www.rsgb.org

RadCom

£3.95 Vol 78 No 12 ♦ December 2002 The Radio Society of Great Britain Members' Magazine

Merry Christmas

from all at the RSGB

WATERS & STANTON

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HORA 70cms Handy

£59.95

C-408

CTCSS
Repeat Shift
Memories

Snap up this bargain handheld at an amazing price. Fits in shirt pocket yet is fully specified for UK ham radio use. 230mW output is ideal for repeaters and rallies. Requires 2 x AA cells.

ALL OUR PRODUCTS NORMALLY IN STOCK AT OUR BRANCHES AT THESE PRICES

PRICE MATCH

FT-1000MP MKV FIELD £2199

NEW

YAESU

YAESU FT-897

NEW

£1199

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

Available November

Order Now for Early Delivery

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.

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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-746 Only two remaining of this popular rig ~~£1495~~		£999 C
IC-756-PRO II	160m - 6m 100W 12V	£2495.95 C

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

IC-7400	160m - 2m 100W 12V	£1449.95 C
IC-706 IIG DSP	160m - 70cm Tcvr with DSP 12V	£849.95 C
IC-718	160m - 10m 100W 12V	£649.95 C
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

Yaesu HF Transceivers etc.

FT-1000mkV	160m - 10m 200W 230V	£2799.95 C
VL-1000	Quadra HF - 6m 1kW linear	£3799.00 D
FTV-1000	6m transvertor 200W Special	£499.95 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	£1199.95 C
FT-817	160m - 70cm 5W Batt.	£595.95 B
FT-840	160m - 10m 100W 12V	£499.95 B

Kenwood HF Transceivers etc.

TS-870S	160m - 10m DSP 100W 12V	£1399.00 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	£629.00 C
TS-2000	160m - 70cm <100W	£1695.00 C
TS-2000X	150m - 23cm <100W	£1999.00 C
TSB-2000	Computer controlled	£1449.00 C
RC-2000	Remote head for TS-2000	£199.95 B
ARCP-2000	TS-2000 software	£44.95 B

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FOR THE BEST ADVICE

FT-817

All bands & All modes gives you a totally portable HF DX or VHF/UHF station. *Ours includes* battery and charger. **£595.95**

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

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

£79.95

One Big Punch
Speech processor.
Dealer fit

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

£259.95

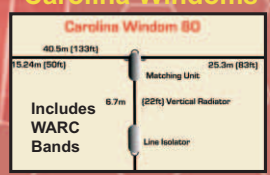
Triple Mag Mounts *Upgraded*

£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

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WON'T BE UNDERSOLD DISCOUNT CUSTOMER SERVICE THE ONLY THING WE

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 plus 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 £1249 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 Band Mobile!

VX-110 £99 B

Combining the ruggedness of the VX-150 with the simplicity of 8-Key operation, the VX-110 is a fully featured 2m handheld ideal for the most demanding of applications. It has a die-cast csae, large speaker and illuminated keypad

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 DC DISTRIBUTION £109 B

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

NEW	4005	£49	5-WAY
	4008	£89	8-WAY
	4012	£109	12-WAY

LINEAR AMPLIFIERS UK

NEW CHALLENGER III

CHALLENGER III	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 £299 B

ICOM

NEW ICOM IC-E90 HANDHELD + SCANNER

IN STOCK NOW

YAESU VX-7R

NEW

SUBMERSIBLE 3-BAND HANDIE

6m - 2m - 70cm

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

~~£359~~ rrp

£329.00 B

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	9.1dB	£129.95 C
ZX10-3DX	3	10.3dB	£159.95 C
ZX12-2	2	6.3sB	£109.95 C
ZX12-3	3	9.1dB	£129.95 C
ZX12-4	4	11.4dB	£169.95 C
ZX15-2	2	6.3dB	£119.95 C
ZX15-3	3	9.1dB	£159.95 C
ZX15-4	4	11.4dB	£199.95 C
ZX17-2	2	6.3dB	£129.95 C
ZX17-3	3	9.1dB	£169.95 C
ZX17-4	4	11.4dB	£199.95 C
ZX20-2	2	6.3dB	£149.95 C
ZX20-3	3	9.1dB	£209.95 C
ZX20-4	4	11.4dB	£269.95 C
ZX20-5	5	12.1dB	£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

Get in Front with HUSTLER

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

5BTV

£209.95
Carr. £9.00

HUSTLER®

BASE STATION ANTENNAS

Spec	4-BTV	5-BTV	NEW 6-BTV
Bands	4	5	6
Coverage	40m-10m	80m-10m	80m-10m
Bandwidth 10-40m	Full	Full	Full
Bandwidth 80m	N/A	100kHz	100kHz
Resonance	1.5:1	1.5:1	1.5:1
Power	1kW CW	1kW CW	1kW CW
Traps	1" forms	1" forms	1"forms
Tubing	1.25"	1.25"	1.25"
Bracket size	1.75"	1.75"	1.75"
Height	21ft 5" (8.52m)	25ft 1" (7.84m)	24ft (7.3m)
Weight	8.8kg	7.7kg	7.5kg
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 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 Auto ATU £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 2-way Coax Switch £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 Remote Balun £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

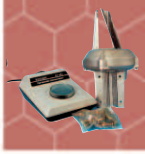
WEP-300B EARPIECES £2.95 A

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 POWER METERS

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

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

RIGblaster

A marriage of radio and computer

OVER 10,000 ON THE AIR

PSK31, MFSK, MT63, SSTV, RTTY,AMTOR, CW, PACKET-APRS,HELLSCHREIBER, REMOTE BASE, METEOR SCATTER, CLUB QST'S, REPEATER CONTROLLER, VOICE KEYER.

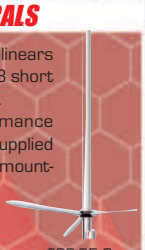
TRY THAT WITH A TNC!

All programmes and every lead included. Just change jumper lead to suit rigs mic socket pin-out

RIGblaster Plus	Auto mic switch 8-pin round (software and cables) £139.95 B
RIGblaster M8	Auto mic switch 8-pin round (software and cables) £109.95 B
RIGblaster M4	Auto mic switch 4-pin round (software and cables) £109.95 B
RIGblaster RJ	Auto mic switch RJ45 £109.95 B
RIGblaster nomic 8p	8-pin mic (software & cables) £62.95 B
RIGblaster nomic 4p	4-pin mic (software & cables) £62.95 B
RIGblaster nomic RJ	RJ45 mic (software & cables) £62.95 B

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

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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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BOARD HIGHLIGHTS SEPTEMBER 2002

AT ITS MEETING in September the Board covered a number of important topics.

Financial Review

The final result for the last financial year, after non-recurring items and interest income, was a surplus of £8414 compared with a surplus of £2901 in the prior year. These accounts were published in the November *RadCom*.

The accounts for the current year are showing that, as expected, advertising income is likely to be lower this year. The Board approved expenditure on maintenance of Lambda House.

Membership

The Board reviewed the longer term implications of the demographic changes affecting the membership. It was agreed that more work on forecasting membership shifts was needed and should be included in the 10-year Business Plan that the Management Committee is to start work on shortly.

Intermediate Licence

It was reported that the syllabus was virtually complete and that a start was to be made on the pilot course content in October. It was also reported that the terminology used in the syllabus and course would as far as is possible be made consistent with the terminology and examples used in education. The Board stressed the need to keep to the timetable for implementation next year.

IARU Conference

It was reported that the papers submitted to the conference had been circulated to the relevant committees for comment.

Regional Matters

The Regional meeting which had taken place in Belfast raised a number of issues concerned with the interaction between HQ and regional events. In general there was a need to continue to cover as many events as possible but that from time to time the presence of HQ staff and other RSGB officers would be helpful.

It had been suggested that a 'Special Event' be arranged for M3s to celebrate the first year of the Foundation Licence. The Board thought this to be an excellent idea. It was suggested that this be discussed with the Contest Committees.

The Board expressed concerns regarding the inactivity of the Regional Team in South Wales.

Satellite Access

Board members had received a paper from AMSAT-UK who requested that Foundation and Intermediate licence holders be given some privileges in satellite operation. This is currently not available under the terms of their licence.

Several options were evaluated, from the perspective of encouraging amateurs to upgrade their licence grade, the need to preserve a range of privileges, the importance of space as a recruiting feature, the need to encourage AMSAT to mentor new licensees in satellite operation, etc.

The following policy was agreed:

- ***Foundation Licence.*** Foundation Licence holders should be encouraged to operate satellites under supervision and that AMSAT-UK should be asked to support this actively.
- ***Intermediate Licence.*** Full access to satellite operation at power levels within the terms of the Intermediate Licence. Satellite aspects should be included in the new syllabus.

This approach was unanimously agreed by the Board. It should be emphasised that this is now RSGB policy and will be communicated to AMSAT-UK and the Radiocommunications Agency.

Education

A proposal was presented which outlined a five-year strategy to achieve the aim of the Society becoming more active in the educational uses of amateur radio.

It was agreed that we should try to increase our input and credibility within the education arena but to do so over a period of time since it would be necessary to put into place the structure required to achieve this goal. A number of short-term projects would be feasible provided that these were done within such a framework. The current Foundation and Intermediate initiatives are part of this, but the practical results being achieved needed to be presented to the education community, including government departments.

Mobile Operation

Current consultation underway regarding mobile telephone operation in motor vehicles is being monitored. Early indicators are that no concessions will be given if the legislation is adopted.

M3 'QSO PARTY'

IN ORDER TO celebrate the first year of the Foundation Licence it is proposed to hold a 'QSO party' to which all M3s and their friends are invited. The event will take place on 1 January 2003 on 40 metres at 1000 and 1500UTC. The frequency is 7070kHz, plus or minus QRM.

AROS TALK

THE RSGB Amateur Radio Observation Service Coordinator, Barry Scarisbrick, G4ACK, will be giving a presentation on the work of AROS at the **Telford and District Amateur Radio Society** on **11 December**. For further details contact Mike, G3JKX, on 01952 299677.

AGM OPEN EARLIER

THE RSGB Annual General Meeting takes place at **12 noon** on **Saturday 7 December** at the **Taliesin Arts Centre** at the **University of Wales, Swansea**. Please note that doors will open at **11.00am**, and not 11.30am as shown in the November *RadCom*.

CONTEST SITES & OPS WANTED

THE SOCIETY has received permission from the RA to operate the Headquarters station GB5HQ from multiple locations within the UK in the IARU Radiosport Contest on 12 and 13 July 2003. The RSGB will join DARC, ARRL and many other national societies in having a simultaneous presence in the contest on multiple bands and modes.

A number of locations has already been chosen to host GB5HQ but if you are an experienced contester and feel you may be able to contribute to the project as an operator or station host please contact the project coordinator Dave Lawley, G4BUO, by e-mail: g4buo@compuserve.com

QSL BUREAU NEWS

MIKE CLARK, MM3OFO / GM6OFO, the RSGB QSL bureau sub-manager for the M1BAA to BZZ series of callsigns, has changed his address. His new address is 9 Burghmuir Road, Perth PH1 1LS. Mike can be contacted by e-mail at: mike.gm6ofo@talk21.com or by phone, tel: 01738 635723.

John Densem, G4KJV, has relinquished the position of QSL sub-manager for the G4ZAA-ZZZ series of callsigns. The new sub-manager is Steve Fletcher, G4GXL, 43 Philip Rudd Court, Pott Row, King's Lynn, Norfolk PE32 1WA.

David Whitelock-Wainwright, M0CHR, has retired as QSL sub-manager for the M0DAA - M0ZZZ series. The new sub-manager is Simon Harris, G0SJH, 19 Mundays Boro, Puttenham, near Guildford, Surrey GU3 1AZ.

REGIONAL MANAGER NEWS

THE RSGB Regional Manager (RRM) for Region 2 (Scotland East and the Highlands), Billy Jenkins, MM0WKJ, has resigned with effect from 1 November 2002 due to pressure of other work. There is therefore a vacancy as RRM for Region 2.

Alan Ross, G1SQB, the RRM for Region 9 (London and the Thames Valley) has had to step down from his position due to ill health. Roger Piper, G3MEH (tel: 01442 826651), has agreed to become 'acting' RRM9 until 31 December and to be co-opted to the post from 1 January 2003.

GB4FUN HELPS SCOUTS WITH FOUNDATION LICENCE

AT LEAST nine Scouts and cadets achieved success with their Foundation course when GB4FUN came to Norfolk for two weeks in October. The visit coincided with the Jamboree on the Air (JOTA) weekend, when GB4FUN was at the 1st Dickleburgh Scouts. Having the vehicle provided a focal point for on-air activity, inspiring those taking the course on the weekend or following week with extra enthusiasm to be on air with their own callsigns. Special thanks are due to Mark Tuttle, G0TMT, whose knowledge and dedication secured a 90% pass rate for the course and to David Palmer, G7URP, for bringing GB4FUN to Norfolk and delivering a positive contribution to the future of amateur radio.

● DO YOU HAVE a commercial background or run your own business? If so, would you be interested in helping the Society in the management of a number of interesting commercial projects over the next three years? Interested? For further information please e-mail General Manager Peter Kirby at: gm.dept@rsgb.org.uk

VHF AWARD NEWS

WHAT A STRANGE MONTH for awards! Just two claimants, both overseas members, but together they claimed more individual awards than in each of the previous three months!

Costas Krallis, SV1XV, upgrades his 50MHz 'Squares' award to 100 squares and 'Countries (2-way)' to 30.

But by far and away the largest claim for many months came from Dave Robinson, WW2R (also G4FRE), who claimed a number of 'Squares' upgrades at 50MHz and also at 1.3, 2.3, 3.4 and 10GHz. Dave also gained 'Basic' and 'Intermediate' distance certificates at 10GHz, using an IC-402 driving a home-brew transverter which for his portable operation as WW2R/5 fed a Hughes 1177X TWT amplifier developing 18W. A 2ft dish was used as the antenna.

However, the best was yet to come as Dave also claimed a certificate and a fistful of stickers at 24GHz setting a new world record in the process. This achievement was well documented in the 'Microwave' column in November *RadCom* (p108).

Congratulations to both 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 October

50MHz: 50 Squares: WW2R, SV1XV. 75S: WW2R. 100S: WW2R/ 30 Countries (2-way): SV1XV.

Microwave Squares:

1.3GHz. 5 Squares: WW2R. 10S: WW2R. 15S: WW2R.

2.3GHz: 5 Squares: WW2R. 3.4GHz: 5 Squares: WW2R. 10GHz: 5 Squares: WW2R.

Microwave Distance: 10GHz Basic: WW2R. WW2R/5. 10GHz Intermediate: WW2R/5 24GHz 100-500km increments: WW2R/5.

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Offering all bands 1.8 to 23cms (23 cms optional) Built in DX cluster monitor and auto QSY plus dual speed packet modem make this radio stand out. Excellent Kenwood build quality and reliability - a radio that is going to be around for a long time. (Requires 25 amp 13.8 volt PSU)

Kenwood TS B2000 **£1599.00**

All radios on this page are available on our

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Kenwood TS-570DGE £849.00

With the introduction of the new "M3" callsigns, (and no - it has nothing to do with BMW) the sales of this excellent Kenwood Transceiver have never been better. An easy to use DSP HF rig with a big clear display and excellent ergonomics, it is little wonder that the TS-570 sells in such huge numbers. Only £849.00

Kenwood TS-50S £629.00

The original HF mobile radio 100 Watts Top band to 10m all mode a bargain at only £629.00

Kenwood TS-870S £1399.00

The original DSP HF Radio with built in ATU (Requires 25 amp 13.8 volt PSU)

Kenwood TH-D7E Mk2

Dual Band Hand Held with built in TNC (Ideal for APRS and DX Cluster monitoring)

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Kenwood TH-F7E

The Scanner that transmits . With a full blown all mode scanner plus 6 Watts 2m & 70 cms this handy is a real winner. £259.95

£259.95

Kenwood TM-D700E MkII £449.00

The only Dual Band mobile with a built in TNC (Ideal for APRS and DX Cluster monitoring) Remote head is standard on this model.

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Wishing all members of the RSGB a very peaceful and happy Christmas.

Radio Communication

Editor
Steve Telenius-Lowe, G4JVG

Technical Editor
George Brown, M5ACN

Technical Illustrator
Cover Design
Bob Ryan, 2E1EKS

Advertising Design
Annie McVicar

Secretarial
Lynn Wortley

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

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

Tel: 0870 904 7373

Fax: 0870 904 7374

E-mail: radcom@rsgb.org.uk

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

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

Tel: 0870 904 7377
(advertising ONLY)

Fax: 0870 904 7378
(advertising ONLY)

E-mail: adsales@rsgb.org.uk

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December 2002

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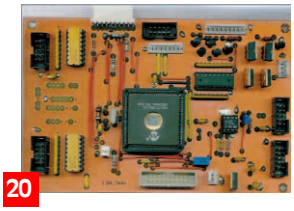
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Down To Earth - Amateur Radio From The Ground Up

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Professionals Learn from Amateurs

A PAPER ENTITLED 'Amateur Use of Novel Signalling Methods at LF' by *RadCom* 'Data' columnist Andy Talbot, G4JNT, was presented at the recent IEE conference on 'Getting the Most Out of the Radio Spectrum'. The terms of the copyright allow Andy's paper to be reprinted freely, including posting on websites, providing reference is made to the paper having been included in the IEE conference. If you want a copy of the 220K file, please e-mail Andy at: ACTALBOT@mail.dstl.gov.uk

● THE INTERNATIONAL Marconi Day website has moved to http://www.gb4imd.co.uk The new webmaster is Geoff, M0GRC (webmaster@gb4imd.co.uk).

● GB2EVR IS THE callsign of the new permanent special event station of the Eden Valley Railway, located at Warcop railway station, six miles east of Appleby-in-Westmorland, Cumbria.

Foundation Courses

MOST FOUNDATION Licence courses are run by local radio clubs, but Adrian Dening, G4JBH, is organising a *residential* course for the Foundation Licence at Kilve Court Education Centre in Somerset. The dates are **Friday 31 January to Sunday 2 February 2003**. Kilve Court is a Georgian house with modern facilities situated in 25 acres of wooded grounds, near the Somerset coast and managed by Somerset County Council Education Department. Course fees of £111 per adult (£99 for under 18s) *include full-board accommodation*. Adrian is running the course as a volunteer and is not receiving any payment for the work. For further information, contact Adrian Dening G4JBH, tel: 01288 331113 (evenings) or e-mail: g4jbh@compuserve.com

● A FOUNDATION Course will take place at Wigtownshire Amateur Radio Club, Aird Building, Stranraer Academy, Cairnport Road in **Stranraer** over the weekend of **18 / 19 January**. Anyone wishing to participate should contact Ian Macdonald, MM5WIG, e-mail: weebooks@global.net.co.uk

30,000 Scouts to Get a Taste of Amateur Radio

E20AJ IS THE callsign of the amateur radio station at the 20th World Scout Jamboree in Thailand between 28 December and 8 January. 15-year old Royce Hunt, M3RMH, of the 47th Doncaster (Edenthorpe) Scouts, will be one of approximately 3000 Scouts from the UK who are jetting off to this, the largest gathering of Scouts in the world. They will join another 27,000 Scouts at the event, where a full radio Scouting programme is available.

E20AJ will be able to operate on HF, VHF, SSTV, APRS and packet 24 hours a day and will be able to provide emergency communications from the site if necessary. There will also be an SWL station, DF contests and plenty of electronic activities. The station will give many Scouts their first taste of amateur radio and it is hoped that many will go on to take out their own licences.

Thanks to Royce, M3RMH, for these details and we wish him a safe and very enjoyable trip.

The E20AJ antennas at the site in Thailand.

UK Radio Amateur Murdered in the Gambia

RON FORD, G3NKO, has been murdered while visiting the Gambia. Ron, from Waterlooville in Hampshire, had built his own holiday accommodation in the Gambia, from where he operated as C56RF. His body was found at the end of October and has been brought home for burial. The funeral took place on 11 November in Cowplain, Hampshire. It is thought that Ron was the victim of a robbery. The circumstances of the murder are being investigated by officers from the Metropolitan Police.

Ron, G3NKO / C56RF, operating as DA1FR in 1982.

Ron was an active member of the Royal Signals Amateur Radio Society, and was a regular check-in on the RSARS international net on 20-metres SSB from the Gambia. He had also held a number of other DX calls, including MP4BFH (Bahrain), MP4TBV (Trucial States), VS2FN (Malaya) and VS9AFR (Aden).

Cheque This Out!

THE COCKENZIE and Port Seton Amateur Radio Club, based in Prestonpans, East Lothian, has once again shown how a small amateur radio club can help others along the way. Members of the club recently handed over a cheque for £1351.07 to their adopted charity, the British Heart Foundation. This sum was raised through junk sales and other fund-raising efforts during the course of the year and brings to a total of £8271.17 the amount raised for the British Heart Foundation since the group was founded in 1994.

Standing: Ron Brown, GM4IKU; Peter Easton, GM1RCP; Brian Pickup, M0RNR; Tom Hood, GM4LRU; Bill Gordon, MM0BXK. Seated: Heather Gregory, East of Scotland Representative British Heart Foundation; Bob Glasgow, GM4UYZ.

Harriet Evans, M3HJE, working a W6 and VE7 pile-up on 15m SSB. Harriet, who is the daughter of well-known DXer Keith, G3VKW, took the Foundation course at the Crawley ARC and received her licence at the age of 9 years, 1 month and 2 days!

THE GENERAL MANAGER OF THE RSGB, THE EDITOR OF *RADCOM* AND ALL HQ STAFF WISH ALL MEMBERS OF THE SOCIETY A VERY MERRY CHRISTMAS!

PicATUne Website

PAUL BERKELEY, M0CJX, a keen builder of the *RadCom* PicATUne project, has started a website with a lot of information about PicATUne. The URL is: www.picatune.co.uk

● THERE IS NOW a website which lists amateur radio equipment that has been reported as stolen to the police. Go to www.hamradiosales.co.uk for further details.

● STEPHEN 'Steve' Richardson, G4JCC, of Hayling Island wishes to point out that he is *not* the Steven Richardson fined for having illegal radio equipment available for use (*RadCom* November 2002 p10).

Sirloin of Beef

LOOK FOR members of the Central Lancs Amateur Radio Club (CLARC) operating **GB2SOB** between **13 and 15 December**. Activity will be from Hoghton Tower near Preston, ancestral home of the de Hoghton family since 1565. It was here where, 385 years ago, King James I of England (King James VI of Scotland) was so delighted with the meal served to him that he knighted the beef 'Sir Loin'. GB2SOB was first activated from 27 to 29 September; the operation was so successful that members of CLARC were asked to repeat the activity in December.

President of CLARC Peter Sinclair, G3UCA, and Baronet Sir Bernard de Hoghton at Hoghton Tower.

What a Success! 5000 New M3 Licences in Just 10 Months

11-Year Old Andrew is 5000th Foundation Licensee

A CHELMSFORD Scout, Andrew Finch, M3FMA, aged 11, became the 5000th M3 licensee in October. Even though Andrew is dyslexic, he passed the Foundation exam at his first attempt, having taking only a weekend training course with his local Scout group. To mark the 5000-licence milestone, Andrew was invited to the Radiocommunications Agency's monitoring station in Baldock, Hertfordshire, on 22 October to receive a special award from the RA and prizes from Yaesu (UK) and the RSGB.

Launched in January this year, the Foundation Licence is being seen as a tremendous success, with an almost 10% increase in UK amateur licence numbers being achieved in just 10 months. Alan Betts, G0HIQ, of the RA's Amateur Radio section, commented, "The radio amateur community was around 50,000 strong before the new licence was introduced, and so this level of interest is very welcome". He added "The Foundation Licence has proved very popular with young people and amateur radio is very much an up-and-coming hobby for them".

A Day to Remember!

ANDREW HAD TOLD his parents he would have to start saving his pocket money to buy a radio, but he is now the proud owner of a Yaesu FT-817 transceiver donated by Yaesu (UK). The radio was presented to Andrew by Paul Bigwood, G3WYW, of Yaesu (UK). He was also given membership of the RSGB by President Bob Whelan, G3PJT, who also presented Andrew with a host of radio amateur goodies and books.

After the presentation ceremonies, Andrew was given a guided tour of the RA monitoring station at Baldock and then whisked off to local radio stations Heartbeat FM and Dream FM for interviews.

Natty headgear! Alan Betts, G0HIQ (RA); RSGB President Bob Whelan, G3PJT; Scout leaders Christopher Chapman, Nigel Hull and Martyn Medcalf, and Yaesu (UK)'s Paul Bigwood, G3WYW, with Andrew.

Andrew Finch, M3FMA, (seen here with his parents) proudly shows his new Yaesu FT-817.

5MHz NoV Moratorium

THE RA SAYS that applications for 5MHz band experimental Notices of Variation (NoVs) have far exceeded their expectations. The RA now considers that the risk of congestion on the five spot frequencies allocated may be detrimental to the overall success of the experiment. Accordingly, the RA decided not to issue any further NoVs for applications received after 31 October. The position will be kept under review and occupancy monitoring of the frequencies will be carried out. It is hoped that - following this exercise - more NoVs could be issued, or a numerical limit to the number of NoVs can be set, based on usage and congestion.

● THERE IS A NEW user group for owners of the Icom IC-E90 handheld: http://groups.yahoo.com/group/Icom-IC-T90

Join the DRM Software Radio Project

'DIGITAL RADIO Mondiale' (DRM), is a project aimed at revitalising the LF, MF and HF AM radio broadcast bands, by using digital signals to provide near-FM quality. Radio amateurs and serious broadcast-band listeners have been invited to become part of the 'DRM Software Radio Project' and access the first DRM programmes when test transmissions begin in December. James Briggs, the DRM Projects Co-ordinator with Merlin Communications in Rampisham, Dorset, says that the project relies on adding an extra down-converter board to existing receivers and then using software to decode the signal via a PC soundcard. There is some more information on the website at www.DRMrx.org

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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.

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- 100W output on HF & 6mtrs
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- SSB, CW, AM, FM and digital modes
- 100 memories
- Detachable faceplate and remote mounting kit available
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~~£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
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- 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

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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
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- 100 memory channels (+ CALL Channels)
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- Channel indication mode
- CTCSS encoder fitted

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DJ-X3

Ultra modern scanning receiver

- 100kHz - 1300MHz
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- Steps: 5/6.5/8.33/10/12.5/ 15/20/25/ 30/50/100kHz
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- Weight: 14.5g (without batteries)
- 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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- 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
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- 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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radios for 2002

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- CTCSS + DCS enc/dec fitted
- 40 memory channels + 1 call channel
- Alphanumeric display
- DCS, Tone burst and DTMF
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  Emits a tone when disconnected from power
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- 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!

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DJ-596 NEW Dual Bander

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A nickel metal-hydride (NiMH) battery is supplied as standard, for added power and convenience.
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- Alphanumeric channel labels
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- Large backlit display and keypad
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- DTMF tones and autodial memories
- Tone bursts
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- 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

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DJ-G5EY Feature Packed Dual Bander

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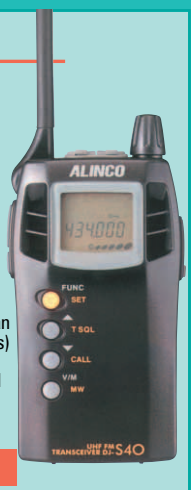

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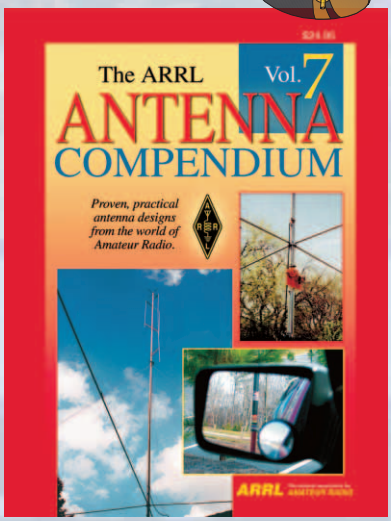

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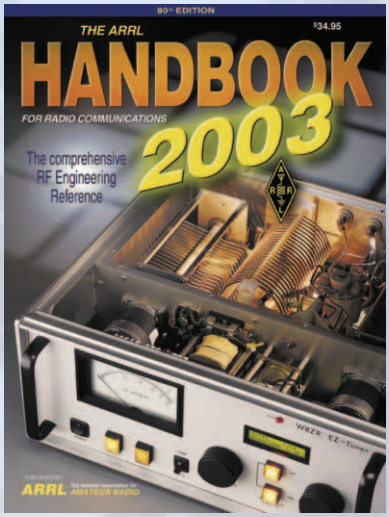

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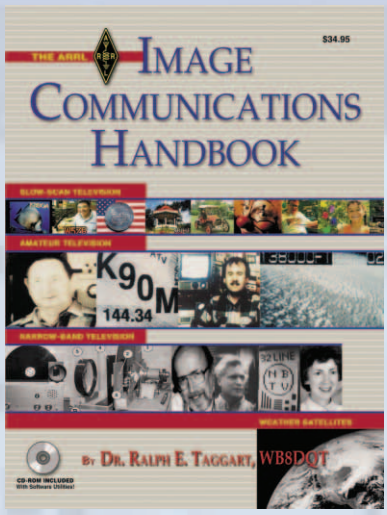

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Count on us!

The RSGB International HF and IOTA

John Gould, G3WKL*, Chairman, HF Convention Organising Committee, describes what you missed if you weren't at this year's event

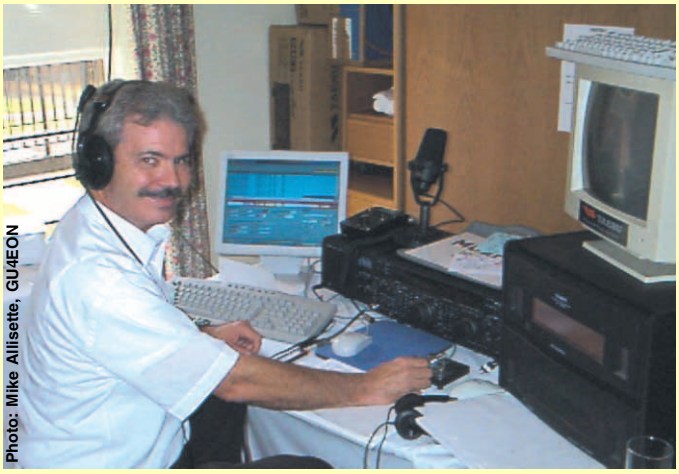


Photo: Mike Allisette, GU4EON

If anyone knows to operate it, he should! Chip Margelli, K7JA, of Yaesu (USA) operating the Yaesu equipment on the HF state-of-the-art demonstration station, MB2HFC.

BOB WHELAN, G3PJT, our President, summed up the weekend thus: "This event is surely the flagship RSGB meeting for HF radio amateurs. The diversity of presentations, from DXpeditions to leading-edge science at LF, just illustrated how diverse and exciting amateur radio is. The social side was excellent too; several people told me that this was *the* event of the year for them."

Many of us came away from the weekend stunned. It was almost like being jet lagged with stimulation for the hobby brought on by two days of presentations, demonstration stations and a truly international gathering of amateur radio enthusiasts. We had one of our largest attendances, with just under 350 people from 20 DXCC entities and eight ITU zones. Thus, plenty of experience to enthuse those who have only just started to those who were enjoying the hobby over 70 years ago, as one of our presenters reminded us!

We have once again to thank our major sponsors, Yaesu and Martin Lynch & Sons, for making the event more affordable. Thanks too to Yaesu for stimulating the raffle with the FT-100D 'star prize' that was won by Kath Wilson, M3CNY. The raffle raised over £1300, close to our record, and all of which will be used to support HF DXpeditions. One nice anecdote is that GM3JOB's XYL won a new Heil Pro-Set Plus headset (jointly donated by Bob Heil and Waters & Stanton). She told me afterwards that she had stopped Rodger buying a pair earlier - just in case he won them in the raffle! We also need to thank Kenwood(UK), EI5DI (SuperDuper), DK9KG (Turbolog), DJ9ZB, G3PMR (Shacklog), G0WMW, W3UR (Daily/Weekly DX), qrz.com, and the RSGB and IOTA for donating prizes that completed what was a splendid range of prizes! Thanks too to members of the Burnham Beeches ARC who provided welcome and very friendly assistance to the organisers and visitors.

So what next? Well, you will just have to wait and see! Nice to

Robert Morgan, M0TTT, at just 16 was possibly the youngest amateur at the Convention. He has not wasted his short time on the air, being successful in a number of contests and having recently returned from a major DXpedition to the Maldives, 8Q7ZZ (see *RadCom* November 2002). He was presented with the G5RP Shield, which is awarded for making the greatest progress in the DX field during the last year.

* *Pathways, 116 Wolverton Road, Newport Pagnell, Bucks MK16 8JG; e-mail: HFC2002.Chairman@rsgb.org.uk*

Photo: John Butcher, G3LAS

A close inspection of the equipment on the Martin Lynch stand.

Skål! At the DX Dinner, left to right: Victor Brand, G3JNB; Åke Hedberg, SM5API; Barry Phillimore, G4VXT; and Fred Handscombe, G4BWP.

Sylvia Manco, 2E1CYL, of RSGB HQ staff, sells another copy of *HF Antennas for All Locations.*

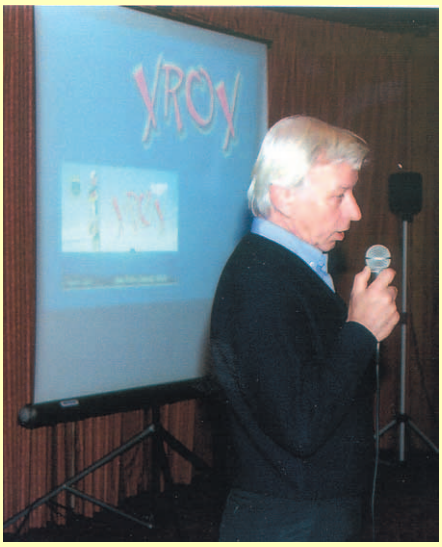
Convention - 11 - 13 October 2002

Chris Gladman, M0AWN, of ML&S, and Ailsa Turbett of Yaesu (UK) with the latest HF offering from Yaesu - the FT-897, which is 'coming soon'.

Photo: Mike Dennison, G3XDV

Presentation of the RSGB LF Experimenters' Award, the Nevada Cup, to Jim Moritz, M0BMU, for his experimental work on LF. He was presented with the trophy immediately after his lecture on the use of specialist data modes for LF.

have a success, albeit with a few 'teething troubles' with a new venue, but it just makes us want to react to all the feedback and make the event even better next year!



World-famous DXer / DXpeditioner Franz Langner, DJ9ZB, made a presentation on one of this year's top DXpeditions - XR0X, San Felix Island, Chile.

ONE-LINERS

HERE ARE SOME random comments heard at this year's Convention:

"There was a good 'buzz' about the place…", G3BJ. "G3UEG demonstrating his remotely-controlled station in Essex by working MB2HFC located 10 feet above his head", G3LAS. "Very well accepted MB2HFC (M copy) [2300km on 136kHz - Ed]", RU6LA. "…JI3DST welded to the MB2HFC microphone…", G3LAS. "G3RFX and G3PJT outside during the fire alarm, clutching their dearest possessions - a glass of red wine each", G3LAS. "Great to see all the old faces - but seemed to me a lot of folks I hadn't seen at the convention before", G3SVL. "We all enjoyed the convention and will no doubt appear under our own steam at some future 'do'", G3OGQ, G8KBB andG3SDI. "A great event which I thoroughly enjoyed... amazing it's taken nearly 30 years on the air for me to finally get seriously interested in HF", G4FKA. ♦

RSGB HF Committee Chairman, Colin Thomas, G3PSM, presents the ROTAB Trophy - for outstanding and consistent DX work - to Rob Ferguson, GM3YTS,

The HF Convention is the venue where the RSGB HF Contest trophies are awarded. Here Steve Jones, GW0GEI, receives the David King G3PFS Trophy for being the leading UK station in the 12-hour section of last year's RSGB IOTA contest.

Photo: John Butcher, G3LAS

Caught on film! Roger Balister, G3KMA, RSGB IOTA Manager, was presented with a kiss - as well as a Russian IOTA soccer uniform - from Tanya, wife of Yuri Sushkin, UA9OPA / N7UJN. The Russian Robinson Club organises a highly-competitive soccer match between 'IOTA' and 'DXCC' teams at Russian IOTA conventions.

Wayne Mills, N7NG, the ARRL Membership Services Department Manager, spoke on the 'Logbook of the World' programme. Wayne later reported that a total of 62 ARRL DXCC award applications were processed at the Convention.

Paul Bigwood, G3WYW, of Yaesu (UK) presents the raffle 'star prize' to a clearly delighted - and amazed! - Kath Wilson, M3CNY.

PIC-A-STAR:

a Software Transmitter And Receiver

*Part five of the continuing series by Peter Rhodes, BSc, G3XJP **

THIS MONTH covers the DSP board circuit diagram. The board is based on (and is not incompatible with) the Analog Devices 2181 EZLITE board. That is, aspects of that board which are not used either by STAR or by W7PUA's DSP-10 have been omitted; the physical construction is completely different, and a current production and superior CODEC chip has been used. But conversely, the EZLITE board can be (and has been) used in this application and, if you already have your hands on one, e-mail me for further details. Signal names as defined by Analog Devices are used throughout.

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

MOTHER BOARD

THE MOTHER board with her two daughters is shown in **Fig 6**. This form of construction was adopted to spread the risk during board manufacture and to allow upgrade of either the CODEC or Processor chips later.

Each board has its own regulator chips to spread the heat dissipation and to maintain modularity.

The CODEC daughter converts analogue signals to / from digital / analogue form for the benefit of the Processor. The digital signals are passed back and forth using a 12.288MHz industry standard AC '97 serial bus - which multiplexes data in, data out and commands.

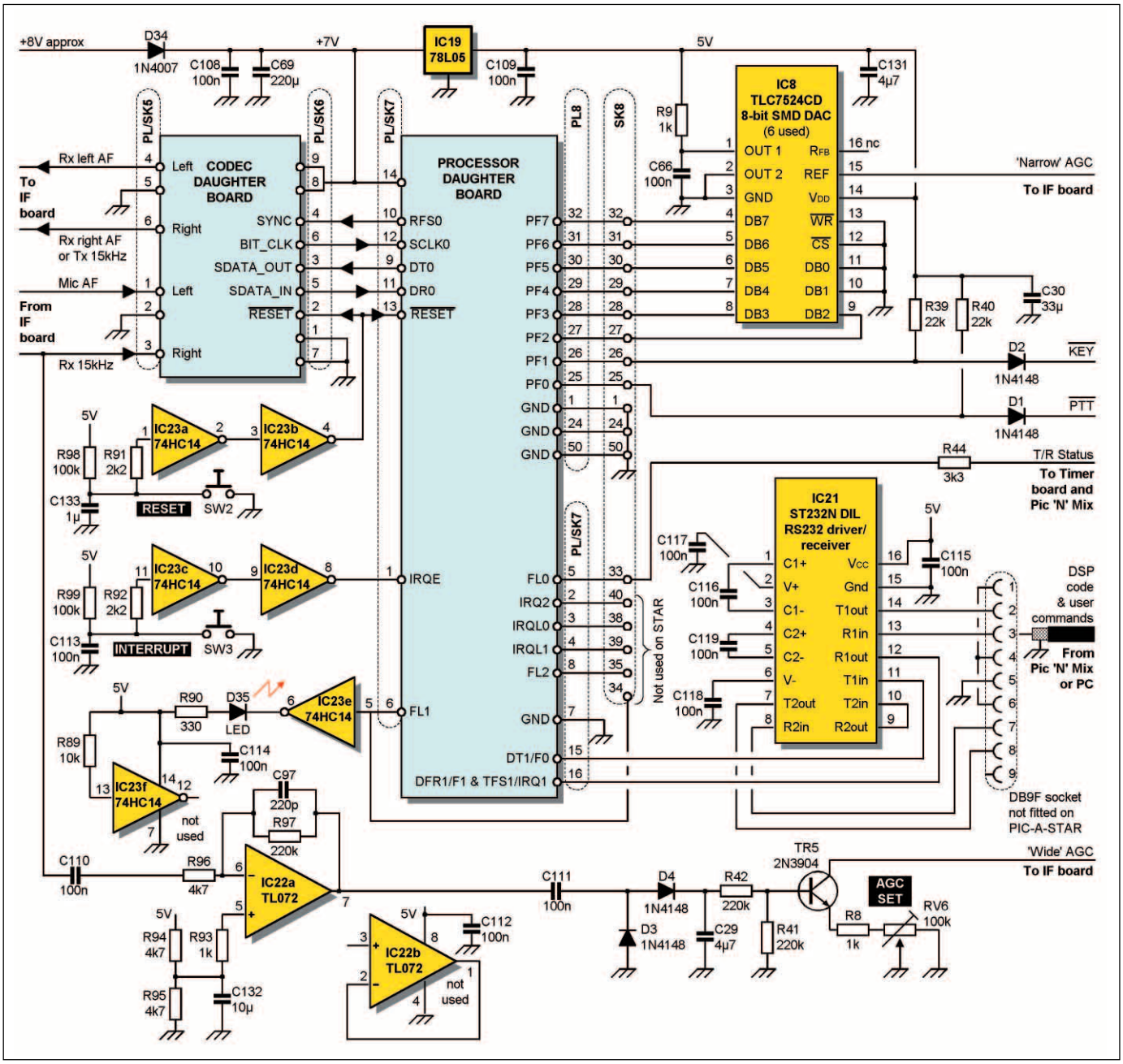


Fig 6: DSP mother / daughters relationship - and mother board circuit diagram.

The Processor daughter does the DSP processing (no surprises there) - but has other control inputs / outputs as well.

Unlike the EZLITE board, the Mother Board carries IC8 and IC22 / TR5 for generating AGC voltages for use on the IF Board - accepts inputs from KEY and PTT lines - and generates the controlling system T / R line as a function of mode and control parameters eg VOX / QSK operation - thus customising it from the general to this particular transceiver application.

IC21 controls RS232 communications from a host - either your PC or the PIC in Pic 'N' Mix - and is used to upload the operational DSP code. It also accepts user commands to control the entire transceiver. IC23 buffers manual resets and interrupts - and drives an LED to show status.

PROCESSOR BOARD

THIS COMPRISES the processor chip - and some memory used only at power-on (or Reset) time to boot load the real operational code. See **Fig 7**. For further detail, see the ADSP-2181 data sheet.

Being mostly track, the board is very quick and easy to build.

CODEC BOARD

THIS IS a standard (albeit minimal) implementation of the AD1885JST CODEC chip. See **Fig 8**. For further detail, consult the data sheet.

The CODEC uses a 3V3 digital rail, but 5V on the analogue side; IC20 translates the 5V logic signals *from* the Processor to this 3V3 level. Outbound 3V3 lines *to* the Processor are already within its logic 1/0 definition range.

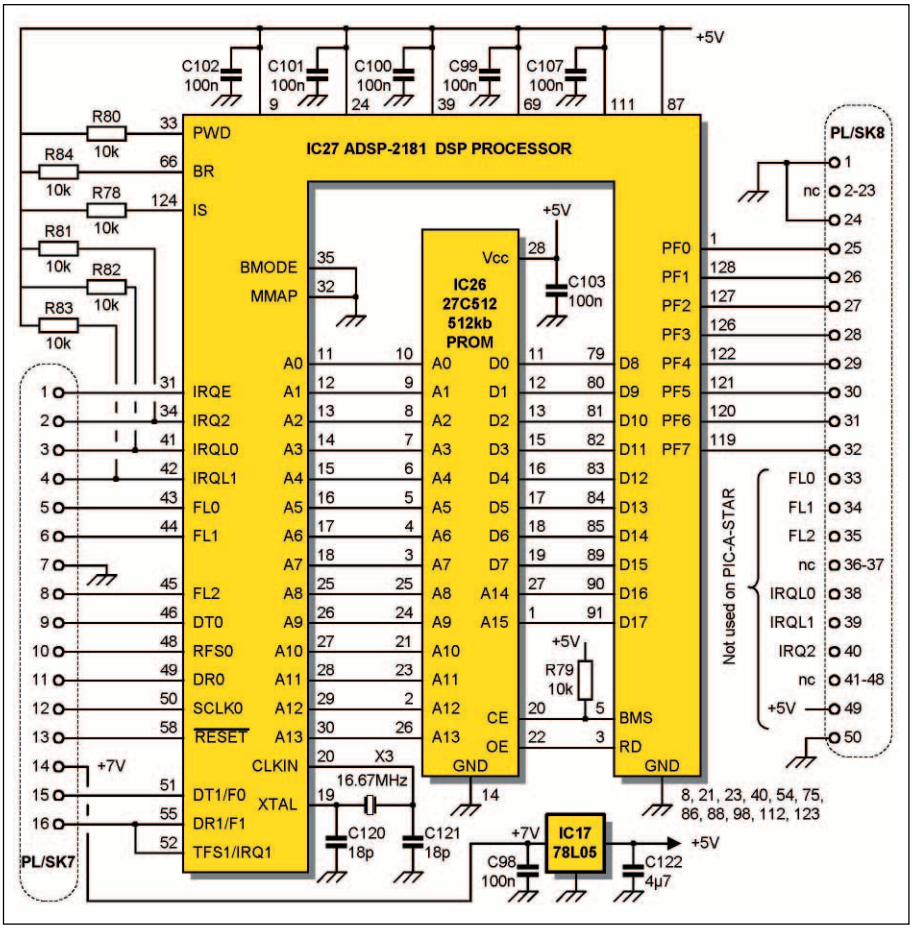


Fig 7: Processor daughter board circuit diagram. IC27 may be a KS-130 or KS-160 processor but, in any event, the slower KS-130 device is assumed. To retain compatibility with EZLITE, the unused or unconnected lines on PL / SK8 are available on the mother board for non-STAR applications.

