SSB, RTTY. Everyone works everyone. Give RS(T) plus serial number. Ukrainian stations give RS(T) plus two letters indicating their region. I can provide full details of scoring, log submission, etc on request. In last year's contest, UK scores included *G4OGB SOMB 492,566, G3RSD SOMB 290,970, *GW3NJW SOMB 84,638, G4GOY SOMB 81,969, G3VQO SOMB 36,096, G3UFY SOMB 32,012, M0EEE/P SOMB 23,600, *GM3CFS 15M 69,874 (World 3rd, 15M), *G4WFQ RTTY 58,930, MM0BQI RTTY 20,608. Asterisks indicate award winners.

The LZ DX Contest is on 16 / 17 November (1200 - 1200), CW only. Exchange RST plus ITU zone. Everyone works everyone. Further details on request. 2001 UK results appeared in May 'HF'.

In the 2001 All Asia contest, UK results were: SSB GM3CFS 15m 19796; CW G3TXF AB 90896, G3RSD AB 4482, GM3CFS 15m 19796, G4RCG 15m 13041, G4OGB 15m 3195. In the AGB New Year Snowball, CW section, M0SDX scored 1410 and G4OGB 1316.

Better late than never, I have the UK results from last year's Scandinavian Activity Contests. In the SSB leg, scores were (* indicates high-power): MW5EPA 31413, G0MTN 28938, *GW0RVT 18920, G3AEZ 18216, G0MRH 8178, M0BEX 8037, M0EEE/P 6213 (op: G3VQR), * G3UFY 6180, G3RSD 3700. In the CW leg: *GW3NJW 36855, G0MTN 34239, *GM4SID 32096, G3TJE 28119, G4OGB 26964, G3YEC 26500, *G3XTT 25149, *G4RCG 16235, *G3UFY 10773, G3KNU 9408, G3HZL 5050, G0MRH 4900, M0EEE/P 2196 (op: G0VQR). Activity from Scandinavia was disappointing in 2001, but was reported to have been up again in this year's events.

COUNTRIES WORKED, 2002
(sorted this month by SSB totals)

CALL	CW	SSB	DATA	MIXED
M0AWX	0	245	0	245
G4PTJ	216	223	0	266
ZC4BS	186	221	84	239
M5PLY	0	207	0	207
G0GFQ	0	172	26	174
M0CNP	8	169	46	169
G4WXZ	155	165	0	212
G3YVH	198	159	0	238
G3JFS	169	150	134	215
G3SED	176	131	0	209
MW5VZW	42	131	0	140
M5GUS	0	130	0	130
G4FVK	58	124	0	130
GU4YOX	117	118	0	167
M0BZK	0	117	59	126
G0LGJ/M	0	114	0	114
MU0FAL	147	113	0	165
G4YWY/M	0	112	0	112
ZC4DW	148	89	96	168
G3LHJ	186	87	116	202
G3XTT	106	85	50	133
MM0BQI	33	84	101	130
M0CAL	2	83	0	83
G4OBK	144	69	76	176
GM4ELV QRP	72	69	0	93
M5AEF QRP	50	61	0	71
M3VAM	0	58	0	58
G4IDL	100	34	0	109
G4DDL	72	26	13	74
ZC4VG	151	14	4	153
G0NXX	243	0	0	243
G3SXW	243	0	0	243
G4IRN	190	0	0	190
G4UCJ	187	0	47	187
G0ARF	0	0	170	170
G3YMC QRP	140	0	0	140
GU0SUP	0	0	118	118
G4DJX	110	0	0	110
M0BVE	110	0	0	110
G3ING	102	0	0	102
MU3DHI				100
G3WP	97	0	0	97
G0URR	0	0	81	81
G3URA	0	0	42	42
M5AFA QRP	0	0	38	38

TABLES

DESPITE THE SUMMER turndown in conditions, totals continue to rise. Roger, G3SXW, shows what can be achieved with just 100 watts, with his massive CW total. Keith, G0GFQ, reports some nice DX, including Lord Howe Island for an all-time new one. He comments that there have been some welcome openings on 10m, so let's hope the autumn season is even better. David, M0CNP, sends in what is likely to be his last update for a while, as a result of a house move. He is looking forward to participating next year from the new QTH. G0LGJ's mobile activities con-

tinue to produce some nice DX. He mentions, amongst others, 9M2/JI1ETU and 4S7AB on 15m, EA4DX/HK0 (San Andres) on 20m and CP6XE on 17m. *Apropos* my mention of 5MHz last month, Dave, G3YMC, reports getting excellent reports from around the country, using just 5 watts to a homebrew VXO rig (details on his web page).

SOURCES OF INFORMATION

FOR MANY OF you, this column may well be your main source of HF-related information, and I am always happy to help with supplementary data on request (where I can!) A number of you, particularly those without Internet access, still ask for QSL information, contest rules and results, etc and I can usually oblige. It's certainly a fact of life that most information that might have arrived on paper in the past is increasingly to be found on the Internet. This is not surprising. There used to be several excellent weekly bulletins of DX news, but without exception these have migrated to e-mail distribution for two obvious reasons. One is that they arrive almost instantaneously, rather than being subject to the vagaries of the postal service. The other is that you are not having to pay for postage, so the cost is usually a lot less. Indeed, several DX bulletins on the Internet are free.

Contest organisers frequently used to mail results booklets to all entrants. Some still do, but the majority choose to reduce costs (not unnaturally, as entrants make no contribution to cover administrative costs) by posting results on the web. The best source of awards information was always the excellent handbook published by K1BV. It remains the definitive source but, again, subscription is now by electronic means. The monthly W6GO list of QSL managers still exists, but as the GO-LIST, again by electronic subscription over the web. And address information used to be by way of the *Radio Amateurs Callbook*, published annually in two large volumes. The last of these was published recently. The publishers have now dropped it due to falling sales, with address information freely available from the QRZ.COM website, the FCC on-line database, and similar sources. To compile this column and provide additional data to readers, I subscribe to most of the above, and can recommend each and every one of those sources, along with several other Internet resources which I have mentioned in this column in recent years. I understand how frustrating it must be for those of you who do not have on-line access, but for those who do the convenience of having so much information readily to hand cannot be overstated.

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). Thanks also to G4OGB for contest results. Please send items for the **January** issue by **16 November** *(note the early deadline, as I will be heading off to HC8).* ♦

WWW.

CY0MM:	www.dipole.com
Deutscher Wetterdienst:	www.dwd.de/de/wir/Geschaeftsfelder/Seeschifffahrt/Sendeplaene/Amateurfunk
Electronic QSL Card Centre:	www.eQSL.cc
G3YMC 5MHz:	www.dsergeant.btinternet.co.uk/fivemegs/fivemegs.htm
IPA Contest:	www.ipa-rc.de
LX0LT:	www.qsl.net/lx0lt

HF F-Layer **Propagation Predictions** for **November 2002**

	3.5MHz	7.0MHz	10.1MHz	14.0MHz	18.1MHz	21.0MHz	28.0MHz
Time	0000111112 20	0000111112 20	0000111112 20	0000111112 20	0000111112 20	0000111112 20	0000111112 20
(UTC)	2468024680 20	2468024680 20	2468024680 20	2468024680 20	2468024680 20	2468024680 20	2468024680 20
*** Europe							
Moscow	884....37778	8881..278778	217633688223	..4877883...	..5999995...	..3999982...	...3886.....
*** Asia							
Yakutsk	2331	421....46676	737656788768	2.3884235213	...76.....	...73.....	...2.....
Tokyo	.....112.	...2..25556.	...61135533.	...62.122...	...62.....	...5.....	...3.....
Singapore	34222	476222	.....773...	.....587....	....1686....	...3466.....	
Hyderabad	2.....2222	6.....66666	.....57721.	..5446895...	..3778982...	...89997....	
Tel Aviv	674.....4445	868....58778	3185..288389	...3866784.45	...77778....	...87784....	...57763....
*** Oceania							
Wellington	.....12...	....65887...	...588997...	...799995...	...38886....	...27763....	....775.....
Perth	.....3433.	.....37622.	.....673...	.....5883...	....1677....	...66765....	
Sydney	.....3432..	.....17731..	.....6871...	....7997....	...28996....	...6888.....	
Honolulu	.....1141..5....	12.755382...	...423.64...	.....2...	.....	.....	
W. Samoa	.....32.14....	...78788....	...488872...	....7885....	....6772....	.....63.....	
*** Africa							
Mauritius	1.....5.....2434	3.....23433	1.....542.1	.....162...	.....26....	...11.22....	
Johannesburg	76.....45	98.....3899	97.....7888	733....58876	..221.2774..	...4335761..	...788984...
Ibadan	.....235.....1112	758.....4546	3156..125511	2.497777 7211	..29988851..	...999995...	
Nairobi	.....12.....	23.....1.11	512....12234	1.62..134211	..75212561..	...77677....	
Canary Isles	6671....2665	8886....7878	88882.127788	432876677852	2..68888973.	...9899895..	...5.8883...
*** S. America							
Buenos Aires	1114.....	7769.....36	3328.....22	...8.....	...951.122..	...8733342..	...466662...
Rio de Janeiro	.....	2223.....11	1117.....111	...7.....1..	...96212551.	...8754663..	...476674...
Lima	.....	1..2.....	...5.....	...5.....	...755111...	...527542...	.....7762...
Caracas	.....	1111.....1	22.3.....11	....3.....	....51..1...	....24222...	.....8883...
*** N. America							
Guatemala	1	11.51.....	...3.....	.....1.....	.....211....	......65....	
New Orleans	2	32.51.....12	...3.1.....	...3.77771..	.....4887...	.....985...	
Washington	111.....2	6666.....66	77185....277	22.224113711	.....76672..	.....8778...	.....3883...
Quebec	6661.....66	87382....477	11.64....5..	...2231146..	...3388884..	.....89982..	.....7997...
Anchorage	155.....	77772..25345	5..432223212	.....5...	.....5...	.....2...	.....
Vancouver	1	2222.....1	2..21.....1	.....	.....77...	.....54...	.....2....
San Francisco	.....	2212.....	1..1.....	.....	.....65...	.....63...	.....5....