SUBSEQUENT MONTHS

THE NEXT TWO MONTHS will cover the component layout, PCBs and constructional details of these boards. ♦

WWW.

Details and applications of the ADSP-2181 and AD1885 www.analog.com

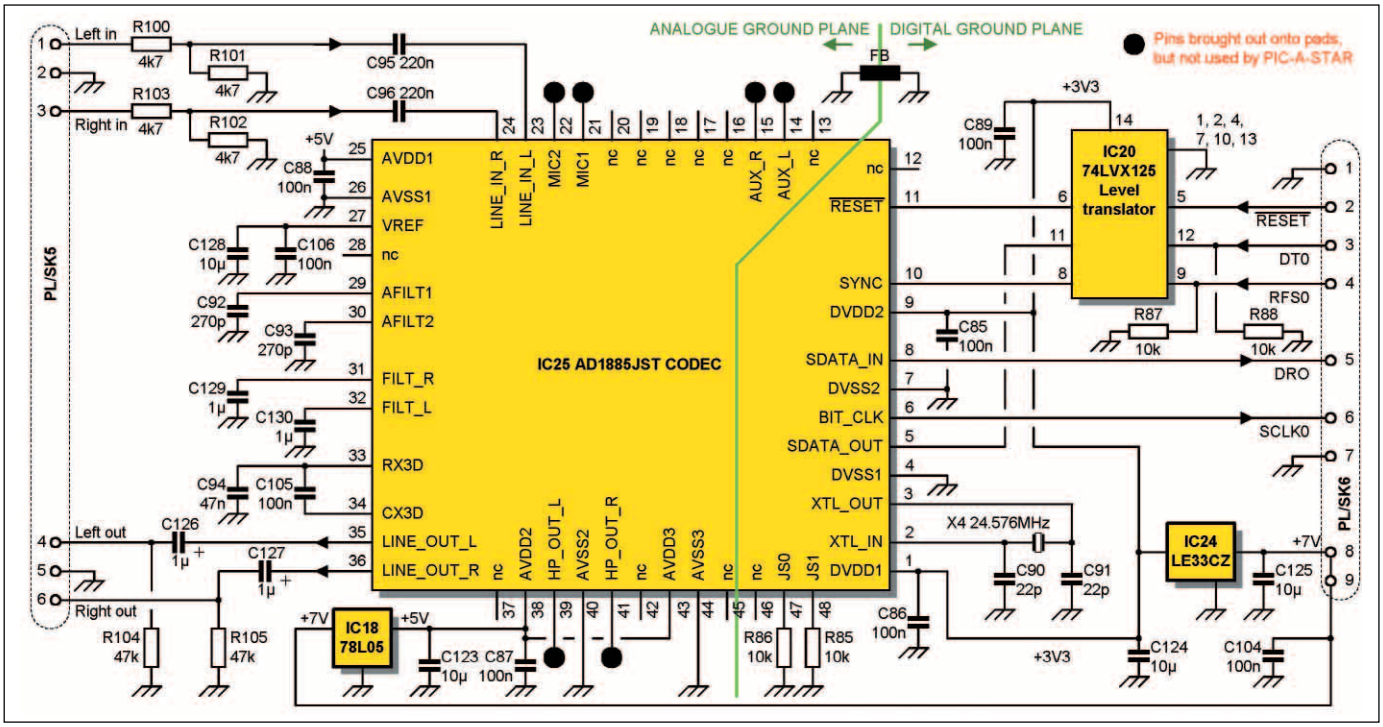
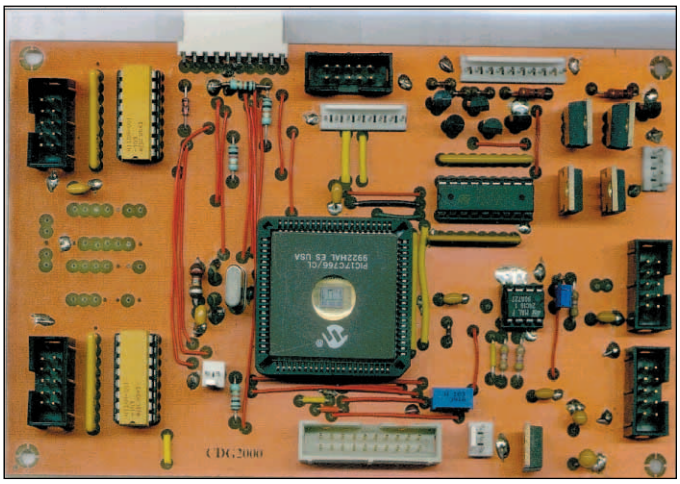


Fig 8: CODEC daughter board circuit diagram. Note that the ground plane is split between analogue and digital to minimise noise.

THE CDG2000 HF TRANSCEIVER

Final part, by Colin Horrabin, G3SBI, Dave Roberts, G8KBB, and George Fare, G3OGQ *

THE CONTROLLER is designed to manage all aspects of the transceiver. It provides two VFOs, manages the user interface and controls all functions of the rig. It handles transmit / receive switching and provides an automatic keyer. It can be seen in this photograph.



The controller PCB.

As you may remember from the first part of this series, the three transceivers built so far have differed widely in their interfaces. Dave wanted a minimalist design with 'soft' buttons and a single rotary control. This was anathema to George who wanted separate controls for each major function. Colin's design fell somewhere in between.

In consequence of these widely differing requirements, the controller needed to be highly configurable. It can support the following user interface options:

- up to 32 push-buttons in two scanned banks that can be soft-programmed;
- 1 or 2 rotary controls (shaft encoders);
- 20 x 2 or 40 x 4 alphanumeric displays or
- 320 x 240 graphics displays.

In addition it possesses:

- an I²C bus to control the transceiver;
- dual DDS control interface;
- a PTT input;
- a keyer input;
- analogue inputs for S-meter and power meter functions;
- switched 12V outputs for transmit / receive and mode control;
- an in-circuit programming interface;
- an RS232 interface.

All push-buttons are 'soft'-controlled. When first switched on, the buttons have no effect. Holding one down for more than five seconds, however, allows the button to be programmed to one of a large number of functions by means of the main tuning control. Releasing the button stores that button's function in non-volatile memory. It will retain that function when switched off. When the graphics display version is used, the function associated with a button is displayed in an on-screen menu close to the button, and the functions may change with selectable menus. The photograph above shows this.

The display.

Almost all operational parameters are configurable - the DDS frequency, the band details, the VCO and relay control data, etc. Those that cannot be configured can be altered by rebuilding the software.

The software is written in PIC assembler, and the full source code is available for amateur use from the Internet [25] together with a User Guide and pre-built executables for our configurations. The PIC may be programmed in circuit in the controller by means of a small interface board plugged into the parallel port of a PC if a dedicated PIC programmer is not available.

THE CIRCUIT

THE CIRCUIT DIAGRAM of the controller is shown in **Figs 37, 38** and **39**. The heart of the controller is a PIC micro - the PIC17C766. This is a 'high end' processor in an 84-pin chip

Connector	Usage
P1	Future RS232 interface
JP1	IF log amp (S-meter) & power meter inputs and keyer input
JP2	DDS bus - drives 1 or 2 DDS devices
JP3	I²C bus.
JP4	Switched 12V
JP5	LCD connector
JP6	Opto switches
JP7	Switch matrix input 2
JP8	Switch matrix input 1
JP9	Power to the controller (+12V and whatever negative voltage the LCD & RS232 need)
JP10	In-circuit serial programming interface.
JP11	Write protect configuration data in EEPROM.
JP12	Unused and not fitted - future interrupt input from I²C
JP13	Incoming 12V to the FET switches
JP14	Push to talk. Ground for transmit

Table 8: Interfaces to the controller.

carrier with a rich set of interface devices [26].

Several interfaces to the controller are provided – these are summarised below in **Table 8**.

JP1 provides two analogue inputs and also carries the keyer lines. The analogue inputs are used for the on-screen S-meter and transmitter power meters. Each requires an analogue voltage in the range 0 to 4V and the software allows it to be converted into an accurate S-meter which will also display a text reading in S points and dBm. An example is shown in the photograph, above right. If the on-screen S-meter is not used, the controller can instead provide a DC voltage that is controllable by software and reflects the attenuator and band settings so that an analogue S-meter can be corrected automatically to read true values regardless of receiver configuration.

JP2 allows the controller to manage the Direct Digital Synthesiser that provides frequency control. In fact, support for 2 DDS chips is provided, but only one is used at present. There is a common serial data / clock interface and two separate load signals.

JP3 is the I²C bus that controls the transceiver. An overview of I²C will be given later but, in summary, it is a two-wire bus that allows the controller to read from and write to a number of devices that are all connected in parallel on the two-wire bus. The detailed circuit diagram shows it on a 10-way connector, with multiple ground and power lines. The keyer lines are also connected to the bus for convenience. The I²C bus also controls an EEPROM on the controller board that provides non-volatile storage for the rig.

JP4, 9 and 13 are concerned with power. JP9 provides power to the controller itself – a voltage sufficient for the 5V regulator plus a negative voltage for the LCD if required. JP13 provides a high current +12V feed to a set of FET switches. These are controlled by the processor and provide switched voltages

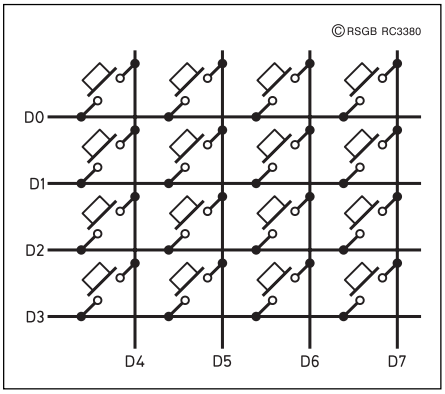


Fig 40: The switch scan circuit.

Close-up of the S-meter.

on JP4, allowing the processor to switch on and off 12V supplies on transmit and receive, as well as controlling other functions as required. The two main outputs for transmit and receive power have active pull-downs to reduce leakage into the circuits when off.

The display is connected to JP5. A wide range of displays can be used provided that each employs an 8-bit parallel bus interface. In George's transceiver, this is a 4-line 40-character alphanumeric display based on the industry standard HD44780 controller. In Dave's it is a 320 x 240 pixel, ¼ VGA graphics panel with a CCFL backlight. Colin's uses the Hitachi HD61830.

JP6 connects to one or two shaft encoders. These are used to provide main tuning and other functions and are quadrature signal devices with two signals from each that allow the controller to read the speed, direction and amount of rotation of each.

Keyboard scanning is provided on JP7 and JP8. The software assumes a 4 x 4 matrix on each port as shown in **Fig 40** providing 32 switches. Not all have to be used. Every 1ms or 2ms (this is configurable), a scan line is pulled low and the state of the switches for the previous scan line low is stored. This means that, within each 10ms period, all 32 switches are scanned. The scan speed is low, so if the lines connecting keyboard to controller are long they can be heavily filtered. Note that series resistors and pull-ups are provided to facilitate this.

Apart from the LCD display updating (and the LCD itself), the controller is very quiet electrically. It has a 32MHz clock which is provided by a crystal connected directly to the PIC and no external bus on which digital signals are changing unless an update to a peripheral is requested.

Address range	Device	Usage
A0-AF	ST24C16	EEPROM
54-55	MAX521	8 analogue outputs
5A-5B	DS1807	Ch A=mic gain Ch B=af gain
5C-5D	DS1807	Ch A=VOX gain Ch B=anti-VOX
4E-4F	PCF8574	Band switch for LPF
4A-4B	PCF8574	VCO control
48-49	PCF8574	Secondary band switch for LPF
46-47	PCF8574	DSP Control
44-45	PCF8574	First band switch on front-end board
42-43	PCF8574	Second band switch on front-end

Table 9: I²C device address map.

I²C BUS OVERVIEW

A FULL DESCRIPTION of I²C bus is beyond the space available here. Detailed information is to be found from Philips who invented it [27] and a good description is presented in the PIC17C766 datasheet [26]. In summary, it is a two-wire bus where a master provides a clock for a number of slave devices and the master and slaves communicate by means of a single data line. It is possible to have multiple-bus masters in I²C, but that option is not used here – the controller is the master. The bus operates at 100kHz. Faster modes are possible, but not necessary. The slow speed also means that the I²C bus cable can be up to 6 feet long (but keep it as short as practicable). Each device on the bus has its own address, and **Table 9** shows the addresses in use at the moment for CDG2000. When the controller wishes to address a device, it sends a START signal by pulling low the data line whilst clock is high. When it has finished, it signals a STOP by raising data whilst clock is high. This is shown in **Fig 41**. Having sent a START, it sends the slave address of the device it wishes to communicate with, with the last bit denoting a read or a write. The slave then acknowledges the request by sending back an ACK (pulls data low whilst clock goes high then low). What happens next depends on the type of peripheral. For the simple PCF8574 [28] latches, data are then sent or received next. For more complex devices such as the EEPROM, a sub-address is sent first.

By the way, an I²C bus is used by the SDRAMs you probably have in your PC to communicate with the chipset – ever wondered how the motherboard magically knows the size and type of memory you

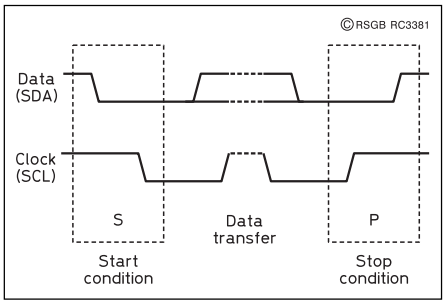


Fig 41: I²C start and stop.

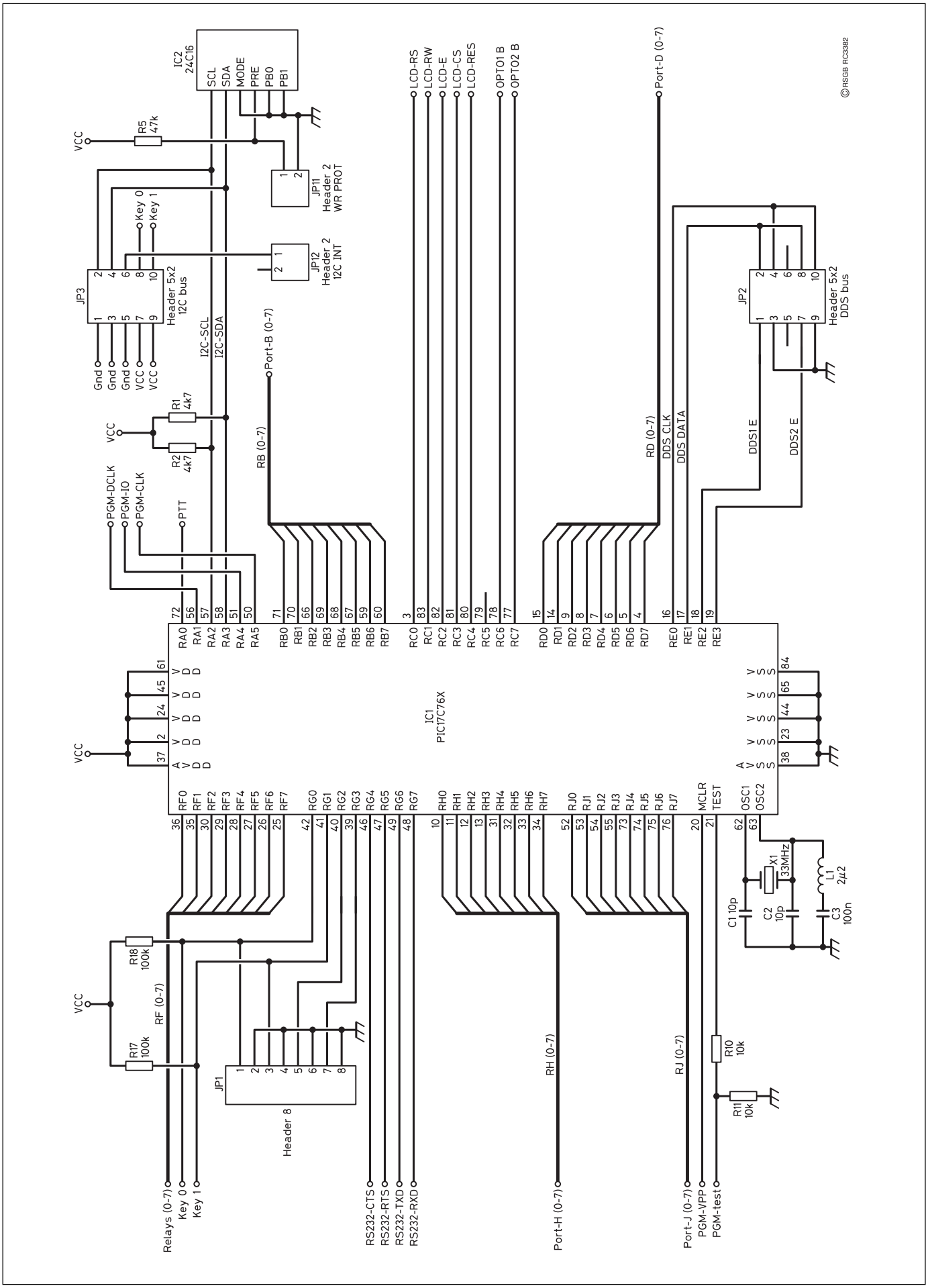


Fig 37: The Controller circuit diagram - part 1.

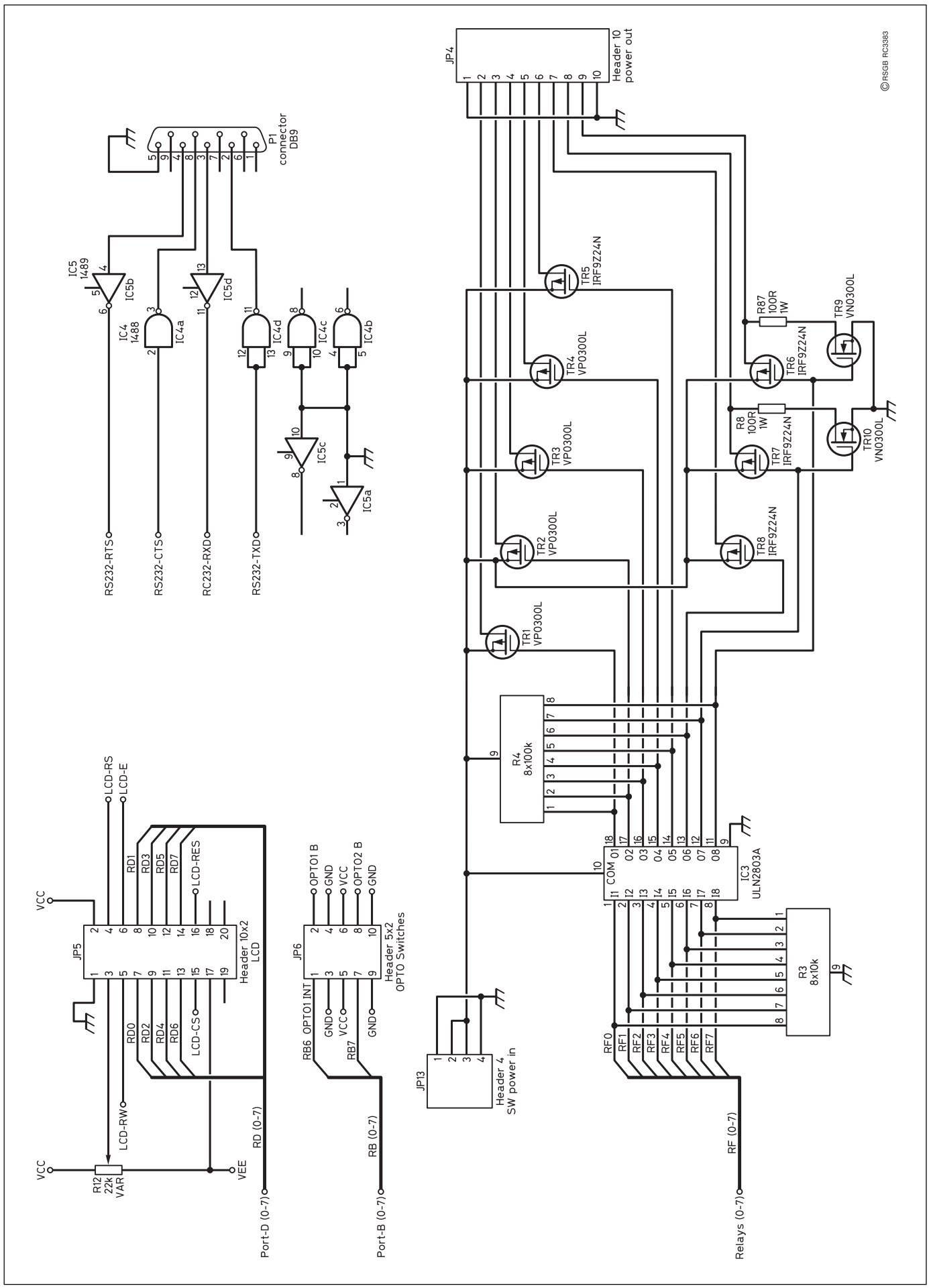


Fig 38:The Controller circuit diagram - part 2.

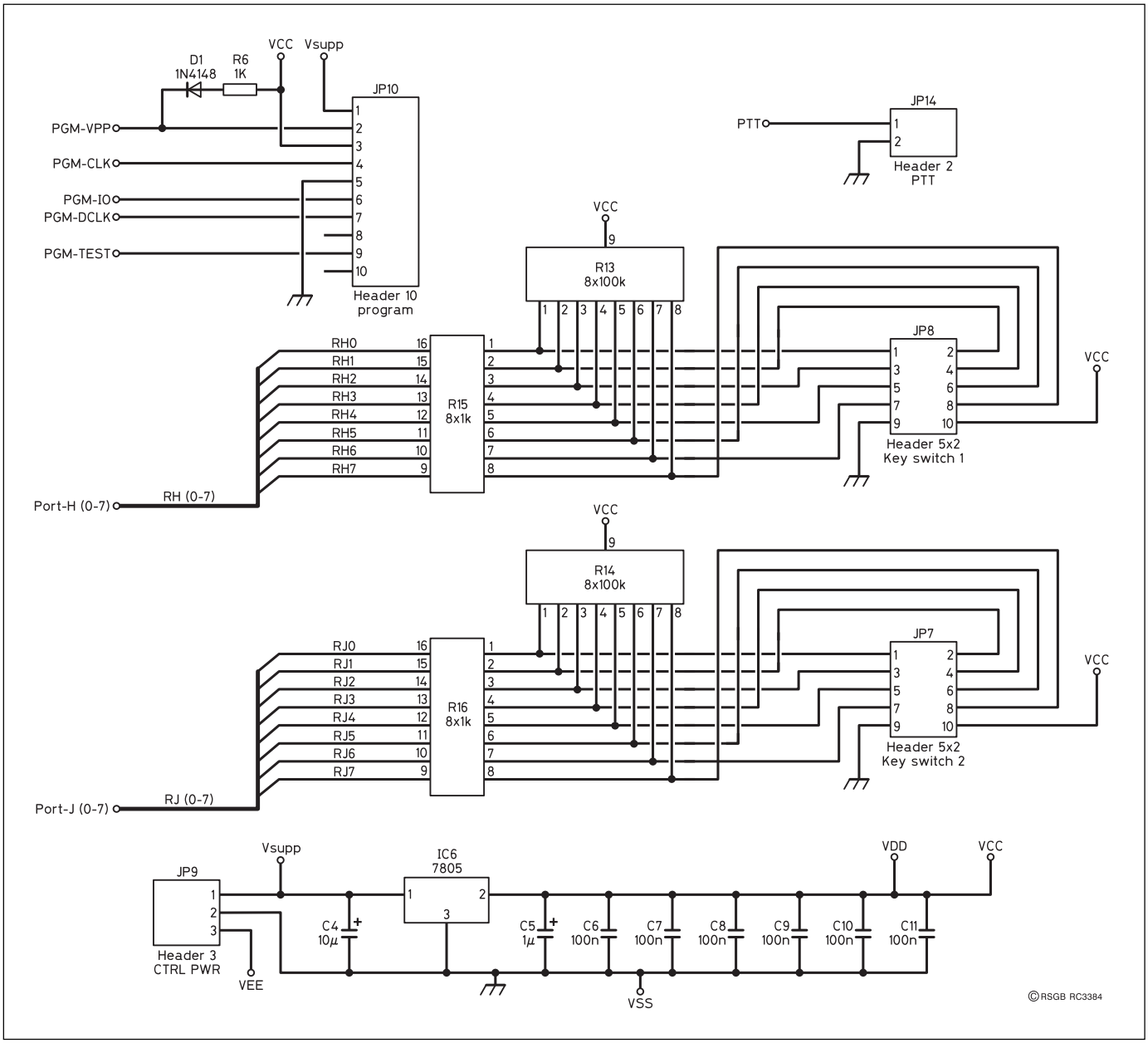


Fig 39: The Controller circuit diagram - part 3.

install without you needing to configure it?

As has been stated earlier, the I²C process in the controller software is an interrupt-driven state machine. The controller can 'stack up' a number of requests that the I²C handler will process one by one. Some of these events are time-critical some are not. When the controller switches bands, for example, it waits until it knows it has read the data for the new band from the EEPROM. When it is, for example, updating the current frequency of the VFO, it instructs the controller to have up to five attempts and not to bother telling it if it succeeded or not. The reason for multiple tries is that certain devices such as EEPROMS can temporarily disconnect themselves from the bus if they are busy writing to non-volatile storage.

The CDG2000 boards are designed so that a 10-way ribbon cable with connectors crimped to it at intervals can be used to 'daisy-chain' all the peripherals together. Just take care with the sockets' orientation!

CONSTRUCTION

LIKE OTHER CDG2000 boards, the controller is a single Eurocard 160 x 100mm. It is a single-sided board with a ground plane. Given the density of wiring for the PIC however, a number of wire links is required. The first photograph shows the controller PCB. PCB artwork, layout, component lists and other constructional details are available on the Internet [25]. The authors can also supply it on CD if required.

Construction is straightforward – the main things to take care with are the pins that connect directly to the ground plane and the orientation of the connectors.

Full programming details are also not presented here. A program is available to allow this to be performed. Ready-programmed PICs may be made available – check with the authors for details. Programming is effected using a small interface connected to the controller.

CONFIGURATION DATA

AS A MINIMUM of data is hard coded, most data items can be changed from the screen. Specifically, the actual DDS frequency, band limits, step rate, IF offset, per-band relay settings, S-meter calibration, data and VCO control words may be altered.

Full details are not presented here but are in the User Guide [25]. In order to facilitate setting the data, a spreadsheet

is available to calculate all the nasty hex values that must be entered for a specific clock frequency and band configuration.

SOFTWARE INTERNALS

INTERNALLY, THE CPU operates on 1ms, 10ms and 1s cycles. Every second millisecond, the push-button scan is advanced and the PTT line is debounced. Both are debounced digitally to avoid transient effects and the results are made available for the 10ms process. Every 10ms, the core events are processed in sequence; all push-button events are handled, the transmit / receive and keyer finite-state machines are executed, the display is updated and any required peripheral events are initiated. Every second, EEPROM data-writes occur if required and miscellaneous events such as controlling the LCD backlight are processed.

Interrupts are used for the following:

- PTT line changes;
- opto shaft encoder events;
- I²C event interrupts;
- 1ms core clock events.

I²C activity is controlled by a background-interrupt-driven finite-state machine. When the main processes want to request I²C activity, they locate a free buffer, define the required activity by setting the buffer, and then pass it to the event handler.

Concern has been raised over the responsiveness of PIC processors when used for tuning control and display-frequency update [29] and the use of dual PICs has been suggested. This is avoided here by virtue of the interrupt handling of opto events and the 10ms main event loop. If an alphanumeric display is used, frequency updates on the screen take under 7ms. When a graphics display is used it takes between 18 and 21ms, well over the 10ms loop time. This has no effect, however, on performance, as interrupt-collected tuning events are accumulated and handled within the main loop (in this case, every msec when the frequency is changed, 10ms otherwise) so that it remains responsive without losing pulses. No detrimental effect will be noticed in use.

All band data and related parameters are stored in the EEPROM. On first use, however, there is no need to pre-configure the EEPROM. Critical data is checksummed and, if the data read does not pass checking, it is rejected and data from the EPROM memory of the PIC is used instead. If a change is made to the data, the updated values are written back to EEPROM to be read next time they are needed. It is also possible to ask the controller to reinitialise the data from EPROM.

REFERENCES

[25] Warrington ARC www.warc.org.uk

[26] Microchip PIC17C766 datasheet, reference DS30289A from www. microchip.com

[27] Philips I²C bus information from www.semiconductors.philips.com/i2c

[28] PCF8574 datasheet from www.semiconductors.philips.com

[29] Use of PICs in DDS designs, 'Technical Topics', *RadCom* January 2001, p61.

AND FINALLY...

THIS IS THE END of the series, which has concentrated on the receiver. Transmit modules and expanded information on the controller and receiver are contained on a CD-ROM now available from G3OGQ at £3.50 inclusive. In response to many requests, a PCB for the front-end is also now available and further boards are in preparation. Watch the Warrington ARC website [25] for updates which will appear from time to time. ♦

Book Review

RADIO MAN - The remarkable rise and fall of C O Stanley

by Mark Frankland,
Consultant Gordon Bussey.

FOR THOSE TO WHOM the name of C O Stanley is not immediately familiar, he was the man who made the name of Pye synonymous with the best of British domestic and military electronics.

The book is written in the best tradition of the thriller; its story is one of conflict and intrigue, with winners and losers, twists and turns, all taking place through war and peace.

The author paints a vivid picture of the man and his work, a man whose almost uncanny and super-human strengths also laid the foundations for his downfall.

The book begins with a short chapter detailing the very end of Stanley's career with Pye, to whet the reader's appetite for how this all came about. We then go into flashback mode, to discover the principal figures who were involved, in his family and in the commercial and electronics world in which the story unfolds.

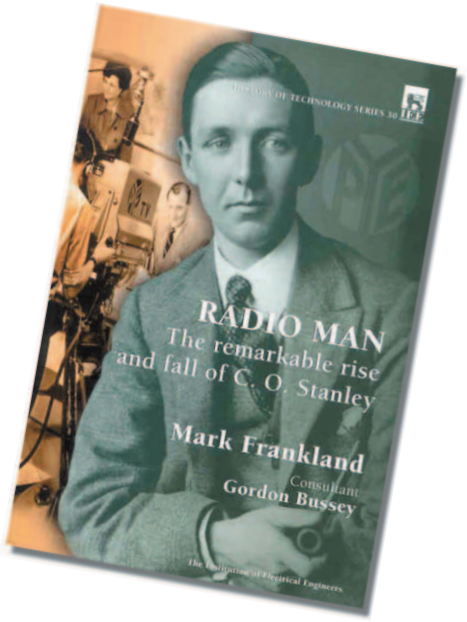
Charles Orr Stanley, or 'C O' as he became known, was born on 24 April 1899, in County Waterford, Ireland. However, the author immediately adds to the air of mystery surrounding C O in the very first paragraph, where he states "Much that happened before he was born affected him greatly, and there are episodes in his earliest years that reveal as much about the trajectory of his later life as a mere date and place of birth". A better start to a biography is difficult to find!

The rise of C O Stanley from his three-man advertising company is an enthralling tale, being involved within its first five years with such names as Frank Murphy, Capt Stanley Mullard, W G Pye and Edward Appleton.

This is far from being a boardroom drama. The output of the Pye company, masterminded by C O himself, is not forgotten. As well as being a family name in the domestic TV business, C O took Pye to war, building on the firm's expertise of mass-production of electronic systems. Radar systems, RF heating equipment, proximity fuzes, and the 18, 19, 22 and 62 sets followed. Incredible short-cuts and bypassing of red tape accompanied these developments. There was a period when CO and his team apparently dictated equipment design and production to Whitehall.

C O had a reputation for arrogance, which had moved mountains and served the country well in its time of need, but it was beginning now to impede progress. Just how this happens I leave you to discover. You will not be disappointed.

Radio Man - The remarkable rise and fall of C O Stanley.
Institution of Electrical Engineers.
ISBN 0-85296-203-7.
356 pages, 153 x 233mm.
£21.25 + p&p (members), available from the RSGB Shop.



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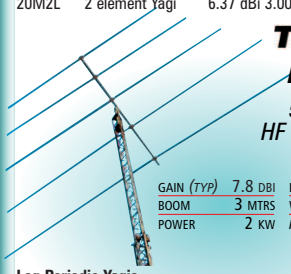
14 MHz					
20M2L	2 element Yagi	6.37 dBi	3.00mtr	tba	£179.95



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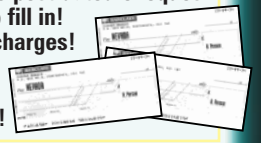

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G650C MEDIUM DUTY
C/W Control Box & 25m Cable
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G450C LIGHT DUTY C/W Control Box & 25m Cable
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G550 Elevation Rotator **£309.00** | P&P £10

GC038 LOWER MAST CLAMP **£25.00**

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

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£129.95 | P&P £7.50

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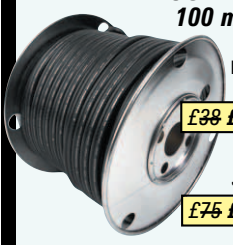

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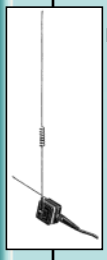

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DAX 3300.....50/144/430MHz	£42.50
DAX 1500.....144/430MHz (Hi Gain)	£33.95
DAX 1000.....144/430MHz (Standard)	£29.95
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HA 45....S..SMA....TRIPLE BAND .....L 4.5CM	£12.95
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MFJ-269....Antenna Analyser HF/VHF/UHF	£369.95
MFJ-914....Auto Tuner extender 300W	£64.95
MFJ-914E..1.8-30MHz 300W Tuner	£129.95
MFJ-945E..1.8-60MHz 300W Tuner	£119.95
MFJ-948....1.8-30MHz 300W Tuner w/Balun	£139.95
MFJ-949E..1.8-30MHz 300W Tuner+D/load	£159.95
MFJ-969....1.8-60MHz 300W Tuner	£199.95
MFJ-971....1.8-30MHz 200W Portable Tuner	£99.95
MFJ-986....1.8-30MHz 1500W Tuner	£349.95
MFJ-989C..1.8-30MHz 1500W Tuner+D/load	£379.95

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Scottish Store: 20 Woodside Way, Glenrothes, Fife, KY7 5DF. Tel: 01592 756962, Fax: 01592 610451, E-mail:jayceecoms@aol.com, Web: www.jatceecoms.com

WHATEVER NEXT

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

A FEW MONTHS ago, when a friend asked me to look at his mobile installation because it wasn't working very well, it was brought home to me just how many different methods amateurs use for connecting equipment to a 12V supply. The installation I looked at couldn't supply sufficient current to keep the transceiver powered on when the PTT was pressed, which demonstrated admirably the fact that several volts can be dropped when passing significant currents through thin conductors and DC connectors in series, especially when the wiring loom of a car and a cigar lighter socket are also brought into the equation!

I'm sure most of us will be familiar with the 6-pin connector used to connect the DC supply to many modern items of amateur radio equipment, but (two name just a few examples) the Trio TS-711E and TS-811E use a 4-pin Molex connector and the Yaesu FT-221R and FT-225RD use a 4-pin Jones plug. Wouldn't it be so much better if all equipment manufacturers could decide upon a common standard that meets our needs, and I don't just mean amateur radio equipment manufacturers.

Wouldn't it be so much better still if everyone used the same type of connector for patching equipment to 12V in the car and in the shack, instead of the hotch-potch of 'T' connectors, automotive industry 'bullet' connectors, terminal posts, spade plugs, 4mm plugs and sockets and - inevitably – the connector block that gets pressed into service when all else fails? It would make moving equipment between car, home, boat and caravan so much easier. It would also make life simpler for emergency communication groups, which often rely upon the equipment of members, if they knew that Fred's transceiver could be taken out of John's control vehicle and that Dave's transceiver could simply plug in where the other had been.

American company West Mountain Radio obviously considered this problem and decided to offer a solution to it. As it says in its publicity leaflet, "120VAC appliances have the same plugs and sockets. Why shouldn't 12VDC connectors be standard?" What it has come up with is called the 'RIGrunner', and it represents a quick, convenient, and *safe* method of connecting a number of 12V devices to a power supply. Various models are available (see photo, right), ranging from five to twelve outlets. Each outlet is RF suppressed, provided with an automotive blade-type fuse and has an LED to indicate if it has blown. Rated at 40A (total), the tracks of the PCB inside are of heavy gauge copper. Incorporated in the two larger models are visual and audible alerts for under- and over-voltage.

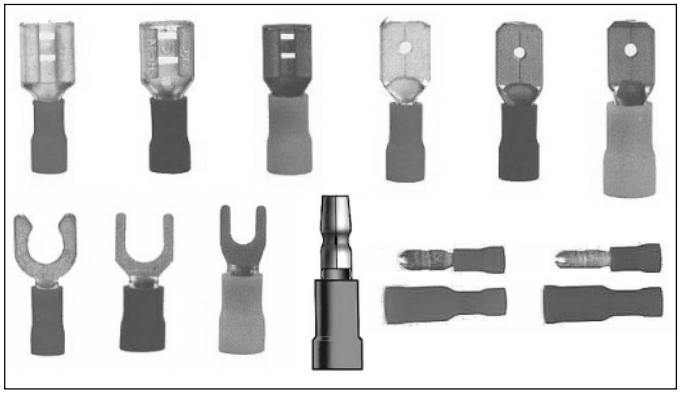
Interestingly, West Mountain Radio didn't try to re-invent the wheel by developing yet another type of connector, it settled on using Anderson 'PowerPoles', which are hot-connect, polarised, colour-keyed, genderless connectors. [See 'In Practice', May 2001, p54 - *Ed*.] A range of extension and adapter cables is also available.

VERY SHORT-RANGE COMMUNICATIONS

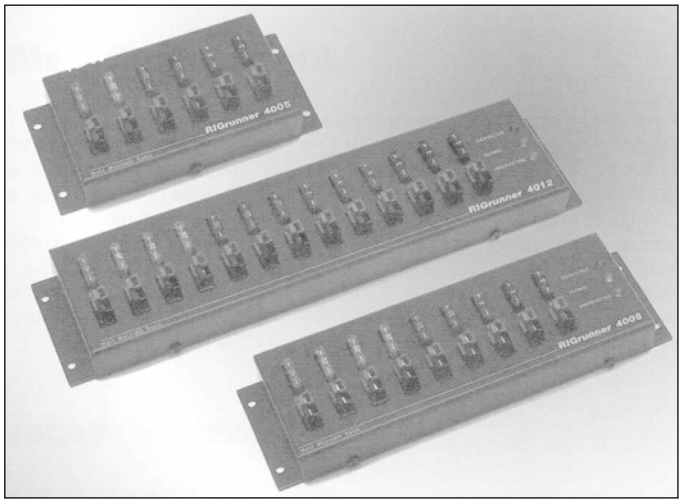
DURING A RECENT speech in Silicon Valley, Gerard Kleisterlee, CEO of Philips, explained that in today's technology market, "To be successful, we need to break down the typical barriers of 'not invented here,' trust, and traditional profit motives and work with even our fiercest competitors to get technology into the market for the benefit of all." What he was referring to is the latest strategic co-operation between Philips and Sony, which is geared toward creating a new radio communication technology, 'Near Field Communication' (NFC). The technology is intended to enable *very* short-range communication between consumer devices incorporating an NFC interface. It could apply to devices such as mobile phones, digital cameras, PDAs, PCs, laptops, game consoles or PC peripherals, across a distance of up to just 20cm, but which is aiming at data rates high enough to transfer high quality images.

The goal is to build an open infrastructure of NFC-compliant devices which effectively incorporate smart-key and smart card reader functions, providing a convenient communication method for services such as payment (including credit card), ticketing, and accessing on-line entertainment content, such as gaming, through the devices. The intention is that this will be done simply by holding devices or smart cards close to each other.

Is NFC just another wireless standard? According to Karsten Ottenberg, General Manager of Philips Semiconductors' Identification business, "NFC is complementary to wireless networks such as Bluetooth and WiFi. However, unlike Bluetooth and WiFi, it is designed for shorter distances



A range of DC connectors. How do you connect *your* 12V equipment to the power supply?



The range of RIGrunner 'intelligent DC power panels'.

Allocation to UK Services	Comments
13.200-13.260MHz AERONAUTICAL MOBILE (OR)	Government use
13.260-13.360MHz AERONAUTICAL MOBILE (OR)	Civil and non civil aeronautical communication services, including data link services NATS joint use of 13.264MHz, 13.29 MHz and 13.30 MHz using transmitters located in the Republic of Ireland
13.360-13.410MHz FIXED S5.149	Government use
13.410-13.570MHz FIXED Aeronautical Mobile (OR) Maritime Mobile Land Mobile S5.150	Government use
13.570-13.600MHz BROADCASTING S5.134, S5.135, S5.151	
13.600-13.800MHz BROADCASTING S5.148	Government use. BBC broadcasting services operate on 13.660MHz and 13.745MHz in this band via Rampisham, Skelton and Woofferton
13.800-13.870MHz BROADCASTING S5.134, S5.135, S5.151	
13.870-14.000MHz FIXED Aeronautical mobile (OR) Maritime mobile Land mobile	Government use

Table 1: Extract from RA365. For the sake of brevity, footnotes (format S5.xx) are not reproduced here. See RA365 or the RA website for details.

and lighter content, and it uses a chip rather than a battery so it is less expensive and can communicate with un-powered devices such as smart cards and RFID transponders." To speculate, communicating with unpowered devices could lead to a user having something akin to the SIM card of his mobile phone implanted under his own skin, so that it could only be used (or a call authorised) when the phone was brought to within 20cm of his head. Philips and Sony say that NFC will be compatible with their existing contactless smart card standards, Mifare™ and FeliCa™.

Transferring data requires bandwidth and transferring it at the proposed rate of 212kb/s requires a fair drop of it, so I decided to listen on and around the proposed NFC frequency of 13.56MHz. Whilst the frequency itself was quiet at the time I listened, there were some strong HF multiplex and RTTY transmissions, plus aeronautical beacons in the region just LF. Needless to say, there were several extremely strong broadcasters in the 300kHz immediately HF. RA365, the Radiocommunication Agency's information booklet that gives a breakdown of frequency allocations, basically describes 13 to 13.6MHz as having a mixture of maritime mobile, aeronautical mobile and fixed services. See **Table 1** for the detail.

At a time when companies are battling to innovate and stay ahead, it may seem odd to hear that two of the largest electronics companies in the world have agreed jointly to develop a new technology. But, considering that the audio CD, which has become one of the world's most far-reaching and useful technologies, was jointly developed by Sony, RCA and Philips in the 1980s, it seems natural that two of these companies would come together again. According to Philips' CEO Gerard Kleisterlee, cooperating with competitors can pay off for all parties involved. Yuki Nozoe, Corporate Executive Vice President, Sony Corporation, commented, "This co-operation between Philips and Sony marks a breakthrough in establishing a new solution for an easy communication network between consumer electronic devices. Together with Philips we will study a vast range of new applications for NFC and we look forward to welcoming other electronics and service companies in support of the technology."

In conclusion, assuming NFC reaches the marketplace, I don't think that radio amateurs are likely to suffer interference from it. In my opinion, if there are problems, it is more likely that an NFC device will run slower in the presence of a strong 14MHz amateur transmission, or grind to a complete halt in the presence of a local broadcaster.

BROADBAND MILESTONE

ACCORDING TO A recent Press Release by the Department of Trade and Industry, the UK has reached a major landmark in the take-up of broadband, with one million businesses and consumers now signed up. With one of the most competitive telecommunication markets in Europe, Britain's adoption of the high-speed, always-on Internet is going from strength to strength. In fact, the number of broadband subscribers has trebled since the beginning of 2002, with an estimated 20,000 new connections being made each week.

Stephen Timms MP, Minister for E-commerce.

E-commerce Minister Stephen Timms welcomed these latest figures from Oftel, saying "This is great news for the UK. Today's figures show that people are really beginning to appreciate the benefits of broadband. This milestone is not all we have to celebrate. Thanks to thriving competition we can boast some of the lowest prices in the world… An increased demand will encourage providers to spread their services into more areas of the country. This means more access for consumers and greater business opportunities for the operators."

Apparently it took five years for the UK to see a million people using mobile phones, but at this pace the UK is well on its way to being the most extensive and competitive market for broadband in the world. Approximately 63% of the UK population currently have access to broadband and 40% have a choice of provider but, during a recent trip to Cornwall, I was informed that at present there is minimal availability of broadband in that county. The Government is setting up a network of dedicated regional broadband advisors, to boost availability, take-up and support in unconnected areas of the country. ♦

WWW.	
RigBlaster	**www.westmountainradio.com**
Anderson PowerPoles	**www.andersonpower.com**
'Near Field' comms	**www.semiconductors.philips.com/news/content/file_878.html**
Radiocommunications Agency	**www.radio.gov.uk**

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.

The GB4FUN Supporters' Honour Roll

GB4FUN 'Big Hitters'

J D Hayward, G7HOD

'The Three Counties Foundation' (via Kath Wilson, M1CNY / M3CNY, and Dave Wilson, G7OBW)

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.

R Macfarlane BEM, 7Q7RM
H C Cho, DS5EXT
J M Purfield, EI2CI
J P Ketch, EI2GN
A O'Rourke, EI2HY
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R M T Hopkins, G3IWW
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D Webber, G3LHJ
D W Blackford, G3NPB
A Floyd, G3PNQ
R C Pickering, G3UWP
A Wang, G3VAA
A G Coker, G3WHM
T R Garner, G3XZY
M J Smyth, G3YFM
J Clemence, G3YHK
M C Baker, G3ZBP
B F Pearl, G4FCX
C D Appleton, G4GBK
T J Aldridge, G4GJR
D J Barrott, G4GVN
C Makin, G4JZM
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T J Stanley, G4TXK
H W D Maude, G4YDG
G S C Crabbe, G4ZFN
C B Jones, G6ERZ
A J Florence, G7CDK
G Rogers, G8ABB
N Killgren, G8EJP
W A Hoskins, G8LU
N E Brown, G8NCK
A F Jeffery, G8SIG
P A Snelling, G8ZFX
A Crowther, GD0MWL
Dunoon & DARS, GM0COD
J G Anderson, GM0GVO
C Mackay, GM0KVD
T W Dickson, GM3DIE
W G Rattray, GM4NDV
M Glendinning, GM7GIS
B F le Lievre, GU4LJC
D Roberts, GW0CSR
D Harris, GW3NDR
A J Wilkinson, GW4PVU
J H Baines, GW7LXI
G J Gakkestad, LA1FH
B Metcalfe, M0AMB
J J Ridout, M0BOV
D Surman, M0BWF
N Lock, M0CBF
G Rowntree, M0CVV
J Williamson, M0JWE
S Watanabe, M0SMW
F T Gibson, M1BQS
K Broxup, M1BVQ
D J Hall, M1CDL
J McGinty, M3ZZO
G A Moucka, MI3GAM
P Holmes, MI3PWH
M D Harper, MW1MDH
G Bowden, RS176339
R Akhurst, RS25209
R Singleton, RS25288
G Davidson, RS33988

The RSGB is also grateful to those many generous members who have sent donations anonymously, or who have asked us not to publish their names.

Newcomers' News

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

AT THE TIME of writing preparations were well under way to start the pilot courses for the new Intermediate Licence assessment and exam. As you are all no doubt aware, the December Novice Radio Amateurs Examination (NRAE) will be the last of its kind. From 1 January a new syllabus will be in place under the ownership of the Radiocommunications Agency.

The pilot courses are being run up to January 2003 to check out the system, in particular the new RSGB training book *The Intermediate Licence*, put together by yours truly with considerable help from Ed Taylor, G3SQX; Dr John Craig, G3SGR; and Alan Betts, G0HIQ. We hope many of the 4000-plus M3 licence holders will use the book to build on their Foundation training and take the new Intermediate assessment and exam. The book should be on the shelves early in the New Year with the new exams being available from March.

How does the new syllabus differ from the old NRAE syllabus? It is much larger, but don't panic, it actually covers less material. How can that be? Well, the old syllabus was quite vague about exactly what you had to know. This led to many tutors, myself included, missing some points that the examiners thought were relevant. The new syllabus has been written deliberately to make the learning objectives quite explicit, leaving no doubt about what you need to know, understand or be able to demonstrate.

There are around 200 learning objectives, about twice the number in the Foundation syllabus. It should come as no surprise then that the training is expected to take about twice as long. That should be about 10 hours shorter than the old NRAE training.

We wish all those involved in the pilot courses the utmost success and look forward to working more 2E callsigns very soon. Good luck to all those about to sit the final NRAE too!

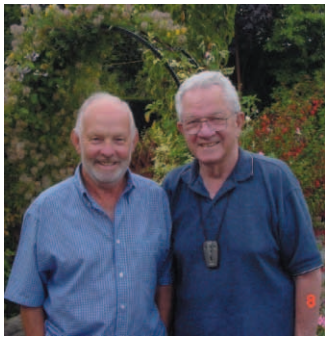
NEWCOMERS IN RETIREMENT

MUCH OF THE thrust behind bringing newcomers into the hobby is, quite rightly, focused on youngsters. The hobby and the electronics industry need new blood. However, many of the new Licence holders are taking to the bands in retirement, usually after a long apprenticeship of short wave listening.

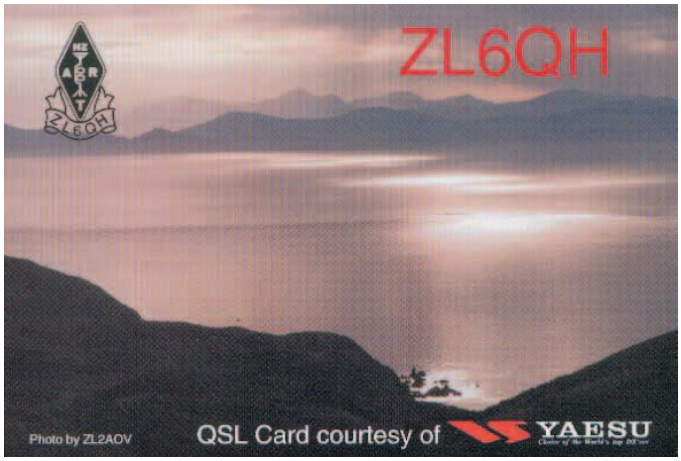
Two such amateurs met up recently for a face to face chat. Nothing particularly remarkable in that, you might say, but when they live on opposite sides of the globe that starts to show the worldwide friendships that can come out of amateur radio!

Ralph Sutton grew up in England but has lived in New Zealand since 1947 and despite having a keen interest in the short wave bands and working in telecommunications he never had the time to take up amateur radio in a big way. However, his retirement present to himself was an amateur radio licence and ZL2AOH was on the air.

Ralph joined the Wellington Amateur Radio Club and has been an active CW operator. So much so that he joined the FISTS club, who devote themselves to Morse code communication. Before making a return visit to UK earlier this year, Ralph used the FISTS membership list to find out if there were any like-minded amateurs near where he was to visit. One of those the search threw up was Brian Davis, 2E0BGD.



Brian, 2E0BGD, and Ralph, ZL2AOH, (see 'Newcomers in Retirement').



The view from the Wellington Club shack (see 'Newcomers in Retirement').

Brian was one of my newcomers in 2000 and he too decided to get himself a transmitting licence after retiring from local government work - his 'millennium project' he called it. Brian is now a committed CW operator and a member of FISTS.

Anyway, Ralph and Brian met one sunny afternoon in Bath and I was able to join them for a while. It was fascinating to listen to the two 'newcomers' comparing notes and seeing how two individuals from opposite sides of the world had so much in common.

During his visit Ralph also visited the Trowbridge and District Amateur Radio Club and met many of the members there. Ralph did make us all rather jealous with pictures of the club station, located at an ex-broadcast site, complete with twin feeders about 1km long from one of the huge antennas!

HOLDING QSL CARDS

MIKE EVANS, MW0CNA, does a sterling job as the QSL card manager for three callsign groups: G0BAA - BZZ, GB A - Z and the special Q calls for the Queen's Jubilee. He has written to say that he keeps receiving e-mails asking him not to destroy the QSL cards he is holding. Mike would like to make it clear that he does *not* destroy QSL cards. Anyone with concerns should contact Mike who is listed in the *RSGB Yearbook* (QTHR) or can be contacted at mw0cna@ntlworld.com

For those absolute newcomers who are wondering what a QSL card is, I shall explain. Many radio amateurs exchange cards to confirm contacts with other stations. The Morse code abbreviation for 'confirming receipt of message' is QSL, so the cards that confirm contacts have become known as QSL cards.

You can send QSL cards direct to the other stations or, if you are a member of the RSGB, you can send cards in bulk through the Society's QSL Bureau, a much cheaper option. Incoming cards are distributed through QSL bureau sub-managers, volunteers who act as 'post boxes'. All you need to do to receive cards through the manager is to send stamped self-addressed envelopes to your sub-manager.

Full details of the QSL bureau and the list of sub-managers can be found in the *RSGB Yearbook*, which is available from the RSGB bookshop. ♦

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

Down To Earth

A Soaring Success - the Eagle Radio Group

by Nevil Brinnen, G3VDV*

All too often one hears of radio clubs that have had to disband due to the number of members falling below a critical mass. It is especially heartening therefore to hear of a new radio club being formed - and not only that, but going from strength to strength. How is it that some clubs see rising membership, with plenty of youngsters and other newcomers joining, while other clubs are moribund? December 2002 sees the first birthday of the Eagle Radio Group, one of the clubs very definitely in the former category. We asked Nevil Brinnen, G3VDV, Chairman of the club since its inception, to let us in on a few secrets of its success. Happy Birthday Eagle Radio Group!

The Eagle Radio Group special event (GB3ERG) team at Tennyson School Fete, 14 July 2002. Left to right, back row: Alec, G1XWD; Nev, G3VDV; Charles, G0CBM; Bob, SWL; Alan, G0RJN; Brian, G1VFI; David, G7BUK. Middle row: Richard, M0RJP; Barbara, 2E1FEG; Terry, G0SWS; Sue, G8JGC; Rob, M0AOV. Front row: Gemma, SWL; Debbie, M3DRP; Maureen, SWL; Jo, M3FEY; Maureen, SWL; Ian, G3MNS.

AT THE beginning of December 2001 radio amateurs in this area received an invitation by post to attend a get-together at a pub in Sutton-on-Sea. Two local amateurs, Pat. G0GMA, and Charles, G0CBM, had looked though the *RSGB Yearbook* and mailed every licensed amateur in the area. Although the response was good, it was not exceptional, with 10 amateurs and several partners turning up for the get-together. The atmosphere was somewhat stilted as it had not been possible to get a private room, and everyone felt conspicuous. Few of those who attended had met previously, although some had chatted on the air. It was decided that there was sufficient interest to arrange another get-together after Christmas, and Nev, G3VDV, said he would find somewhere central with exclusive use of a room. He also suggested arranging an activity sked on 2m every Sunday. These skeds had the immediate effect of publicising the next meeting. A venue was found, the Eagle Hotel in Mablethorpe, and the landlord said he would be pleased to see the group on a regular basis, offering a room free of charge for meetings on the second Tuesday of every month.

The January meeting was quite well attended, but awkward without any leadership. A discussion took place about the needs of amateurs in the area, and Charles, G0CBM, a registered Novice instructor, was asked to give a talk at the next meeting, outlining the changes in licensing with the advent of the new Foundation Licence. On the night of Charles's talk, Nev, G3VDV, remarked on the difficulty of running the meetings without a Chairman - and was immediately made the first Chairman of the group. Also elected were Terry, G0SWS, as group Secretary, and Charles, G0CBM, as Training and Education Officer. The name 'Eagle Radio Group' was adopted. Charles's talk was well received and people stayed on afterwards to socialise. Each subsequent meeting has started with a few words of welcome to new members and visitors, with everybody giving their name, and callsign if they have one. New members are then asked about their radio interests. There is no membership fee and the meetings are free. With some structure the group has gone from strength to strength, with regular talks and events being planned well in advance.

TALKS & PUBLICITY

THE TALKS HAVE covered a wide range of subjects, not necessarily radio or electronics based, for example: gliding, computing, coastal radio, fibre optics and G3RKL's walk across New Zealand, to name a few. The speaker is asked to talk for about 30 minutes, but in all cases the time has extended to over an hour and longer. Members are encouraged to interrupt and ask questions, and a light-hearted atmosphere prevails. If the speaker is over-running he is asked to take a short break, which allows the audience to stretch their legs and top up their drinks. Some people may leave at this point, particularly on winter evenings when they do not like to drive in the dark. Many opt to share transport, taking turns to have a drink.

After every meeting the Chairman submits a press release to the local paper, and so far this has resulted in an item being published each time. A press photographer has also been present at some meetings and group photos have been published in the local paper. This has proved a great help in promoting interest, and consequently membership has slowly but steadily increased over the months. Group events and meetings are of course publicised in *RadCom*, while specially-designed displays drawing attention to the group and the Foundation Licence are used at every opportunity.

TRAINING

THE GROUP'S special event station, GB0ERG, at the Tennyson School Fete in Mablethorpe was a great success and interested a large number of people. It was a golden opportunity to make the public aware of the Foundation Licence and the group's activities, with over 100 contacts made with 27 countries. Even the Lady Mayor went on the air. RSGB leaflets were distributed along with those of the group.

So far this year, Charles, G0CBM, the Training Officer, has taught Morse to Richard, G7BXO, who now has the callsign M0RJP. The three candidates for Charles's first Foundation Course all passed, and are now: Jo, M3FEY; Debbie, M3DRP; and David, M3FSE.

Judging by the interest shown at the fete, Charles is likely be kept busy for some time to come. It is very fortunate that Eddie, G3WNQ, is a group member.

Mablethorpe & Sutton-on-Sea Mayoress, Councillor Rita Dudley, presents Jo, M3FEY, and Debbie, M3DRP (seated), with engraved glasses for successfully passing the Foundation Licence test.

* *134 Victoria Road, Mablethorpe, Lincs LN12 2AJ; E-mail: eagleradiogroup@aol.com*

Formerly a radio officer at Humber Radio, he is now an RSGB Morse examiner, and has done some excellent work with disabled people, allowing them to take the Morse test in their own homes. He has also given a fascinating talk to the group on the history of Humber Radio.

MEMBERS' SKILLS

AS MEMBERSHIP increases so does the pool of talents and skills, of which the group has been fortunate enough to take advantage. Many members have offered their services for the benefit of the group, for example, Richard, M0RJP, a skilful joiner, made some very professional A-frames for the display boards, while Brian, G1VFI, got to grips with the Honda generator. Others have been busy helping fellow members to erect aerials and sort out various problems with their rigs and, of course, computers.

It is important to include shortwave listeners and 'semi-interested' visitors in group activities, as often a member will bring a friend to the meeting who is not a licensed amateur. These are the most likely people to enrol for a Foundation Course, if they like what they see. There seems to be a need for a 'jargon buster' - some members have been operating for so long they don't realise that as far as the lay person is concerned they might as well be speaking Martian! First impressions count, and there is a good chance he or she will be back if someone takes him under his wing. It's a good idea to try to remember names and use them wherever possible - it's a friendly gesture and puts people at ease. SWLs should be mentioned during an activity sked, as they are important group members. Forming cliques is something to be avoided.

SOCIAL EVENTS

THE SOCIAL SIDE of the group has not been neglected. A successful spring social at the Eagle Hotel has cemented the relationship with staff there, and frequent press coverage has helped to put them on the map. The group has been offered a larger room, having outgrown the previous one. A visit to a local brewery was a great success, with a hired minibus ensuring that everyone got home safely! A summer barbecue with a portable station went down well with everyone. These events have not only brought members of the group closer together, but have also involved their families. When an idea for an activity is put forward it is ascertained whether there is enough general interest, and if so the person who made the suggestion is invited to be the organiser and co-ordinator. Organisers give an update on how arrangements are progressing, and volunteers are sought to help out if necessary, ensuring that everything runs smoothly.

It's not only radio: Eagle Group members visit Bateman's Brewery in Wainfleet.

AIMS

THE GROUP would like to see a continued growth in membership and to draw young people into the hobby. Nowadays, largely due to the Internet, social contact between people of different countries is taken for granted, although when young people were persuaded on to the microphone at the special event station and invited to greet someone over the radio, the interest level was raised and questions followed.

There is a feeling among older members that they can put something back into the hobby by giving their full support to the group's recruiting activities. It is hoped that a collection of radio equipment will be on show in the local library window, along with information about the group and the Foundation Licence courses. Posters are displayed in shop windows throughout the town, and are available in local tourist offices. As Mablethorpe is a holiday resort there have already been several visiting amateurs at the meetings, in addition to unlicensed visitors from out of town who show an interest in radio. The latter we point in the direction of clubs in their own areas.

The 2m Sunday activity sked is very successful and has some interesting input; it is also a good opportunity to keep people informed about group activities. Over 80% of the group is on the Internet and Terry, G0SWS, the Secretary, makes good use of this. After each meeting he sends a report of the meeting, and lists events for the coming month, along with contact numbers for those responsible for each event. About two days before the next meeting he sends a reminder, and the title of the monthly talk.

The group's website is now up and running - one of the areas where young people can teach the old hands a few tricks!

FINANCE

THE GROUP HAS NO large bank balance at its disposal, but outgoings have been very small. Money has been spent on postage, the site fee for the special event station at the Tennyson School fete, display materials, and awards: drinking glasses hand-engraved by David, G7BUK, one of the group members.

In April sad news came of a silent key; Alf, G5LL. A collection was made in his name, and instead of flowers the cash collected was used to help fund the special event, and all QSL cards from the event carry a dedication to Alf. The sales table at the event was stacked with donated goodies, proceeds going into group funds. Whether the group remains on the same footing in the future depends on how members would like it to be managed. At present there is no need for a Treasurer, as Terry, G0SWS, the Secretary, handles the money simply as petty cash.

It is difficult to say at this early stage what the future holds for the group; many different roads could be taken. It would seem to be working if present membership can be kept and perhaps slowly increased. **Fig 1** shows the growth in membership over the first year. Much more could be done in addition to talks and visits, and there may well be interest in construction, contests, and other facets of the hobby.

YOUR TURN

ARE YOU ENJOYING your hobby, but doing it on your own? Do you feel that there might be enough of you in your area to form a group and promote the hobby? You will be surprised how much fun it is to *share* your expertise. A wealth of knowledge and experience is waiting to be tapped within our small group alone. The 2003 talks programme is almost full, and the speakers are mainly group members who only months ago would not have dreamt of giving a talk to a radio club. The RSGB and the Foundation Licence have provided the opportunity to revitalise this wonderful hobby. *Are you prepared to do your bit?*

More information about the Eagle Radio Group can be found on its website: www.eagleradio.netfirms.com ♦

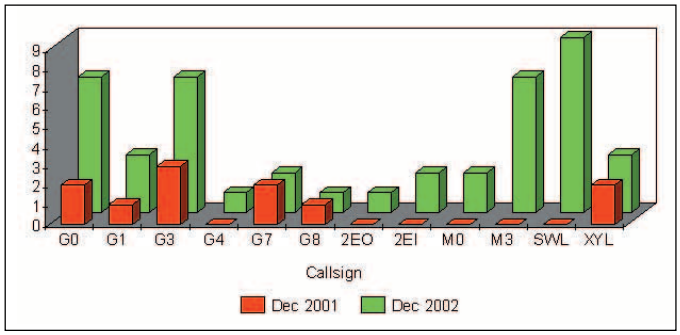


Fig 1: The chart illustrates the change in callsign distribution over the group's first 12 months, with membership now standing at 45. The welcome increase in the number of SWLs and addition of M3s is clear evidence of the extent of new interest shown in amateur radio. The group's Foundation Courses are proving to be very popular.

Down To Earth

Linearising Your Wheatstone Bridge

*How to linearise the scale on your Wheatstone bridge, by John Andersen, VK5ZFO **

IN HIS ARTICLE on p36 of the September issue of *RadCom*, Dick Biddulph, M0CGN, gave a delightfully elegant circuit for measuring resistance using a Wheatstone bridge. As I read it, I realised that nearly half the article was concerned with calibration. This is because the method used is inherently non-linear. For all its simplicity, it is this fact that has discouraged me, and no doubt many others, from using the Wheatstone principle.

HOW IT IS DONE

IT HAS BEEN SOME time since I played around with

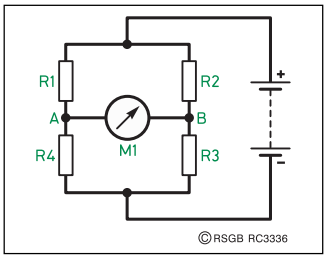


Fig 1:The original Wheatstone bridge circuit.

these things, so I looked again at **Fig 1**, and at the equation at balance:

$$\frac{R1}{R4} = \frac{R2}{R3} \qquad (1)$$

As is my wont when puzzling over how things work, I

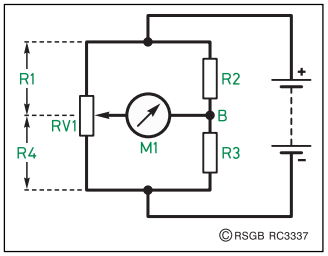


Fig 2: The initial modification to the circuit.

* *230 Young Street, Unley SA 5061, Australia.*
E-mail: johnandersen@smartchat.net.au

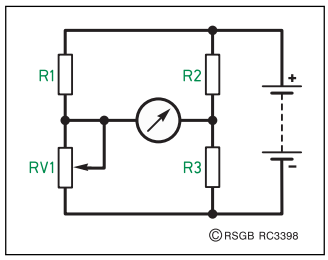


Fig 3: Keeping R1 fixed and varying R4 (as RV1) makes the scale linear.

rearranged the equation to see how it looked. As I did so I realised that in all the amateur literature I have read [and in most schools' textbooks and 'professional' tomes - *Ed*], the Wheatstone bridge circuit has been considered as a means of comparing ratios and that, in so doing, it is natural for both R1 and R4 to be replaced by a single potentiometer as in **Fig 2**.

Since, in seeking a balance, both R1 and R4 are varied at the same time, the circuit is inherently non-linear.

Now, if equation 1 is rearranged and R3 is separated out, it becomes:

$$R3 = R4\frac{R2}{R1} \qquad (2)$$

R2(Ω)	Multiply RV1 *scale reading* by	Max of range (Ω)
100	10	100
1k	100	1k
10k	1k	10k
100k	10k	100k
1M	100k	1M
10M	1M	10M

Table 1: Relationship between R2, the scale factor, and the maximum reading on the scale.
RV1 = R1 = 10kΩ, RV1 scale marked 0 - 10 in equal increments.

If R4 is now replaced by a variable resistance RV1, and R1 and R2 are fixed:

$$R3 = RV1 \times \text{constant} \qquad (3)$$

This is a simple comparison of resistances and, if RV1 has a linear characteristic, the calibration scale will also be linear. The circuit then becomes as in **Fig 3**.

Now, if the value of RV1 is made the same as R1 - say, 10kΩ - it is a simple matter to select values of R2 so that the bridge can be switched in decade ranges, see **Table 1** and **Fig 4**. This turns out to be the way the inventors originally intended the bridge circuit to be used.

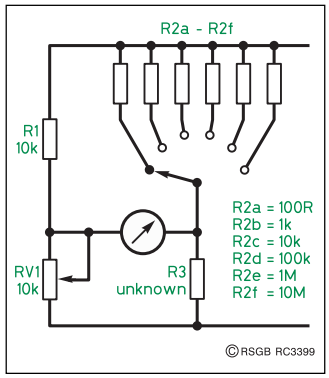


Fig 4: The complete circuit, showing the incorporation of the range switch, with its six resistors.

With this small alteration, Dick Biddulph's circuit can have a linear readout and, additionally, be much easier to set up. ♦

RadCom Helplines FOR MEMBERS

- Pete, G8VG, is looking for a **50MHz module** for the **Yaesu FT-736**. G8VG, QTHR, or e-mail g8vg@supanet.com
- Ian, G4AKD, is looking for a good home for eight boxed **Creed teleprinter black ribbons** - no charge! G4AKD, QTHR. Tel: 01954 782 974.
- Paul, G3MQX, needs a manual for the **Galaxy MkIII transceiver**. He is also looking for a manual for the **Trio 9R-59DS receiver**. All costs will be reimbursed. G3MQX, QTHR. Tel: 01803 855 597.
- Dave, G4ZYF, needs details of voltages, a PSU circuit or any other information for a **Samsung 4-head VCR, type VIK350**. The circuit details manual is apparently not available through the usual commercial channels for older models, and Samsung has not been helpful so far. All expenses will be gratefully refunded. G4ZYF, QTHR. Tel: 0117 967 6381.
- Ron, GW8DUP, would greatly appreciate information on modifying the **Trio TR-9500 UHF multimode** to provide variable output power facility. GW8DUP, QTHR. Tel: 01792 772 632 or e-mail: ronald.h@ntlworld.com
- Joseph, W1JR, is trying to locate **Dave Davies, ex-CN2AE** in the mid-1950s. Can anyone help? Joseph H Reisert, W1JR, 3 Hubbard Road, Amherst, New Hampshire 03031, USA.
- White stick operator, G3VRU, urgently requires a **Yaesu CW filter type XF-8.9HC** (600Hz) for the FT-980. G3VRU, QTHR. Tel: 01909 722 133.
- Bill, EA8AZC, requires personal, hands-on service assistance (preferably in the southern counties) for a **Collins S-Line TX 32S-A** which he will be bringing to the UK. EA8AZC, e-mail: bbkiwitt@terra.es
- John, G0FRO, is looking for a circuit diagram for a **Bushido 5in colour TV, CTVR 5500**. All expenses will be met. G0FRO, QTHR. Tel: 01235 832 871or e-mail: john.medcalf@ntlworld.com

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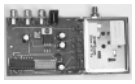

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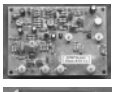

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bhi NES 10-2 Noise

Reviewed by Chris Lorek, G4HCL*

A DSP loudspeaker? Is this just a gimmick, or can it really help to improve the readability of signals? We asked Chris Lorek, G4HCL, to find out . . .

80m at night: "Sorry, I'm having problems reading you due to the band noise." *2m on the local repeater:* "There's a lot of wind noise in the background of your audio." Wouldn't it be nice if all received signals were 'crystal clear and BBC quality?' (But then, that could take the fun out of it!) However, 'getting through' means everything in a contact: "if you can't hear 'em you can't work 'em" is an old adage in our hobby.

Many top-of-the-range transceivers nowadays offer DSP - Digital Signal Processing - of received signals. I've used a home-built W9GR DSP add-on audio processor for many years now with my FT-990, with great success. I wouldn't be without it when I'm hunting out grey-line DX signals on the low bands. Together with careful tweaks of the IF bandwidth and IF shift it nicely reduces a lot of the background audio 'mush' that my ears would otherwise have to put up with. Another benefit, besides better readability, is an overall reduction in 'user fatigue', ie I don't get anywhere near as tired in trying to listen through the noise all the time.

* *PO Box 400, Eastleigh SO53 4ZF; e-mail; g4hcl@rsgb.org.uk*

The UK company of bhi, located in Bexhill on Sea, has come up with a very easy-to-use accessory for doing just this. They've incorporated a full-featured DSP noise reduction circuit entirely within a small external speaker casing. Measuring 110 x 65 x 55mm it's the size of a typical compact extension mobile speaker.

SETTING UP

TO USE THE NES 10-2 you just connect a DC supply of between 12 and 28V, and plug the speaker's 2m-long audio lead into your receiver's external speaker 3.5mm jack connection. That's it. Suddenly, received audio that was noisy with static crashes, ignition interference and so on becomes transformed into a nice, quiet background.

As anyone who's used DSP noise reduction will know, life's not always perfect, and that processed received speech can take on a 'modified' sound. This is because the way DSP works is by looking at 'uncorrelated' signals (ie random noise) and distinguishing this from 'correlated' signals (such as information), reducing the uncorrelated noise whilst keeping hold of the correlated audio. Increasing the actual level of such processing can reduce the level of noise more and more, until you come to the point where the wanted audio is adversely affected. In practice, this has the effect of making the received speech have a gradually increasing unnatural 'hollow' or 'ghostly' effect as the DSP level is also increased.

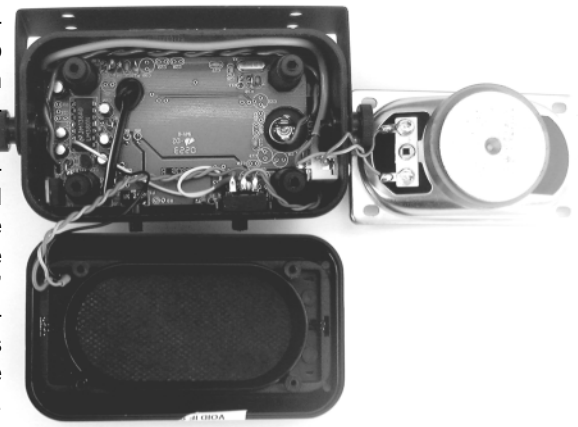
ON THE AIR

THE NES 10-2 has eight selectable levels of processing, which you can choose using a number of small DIP switches on the rear of the speaker case (see **Table 1**). It's supplied pre-set to level '6', which the user instructions say is suitable for most purposes. I experimented with the settings, eventually settling on level '4', ie mid-range, for my own preference for in-shack HF use.

SW1	SW2	SW3	Level
On	On	On	1
On	On	Off	2
On	Off	On	3
On	Off	Off	4
Off	On	On	5
Off	On	Off	6
Off	Off	On	7
Off	Off	Off	8

Table 1: The NES 10-2 DIP switch settings.

I found that the filter took a short but finite time to adjust itself to the background noise level but, from then on, in virtually all cases the general level of background noise was very nicely reduced. So much so that I found I could often leave my receiver monitoring a given HF net frequency, waiting for a CQ to appear, without having to have the volume turned well down. There's also a 3.5mm jack socket on the side of the speaker which allows you to plug in a headphone and still get the advantage of the unit's noise reduction, which is useful in the shack as well as when using a mobile headset.



In addition to HF use at home and mobile, I also tested the speaker on VHF and UHF, both SSB and FM, including over 1000 miles-worth of driving around the country and from temporary locations. Once again, on SSB it was almost like having an FM 'squelch', and I found I could continually monitor, say, 144.3 or 433.2MHz with much less strain on my ears. The results on FM were naturally not much clearer from strong, well modulated signals, but it really did clear up audio from the occasional mobile station with a badly-adjusted 'hands free' microphone complete with plenty of background noise.

CONTROLS

APART FROM THE rear panel DIP switches, the only controls on the speaker are a pre-

Eliminating Speaker

set volume control and a noise cancellation on / off slider switch. The volume control could more accurately be described as a sensitivity control, because once set, I could then use my receiver's volume control as usual to control the overall volume. The speaker gives up to 2.5W RMS output, quite ample for most purposes. A dual-colour LED behind the speaker grille glows red when the noise suppression is off, and green when on, and this illuminates whenever power was applied.

There's no on / off switch, so you'll need to disconnect the power when you're not using it unless of course you don't mind the LED being lit all the time. The speaker unit needs a specified 500mA current, I found it drew 76mA with no audio present, so if you use it mobile I'd suggest you wire it to an ignition-switched supply to save long-term battery drain.

ADD-ONS

OPTIONAL ACCESSORIES include a plug-in mains 12V DC power supply or a fused power plug lead for shack use, and a fused in-vehicle power lead. bhi can also supply a simpler 'fixed level' noise eliminating speaker, the NESCB, which could be perfectly adequate for fixed-channel communications such as FM. Also coming up is the NEIM1031 noise eliminating in-line module, which you can use where an external speaker may not be the best solution.

OVERALL CONCLUSIONS

AN EXCELLENT, easy-to-use plug-in accessory that can significantly improve your receiver's audio performance and readability.

The NES 10-2 is currently priced at £99.95 plus P&P, and our thanks go to bhi Ltd, PO Box 136, Bexhill on Sea, East Sussex TN39 3WD for the loan of the unit. Contact bhi on 01293 530147 for further information.

bhi has kindly offered an NES 10-2 noise elimination speaker as a competition prize for RSGB members. Take a look at the accompanying competition details in this issue to see how you could win one!

Win! A bhi NES 10-2 Noise Eliminating Speaker

THE NEW bhi NES Noise Eliminating Speaker is an add-on unit that simply plugs into your receiver or transceiver loudspeaker socket. It can help to improve the readability of signals by using digital signal processing technology to reduce the background noise - be it natural static, mobile wind noises or man-made interference.

You'll have read Chris Lorek's review on pages 38 / 39. Now, thanks to bhi, an NES 10-2 speaker unit could be yours in our free competition exclusive to RSGB members. The NES 10-2 is ideal for the home shack or for mobile use. Enter the competition - it could be you!

COMPETITION TIME

Look at the three questions below. Write your answers on **a postcard or the back of a sealed envelope** (no letters accepted) and send them to: bhi NES 10-2 Competition, RSGB HQ, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE. Don't forget to include your own name and address! The closing date is first post on **Friday 3 January 2003** and the winner will be announced in the February *RadCom*.

Questions

1) How many levels of noise reduction does the bhi NES 10-2 speaker unit incorporate?
a) One ***b) Four*** ***c) Eight***

2) What is the recommended retail price of the bhi NES 10-2?
a) £99.95 ***b) £109.95*** ***c) £119.95***

3) Can the bhi NES 10-2 be used on . . .
a) FM and SSB only? ***b) All modes?*** ***c) SSB only?***

THE SMALL PRINT:
Only one entry per reader (multiple entries will be disqualified). No other correspondence can be entered into. All entries will become the property of the RSGB; please state on your entry if you do not wish to receive further promotional material or offers from the RSGB. Employees of the RSGB are not eligible to enter. The winner will be the first correct entry drawn at random. The draw will take place on 3 January 2003.

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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

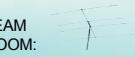
DLHF-100 10/15/20 Mtrs (12/17-30M) Boom Length 4.20m Max Height 6.80m Weight 35 KG Gain 10dB **£399.95**

VISA SWITCH MasterCard

HF YAGI

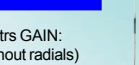
HBV-2 2 BAND 2 ELEMENT TRAPPED BEAM
FREQ: 20-40 Mtrs GAIN: 4dBd BOOM: 5.00m
LONGEST ELEMENT: 13.00m POWER: 1600 Watts ... **£329.95**

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**

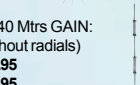
HF VERTICALS



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: 32.5m 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

WinCap Wizard 3

Reviewed by Gwyn Williams, G4FKH*, Vice Chairman, RSGB Propagation Studies Committee

WINCAP WIZARD 3 (*WW3*) is a new propagation prediction program available from Taborsoft HamTools. It can be downloaded from the Internet, though at 7.233MB in size it may be a little laborious to do so. In my case it took about 50 minutes via my 56KB dial-up modem, ie less than £1 in call charges. Installing the packages is very simple, all that is necessary is to click or double click on the downloaded file; the inbuilt Windows installation process kicks in and together with the installing package guides the new user through the process. I always keep my radio-related software in one directory, making sub-directories for each new package, but the defaults can be accepted with no loss of functionality.

Fig 1: The initial 'Master Control Screen'.

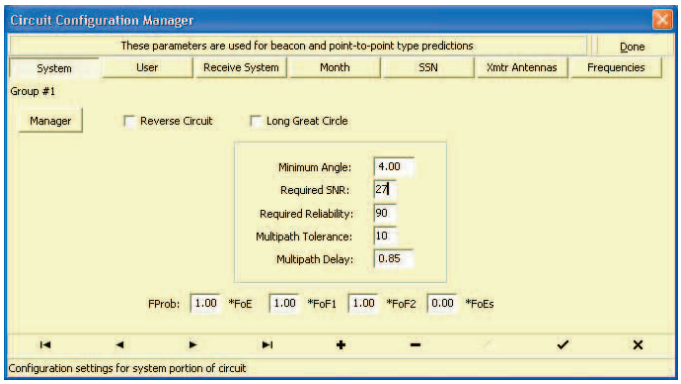


Fig 2: Initial input screen 'System' from the 'Master Control Palette > Circuits'.

WHY USE PROPAGATION PREDICTION SOFTWARE?

THIS TYPE OF SOFTWARE assists with high frequency (HF) radio communications circuit analysis, HF scheduling and frequency selection. It's especially useful for planning in preparation for contests, DX pursuits - or just for fun. *WW3* also caters for batch analysis; up to 18 point-to point predictions can be created simultaneously.

Three types of prediction are available: point-to point, NCDXF / IARU International Beacon Network, and 'user batch' mode. Charts, reports and the result-inspector interpret the *VOACAP* data into 'prediction views'.

At the heart of all packages such as this is the *prediction engine*, in this case *VOACAP*, separately available from http://elbert.its.bldrdoc.gov/hf.htm (and free of charge).

I have recently noticed an anomaly with HF prediction packages centred on the solstice periods and have found that to date only *VOACAP* maintains a generally correct MUF prediction when compared with measured figures available from the Rutherford Appleton Laboratory (RAL). In future, the *RadCom* propagation predictions will be produced using *VOACAP*. For this reason, I believe the producer of *WW3*, Jim Tabor, KU5S, has chosen the correct prediction engine for his package.

STARTING WITH *WW3*

FIG 1 SHOWS the initial start-up screen. However, before we go on to prepare the input I would like to make a few points about documentation, in this case the 'Help' feature, accessed via the initial screen's seventh option ('Menu > Options > Help'). There is a document file that comes with the package, but seems to be incomplete. Because I prefer printouts to on-screen help files, I merely printed out all the help topics. After reading through it, the general philosophy can be garnered and a good deal of propagation theory absorbed. There is also a small bibliography detailing further reading.

Now on to the more interesting stuff! To start it is necessary to input all your station details as shown in **Fig 2**, found under the 'Circuits' tab, which depicts the first option 'System'. You will notice that I have not used all the suggested defaults; I have changed my 'Minimum Angle' to 4°, and my 'Required SNR' to 27. This is

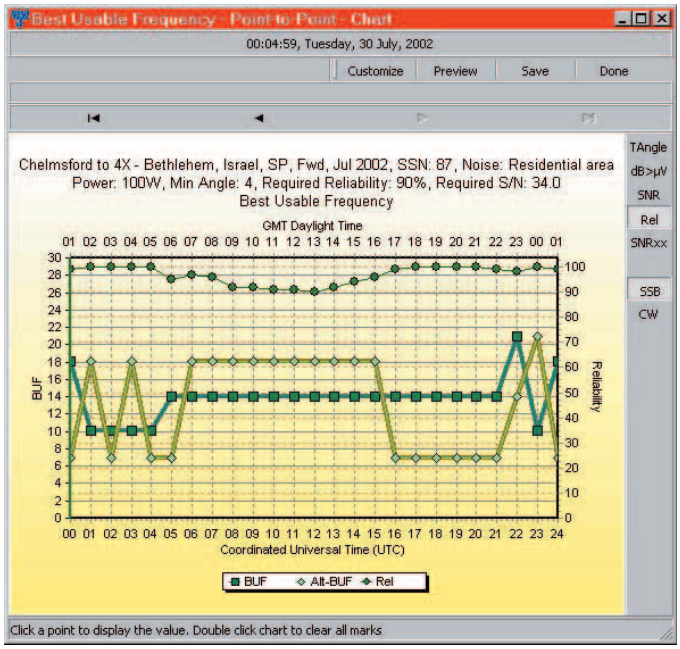


Fig 3: Graph of 'Best Usable Frequency' (BUF) etc.

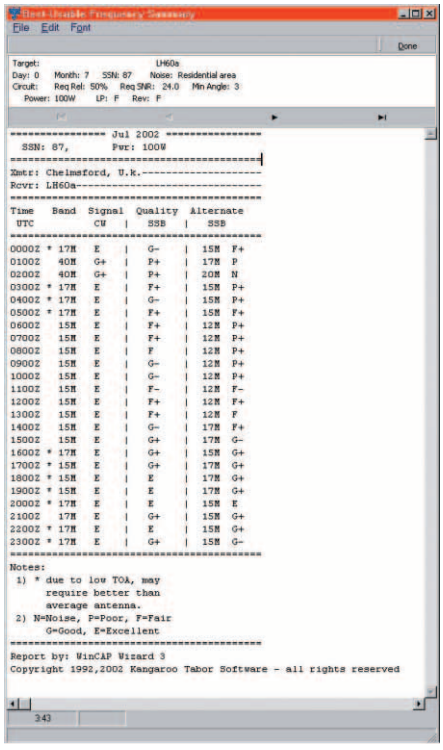


Fig 4: The 'Best Usable Frequency' (BUF) chart.

* *21 Borda Close, Chelmsford, Essex CM1 4JY.*

Propagation Prediction Software

because I do not have a perfect take-off for my aerial and as a CW operator, an SNR level of 27 will show openings even when reception conditions are 'Poor'. If in any doubt about these or any other options either refer to the documentation or use the suggested defaults. Carefully work through the remainder of the buttons on this screen. I would suggest the next course of action is to check out and change if necessary the 'Miscellaneous Defaults' found under 'Menu' on the 'Master Control Palette', again referring to the documentation if in any doubt.

PREPARING A PREDICTION

THERE ARE SEVERAL ways to produce predictions and in fact three different types of prediction as listed above. For convenience I will demonstrate a 'Point-to Point' prediction. By choosing the fourth option on the 'Master Control Palette', 'Map', any worldwide destination can be picked out easily. Simply clicking with the mouse produces the prediction results. Another way to choose destinations is from the 'Analyse' button on the 'Master Control Palette'; this presents a spreadsheet-type view that is sorted alphabetically in prefix order. By choosing '4X Bethlehem', and pressing the 'Analyse' button on that screen, the screens at **Fig 3** and **Fig 4** pop up. (All the views and analysis screens are configurable and interchangeable.) These views really complement each other and help to give an clearer overall picture of what is actually happening.

As with all programs of this nature, it will be necessary to tailor the inputs to a particular situation, either using the method explained in my earlier article in *RadCom* [1] or by changing the aerial configuration and default parameters.

For this package's defaults the author's philosophy is that it is better to know that a circuit is at least usable and a path exists than see none and not even try. The package comes with a default aerial of a high dipole for 0 to 13MHz and a 3-element Yagi for 14 to 30MHz, while the default transmit power is 1500 watts. Putting this all together we have a 'big-gun' scenario. *VOACAP* allows for only one transmit aerial and up to four receive aerials and it is possible to modify the gain settings for these parameters. The defaults provide 12dBi gain on the lower frequencies and 24dBi gain on the higher frequencies. The author's state that these gains are very close to those used in other propagation charts.