Key: Each number in the table represents the expected *circuit reliability*, eg '1' represents reliability between 1 and 19% of days, '2' between 20 and 29% of days etc. No signal is expected when a '.' is shown. **Black** is shown when the signal strength is expected to be low to very low; **blue** when it is expected to be fair and **red** when the signal is expected to be strong.

The RSGB Propagation Studies Committee provides propagation predictions on the Internet at www.g4fkh.demon.co.uk The page is updated monthly. The provisional mean sunspot number for September 2002 issued by the Sunspot Data Centre, Brussels, was 109.3. The maximum daily sunspot number was 147 on 3 September and the minimum was 64 on 30 September. The predicted smoothed sunspot numbers for November, December and January are respectively: (SIDC classical method – Waldmeier's standard) 96, 94, 91 (combined method) 80. 76, 72.

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SWL

DAVID Whitaker, BRS25429, and Simon, RS177448, have been getting a taste for 5MHz. Both have heard some 'DX': David heard five DXCC entities - G, GI, GU, GM and GW, while Simon heard G, GI, GM and GW to give him four countries on the band.

Simon listened mainly during the weekends and found a reasonable level of activity. Apart from those stations outside G, he had heard Gs in various parts of the country including Plymouth and Kendal.

CQWW SWL CHALLENGE

THE RESULTS APPEAR in **Table 1** below. Everyone who sent return postage will receive a copy of the results booklet. I was pleased with the level of entry, especially in the CW section. In the main, logs were well presented and most used some form of computer logging. This makes checking much easier and also means that a cover sheet is generated. There were several newcomers this year. This is mainly due to the rules being sent with all direct D68C cards.

This year's contests are upon us and I look forward to receiving a good entry this year.

Spectacular QSL from German SWL DE9SDA.

SWL CONTEST LOGGER

SWLS WHO ENJOY contesting can now have a dedicated HF contest logger - for free. *SDL* (*SD for Listeners*) supports the major international contests and most RSGB contests - the same ones already supported by SD. SDL is FreeWare, and may be downloaded from http://www.ei5di.com/sd/sdl992.zip (472KB). Why not try it out and perhaps use it to introduce novices to contest logging? *SDL* is fun to use because it identifies countries and potential multipliers as you type callsign prefixes, and you don't have to learn any multiple keystrokes for logging or editing. The software is by Paul, EI5DI. Once you've taken a look, and if you think that Paul has missed anything, let him know by e-mail, and he will do his best to improve the software.

CQ WW SWL CHALLENGE 2001 RESULTS

CQ WW SWL CHALLENGE 2001 SSB RESULTS

CATEGORY 'A' - SINGLE OPERATOR

SWL Call	Total Mults	Multipliers per Band 28	21	14	7	3.5	1.8	FINAL SCORE
OM3-27707	640	152	143	137	97	68	43	1,336,320
ONL-383	585	131	127	124	90	70	43	1,059.44
GW-5218	556	120	128	115	92	60	41	971,888
F-15452	523	136	107	100	85	55	40	811,173
BRS91529	463	104	100	87	75	52	45	584,769
BRS503100	430	99	87	105	72	45	22	503,100
NL-455	425	82	92	82	75	54	40	501,925
F-17789	417	99	83	78	66	53	38	475,797
BRS8841	373	94	84	81	55	29	30	379.341
HG1-777	363	107	61	67	43	50	35	339,405
DE0HCS	353	93	73	64	47	42	34	306.757
RS95258	318	72	70	70	51	55	0	284.292
F-14846	328	84	71	64	41	37	31	268,960
SM3-8055	327	77	62	69	55	44	20	261,273
OH2-836	325	77	56	65	54	44	29	260,325
CXN-020	229	80	71	62	16	0	0	231,748
I5-1990	277	63	67	74	34	27	12	226,309
F-20553	282	79	54	66	27	40	18	209,244
DE0WSM	153	43	30	36	30	14	0	205,173
OH3-911	268	48	63	60	55	31	11	173,664
ONL3997	235	91	50	51	26	17	0	151,105
F-16156	236	92	55	34	25	15	15	133,104
G7RSK	241	40	50	49	53	34	15	132,784
DH2URF	202	40	36	34	35	31	26	90,294
OE1-0140	186	58	45	45	35	3	0	79,968
I1-2098/GE	178	41	53	39	15	30	0	69,420
DE0WAF	122	40	30	22	21	7	2	60,146
I7-2932/BA	236	65	51	39	30	26	25	39,424
RS95363	126	15	33	32	23	14	9	29,106
SP2-09181	108	23	28	38	13	6	0	25,488
OK1-31341	108	0	24	38	14	32	0	21.037
I2/SWL-4610	76	31	15	14	12	4	0	7,240

CATEGORY "B" - MULTI-MULTI

SWL Call	Total Mults	Multipliers per Band 28	21	14	7	3.5	1.8	FINAL SCORE
RS178500	675	147	143	139	106	84	56	1,478.93

CATEGORY "C" - MULTI-SINGLE

SWL Call	Total Mults	Multipliers per Band 28	21	14	7	3.5	1.8	FINAL SCORE
OKL-7	486	160	90	83	66	46	41	385,228
ONL10402	150	47	40	37	26	0	0	96,300
GM7VXR	126	126	0	0	0	0	0	54,432

CQ WW SWL CHALLENGE 2001 CW RESULTS

CATEGORY "A" - SINGLE OPERATOR

SWL Call	Total Mults	Multipliers per Band 28	21	14	7	3.5	1.8	FINAL SCORE
OM3-27707	683	141	139	137	120	88	58	1,537,433
HG1-777	599	126	140	86	76	96	75	1,097,967
ONL383	570	124	112	111	94	77	52	990.66
OK1-11861	487	112	110	84	69	78	34	693.001
BRS8841	410	89	86	71	68	54	42	478,060
BRS88921	369	78	73	74	61	50	33	320,661
R0W-52	280	53	58	65	62	30	12	311,360
DH2URF	287	52	49	51	59	39	37	200,613
DE0HCS	252	54	51	45	39	40	23	130,032
F-15922	222	55	49	53	32	31	2	96,348
NL-455	198	40	36	38	35	27	22	70,092
F-10125	160	19	20	40	20	30	31	48,000
SM3-8055	150	40	35	33	25	10	7	42,300
YO5-025/Cj	127	10	44	25	36	12	0	38,481
F5NLX	68	14	32	2	20	0	0	8,092
RX3OO	28	0	0	0	28	0	0	2,016

CATEGORY "C" - MULTI-SINGLE

SWL Call	Total Mults	Multipliers per Band 28	21	14	7	3.5	1.8	FINAL SCORE
OKL-7	228	91	23	58	29	27	0	132,240

Table 1: Results of last year's CQ WW SWL Challenge.

SWL CARDS

PETER DESTOOP, ONL5923 (peter.destoop@pandora.be), provided an update on his collection of SWL QSL cards. He was getting organised with the help of QSL.at and was in the process of putting the first entries in a computer program. Peter has around 3000 SWL cards from 50 countries. The oldest card dates from 1943. Peter will send more details regarding the ultimate SWL collection as soon as he has everything sorted out on computer.

GB50 AWARDS

CLARE, RS102891, reports that the two GB50 awards had been received from the printers. She is starting to send them out – strictly in the order that the claims were received. Be patient – she will deal with all the claims as soon as she can.

BROADCAST DX

TOM, M1EYP, wrote with reference to the request for recommended books for medium wave and short wave broadcast stations. The usual main reference work is the '*WRTH*' - *World Radio TV Handbook* - published every year. This year there is a new annual book published half way through the year to show hour-by-hour schedules, changes for the summer period and station contact details. Another useful book is *Passport to World Band Radio*.

Twice yearly, the British DX Club (BDXC-UK) produces a *Broadcasts in English* booklet. These are £2 each and give accurate, up-to-date and comprehensive BC listings. BDXC members get this twice yearly booklet free, in addition to the 12 monthly copies of *Communication* - the club's monthly journal. Membership of BDXC is £12 per annum. Further details can be found at www.bdxc.org.uk

ILLW 2002

THE INTERNATIONAL Lighthouse / Lightship Weekend for 2002 was a huge success, with at least 318 stations at lighthouses and lightship active in 45 countries. A list of stations that were QRV is at vk2ce.com/illw/2002.htm ♦

Antennas

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CONTINUING the experimental and measuring theme of last month's 'Antennas' column we will have a look at making polar diagrams of beam antennas. This can be done quite simply at VHF by energising the beam antenna with a QRP transmitter and using a dipole antenna and field strength meter (FSM) to measure the field strength as the beam antenna is rotated. Furthermore, HF beam antennas can be modelled using VHF antennas as described in [1].

POLAR DIAGRAM USING A COMPUTER

POLAR DIAGRAM plotting, described above, can be automated using a computer. This method takes much of the work out of manual method of plotting polar diagrams and speeds up the process considerably.

Storage of data and the application of functions for normalisation and conversion from linear to log scales etc, are tasks amenable to computerisation. Additionally, very complex polar diagrams can be plotted that would otherwise be difficult using the manual method.

All my early work was done using a BBC computer. All that had to be done was to connect the DC output from the FSM, to the A/D converter, which was an integral part of that computer and addressable in BBC BASIC. The idea was not new and a polar diagram-plotting program, written by G4IJE and G3NOX, was first described in [2].

The program was later modified to run on the more widely used IBM compatible computer but an external ADC was required, see [1].

WINDOWS SOFTWARE

A POLAR PLOT program, written to run on Windows 95/98/NT4 and Windows 2000, has been written by Bob Freeth, G4HFQ, and is obtainable from his website, see WWW below. This system circumvents the requirement for an ADC interface. Instead, a sound card with a line-in or microphone input is used, which is connected to the audio output of the receiver.

The volume of a beat note, in the SSB or CW mode of a plain unmodulated carrier has good correlation with the RF input level, provided the receiver is operated in a linear manner. This is best achieved by simply reducing the RF gain (most receivers with no RF gain control are unsuitable for this application). Modulated tones in AM or FM cannot be used, particularly FM, which is inherently designed to maintain audio level regardless of the RF input level.