ANALYSIS MODE

WW3 HAS AN innovative analysis inspector, called 'Results Inspector', **Fig 5**, which

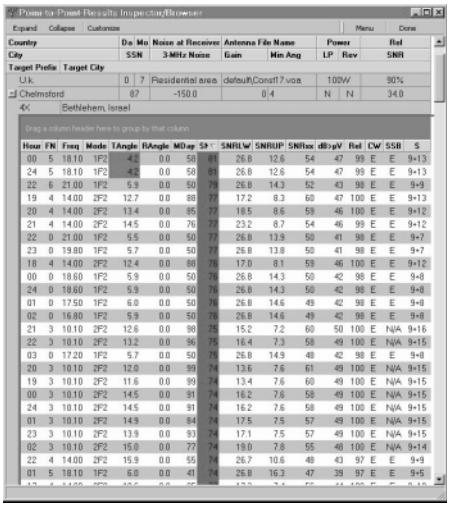


Fig 5: The Results Inspector, sorted on the SNR column (shown shaded, in centre).

is accessed via the 'Results > Results Inspector > Point-to Point' tab of the 'Master Control Palette'. The data can be sorted from any column and either in ascending or descending order.

Another very useful analysis tool is the 'Signal Level and Take-Off Angle' report, **Fig 6**, accessed via the 'Reports > Point-to Point > Signal Levels and Angles' tab on the 'Master Control Palette'. It is easy to see at a glance which band is predicted to be open, at what time and at what signal strength. These analysis tools make this package very powerful, the ultimate usefulness limited only by the imagination of the user. There are many more features available to purchasers, but I won't spoil all the fun by

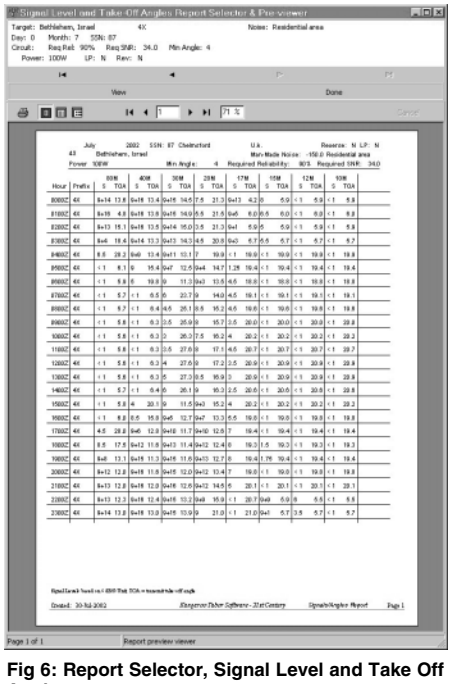


Fig 6: Report Selector, Signal Level and Take Off Angle report.

detailing them all, as with all such packages it is best to try things out and analyse the differences for oneself.

OVERALL PERFORMANCE

AS ALREADY MENTIONED, this is a very powerful package and its flexibility makes it one of the top packages available to radio amateurs. With careful analysis of one's own set-up and correct input of the various parameters, accurate predictions can easily be achieved.

One thing that I found a little annoying is that the designers decided not to include LUF / MUF / FOT graphs, stating that they consider their 'BUF' (Best Usable Frequency) graph to be superior.

Tabor Software has an e-mail reflector for their products and this package often features as it's quite new. Some of the most useful output has been aerial design information and a general discussion concerning some initial difficulties with output screen placement on the monitor. Also of interest is KU5S's tutorials. He recently published a short one on the 'Results Inspector', which I'm sure helped a lot of users. There is also a promise of more to come.

AVAILABILITY

WINCAP WIZARD 3 is available on a free 30-day trial from http://www.taborsoft.com It costs $65 to register and receive a complimentary licence for their beacon reception program *BTWiz*. Payment can be made via all the usual methods including on-line; the price includes upgrades, which may include bug fixes and enhancements. It is possible to purchase the software on a CD for $15 extra, but that will quickly become outdated as enhancements are added.

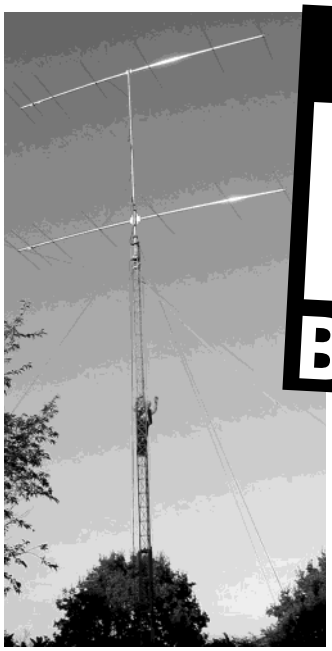
BTWiz is an NCDXF beacon chain monitoring aid and shows which beacon is transmitting, on what frequency, the great circle path, the day / night terminator, the great circle distance and the azimuth angle. Because this application originates from the same stable as the previous one, manipulation of the various features is the same in both cases. As well as the normal beacon type features, there are other tools available, ie Calendar, an Internet Time Checker and a Time Zone Browser. A neat added extra.

All in all, I'm sure that most will agree that *WW3* is worth the cost when the benefits are taken into consideration.

REFERENCE

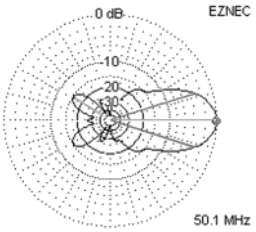
[1] 'The RSGB PSC International Beacon Monitoring Project', Gwyn Williams, G4FKH, *RadCom*, April 2002. ♦

TRIDENT®



Mike G3SED's stacked pair of Trident® 6 mtr 7 element Long Boom Yagis - spaced 22ft at 75ft high

6 mtr DX BUSTERS



Pair TA6M7LDX stacked 22ft at 75ft High. Gain 21.15 dBi at 4 deg elevation

beat the *PILEUPS* with these *OUTSTANDING*

UK designed and manufactured Antennas

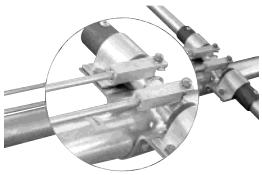
• Computer Optimised • Ultra Lightweight • Stress Analysed
• High Wind Survival • Extra Strong • 2kW Power Rated

All Mono Band Yagi's are computer optimised for the very best performance using the latest industry software. Wind loading and mechanical stress are optimised with a separate computer programme to provide high survivability in the worst of weathers.

Trident® Yagis use a riveted construction to give extremely strong, yet ultra lightweight antennas that hold their profile in high winds. Only high grade extruded aluminium is used throughout, no welded seams. Other hardware and fixings are of stainless steel.

Trident® Yagis are easy to assemble in just a few minutes straight out of the box without the need for measurements. All antennas are index drilled at the factory with the boom to element brackets pre-fitted to ensure perfect element alignment.

Trident® Lightweight economy Yagis use a square section boom and lightweight elements to provide a cost effective and low price alternative to the "mainstream" DX buster yagis above.



DETAIL OF HAIRPIN MATCH

DETAIL OF EL JOINT

DETAIL OF YAGI FEED

Trident® 6 Metre Yagis

		GAIN	BOOM	WEIGHT	PRICE
DX Busters					
6ML	3 element	8.21	1.9	3kg	£85.95
6M5L	5 element	10.31	3.6	6kg	£119.95
6M5LDX	5 el. Long Yagi	11.75	6.0	8.5kg	£165.95
6M6L	6 el Yagi	12.40	7.22	n/a	£225.00
6M7LDX	7 el. Long Yagi	13.31	9.60	11kg	£249.95
Lightweight Economy Range					
TR 6-3	3 el. economy	8.20	1.9	n/a	£75.00
TR 6-5	5 el. economy	10.20	3.6	n/a	£99.95
Baluns					
CB 18-52	18 - 52 MHz 50 Ohm Balun				£12.95
W2DU	18 - 52 MHz 50 Ohm 1:1 2kW Balun				£29.95

W2DU BALUN

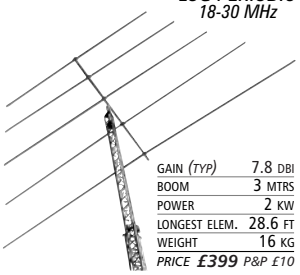
Please add £2.75 for postage and packing for all Baluns

Dear Nevada

In September I purchased from you a **Trident 50MHz Yagi**. I found it to be very well constructed and lightweight. Its 3 elements are perched barely 5mtrs above ground. Like all new products I was a little wary but your advice proved my initial 'wobble' to be unfounded when I worked Terry VK8TM in Alice Springs at 10:10hrs last Sunday (4/11). Obviously good conditions, yes - but I was only using 10 Watts!

73s Jim Rabbitts GM8LFB

LP 1830 *5 ELEMENT HF LOG PERIODIC 18-30 MHz*



PRICE ***£399*** *P&P £10*

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17M4L	4 element Yagi	tba	tba	tba	tba

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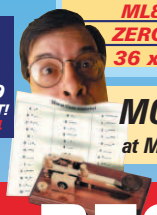

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ALSO AVAILABLE: 23cm version CALL FOR DEAL!

Kenwood bought us the first full DSP hf radio and now TS-2000 is the first DSP all band radio! Coverage is 160m-70cms with built in ATU (HF & 6m), Built in TNC, 100 Watts HF, 6 & 2m 50W 70cms!

TS-2000X
Same as the TS-2000E but with 10W23cms as well!

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KENWOOD B2000

zero DEPOSIT

TS-B2000E and TS-B2000X Same spec as the TS-2000E and X but with no controls on the main unit. Operation is either via a PC or optional remote mobile head kit!

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

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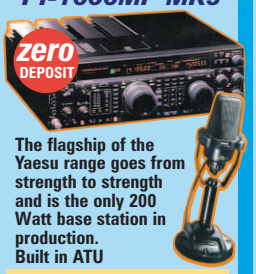
YAESU FT-1000MP MK5

zero DEPOSIT



The flagship of the Yaesu range goes from strength to strength and is the only 200 Watt base station in production. Built in ATU

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YAESU QUADRA VL1000

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Full IF DSP
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ICOM IC706 MK2G

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zero DEPOSIT

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ML&S £629 ZERO DEPOSIT! 36 x £22.87

KENWOOD TS-870S

zero DEPOSIT

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ICOM PCR-1000

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ML&S £309 ZERO DEPOSIT! 36 x £11.23

ICOM IC-R8500

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zero DEPOSIT

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YAESU VR-500

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zero DEPOSIT

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CALL FOR AVAILABILITY

YAESU FT-817

choose a package to suit you

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Package 1
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YAESU FT-920AFC

zero DEPOSIT

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YAESU VX-1R

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zero DEPOSIT

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FINANCE EXAMPLE VX-7R AT £329.00
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Chris Taylor G0WTZ

Chris has been with ML&S for over 12 Years. In this time he has kept a keen interest in the hobby. He currently enjoys QRP with the FT-817 and also enjoys Data Modes. As a biker you do not catch him mobile too often but when you do he is usually to be found on Top Band. As Sales Director Chris always has his calculator at the ready to give you that famous "Taylor made Package" Give him a call today with your wish list and he will be happy to work out a deal for you."

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FT-1000 Mark V Field

zero DEPOSIT

ML&S £2199
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- *Easy Digital Mode Interfacing*
- *And MORE.....*

LOOK! New Miracle Antenna has arrived!

MIRACLE WHIP MkII

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 (25W max). It even works without a counter poise. Call for full details!

ML&S £129.95 IN STOCK!

Kenwood TM-V7E

Dual Band Mobile giving VHF & UHF coverage with dual receive of VHF & UHF or HF & VHF/UHF & UHF.
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Icom IC-T90E

The new 3 band hand held from Icom is long over due and well worth the wait. The buttons have a very positive feel and audio is good on both TX and RX. With lithium Ion Battery giving 5 watts on 2,70 & 6 "Another winner from the Icom stable"
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TRANSCEIVER / COMPUTER INTERFACING

HOW CAN I build an interface to control my transceiver from my PC? The interface from the transceiver manufacturer costs a fortune!

IT ISN'T DIFFICULT. Almost all modern transceivers have an interface for computer control, and there is a wide variety of software available to communicate with the microprocessor inside your rig that controls the frequency synthesiser and many other functions. The PC software exchanges data with the transceiver using one of your PC's serial interface or COM ports [1]. The COM port uses a world-standard system called RS-232 for exchanging serial data with the outside world. RS-232 is a bipolar signalling system: the logic zero or 'space' level is specified as +10V (actually anywhere in the range +5 to +15V) and the logic 1 or 'mark' level is -10V (actually -5 to -15V). The problem is that most transceiver serial ports provide TTL-level signals: +5V for logic 1 and 0V for logic zero. **Fig 1** shows why an interface is needed, to shift these voltage levels between the two systems. Controlling a transceiver by a PC is usually a two-way data exchange, so each direction needs its own level shifter.

A few transceivers now provide direct plug-and-play RS-232 compatibility, using a similar 9-pin D connector to the PC's COM port. All others need an interface, so let's examine the connector pins at the COM port to see what's needed. **Table 1** lists the signals we have to work with, at the PC COM port. Note the *Connects To* column: all the lines from the PC connect to a different-named line at the other end of the link, with the single obvious exception of Ground. The most important pair are TXD and RXD. The TXD output from the PC carries transmitted data from the PC to the transceiver, and is connected via the interface to the transceiver's RXD input (sometimes called 'Serial In'). The transceiver's TXD output (or 'Serial Out') sends data back to the PC's RXD port. The Big Three transceiver manufacturers each have different control protocols and different hardware interface requirements, and these also vary between different transceivers from the same manufacturer. The control protocols are usually handled for you by the software authors - and now, here's how to handle the hardware requirements.

Pin	Name	Function	Input/Output (for PC)	Connects to (other end)
1				
2	**TXD**	**Transmitted Data**	**Output**	**RXD**
3	**RXD**	**Received Data**	**Input**	**TXD**
4	DSR*	Data Set Ready - handshake	Input	DTR*
5	**GND**	**Ground**	**(chassis)**	**GND**
6	DTR*	Data Terminal Ready - handshake	Output	DSR*
7	CTS*	Clear To Send - handshake	Input	RTS*
8	RTS*	Ready To Send - handshake	Output	CTS*
9				

Table 1: RS-232 connections. Pin numbers are moulded into connectors, and are the same for both plugs and sockets. If handshake connections (marked *) are necessary, they can often be looped-back locally at the connector without using extra lines. In PC-transceiver interfacing, DTR and DSR are commonly used for other purposes:DC power, CW keying and / or PTT control.

All that's absolutely needed for two-way serial communication are just three wires: TXD, RXD and ground. That's what Yaesu rigs use (**Fig 2(a)**). In this kind of 'free streaming' communication, either end can send data whenever it wants, and this works fine for the kinds of simple, direct links we need for transceiver control. The Kenwood interface is more complex: it uses reversed TTL logic polarities (indicated by the TTL inverters in **Fig 2(b)** and it also requires Request-To-Send (RTS) and Clear-To-Send (CTS) handshaking on two additional lines. This RS-232 jargon means that no data is supposed to be transmitted until the other end has been asked if it's ready to receive (RTS), and has sent back a confirmation (CTS). Mercifully, RS-232 communication doesn't always insist on such formalities. The hardware handshaking needs of Kenwood rigs can usually be satisfied by linking the RTS output directly back to the CTS input the same connector (**Fig 2(c)**) - in effect, each device tells itself to go ahead.

Next let's look at some hardware for level

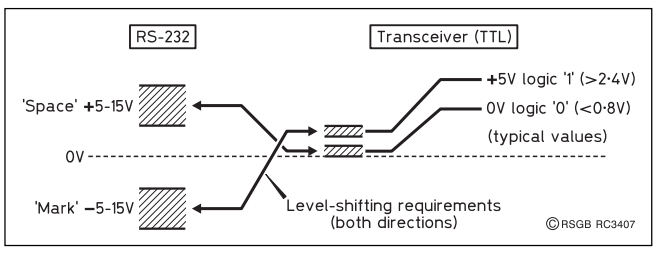

Fig 1: Level-shifting requirements between RS-232 and TTL. As well as the polarity inversion in RS-232, the logic levels are also inverted.

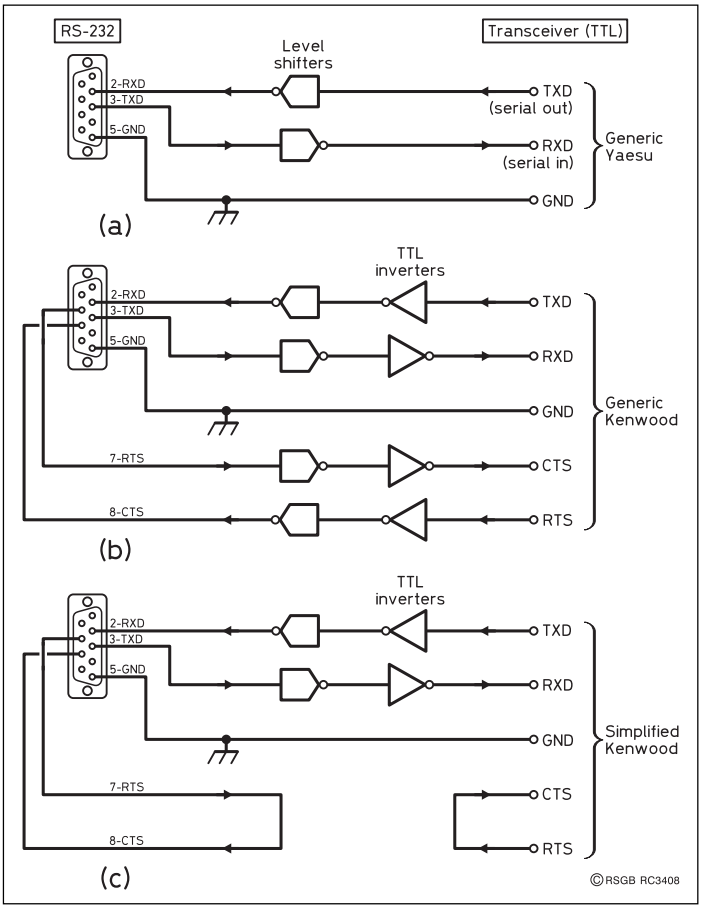

Fig 2: Generic interfaces from RS-232 (a) 3-wire Yaesu, (b) 5-wire Kenwood with full RTS - CTS handshaking, (c) simplified 3-wire Kenwood, with handshaking emulated by CTS - RTS linking at each end.

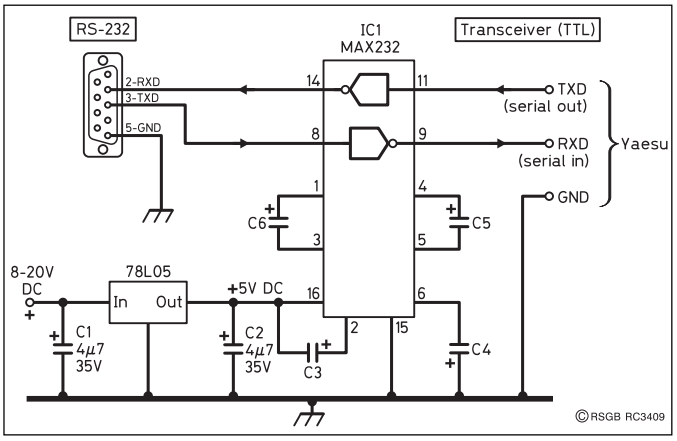

Fig 3: Practical Yaesu interface using the MAX232. C3 - C6 are typically 10µF 35V tantalum electrolytic, but some varieties of MAX232 allow lower values (see data sheets).

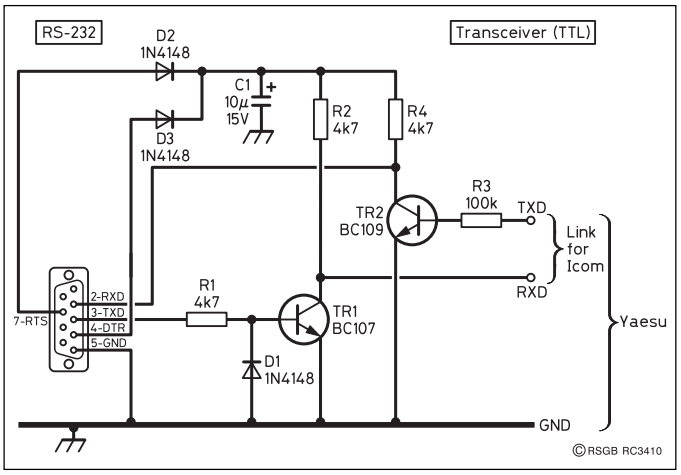

Fig 4: Practical Yaesu/Icom interface deriving power from the COM port. Note the link for the Icom 'single-wire' data bus (Fig 5).

shifting (don't worry, I haven't forgotten Icom). Remember that the aim is to translate the TTL levels from the transceiver into RS-232 (or compatible) levels for the PC (Fig 1). The first practical interface I'll describe (**Fig 3**) uses a MAX232 IC to generate true RS-232 voltage levels. To fall securely inside the RS-232 specification, this requires DC supply rails at about +10V and -10V. The MAX232 revolutionised TTL / RS-232 interfacing by generating both of these voltages on-chip from a standard +5V TTL supply, which makes the whole design very simple. The MAX232 contains two level shifters in each direction, so it can provide a more complete RS-232 interface with handshaking if required. Fig 3 shows a MAX232 interface for Yaesu transceivers such as the FT-980 and FT-990 that don't already have a PC-compatible COM port. It's really pretty simple: wire it up in a small shielded box close to the transceiver, apply +12V (which the 78L05 regulates down to +5V) and away you go with real RS-232 bipolar signalling [2]. More elaborate interfaces for Yaesu, Icom and Kenwood rigs using the MAX232 are described in recent editions of the *ARRL Handbook*.

But interfaces can often be much simpler than that. We don't really need true bipolar signalling, because the RS-232 receiver ICs used in PC COM ports don't insist on the full-specification voltage levels. To the disgust of RS-232 purists, they treat any incoming voltage above about +1.8V as a valid 'space' level, and anything below about +1.6V as a valid 'mark'. This means you can fake an RS-232 interface by simply pulling the relevant line from a normal +5V TTL level down to ground. The noise margins are much reduced compared with true bipolar RS-232 with its 20V swing, but they are generally adequate for short screened runs between a PC and a transceiver. **Fig 4** shows an example for Yaesu rigs. R1 connects the PC's TXD port to the base of TR1, and a positive RS-232 'space' level will pull TR1's collector voltage down to ground. The negative RS-232 'mark' condition biases TR1 into cutoff (negative base voltage is limited by D1) so that R2 can pull the output line up to a valid TTL 'logic 1' level. TR2 works in a similar way: whenever the transceiver puts a TTL 'logic 1' on the line, TR2 pulls the RXD voltage at the PC COM port almost to zero, which the PC's RS-232 receiver IC interprets as a valid 'mark'.

Icom rigs are different because they use a simple 'one wire' interface (actually a single wire plus ground screen). The Icom CI-V control protocol is quite sophisticated: it not only handles signalling both ways along the single wire, but also allows the PC interface and several Icom rigs to *share* that one data line (**Fig 5**). The CI-V system sends individually addressed data packets to each rig, and likewise recognises the identity of each rig when receiving data. The Icom hardware interface thus requires the input and output to be commoned - in Fig 4, simply link TXD and RXD at the transceiver side as shown [3].

You've probably noticed another simplification in the two-transistor interface in Fig 4 - it needs no external power supply. The positive rail is generated directly from the RS-232 port via D2 and D3, which are connected to the RTS and DTR lines. Either or both of these lines usually sits at the RS-232 'space' level of about +10V. C1 stores this voltage and takes care of any minor gaps in the supply. Stealing a small positive and/or negative supply from the RS-232 port is a well-known technique, but it's limited to a few milliamps only, so it won't work with the basic MAX232 circuit in Fig 3.

There's also a completely different class of RS-232/TTL interfaces using opto-isolators. If you have multiple transceiver-PC interconnections including audio, these interfaces can be very useful because they also break the ground connection, which may help prevent hum loops. However, opto-isolators require either a separate power supply or 'strong' TTL outputs from the PC that are capable of sourcing 10 - 20mA. I'll return to this if anyone's interested, and there are several links on the 'In Practice' web page.

THANK YOU!

FINALLY, THANKS TO EVERYBODY who has e-mailed and written letters during the past year. As 'In Practice' enters its 11th year, this is a seasonal opportunity to say how grateful I am for all your questions, comments and brilliant ideas! Happy holidays and best wishes for 2003.

NOTES

1. 'Serial' means that the data bits travel in sequence down a single wire, rather than in parallel down several wires (as happens at your parallel printer port).

2. If you're a little more adventurous, the best place for this interface is inside the transceiver, where the manufacturer should have put it in the first place.

3. Some web versions of the Fig 4 interface show R3 as 4.7kΩ, but not all Icom rigs can deliver a good TTL 'logic 1' into this low resistance. That's why R3 is 100kΩ, and TR2 is a high-beta transistor. ♦

The 'In Practice' website has many links to PC control interface circuits.

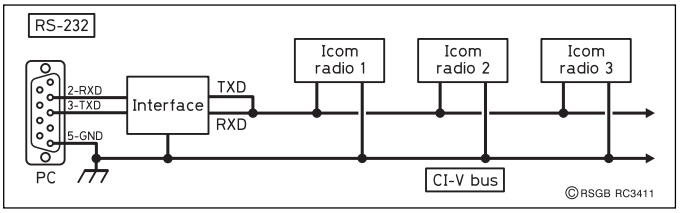

Fig 5: Icom 'single-wire' (plus ground) CI-V data bus allows multiple rig control; also used by Ten-Tec.

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.

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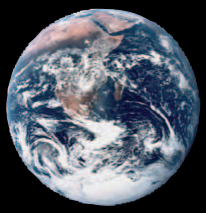

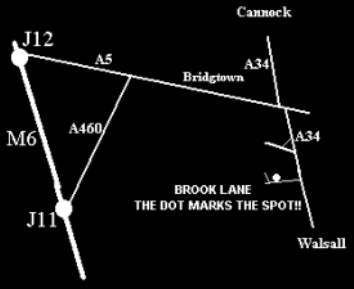

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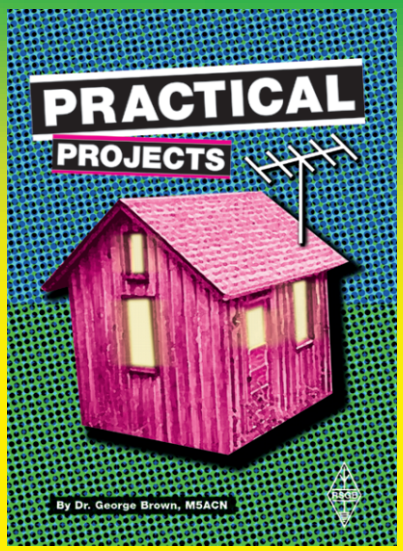

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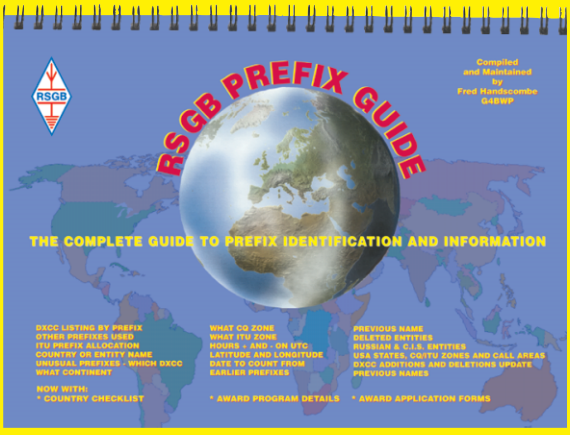

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OSCILLATOR NOISE & THE K2 KIT

JOHN CRABTREE, KC0GGH, has commented on the topic of G3SBI's double-tank low-noise oscillators as discussed in 'TT' April 2002 and also in respect of the AOR7030 and CDG2000 designs. His letter was written before the publication of G3UUC's notes in the November 'TT'. He provided copies of David Leeson's 1966 contribution to *Proc IEEE,* (referred to in the May 'TT') mentioning that Leeson is now W6NL but adding that "Since then there has been much work on refining the basic Leeson model. There has also been much reference in the amateur radio literature in the last eight years, particularly by Dr Ulrich Rohde, DJ2LR / HB9AWE."

KC0GGH continued: "Peter Chadwick, G3RZP, pointed out to me that, since 1998, there have been many papers in the *IEEE Journal of Solid-State Circuits* on the issues of designing low phase-noise oscillators for mobile telephone applications. In these designs, oscillator performance is governed by the low Q of the [UHF] coils.

"The understanding and modelling of phase noise was moved on by Dr T H Lee and Ali Hajimiri, for example, in 'Oscillator Phase Noise - a Tutorial' (*IEEE J S-S C,* March 2000, pp326-36) which explains their difficulties with the Leeson model and their new methods. This and many other papers written by them are available on-line from the Stanford University Electrical Engineering website. Also, Professor Jeremy Everard at the University of York has done much work on low noise oscillators, some of which is detailed in his book *Fundamentals of RF Design With Low-Noise Oscillators*."

KC0GGH admits that he is at a loss to understand why G3SBI found that the phase noise fell by 20dB for a single resonator and 30dB for the double-tank circuit: "The single tank circuit should have a close-in region where the phase noise falls by 30dB. Possibly there are the effects of the PLL, tuning diodes etc".

He enclosed a copy of the AR7030 local oscillator phase-noise plot as given in the maker's technical specifications of the receiver: **Fig 1**. This shows a fall of about 6dB per octave (20dB per decade) from 10kHz to 40kHz. "Closer in, say 5kHz to 10kHz, it falls by about 9dB (about 30dB per decade) and, closer in than 5kHz, the slope is even greater, and other effects must be happening. G3SBI's two-transistor circuit (Fig 6(b) April 'TT') is really intriguing. By reducing the size of the capacitors, presumably the loading is decreased and the Q increases? I wonder if the effects of the symmetry give any sort of flicker noise reduction as per Lee and Hajimiri? This is pure speculation on my part."

KC0GGH has also commented on 'receiver dynamic range' with reference to the article 'HF Receiver Dynamic Range: How Much Do We Need?', by Peter Chadwick, G3RZP (*QEX*, May / June 2002, pp36-41). G3RZP considers how good receivers need to be in terms of limitations produced by the intermodulation in the receiver; effects caused by local-oscillator phase noise (reciprocal mixing); and spurious responses, both internal and external. From this he draws the conclusion that "the signal-handling performance of commercial amateur radio equipment has not [generally] improved in 20 years. Yes, I will concede that we have better stability, multiple VFOs etc. The real problem has been the inclusion of general coverage receivers into amateur radio transceivers, with the move to up-conversion receiver designs with wider roofing filters, and wideband (and hence noisy) oscillators."

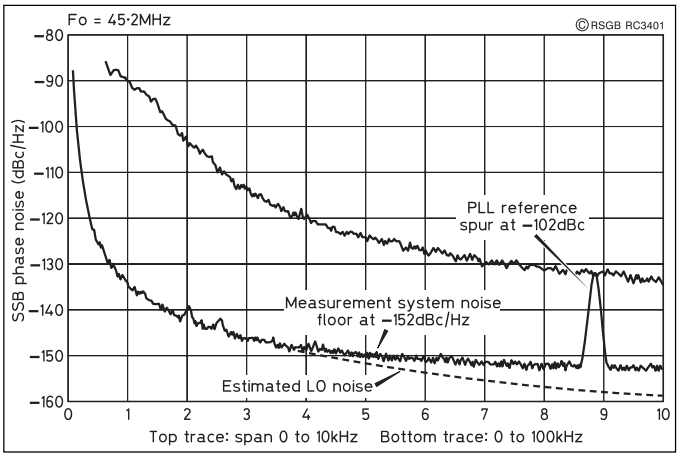


Fig 1: Phase noise plots of the AR7060 receiver which uses a double-tank local oscillator.

KC0GGH continues: " I recall you writing that amateur radio receivers should cover amateur bands only. The reasons are abundantly clear. The CDG2000 transceiver, at face value, has a signal-handling performance far better than nearly all commercial equipment."

[My reference to amateur-bands-only receivers was primarily directed at the absence of effective input RF filters designed specifically to pass only the HF amateur bands rather than the older tuned-signal-frequency circuits (although these could impose tracking problems). Good signal-frequency selectivity remains a desirable attribute. One must admit, however, that modern general coverage equipment facilitates the use of the experimental 5MHz allocations and any possible new bands or extensions to existing bands! It is worth noting that the high-performance Icom 756-PROII has 11 bandpass filters and one low-pass RF input filter, together providing general coverage from 0.03 to 60MHz but, even so, will not attenuate 7MHz broadcast signals! - *G3VA*].

KC0GGH also draws attention to the Elecraft K2 transceiver kit introduced as a high-performance QRP transceiver (1 - 10W output) two years ago, now available with a 100-watt modification as the K2/100. This kit has not so far been reviewed or, apparently, advertised in the UK, but details can be downloaded from: **www.elecraft.com/** Several K2 kits have been obtained direct from the USA and successfully built in the UK.

A six-page review of the K2 transceiver kit appeared in *QST*, March 2000, pp69-74, in which it was noted: "The Elecraft K2 represents a remarkable advance in the level of sophistication and performance available in a build-it-yourself format. While assembly will require some proficiency with basic electronics assembly techniques, with Internet access, valuable assistance [from Elecraft] can be as close as your keyboard". Useful advice on building kit radios is given in the *QST* review.

The 'K2_perf.htm' page includes performance comparisons of the K2 with a number of current factory-built models. Based on measurements made in the ARRL laboratory it shows that, in virtually all relevant signal-handling respects, the K2 receiver outperforms current factory models and comes top in close-in performance under specified conditions, see the extracts in **Tables 1** and **2** overleaf.

Table 1 shows that its close-in phase noise (dBc at +4kHz) is bettered only by the IC-756PROII, yet the receiver current drain is only 150mA. Table 2 is perhaps the more remarkable, showing its excellent strong signal performance at 5kHz signal spacing on 14MHz (preamplifiers off). IMDDR3 is the two-tone third order IMD dynamic range, showing how the receiver performs in the presence of multi-

Rig	MDS (dBm)	IMDDR3 (dB*)	IP3 (dBm)	IP2 (dBm)	BDR (dB*)	Phase noise (dBc†)	Phase noise (dBc‡)
K2	-131/-138	97/98	+21.6/+6.9	+76/+75	136/128	-120	-126
FT-1000MP	-128/-135	97/94	+15/+5	+86/+88	142/137	-118	-125
IC-756PRO	-128/-136	95/92	+15.4/+4.3	+64/+63	127/125	-130	-135
Omni VI	-133	97	+12/+16	+58	123(nl)	-117	-123
TS-870	-129/-139	97/95	+16/+4	+63/+63	127/123	-118	-125
FT-817	-126/-134	87/84	+5/-5.6	+84/+88.4	106/104	-103	-113

Table 1: Extracts from ARRL Lab receiver test data. Notes: * IMDDR3 at 20kHz spacing; † at +4kHz; ‡ at +10kHz. Where appropriate, readings are given with preamp on and off.

ple strong nearby signals in relation to its sensitivity (MDS). With the preamp turned off +95dBm or more can be considered excellent.

The US price of the basic CW kit was given in the 2000 review as $549, SSB option $79 and various other optional extras. An October 2002 *QST* 'New Products' item states: "Elecraft's landmark K2 kit transceiver is now available in a 100W model. The compact K2/100 is based on the K2 with an integral heat sink as its top cover, with the same features and same world-class receive performance. It has the portability and efficiency of a QRP transceiver with a 100W punch when you really need it. The K2/100 shares the same options as the K2". The basic price of the K2 is now $589, with the KPA100 100W integration kit (internal), which completes the K2 as a K2/100, sells in the US for $349. Co-founders of Elecraft are Wayne Burdick, N6KR, and Eric Swartz, WA6HHQ.

Designs such as the CDG2000 and the K2 are an indication that home-construction of even the highest performance equipment is not dead, and indeed should be encouraged by modern technology. As G3SBI has pointed out, construction of the CDG2000 does not involve the age-old problems of alignment of RF / IF stages, etc. All modules are, in effect, pre-tuned.

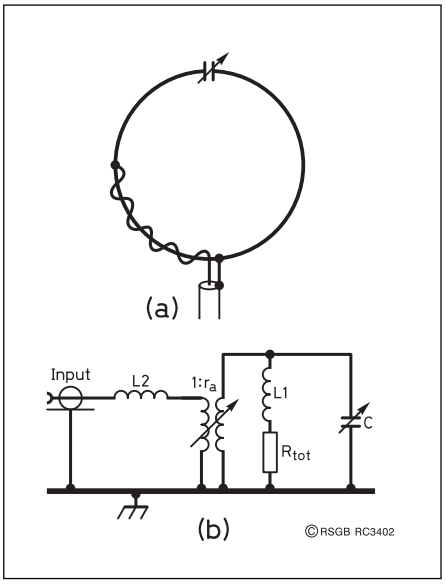


Fig 2: (a) Typical loop configuration as used by G3LHZ. (b) Circuit model as proposed by G3LHZ. R_{tot} combines all radiation and loss resistances of the various modes. In general, each of these varies differently with frequency. For more details see *Electronics Letters,* 29 August 2002.

G3LHZ & SMALL TUNED TX LOOPS

THE NOVEMBER 'TT' item 'Small Antennas: Stay Open to New Ideas', mentioned that Professor Mike Underhill, G3LHX, and his student, Marc Harper, had contributed to the IEE's *Electronic Letters* on the topic of small loops. G3LHZ felt that it "may prove of some significance to radio amateurs."

I can now report that their contribution 'Simple Circuit Model of Small Tuned-Loop Antenna Including Observable Environmental Effects' duly appeared in the issue of 29 August 2002, pp1006-1008. It is too early to know what will be the response of the 'Antenna Establishment', as it has been called but, certainly, it throws a new a new stone into the debate on the efficiency of small loops in predicting that the series radiation resistance of small loops is about *1000 times* greater than predicted by the debatable formula $3.123 \times 10^4 (A^2/\lambda^2)^2$!

To quote briefly from the introduction: "The small tuned (magnetic) loop antenna typically consists of a single-turn loop, tuned by a single capacitor, with a subsidiary input loop or gamma match: **Fig 2(a)**. Over the HF 1.7 - 30MHz frequency range, loops with diameters of 0.8 - 1.2m can have radiation efficiencies of no worse than 90% [*sic*], and can operate with powers of a few hundred watts. A loop with a copper tube diameter of 20 to 30mm can be capacitively tuned over a 10:1 frequency range at >90% efficiency. The tube diameter requirement means that efficient (transmitting) loops do not scale with frequency and are not useful above about 30 - 50MHz. Typically, a balanced loop has a small operational bandwidth, roughly proportional to loop size, corresponding to a Q factor of about 200 to 600."

It is recognised by G3LHZ that the formula given above is based on theory that

Rig	IMDDR3 (dB)	BDR (dB)
Elecraft K2	88	126
Ten-Tec Omni VI Plus	86	119
Yaesu FT-1000MP	83	119
Icom IC-756PRO	80	104
Yaesu FT-1000MP MkV	78	106
Icom IC-775DSP	77	104
Icom IC-706 MkIIG	74	86
Kenwood TS-570D	72	87
Icom IC-756	67	98

Table 2: Close-in IMD dynamic range and blocking dynamic range at 5kHz signal spacing (preamps off, 14MHz).

is well-founded and probably correct: "However, measurements show that it predicts radiation resistances which, for loops <λ/160 in diameter, are about a thousand times less than measured values. This shows that other radiation modes are more dominant in practice."

It may be recalled that G3LHZ suggested ('TT', November 1997) that in compact loops "a small folded dipole mode was usually the dominant mode". This attracted considerable controversy, and he now admits that he was "partially wrong". His recent work with Marc Hooper has shown that a 'true' loop mode (not compliant with the Chu-Wheeler criterion) is nearly always dominant at the lowest frequencies of loop operation, even if the loop is deliberately unbalanced and a ground-plane added to enhance the dipole/monopole mode.

However, if I understand the latest findings correctly, G3LHZ believes that the dipole mode plays an important part at the higher frequency end of the loop range and results in the much higher radiation resistance. In *Electronics Letters*, he writes: "Practical impedance measurements show that there are several other radiation modes and loss mechanisms with different frequency laws. Of these, we find that the dominant radiation term for practical loops has a series radiation resistance proportional to frequency and loop area, with a magnitude that always exceeds the 'classic' loop radiation resistance below the loop self-resonant frequency."

A circuit model, **Fig 2(b)**, and impedance equations are derived in which the total resistance (R_{tot}) combines all radiation and loss resistances. The Q of the loop is then calculated and measured, showing good agreement. In general, each of the losses varies differently with frequency. Underhill and Harper conclude that "A simple circuit model for balanced (and unbalanced) tuned-loop antennas has been derived from SWR-based Q meas-

urements. The Q measurements are sufficiently accurate and sensitive to be able to identify and separate two (magnetic) loop radiation mechanisms, one electric (dipole) mode and the loop conductor losses. The Q measurement method has also been found to be sufficiently sensitive and accurate for the identification and measurement of ground and environmental effects. These effects can be losses, reflections or (re-)radiation from the ground or surrounding environment."

If G3LHZ is correct in his belief that a loop less than λ/160 in diameter (25cm at 7MHz) has a radiation resistance some one thousand times that calculated by the classic formula, it would certainly add new interest to the use of small transmitting loops (even, perhaps, the CFL). But I find it rather difficult to understand (even after reading his IEE letter several times) why two minor modes at the lower end of the range should have such a large effect at the higher end. Presumably it would mean that loops of diameters somewhat greater than λ/160 would have radiation resistances somewhere between the classic figure and a thousand times as great.

It will be interesting to see what the 'Antenna Establishment' makes of these new claims which could have a profound implication on amateur use of compact loops. The *EL* contribution will have been refereed. I much doubt if all experts will agree!

THE EARTH BELOW

FIRST, AN APOLOGY for a 'slip of the keyboard' in the November 'TT', p79, column 2, where I stated that "the earth reflection may be from well below the surface at higher frequencies" and then failed to correct my error when reading the proofs . As G0GSF points out, "in fact, the depth of penetration into the earth is essentially inversely proportional to the square root of frequency. So, the *higher* the frequency the *smaller* the penetration."

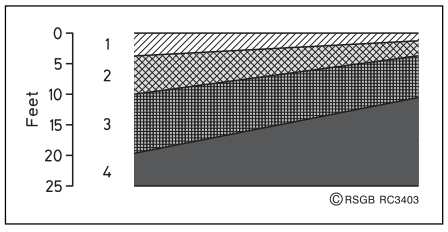


Fig 3: Typical section of earth's crust showing geological strata with several layers of different electrical conductivity, each of which may vary in depth below the surface. (1) Alluvial soil having relatively good conductivity (about 20 units); (2) Sandy soil (about 4 units); (3) Chalk (about 10 units); (4) Young rock (about 1 unit). Sea water has a conductivity of about 4000 units (unit = 10^{-14} emu). Effective conductivity of RF depends upon depth of penetration of the earth currents and is thus a function of frequency, the higher the frequency the more the current will be concentrated in the uppermost level(s). (Source G3HRH, 1966)

However, it is worth stressing once again that the ground below and surrounding an antenna, out to a distance of several wavelengths, has a marked effect on its vertical radiation pattern and gain. This is especially true for vertically-polarised antennas.

A classic 11-page article 'The Ground Beneath Us', written 36 years ago by Ray Hills, G3HRH, while he was a BBC antenna engineer, appeared in the *RSGB Bulletin,* (June 1966, pp375-385), and remains a useful and reliable source of information on this topic – and, indeed, would surely be worth republishing in its entirely if space could ever be found in *RadCom.* In his opening remarks, G3HRH wrote: "Many hundreds of thousands of words are written, to be assimilated, on the subject of radiators of energy but, in nearly every case, the author devotes himself to a study of what is up in the air, and completely ignores the effects of the ground beneath his feet... Any aerial system, and any mode of propagation, are affected by the physical constants of the earth to some degree… In practice, it is possible to classify these effects into three main groups: ohmic losses as a conductor of current; skin losses as a conductor supporting propagation of a surface wave; and reflection losses as a mirror to incident wavefronts."

G3HRH shows (**Fig 3)** how the conductivity of the earth's crust often comprises several layers at varying depths with conductivity that may vary over a range of some 20:1 between alluvial soil and young rock. He gave, as a general guide, the map of **Fig 4**, that shows the variation, throughout the UK, of the average conductivity (at frequencies up to about 1.5MHz in terms of 10^{-14}emu). **Table 3** shows the depth of penetration of RF signals at LF / MF showing that signals penetrate to greater depths in poor soil than in good soil. Attenuation of HF signals will be greater and hence penetration much less than shown in Table 3.