Although I used this technique in the past, for modelling HF antennas using VHF antennas on my garden antenna test range, by using the G4HFQ software it is possible to measure the performance of a full size HF beam. An example of an HF beam plot is shown in **Fig 1**. This antenna is a modified version of the commercial five-band MQ2 beam and Fig 1 illustrates the polar diagram on 10m. The measurement was made by energising a short dipole, located around three wavelengths from the beam, via an ATU with a signal generator. The beam antenna was then rotated and the measurements made using the G4HFQ software.

Many operators check their antenna with other locals and these ground wave tests are quite useful. I once described in an article how I did this and was taken to task by a reader. He regarded such measurements as unreliable and the point he made is illustrated in **Fig 2**. Most polar diagrams shown in antenna books are obtained through mathematical modelling. This indicates that the field strength of a practical antenna would only be a fraction of the main lobe. In fact, if you ask a modelling software program, such as *EZNEC*, to make an azimuth measurement at zero degrees elevation it will reject the measurement attempt with a message to say that the signal strength will be zero. In the real world the situation is far more complex. The polar diagram of the antenna shown in Fig 1 was made of a beam antenna 10m high yet the short dipole energised with a signal generator was only 4m high. The measured F/B of 10dB was what I expected from experience of using the antenna for several years.

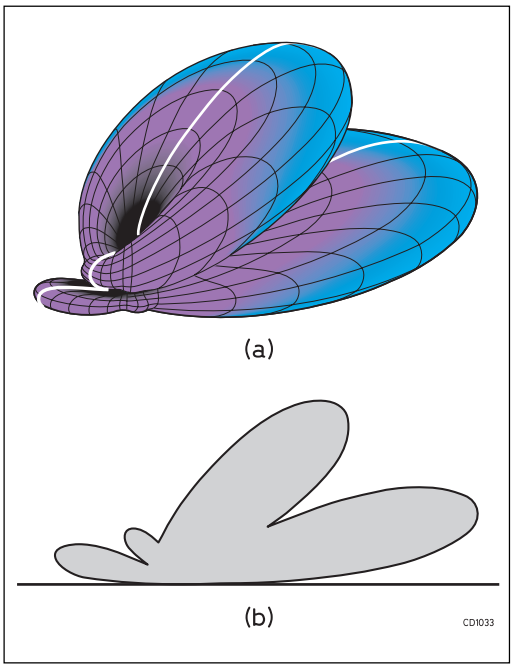


Fig 2: (a) Three-dimensional polar diagram of a three-element beam showing a vertical or elevation section. (b) Radiation pattern through this section. This result was obtained using the *EZNEC* antenna analysis software.

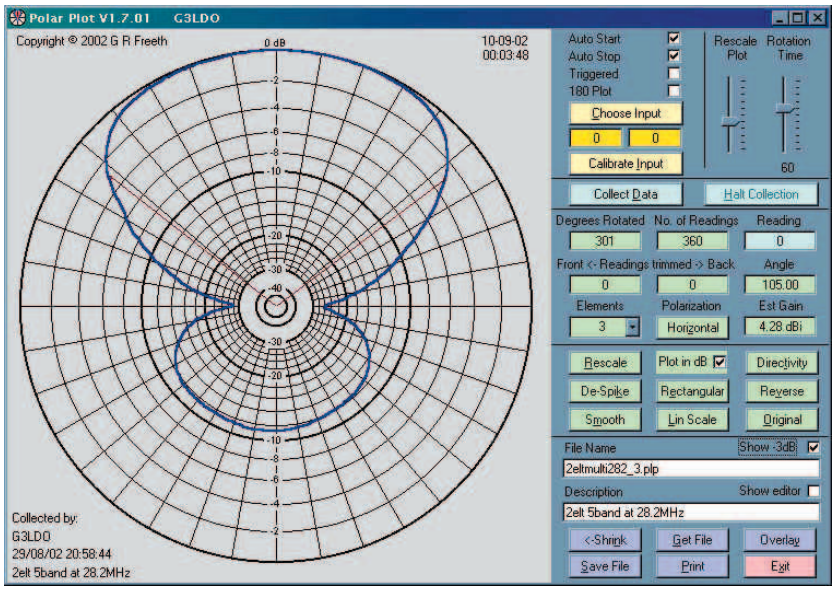


Fig 1: Polar diagram of a modified MQ2 beam on 28MHz. The main lobe looks slightly squashed, possibly due to non-linearity in the receiver settings, although the 10dB F/B was what I was expected. The plot is done using a scale originated by the ARRL called a log periodic scale. The setting boxes to the right illustrate the range of processing that is available with this application.

REFERENCES

[1] *The Antenna Experimenter's Guide (second edition)*, by Peter Dodd, G3LDO, RSGB.
[2] 'VHF/UHF', Ken Willis, G8VR, *RadCom*, Jan 1987. ♦

WWW.
Polar Plot software www.bob.freeth.dial.pipex.com/polarplot

ATV

TREVOR BROWN, G8CJS
E-mail: chairman@batc.org.uk

IN THE March ATV column was a picture of the old Southern Mobile control room being restored by BATC member Paul Marshall. I am pleased to report this unit is now fully restored and in full working order. Paul has now acquired a new mobile control room that started life as one of two identical OB units owned by Yorkshire Television in 1968. Both units were equipped with four Marconi MkVII colour cameras.

Yorkshire Television was a new ITV franchise then, taking over the Emley Moor transmitter from a shared service of Granada for weekdays and ABC at weekends. The studios were built from scratch and the two OB units were used to produce a stockpile of dramas to keep the station on the air until the engineering work on the studio complex was complete. Both units saw service on the exterior scenes of Emmerdale Farm (1972).

HAREFIELD DAYS

PAUL'S UNIT was finally sold on to the CEGB (Central Electricity Generating Board); in 1983 they, in turn, passed it along to Harefield Hospital where it was used for Hospital TV. During the 19 years it spent at Harefield, it was used in a non-mobile capacity and suffered a vandal-damaged windscreen which was boarded over. Paul, with a lot of help from his friends, replaced the windscreen and managed to get the engine and running gear operational at Harefield, before the journey back to his home in Lincolnshire. The unit did suffer one minor breakdown en route; one of the radiator hoses blew and had to be frantically replaced with a temporary one. Not bad after 19 years off the road!

TV VERSUS FILM

MOST OF the modern OB units spend the majority of their time on live sport, drama being left to film crews or portable electronic cameras but, in 1968, these portable electronic cameras did not exist. Programmes that used studios for the interiors and location for exteriors often used film for the exterior shots. Film pictures have a completely different look and, even now, with some very sophisticated technology available, film cannot always be matched to electronic studio images. In the early days of colour, switching between film and studio images did jar and spoil the illusion. Many programmes were made using this formula including 'The Good Life', to which BBC 2 has been treating us of late. The alternative to these disturbing cuts was to use one of these units to shoot the exterior footage.

The YTV OB truck in a sorry state, as it was found at Harefield.

WHERE ARE THEY NOW?

AS PAUL STARTS the restoration work, it would be interesting, through the readers of *RadCom*, to track down any of these early outside broadcast units that still exist, and find out what they are doing now. I know of several that are privately owned by BATC members; some are in working order and some are in the process of renovation. There are examples of conversions to a new life and one or two are now mobile homes.

MORE ATV REPEATERS

THERE HAS BEEN an upsurge of interest in amateur television repeaters recently, with applications received for a number of new units. 13cm TV units proposed are GB3DH (Derby), GB3FT (Newbury) and GB3TZ (Luton), the 23cm TV units proposed being GB3CT (Crawley), GB3CX (Clacton), GB3FV (Wisbech) and GB3NQ (Cornwall). This brings the total to 45 ATV repeaters: nine at 10GHz, all being on air; six at 2.3GHz, four being on air with two new applications; 31 at 1.3GHz, 26 being on air with four new applications and one off-air.

NEW YORKSHIRE 10GHz ATV REPEATER

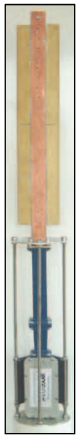
GB3YX IS ONE of the latest 10GHz repeaters, co-sited with GB3YT, the 24cm ATV repeater. It was switched on during Tuesday 27 August and has caused a flurry of equipment-building across the Yorkshire area.

The transmitter is a 1W DRO-stabilised unit designed by PA3GIE and supplied by Wyzcom. Two identical G6NHG slotted-waveguide antennas are used, giving some 12dBi gain.

The group spent a lot of time perfecting the radomes that cover the antennas. The original idea was to use a single piece of 3mm-wall PVC waste pipe as both the equipment enclosure and radome, but tests in an anechoic chamber showed that internal reflections within the radome produced deep nulls in the radiation pattern. Thinner-wall PVC was better, but home-made tubing formed from thin fibreglass turned out to have the best performance.

There is still much to do on the repeater. The logic in particular is still 'evolving'. Amongst the improvements expected over the next few months are external cameras to provide pretty views of the surrounding countryside, a slide-show display and, most excitingly, the ability to link the two ATV repeaters together for cross-band contacts.

The group hopes that, by the time you read this, you will be able to watch one or both of the repeaters on the Internet via the website 24 hours a day. ♦



The GB3YX receiver outdoor equipment showing the slotted waveguide antenna, top, followed by a 5-pole waveguide filter made by G6NHG, and the Wyzcom low-noise downconverter. The black plates either side of the LNB are heatsinks holding the heater resistors. Hidden behind the LNB is the temperature sensor. The whole assembly is mounted between two aluminium discs to make it a sliding fit in the PVC pipe.

WWW.

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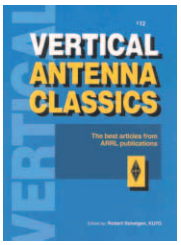

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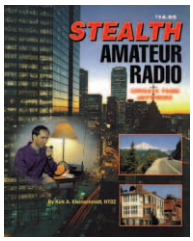

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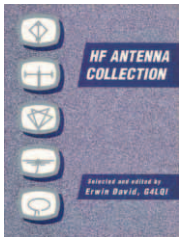

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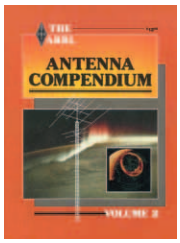

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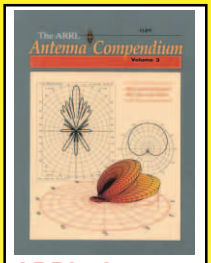

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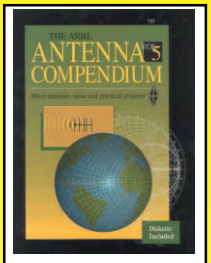

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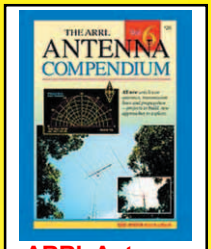

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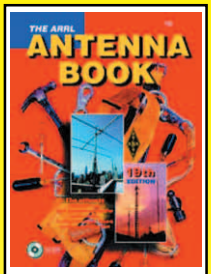

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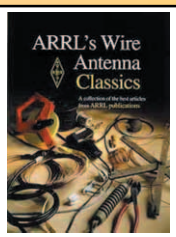

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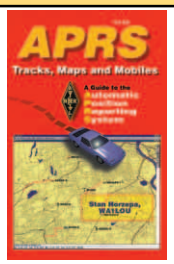

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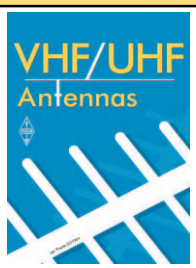

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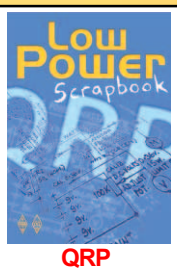

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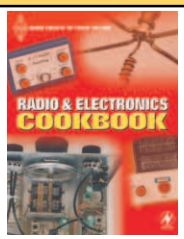

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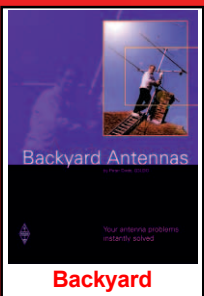

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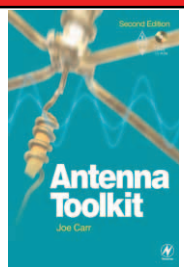

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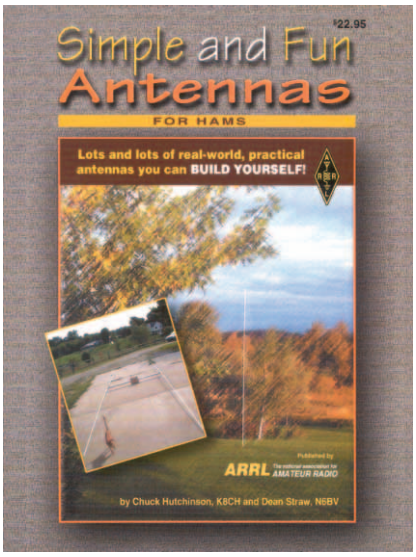

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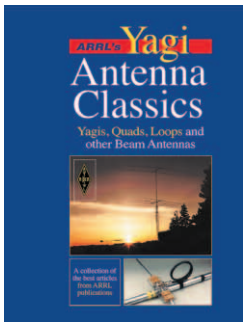

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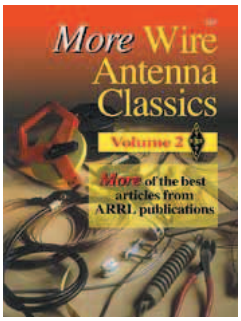

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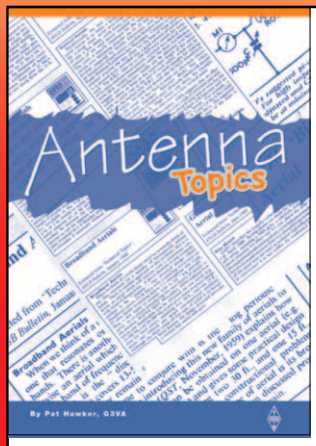

Antenna Topics

By Pat Hawker, G3VA

If you are interested in antennas this book is a goldmine of information and ideas on the subject. Pat Hawker has been writing his "Technical Topics" column in Radcom since 1958 and has produced much excellent work in this time. This book is a chronological collection of cuttings of Pat's words over the years. Hundreds of areas and subjects are covered and many a good idea is included. Carefully indexed this book is not only a great reference work but also a history of over forty years of antenna design.

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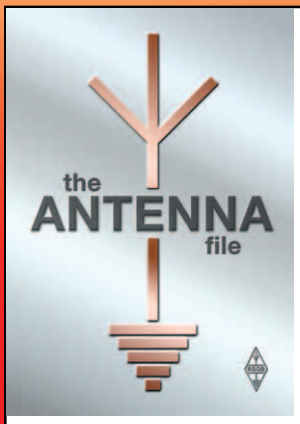

The Antenna File

The Radio Society of Great Britain produces some of the best works on antennas and this is a collection of that work from the last ten years. This book contains 288 pages of articles drawn from the Radcom magazine and includes:
50 HF antennas, 14 VHF/UHF/SHF antennas, 3 receiving antennas, 6 articles on masts and supports, 9 articles on tuning and measuring, 4 on antenna construction, 5 on design and theory, and 9 Peter Hart antenna reviews and much more. In fact everything you need to know about antennas and how to get the best out of them.

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NO PARTICULAR theme to this month's article, but I have been reviewing several pages and I think these will be of interest to readers.

FRARS

I RECEIVED an invitation to review the unusually-named Flight Refuelling Amateur Radio Society (FRARS) site. The group was, says the webmaster, "founded in 1982 by employees of Flight Refuelling (now Cobham PLC). The club has a variety of members with wide-ranging interests. There are groups who contest on VHF and UHF, groups who contest on HF and groups who just enjoy the company and like-minded people that can be found at the club." That seems a good enough reason to make a page for the Internet, but I was not prepared for the very high quality and variety of the articles and lay-out of the pages, which must rank as one of the most professional of amateur radio pages I have seen for some time.

As one would expect, there is the usual introduction and explanation of the pages. Fine. I was also interested to read, "(we) are currently working on building a community wireless network which will give members 11Mb/s access to each other and to the Internet. This network will use cheap 802.11b network cards." I wish I lived near Cobham. It sounds fascinating. There is a useful section called 'Knowledge Base', which includes good quality information on microwaves, building a WxSat antenna, an equipment review, all with excellent graphics and diagrams. Details under 'News' included the Hamfest 2002 and newsletters from the Society. There is even a biography of some of the members; as always, well presented and interesting. The jargon glossary is a searchable database. Links to other pages are thin on the ground – none to my pages – but those links listed are relevant and useful.

This is a good example of advertising one's own society in a professional and pleasing way, whilst being genuinely of use to others who are not necessarily in that organisation. A nice site.

THE HUMAN RACE

WELL, WE *ARE* members of it, but you might think this an odd name for an amateur site. This is a "TV documentary about Amateur Radio." In fact it's about *a* race, not *the* Race. You will need *Quick Time* to watch the movies. There is a history of amateur radio, and to ethereal music, a photo of an amateur CW operator (circa 1940?), we read "Eventually, a global communications network handling voice, data and facsimile will instantly link man by land, air, underwater and space circuits. This will affect man's way of thinking, his means of education, his relationship to his physical and social environment and will alter his ways of living…" The quotation is unattributed.

There is more – much more – the Statement of Purpose tells us: "For the better part of four generations, ham radio operators have enjoyed access to an environment of free, global telecommunications. Within this environment the ham radio operator participates in a never-ending, worldwide conversation that literally transcends national borders, ideological incompatibilities and political rivalries … the ham radio world perspective institutes a uniquely transcultural form of friendship, extending throughout the world and affecting all amateurs on a person-to-person basis… *The Human Race* proposes to document the amateur radio world perspective through the adventure of a race around the planet." So now you know.

CQ magazine, one of the many fairly heavy-weight sponsors, is quoted as saying "*The Human Race* is a planned educational television series in which two amateur radio operators will participate in a global 'road rally', one heading east and one heading west with transportation limited to that volunteered by other amateur operators that the ham competitors meet along the way. The race will begin in Kansas City, Missouri, and end in a location roughly halfway around the world where the paths of the two competitors intersect. Each competitor will be accompanied by a TV production crew and tracked using GPS (Global Positioning System) and APRS (Automatic Position Reporting System), with a constantly-updated website enabling hams and others around the world to follow the progress of the race. Each competitor/crew will also be outfitted with advanced communications systems, including amateur stations.

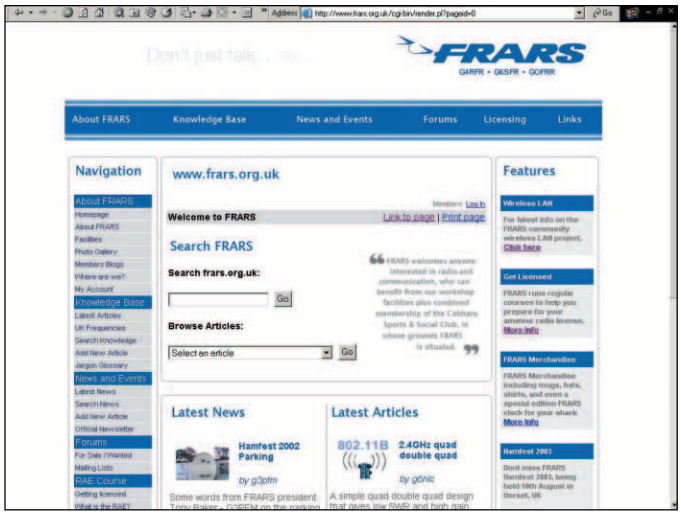
"Along the way, each racer encounters a series of pre-selected 'ham hosts', who have each been chosen for an area of expertise in a particular area of amateur radio. They not only play host to the amateur, but also are interviewed by the competitor about their area of specialty and the role ham radio has played in their lives." It sounds something quite out of the ordinary. I will publish more details about this when I receive them. You too could be a part of it, and those who are interested can find contact points on the site. Let no-one say our hobby has no philosophy or originality!