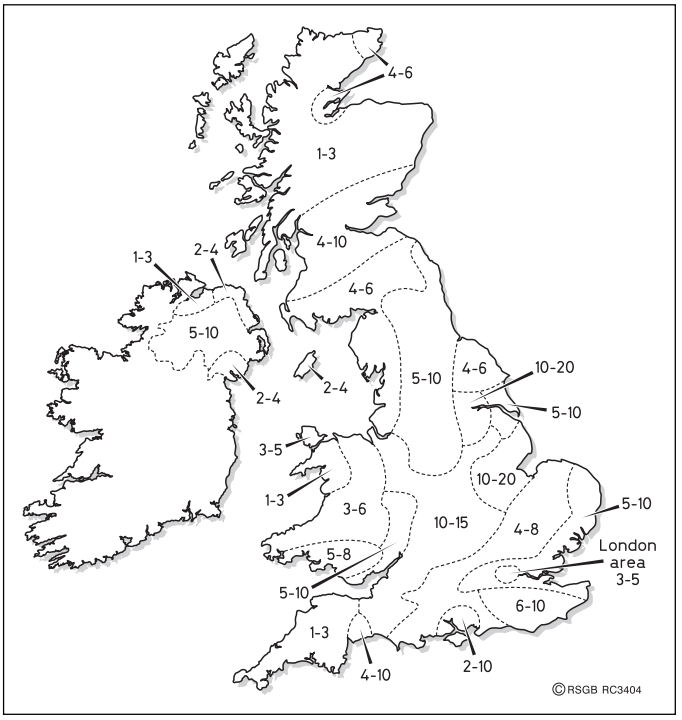


Fig 4: Approximate ground conductivity map of the UK (figures quoted are for 1.5MHz). Conductivity is moderate to good in central and south-east England, poor in London, west and northwest England. Urban areas tend to be of lower conductivity than farmland and rural areas. (Source G3HRH, 1966)

Conductivity of the sea is some 4000 times greater than new rock or some 400 times that of good alluvial soil. This is why G3HRH considers: "The finest possible general-purpose simple radiator for the HF bands is a quarter-wave vertical erected in the centre of a salt-water lake of 2.5 to 3λ radius." But who, unless operating maritime mobile on a perfectly calm sea or inland salt-water lake, could enjoy such a favourable site? In practice, the performance of a quarter-wave monopole or elevated ground plane with a good earth mat is highly dependent upon ground conductivity. Poor ground conductivity has far less effect on horizontally-polarised antennas, even at relatively low height, but can still be significant.

Theoretically, there is no advantage in raising the height of a quarter-wave vertical antenna; a ground-based monopole with a good earth system has the same gain and VRP as an elevated groundplane. This may apply with a good unobstructed and uncluttered site, but an advantage of the ground-plane antenna

Surface constants	0.2MHz	1MHz	1.5MHz
Sea water 4 x 10^{-11}emu	4.3	1.9	1.6
Good soil 10^{-13}emu	85	38	31
Poor soil 10^{-14}emu	270	121	99

Table 3: Depth in feet of RF penetration to where the current density is 10% of that at the surface.

above roof-level is that it will be less affected by the many nearby conductive objects (resonant and non-resonant) that are present at the average site available to amateurs; these may absorb RF power, or re-radiate it, or a bit of each, distorting the radiation pattern and reducing the gain.

As pointed out by Les Mitchell, G3BHK, many years ago, the average house has electrical wiring passing up the walls and branching out at roughly 8 and 16ft levels. The water pipes extend upwards to around 20ft with extensions under the floor. TV and VHF broadcast antennas are often at the 32-33ft level. Water tanks, baths, hot-water cylinders etc may add to the clutter. Concrete buildings may absorb and reflect signals. Garden fences, trees etc may be quite close to a vertical monopole and will have a much greater effect on vertically- rather than horizontally-polarised signals. But do not imagine that an elevated ground-plane or a vertical dipole antenna that does not depend on a direct connection to earth is unaffected by the conductivity of the earth below.

Hardy Landskov, W7KAR (*QST,* November 1975, pp19-21, briefly reported in 'TT' November 1976, pp831/2), concluded, in respect of horizontally-polarised antennas:

(1) "Low heights should be avoided with all horizontal antennas, because their gains suffer badly at elevations under one wavelength above ground [in practice, this usually implies 'the higher the better'].
(2) "Antennas located one wavelength or more above ground have gains within a few tenths of a decibel of the perfect-earth case, *regardless of soil conditions.*
(3) "High-angle radiation (above 45°) suffers as much as 3dB for antennas over poor earth, regardless of antenna height. This is an important consideration on 3.5 and 1.8MHz, where few antennas exceed or even reach a quarter-wave above earth."

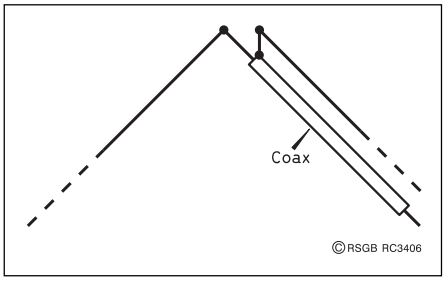


Fig 6: Sloping feedline to the Pyramid antenna. A balun could be used at the top of the pole if the coaxial cable is dropped vertically down the supporting pole.

G3ENI'S 5.4MHz PYRAMID NVIS ANTENNA

THE PRIME PURPOSE of the experimental UK 5.4MHz spot-frequency allocations, as I understand it, is to check the extent to which these frequencies can be depended upon to support short-range (short or no-skip) emergency communications at times when the critical frequency is too low for good NVIS propagation at 7MHz and too high for fade-free 3.5MHz NVIS. It is not intended to provide another band for DX operation, although there is no doubt that 5MHz is suitable at times for DX, grey-line, etc. As noted in 'TT' February 2002, Raynet has, for some time, sought to explore the use of HF for its UK operations.

John Pegler, G3ENI, has recently contributed to the Thames Valley ARTS a description of an omni-directional compact antenna designed specifically for NVIS purposes, radiating primarily in the vertical direction. He writes: "This antenna is ideal for the small garden, can be assembled easily for portable use, has low visual impact and can be located clear of other antennas.

"It consists of a half-wavelength of wire with the two arms bent in the form of triangles and assembled in the shape of a square-based pyramid as shown in **Fig 5(a)**, with **(b)** showing a plan view. When radiating, there is little reaction between the sloping wires that are at right angles, with orthogonal polarisation.

"The apex is supported on a short insulated pole and the base points are secured to tent pegs or similar insulated ground anchors so that the horizontal sections are some 1 to 2ft above the ground. The feeder can either be led up and secured to the insulated pole or fed down one leg as shown in **Fig 6**, making sure that the coaxial cable outer is connected to the adjacent wire as shown.

"For 5.4MHz, the total length of wire required is about 88ft (26.84m), the sloping wires 13ft (4m), and horizontal wires 18ft (5.5m), for a mast height of 11ft (3.35m) which includes the extra 2ft to keep the horizontal wires off the ground. Note that with QRO there will be quite high RF voltage on the horizontal wires at the low height of 2 to 3ft. For non-NVIS, there will be a loss of about 16dB compared to a half-wave dipole at 30ft"

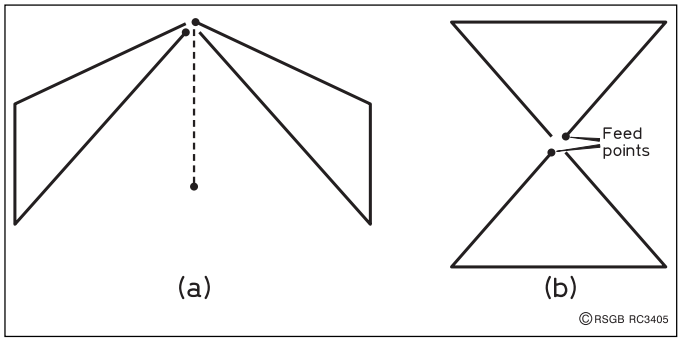


Fig 5: G3ENI's 'Pyramid' NVIS antenna for 5.4MHz. (a) General appearance. (b) Plan view. Dimensions for 5.4MHz in text.

ALTERNATIVE POWER SOURCES

THE DRIVE TO develop alternative sources of power based on renewable and / or pollution-free sources continues apace. A 1.4MW fuel cell, the largest to date, is being installed by Verizon at a call-centre in New York, based on seven natural-gas-powered cells backed up by four natural-gas generators to provide back-up and boost output to 4.4MW. Hydrogen (for fuel cells) could become a future major source of electric power.

Interest is being resurrected in thermo-photovoltaics (see *New Scientist*, 21 September 2002, p21), in which infra-red heat radiation is directed onto cooled solar cells. This technology was investigated some 30 years ago by the US military, but made little headway because of its low energy-conversion efficiency. The advantage would be that it could function at night as well as during daytime so that batteries could be dispensed with. Engineers at a Swedish solar energy research centre have now developed a method of making TPV more efficient by placing the whole TPV system inside an egg-shaped optical chamber with a highly reflective interior coating making it look like a Fabergé jewelled egg. The three-dimensional, ellipsoidal shape ensures that most of the emitted radiation reflects off the inside of the egg and hits the infra-red filter almost head on. About 96% of the emitted infra-red rays reach the solar cell. The basic heat source could be hot flue gases, preheated air or warm household water etc, thus recycling waste industrial or domestic heat into electric power. Applications, it is suggested, could range from small domestic generators, producing heat and electricity, to megawatt power plants or back-up stations.

New Scientist also reports that Mike Rowe at Cardiff University has been working on ways to improve the efficiency of generators that use the thermoelectric effect. By linking a network of bismuth telluride / aluminium thermocouples, made resistant to high temperatures, they have generated about 100W when placed on a cooking stove. Prototypes can even use waste water from a hot bath to power a TV set for about an hour. ♦

Club & Regional NEWS

Region 1: Scotland West & Western Isles

KILMARNOCK & LOUDOUN ARC
10, Social evening, quiz. Kilmarnock. www.klarc.co.uk

PAISLEY (YMCA) ARC
11, Party night. Jim, GM3UWX, 01505 862817.

WIGTOWNSHIRE ARC
5, 12, 19 TBA. Ian Macdonald, MM5WIG, 01988 403364.

Region 2: Scotland East & the Highlands

COCKENZIE & PORT SETON ARC
7, Christmas meal. Bob, GM4UYZ, 01875 811723.

LOTHIANS RS
9, Low-noise crystal oscillators. Peter, 0131 446 0155.

Region 3: North West

FYLDE ARS
12, Christmas special. Ken, G3RFH, 01253 407952.

MID CHESHIRE ARS
4, VHF on air. 11, Activity night. 18, Wine & cheese tasting. Niall, G0VOK, 01606 871413.

ROSSENDALE ARS
11, Taking better photographs. Ken, G1RWK, 07899 084 331.

STOCKPORT RS
3, AGM. 17, Christmas social. David, M1ANT, 0161 4567832.

THORNTON CLEVELEYS ARS
2, Auction. Jack, G4BFH, jack@jduddington.fsnet.co.uk

Region 4: North East

GOOLE R & ES
13, 20, 27, Social night, Christmas dinner at *The Black Swan*. Richard, G0GLZ, 07867 862169.

GRIMSBY ARS
5, Party night at Cromwell Club. 19, Cromwells Club's draw night. Brian, G4DXB, 01472 231383.

HALIFAX & DARS
17, Christmas party and quiz. Tom, M0TKA, 01484 715079.

HORNSEA ARS
4, Christmas party. 11, Video of wartime Hull. 18, Optics Part 3. Andy, G0VRM, 01482 643660.

RIPON & DARS
5, On the air for the Foundation holders. 12, Technical discussion night. 19, Antenna workshop: ask David all things about antennas. George, M0CVV, 01423 501486, m0cvv@btopenworld.com

Region 5: West Midlands

CHELTENHAM ARS
6, AGM and social evening. Ivan, G4BGW, 01452 731956, ivan@g4bgw.freeserve.co.uk

DERBY & DARS
3, Junk Sale. 17, Mince pie evening. Martin, G3SZJ, martin@martinshardlow.demon.co.uk

GLOUCESTER AR & ES
2, Christmas talk. 9, Workshop, on air. 16, Christmas buffet. Tony, 01452 618930 (OH).

KIDDERMINSTER & DARS
3, Christmas social evening. Tony, G1OZB, 01299 400172.

MID-WARWICKSHIRE ARS
10, Christmas meeting and party. Bernard, M1AUK, 01926 420913.

SALOP ARS
5, Family quiz. 12, Christmas social. 19, Mince pies evening. Les, M5LMG, 01743 353 288.

SANDWELL RC
20, Morse tests. John, G4AAL.

STRATFORD UPON AVON & DRS
9, Surplus sale of radio shack items, G8HJS, and night on air, G3MXH. 25, Christmas greetings on air. Ron, 01789 267430.

TELFORD & DARS
4, On air. 11, AROS, Barry Scarisbrick, G4ACK (TBC). 18, Christmas dinner. 25, Christmas net. Mike, G3JKX, 01952 299677.

Region 6: North Wales

CONWY VALLEY ARC
5, 'Little toys for big boys', John Richards, GW0AQR. Wynne, GW6PMC, 01745 855068.

NORTH WALES RS
5, Propagation, part 1. 12, Last supper, close for holidays. Ted, GW0DSJ, edward@eshipton.fsnet.co.uk

Region 7: South Wales

ABERYSTWYTH & DARS
12, Morse & mince pies, Mark, GW4LHL & Wyn, GW4TUD. 26, Club net S20/S21, GW7OZP. Ray, GW7AGG.

SWANSEA ARS
5, Final preparation for hosting RSGB AGM. 7, RSGB AGM at Swansea University. 12, SARS AGM. 19, Xmas dinner. Roger, GW4HSH, 01792 404 422.

Region 8: Northern Ireland

BANGOR & DARS
4, 'Digital Modes in Amateur Radio', Harry, GI4JTF. Mike, GI4XSF, 028 42772383.

Region 9: London & Thames Valley

AYLESBURY VALE RS
11, Mince pies. Roger, G3MEH, 01442 826651 or g3meh@supanet.com

BROMLEY & DARS
17, Mince pies & short talks. Alan, G0TLK, alangm4@clara.net

CHESHAM & DARS
4, General meeting. 11, Pre-Christmas treasure hunt. 18, Christmas party at Sue's, G0NLX. Terry, e-mail: terence.thirlwell@eds.com

CHESHUNT & DARC
4, Members' forum. 18, Christmas social evening. Jim, G0JXN, 01992 468204.

COULSDON ATS
9, AGM. Steve, G7SYO, 01737 354271

CRAY VALLEY RS
5, Christmas meeting, *The Welcome Inn*, Eltham. Bob, BRS32525, 020 8265 7735 after 8pm or weekends.

CRYSTAL PALACE R & EC
6, Morse instruction, technical discussions and club projects. 20, Christmas social. Bob, G3OOU, 01737 552170 or Victor, 020 8653 2946.

ECHELFORD ARS
12, Christmas party. Robin, G3TDR, 01784 456513.

EDGWARE & DARS
12, Grand junk sale. Hank, G0FAB, 020 8205 1023.

MAIDENHEAD & DARC
5, Fault finding, Roger, G3VCT. 17, Constructional contest and quiz, John, G3TWG. John, G3TWG, 01628 525275.

RS OF HARROW
6, Construction contest. 20, 'My Other Hobby Is...' Jim, G0AOT, 01895 476 933 or 020 7278 6421.

READING & DARC
12, AGM & refreshments. Pete, G8FRC, 0118 969 5697.

SILVERTHORN RC
20, Christmas party (TBC). David, G0KHC, 020 8504 2831.

SOUTHGATE ARC
12, AGM. 25, Christmas net. Mike, M0ASA, 020 8366 0698.

SURREY RCC
2, GB50 talk, Bob, BRS32525. Ray, G4FFY, 020 8644 7589.

SUTTON & CHEAM RS
12, Christmas junk sale. John, G0BWV, 020 8644 9945.

THAMES VALLEY ARTS
4, Christmas social at David's, G3KQR, QTH. Trevor, M0CDB, 01372 457674.

WIMBLEDON & DARS
13, Christmas social. Jim, G4WYJ, 01737 356745.

Region 10: South & South East

BASINGSTOKE ARC
2, Families' night. 27, 'Foxhunt', Turkey Settler. Peter, M1DGQ, 0118 983 6545.

CRAWLEY RC
6, Fish and chips dinner. 18, 'Dayton 2002'. Derek, G3GRO, 01293 520 424.

FAREHAM & DARS
4, Planning club programme, on air. 11, MFJ Antenna Analyser, Brian, G4ITG, and Mick, G4ITF. 18, Mince pies, 5-minute talks. Steve, G7HEP, 01329 663673.

FARNBOROUGH & DRS
11, Video evening. Norman, G0VYR, 01483 835320.

HASTINGS E & RC
11, Executive Committee meeting. R C Gornall, G7DME, 01424 444466.

HORNDEAN & DARC
3, Club social. Stuart, G0FYX, 023 9247 2846.

HORSHAM ARC
5, AGM. David, G4JHI, 01403 252221.

ITCHEN VALLEY RC
13, Morse pies, Sheila, G0VNI. Sheila, G0VNI, 023 80813827, sheila.williams@ivarc.org.uk

MID SUSSEX ARS
6, Microwave evening. 13,

Region	RSGB Regional Manager
1. Scotland West & Western Isles	Gordon Hunter, GM3ULP
2. Scotland East & the Highlands	Position vacant
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	Roger Piper, G3MEH (acting)
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 5 November 2002.

Christmas dinner. Geoff, G6MJW, 01273 845103.

OXFORD & DARS

12, Christmas social. Dave, G3BLS, 01865 247311.

SOUTHDOWN ARS

2, Ladies' night, quiz, video, mince pies. 5, G0DOF 2m activity and contest night. John, G3DQY, 01424 424319.

SWINDON & DARC

5, 'Radio Activity', Colin Desborough, G3NNG. 12, Christmas dinner. 19, Inter-club fun quiz. Den, M0ACM, 01793 822705.

TROWBRIDGE & DARC

4, Christmas party & presentation night. 18, Farewell 2002. Ian, G0GRI, 01225 864698.

WORTHING & DARC

4, Slide show, G3EUE. 11, Christmas Quiz. 18, Christmas party and club awards. Roy, G4GPX, 01903 753893.

Region 11: South West & Channel Islands

APPLEDORE & DARC

16, Christmas party. Brian, M0BRB, 01237 473251.

BLACKMORE VALE ARS

3, VHF on air. 7, Christmas dinner. 10, Christmas quiz, Derek, G1THG. 17, HF on air. Tony, G0GFL, 01258 860 741.

BRISTOL RSGB GROUP

9, Grand Christmas Party at Arnos Manor Hotel, Brislington, Bristol. Martyn, G3RFX, 0117 9736419.

CORNISH RAC

5, Combined Christmas party. John G4LJY, 01872 863849.

SOUTH BRISTOL ARC

4, Grand Christmas darts contest. 11, Christmas social. 18, Greetings from GX4WAW. Len, G4RZY, 01275 834282.

TORBAY ARS

13, Club Christmas party at Club HQ, start 7.30. rally@tars.org.uk

WEST SOMERSET ARC

3, Quiz. Jean, G0SZO, 01984 633060.

YEOVIL ARC

5, Designing your own QSL cards, M0WOB. 12, Club project G3PCJ. 19, Mince pies, on air. Derek, M1WOB, 01935 414452.

Region 12: East & East Anglia

BRAINTREE & DARS

2, Operating Evening. John, M5AJB, 01787 460 947.

CAMBRIDGE & DARC

6, Equipment surgery, bring your faulty equipment. 7, Visit to Vintage Wireless Museum, Dulwich. 13, Christmas party. Ron, G3KBR, 01223 501712.

CHELMSFORD ARS

3, 'How I got into Amateur Radio', Brian, G4CTS, PC logging programs, Carl, G3PEM. David, M0BQC, 01245 602838/

COLCHESTER RAC

5, *A Brief History of Time* Stephen Hawking video. 19, Inter-Club Convention Abbeygate Room at Colchester Institute. Andy, M1MOD, 01206 735122.

FELIXSTOWE & DARS

2, RAE exam. 9, Christmas noggin: video & mince pies. Paul, G4YQC, 01394 273507.

IPSWICH RADIO CLUB

4, Quiz versus HARIG, Paul, G4YQC. Keith, G7CIY, 01394 420226.

LEISTON ARC

3, Christmas dinner. Paul, M3MIG & Diana, M3VDT, 01728 746044, m3mig@aol.com

NORFOLK ARC

4, Informal Morse practice and instruction. 11, Christmas dinner at Norwich Aviation Centre. Peter, G3ASQ.

Region 13: East Midlands

EAGLE RADIO GROUP

7, Christmas dinner. 10, AGM / open forum. G0SWS, 01507 478590.

LOUGHBOROUGH & DARC

3, Vintage radio & test gear. 10, Quiz. 17, Pre-Christmas drink. Chris, G1ETZ, 01509 504319.

SOUTH NORMANTON, ALFRETON & DARC

2, Christmas party. 9, On air. 16, Santa's junk sale. 23, Christmas on the air. 30, No meeting. Mike, M0RMJ, 01949 876523.

SHEFFORD & DARS

5, Club quiz. 12, Chairman's mince pie evening. Derek, G4JLP, 01462 851722.

BIGGEST-YET GM FOUNDATION COURSE

WIGTOWNSHIRE Amateur Radio Club, in conjunction with the Dumfries & Galloway Council Community Learning Service, recently completed its first Foundation Course at Stranraer Academy. The club believes it to be the largest class participating in the scheme in Scotland - so far!

Ian Macdonald, MM5WIG, the Senior Instructor in Dumfries & Galloway, along with his enthusiastic team from the Wigtownshire club, ran the two-day course at the Academy using a Microsoft Powerpoint presentation supplied by the Bangor & DARS from Northern Ireland. Eleven students from all over Scotland passed the examination and Morse assessment with flying colours, including the youngest, 12-year old Daniel Sturgeon from Ayr. More Foundation Courses are being planned for 2003.

Does the Whitehaven Amateur Radio Club hold the record for the youngest and oldest qualifiers for the M3 licence in one course? Tom Baggley, M3OMT, is 78 and Niall Topping, M3NWT, is 8 years old.

DUNDEE JOTA SUCCESS

MEMBERS OF THE Dundee Amateur Radio Club participated in Jamboree on the Air in October with five Dundee Scout groups. They carried out instruction classes, demonstration and operation of HF amateur radio equipment under the supervision and guidance of the club's 'technical expert' Tom Harrison, GM3NHQ. The Scouts ended the weekend by taking an examination for their Communications Badge. All 21 Scouts passed.

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*.

PHOENIX CLUB RAISES FUNDS FOR BWFB

MEMBERS OF THE Phoenix ARC in Birtley, Tyne & Wear, ran a special event station for the British Wireless For The Blind 'Transmission 2002' over the weekend of 14 / 15 September. The station was operated by Ernie, M0ERN; George, M5JTW; Sam, M0BZX, and Ian, M0RZE, with special guest John, G0TBZ, operating CW. They had enough contacts and sponsorship to raise £424.95 for the charity.

Chairman of the club Bev, M0CBP, said "I keep saying this, but I think we have one of the best clubs in the country. We seem to have experts in so many fields, one of them now found to be fund-raising. There are individuals in the club who will do anything to help the club achieve any goal that is set for them. I am so proud to be the Chairman."

AWARDS FOR TWO OUTSTANDING CHELMSFORD AMATEURS

AT THE Chelmsford ARS AGM each year the club presents two prestigious awards. This year Chris, G0IPU (below, right), was presented with the Chelmsford Amateur Radio Society Award of Merit by the club's president, Harry Heap, G5HF, for his outstanding work in running Foundation courses for the club. He also ran Intermediate and Foundation courses for the Chelmsford Scouts. Over the past year Chris has helped more than 45 new radio amateurs gain their licences. To put this figure in perspective, it is over twice the number of new licences issued in Chelmsford during the whole of the 1990s!

The Roy Martyr G3PMX shield, awarded for excellence in amateur radio, was presented by Ela Martyr, G6HKM, to Colin, G0TRM, who has produced many innovative construction projects over the years. His work has been an inspiration to others and the club has seen a significant increase in home construction.

HIGH ACTIVITY FROM THE HIGH NORTH

THE FOUNDATION Licence scheme has recently brought six new licensees into the hobby in Orkney. There was excitement in the Holt household when, on 22 September, and after 10 years of waiting, Edmund, GM0WED, made his first-ever contact with Japan. However, the excitement was short-lived when it was eclipsed by daughter Lucy, MM3LCX, who, one hour later, and with power reduced to 10W, made her first non-UK contact - also to Japan.

Pictured here with Foundation Licence Tutor, Edmund Holt, GM0WED, are: Lucy Holt, MM3LCX; Bob Duncan, MM3RDD; Susannah Holt, MM3SUS; Thelma Holt, MM3TLH; Gill Atkins, MM3LIG; Barry Atkins, MM3BGK.

Having obtained his Foundation Licence, Kirkwall Grammar School physics teacher Bob Duncan, MM3RDD, encouraged three candidates to join the after-school Foundation course run by Edmund, GM0WED. The enthusiasm is infectious and there are now six more pupils waiting for the next course.

NORTH NORFOLK ARG LOSES CLUB STALWART

RICHARD 'DICK' Gallop, G0KNQ, died recently at the age of 74. He was a member of the North Norfolk Amateur Radio Group and quickly became a stalwart of the club's activities at GB2MC, the Muckleburgh Collection. His infectious enthusiasm and his rapport with young visitors to the museum was a sight to behold. It was Dick who had the idea of issuing NNARG certificates to visitors who sent their names in Morse at the museum. He was elected Chairman in 2000, and set about moving the group out of the two 1950 radio trucks into a building within the collection. He turned an old tyre store into an integral display of the museum and in 2001 started on providing an operating shack, workshop and storeroom. He will be missed.

FIRST FOUNDATION COURSE AT STEVENAGE

THE STEVENAGE and DARS recently held its first Foundation Course, which had a 100% pass rate (after one re-sit). Ken Blanshard, M0KPB, the Lead Instructor, commented, "This was as much a learning experience for the instructors as for the candidates!" Damian Murphy - now M3BCK as a result of the course - said, "We were an eclectic mix. Diverse Citizens Band operators, listeners, relatives of existing amateurs and a couple of army cadets, who had between us a wide variety of radio experience and technical backgrounds. Judging from the quality of supporting materials, we had many years of experience as well as professional training input from the instructors."

Nicolas Pike, M3BZZ, said, "I had always been interested in amateur radio, but had been deterred from gaining my licence by the exam required. A friend explained about the Foundation Licence and it certainly rekindled my interest. Searching the web I found my local radio club in Stevenage and signed up for the course. Thanks must go to those who gave up their time. There are now 11 more M3s on the bands."

BIRMINGHAM BERNIE'S BINGO RADIO

AN ENTIRE BIRMINGHAM family recently passed the Foundation course run by the Sutton Coldfield Radio Society. Bernie is now M3ASZ; Barry, M1/M3CQN; and the children Lindsey, M3LMA; Barry, M3BJV; and Steven, M3SVN, who had just turned eight years of age. Lucky Bernie, M3ASZ, went to play bingo the same week she passed the exam and won enough money to buy a new VX-5R handheld, which is now known as 'Bernie's bingo radio' in Birmingham.

Tutors Sid, G4RIO, and Peter, G4KQU, have run the Sutton Coldfield RS Foundation courses since January, with 33 candidates aged from 8 to 75 taking the exam and all passing. Sid and Peter say "It has amazed us how many people in this area have an interest in amateur radio and put themselves forward for the course. At the time of writing another five people have applied to go on the course."

Back row, left to right: M3ASZ, G4RIO, M1/M3CQN, M3LMA, G4KQU. Front row: M3BJV, M3SVN.

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

ICOM AT-150 for 250Hz, filter for Icom IC-735 or 20A PSU. 01603 743 646 (Norwich).

WARTIME and pre-war T & R *Bulletin*s in exchange for 1960s to 1990s *Bulletin*s and *RadCom*s, many complete duplicate years available. Also wanted USA *Radio* h/books published by editors and engineers or W W Smith, titles of interest 'Telephony', 'Newcomers', 'Noise Reduction', 'Ultra-High Frequencies', 'Antenna Guide'. Also *Radio Digest*, *Radio* magazine and similar, published 1938 –1950, Santa Barbara CA. G3NGX, QTHR, 01491 872 919 (Reading).
E-mail: harryhogg@waitrose.com

FOR SALE

ICOM IC-751A, all-mode tcvr gen cov rcvr, built-in PSU, electronic keyer, CW filter, AM, FM. Trio dual-band 2m tcvr, TW-400, 25W, 10W. Kenwood PS-20 PSU. Micronta pwr/SWR meter: 10, 100, 1000W. Bargain, the lot, £450. GW4WJO, 01407 762 330 (Holyhead).

101ZD good wkg cond, Xtal req for full 10m coverage, £140. JR 310 old classic rcvr, sensitive, £50. Homebrew roller coaster – wide-spaced cond with MFJ coil balun inside, £60. Lake aerial coupler, £10. Buyer collects. Mike, 01252 403 655 or Bob, 01252 615 831 daytime, (Farnborough).

1740A oscilloscope. Two 19 sets for sale. G1DQL, 020 8643 7731 (Sutton).

A fine Yaesu station – G0VON Silent key. FT-1000MP tcvr, £1000. FL-7000 linear amplifier, £750. FV-707 DM digital VFO, £100. FTV-707 VHF tvtr, £160. FL-2050 2m linear amplifier, £75. FC-707 ant tuner, £100. FP-707 power supply, £120. FF-501 low pass filter, £25. Sommerkamp YS200 SWR/wattmeter, £75. Icom 706, £425. Kent straight key, £35. Kent dual paddle key, £45. ProAm triple magmount, £30. ProAm mobile whip 80m, £15. 40m, 20m, 17m, 15m, 10m, mobile whips, £12 each or triple magmount plus six whips, £90. Mutek SLNA1445 2m pre-amp, £30. 01282 813 761 (Barnoldswick).

ALINCO DX-70TH boxed, little used, £425. EDX-1 Alinco ATU, £90. Buyer collects or will travel 30 miles radius of QTH. G4WYH, QTHR, 01772 792 863 (Preston).

ALL must go. Yaesu FT-757GX, c/w matching ATU FT-757AT, exc cond, £375 ono. Icom 2800H, still in box, £350. Kenwood R5800 c/w man, exc cond, £400. Buyer collects or pay carriage extra. Roland, M3RCH, 020 7511 3246 or 07930 383 268 any time (London).

ALTAI TR dip meter, £25. Datong auto RF speech processor, £25. Deecom full-size G5RV, new, £15. Data transfer switch, £10. Dactron multi-voltage PSU, 500mA, £10. Magmount and 2m whip, £10. 01282 813 761 (Barnoldswick).

AOR AR3000A multimode scanning base rcvr with mains PSU and telescopic whip. Immaculate, boxed with man, £330. Rick, G4BLT, 01924 255 515 (Wakefield).
E-mail: g4blt@wdrs.org.uk

AR88D, gwo, clean cond, re-aligned, £95. Eddystone EA12, gwo above-average cond, offers. G3WCE, QTHR, 01692 538 794 (North Walsham).

BIRD Termaline wattmeter model 611, 30-500MHz 60W, £25. Bird Termaline wattmeter model 6156, 25-500MHz 150W, £40. HP sweeper 8620C one OK, one slight fault, no 5V supply, both with 5.9-6GHz plugins, £200 the pair. Buyer to collect. 0161 430 2010 after 6pm (Stockport).

CALLING all M3s, Trio TS-120V HF rig in almost as-new cond. Ideal for mobile/portable as very low power consumption, £149 ono. Matching PS-20 PSU, £30 ono. VFO-120, £40 ono or DFC120 digital VFO with memories and long cable (Ideal for mobile remote control), £40 ono. Rig plus PSU and either VFO, £200. TR-2300 (2m FM) with PSU/PA (10W), £65 ono. Dave, 01525 377 828 (Leighton Buzzard).
E-mail: d-keston@thersgb.net

COLLECTORS items: AR88, B29, 62H, R1124C, RX25, Marconi H11 in 7ft rack, TF 144H, Pye Westminster and Olympic AM, tripods, Megger, 545A scope, Kay valve Sonograph, KW103, Dawe ULF oscillator, Standard C-8800 2m tcvr, ATUs, Beme yacht loop rcvr, RAF W1191, many high voltage power supply components, please phone for list and prices. G3MFW, QTHR, 01726 73608 (St. Austell).

COLLECTORS: Sinclair ZX Spectrum (green dot), ZX Spectrum & Opus disc drive (single), Centronics printer interface (dot matrix), all leads, plugs etc and all mans. Commercial, homemade and new 3½in, 1000K diskettes including *Tasword* word processor, games and utilities, also 5½ floppies for PCs for *Tasword* word processor and spellchecker. Buyer collects. G4DAV, QTHR, 01275 852 304 (r Bristol).

COLLINS 30L1 linear, man and spare valves, £400. Collins 180S-1 antenna coupler, £150. *RadCom*s 1948-2002, some gaps, £2 per year. All buyer collects. G3MDQ, 0121 354 9972 (Sutton Coldfield).

EMERGENCY mains or field power supply. Crystal controlled 300W, 50Hz, 250V. UK-made commercial grade with ILP toroidal transformers and separate battery case. Auto switches when mains fail, £50 plus postage. John, M0CDY, 01202 258 114, evenings (Bournemouth).

FT-101B working order, £100. Buyer collects. G3MEA, 01670 503 525 (Morpeth).

FT-290R Mutek front end, c/w NiCads & mic, £150. FT-790R c/w mic, £100. MML 144/50-S SSB/FM linear amp 10W in 50W out, AKA14000DS MkII reel-to-reel tape recorder with mans, vgc. Best offer secures, all ono, buyer collects. G4GWF, QTHR, 01942 260 086 (Leigh).
E-mail: gwfmkm@aol.com

FT-920 HF + gen cov rcvr, CW filter, FM board, built-in electronic keyer and ATU, hand mic, desk mic, matching PSU and spkr, all mans, boxed as new, hardly used, exc cond, three months' warranty remaining, cost new over £1600, bargain, £900. Dave, GW4VDP, 01407 861 157 (Holyhead).

HALLICRAFTERS SX24 Skyrider Defiant, £100. Eddystone All World 4 TRF, £150. Cossor Melody Maker 1930, £75. Lissen Skyscraper 3V TRF, £75. Ormond Moving Iron LS, £30. Codar CR 45 TRF, £50. Codar Mini Clipper transistor TRF, £50. Codar multiband 6 -transistor TRF, £50. Tony, G4HHZ, QTHR, 023 8027 0785 (Eastleigh).
E-mail: tony@nicholrd.fsnet.co.uk

HENRY power amp, Eimac 3C1000 valve, £160. Heathkit SB200 1.2kW linear, £200. TS-940S w/VS1, £600. FT-101E, £150. FT-101ZD w/FM, £200. FT-221R, £175. AT-230 w/ G2DYM 1:1 balun, £145. FT-200 & FP-200, £125. FR-50, FT-50, FL-50, £25 each. Drake 2kW linear, £400. Ben, 01398 361 215 (Taunton).

HP432A power meter with 478A thermistor head, 0.1-10GHz, -20 to +10dBm, £135. Heads, £75. Wavetek SAM3 digital signal analysis meter 1-480MHz, £145. BLW96 power transistors, £20. Prefer buyer inspects and collects. 01403 864 222 (Horsham).
E-mail: g3wzt@btinternet.com

HP8901B modulation analyser, £400. HP8407A 110MHz network analyser system, £250. HP6632A prog PSU 20V/5A, £150. Racal 9083 two-tone source, £80. 07973 502 741 (Ely).
E-mail: john@g4fit.com

HRO-M with PSU & 6 coils, £100. G0JXN, 01992 468 204.
E-mail: jim.g0jxn@ntlworld.com

HYGAIN AV640 antenna, £150, nearly new, bought brand new from W&S, buyer collects, call Terry, 020 8553 1401 (Ilford).

IC-730 100W HF inc WARC tcvr with PSU, £350. FT-8100R VHF/UHF FM, £220. FT-290R, 80m 15W tvtr, £200. Datong filter FL2, £55. BC221, £40. Uher Report stereo tape recorder, £120. MFJ-482B memory keyer, £45. 28MHz FM tcvr, £35. Carriage extra. G3RXG, QTHR, 01934 843 562 (Somerset).
E-mail: radius@euphony.net

ICOM 706, as-new cond, boxed complete, little used, standby rig, not used mobile, non smoker, original owner, £430 ono. G3YJD, QTHR, 01908 379 250 (Bletchley).

ICOM 735 HF tcvr, with man, boxed, as new, no mods, £325 or vno. Buyer to collect or pay carriage. Bill, G4SOB, 01206 577 783 (Colchester).

ICOM 735 HF tcvr. Boxed with man, power lead plus fused car battery lead, vgc, £375. FT-290R 2m tcvr, with man, mains charger, repeater 'auto access tone/listen on input' mod included, vgc, £150. FT-203R 2m h/held, boxed with man, soft case, PA-3 car charger and mic headset, vgc, £75. Robot 400 SSTV scan converter, as new, any offer considered. 01568 797 327 (Hereford).
E-mail: derek.alexander1@btopenworld. com

ICOM 745 HF tcvr with CW filters. IC-AT100 auto-ATU. Daiwa PS-304 II, 30A PSU, MFJ-1701 6-way switch, £420 ono. G4AIB, 01159 301 327 (Ilkeston).
E-mail: p.holt@dtn.ntl.com

ICOM owners. I have just purchased in error a 'Rascal' digital interface for transmitting/receiving RTTY etc. It is made by Buxcomm but is unsuitable for my setup. It covers 29 different Icom models and more detailed information is on its website, www.packetradio.com. Look under 'Icom Rigs'. It cost £42 but is for sale brand new and unused for £30 post paid. Ken, G3RDG, 020 8455 8831 (London).
E-mail: kennethb@btinternet.com

ILL health sale. Yaesu 757GX MkII, mint, h/held and MC-60 desk mic, £375 no offers. Icom 7100 rcvr 0-2GHz , mint, £450 no offers. Few hours use only from new on above items, packing and mans. Yaesu FC-707 ATU, exc, £60. Altai sig gen TE-20D, exc, £65. CB radios, £10 each. Cobra 148GTL DX (fault), £30. Approx 22 CB radios, spares or repair, £5 each, collect only. G1GTP, 01429 293 414 (Hartlepool).

JIM Noble, G8FEQ, writes that, in his early eighties, due to declining health and eye-sight problems, he can no longer do constructional and experimental work. It is his intention to give away much of his stock of materials and components and some finished professional pieces of gear such as

CONGRATULATIONS

to the following whom our records show as having reached 50 or 60 years' continuous RSGB membership this month:

50 years		*60 years*	
G0FMU	Mr A J Turner	G2AOY	Mr J R Muddell
G3IIN	Mr M J Griffin	GM3BCL	Mr A G Anderson
G3IPV	Mr P W Haylett	GM3DOD	Mr A M Murray
G3JBR	Mr D P Tipper		
G3JKT	Mr J Huggett		
G3LWK	Mr H Taylor		
GM0UTD	Mr H R Urquhart		
GW3IEQ	Mr P Hudson		
GW3JSV	Mr D A S Holmes		
RS20537	Mr R A Townsend		

small power supplies. Also some projects under construction & rebuild. There is no rubbish. The collector takes all. If you would like to apply please write very briefly with address & home number. G8FEQ is QTHR.

JRC NRD-525 rvcr, £395. Hitachi oscilloscope V-212, 20MHz, £45. Pace SS9000 satellite rcvr, £13. IC-2SET 144MHz FM tcvr, £40. GW0SAJ, 01792 296 520 (Swansea).

KENWOOD 850SAT tcvr 1.8Hz SSB filter, mic and matching units, DSP-100 digital signal processor, SP-31 speaker, PS-52 power supply, cables and man, £645. Collected or delivered 50 miles Kettering. Oscilloscope dual channel 50Hz Philips PM-3217U, probes, man, buyer collects or possible delivery, £70. Icom desk mic IC-SM5, £15 plus postage. Bencher twin paddle, chrome, £30 plus postage. Heathkit dip meter, original coils 1.6-250MHz, man, £25 plus postage. Q-Tek 5-ele 2m crossed Yagi, unused as new, £35 plus postage. Morse Trainer MMS2, advanced model 6-32WPM, speaks back on Morse input/output, £50 plus postage. Telephone to discuss any item, G0RDV, QTHR, 01536 514 544 (Kettering).
E-mail: ljldavies@hotmail.com

KENWOOD MC-60A desk mic, £55. Kenwood HS-5 headphones, £35. Prices inc p&p. Mike, G4MJA, 0191 389 2822 (Durham).

KENWOOD SM-220 station monitor, exc cond with connecting cables, pan display unit installed + man, boxed (non-smoker), £175 plus postage. M3GTX, 01406 380 037 (Spalding).

KENWOOD spkr SP-930, boxed £55. AOR AR8000 scanner, boxed, man, £150. Canon Ixus L-1 APS camera, boxed, case, man, £50. 0116 220 4446 (Leicester).
E-mail: p.godber@ntlworld.com

KENWOOD TH-22E 2m handy tcvr, original packing, spare bat, spkr mic, soft case, charger, mint, £95. Dave, G1JPF, 01594 842 526 (Lydney).
E-mail: dave@dibarton.co.uk

KENWOOD Trio TL-922 linear, mint cond, slow-start, man, original packing, will assist with delivery, £750 ono. 01526 353 696 (Lincoln).

KENWOOD TS-680S HF / 6m tcvr. Nice cond with mic, man and original packing, £400. Mike, G0DQS, QTHR, 01453 547 243 (Gloucestershire).

KENWOOD TS-830S, AT-230, SP-31, YGH55CN, £390. Hi-Mound HK-702 key, £20. Yaesu FT-290R, inc NiCads, man, Adonis AM-303 mic, £150. Ham Int 3A PSU, AMB11, £10. Toyo YM1X SWR/pwr, £5. Microwave Modules MM 50/144 tvtr, £50. MM2001 RTTY-TV cvtr, £25. Sony Betamax video camera outfit, suit ATV operation, offers? HB9CV, £10. Supa-Tuta Morse Tutor, AVO 8X offers? Ant switches 3.5-430MHz, SA450 (2.5kW). Prefer not to split HF gear, buyer collects or arrange. Rich, G4ZDG, 024 7660 2835 (Coventry).
E-mail: g4zdg@pailton.com

KENWOOD TS-940S, int ATU, CW filter, SP-949 spkr, £500. SM-220 station monitor (with pan display), £160. Both with service mans. Datong RF speech processor, £45. MFJ phones, £5. SMC 1045 420-440, 10W, 2ch, 25kHz, brand new, £20. Shure 444 microphone, £20. AS chrome magmount, £5. Star LC-240 printer (new), £20. Yaesu FT-221R 2m multimode, Mutek front end, £120. MML 70cm 50W linear, £50. Datong woodpecker blanker, £5. MML converters 2m and 70cm, £6 each. Inspect/collect. 01943 872 231.
E-mail: jbu@g3kkp.freeserve.co.uk

LINEAR TL-922, overhauled, new valves, gwo, £600. Oscilloscope Tektronix 547 large c/w probes, £30. Ferrograph stereo reel-to-reel tape recorder, £30. BC221 c/w spare PSU, £25. All items c/w mans, buyer collects or arranges transport. Ken, G0KWS, QTHR, 0191 252 7141 (Whitley Bay).
E-mail: johnina@lineone.net

MAST 40ft pump-up free standing Clark ex-army mast heavy duty, ideal for portable or permanent use, buyer collects, £300 ono. M5JON, 01454 326 869 (Bristol).

MFJ 1788+, 15-40m super loop, purchased 29/07/02 at £389.95, has not been installed or used. Accept reasonable offer, buyer collects, Keith, G7NDB, 01256 397 326 evenings (Basingstoke).

MFJ HF/VHF/UHF SWR analyser, hardly used, £280 ono. 01983 855 838 (Ventnor).

NEW licence? IC-725 HF SSB/CW, 5-100W. CW filter, £200. FT-790 70cm SSB/CW/FM, £75. Both working perfectly, boxed, top cond. Chris, G3YHF, 0121 449 5583 (Birmingham).

OSCILLOSCOPES Hameg model 203, 20MHz, £35. Telequipment D1016, 15MHz, £25, with probes, later with man. G0GUL, 024 7672 1930 (Coventry).
E-mail: pjsolman3@ntlworld.com for pictures

QUAD Spider antenna fabricated in high quality polished stainless steel with 1in stub section and brackets/clamps for 2in mast, all s/steel. Complete with fibreglass poles and all fittings for three bands. Unused in brand new cond, £135. Buyer collects. G3RJX, QTHR, 07958 481 087 anytime (Birmingham).