LINKS PAGES

ON A SOMEWHAT lighter note, here are one or two useful links pages: first, **HR Showcase**, which I quite liked – just various links and some notes of its own; and my UK favourite **G7KPF's Links**, with a UK flavour; and the old favourite, **QRZ.COM**, full of good things.

WINTER PROPAGATION

THE WINTER season propagation is upon us, with its long nights here in the northern hemisphere but good openings (we hope) to VK etc. Why? Well, have a look at the **RSGB's Propagation Committee's** pages for an explanation of seasonal variations and associated links. It's quite a mine of information. Can you get to grips with nano-Teslas and that weekly tongue-twister 'The ACE Spacecraft' you hear in GB2RS? ♦



The Flight Refuelling ARS home page.

WWW.

FRARS www.frars.org.uk
The Human Race www.humanrace.fr.st/
HR Showcase www.hrshowcase.com/
G7KPF Links www.users.zetnet.co.uk/kama/hamlinks.htm
QRZ.COM www.qrz.com/
RSGB propagation pages www.keele.ac.uk/depts/por/psc.htm

QRP QRP QRP QRP QRP

REV GEORGE DOBBS, G3RJV
St Aidan's Vicarage,
498 Manchester Road,
Rochdale OL11 3HE.
E-mail: g3rjv@gqrp.com

THERE ARE many reasons why amateur radio operators choose QRP. Two common ones are the use of home-built equipment and the possibility of having a completely portable amateur radio station. In this column, I offer an example of each [*see also p36* - Ed].

EW1MM

GARY Podgorny, EW1MM, is a keen member of the G QRP Club living in Minsk, in the Republic of Belarus. Gary is a radio operator in civil aviation and a frequent author in Russian language amateur radio magazines. His amateur radio history is largely that of someone who has built his own station equipment and shared his ideas with others. Gary is also a fluent English speaker and writer, having studied English since the 1970s. He calls teaching and helping others improve their English skills his "other hobby".

The photograph of the EW1MM station shows an interesting mix of equipment. Prior to the 1990s, the station was almost entirely home-made, but when Gary began his first steps in digital modes, he felt the need for synthesised signal generation. He bought a Russian R160P communications receiver, which is the large grey equipment to the left of the photograph. The R160P has a synthesiser, three intermediate frequency conversions with three crystal filters. But this was no surrender to the commercial world, because Gary rebuilt the receiver as a transceiver to make it his main station rig. He also installed an encoder (the red plate with tuning knob) for 10Hz step tuning using a Z80 processor.

The other main transceiver is the old Ten-Tec Argonaut 505, the first of the Argonaut series of QRP transceivers. This can be seen on the desk behind the headphones, alongside his home-built memory keyer with a Vibroplex paddle key. To the left on the shelf above the Argonaut is a large dark case containing a home-made power amplifier using a Russian GS-35B ceramic triode. The rest of the station is a collection of mainly home-built accessory equipment for audio processing and digital communications.

Gary is a *RadCom* reader. He gets copies from a Swedish amateur radio friend. So we wish him well with his interesting and varied station. In an age when most amateur radio stations are predictable and often look like a small corner of an amateur radio retailer's shop, the EW1MM station clearly shows someone actively engaged in the hobby.

G3IUC

BOB McMILLAN, G3IUC, wrote to *RadCom* with a description of his QRP station in a suitcase, enclosing a photograph. The compact nature of low-powered radio equipment is such that many QRP operators have put together 'stations to go'. As can be seen for the photograph, Bob makes full use of the MFJ range of QRP equipment. In Bob's own words: "Three years ago, I decided to build a completely 'free' QRP station after enjoying mobile operation with an MFJ-9040 transceiver (the MFJ-9040 is a QRP CW transceiver for the 7MHz band). I installed the MFJ-9040, MFJ-910 antenna matcher, MFJ-816 HF SWR / power meter, a rechargeable 7.2Ah battery and an old Royal Signals WT 8A key into an old tool case. I hooked up a 40-metre Pro-Am whip antenna via about 10 metres of good quality coax cable and trimmed the wire counterpoise for resonance. An SWR of 1:1 was easily achieved and the results were very good.

"I found I could transport the station almost everywhere, on foot or by car. The Pro-Am whip can easily be installed with bungees and straps to secure its home-made bracket and the wire counterpoise stretched to any tree, shrubs or buildings. I have used the 'rig in a suitcase' many times in and around Scarborough and recently in Wales with some very respectable reports from the UK and Europe, even without the ATU! I have had similar results on 20 metres using the MFJ-9020 and the Pro-Am whip PHF20, with some good contacts into the USA.

"The photograph shows the MFJ-9020 transceiver with the ATU and SWR meter, key and battery. Alongside the case is the Pro-Am whip with its base connector and home-made fixing bracket with the wire counterpoise and coax cable coiled up. The whole exercise has been great fun and a refreshing change from home QTH operation."

The advent of the Yaesu FT-817, and the associated range of whip antennas, has greatly increased the interest in operating a completely portable HF station. So I am inviting others to share their ideas. If you have a portable QRP station, please send me a picture, with a brief description of the station, the antenna, and your results, and we will share as many of them as possible with *RadCom* readers.

VERY LOW AND VERY SLOW

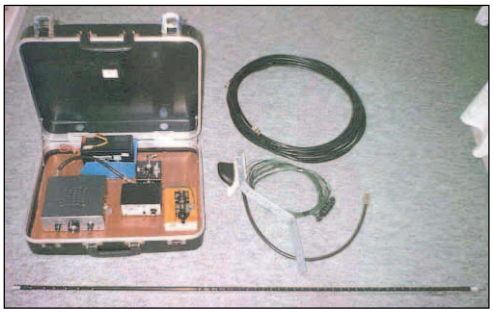
I HAVE RECEIVED information from Johan, ON5EX, about some interesting, and amazing, low-power experiments principally on the 10MHz band. Operators using QRPp(pp) - microwatt power - and QRSS (slow CW of the order of 10s per dot) have been having experimental QSOs between Europe and the USA. QRSS is a derivative of the CW Q-signal QRS for "Please lower your code speed". By using extremely slow CW, it is possible to use a computer sound card and special software to extract CW characters from below the audible noise floor. Morse code element lengths of 10 to 30 seconds (or even longer) per dot are commonly used.

The experiments Johan describes originate via an Internet mailing list and anyone interested is invited to join. To join, simply send an e-mail to qrss@cnts.be for further information. Johan says that this is not a formal list but just "a group of friendly radio amateurs fascinated by pushing the frontiers and wanting to discover new horizons". ♦

WWW.

More information on QRSS
www.ussc.com/~turner/qrss1.html
www.qsl.net/on7yd/136narro.htm#QRSS.

The station of EW1MM.



G3IUC's 'rig in a suitcase'.

DAVE PICK, G3YXM
178 Alcester Road South,
Kings Heath,
Birmingham B14 6DE.
E-mail: lf.radcom@rsgb.org.uk

ON 21 JULY, the second 'LF Roundtable' meeting took place. Last year's event was at the Flight Refuelling club premises. This year it was held at the Crawley Amateur Radio Club (CARC).

Derek, G3GRO, reports: "In the informal morning session, the visitors mingled with the usual Sunday morning attendance of CARC members and there was much rooting through the assorted bits and pieces on sale and conspicuous consumption of bacon butties in the lunch break.

"A number of technical papers on LF topics was presented in the afternoon session, with the final paper being given by CARC club member Professor Mike Underhill, G3LHZ, on the effective radiating efficiency of small (in terms of wavelength) magnetic loops and vertical antennas at LF. This paper provoked a good deal of lively discussion since Mike's view that conventional antenna theory in general under-estimates the effective efficiency of this class of antenna is considered somewhat controversial in some academic circles. The discussion, which also included debate on the Maurice Hately CFA antenna, including some test results, went on until at least 6pm - long after the nominal finishing time. I suspect that we shall be asked to run this event again next year!"

BRAZIL TO GET 136kHz

MARCUS, PY3CRX / PY2PLL, reports that ANATEL - the Brazilian equivalent of the FCC – has agreed that the 135.7 - 137.8kHz band should be allocated to amateurs on a secondary basis. This information was made public on 17 July in a press release from ANATEL. I wonder if they'll beat the US to the issue of permits?

FIRST EA - LF CONTACTS

JOSÉ MANUEL, EA1PX, continued his good run on LF by making a QSO with Brian, CT1DRP, on 16 August. They used QRSS (three-second dots, hand sent!) on 137.693kHz. Signals were good over the 300km path from La Coruña to Porto. On 2 September, he did even better, and had a two-way contact with Jim, M0BMU, on QRSS. All this with a poor earth and only 100W!

ZL6QH ON LF AGAIN

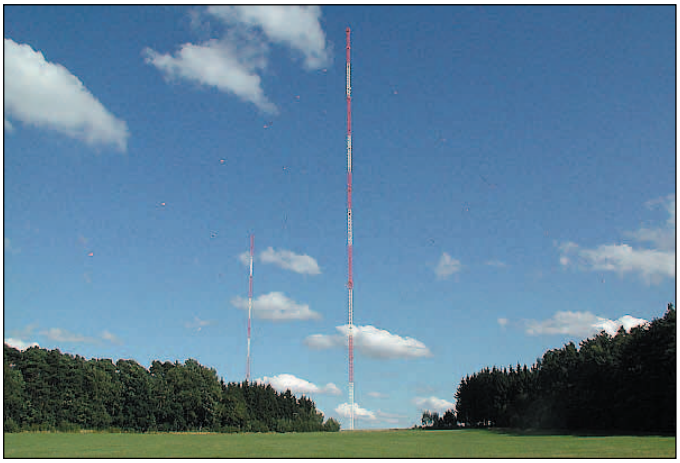
ANOTHER 136kHz test from the Quartz Hill club took place on 17 August. Once again the Pacific was crossed, with VE7SL near Vancouver receiving the test transmission. It really is remarkable that every test that the station has made has been received in North America. There'll be a good chance of a QSO once the Ws and VEs are fully licensed.

ITALIAN BEACON ON AIR

GIULIO, IK2DED, has built a beacon station which he has been testing on 135.800kHz. It is located in Northern Italy, a few kilometres west of Lake Garda, 980m above sea level. The aerial is a sloping wire from the top of a 60m tower. The message sent is "IK2DED/B LF BEACON JN55FO" two or three times at 7WPM with 40W of RF; then, in QRSS "IK2DED/B JN55FO PWR HIGH" at 40W, "PWR MED" at 4W and "PWR LOW" at 0.4W.

The three power levels had only just been implemented at the time of writing and the exact sequence of messages may be subject to change.

The beacon has been received in England and Greece during initial tests. It will be a useful indicator of medium-distance propagation.



The Donebach masts.

JASON HAS BEEN CLIPPED

THE INTERESTING data mode *Jason*, which has been designed for LF DX use by Alberto di Bene, has been updated recently. The newest versions have the option of using a new decoder by Stewart Nelson, KK7KA, based on his work on *Wolf*. This decoder has proved to be superior to the native decoder in noisy conditions.

Another innovation is a clipper, named a 'Hendrixiser' by some wags, which further improves decoder performance in noise, especially static crashes.

Jason is available for free download - see WWW.

BIG SIGNAL FROM GERMANY

ON 24 JULY, a group of German amateurs operated on 136kHz from the Deutschlandfunk masts at Donebach, whilst the QRO 153kHz transmitters were off the air for maintenance. The best reports came from CT1DRP and EA1TF who copied them in normal CW. The ERP at the time was probably about 60W; that's approximately 17dB up on a normal amateur signal. EA1PX also copied the signal, his first amateur LF reception. Inspired by this he has since received M0BMU's *Jason* test and followed this by having a cross-band QSO with him on QRSS. Although some have questioned the value of such activity, I think that the above illustrates the positive effect of this kind of event as a catalyst for interest in the band.

JEAN-JACQUES FAUCHEZ

I HAVE BEEN informed by John Rabson, G3PAI, of the death on 25 June of 'J J', F6IDE, who was a stalwart of cave radio experimenting. As well as conventional caving frequencies, his work encompassed 136kHz and topband. John writes in the *BCRA Journal*: "What a polymath! The man our readers knew as a frequent contributor to the *Journal* (and whose published work covered a wide range of topics: receivers, complete radios, results of propagation experiments, test gear and so on) was also an engineer, a radio amateur, an inventor, a glider pilot, a violinist, an artist, an astronomer, a historian and an indefatigable planter of trees."

TRANS-ATLANTIC TESTS

WE ARE NOW well into the trans-Atlantic testing season. There are still a lot of tests to be done and records to break. I hope the interest from over the pond will be high again this season, especially in view of their imminent ability to transmit on the band. Keep an eye on the trans-Atlantic window around 135.9kHz for the European stations. ♦

WWW.
Jason **www.weaksignals.com**

ROGER BALISTER, G3KMA
La Quinta, Mimbridge, Chobham, Surrey, GU24 8AR.
E-mail: g3kma@dial.pipex.com

Pushing the boat out - QSL from the recent XU7ABW / XU7ACA DXpedition from Koh Poah Island, AS-133, in Cambodia.

Yaesu, Principal Sponsor of the IOTA Programme

THANKFULLY, A peaceful solution was found to the problem of Perejil, the island off the north coast of Morocco where briefly in mid-July a territorial spat between Morocco and Spain hit the news headlines [see the September 'IOTA' column - *Ed*]. While the agreement of both sides to remove their troops and leave the island uninhabited - and effectively in sovereignty limbo - made good sense, it probably represented the worst outcome for IOTA! The chances of either country sanctioning an IOTA operation are lost, given the political need to avoid provocation. While applauding the peaceful outcome, we somehow seem to have a match result of IOTA 0, Resident Goats 1.

There is another AF-069 counter, Alhucemas Island, which saw an operation by EG9A in October 1995. We must hope permission will be granted for a repeat operation there.

ACTIVITY ON THE BANDS

AUGUST BEGAN with a joint Indonesian / Italian team mounting an operation from the unnumbered Masalembu Islands, located in the Java Sea, halfway between Java and Kalimantan Province, Borneo. Despite poor band conditions they managed to hand out 8A3M contacts for three days and, with them, the new reference OC-250. QSLs go to IZ8CCW.

A new Alaskan group came on the air at about the same time. The KL7AK team that has put on many rare Alaskan IOTAs so successfully in recent years set up station on Deer Island (Southern Alaska Peninsula West group) eager to hand out a new IOTA (NA-222). But this was no easy operation - on the contrary it was their toughest to date! Some of the most appalling weather seen in that part of Alaska at this time of year dropped in on them and everything, equipment and operators included, was drenched. It certainly felt lonely being on a remote uninhabited island in those conditions. One day's operation was lost but despite that the operators at KL7AK/P made a creditable 1876 QSOs and survived to tell the tale (team member Jim, K9PPY, was scheduled to give a presentation on the trip at the RSGB HF & IOTA Convention in October). QSLs to N6AWD.

In mid-August we had the rare treat of activity from a new Myanmar IOTA. It took place in the course of a major amateur radio operation from a mainland site in Arakan Region. Some operators from the multinational team took time out to put XY0TA on the air from nearby Apaw-ye Kyun Island. In just a few days they gave out AS-165 to more than 4800 contacts. QSLs to DL8KBJ.

IOTA ON 6 METRES

THE SPORADIC E season continued into mid-August, producing for your columnist the following IOTA contacts - EH7HZ/EA9 (AF-042), OZ1ANA (EU-172), 5C2MI (AF-065), 9A/SP6WAS (EU-016), LA6MV (EU-079), LA1JFA (EU-062), 9A/OE2WPO (EU-136), ES5MC/0 (EU-034), ES8X (EU-178), SV5BYR (EU-001), SV8AQY (EU-052). Although progress is steady - the score has now reached 72 IOTAs since July 2001, it could have been more rapid if a wider range of island stations had been there to take advantage of the openings. Many IOTA DXpeditions who do take 6m equipment find that life on the 'Magic Band' can get quite hectic when the band is open. Give it a try next season and you may be surprised at how much you enjoy it.

FORTHCOMING NEW ONES

DXPEDITIONERS will be activating three new groups at the time or shortly after you receive this issue of *RadCom*. The '425 DX News' reports that Diamond DX Club members Nando, IT9YRE; Gaetano, IT9GAI, and Claudio, I1SNW, will be active as V63RE, V63GH and V63WN from Nomwin Island (Hall Islands) on 24 - 27 October and from Ta Island in the Satawan Atoll (Mortlock Islands) from 30 October to 4 November. QSL via IT9YRE. Further information is available on the Internet (see WWW below).

Johan, PA3EXX, is scheduled to air VK4WWI from Woody Wallis Island (Queensland State - Gulf of Carpentaria - North group) on 6 - 10 November. Further information is available on Johan's website. This and the planned late September operation by Paul, VK3KXG, and friends from Lady Julia Percy Island in the Victoria State West group almost exhausts the number of unnumbered VK IOTA groups.

In addition plans are afoot for one or two more unnumbered Indonesian groups to be activated before the end of the year. The first is likely to be Kalimantan's Coastal Islands West group, where Temaju Island is targeted for an early operation. Keep a watch on the DX bulletins. ♦

NEW REFERENCES

AS-165	XZ	Arakan Region group
NA-222	KL	Southern Alaska Peninsula West group
OC-249	YB8	Aru Islands
OC-250	YB3	Masalembu Islands

WWW.

RSGB IOTA Programme:	http://www.rsgbiota.org
IOTA Manager's website:	http://www.eo19.dial.pipex.com/index.shtml
IOTA Contest rules:	http://www.rsgbhfcc.org/
Diamond DX Club V63 expedition	http://www.ddxc.net/v63
PA3EXX VK4WWI expedition	http://home.tiscali.nl/~su042021

RSGB IOTA Programme, PO Box 9, Potters Bar, Herts EN6 3RH; e-mail: iota.hq@rsgb.org.uk

MICROWAVE

SIMON LEWIS, GM4PLM
Creoch Farm, Ochiltree, Ayrshire KA18 2QH.
E-mail: uwave.radcom@rsgb.org.uk

AN EXCITING month this time round with news of the famous Martlesham Round Table, new beacons and an amazing record-breaking contact on 24GHz.

MARTLESHAM MICROWAVE ROUND TABLE 2002

THIS IS THE UK's premier microwave event and certainly not one to be missed – it's certainly well-visited from Europe too! Dates for this year are 9/10 November and it will again be held at Adastral Park, Martlesham Heath, Ipswich IP5 3RE. For security reasons, visitors must be pre-registered at least seven days before the event. *Please* book before coming along, or you will be disappointed. This year an on-line booking system is available and it is recommended that you book using it (postal bookings can be accepted by G3XDY, QTHR, as well). A full programme is again planned and it's certainly one not to be missed.

Saturday 9 November - a visit to the RAF Air Defence Radar Museum at RAF Neatishead has been arranged during the day. Space is limited to a party of 20 maximum, so please book early to avoid disappointment. The cost is £3 each. More details on-line.

Saturday 9 November (pm) - a microwavers' dinner has been planned at a new venue this year, the County Hotel, Copdock, Ipswich (just off the A12). The cost is £24 per person. Please book early using the on-line booking system. Places are limited to 30 maximum, and the evening is bound to be popular. Accommodation is also available for travellers and those who wish to indulge! A block of rooms is available for the Saturday night at the same hotel at the following concessionary rates: single room, B&B, per person - £38.50; twin / double room, B&B, per person - £28.50. Please book direct with the hotel on 01473 209 988, quoting "Group No 784" to gain the concessionary rate.

Sunday 10 November - the Round Table will open at 9am and the talks programme will commence at 10.45am. The usual microwave test and measurement facilities will be available, and a 10GHz antenna test range will be operated if the weather is reasonable. Refreshments will be available throughout the day. A limited number of tables is available for flea market traders at £5 per table. Please contact G3XDY to book.