SILENT key sale (G3CTI). Trio SSB HF tcvr model TS-520, inc SWR-25 SWR & pwr meter, mic, LS, & mans, £110 ono. Dynamco oscilloscope Series 71, comprising display D7100, Amp 1Y2, TB 1X2 & 1Y4. Probe and mans, gwo, £50 ono. Dynamco oscilloscope as above, but less TB 1Y4 not wkg, £30 ono. Jason audio gen AG-10 (No 2) 10Hz-100kHz, gwo, £20 ono. Prefer collection. Geoff, G1CQH. 01737 642 004 (Redhill).

SILENT key sale, G4DBA. Strumech tiltover tower, 45ft base plate and post, KLM KT-34A, Ham TV rotator, FT-1000 MP. 1997 SB200, Kenwood LF-30A, Datong FL3, Icom 240. Offers to G4RL, QTHR, 01228 513 554 (Carlisle).
E-mail: lawrie.philp@ntlworld.com

SILENT key sale. Auto VOX tape-switching unit kits suitable for scanners or rcvrs with squelch control. Batt operated, normal price was £25. Yours for £7.50. Only 43 are available or sell whole lot. G3MYG, QTHR, 020 8346 2304 (North London).

SILENT key sale. Versatower with HyGain 4-ele beam ant and rotator, plus 300ft coax, £150 the lot. Family Clements, 01375 390 268 (Grays).

STANDARD C-8800 144MHz FM tcvr, PSU, 7/8 colinear. AR40 antenna rotator, 20ft aluminium scaffold pole, 8-ele 144MHz, 88-ele 432MHz, various mast sections. Microwave Modules 432/28MHz tvtr. Gresham Lion GL7000 VDU, colour. Various Gresham Lion PSUs, 5V, 12V, 12 +12V. Tektronix 465B oscilloscope (200MHz) plus scope-mobile. Offers? G3ZWK, 07710 599 592 (Farnborough). E-mail; dave@raimbach.com

STRUMECH Versatower P60 (60ft) mast, 3-section inc head unit, ground post & new cables, ready for transport, £200 ono. G3VGH, QTHR, 01904 769 245 (York).

TRIO TS-130S 100W HF SSB tcvr 80-10m incl WARC bands, perfect, £350. Colt 320 AM/FM/SSB 10m tcvr, 28.46 to 29.70MHz coverage and repeater operation – 100kHz plus 50W PA, £35. 01902 847 296 (Wolverhampton).
E-mail: con@g4evp.fsnet.co.uk

TRIO TS-130V SSB/QRP tcvr (WARC). Kenwood AT-120 ATU, PS-20 PSU, mic etc, £225. Kenwood frequency controller DFC-230 (occasional dry

SILENT KEYS

WE REGRET to record the passing of the following radio amateurs:

2E0RAF	Mr B Woodrup	13/09/02
DL2MDE	Mr T Kieselbach	
EI7FOB	Mr A F Billett	07/02
G0DTN	Mr R Lord	30/08/02
G0IRV	Mr C G Lockyer	21/09/02
G0KNQ	Mr R Gallop	28/09/02
G0MTL	Mrs D Barnes	24/10/02
G0NCG	Mr A F Broadbent	
G0SHB	Mr E H Lambourn	13/09/02
G1ZUF	Mr J Gibson	
G2AZP	Mr P W Crowley	21/10/02
G2BNI	Mr D B Drage	06/10/02
G2FRI	Mr T J Swain	19/09/02
G3CGQ	Mr F W Tyler	01/09/02
G3HSP	Mr A Ward	14/10/02
G3IRP	Mr R Plumb	26/09/02
G3KOG	Mr W J Blanchard	03/10/02
G3LCW	Mr L A Hood	
G3LQG	Mr J McCaig	
G3LYN	Mr R J Amblin	25/09/02
G3MCO	Rev W C Mills	
G3NHU	Mr A D Besford	18/09/02
G3NKO / C56RF		
	Mr R Ford	10/02
G3PTT	Mr S H Goodhall	18/12/01
G3RFE	Mr T H Bell	21/09/02
G3RYC	Mr B R M Hanson	03/09/02
G3SQM	Mr A Smith	
G4DBA	Mr R H Percival	11/08/02
G4FYD	Mr K S English	07/02
G4GYU	Mr J Coates	23/10/02
G4HUR	Mr E H Ward	08/02
G4OYU	Mr J Philpot	08/10/02
G4PXQ	Mr G Griffiths	17/10/02
G4UXN	Mr S W Skinner	21/08/02
G4VUU	Mr W E Dick	26/09/02
G6ZJW	Mr J Wealleans	21/01/02
G8DR	Mr D Aston	08/09/02
G8OWN	Mr D Miller	
GI5SJ	Mr S Johnson	
GM1IKQ	Mr L S Davies	23/09/02
GW6ZKJ	Mr A G Tapscott	11/10/02
LU7XP	Mr J F Vrsalovich	
RS4305	Mr A H Hennis	28/09/02

The Members' Ads order form is now published here. If members do not wish to cut the form out of the magazine, photocopies will be accepted, as will recent copies of the form from previous months, or recent copies of the 'carrier' sheet. *As a last resort*, members may also send in their advertisements on separate sheets of paper, but if you choose to do this, you *must* supply an accurate word count - and, of course, the correct fee in the normal manner.

RSGB MEMBERS' ADS ORDER FORM

Application form for one For Sale, Exchange or Wanted advertisement. Do not mix classifications on this form; separate applications must be made.

Please ensure you read and understand the conditions of acceptance of these subsidised Members' Advertisements, printed at the top of the Members' Ads page of the current *RadCom*.

FOR SALE ☐
EXCHANGE ☐
WANTED ☐
Tick one box

I enclose a cheque/PO for £ ..... or please charge to my credit account below

CARD No EXPIRY DATE

Issue No (Switch only) . . . . . .

Signed: . . . . . *Date:* . . . . . .

FREE ENTRIES TOWN PHONE E-MAIL

RATES: UP TO 20 WORDS £5.50; 21-40, £6.50; 41-60, £7.50

joint included). Hi-Mound Morse key HK-808 (marble), £20. Icom 290E 2m all-mode mobile tcvr, £100. QRP bits – ring. Pair 6V6GT/G valves, offers, box new. Valves – OA3, 807, EZ90, 6SN7GT, 12AX7 etc, £5 collect. G0NID, QTHR, 0161 998 2921 (Manchester).
E-mail: e.page@lineone.net

YAESU FT-1000MP – AC 100W, immaculate cond with original box and man etc, £1200. G3RCU not QTHR, 01202 475 048 (Christchurch).
E-mail: chris@g3rcu.fsnet.co.uk

YAESU FT-736R VHF/UHF satellite multimode tcvr. Exc cond, owned since new, boxed with man, £450. G2BFO, QTHR, 023 9225 5459 (Portsmouth).

YAESU FT-757GX, FP-757HD, FC-757AT, £450. Kenwood TS-850SAT, PS-52, £700. Kenwood TL-922 PA, £750. Cuschcraft A45 tribander, £280. Datong FL2 filter, £25. Shure 444D mic, £25. KAM all mode, £75. Weltz SP-15M SWR, £5. Hanson 50B SWR, £5. Leader dip meter 815, £25. Leader impedance meter 870A, £25 all ovno. Icom 240 2m FM, Icom 245E 2m, multimode, Icom K-H16 h/held (needs new battery), Channel Master rotator, Yaesu G400R rotator, Uniden Force 2m rig, MFJ noise bridge, offers? HF rigs on air, photos via e-mail, collect or plus postage. G4OYO, QTHR, 0115 917 2845 (Nottingham.
E-mail: abram@ntl.com

YAESU FT-902 DM, FC-902 ATU, SP-901 spkr, Morse key Hi-mound MK-706, DC power-lead for 902 DM, £450 ono. No splits. FRG-7 rcvr with mech filter for SSB + tunable BFO, £80. G3THX, QTHR, 01754 761 306 (Skegness).

YAESU FT-990, HF 0-30MHz, built-in ATU, vgc, M3PDT, 01482 787 430 (Hull).
E-mail: peter@debbiet.karoo.co.uk

WANTED

ATARI STE computer. 01279 23421.
E-mail: poisonpen@poisonpen.freeserve.co.uk

COLLINS KWM380, also 75A4 and SSB adapter for 390A, in fact any Collins rcvr-transmitter or American valve design considered. Also any Collins add ons/parts, spkr, electro-voice mic. Andrew, QTHR, G0TFT, 0191 428 6100(nr Newcastle).
E-mail: yagi@blueyonder.co.uk

DAIWA rotator type MR750 with or without CR4 controller. Also any MR750U motor units for above. Mario, GM3MZX, QTHR, 01671 402 268 (Newton-Stewart).
E-mail: marioped@aol.com

EDDYSTONE EC958/7 or /7E, would consider the original EC958. Also required, S G Brown headphones types 'A' and 'F'. Tony, 01494 778 352 evenings (Chesham).

EX-RAF 1155 rcvr, cash waiting, your price, collect anywhere. GW3SMY, QTHR, 01492 545 325 (Colwyn Bay).

HF tcvr 10/100W, no mods, must be very reasonable price. 01542 870 322 (Keith, Banffshire).

ICOM IC-AT 100 auto-ATU including cable, must be gc/fwo and h/book. Des, G0JCF, 01895 633 118.
E-mail: gonedes@aol.com

MULLARD 5-10 amplifier, pre-amp and tape record/play back amp type C, from Stern Clyne kits. Also Stern Clyne AM/FM tuner, Collaro 3-speed transcription record deck, Goldring-Lenco 3-speed record deck. 023 8027 0785 (Eastleigh).
E-mail: tony@nicholrd.fsnet.co.uk

PAIR of ceramic 813 bases, square type preferred. SB200 linear, electrical cond unimportant but must be good mechanically. G3WCE, QTHR, 01692 538 794 (North Walsham).

PLESSEY TDMS70, TSG10, TSG20. Rees Mace Marine (Pye) 619 transmitter and CAT rcvr. Creed 75 teleprinters, un-used spares and tools. Rohde & Schwarz Polyskop SWOB IV. Racal Speedrace MA275 oscillator coupling unit. Racal valve radio equipment, mans and sales literature brought for cash. Nigel, G0UGD, 01323 486 822 (Eastbourne).
E-mail: nigel@irisys.co.uk

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

SOE WWII clandestine radio sets wanted by collector. Your price paid for a type 51 MkI rcvr and PSU or WHY? 020 8505 0838 (London).

***VLF** Radio Engineering* by Watt, *Essays in Electronics* by 'Cathode Ray' (M G Scroggie), *Super-Regenerative Receivers* by J R Whitehead, cond fair. G3NGX, 01491 872 919 (Reading).
E-mail: harryhogg@waitrose.com

WANTED dead or alive! Class D wavemeter. Ask for Geoff, 01634 253 056 (Medway).

YAESU FT-900AT, 100W HF tcvr + mic c/w original h/book and box. As new, mint cond, £495. Peter, G3ZTZ, QTHR, 01276 507 785 (Camberley).
E-mail: pete.howell@ntlworld.com

Rallies & Events

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 RC 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. Map at [www.lowton.gq.nu]

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 - The Paddocks, Long Road, Canvey Island, Essex, at the southernmost extremity of the A130. Radio, computers and electronics . OT 10.30am, £1.50. C (home-made), CP free, DF, TS, MT, MA (book with examiners before midday for both exams). Brian, G7IIO, 01268 756 331 or briang7iio@yahoo.com [www.southessex.ars.btinternet.co.uk]

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 - Britten Arena, Wood Green Animal Shelter, King's Bush Farm, London Road, Godmanchester. OT 10am, £2, concessions £1.50. CP free, LB, C, FAM. [www.cdarc.org.uk]

WAKEFIELD & DRS Northern Cross Radio Rally - Thornes Park Athletics Stadium, Wakefield, W Yorkshire. Just out of town on the Horbury Road. Easy access from M1 jns 39 and 40 - well signposted. OT 10.30/11am. B&B, MT. John, G7JTH, 01924 251 822 or g7jth@wdrs.org.uk [www.wdrs.org.uk]

23 FEBRUARY 2003

SWANSEA ARS Amateur Radio & Computer Show - Swansea Leisure Centre, on the A4067 Swansea-to-Mumbles coast road. OT 10.30am, £1.50, children 50p. TS, B&B, SIG, C, LB. Roger, GW4HSH, 01792 404 422.

2 MARCH 2003

18th RAINHAM RADIO RALLY - Martin, M0AAK, martinm0aak@yahoo.co.uk

8 MARCH 2003

CRYSTAL PALACE R & EC 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.

22 MARCH 2003

SOUTH NORMANTON & DARC and G QRP CLUB Junction 28 Mini-Convention - Duncan, G4DFV, 01623 465 443 or pentode@ntlworld.com

30 MARCH 2003

YEOVIL & DARC 19th QRP Convention - Derek, M0WOB, 01935 414 452, m0wob@tiscali.co.uk

25 - 27 APRIL 2003

SCANDINAVIAN HAMVENTION 2003 - Göteborg, Sweden. [www.scandiham.com]

26 APRIL 2003

INTERNATIONAL MARCONI DAY - [www.gb4imd.co.uk]

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.

MID-CHESHIRE ARS Rally - David, G4XUV, 01606 77787.

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 Radio & Computer Rally - New venue - Gleed Boys' School, Halmer Gardens, Spalding. Ray, M0CTM, 01775 711 953, or John, G4NBR, 07946 302 815. [www.sdars.org.uk]

WEST MANCHESTER RC 7th Red Rose QRP Festival - Les, G4HZJ, 01942 870 634, g4hzj1@ntlworld.com

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]

12 JULY 2003

CORNISH RAC Radio & Computer Rally - Ken, G0FIC, ken@jtarry.freeserve.co.uk or John, G4LJY, g4ljy@hotmail.com

20 JULY 2003

LINCOLN SWC Hamfest - New venue: Lincoln University Sports Centre, Brayford Pool, Lincoln. John, G8VGF, 01522 525 760.

27 JULY 2003

COLCHESTER RA Amateur Radio Rally & Computer Fair - Gary, 01621 818 620 or James, 01255 242 748. E-mail: cra2003@garycavie.com or cra2003@mcginty.net

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

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.

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?

2 Dec GB2ACR: Air Cadets Rochester. Rochester, Kent. TLH7 (G4EVY)
13 Dec GB2SOB: Sirloin of Beef. Preston, Lancs. LH27 (G3UCA)
20 Dec GB4YOU: Youlbury Scout & Guide Radio. Oxford. TLH27P (G0RJX)
GB4YOU: Youlbury Scout & Guide Radio. Oxford. LH27P (G0REL)

HF HF HF HF

DON FIELD, G3XTT
105 Shiplake Bottom, Peppard Common, Henley on Thames, RG9 5HJ.
e-mail: hf.radcom@rsgb.org.uk

PERHAPS THE big surprise of October was an operation as TX0AT from the Chesterfield Islands (a dependency of New Caledonia, but a separate entity for DXCC) by a group of Italians. Much of their operation seems to have been on 27MHz CB/Freeband (which is legal in New Caledonia), but the amateur licence was correctly issued, and operations will probably count for DXCC in due course. I found them very easy to work on 20m SSB (first call, running 200 watts). Generally, band conditions were fair to good during the month, and the ZL7C (Chatham Island) expedition appeared all over the place, with UK stations working them on all nine HF bands.

Conditions during the CQWW Phone contest in late October were well down on last year, with several solar disturbances before and during the contest, and a relatively low solar flux. At MU0C (Guernsey) we had reasonable propagation to Japan, Australasia and the US on 10m on the Saturday, but Sunday was well down. At the other end of the spectrum, 160m was a little disappointing too. In our case we made just three trans-Atlantic contacts, though there were some nice ones from the east such as A61AJ (UAE). Mind you, for many UK stations the main problem was the wind. In Guernsey winds peaked at 90MPH, and I believe they were stronger in other parts of the British Isles. I hope your antennas are still standing!

BAND PLANNING

AFTER THE CONTEST there were several complaints on the contest reflectors and elsewhere about SSB excursions into the CW segment of 40m. While I cannot condone this, it's almost inevitable that the very high level of contest activity will result in this happening, but only on this and maybe one other major contest weekend of the year. At other times, HF operators appear to be remarkably good at sticking to what is, for most of the world's amateurs, simply a voluntary agreement. No doubt in the CW leg of the contest we might expect CW signals on 40m extending well up into the higher reaches of the band. I daresay, if the bandplans were seriously revisited nowadays, there would be pressure for extended allocations for digital modes, SSTV, experimental voice modes, QRP and DX working frequencies, etc, which, if made mandatory, would in my view create an unwanted level of rigidity, when activity level by mode varies dramatically from day to day and year to year. I must make it clear, though, that that is a personal view and others may well disagree. For now, I can but call for a degree of common sense in respecting the IARU-recommended band plans.

DX NEWS

MARIO, (ex-EY8TM), will be in the Monrovia, **Liberia**, area for about three years. He expects to have the callsign EL2TM. QSL via F6FNU.

Several operators will activate the special callsign K9V from St Croix (NA-106) in the **US Virgin Islands** (normal prefix KP2; watch your logging programs!) The operation will be 2 - 8 December, on all bands, SSB, CW and PSK. QSL via WF9V. By the way, in case you're confused about the 'one-by-one' callsigns being used from the US mainland and US possessions (for example, K8O used recently from American Samoa), these are special event calls. The FCC will not issue full callsigns, even for rare spots like KH8, KH9, etc, for short-duration operations.

Jim Bullington, N4HX (ex-9U5JB, TYA11, HS5AFJ) has just received his 5U7JB licence. 'Bull' has recently been assigned Director of the US Peace Corps in **Niger**. If his past operations are a guide, expect Jim to be very active indeed.

Dani, EA4ATI, is now active as XT2ATI from **Burkina Faso** and will be there for six months. QSL direct only via EA4YK.

John, KX7YT, will be active as S21YV on 10, 15 and 20 SSB and PSK31 from Dhaka, **Bangladesh**, until 4 December. The station will consist of an IC-706MkIIG and AT-180 tuner. Both vertical and wire Yagi antennas will be used. John will be returning to Dhaka in February and again in October 2003. QSL to his home call.

Mel, JA2KLT, has been working in Damascus, **Syria**, since April. He hopes he can soon be active from the YK0RJ club station. Apparently this is a station donated by the IARU, currently with no antennas. Once Mel gets on the air QSLs will be handled by JA1ELY. Mel has also been operating from Jordan as JY8YV from the station of JY9NY.

Recent changes to the licensing regime in **Thailand** have meant that resident UK amateurs and those of certain other countries are now able to have their own HS callsigns. Some well known callsigns which have now changed are:

HS0/G4UAV = HS0ZDX,
HS0/SM3DYU = HS0ZDY,
HS0/G3NOM = HS0ZDZ,
HS0/OE2REL = HS0ZEA and
HS0/GW3KYN = HS0ZEB.

Ken, K6TA / P40TA, and Kay, K6KO / P40K, will operate from **Aruba** between 3 and 17 December including operations in the ARRL 10m and 160m Contests. They will operate from the P49V super station with two complete stations. Outside the contests they will concentrate on the WARC bands. QSL both calls via WM6A.

John, K4BAI, will be in **Barbados** 10 - 17 December. He plans to be active in the ARRL 10m Contest, on both modes, as 8P9Z. Outside the contest, look for John to be active as 8P9HT on all bands CW / SSB. QSL both callsigns via K4BAI.

A group of six operators will be on from FS, **French St Martin**, in early December. Ann, W2AZK; Brian, KF2HC; Gene, K2KJI; Maryann, K2RVH; Bob, W5GJ, and Mike, WA2VUN, will sign FS/home call 4 - 11 December. They hope to have two stations on HF, both CW and SSB, and possibly some PSK31. QSL to the home call of the station you work.

ARRL International DX CW Contest 2002

(A=QRP, B=Low Power, C=High Power)			
G0DCK	189930	A	
GW0KZW	12183	A	
G4EHT	4515	A	
G4GZG	4368	A	
G0MTN	841698	B	
GM3NHQ	301392	B	
G4KFT	286749	B	
MU0FAL	275394	B	
G3RSD	246330	B	
G3VQO	201498	B	
G4PIQ	199350	B	
G0UKX	184920	B	
G3KKJ	147828	B	
G4ZME	70782	B	
G0/N9LYE	64500	B	
G3ECS	57285	B	
M0AEK	33495	B	
GM2T (GM0CLN op)	129978	B	10
GU4YOX	54927	B	10
GW4HBK	10464	B	40
MM0BQI	4350	B	40
G4BUO	3093960	C	
G3MXJ	1509000	C	
G3UFY	741240	C	
G3TXF	594015	C	
G2QT	539760	C	
G4BJM	504192	C	
GM4SID	139392	C	
GI4KSH	120648	C	
M0TTT	253995	C	10
G3WVG	235944	C	10
G4TSH/P	232578	C	10
M0C (G0CKP op)	194256	C	10
G0ORH	82665	C	10
M6T (G4PIQ op)	48816	C	10
G4JZO	38700	C	10
G3XSV	31050	C	10
G0VDZ	2460	C	10
GM3POI	306033	C	15
MU2K (G3SQX op)	178953	C	15
G4IIY	86337	C	15
G0MRH	7560	C	15
M4T (G0VQR op)	33792	C	20
G3JKY	22113	C	20
GW7X (GW3NJW op)	151164	C	40
G0IVZ	123255	C	80
G4OBK	576	C	160
Single-op Assisted			
M0SDX	2328339	C	
G3LZQ	1281180	C	
Multi-op Unlimited			
MD/DL5AXX	6063552	C	
M3S	239592	B	

IOTA ACTIVITY

JAY, V31MX, and Cal, V31MF, will operate from **Caye Caulker** (NA-073) 11 - 17 December on 20, 15 and 10m SSB, including the ARRL 10m Contest. QSL via K0BCN.

AWARDS

I HAVE RECEIVED details of an award sponsored by the radio club of the island of Capri (Italy). It is for working the island's reefs, castles and lighthouses. Contacts between 1/1/02 and 31/12/04 count. I can provide full details including a list of qualifying counters on request.

Vlad, Z35M, who is currently active from Albania as ZA/Z35M.

CONTESTS

THIS MONTH'S MAIN contest is probably the ARRL 10m Contest, which takes place over 14 / 15 December, and may be the last chance to have a go at a major 10m contest before the sunspots start to desert us in a way which significantly affects 28MHz propagation. Work either or both modes, and exchange RS(T) plus serial number. US / Canadian stations will give you their state / province. Results of the 2001 contest appeared last month. Operations scheduled for this year include PJ2T (Netherlands Antilles) who will be a multi-op high-power entry.

There are a couple of contests for topband enthusiasts this month. The ARRL 160m Contest is on 6 - 8 December, and the Stew Perry Topband Challenge 28 / 29 December. The OK DX RTTY Contest is on 21 December. There are some other interesting events too, such as the TOPS CW Club 80m activity contest on 7/8 December. I haven't space to give rules for all of them. Drop me a line, by all means, or check one of the various relevant web pages. On the subject of which, let me this month recommend WA7BNM's site for a useful contest calendar, and NG3K's for announced contest operations.

Results of the 2002 ARRL International DX CW Contest are now available, with an extended commentary, as usual, on the ARRL website. UK results appear in the table on page 72. Congratulations especially to G4BUO (9th World, 2nd Europe) in the high-power all-band category, to M0TTT, G3WVG and G4TSH/P (World and European 2nd, 3rd and 4th) on 10m, GM3POI (1st World, 2nd Europe) on 15m, GW7X operated by GW3NJW (8th World, 7th Europe) on 40m, G0IVZ (2nd World, 1st Europe) on 80m, G4OBK (8th World, 7th Europe) on 160m, GM2T operated by GM0CLN (6th World, 3rd Europe) 10m low-power, M0SDX and G3LZQ (3rd World, 2nd Europe and 7th World, 6th Europe respectively) in the single-operator Assisted category, and to MD/DL5AXX and M3S (1st World, 1st Europe and 10th World, 8th Europe) in the multi-op unlimited transmitter category. A good turnout all round!

My apologies to Ian, GW3KYN, whose call appeared as GW0KYN in the 10m contest results in last month's column. It's always hard to transcribe a long list of results and I'm afraid the old fingers occasionally go astray!

TABLES

MARK, G0LGJ, HAS been enjoying good success from his car. A new antenna for 12m brought contacts with AY1ECZ (Argentina), 9K2ZZ (Kuwait), AP2JZB (Pakistan), XV9DT (Vietnam) and C98DC (Mozambique) to name but a few. Not

9 BAND TABLES No 44

MIXED MODE

CALL	1.8	3.5	7	10	14	18	21	24	28	TOTAL
G3KMA	253	301	327	321	334	329	335	322	332	2854
G4BWP	247	305	333	320	335	329	335	314	325	2843
G3XTT	233	278	316	284	332	314	332	297	312	2698
GW3JXN	183	257	294	285	328	319	320	296	304	2586
G3GIQ	152	246	303	264	333	317	333	306	328	2582
G3SED	233	261	293	278	314	293	297	266	287	2522
G4OBK	171	227	278	283	327	307	318	301	300	2512
G3TXF	129	235	296	286	329	292	323	273	302	2465
G3TBK	119	231	276	249	327	296	315	278	287	2378
G3LAS	106	201	250	255	316	301	316	296	299	2340
G3YVH	128	156	259	282	324	313	311	277	282	2332
G3IFB	62	222	288	244	327	250	307	247	287	2234
GM3PPE	148	210	254	264	320	261	277	232	227	2193
G3VJP	107	182	256	190	326	276	313	245	286	2181
G3AKU	109	164	237	250	296	263	275	261	275	2130
G4PTJ	42	177	229	182	323	272	320	261	301	2107
G3KMQ	60	212	266	213	325	247	281	255	247	2106
G3IGW	129	198	316	240	289	246	258	131	235	2042
G5LP	67	224	283	224	312	226	284	162	244	2026
G0TSM	67	153	229	184	301	261	294	231	295	2015
G3VKW	48	163	231	124	326	219	322	233	306	1972
G0JHC	1	29	164	260	272	300	313	294	308	1941
M0BEW	34	115	213	187	282	240	272	228	263	1834
G4XRX	8	77	172	154	294	233	300	205	262	1705
M0AWX	45	115	138	0	277	219	263	204	225	1486
G4NXG/M	25	58	138	0	292	217	288	193	253	1464
G0LRX	1	95	124	0	233	53	251	52	227	1036
G4FVK	40	79	105	59	189	107	187	75	172	1013
MM0BQI	39	62	122	49	188	76	168	61	160	925
M0CNP	10	67	119	9	208	73	163	51	126	826
AVERAGE	100	171	237	198	299	248	289	228	268	2044

CW ONLY

G3KMA	247	281	324	321	333	322	331	308	323	2790
G4BWP	222	231	301	319	302	307	308	283	266	2539
G3XTT	222	248	304	284	305	291	303	271	283	2511
GW3JXN	180	225	280	285	313	305	307	272	275	2442
G3TXF	129	228	294	286	324	290	318	272	290	2431
G0NXX	172	235	282	293	300	292	278	267	268	2387
G4OBK	162	207	271	283	309	293	293	279	279	2376
G3SED	232	244	287	278	286	262	259	220	226	2294
G3SXW	96	206	262	263	317	279	303	254	281	2261
G3YVH	124	150	250	276	309	297	288	256	258	2208
G3LAS	106	128	225	255	274	276	283	256	259	2062
G3NOH	49	124	208	257	301	283	294	248	261	2025
G5LP	67	223	283	224	301	225	273	162	243	2001
G3VJP	106	147	245	190	298	253	285	221	251	1996
G4PTJ	40	116	194	182	258	242	283	234	256	1805
G0TSM	63	106	203	184	216	177	225	180	253	1607
G3VKW	41	90	175	122	232	167	260	178	202	1467
MM0BQI	26	31	81	49	95	32	84	28	88	514
AVERAGE	127	179	248	242	282	255	276	233	253	2095

Next deadline 8 January 2003

Prepared by G3GIQ henry@topdx.com 8 October 2002

COUNTRIES WORKED, 2002

(sorted this month by Mixed totals)

CALL	CW	SSB	DATA	MIXED
G4PTJ	226	224	0	271
G0NXX	251	0	0	251
G3YVH	209	173	0	245
M0AWX	0	245	0	245
G3SXW	243	0	0	243
ZC4BS	186	221	84	239
G4WXZ	166	179	0	224
G3SED	192	140	3	222
G3JFS	177	154	143	221
M5PLY	0	220	0	220
G3LHJ	190	88	131	211
M3RDX	0	197	82	203
G4IRN	201	0	0	201
G0GFQ	0	200	26	200
G4UCJ	187	0	47	187
G0ARF	0	0	180	180
ZC4DW	151	107	115	180
MU0FAL	147	131	0	177
G4OBK	144	69	76	176
M0CNP	8	169	46	169
G3XTT	128	104	92	168
GU4YOX	117	118	0	167
ZC4VG	153	14	36	156
G3YMC QRP	150	0	0	150
MM0BQI	59	103	104	148
MW5VZW	42	131	0	140
M0BZK	0	122	65	133
M5GUS	0	132	0	132
G4DJX	131	0	0	131
G4FVK	58	124	0	130
G0LGJ/M	0	120	0	120
MU3DHI	3	119	0	119
GU0SUP	0	0	118	118
G4YWY/M	0	112	0	112
M0BVE	110	0	0	110
G4IDL	100	34	0	109
G3ING	102	0	0	102
G3WP	97	0	0	97
GM4ELV QRP	72	69	0	93
M0CAL	3	85	0	85
M3FSI	0	85	0	85
G0URR	0	0	81	81
G4DDL	72	26	13	74
M5AEF QRP	50	61	0	71
G3URA	0	0	65	65
M3VAM	0	58	0	58
M5AFA QRP	0	0	38	38

bad! We've had a veritable flurry of M3 licensees joining the table this month. Welcome one and all. Ian, M3RDX, starts with some excellent totals, all worked since March with a TS-2000 and a DX33 multiband Yagi at 50ft. He attributes his success to a 25-year apprenticeship as a short-wave listener, which really does reinforce the old adage that starting as an SWL hones your operating capabilities for the time when you are licensed. Al, MU3DHI, reports some nice ones such as TT8DX (Chad), BI7DX (China) and YA5T (Afghanistan) on 15m. His 15m score is now up to 83 countries. Just one 5MHz report this month, from Robin, M5AEF, who has managed 11 locator squares and 2 DXCC countries so far, his best DX being GI4VIV in IO74, at 529km. Robin is using 1 watt and a half-wave dipole up at 5m.

The 9-band table appears on page 73, thanks as always to Henry, G3GIQ. Scores didn't move up very much over the summer months, but the next one should reflect the usual autumnal improvement in conditions and band activity. Make a note of the deadline now.

QSL ADDRESSES

I AM CONSCIOUS that 'QTH Corner' hasn't appeared for a few months, and several of you have been writing to me with requests for addresses (which, indeed, I am happy to help with where I can). 'QTH Corner' takes some time to compile, and with so many operations on the bands it isn't easy to second-guess which addresses readers will need. But I'll try to include a bumper one, hopefully next month.

DX FOUNDATIONS

OCTOBER MARKED 30 years of the Northern California DX Foundation (NCDXF), during which time it has given $1.5 million to support DX-related activities, expeditions, scholarships, etc. The NCDXF beacon system now has transmitters in 18 countries. This is a good time to remember that many DXpeditions simply would not take place if it were not for the support of NCDXF and others. Here in Europe, our own CDXC (Chiltern DX Club, the UK DX Foundation) is one of the main contributors, along with the German-based European DX Foundation (EuDXF). If you enjoy working DX, it is well worth supporting one or more of these organisations.

W9WNV

FINALLY, THOSE OF you who were active DXers in the 1960s will remember Don Miller, W9WNV, who activated many rare spots on his round-the-world travels. Don was subsequently convicted for plotting his wife's murder, and has spent many years behind bars (and no longer holds his amateur licence). A recent news item says that Don, now in his mid-sixties, has been offered parole, though I don't suppose he'll be off on any more expeditions after all this time. DXpeditioners contemporary to the Don Miller era were Gus Browning, W4BPD, and Lloyd and Iris Colvin, W6KG and W6QL.

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 **February** issue by **21 December.** ♦

www.

ARRL:	www.arrl.org
CDXC:	www.cdxc.org
EuDXF:	www.eudxf.org
NCDXF:	www.ncdxf.org
NG3K:	cpcug.org/user/wfeidt
WA7BNM:	www.hornucopia.com/contestcal

HF F-Layer **Propagation Predictions** for **December 2002**

	3.5MHz	7.0MHz	14.0MHz	18.1MHz	21.0MHz	24.9MHz	28.0MHz
Time	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220
(UTC)	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020
*** Europe							
Moscow	886....78888	8881..288888	..1877882...	..2999993...	...999981...	...3888.....	...2886.....
*** Asia							
Yakutsk	3323	643...266677	2..883245212	...65.....	...43.....	...22.....	.....
Tokyo	.....112.	...41.14535.	...52.....	...42.....	...2.....	...2.....	.....
Singapore	.....	265332	.....2782...	.....687....	....1675....	...24672....	...2355....
Hyderabad	.....	2.....12222	.....5761..	...225883...	...66798....	...89997....	...89996....
Tel Aviv	673....26777	868....88888	5..866894.34	...77777....	...57784....	...58874....	...47763....
*** Oceania							
Wellington	.....1....	...377884...	...699981...	....8883....	....787.....	....787.....	....675.....
Perth	.....	.....2223.	.....772...	.....5982...	....1687....	...56886....	...56783....
Sydney	.....	.....3321..	....1886....	....8996....	...18993....	...68992....	...5898.....
Honolulu	.....	.1.21..3....	.....1.23...	.....	.....	.....	.....
W. Samoa	.....	...11.13....	....88871...	....6775....	....5762....	....253.....	.....3.....
*** Africa							
Mauritius	.....	3.....1212	.....521..	.....61...	.....15....	.....22....	.....1.....
Johannesburg	62.....54	98.....4899	611....68866	...1..1773..	...222375...	...777885...	...677882...
Ibadan	.....	667.....4556	3.271115772 2	2..988898421	...9999963..	...99999973..	...999986...
Nairobi	.....	33.....2211	5.4....46666	2.54222477522	..26556862..	...767782...	...77777....
Canary Isles	666.....6665	8886....8878	33.865468853	...98888962.	...8899694..	...428885...	...2.8883...
*** S. America							
Buenos Aires	1225.....	7759.....26	...8.....	...83...22..	...752133...	...353352...	....4335....
Rio de Janeiro	...1.....	1217.....11	...7.....	...8611254..	...7733552..	...475464...	....74352...
Lima	.....	11.4.....1	...41.....	...655212...	...227543...	.....7762...	.....776....
Caracas	.....	2333.....22	....4....1..	....22.11...	.....4334...	.....8785...	.....8883...
*** N. America							
Guatemala	.....	3314.....1	...1.....	.....1.....	.....1.....	.....64.....	.....64.....
New Orleans	.....	3223.....3	...2.2.....	...3.47771..	.....2887...	.....885....	.....993....
Washington	111.....1	7777.....77	13.324..372.	.....76672..	.....6778...	.....2774...	.....882...
Quebec	5663.....576	78382....987	.....4115...	....288881..	.....8998...	.....7997...	.....6997...
Anchorage	.....	77461.146546	.....5...	.....3...	.....	.....	.....
Vancouver	.....	3312.....1	.....21...	.....75...	.....43...	.....33...	.....
San Francisco	.....	3212.....1	.....	.....63...	.....62...	.....6....	.....3....

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 October 2002 issued by the Sunspot Data Centre, Brussels, was 97.5. The maximum daily sunspot number was 129 on 10 October and the minimum was 58 on 1 October. The predicted smoothed sunspot numbers for December, January and February are respectively: (SIDC classical method – Waldmeier's standard) 95, 92, 90 (combined method) 77, 73, 70.

VHF/UHF

NORMAN FITCH, G3FPK
40 Eskdale Gardens, Purley, Surrey CR8 1EZ.
E-mail: g3fpk@compuserve.com

CONDITIONS ON the VHF bands have been somewhat disappointing lately. Such highlights as there have been include the first 50MHz QSOs from Afghanistan and the first of the season's F_2 openings to Australia and across the North Atlantic. While tropospheric (tropo) openings were rare, there was excellent auroral propagation at the beginning of October.

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, (TW), (WV) etc refers to the postcode area and (IO75), for example, is the Maidenhead grid.

PUBLICATIONS

THE DELAYED ISSUE 2/2002 of the quarterly *DUBUS* magazine starts with an appraisal of Rainer Bertelsmeier's, DJ9BV, work for the publication as referred to last month. There are 25 pages on EME matters, eight of which are of photographs of antenna systems and their operators. The full results of this year's REF/*DUBUS* EME Contest are included - see the Moonbounce section for details.

There are the usual tropo, aurora and meteor scatter (MS) sections and the Sporadic E (Es) one includes maps of nine of this summer's openings showing the paths worked. This edition includes the 'Without-EME' Toplists covering 50MHz to 241GHz. Andy Talbot, G4JNT (QTHR), is the UK agent for *DUBUS* and his e-mail address is dubus@marsport.demon.co.uk

The Autumn edition of the quarterly publication *VHF Communications* starts with a comprehensive 21-page article describing an FM receiver covering 137-141MHz, which includes the meteorological satellite band, by Miroslav Gola, OK2UGS. It is a double conversion superhet with PLL. There are many printed circuit board (PCB) layout diagrams, full circuit details, a parts list and details of suitable antennas. Detailed information on kits, complete with CD, can be obtained from emgo@vuhz.cz or emgo@iol.cz and there is a website - see the list. Bernd Kaa, DG4RBF, writes about Precision Directional Couplers for Matching Measurements covering from approximately 120MHz through 1.5GHz illustrated with many drawings, photographs and plots. Gunthard Kraus, DG8GB, has his regular Internet Treasure Trove pages. Andy Barter, G8ATD, edits *VHF Communications,* which is published by KM Publications, 63 Ringwood Road, Luton LU2 7BG. The e-mail address is vhfsubs@vhfcomm.co.uk and there is a website - see the list.

GEOMAGNETIC AND SOLAR ACTIVITY

WHILE THE AVERAGE daily solar flux is now dropping, geomagnetic activity is on the increase. In the 29 days to 11 October there were 18 quiet days when the middle latitude A-index at Fredericksburg was in the range 0-10. There were five unsettled days (11-20) and the remaining six were in the sub-storm range (21-50), the maximum being 43 on 4 October. The three-hourly K-index reached 6 at times on 1-4 and 8 October and 7 in the early hours of the 4th. Details of the events leading up to the consequent auroras are covered later.

After the previous month's surge in the 10.7cm solar flux, in the 30 days to 11 October it only exceeded 200 units on the first three days. The daily average was 165.5, about 15% below the previous month's value. The peak figure was 212 on 12 September and the minimum was 136 on 2 October. Even so, 46 new sunspot regions were recorded although their areas in millionths of the Sun's visible disc never exceeded 1850. On eight days the values were below 1000 with a minimum of 520 on 30 September. A vast amount of these data are available on the Space Environment Center's website - see the list.

PROPAGATION

THE AUGUST ISSUE of *SunMag* commences with a press release by the European Space Agency (ESA) about starquakes. We are all familiar with earthquakes, but similar events occur in our gaseous Sun and other stars in the universe. Helioseismology is the study of these phenomena and the ESA's SOHO spacecraft is already registering these waves at a million points across the Sun's visible surface.

Its MDI instrument can look right through the Sun to observe stormy sunspot regions forming on the far side. Future ESA missions, such as Eddington due for launch in 2008, and Solar Orbiter due for a 2012 launch, will enable scientists to look more closely at selected parts of the Sun.

The second article refers to a NASA press release concerning its Living With a Star (LWS) program. The first of these missions, due for launch in August 2007, will be on a Sun-pointing spacecraft in geosynchronous orbit. It will carry instruments in the Solar Dynamics Observatory (SDO) mission ". . . designed to provide new data con-

METEOR SCATTER

THE BIG EVENT for MS enthusiasts this month is the Geminids shower, which should be active between 7 and 15 December. The OH5IY program suggests that the peak should be around 1000 on the 14th with a zenithal hourly rate (ZHR) of 119. For mid-UK stations, the radiant is below the horizon for about four hours from 1230. Reflection efficiency is 50% above average for about 30 hours and this shower usually has a steady build up to the peak but it falls off rapidly afterwards.

The last shower of the year is the Ursids which has a maximum ZHR of about 10 and should peak at around 1900 on the 22nd. The radiant doesn't set and reflection efficiencies should be 50% above average for about 12 hours, but the geometry is such that the north/south path is not very good.

The VHF-DX-Group DL-West has produced the latest version, 1.90, of its MS Database which, can be downloaded via a link from its website - see the list. Thanks to Guido Juenkersfeld, DL8EBW, for this information.

Andy Adams, G0KZG, should be operating maritime mobile in the North Atlantic now. The ship was due to leave Fairlie in North Ayrshire on 6 November for a working area between Iceland and Greenland. His sked working frequency (QRG) is 144.120MHz with 2.5min, 2000LPM (letters per minute) HSCW (high speed CW), with him transmitting in the first period. 144.125MHz is the random-only QRG with the same procedure. WSJT FSK441 random operation is on 144.360MHz using 30s periods with him transmitting first.

The provisional operating times are 0400-0600 mainly for skeds on the sked QRG; 1800-2100 for random work on 144.125 or 144.360MHz; weekend afternoons for random work. These times are subject to work commitments and ship time. Andy says that, when calling him, just send your call which makes it easier for him to work out who is calling. He gives the following example: G0KZG is sending "CQ CQ CQ GTKZGMM". ZS6WB hears him calling so sends "ZS6WB ZS6WB ZS6WB". Andy hears "WB 6 ZS6 6WBZS" then replies "ZS6WB ZS6WB ZS6WB" for one period. ZS6WB hears his own call so knows that Andy is working him so starts the QSO as normal, "GTKZGMM ZS6WB 26 26 26" and so on.

His equipment for 2m consists of an FT-847, a 3CX800 amplifier repaired at short notice by Linear Amp (UK) Ltd, an 11-ele Tonna Yagi with a 9-ele spare and a Landwehr GasFet low noise masthead preamp, while for 6m he has a 5-ele Tonna Yagi. Watch the *DXCluster* for information during the trip, which should see the ship back in Southampton on 20 December.

cerning the nature and consequences of solar variability to humanity and will directly contribute to NASA's mission to understand and protect the home planet." SDO will investigate all sorts of phenomena, such as the Sun's magnetic field, the solar wind and ultraviolet radiation, all of which affect radio propagation.

There are eight pages of sunspot group data, a solar flare list and page of 10 solar parameters in graphical form from the SEC covering solar cycles 19 to 23 to date. There are no daily solar, geomagnetic or particle data, though. *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

The July edition of *The Six and Ten Report* has five pages of analysis of 50MHz reports from the UK covering Es, MS, tropo and auroral modes. There is the usual page of daily solar, geomagnetic and particle data and the complete three-hourly K-index values for Hartland (Devon) provided by the British Geological Survey. The *Report* is an activity of the RSGB's Propagation Studies Committee (PSC), and is edited by Dr Steve Reed, G0AEV, and Prof Martin Harrison, G3USF. Subscription enquiries should be addressed to G0AEV QTHR; Steve's e-mail address is g0aev@explore.force9.co.uk

LOCATOR SQUARES TABLE
Starting date: 1-1-1979

Callsign	50	70	144	430	1296	Total
G0JHC	1000	26	48	4	-	1078
G3IMV	813	20	616	125	53	1627
GJ4ICD	780	1	267	121	79	1248
G0FYD	676	1	285	20	-	982
GW7SMV	664	-	211	-	-	875
G8BCG	661	-	-	-	-	661
G4DEZ	602	23	140	58	27	850
G4TIF	509	28	235	112	-	884
G0EVT	506	14	309	77	16	922
G7KHF	487	-	18	-	-	505
G4OBK	423	21	57	4	-	505
G8TOK	405	34	140	56	29	664
G1SWH	350	42	240	81	30	743
GU6AJE	338	13	32	-	-	383
M5BXB	335	15	160	56	-	566
GM4VVX	324	5	132	-	-	461
G8HGN	310	-	168	67	-	545
GW3EJR	289	-	-	-	-	289
G1UGH	280	-	130	18	-	428
G3FIJ	278	29	108	51	23	489
G7CLY	244	-	248	16	-	508
M1DUD	238	1	32	1	-	272
G1EFL	231	-	67	2	-	300
G0XDI	228	-	254	67	-	549
G6TTL	220	-	133	90	27	470
G0ISW	218	2	87	22	-	329
GM4JJJ	206	3	430	46	-	685
GM6MEN	186	-	-	-	-	186
G4APJ	176	-	57	24	-	257
M5PLY	120	-	-	-	-	120
M1DRK	113	-	-	-	-	113
G4ZHI	101	10	259	33	-	403
G4FUJ	96	20	25	6	5	152
G3FPK	30	-	246	-	-	276
M3VAM	19	-	17	2	-	38
G4YTL	-	53	529	122	-	704
G3XDY	-	34	251	175	123	583
G4OUT	-	23	107	-	-	130
EA7IT	-	-	103	-	-	103
G8RWG	-	-	30	-	-	30

No satellite, repeater or packet radio QSOs. If no updates received for a year entries will be deleted. Band of the month 50MHz. Next deadline is 10 December.

Photo: Henryk Kotowski, SM0JHF

Sture, OH0JFP, who is active every Tuesday evening in the VHF Activity Contests. His new contest station has been built from scratch in two years. It is located 8km south of Mariehamn, the main town of the Åland Islands. He plans a rotating mast with even more antennas for 2003. Sture is 50 years old on 1 December 2002. Next time you talk to him, take the opportunity to wish him a happy birthday and congratulate him on his excellent contest station.

MOONBOUNCE

FIRST THE results of the REF/*DUBUS* EME Contest held in March and April. The only British Isles entrant of the 45 in the 144MHz section was Roy Reed, G3ZIG (JO02), who was fourth. He made 67 QSOs with 34 multipliers to give a total of 227,800 points. 25 entered the 432MHz section and the sole British Isles participant was Peter Blair, G3LTF (IO91), who was 15th with 19 QSOs and 15 multipliers for a total of 28,650 points. Roy Reed, G3CCH (JO02), narrowly won the 1296MHz section with 151,200 points from 56 QSOs and 27 multipliers. G3LTF 54,400/32/17 was 15th and Doug Parker, G4DZU (IO93), 4,800/8/6 was 28th. On 2300MHz, G3LTF was 5th 5,600/8/7 and Peter was 6th out of 15 in the multiband category. Well done the Brits!

G4CCH (IO93), was QRV on 23cm on 28 September and completed with OZ4MM*, also on SSB, GW3XYW*, N7AM* and IK2MMB*. Next day brought QSOs with OH2DG*, ZS6AXT*, IK3COJ*, GW3XYW, IK2MMB* "for a really good CW chat" and G3LTF*. Conditions were very good on the Sunday of this activity weekend and he was hearing S8 echoes at times, while the minimum echo level was with about 5W! On 5 October he had QSOs with DF4PV, OZ6OL*, G3LTF and K5JL 599/589. Next day the New Moon was very close to the Sun resulting in a 6dB increase in noise level. In spite of this he completed with HB9BBD* and on SSB, OZ6OL*, ZS6AXT*, W7BBM and F6ETI*.

The following notes are taken from the October *432 and Above EME Newsletter*. G3LTF has rebuilt his 6m 0.375f/d dish antenna and the whole structure is now assembled to a much higher accuracy. Peter estimates a 3-4dB gain increase on 13cm and about 0.8dB on 23cm and he reports 0.7dB and 0.3-0.4dB of Moon noise on those bands respectively. The first QSO on 23cm with the improved dish was on 9 August with OZ6OL. Next day he completed with F1ANH*, N2UO* for initial (#)189, W2UHI*, VE6TA*, W7BBM*, N7AM* (#190), G4CCH, K0YW and WA6PY*.

On 23cm on 31 August, Stuart Jones, GW3XYW (IO71), completed with DF4PV*, K5JL*, PA3CSG* and F6ETI* and next day with F5VHX (M/O), G4CCH*, K5JL*, W7SZ*, K2UYH and OZ6OL*. He now has JT44 software installed. F5VHX is the new call sign of Graham Daubney (JO04) who previously used F/G8MBI and F/G0VBA.

Ian White, G3SEK (IO91), advises that the 432 and Above 'EME Operating Guide', as agreed at the Prague conference, is now on the conference website - see the list. Finally, Ian Williams, M0BCG (IO91), asks that it be clarified that his claim in the October 'VHF/UHF' column for the first-ever digital mode EME QSO referred only to the 6m band and not to all bands.

OCTOBER AURORAS

"A SOLAR WIND stream buffeted Earth's magnetic field early Tuesday 1 October and triggered a strong geomagnetic storm." That was part of a message from the Space Weather Internet site. Then, "The interplanetary magnetic field near Earth turned south again on Thursday 3 October and re-energised the current spate of geomagnetic activity."

On 6m on the 1st Bryn Llewellyn, G4DEZ (JO03), contacted lots of stations in ES, GM, GI, LY, OH, SM and YL. On 2m he worked into ES, GI, GM, LA, LY, SM and YL and signals were still tone 'A' at 0130 on the 2nd. On 6m on the 1st, Ted Collins, G4UPS (IO80), heard the GM3RMK beacon at RST33A at 1400. From 1414 he contacted GM3UA, G3CCH* and G8TIC/P (IO93), GW0GEI (IO73), MM0CEZ (IO75) and G3AB* (IO94). Fade out was at 1710.

Running just 2W on 6m from an FT-690 to a 5-ele Yagi Robin Burrows-Ellis, M1DUD (JO02), made his first Scottish contact this year with GM3WOJ (IO77) on the 3rd, one on SSB, the other on CW at beam heading (QTE) 0°. On the 4th at 10° he heard GM7PBB (IO86), GM4WJA (IO68), GI0OTC (IO65), OZ1DPR (JO45) and GM8EOG*.

Clive Ohennessy, GM4VVX (IO78), was QRV on 6m on the 3rd when the event turned into Auroral-E propagation, 1956-2030, producing QSOs with ES, OH and SM stations in JO99, KO39 and KP 10, 11, 20, 21 and 32. On 4m on the 5th from 1545 he worked G3LVP (IO81), GM4DIJ (IO85) and G4OBK (IO94).

On 2m he detects auroras by listening to beacon LA4VHF on 144.441MHz. He discovered the aurora on the 1st at 1445 when 2m was full of signals but QSO rates dropped off greatly when the auroral curtain came south and settled overhead filling the sky from a line along the Milky

Way all the way to the north horizon. He was swamped with auroral hiss. The colours were mainly pale lime green with hints of pink. Overhead it looked very much like 'horses tails' clouds that were drifting and twitching about, sometimes very quickly, with bright arcs and rays to the north and west. The aurora was so bright that it cast flickering shadows on the ground.

BAND REPORTS

50MHz

Nick Peckett, G4KUX, is now QRV from Kabul (MM44ON) in Afghanistan as YA4F, his first QSO being with YF1OO* at 1515 on 24 September. Another 'first' was at 1108 on the 27th when he worked VK6JQ (PH12CC). He intends being QRV most evenings after 1430 and probably all day on Fridays, his day off. He runs 100W to a 4-ele Yagi.

M1DUD writes that, completely out of the blue on an apparently dead band on 9 October, he worked TR8CA (JJ40) getting an RS55 report with 2W for Robin's ODX ever at 5779km. The QSL route is via F6CBC.

G4UPS continues with his daily morning CW skeds with G3CCH and with SM7AED (JO65) when conditions permit. His September report reveals very poor conditions until the 28th. He was QRT that day between 0830 and 1900 but learned that G3HBR reported an opening from G to VK6JQ at 0930. A huge solar flare was noted at 0658 on the 30th and 10min later he exchanged RST599 CW reports with SM7AED. Another long lasting flare was noted at 1038. At 1630, W3EP* was heard working a G followed by W1JJM* working a GW3 for the first opening across the North Atlantic this season.

At 1140 on 5 October, IS0GQX* (JM49) appeared from nowhere and worked Ted and a few others but faded out within 20min. Another solar flare was heard at 0735 on the 8th and later on he heard Gs calling TR8CA who subsequently reported on 10m that he had worked 100 Gs in IO90 on 6m that day.

144MHz

Ken Punshon, G4APJ (IO83), found a bit of a tropo lift on 15 September and worked EA1EBJ (JN73) just before dinner. Later on he contacted F5FLN and F4ARU (IN94), F6APE (IN97) and F5VHX. On 1 October during the Cumulatives, G4DEZ worked many DLs along the Czech border at up to 1060km in JN58, 68, 69 and JO60 grids and Bryn thinks he had his own private duct!

GM4VVX caught the tropo on 13 September, 1409-2120, and completed with GM3SBC (IO85), GI0OWA (IO64), GM3POI (IO88), PE2RMI and PE1OLM (JO23), DF0WD* (JO42), PE2FHE and PE2PS (JO33) and DG7TG (JO43). Clive also reports auroral QSOs on 4, 7, 9-12 and 19 September.

430MHz

G4APJ worked F6APE on 15 September and he was stronger on this band that he was on 2m. Ken heard F5VHX and, after working Graham on 2m, tried on 70cm but there was no trace by then. During the IARU Contest on the 5/6 October weekend he worked F6BRK/P (IN98) for a new grid and PA6NL so conditions were up. G4DEZ was also QRV in this event and in the Cumulatives on the 8th working a few new post code districts and a couple more grids but reckons conditions were poor on both days.

DEADLINES

THE DEADLINE FOR February is **10 December** and for the March it's **14 January** when I'll need your final scores for the 2002 Annual table. My CompuServe ID is g3fpk and the telephone answering and fax machine is on 020 8763 9457. Have a wonderful Christmas. ♦

WWW.

OK2UGS FM Rx	www.emgola.cz/
VHF Comms.	www.vhfcomm.co.uk
SEC	gopher://solar.sec.noaa.gov
MS Database	www.rue.net/vhfdx/services/services.htm
'EME Operating Guide'	www.emecz/convent/eme%20operating%20guide.pdf

Advertisers' Index

Next Display Advertisement Copy Date: for JANUARY 2003 - is 20th NOVEMBER 2002

CONTEST

TIM KIRBY, G4VXE
11a Vansittart Road,
Windsor SL4 5BZ
E-mail: tim@g4vxe.com

AT THE TIME of writing this, the autumn contest season is well under way. Three weeks ago, I had the pleasure of being part of the MW2I team for the *CQ* WW RTTY contest. Conditions were the best that any of us could remember and we were thrilled to over double last year's score and beat the old European record. However, conditions were so good, that we expect that a number of other people will have beaten the European record too. RTTY contesting certainly seems to be gaining in popularity, as we noticed a considerably more UK stations taking part in the contest than we have seen before, an observation also echoed by Phil, GU0SUP. Phil gave a popular and successful introduction to RTTY contesting at the recent HF Convention at Egham.

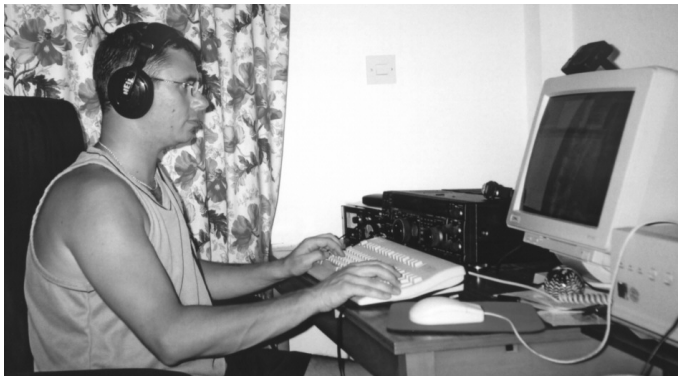
CQ WW CW - HOW TO SUBMIT YOUR LOG

YOU SHOULD BE receiving this just before the *CQ* WW CW contest, which is probably *the* premier CW contest of the year. UK operators' intentions are fairly quiet so far, although I have every confidence that we shall be seeing the usual suspects taking part in the contest. It would be nice also, to have 'not the usual suspects' taking a few minutes to come on the bands and make some points. If you have a QRP rig, you might find it an ideal time to come on and see what contacts you can make - the chances are that you will make more distant contacts than you have done before, particularly if you wait until the QRM to subside a little, perhaps on the Sunday. The CQWW committee urge you to make an entry, no matter how many or how few contacts you make. With e-mail submission of logs, this really couldn't be simpler. You can see all the information at http://www.cqww.com/log_info.htm but to submit your log, make sure that your file is named yourcall.log (where "yourcall" is replaced by your own callsign!), attach it to an e-mail and then send it to cw@cqww.com (ssb@cqww.com in the case of the SSB logs, of course). If your logging program generates Cabrillo format, and most serious programs do now, then please make sure that you send the Cabrillo file. We'll discuss a little more about Cabrillo in an upcoming issue, as the RSGB HF Contests Committee is moving more towards using this format to help with the more automated and timely adjudication of contests.

VHF IN DECEMBER

ON THE VHF bands, there's the ever-popular 144MHz AFS contest on 1 December. Five stations count per team, so try and get a few club members on for this event. Portable stations are welcomed in the event, but do not count toward the AFS tables. Last year, Allan, GM4ZUK/P, provided some very welcome DX for many entrants. VHF contesting from the North of Scotland is sometimes rather a lonely furrow, and it was therefore good to hear Allan doing great trade in the September Trophy this year, when a massive aurora lit up the VHF bands allowing Allan to make some marvellous contacts throughout Europe.

Don't forget, either, the Christmas Activity contests from 1400 - 1600UTC on 26, 27, 28 and 29 December. These contests run from 50 to 432MHz, so it's an ideal opportunity to escape to the shack for a few minutes to gain some respite from the Christmas excesses!



Very active from Cyprus, here's Dez, ZC4DW pictured during July's RSGB IOTA Contest.

70MHz Cumulatives, 2002

ONCE AGAIN, a popular set of contests with good activity in many of the sessions and several new faces on the results table. Robert Ferguson, GD4GNH, again took a commanding lead in the single operator fixed station section. Second place was fairly closely fought between Pat Moore, G3IKR, and John Hall, G0ODQ. Pat showed that you don't need the most up to date gear to be successful, running Heathkit SB303 / 401 separates, a homebrew valve transverter with a 3-400Z PA , and a Yagi over 30 years old! He didn't even need to be active for the whole of each session. Dave Gilligan, G1OGY, put in an excellent performance with only 10W, and Phil Catterall, G4OBK, put in a first appearance with low power and an HF log-periodic, and promised to make a bigger showing in the future.

The 'All Others' section was much more closely contested at the top, with the leader of the last few years, G4RFR, being displaced down to fourth place. Tim Boon, M0AFC/P, won out in the end, with only 20W from an excellent site in Cumbria.

Andy Cook, G4PIQ

70MHz Cumulatives, 2002

Single Operator Fixed Section

Pos	Callsign	13-Jan	27-Jan	10-Feb	24-Feb	17-Mar	Norm	QSO	Loc	Pwr	Ant	km
1*	GD4GNH	12236	14000	10621	5842	10247	3000	185	74QD	160	5Y	474
2*	G3IKR	3763	3818	4000	3838	4204	1444	168	82XF	140	4Y	420
3	G0ODQ	4411	3504	3699	3205	3625	1263	154	91NQ	150	5Y	469
4	G4YTL	3779	3599	0	3025	2545	1084	112	92MB	150	3Y	427
5	G3TCU	4229	3087	3446	0	4065	1067	103	91QE	150	6Y	526
6	G8EFU	2898	2780	2734	2256	2303	880	126	92BO	90	3Y	354
7*	G1OGY	3704	2077	0	1551	2443	807	59	01GR	10	5Y	501
8	G0GCI	3773	1815	1691	1905	1598	794	67	01ED	100	8Y	474
9	G7NBE	1907	1369	0	1206	2142	571	55	92GS	25	3Y	342
10	G4SJH	2562	2427	1771	0	0	549	59	91PI	75	3Y	407
11	G0UPU	659	840	1027	1488	1695	517	56	91AX	50	5Y	421
12	G3JYP	0	3303	2253	0	0	448	22	84SN	10	8QY	423
13	G4OBK	0	0	880	1393	0	321	8	94OF	8	HFLP	308
14	G4OUT	1211	1334	777	0	0	267	41	92AT	10	3CV	230

All Others Section

Pos	Callsign	17-Jan	31-Jan	14-Feb	28-Feb	14-Mar	Norm	QSO	Loc	Pwr	Ant	km
1*	M0AFC/P	6344	5983	0	4397	4203	3000	104	84SA	20	5Y	373
2*	G4ZAP	4560	5214	4168	4067	0	2706	131	81SG	160	5Y	380
3	GW8ASA/P	5987	0	3529	3645	4291	2543	120	81GN	80	3Y	326
4	G4RFR	0	3852	4587	3012	5998	2453	115	90AS	120	12Y	555
5	G0WJR/P	3609	2133	1500	1871	0	1351	70	81QJ	25	2Y	334
6	GM4WLL/P	0	0	0	0	7811	1000	23	85NR	20	6Y	555

Low Power Contest, 2002

CONGRATULATIONS to all the winners of this event, and everyone that took part, all of whom had to endure noisy bands and poor conditions. Don Beattie, G3BJ, won section A (10W fixed), and also obtained the most number of QSOs in the contest. The Melton Mowbray team, G4FOX/P, won section B (10W portable) and also entered a perfect log. In section C (<3W fixed) Les Elliott, G4OGB, won the fixed event, and it was nice to see a good turn out of portable stations, of which the Hadley Contest Group, G4STV, won section D (<3W portable).

The weather was fine which gave an added incentive for going portable, and congratulations to DL2BQD who entered the contest from Beverley in Yorkshire, as M/DL2BQD/P. Many thanks to those who sent in check logs, which helped in the adjudication. I have included them in the relevant sections.

Dave Mason,G3RXP

Club Calls Contest, 2001

AN INCREASING NUMBER of entrants and logged callsigns in this year's event confirm this event is growing in popularity, with 88 and 232 respectively. Some clubs have commented on the ideal training ground it gave either for introducing contesting to their individual members or in improving team performance to achieve higher results. From Guernsey ARS, Ed, GU3SQX, comments "Good fun and useful training for Class Bs under supervision".

Horsham ARC Novice members, 2E0AVG and 2E0AVH sent in entries and we hope to be hearing more from them in the future. Six club stations included Class B licensees as operators on their log sheets.

The Ariel Trophy and Certificate of Merit goes to the leading club station, North Wakefield Radio Club, G4NOK, using a dipole at 60ft and operated by John, G4RCG, with logging by Charlene Dawson (who hopes to have a 2E1 callsign by now). For the third year in succession, a Certificate of Merit goes to the leading individual club member Richard Marshall, G4ERP, a member of Cheltenham ARA. Richard again used his successful inverted-vee dipole antenna at 60ft. A certificate of merit is available to the leading no-club entrant but no entries were received from non-club participants, although quite a few did join in.

The David Hill G4IQM Memorial Trophy goes to the Cheltenham Amateur Radio Association for the fourth year in succession. This year both Horsham ARC and Worthing & DARC members put on strong opposition and narrowed the winner's gap. The adjudicated scores were Cheltenham ARA 5586, Horsham ARC 4172 and Worthing & DARC 1912. Next year, five in a row has got to be stopped, but who will have the expertise to do it?!

Mike Thayne, G3GMS

Club Calls Contest, 2001

Pos	Callsign	Club Name	Status	CS	M	NC	QSOs	Score
1#*	G4NOK	North Wakefield RC	CS	36	73	5	114	1607
2*	G4ERP	Cheltenham ARA	M	34	71	6	111	1538
3	G3SIJ	Chiltern DX Club	M	33	70	4	107	1496
4	M5ARC/P	Wisbech ARAEC	CS	32	70	10	112	1486
5	GW8GT	Red Dragon CG	CS	36	52	10	98	1454
6	M0RAD	Avon Valley ARA	CS	29	71	8	108	1404
7	G3WSC	Crawley ARC	CS	32	61	3	96	1393
8	G3VER	Verulam ARC	CS	32	58	7	97	1381
9	GU3HFN	Guernsey ARS	CS	33	53	6	92	1366
10	G0SWI/P	Sudbury ADRA	CS	34	49	4	87	1356
11	G0RGH/P	Harwich ARIG	CS	31	53	6	90	1310
12	GX3ZME	Telford ARS	CS	34	42	3	79	1297
13	G4ENA	Cheltenham ARA	M	34	42	2	78	1294
14	G4AHG/P	Shirehampton ARC	CS	29	55	10	94	1282
15	GC0VJS/P	Mid-Glamorgan ARG	CS	28	58	9	95	1275
16	G0AOZ	Harwell ARS	M	28	56	4	88	1244
17	G4AYM/P	Gloucester ARAES	CS	32	38	2	72	1206
18	G3LRS	Leicester RS	CS	29	46	8	83	1204
19	GC4CC	Swansea ARS	CS	27	46	6	79	1142
20	G0VQR	Reading ADARC	M	29	36	2	67	1106

Club Calls Contest, 2001, cont.

Pos	Callsign	Club Name	Status	CS	M	NC	QSOs	Score
21	G0RAF	RAF Waddington	CS	29	35	1	65	1095
22	G3UES/P	Echelford ARS	CS	29	35		64	1092
23	G4ALE/P	Addiscombe ARC	CS	30	31		61	1088
24	G3IKR	Cheltenham ARA	M	30	25		55	1040
25	G5XV/P	Newbury ADARS	CS	27	34		61	1028
26	G3WOR/P	Worthing ADARC	CS	23	44		67	996
27	G3YAJ	Colchester RA	M	29	19		48	964
28	G3TRF	Maidstone YMCA ARS	CS	26	28	2	56	958
29	G3OGP	Horsham ARC	M	25	31		56	948
30	G3RAL/P	Loughborough ADARC	CS	24	33		57	936
31	G3NKS	Cheltenham ARA	M	24	27	1	52	891
32	G4ADV	Newquay ARS	CS	22	30	6	58	874
33	G3SWC	Horsham ARC	M	24	25		49	872
34	G3YDD/P	Hereford ARS	CS	23	24		47	836
35	G0CXJ	Stratford on Avon ADRS	M	26	13		39	832
36	G3ZKN	Cheltenham ARA	M	23	22	1	46	823
37	G4JHI	Horsham ARC	M	19	35		54	812
38	G0MTN	Wythall RC	M	23	19	1	43	799
39	GW4JUN	GQRP	M	24	14		38	784
40	G3TNO	Horsham ARC	M	21	24		45	780
41	G3VTS	Cheltenham ARA	M	23	15	1	39	767
42	G4LRP	Horsham ARC	M	20	25		45	760
42	MX0EEE	Reading ADARC	CS	22	18		40	760
44	G3KKQ	Echelford ARS	M	19	24		43	724
45	G0OUR	Open University ARC	CS	18	22	1	41	683
46	G4FBS	Horndean ADARC	CS	20	15		35	680
47	G0WRS	Warrington ARC	CS	20	13		33	664
48	G3NPF	Horsham ARC	M	15	30		45	660
49	G3YEC	Colchester RA	M	20	11		31	648
50	G3GWB/P	Northampton RC	CS	16	19		35	600
51	G3XMM	Cheltenham ARA	M	18	11	1	30	595
52	G3SZS	Cheltenham ARA	M	16	16	1	33	579
53	G4VTO	Torbay ARS	M	18	9		27	576
54	G0VYR	Farnborough ADARS	M	17	9		26	548
55	G0ICJ	Wythall RC	M	16	11		27	536
56	GW4BLE	Blackwood ARS	M	16	10		26	528
57	G3MA	Gloucester ARAES	M	14	15	2	31	518
58	G4SLE	Worthing ADARC	M	13	18		31	508
59	G5BK/P	Cheltenham ARA	CS	13	15		28	484
60	G4MVO	Cheltenham ARA	M	15	7		22	476
61	M0ANS	Northampton RC	M	15	6		21	468
62	G4RFU	Cheltenham ARA	M	13	12		25	460
63	G4KIT	Worthing ADARC	M	13	9		22	436
64	G4FQR	Horsham ARC	M	12	12		24	432
65	G0RCB	Worthing ADARC	M	11	12		23	404
65	G3CO/P	Colchester RA	CS	13	5		18	404
65	G4BJM	Open University ARC	M	13	5		18	404
68	G3REB	Cheltenham ARA	M	11	5	3	19	357
69	G4HRS/P	Horsham ARC	CS	8	15		23	344
70	G4MRH	Worthing ADARC	M	8	11		19	312
71	GU3SQX	Guernsey ARS	M	10	2		12	296
72	M0COP	Wythall RC	M	8	8		16	288
73	2E0AVH	Horsham ARC	M	4	20	2	26	278
74	G3VQO	Horsham ARC	M	7	10		17	276
75	2E0AVG/P	Horsham ARC	M	8	5		13	264
76	MX5HDF/P	Midland CG	CS	9	1		10	260
77	G0AQH	Worthing ADARC	M	7	7		14	252
78	G4PDQ	Cheltenham ARA	M		30	3	33	249
79	G2HS	Echelford ARS	M	7	5		12	236
80	G3PYC	Horsham ARC	M	5	11		16	228
81	G3NDJ	Worthing ADARC	M	6	5		11	208
82	G0WMG	Worthing ADARC	M	3	9		12	156
83	M5TEM	Stevenage ADARS	M	4	1		5	120
84	M0ADY	Worthing ADARC	M	4			4	112
85	G0FQI	Northampton RC	M	3	3		6	108
86	G3VXJ	Worthing ADARC	M	3	1		4	92
87	G3HDJ	Northampton RC	M	2	3		5	80
88	G3FVO	Northampton RC	M	2	2		4	72
	G3KXF	Worthing ADARC	M					dk

# Trophy Winner * Certificate of Merit
CS = Club Station, M = Member, NC = No Club

David Hill G4IQM Memorial Trophy

Posn	Club Name	Score
1.	Cheltenham ARA #	5586
2.	Horsham ARC	4172
3.	Worthing ADARC	1912

Low Power Contest, 2002

10W Fixed Section

Pos	Callsign	Points
1	G3BJ	1080
2	G4ARI	990
3	G3HEJ	920
4	G3RSD	845
5	G2HLU	805
6	G3PJT	710
7	G4DDX	565
8	G3CQR	415
9	G4EBK	355
10	G4XPE	230
11	DL1DQY	160
12	G3GMS	95

10W Portable Section

Pos	Callsign	Points
1	G4FOX/P	1035
2	G3IZD/P	945
3	G4BLI/P	820
4	G4AYM/P	795

3W Fixed Section

Pos	Callsign	Points
1	G4OGB	810
2	GI0RQK	705
3	G3KZR	600
4	G3VIP	455
5	GW3SB	385
6	GI4SRQ	380
7	G3VYI	270
8	DM3XI	175

3W Portable Section

Pos	Callsign	Points
1	G4STV/P	1045
2	M5MDX/P	965
3	G3YMC/P	865
4	GM3JKS/P	720
5	G3GWB/P	690
6	G4HRC/P	635
7	G2CP/P	295
8	M/DL2BQD/P	140

CONTEST CALENDAR

HF Contests

Date	Time	Mode	Contest	Bands	Exchange
6-8 December	*2200-1600*	*CW*	*ARRL 160 CW*	*1.8*	*RST*
7-8 December	*1800-0200*	*RTTY*	*TARA RTTY Sprint*	*3.5-28*	*RST+SN*
14-15 December	*0000-2359*	*CW/SSB*	*ARRL 10m*	*28*	*RST+SN*
26 December	*0830-1059*	*CW*	*DARC Christmas Contest*	*3.5/7*	*RST*
28 December	*0000-2359*	*CW/SSB*	*RAC Winter Contest*	*1.8-144*	*RST+SN*
28-29 December	*1500-1500*	*CW*	*Stew Perry Topband Challenge*	*1.8*	*Grid Sq (eg IO91)*

VHF Contests

Date	Time	Mode	Contest	Bands	Exchange
1 December	0900-1700	ALL	RSGB 144MHz AFS	144	RST+SN+Locator
3 December	1900-2130	ALL	RSGB 144MHz Activity	144	RST+SN+Locator
10 December	1900-2130	ALL	RSGB 432MHz Activity	432	RST+SN+Locator
17 December	1900-2130	ALL	RSGB 1.3/2.3Ghz Activity	1.3/2.3	RST+SN+Locator
24 December	1900-2130	ALL	RSGB 50MHz Activity	50	RST+SN+Locator
26 December	1400-1600	ALL	RSGB Christmas Cumulatives	50/70/144/432	RST+SN+Locator
27 December	1400-1600	ALL	RSGB Christmas Cumulatives	50/70/144/432	RST+SN+Locator
28 December	1400-1600	ALL	RSGB Christmas Cumulatives	50/70/144/432	RST+SN+Locator
29 December	1400-1600	ALL	RSGB Christmas Cumulatives	50/70/144/432	RST+SN+Locator

Microwave Contests

Date	Time	Mode	Contest	Bands	Exchange
29 December	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.rsgbhfcc.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

Antennas

PETER DODD, G3LDO
37 The Ridings, East Preston, West Sussex, BN16 2TW
E-mail: g3ldo@ukonline.co.uk

HAVE YOU ever noticed that in many locations the shack seems to be in the wrong place, relative to the antennas? In my case the shack is located in a bedroom at the front of the house while the antennas are located in the garden at the rear. My solution for yet another coax feeder to yet another experimental antenna was to drill yet another hole in the window frame and drape the cable with the rest - including a rotator control cable and an LF transmitter remote control cable - along the side of the house. Early this year I received an ultimatum from the management - tidy it all up or else.

THE MULTI CABLE TIDY

TO ROUTE THE CABLE from the shack to the outside of the house a hole was made in the wall and a piece of plastic tubing fitted as shown in **Fig 1** and described in [1] and [2]. The next problem was to find a tidy way to route the cables from the front of the house to the back. The solution came in the form of two lengths of square section plastic tubing.

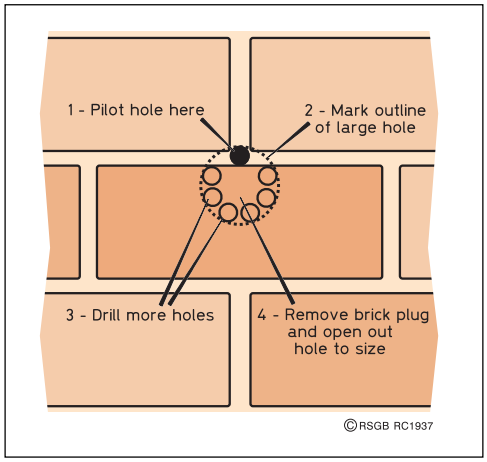


Fig 1: How to make a 40mm hole through a brick wall for inserting plastic tube conduit to carry coax and other cables from the shack to the outside of the house.

This material is available in a colour that closely matched the brickwork of the house, and with the matching wall clamps it was easy to fix to the wall. This was fitted so that one end was adjacent to the plastic pipe fitted into the wall and the other at the part of the wall nearest the garden. All the cables were then run through the wall aperture and plastic tubing, as shown in the photograph below right, resulting in a much tidier look to the side of the house and Brownie points for your columnist. A length of hard-drawn copper wire is included with the cable bundle to make it easier to draw through a new cable.

THE COAX CABLE HORROR SHOW

WHILE MAKING THE changes to the coax cable feeders described above I noticed that one section of coax was behaving in a rather peculiar fashion. My method of testing coax is to connect the remote end to the MFJ VersaTuner V switched to the dummy load. The crossed meters of the SWR indicator are calibrated to read power so any loss is obvious. The section of coax in question indicated that the loss was low but the SWR at the transceiver was high, rather than the loss being fairly high and the SWR low as you might normally expect.

I replaced the coax and the measurements were normal. I examined the old length (of uncertain pedigree) and found although the centre conductor was nice shiny copper the braiding was a different matter. The braiding on this coax length comprised fairly open braiding over solid copper foil. The outer sheath appeared to have migrated through the braiding causing it to be a nasty dull black colour although the foil still seemed quite shiny, as shown in the photograph above.

The rogue coax length. The centre conductor is nice shiny copper although the braiding is a dull black colour.

I had a similar problem on my mobile installation a couple of months ago where the antenna would not load and the antenna resonance was nowhere to be seen. I tested the coax with a meter together with the ground connection and this seemed OK. I replaced the coax, which was only about 3m long, and the problem disappeared. A post mortem on the coax length gave no clues as to where the problem lay. The moral is that if you have an antenna that is behaving strangely, check the coax. Always test that bargain length that you got from a rally before you press it into service.

REFERENCES

[1] 'In Practice', Ian White, G3SEK, *RadCom*, November 1998.
[2] *The Antenna Experimenter's Guide (2nd edition)*, Peter Dodd, G3LDO, RSGB.
[3] Go to *Google* 'Advanced Search' and type in "PL-259 plugs". ♦

FITTING PL259 PLUGS

AS PART OF THE coax cable reorganisation described above I had to fit PL259 plugs to the RG-213 cable. I find the recommended way of doing this a pig of a job. Yes, I know that it is, or was, the standard soldering exercise for Novices so I can only conclude my soldering abilities are below par. I can never be sure if I have used enough heat to make the solder run through the holes to make a good dry-joint-free connection to the braid, or if I have seriously cooked the coax. Trying to reclaim such a soldered plug is a messy business. Greg Ordy, W8WWW, claims that a blow torch is better for the job although this is only part of the story, see [3].

My solution is to make up the end of the cable as recommended but make a loose pigtail of the braid and fold it back over the coax sheath. The cable is then screwed into the plug and the centre connection soldered. The protruding braid is then cropped so that there is approximately 5mm folded back over the body of the plug. The braid can be soldered to the plug, a much easier task than soldering through the holes and the soldered joint can be inspected for a good solder flow.

PL259 plugs are occasionally available with clamp nuts and pressure sleeves (as fitted to N-type plugs), which is a much better solution.

The arrangement for routing coax and other cables from inside the shack at the front of the house to the rear. There is plenty of room for future additional cables. The yellow cable is a safety earth wire connected to ground.

BOB TREACHER, BRS32525
93 Elibank Road, Eltham, SE9 1QJ.
E-Mail: brs32525@compuserve.com

SWL

ALL DIRECT SWL cards received following the GB50 operation in June have now been sent replies. Most claims for the GB50 award (pictured below) have also been processed by Clare, RS102891. Details of how to apply for the awards are on the GB50 and Cray Valley RS websites.

Having handled QSL cards for big DXpeditions (9M0C and D68C) as well as 'special' special event stations (M2000A and GB50), it is interesting to note that each type of callsign seems to attract a different category of listener. 'Real' DXpeditions attract cards from DX-chasing SWLs, whereas there seems to be a 'British special event' SWL who seems to spend a great deal of time logging GB stations on 40m SSB. It is interesting that 80% of the direct cards received for GB50 were from British listeners.

It was also interesting to note how many SWL reports for GB50 were from SWLs who were not members of the RSGB, the ISWL (International Short Wave League) or the ILA (International Listeners' Association), but who simply sent an SWL report in the body of a letter. Those SWLs will not normally be able to read this column, but they would benefit from understanding what details are required when sending an SWL report.

MORE ON G-SWL QSLING

NIGEL CAWTHORNE, G3TXF (ex-A3107). saw my comments in the September column about the relative paucity of G SWLs that send cards. It spurred him to do some analysis of his DX trips QSLing database.

Over the past four years, he has sent QSL cards in reply to 443 incoming SWL reports. The largest number (104) - nearly 25% - came from DL, followed by RA (63), OK (42), OM (33), LY (24), SP (23), JA (20), ON (15), PA (15). There were just 13 from G SWLs. This data covers 11 CW-only DX trips (including FW/G3TXF, VK9CXF and ZL7/G3TXF).

The figures indicate the number of 'reported QSOs' and not SWL cards or individual SWLs. The 13 'reported QSOs' from the G SWLs came from just three G SWLs: BRS8841 (9), RS174461 (3) and SWL-G8UQV (1). Nigel's data clearly supports my theory. Overall he says that SWL cards represent less than 0.8% of all cards received.

Nigel is only too keen to reply to any SWL reports received, but he is of the view that, in the UK at least, there is hardly anyone out there listening who sends SWL cards! Any further comments?

CQWW CHALLENGE

WITH THE SSB section behind us, it will be the turn of the keen CW SWLs to take part in the CW section of the Challenge during the last full weekend of November. There was an upturn in the number of SWLs who took part in the CW CQWW Challenge last year. I hope that the trend continues. The full rules were included as part of the October 'SWL' column.

A last-minute change of plans saw my RS178500 team enter the Multi-Multi section of the SSB section after all this year - but with a much reduced team that only comprised Mick, BRS31976; Simon, RS177448, and myself. Entries for the SSB section should be postmarked no later than 27 November.

CRAY VALLEY SWL RESULTS

THE CRAY VALLEY Radio Society (CVRS) sponsored the annual Low Bands contest for the second time this January. Once again, participation might have been better. The hope is that entries will improve once low band DX conditions improve as we start to head towards the sunspot minimum. Accordingly, the society does not expect a bumper turnout for the 2003 contest, but it will be supporting the event again. Rules will appear next month, and on the club's website, but this month sees last year's results. Coming home first was Arthur Miller, GW-5218, but there was quite a battle for second spot which was eventually taken by Philip Davies, RS95258.

The idea of a 'six hour' category was not a success, at least this year, with the only three entrants all from the Treacher household! Simon, RS177448, took the honours, but none of us really took the contest seriously because of other radio activities that weekend. However, they took the number of entries to seven. A full write-up will be posted on the CVRS website.

WEATHER SATELLITES

IT SEEMS THAT coverage of weather satellites a few months ago was quite popular amongst listeners and our licensed colleagues. As a result, there is more news this month. It was the first time that Jonathon, HB9DRD / G4KLX, had written to the column for 24 years - that was when he was RS38529! His view was that receiving weather satellites could be achieved more cheaply than described by Keith, G3MCD.

Jonathon uses an Icom IC-PCR1000 that can be switched internally so that its output level can be fed directly into the Line In connector on a sound card in a PC. He uses a 4-element 2m beam fed with UR67 coax. He set the Icom to the correct frequency and set the FM filter to 50kHz. This allowed for tracking the satellite without worrying about the Doppler shift. Jonathon referred to needing at least a 40kHz FM bandwidth to receive the full data from the satellite (the infra-red data gets corrupted with narrower bandwidths).

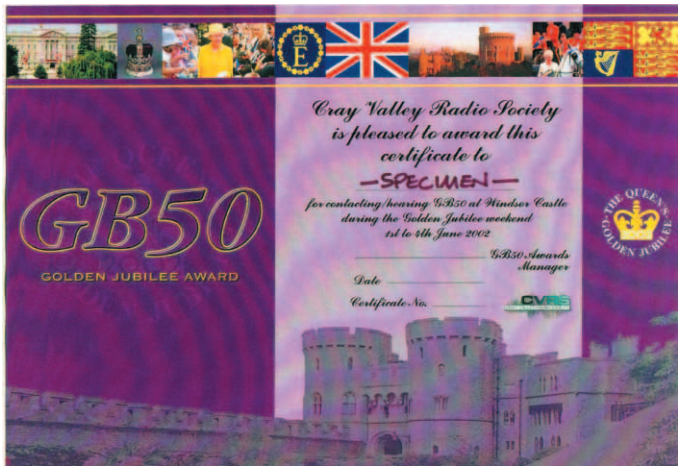
Jonathon downloaded a program called *wxtoimg*, which is available for Windows and Linux, to decode it. It is free for personal non-commercial use. Jonathon uses Linux on a PentiumII 400MHz. For satellite tracking he uses *Mtrack*, a Linux satellite tracking program which is free and available with most Linux distributions. He uses the *QtPcr* program to control the rig.

Having set the software up, he set the audio level and waited for a satellite. He mounted the beam on a small tripod and pointed it in approximately the correct direction, watching the S-meter and following the satellite across the sky, only moving the antenna when the signal started to go down.

At the end of the pass, the computer produces some beautiful pictures which can be enhanced via many functions of the program. One useful feature is that the program automatically adds coastlines and borders to the image and displays the temperature of the land wherever the cursor is! ♦

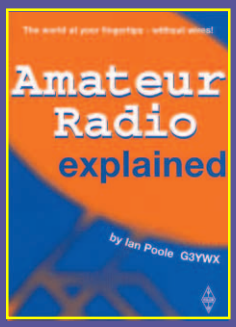
WWW.

GB50: www.gb50.com
CVRS: www.cvrs.org
wxtoimg
www.weather.net.nz/wxtoimg



CHRISTMAS 2002

Amateur Radio Explained



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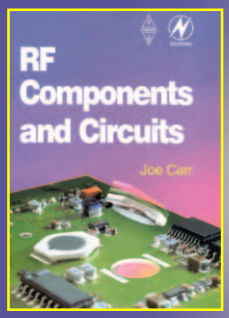

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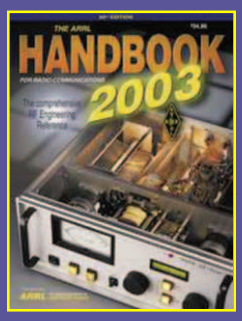

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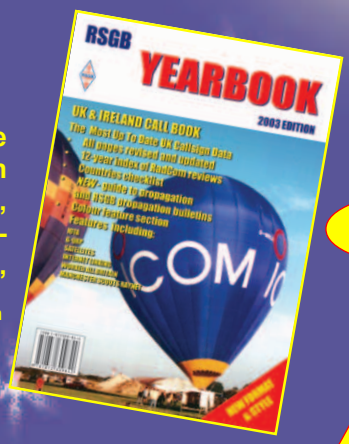

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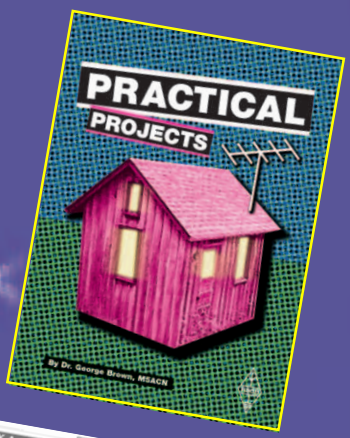

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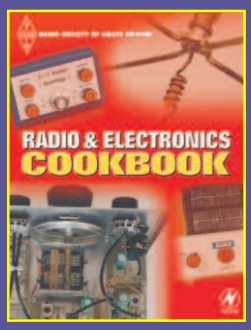

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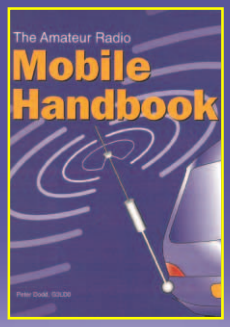

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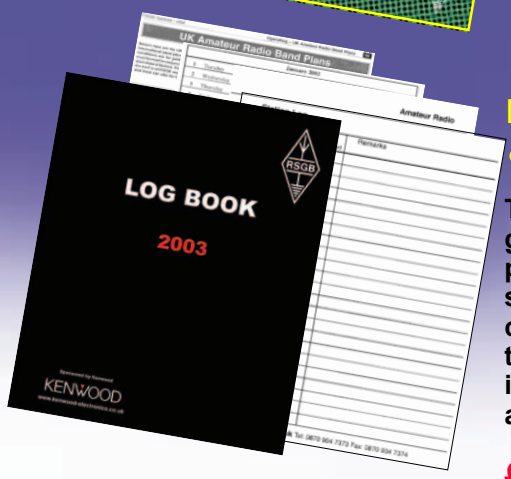

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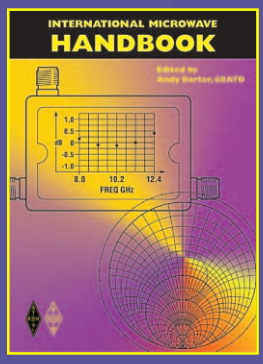

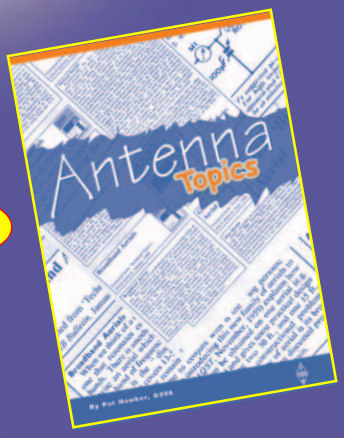

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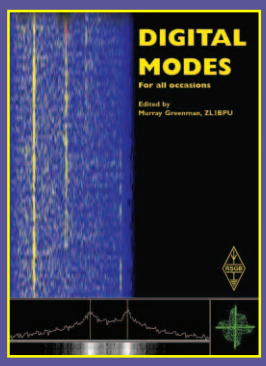

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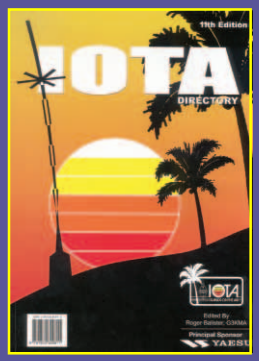

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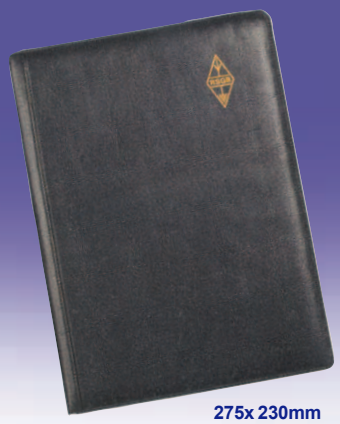

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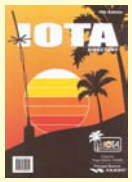

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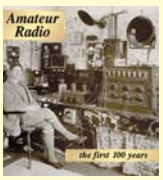

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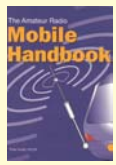

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REPEATERS

MARK LEWIS, GW7KDU
14 Hornbeam Close, St Mellons, Cardiff CF3 0JA. E-mail: rmcwales@ntlworld.com

THIS COLUMN has followed the progress of an experiment run by the Clacton repeater group to link a duplex repeater to the Internet. The keeper, Richard Kearnes, G7HJK, has recently sent me a report on their findings.