This year, Martlesham welcomes Paul Wade, W1GHZ, to give a talk. Paul is well-known for his authoritative on-line antenna handbook. There will also be talks from Chris Bartram, GW4DGU, on oscillators for microwave systems, and from Grant Hodgson, G8UBN, on new devices and components for the microwave amateur. In addition to these technical talks, there will be an opportunity to review the microwave contest programme, and the UK Microwave Group AGM will also take place.

It's expected that this will be as popular as ever, so book early to avoid disappointment! It's not one to miss! More details from G3XDY.

NEW WORLD 24GHz RECORD

ON SEPTEMBER 7, at 1235UTC, WW2R/5 and W5LUA made a record-breaking contact on 24.192GHz. Dave was operating portable in EM41HC near Natchez, Mississippi, and W5LUA was operating from his home in EM13QC, Allen, Texas. CW signals of 549 were exchanged.

Based on 6-digit to 6-digit grid squares, the QSO distance is 337.3 miles or 542.8km – a new world record. The equipment at WW2R/5 consisted of a 2ft dish and a modified TWT running 11W output. A 1.8dB HEMT preamplifier was mounted directly on the waveguide switch. A homemade transverter fed an IC-402 at 435MHz. Signals on 10GHz were consistently around 10dB above the noise. After the QSY to 24GHz, and overcoming the surprise of hearing anything, initial signals were estimated at around 6dB above the noise but, by the end of the QSO, were barely audible above the noise.

The equipment at W5LUA consisted of a 2ft MACOM dish with azimuth and elevation control at 65ft. LNA noise figure at the dish measured 3dB, an Alelco TWT producing 50 watts in the shack. The actual power getting to the dish was considerably less. The transmit losses added up to 8.5dB, giving about 7W at the feed. Weather at EM41HC was 75°F and 88% relative humidity with relatively clear skies and some high clouds. Weather at EM13QC was 72°F and 70% relative humidity, with skies partly cloudy.

Attempts to repeat the contact over the same path 12 hours after the initial QSO resulted in no signals being identifiable either way on 10GHz, suggesting that the morning QSO had been under enhanced tropo conditions. No signals were heard on 2m or 70cm at the time of the contact. Both operators are to be congratulated on such a fine effort. For those not familiar with the call WW2R, it is, in fact, owned by the ubiquitous microwaver Dave Robinson, G4FRE!

Dave Robinson, WW2R (and G4FRE), in typical British headgear.

BEACON NEWS

THE 10GHz beacon, GB3MHX, at Martlesham Heath, has been off the air for an upgrade, reports John, G3XDY. He says this is now complete and it is expected that the beacon will have been re-installed on 26 September, weather permitting. At the same time, it is planned to install the antennas for GB3MHS on 3400.830MHz and, if all goes well, that beacon also will be brought into service. GB3MHS is based on a beacon exciter courtesy of DB6NT, a G4FRE PIC keyer, and an ex-Ionica 15W SSPA module and output filter. Thanks also go to Mark, GM4ISM, for the commercial antennas and output filter unit. GB3MHX will have an EIRP of 10W (omni) and GB3MHS will fire east / west with 120° beamwidth antennas and 75W EIRP.

A REQUEST

I HAVE BEEN looking for a large dish for EME use for some time. A promised one fell through, so I am still looking. Any size between 3.4 and 6m would be acceptable. The dish will also double as a radio telescope antenna for the Ayrshire Astronomical Society – can you help? If so, please let me know by e-mail to gm4plm@emn.org.uk ♦

WWW.

Martlesham Round Table booking system http://mmrt.myip.org
RAF Neatishead Radar Museum www.neatishead.raf.mod.uk
John Quarmby, G3XDY g3xdy@btinternet.com
Tel: 01473 717 830

JOHN HEATH, G7HIA
Chestnuts, Desford Lane, Kirkby Mallory, Leicester LE9 7QF.
E-mail: g7hia@amsat.org

SPACE

SATELLITE enthusiasts, constructors and experimenters converged on the University of Surrey at the end of July for the 17th AMSAT-UK Colloquium. Delegates from the UK and some 14 countries were treated to a varied programme of lectures, demonstrations and equipment testing. The antenna range proved popular once again, giving new and experienced constructors the chance to get accurate test results, as well as valuable advice from Sam Jewell, G4DDK, and Dave Bowman, G0MRF.

The tour of Surrey Satellite Technology's clean rooms, laboratories and satellite ground station is always a treat with Chris, G7UPN, on hand to answer a whole raft of technical questions. It's quite impossible to cover this excellent event properly in such a limited space, so please take a look at the full report which is on the AMSAT website.

Even if you are not a member of AMSAT you are welcome to attend these colloquia, and if you can't come for all three days then day tickets are available. If you have an interest in satellites and space radio you will enjoy your visit. Tentative dates for 2003 are 25 - 27 July.

IMPORTANT LICENSING INFORMATION

DIFFERENT VERSIONS of the 'Terms Provisions and Limitations Booklet', BR68, are currently issued to each class of licence holder: Full, Intermediate and Foundation. Each version states the privileges of the respective licence. If you inspect the version for Full licensees, you will see that the Amateur Satellite Service is separately designated. It is, in fact, a separate user service, within international regulations. Having joined AMSAT-UK many years ago, I was lucky enough to have this explained to me, with the follow up statement, "but you don't need a separate licence, anyone with a valid licence is welcome on satellites". Over recent years, the situation has changed significantly. The Novice (Intermediate) Licence does not give access to satellites, and neither does the Foundation Licence.

The RSGB, working with the Radiocommunications Agency, is evolving a progressive licensing scheme that will start with the Foundation, go on to Intermediate and then Full. Currently, I understand that there will be no satellite access of any sort for Foundation or Intermediate licensees. This seems a great pity. Satellite communications represents a very exciting aspect of our hobby, with strong appeal to youngsters (as we have seen first-hand at the National Space Centre). Having talked to many regular satellite users, I have not found anyone who has objections to holders of any class of licence, joining us on the satellites. Indeed, most have commented that getting on satellite is just the sort of self-training and experimentation specified in all classes of licence.

AMSAT-UK is now working on a proposal for discussion with the RSGB aimed at giving access to the FM 'easy satellites' at Foundation level, and progressing, with the Intermediate Licence, to SSB satellites. In the meantime, spare a thought for the 2E1s who now find that they had been operating unwittingly outside the terms of their licences, and have had to shut down their satellite stations.

Amsat Colloquium - working UO-14 QRP with hand-helds. Ray, W2RS (right), using a commercial dual-band Arrow antenna for 2m and 70cm. Wouter, PE4WJ (left), with his home-brew version, which performed very well.

TRACKING SOFTWARE

THANKS TO David Taylor for a note about his satellite tracker *Wxtrack*. As you can probably guess, it was written very much with weather satellites in mind.

David has updated this Windows software to cover the Shuttle and the ISS. It will display a table of passes that are mutually visible to both your own location and a remote location, such as a Russian ground station. David hopes readers of *RadCom* will find this a useful update for listening to the ISS. *Wxtrack* may be downloaded from the website, navigating via 'satellite tools' and 'Wxtrack'.

GQ JUBILEE CALL

MEMBERS OF the AMSAT Midlands VHF net were busy on satellite with the GQ prefix in June. In just two weeks Robert, G8ATE, worked 143 stations in 27 countries, all on the low earth orbiting satellites FO-20, FO-29, UO-14 and AO-7. Also on the LEOs, but with a little help from AO-40, I clocked up 79 calls in 32 countries, with VK3KOS as best DX. Several Jubilee stations were worked, including satellite veteran Des, whose GQ6HRH call must have left a few overseas stations wondering who they had just worked on UO-14!

LAZARUS SATELLITE

AFTER BEING declared dead 21 years ago due to battery failure, AO-7 has miraculously come back to life. First detected by Pat Gowen, G3IOR, on 21 June at 1728UTC, AO-7 is almost certainly running off the solar panels, so will operate when in sunlight. As a result, AO-7 will reset each orbit, and may not turn on each time.

Many stations have worked through it and, despite its age, it is performing well. It is in Mode A (2m up, 10m down) when the 29.502MHz beacon can be heard.

After a search for the old command codes and hardware, the satellite was successfully commanded in July by N1JEZ. At the time of writing, seven commands have been accepted and experiments are continuing. CW telemetry decode software, and other AO-7 information can be found on the AMSAT website.

A NEW WEATHER SATELLITE

I AM ABLE to report weather satellite DX from the new weather satellite NOAA 17 (APT on 137.620MHz FM). My first attempt produced a rare cloud-free image of Svalbard near the North Pole. ♦

WWW.
Wxtrack software
www.satsignal.net
AMSAT-UK www.uk.amsat.org

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the last WORD

Excellent Course

I must bring to your attention the first rate Foundation Course hosted by the Dover Radio Club at Dover Grammar School for Boys. At very short notice the organisers were able to accommodate my son Peter, aged 12, on the course. Over two Saturdays David Harding, G0DQI, and Brian Joyner, G8ZYZ, both brimming with infectious enthusiasm, covered the Foundation material. There was plenty of time for the practical aspects of the course and revision of key areas. Even the Morse assessment was good fun and many candidates left with a desire to try their hand at learning Morse. All in all an excellent course.

This is the second time the Dover Radio Club has helped out prospective amateurs from the other side of our county. A few years ago the club was able to allow me a place on their RAE examination when places were few and far between. Well done Dover! Peter passed and now eagerly awaits his licence in the post! Listen out for M3PJS!

Steve Seabrook, M0ECS

Marconi "Not a Scientist"

In reply to John Allison, G0LYY ('The Last Word', September 2002), the reason we don't use the Marconi as an SI unit is because Mr Marconi was a businessman and radio pioneer, not a scientist or engineer! Appleton and Heaviside were associated with the layers of the ionosphere because of original work that they did at that time. Professor Appleton does, at least, have a laboratory named after him at Liverpool University.

Mike Knowler, B Eng, G3YIB

SSB Not Intelligible?

Today I realised why I have spent the last year on courses to master my second-hand computer. At my age 83/4 I have succeeded. Later I went on the air on 40m and put out several CQs. No response. All the QSOs were ongoing nets. I am an invalid, can't attend clubs because night driving is not for me; as I live in the sticks I do not meet other 'hams'. I have been licensed for over 50 years and up to the advent of SSB I enjoyed being on the air, the speech was intelligible and easy to tune in. Now with complicated expensive black boxes and SSB, clear speech is difficult to achieve without a lot of constant fiddling, and for some stations impossible. I am an OAP of some 20 years, so a top of the market transceiver is out. I would need a course to learn how to use it if I could afford it! To me SSB spoilt ham radio, one used to be able to recognise the voices of friends and acquaintances, not now.

W T Clegg, G3EFK

Use or Lose

Yes, what is it about the 2 metre band ('Use or Lose', *The Last Word*, October 2002)? The strange lack of activity, especially the FM bit - well, to be absolutely honest, the SSB / CW portion is quiet too most of the time. But that's another story. Mr Slater, G0PQB, rightly questions "the current lack of use of the FM part of the 2 metre band". His example of South Herts is far from being unusual in a dearth of FM signals! My neck of the woods concerning 2m FM activity is quiet too - very quiet. In fact, during my visits to the North of England (notwithstanding 2m repeaters, most of which could hardly be described as being busy), calling CQ on a simplex channel sometimes feels like one is calling CQ from the dark side of the Moon!

As G0PQB also points out, I can't see the point of "exclusive CTCSS-only repeaters" either. It smacks of unnecessary exclusion.

There again, it might be that most people prefer HF operation or whatever instead? Mind you, this won't solve the ongoing question on how to stop the apparent 'rot' on the FM portion of 2 metres, will it?

Ray J Howes, G4OWY

Farewell Raynet, Farewell RSGB?

I understand from reading *RadCom* over recent months that the RSGB is keen to get more people into the field of amateur radio. It is therefore hard to see the reason for dropping the name Raynet, which is known, and hopefully respected, to all the User Services and other organisations supported by Raynet. The RCVS, when not being confused with vets or ladies bearing cups of tea, will be assumed to be a bunch of people with CB radios or walkie-talkies. I see a lot of Raynet groups keeping the name Raynet and leaving the RSGB as I am sure the RSGB will not be helping to change all the stationery, banners etc with the name Raynet on them. Maybe this is what the RSGB really wants? With modern communications it can be argued that in the UK at least, Raynet is no longer necessary (at least in my area); changing the name to something with no relationship to amateur radio could be the death knell of Raynet, by whatever name.

These feelings are not purely mine, they are representative of our whole group.

Gordon Bubb, G7KNS, Joint Controller, West Kent Raynet

[*Peter Kirby, G0TWW, RSGB General Manager, replies: I think Mr Bubb has completely missed the point behind the Society's recent announcement of the appointment of Paul Gaskell, G4MWO, as the Radio Communications Voluntary Services National Co-ordinator. The RSGB has no intention whatsoever of dropping the term Raynet. Our aim is to get all the groups providing a service to the community, be it in an emergency or on some other occasion, the recognition they deserve. Raynet is part of the history of amateur radio and the name should continue to be used.*]

80m Noise

....The response [to letters published in 'The Last Word' July and September 2002 - *Ed*] was considerable and I received some 50 letters and e-mails. Most confirmed that the noise commenced just over a year ago. Some 42 amateurs reported noise on 80m, similar to that which I experience myself. Ten of those also reported hearing the noise switch off, indicating that it was man-made. Three reported noise which does not seem to be similar in character and four reported no excessive noise whatsoever. The noise was reported from the south coast of England to as far north as Inverness. There were two instances where stations only a few miles apart had opposing results. This might point to the proximity of power lines.

There is no doubt that there is a profusion of electronic smog these days from TVs, video recorders, satellite receivers, computers, security equipment and so forth, but it is unlikely that when several stations a great many miles apart are in QSO that such noise should cease simultaneously at all of them. Unfortunately these occasions are not precisely documented. Power line transmissions or perhaps broadband communications via telephone lines seem to be the most likely culprit. One thing is certain; someone knows exactly what is causing the problem and they are not letting on! We have a right to know.

May I express my thanks once again to all the amateurs who took the trouble to communicate with me over this problem.

Enver H Chaudri, G3DCS

Doing a Great Job

I just wanted to put fingers to keyboard, to thank Kath and Dave Wilson (M1CNY and G7OBW) for their hard work and dedication regarding the Morse Campaign last weekend at the Beacons in Frodsham. Not only the Morse, but also all the Foundation courses and Morse Assessments they have run, which both my wife and I were students on. Their hard work to put these events on for all the students has been fantastic. My wife and I cannot thank them enough for their dedication to promoting amateur radio. I feel sure we are not alone in passing on these thanks: if all the people that Kath and Dave have assisted into amateur radio cheered together, it would be very loud!

Les Chesters, MW1BLC / MW3BLC / MW0? and Lin Chesters, MW3LIN

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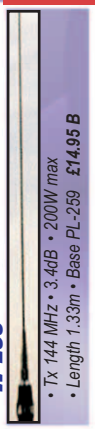

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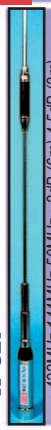

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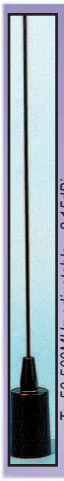

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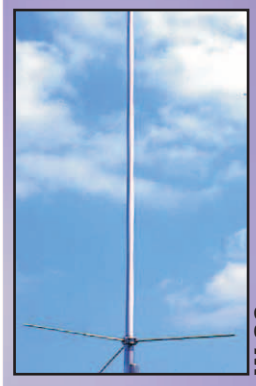

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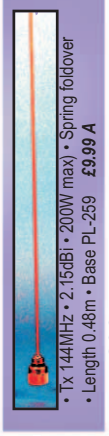
• 2/70MHz • 3/6 dB • 150W • 1/2, 2x5/8
• 1.15m • 0.885kg **£39.95 C**

W-50
• 2/70MHz • 4.5/7.2dB • 200W • 3x1/4, 3x5/8
• 1.8m • 1.2kg **£49.95 C**

W-300
• 2/70MHz • 6.5/9dB • 200W • 2x5/8, 5x5/8
• 3.1m • 1.46kg **£64.95 C**

W-2000
• 6/2/70MHz • 2.15/6.2/8.4dB • 150 (50W 6m)W
• 1/2, 2x5/8, 4x5/8 • 2.5m • 1.2kg **£69.95 C**



W-2LE 2
• Tx 144MHz • 2.15dBi • 200W max) • Spring foldover
• Length 0.48m • Base PL-259 **£9.99 A**

W-7900
• Tx 144 & 430MHz • 5 & 7.6dB • 150W max
• Spring foldover • Length 1.58m • Base PL-259 **£32.95 B**

WSM-138
• Adjustable 138 - 470MHz • Gain - unity • 50W max
• Micro magnetic 29mm base • Element max length 0.55m
• 2.75m mini coax with BNC **£19.95 B**

C-408

BACK IN STOCK
HORA C-408
UHF TRANSCEIVER
(SHIRT POCKET SIZE)

SPECIAL OFFER ONLY £59

AR-147

ADI AR147
50W FM MOBILE

SPECIAL OFFER £139
SAVE £60

HP-200

WATSON NEW WATSON HP-200 COMMS, PADDED PHONES

£22.95
SUPERB AUDIO CLARITY & COMFORT

TRAVELER

HEIL

HEIL TRAVELER SINGLE HEADPHONE & BOOM MIC. FOR IC-706/FT-817/8-PIN ICOM (STATE WHICH WHEN ORDERING)

NEW

£89.95 LIGHT/WELL MADE/CLARITY

MFJ-461 MORSE CODE READER

JUST PLACE NEAR YOUR RECEIVER AND INSTANTLY DECODE CW - NO CONNECTION REQUIRED

The MFJ-461 is a stand-alone pocket sized Morse code reader. Similar in size to the MFJ Morse tutors, all you do is hold it close to your receiver and it instantly displays CW on the 32 character high contrast LCD. It has automatic speed tracking, a serial port - if you wish to connect to a computer to display the text on a bigger screen. It can also be connected to your receivers audio if required. Truly pocket sized at 57 x 82.5 x 25.5mm and 156g.

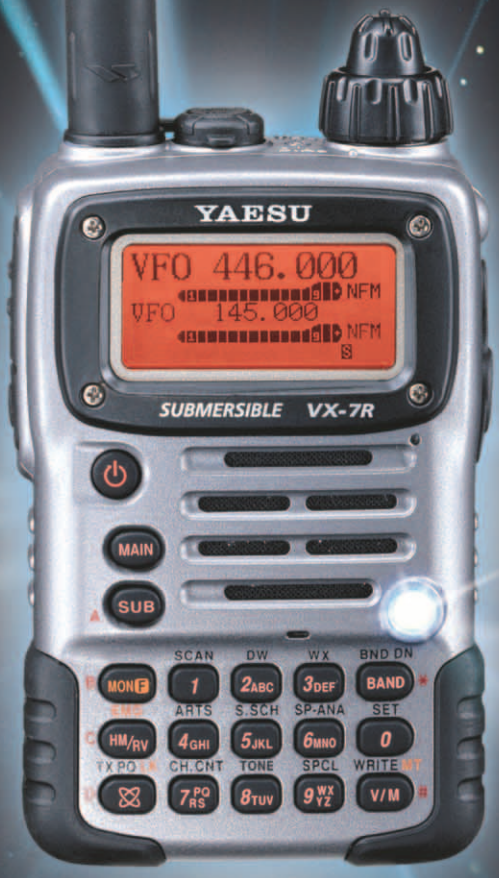
£84.95 B

MFJ BEST SELLERS

50/144/430MHz 5W FM Transceiver

VX-7R

ULTRA-RUGGED, SUBMERSIBLE TRI-BAND MAGNESIUM HANDIE



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