"Since March 2000, the only unattended 24/7 Internet link to a duplex voice repeater has been running on GB3CL in Clacton on Sea, Essex. Many interesting conclusions can be drawn from the linking and these vary, depending on personal views of what the linking was to achieve.

"For the last 12 months, the repeater has run with *eQSO* as the linking software. Firstly the repeater was situated in an *eQSO* Internet room called 'GB3CL' and was regularly visited by hams around the world, wanting to speak with the local users.

"Within a few weeks the repeater would spend many days without a visitor to the room. This gave the impression that the link was not working and generated complaints about little or no Internet activity. The repeater was then moved into the main Internet room '101 English' and this instantly generated a huge amount of traffic.

"This has lead to a few important points about Internet linking to a duplex voice repeater:

1. The experiment was greeted with excitement at first, with many local users regularly calling through the repeater to work stations from all the DX locations. This was considered a big success, as dozens of locals could be heard on the repeater during the week, on a normally quiet unit.

2. As the Internet has a very high turn-over of new hams trying the software, quality of transmitted audio is a problem. With radio, nearly all transceivers have deviation levels set that are acceptable to the local repeater. With no audio restrictions on the Internet, many different levels and quality could be heard within a few minutes. This may be improved with some audio-levelling software, but we were restricted by the limitations of the PC used on the repeater site.

3. As a repeater is designed to offer increased mobile coverage, this conflicts with the idea of Internet gateways. Within the gateway framework, it is normal to listen to two or more stations generally chatting. This can last for a few minutes or a few hours (whilst one person is talking, all the links are relaying this and everyone is listening). If two local users of the repeater wish to hold a conversation, this is nearly always considered unacceptable and the link removed by an *eQSO* administrator monitoring the room. This has caused friction with the local users being discouraged from using the repeater, to ensure the link to the Internet remains active.

4. There are no agreed guidelines at the moment, a small number of administrators controls what is allowed on the network. This is very good in principle, but can lead to personal opinions controlling who can be removed from the linking room.

"Generally the Internet linking is considered a big success, but it will not remain on GB3CL in its present form. We would like to see local radio users being encouraged to use the repeater, not being discouraged. This can be achieved by using the linking software as a path between two or more duplex voice repeaters. By using an *eQSO* Internet room just for repeaters, that can have password control to stop unwelcome visitors, repeater linking would work very well.

"With the future hope of linking a number of quiet repeaters, to share the general repeater user population, activity will increase. The small numbers of users for each repeater will become a healthy number across a linked repeater group."

Vodafone Algon cavity filters.

CAVITIES

ROBIN, G3LBA, is converting ex-Vodafone Algon TACS filters to use as cavities on 70cm. One of the completed duplexers is in use on GB3DI. The final isolation between Rx / Tx ports of the unit is in excess of 90dB. Insertion loss on Rx is typically 0.5dB and on Tx around 0.8 to 1dB. He hopes to have further details to publish soon.

The RMC has received some information about 2m cavities being produced by Radial, a Russian company, for US$485. The company has a distributor in Finland. The RMC is interested to hear from anyone who has had experience of using cavities from this company. Details can be found on Radial's website [1]. ♦

WWW.

[1] Radial: www.radial.ru
[2] RMCWeb: www.coldal.org.uk/rmc

LATEST CLEARED REPEATERS

Call	Type	Channel/ Frequency	Proposed Keeper
GB3XN	New 70cm Wide Split Worksop	RU74 / 430.925MHz	G3XXN

Outstanding voice repeater proposals submitted for licensing are

Call	Type	Process Stage	Proposed Keeper
GB3AA	New 23cm Alveston, North of Bristol	RA	G4CJZ
GB3AS	Wigton, Cumbria	RA	G4KFN
GB3BY	6m Site change Kidderminster	PU	G8EPR
GB3DM	New 70cm Dumbarton	RA	MM1APC
GB3DN	New 2m Gt. Torrington, Devon	RA	G1BHM
GB3FJ	Site change 70cm Winceby Lincolnshire	RA	G8LXI
GB3HT	70cm Site change Hinckley	RA	G4ALB
GB3IB	New 70cm Wide split Weston-super-Mare	PU	G4SZM
GB3IT	New 70cm Wide split Tamworth	PU	G6NHG
GB3KR	70cm Site change, Kidderminster	RIS	G8NTU
GB3MX	2m Site change Mansfield	RA	G6CUK
GB3NB	2m Site change Wymondham Norfolk	RA	G8VLL
GB3PL	New 2m East Cornwall	RA	M5DAP
GB3RB	New 70cm Wide split Bolsover	RIS	G1SLE
GB3SH	2m Site change Southampton	RA	M1AFM
GB3SM	70cm Site change Leek, Staffs	RA	G8DZJ
GB3WD	New 2m Plymouth	RA	G7LUL
GB3WW	Site change 2m Nant-y-Caws, Nr Carmarthen	RMC	GW4FOI

Repeater proposal status as of 10 October 2002. The latest clearance status can be obtained from the RMC website [2]. Please note that even though an application may have cleared it is beyond the control of the RMC as to when the keeper will bring the repeater into service.

IARU

TIM HUGHES, G3GVV
10 Farm Lane, Tonbridge TN10 3DG.

AN IMPORTANT IARU Region 1 Conference is being held in San Marino from 10 to 15 November and a full report will be published in *RadCom* in the near future. The venue for these conferences is decided by delegates at the previous conference; Member Societies wishing to host these occasions give a presentation extolling the virtues of their proposal. The latter must meet several criteria, including the accommodation available, office facilities, meeting rooms of various capacities, accessibility to airports, to name but a few. Two or three such bids are made at the beginning of the Conference, accompanied by supporting documentation; at the final Plenary, voting takes place, each society having one vote, and the chosen place is announced. Previous conferences have been held in Paris (1950), Lausanne (1953), Stresa (1956), Bad Gotesberg (1958), Folkestone (1960), Malmö (1963), Opatija (1966), Brussels (1969), Scheveningen (1972), Warsaw (1975), Miskolc-Tapolca (1978), Brighton (1981), Cefalu (1984), Noordwijkerhout (1987), Torremolinos (1990), De Haan (1993), Tel Aviv (1996), and Lillehammer (1999).

MEMBER SOCIETIES

THE PREVIOUS paragraph contained reference to 'Member Societies', two words which have been used in many previous IARU articles. A national society is not automatically a Member Society of IARU. The society has to apply first to its appropriate regional organisation with a copy of its constitution, a list of its officers, the number of members who are licensed amateurs, and the number of licensed operators in its country.

In addition, it has to provide satisfactory evidence that it adequately represents the interests of amateurs throughout the country it proposes to represent; that it has the ability to meet the financial obligations as a member of IARU; that it is legally able to act in the furtherance of IARU objectives within its country; and that it will adhere to the Constitutions of both the IARU and its regional organisation. This application, when approved by the regional organisation (Region 1, 2 or 3) is forwarded to the Administrative Council (AC) which, in turn, circulates it to all Member Societies, and they in turn indicate their approval or otherwise. When their approval has been given, the applicant is notified that it has been admitted to IARU. There can be only one Member Society for a country. Of necessity this is only a summary of the procedure, and the whole process may take several months.

REGION 3 PREPARES FOR WRC

THE VICE-PRESIDENT of IARU, Dr David Wardlaw, VK3ADW (who also holds the callsign G3RYW), attended the third

Chen Ping, BA1HAM, on the Great Wall of China.

Vice-President of IARU, Dr David Wardlaw, VK3ADW, also G3RYW.

Asia-Pacific Telecommunity Conference Preparatory Group Meeting (APG) in Bangkok, together with Young-Soon Park, HL1IFM, who is a director of IARU Region 3. Present too, as members of their country's delegation, were Chen Ping, BA1HAM; Dr Rhee, HL1AQQ; S Sichan HS1BNP; Ray Gerrard, HS0/G3NOM; and Jay Oka, JA1TRC. A document covering issues of interest to radio amateurs on the World Radio Conference agenda was presented by VK3ADW. IARU has reviewed the provisions of Article 25 and has prepared proposed revisions. He reported that IARU supports the draft Conference Preparatory Meeting (CPM) text on this revision. IARU seeks an alignment of the allocation to the amateur service on the 7MHz band to obtain a common worldwide allocation of 300kHz.

The usefulness of the allocations around 7MHz for amateur purposes is limited because only 100kHz of spectrum between 7000 and 7300kHz is common to Regions 1, 2 and 3. In 1938, 7000 - 7300kHz was allocated exclusively to the amateur service; it was reduced to its present width at WARC-59.

The 7100 to 7300kHz segment is allocated exclusively to the Broadcasting Service in Regions 1 and 3, and exclusively to the Amateur Service in Region 2. Because of the disparity in signal levels between the two services, broadcast transmissions cause interference to the sensitive receivers used in the Amateur Service during periods of good propagation between Region 2 and Regions 1 and 3. The degree of interference experienced in Region 2 varies with the time of day, season, solar activity and distance from the broadcasting stations in the other two regions.

Unfortunately, the Asia-Pacific Broadcasting Union (ABU) representing the broadcasters of Region 3, resisted the IARU proposals. Amongst its comments, the ABU mentioned that 50% of the transmitters, and many short-wave receivers, may be out of their tuning range if there were to be a change in frequency allocation; there would, too, be a significant cost impact if broadcasters had to implement the proposed frequency move.

A discussion has since been held with the ABU at its office in Kuala Lumpur. VK3ADW, K C Selvadurai, 9V1UV, who is a Director of Region 3, and Sangat Singh, 9M2SS, a former Region 3 Director, represented IARU. A better understanding now exists of the basis of the ABU's position, and the logical approach used to reach its conclusion. It appears that many broadcasting transmitters are old and unable to accommodate a change of frequency. A change to digital transmissions will require transmitter replacement in the future. The final decision is in the hands of the Administrations.

9V1UV is thanked for this information from the *IARU R2 Newsletter.* ♦

EMC

DAVID LAUDER, G0SNO
20 Sutherland Close, Barnet, Herts EN5 2JL.
E-mail: emc.radcom@rsgb.org.uk

IN DOUGLAS Adams's 1979 science fiction book *The Hitchhikers' Guide to the Galaxy*, the earth was demolished by a Vogon constructor fleet to make way for a hyperspatial express route. From an HF radio user's perspective, the latest proposal for amending EMC standards for the benefit of Power Line Communications (PLC) could be regarded as an attempt to demolish the HF spectrum to make way for a cyberspace express route!

BROADBAND BRITAIN

THE TERM 'broadband' is used to describe a range of technologies that allow high-speed, always-on access to the Internet at data rates higher than a standard 56kb/s dial-up modem. Britain already has the highest level of electronic commerce apart from the US and there is a great deal of pressure to promote the spread of broadband Internet access.

Broadband access technologies include ADSL and cable TV modems but the range of ADSL is limited to 5.5km from the telephone exchange and many areas are not served by cable TV networks. Alternatives include Broadband Fixed Wireless Access (BBFWA) on 3.4GHz or 28GHz and satellite systems. As reported in the August 'EMC', Power Line communications (PLC) has reappeared as a possible broadband access technology and trials are currently taking place in Scotland.

The DTI has set up the Broadband Stakeholders Group (BSG), which includes suppliers of broadband infrastructure, services and content, and their customers. In December 2001, the BSG presented its first report to Douglas Alexander MP, former Minister of State for E-Commerce and Competitiveness (see WWW).

UK Government broadband strategy is based on this 62-page BSG report which does not mention PLC as a possible broadband access technology and contains only one reference to EMC issues. This is in Recommendation 15.6, which makes the following rather scathing comments about the RA MPT1570 standard.

"Unilateral action by the UK to develop non-harmonised emission limit standards for DSL has had significant cost implications for equipment manufacturers. Interference issues should be addressed at European Level in order to develop harmonised solutions. Unilateral action on the part of the UK has encouraged other non-harmonised initiatives by other Member States leading to additional cost barriers for equipment manufacturers. Inappropriate application of the MPT1570 enforcement standard could restrict the availability of DSL service in some areas. Government must ensure that the application of MPT1570 strikes an appropriate balance between the need to offer adequate protection to radio services whilst avoiding undue constraints on the roll-out of DSL services, including future VDSL services."

What does "Inappropriate application of the MPT1570 enforcement standard" mean? The implication seems to be that if a broadband network does not comply with the standard, then the standard should not be enforced. A point that appears to have been overlooked is that no harmonised European standard yet exists for radiated emissions from powerline and telephone networks below 30MHz. This is why MPT1570 was developed. The German RegTP regulator also has a national standard, NB30, but it can be argued that this does not give sufficient protection to radio services.

Harmonised European standards are normally developed from existing standards and work is currently in progress to do this. Nevertheless, there is a great deal of pressure for limits far in excess of MPT1570 or NB30.

When it comes to protection of the radio spectrum, there seems to be a risk that a 'Broadband Britain Bulldozer' could run out of control, rather like the Vogon Constructor Fleet in the *Hitchhiker's Guide*!

WWW.

Office of the E-Envoy www.e-envoy.gov.uk/
(Follow links to 'Broadband' then 'Broadband Stakeholder Group')
Juice Technology, high frequency lighting www.juicetechnology.co.uk

IT EQUIPMENT STANDARD

EN55022 IS THE HARMONISED European EMC standard for emissions of interference by Information technology Equipment (ITE). Any product that uses power line communications above 150kHz either for broadband access or home networking would need to comply with EN55022 which is based upon IEC CISPR publication 22. The conducted emission levels from 150kHz - 30MHz are intended to protect some radio services and are much lower than designers of PLC equipment would like.

A proposal has been made to amend CISPR22 to introduce the concept of a 'multi-purpose port' which is a mains input that is also used as an RF output for PLC. When measured as a communications port, much higher limits would apply.

To explain the reasoning behind this, we first need to distinguish between common-mode and differential-mode conducted interference emissions from electronic equipment. **Fig 1** illustrates the difference. A purely differential-mode interference source drives between line and neutral as shown in Fig 1(a). A purely common-mode source drives line and neutral together relative to the chassis of the equipment in question. A common-mode source is considered to have greater interference potential, but the standard V-network used for conducted emission tests does not distinguish between the two.

The argument goes that, if a well-balanced differential signal is driven along a telecommunication line, what matters is the magnitude of the common-mode current rather than the differential-mode current. The common-mode current is determined by two factors. The first is the degree of unbalance at the source and the second is the amount of mode conversion (differential-mode to common-mode) that occurs in the cable and at the load.

This principle has already been applied to telecommunication ports in CISPR22. These include ports for ADSL, VDSL, computer local area networks (LANs) and home phone-line networks. A new type of test using a T-network measures the common-mode emission from the equipment under test, but the limit is based on an assumed value for the balance of the cable.

I am not happy with the CISPR22 telecommunication port limits because of the way they are derived from the mains port conducted limits. It is claimed that there are few complaints, so the existing limits for mains ports must be OK.

The flaw in this argument is that emissions from most existing equipment do not get anywhere near the limit above a few MHz and may not be purely common-mode either. For example, emissions from unintentional sources such as switch-mode power supplies may approach the limit below about 0.5 - 1MHz, but they normally fall with increasing frequency and are typically 20dB below the limit at 5 - 10MHz.

In the case of intentional emissions from a telecommunication port, the common-mode signals can go right up to the limit all the way up to 30MHz. The telecommunication port limits also assume a certain degree of balance in the cable which may not be achieved in practice.

There is worse to come, however. There is a proposal to apply the telecommunication port limit to the mains port if it is a multi-purpose port. The proposed limit is based on the balance of mains wiring being over 30dB all the way up to 30MHz, a figure that many would regard as highly optimistic.

Fig 2 shows the proposed limit, which is best described as outrageous. Note that the 'chimney' for PLC would extend all the way from 1.6 - 30MHz with no 'notches' for amateur bands! The upper line in Fig 2 is adjusted for the different test methods applied to telecommunication ports and mains ports, including the difference between a V-network and a T-network.

At the time of writing, it is not known whether this proposal will be accepted but, even if it is rejected, further attempts at changes to the standard are likely.

What needs to be done is to go back to square one and look at mains-conducted emissions in relation to protecting radio communications rather than making a whole series of assumptions, some of which are of questionable validity.

BALANCED PAIR MEASUREMENTS

HOW CAN THE balance of a twisted pair cable or a power network be measured at RF? An IEEE paper by Macfarlane [1] describes a method for measuring the Longitudinal Conversion Loss (LCL) of a twisted pair cable such as a telephone pair or LAN cable.

What we really want to measure is the Transverse Conversion Loss (TCL), which shows how much of the wanted differential signal on the pair is converted to an unwanted common-mode signal. Due to practical difficulties in measuring TCL, it is easier to measure LCL which is the inverse of this. That is, LCL is a measure of how much common-mode signal gets converted to differential-mode.

An outline of Macfarlane's method is shown in **Fig 3**. The LCL probe is an ingenious network consisting of various bifilar-wound chokes. A signal fed into the common-mode port is driven onto the cable and the amount of signal converted to differential mode is measured at the of the differential-mode port. In Macfarlane's method, the ground of the LCL probe is connected to ground and the cable under test is driven against ground with a common-mode signal.

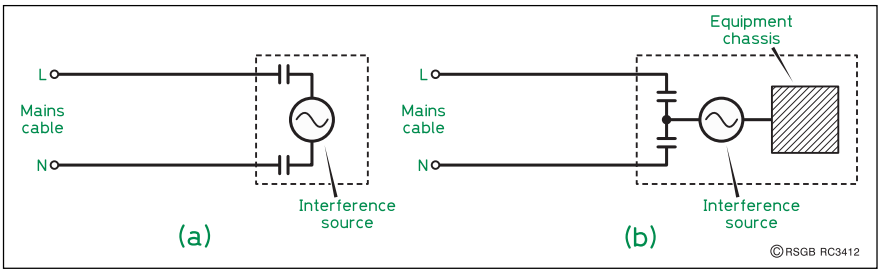

Fig 1: (a) A differential-mode conducted-emission source and (b) a common-mode conducted-emission source.

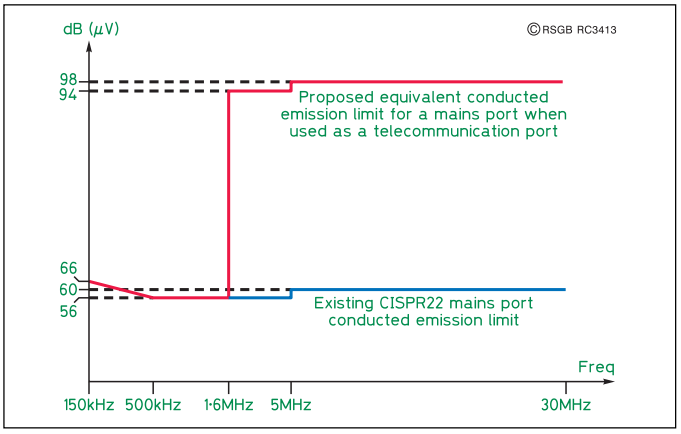

Fig 2: A proposal for an increased mains port conducted-emission limit for a dual-purpose power and telecommunication port.

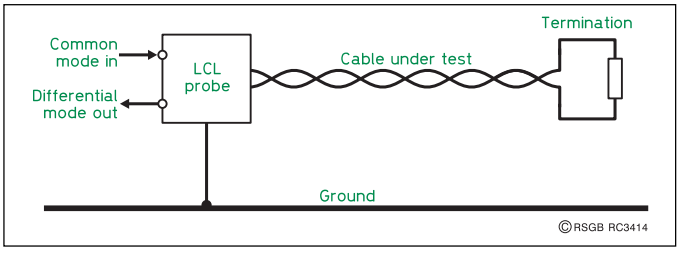

Fig 3: Macfarlane's method for measuring the balance of a cable pair.

Others have applied or possibly mis-applied Macfarlane's method to measure the LCL of powerline networks in buildings. A pair of 100nF capacitors is added in series with the output of the LCL probe to isolate the 50Hz mains. Instead of directly grounding the ground terminal of the LCL probe, tests have been done with it connected to a floating ground plane of at least 1m^2 which is 'grounded' only by its capacitance to earth.

In the UK, the fact that neutral and earth are joined at the electricity meter in a PME installation would have a major impact on LCL.

No allowance appears to have been made for the LCL of appliances connected to the power network, for example TV sets which are often connected via a coaxial feeder to an outdoor aerial. Another, seasonal example is Christmas tree lights. One side of the incoming mains is connected via a short wire to the first light and the other is connected via a longer wire to the last light. What is the LCL of a TV set connected to a coaxial feeder, or of a set of Christmas tree lights?

Not surprisingly, a wide range of results has been obtained for LCL measurements in different countries. Averaging appears to have been applied by averaging decibels rather than linear units. Is this statistically valid?

HIGH-FREQUENCY LIGHTING

A NEW IDEA for fluorescent lighting in commercial premises is the 'Juice' system (see WWW). Instead of having separate ballasts for each light fitting, a 1kW switch-mode power supply distributes 240VAC at 50kHz to a number of light fittings. The 50kHz output is symmetrically balanced about earth and is fed via screened twisted pair cables and lighting tracks with balanced conductors.

The data sheet for the Juice J1 system states that the total harmonic distortion of the 50kHz signal is less than 10% with declining harmonics above the 7th. The 7th harmonic is at 350kHz but what about the 36th at 1.8MHz, the 37th at 1.85MHz, the 70th at 3.5MHz, the 71st at 3.55MHz, etc? With a kilowatt of output power at 50kHz, even if the harmonics in amateur bands are suppressed by 60dB, there would still be a total of 1mW in each one. Some of this could be radiated by the tubes, all of which are fed in phase. There is some scope for LCL measurements of the system with the fluorescent tubes attached and lit.

The data sheet for the Juice J1 system states that the product complies with EN55014 and EN55015. It will be interesting to see what implications the amended EN55014-1:2000 standard has for this type of product.

REFERENCE

[1] Macfarlane I P, 'A Probe for the Measurement of Electrical Unbalance of Networks and Devices', *IEEE Trans on EMC*, Vol 41, Issue 1, Feb 1999. ♦

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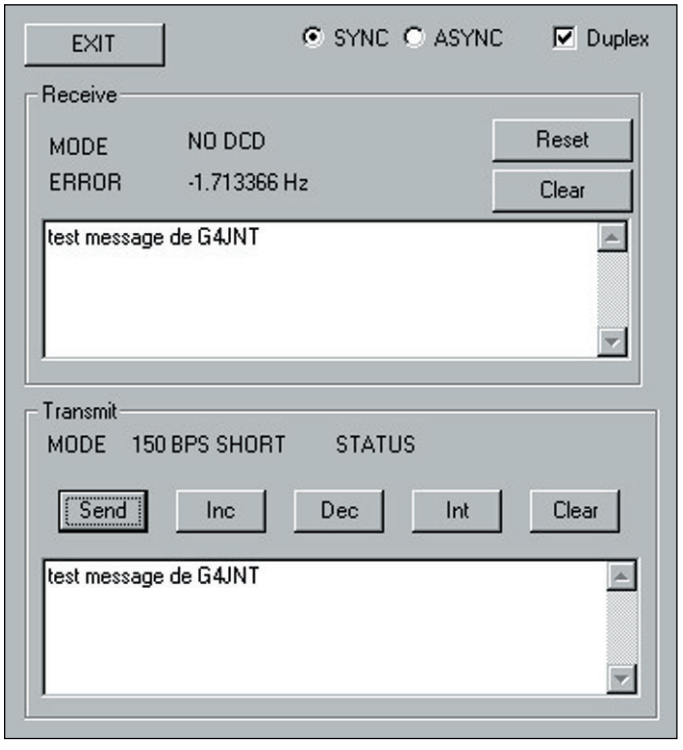
IN AN EARLIER column I mentioned the experiments we tried using the Stanag 4285 waveform - 8 level PSK at 2400 baud in a 3kHz channel. G4GUO has now enhanced this to the MilStd 188-110A standard and produced a very simple standalone piece of software for sending simple test messages. This waveform, occupying a full 3kHz bandwidth, can be wound back in terms of its throughput to suit worsening propagation conditions until, at 75b/s using a 10s interleave time, it will still get through where every other mode known to the amateur community fails! As its wideband format is not really suitable for the HF amateur bands, Charles is not making the software widely available due to its anti-social nature if used there but, on VHF and microwaves, M110A may have something to offer. We do not yet know how good it is with mistuning, drift and the scatter on many microwave paths, but hope to find out. If any microwave operators want to do some serious experimenting with this data mode, the software can be made available on an individual basis.

KEEP YOUR OLDER COMPUTERS

MOST MODERN Personal Computers purchased these days come with one of the variants of the Windows operating system such as Windows 98, 2000, ME XP, NT. A lot of software for amateur radio still runs perfectly happily in a *DOS* (more correctly called *MS-DOS*) environment, such as was in common use on PCs of not that long ago. Problems can come when such software needs to run on a PC with the latest operating system. While all these (at least so far) have a command prompt mode which to most users looks and behaves like a *DOS* system, it is not fully compatible. From Windows 98 onwards, *DOS*-compatibility was maintained by emulating *DOS* rather than opening up a window using the true hardware approach to enable multitasking and security with the host Windows environment. For most functions this emulation is very good and software usually runs without a hitch. But problems can occur when software tries to interface to the PC hardware, something we need to do a lot when using it to control items such as radios and modems. Then, the Windows operating system can sometimes intervene and block access, meaning the legacy software is now useless. The 'domestic' operating systems such as 98 and XP are slightly better in this respect than the multi-user systems such as Windows NT, but they are not perfect. The ideal solution, of course, is for authors to re-write their software for the Windows environment, where they can take advantage of the full 32-bit processing capability now available. But why should they commit considerably extra effort to produce something roughly similar to what already exists? Most of this legacy software is quite happy running on slow *DOS*-based machines, doing a perfectly good job and is familiar to everyone who uses it; why should it be changed just because it will not run under a new operating system? So, what other options are there? Keep your old machines. Any PC can run real *MS-DOS*, provided a copy of the operating system is available to re-install. PCs have been gaining in performance so fast these days that some quite high-specification machines appear in rubbish dumps, or at rallies where they cannot even be sold at £5 each. *FlexNet*, as detailed above, will run quite happily on a 20MHz 386 machine, the 'Coherent' BPSK programme by VE2IQ runs perfectly on a 10MHz 286, to name just two packages. It is unlikely that machines of this vintage are still around, but 486 machines running at 25 to 66MHz are still plentiful and can often be seen at car boot sales and rallies, with their owners vainly trying to raise a few pounds for them! These older machines may still have *DOS* or perhaps Windows 3.11 on them. The older laptops can also be found and these are possibly of the greatest use, the batteries will probably be defunct by now, but so what? Use a mains PSU, surplus gel cells, anything you can press into service. If it doesn't have a *DOS* operating system already installed, original installation discs can often be found at the backs of cupboards, at rubbish dumps, at boot sales; look around at work, anywhere. If you want to write your own software, 16-bit programming languages for the *DOS* environment are still in common use, are far easier to programme in than a Windows environment, and make interfacing straightforward.



Screenshot of the MilStd 188-110A messaging software, shown operating in full duplex mode.

DESIGNING A DATA MODE FROM SCRATCH (2)

REFLECTIONS from short-duration meteor 'pings' normally have a clean non-scattered characteristic, ie a T9 'note', with a Doppler shift of a few tens or hundreds of Hertz at VHF caused by the movement of the ionised trail. The clean nature of the reflected signal means that we ought to be able to use a high data rate to pass as much traffic as possible per ping, the high rate also allowing frequency errors due to tuning and Doppler to be minimised. So, the first choice that needs making is that of modulation type. In an earlier column we showed that on-off keyed modes were noticeably inferior to frequency- or phase-shift keying for weak signalling, so the choice comes down to which of the latter two do we adopt, FSK or PSK? FSK is usually the mode of choice where signals are scattered and lose their coherency, or where modem simplicity is an issue. Here, we know that the signals are going to be clean, and as we will be using the processing power of, typically, a PC / soundcard combination, maximum advantage can be gained by using the coherent signalling characteristics of PSK over the usually non-coherent (or power-based) detection usually adopted for FSK. So now, what variant of PSK do we adopt? Normally, PSK requires the receiving modem to lock coherently to both the RF carrier and the symbol clock phase; this often takes a considerable

PC/FlexNet – A MODERN APPROACH TO PACKET RADIO

A POWERFUL, flexible and easy to use AX.25 stack for Intel-80x86 based PC's running on *DOS* or *MS-Windows 95* is provided by *PC/FlexNet*, whose sister, *RMNC/FlexNet*, is digipeater software for a microcontroller hardware (the RMNC). It is widely used in central Europe and famous for its reliability. *PC/FlexNet's* features can be summarised as follows:

Speed Actual speeds depend on the hardware configuration, but *PC/FlexNet* is much faster than other AX.25 stacks, eg *TheNet.*
Flexibility *PC/FlexNet* is highly modular; every module (except the kernel) is optional, so you can load just the modules you need.
Ease of use *PC/FlexNet* has very few parameters to adjust, just two per radio channel. The other parameters, especially the channel access parameters, are set automatically according to the channel usage characteristics.
Compatibility *PC/FlexNet* works with virtually any hardware that can be used as a modem and with almost all *DOS*-based amateur radio applications.
Digipeater The *FlexNet* kernel contains a simple SSID based digipeater. The optional *FLEXDIGI* module provides a fully-fledged digipeater featuring a proprietary routing protocol that is much more reliable and faster converging than, for example, *NET/ROM*. *FlexNet*'s hop-to-hop 'acknowledges' reduce packet loss significantly and make connections over dozens of digipeaters possible!
Background operation *PC/FlexNet* and its L1 drivers are TSR (terminate and stay resident) programs, ie they return immediately to the *DOS* prompt. *PC/FlexNet* applications come in two flavours: TSR and non-TSR. *PC/FlexNet* supports any number of TSR applications (as long as memory suffices...), but only one non-TSR application (the last one).
Extendability *PC/FlexNet*'s modular concept makes development easy. Unlike other big monolithic solutions, each author only needs to know his small module. This improves the quality and stability of the modules a lot. Developer kits are available from the author, (D)K7WJ. The kits provide C sample files and C linkable libraries.

The most important module is the *Flexnet* kernel, FLEXNET.EXE, see **Fig 1**. It provides an interface to the L1 drivers at the lower edge, and an application interface at the upper edge. The kernel uses the L1 drivers to transmit and receive packets over the air (or the wire). *PC/FlexNet* applications use the kernel to set up outgoing connects and listen to incoming connects. The L1 drivers actually access the hardware to transmit and receive packets. The *FlexNet* kernel supports up to 16 channels. L1 drivers may support more than one channel. Each driver should be accompanied by a .DOC file describing its capabilities and command line parameters. There are a few applications that support the *PC/FlexNet* application programming interface directly, most notably the Baycom Mailbox (BCM) and the Baycom Terminal (BCT). Emulators such as *TFEMU* (WA8DED emulator) provide standard amateur interfaces. As they are emulations, they are not perfect; but are good enough so that almost all programs work with them.

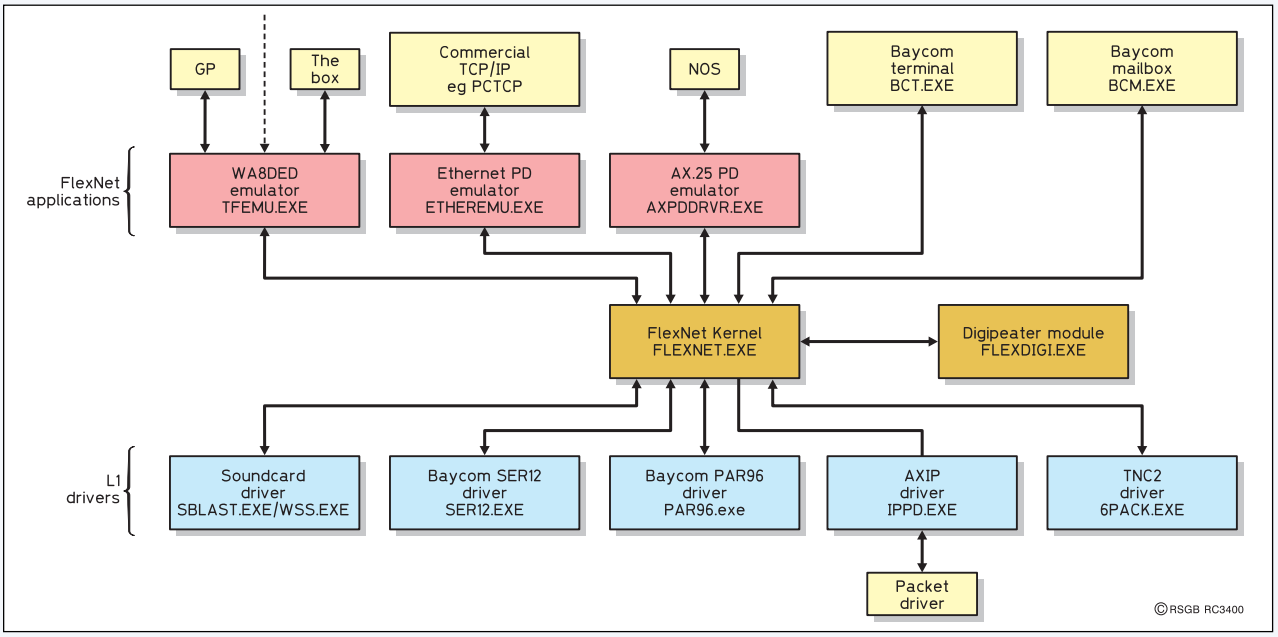


Fig 1: The *PC/FlexNet* module hierarchy. A subset of the available modules and applications for the *FlexNet* packet radio software. See the appropriate websites for additional modules and applications.

time, especially in the case of weak signals, and time is a parameter we just do not have here! Differential PSK, on the other hand, only requires the comparison of one transmitted symbol with a delayed version of the previous symbol, looking for any change of phase between them. So clock recovery can be made nearly instantaneous, can hold for an extended period once timing is known, and the effects of frequency errors can be precisely determined as we shall see later. We next have a choice of how many phase levels to adopt. There is a direct trade off of signal to noise ratio with the number of phase states. QPSK has four states, so can transmit two bits of data per symbol, compared with BPSK's one bit per symbol, but QPSK has a 3dB S / N disadvantage over BPSK as the phase states are closer together. Twice the data rate requires twice the signal to noise, which may or may not be an advantage, especially as clock recovery from a noisy QPSK waveform is less reliable than that from BPSK. But now the nature of the signal can come to our help. Last time we saw how a meteor ping had a strong initial signal strength, tailing off exponentially as the ionised trail dispersed. Can we make use of this? As the signal will be at its strongest at the start of the ping, we can probably rely on getting good initial clock recovery on a QPSK signal and make use of the higher data rate this mode can support for improved traffic rate. If we are going to go for QPSK, then there will inherently be the capability for BPSK already there, so the choice can be made during operation whether to optimise for noise of traffic capability. In the next few parts we will put some numbers into this concept and turn it into a practical modulation type, and then follow up with a protocol for detecting the short duration pings and turning them into a transparent messaging medium. ♦

WWW.

PC/FlexNet www.afthd.tu-darmstadt.de/~flexnet

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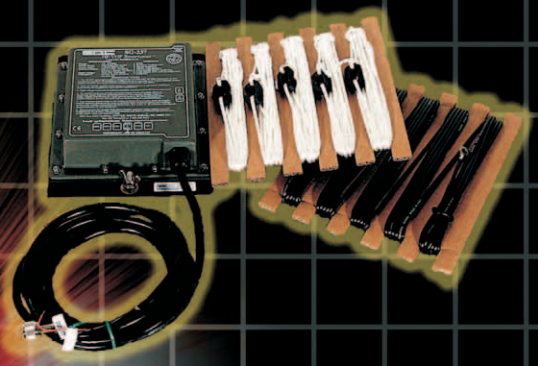

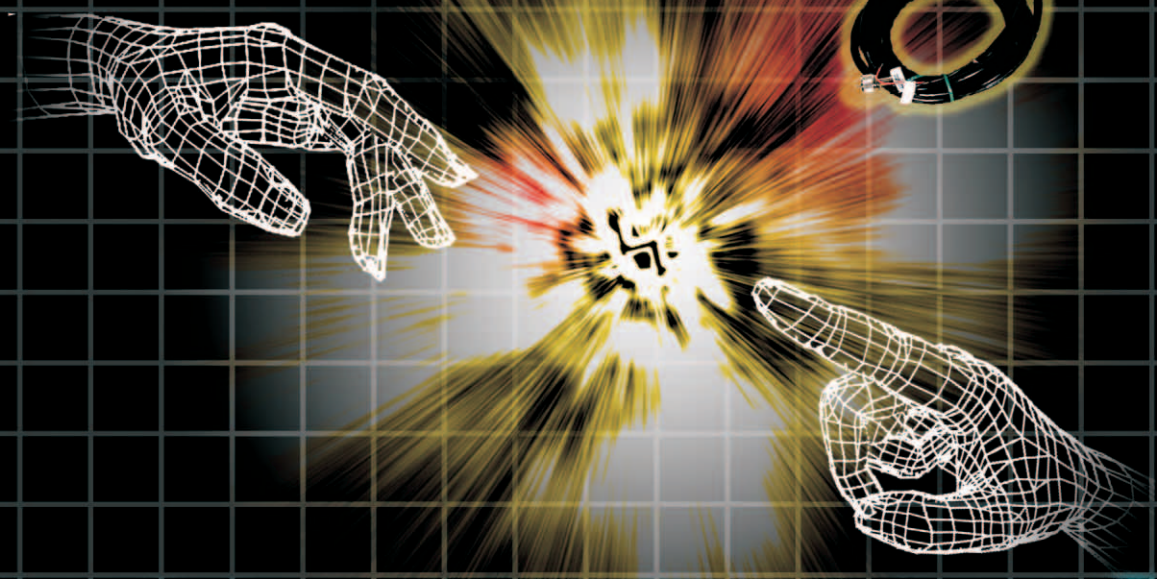

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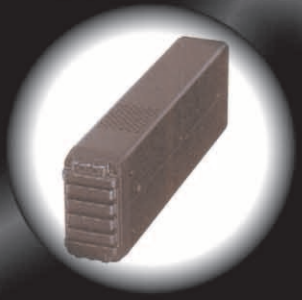

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The VP8 Story

Thank you for your fascinating article on the role of amateur radio in the liberation of the Falkland Islands (*RadCom*, October 2002). I am puzzled by a number of points, and I imagine that most of your readers would appreciate knowing the answers if possible.

It seems extraordinary that Tony Pole-Evans was allowed to continue transmitting all through the hostilities. Surely the Argentineans must have been aware of his transmissions, especially as amateur operators in Argentina were monitoring them, and presumably must have informed their own authorities. How did Tony get away with it? Was his callsign given or did he operate anonymously? Surely he could have been tracked down by direction finding anyway.

The role of the medical broadcast was not fully explained. What were these broadcasts and how was sensitive information included (concealed, presumably) in the transmissions? Were these broadcasts the sole source of information relayed to Tony Pole-Evans, or were there others?

What happened to all the other amateur operators on the islands? Presumably they were threatened into closing down, or was their equipment confiscated?

R J Martin, M0LLY

[Les Hamilton, GM3ITN, author of the article, responds: *"Radio amateurs in the Islas Malvinas under the occupation of the Argentine forces were under curfew and no radio equipment was to be used. The hospital transmissions were used to keep in touch with the 'Camp', which are all the settlements outside Stanley, the capital of the Falklands - half the population lives in Stanley and the other half is in the Camp. Saunders Island is an hour's flying time from Stanley. The Argentine forces visited Tony Pole-Evans, dismantled his beam and took away his transceiver but fortunately left his wire antenna. He had another transceiver hidden which he then used. Secret frequencies, calls, codes, transmissions were all pre-arranged. These I am afraid I would not like to disclose."*]

RSGB HF Convention

This was the first HF Converntion I have attended [see pages 16/17 this month - *Ed*] and I will certainly go again. May I congratulate all concerned: the lectures were presented in a very professional manner. They were entertaining and informative and it was enlightening to see that amateurs were engaged in many types or experiment and development.

I thought all the presentations were excellent; it is very difficult to single out any one - or to attend all of them! - but, for example, there was a very informative and stimulating lecture on greyline propagation by Steve Nichols, G0KYA, and the presentation by Mark Haynes, M0DXR, on the 8Q7ZZ DXpedition [see November 2002 *RadCom* pages 44/45 - *Ed*] which was fielded by him and his youthful band of colleagues with support and encouragement from a wide age-range of helpers demonstrated his maturity and capabilities. May he and his able co-enthusiasts go far; the hobby is in good hands and it was demonstrated that enthusiasm is alive and well.

I was very pleased that Alan Betts, G0HIQ, from the RA was there to give a lecture and I heard many favourable comments about the effort being put in and the paths being followed by the licensing authority. It appeared that many clubs, voluntary helpers etc deserve congratulations for encouraging new amateurs, running courses, and maintaining their interest.

All those giving presentations had clearly put in many hours of work both on their projects and in preparing the lectures to what I considered to be a very high standard. Also Bob, Mr President, thanks to you and all the hard-working officers of the RSGB at the event and to those who enthusiastically manned the various stands, the ARRL DXCC checkers and the dinner hosts.

I met a number of overseas DX operators that I have spoken to on the air in addition to many UK amateurs. So, a very enjoyable and worthwhile event. My hearty congratulations to all concerned.

Mike Cooke, DMA, G4DYC

Pic-A-Skill

I write to thank you for the Pic-a-Switch series of articles by Peter Rhodes which you published last year. Previously I had tended to skip over articles with a 'digital' or 'software' element such as Pic-a-Tune as they looked rather complicated, but I had an application for a frequency-sensitive switch so decided to give it a try.

I found Peter's step-by-step approach led me gently through acquiring new skills. For the first time in my life, I etched my own circuit boards! (I had just been a Veroboard man up until then). I downloaded the Microchip assembler software on to my 486 PC and typed up the program as per the article (see G3YJR website at www.yorks8128.freeserve.co.uk/G/3YJR.htm or search for 'g3yjr' using *Google* for problems solved), and downloaded the assembler reference manual so that I could figure out what each instruction actually did.

A little board of LEDs to plug in the programmer came in handy so that I could see the state of each PIC pin (LEDs not plugged in when loading the program). I was really chuffed when the test program loaded and ran, flashing the LEDs. Wow!

I now have a box of relays switching lengths of ladder-line and baluns together feeding a 40m delta loop. A whiff of RF and the Pic-a-Switch automatically selects the lengths to match any band from 80m to 10m (including 60m!) I am experimenting with topband. 6m might be beyond the PIC. Another article here perhaps?

So thanks again - you *can* teach an old dog new tricks. With hot iron at the ready, DSP here I come!

Graham Coyne, G3YJR

Slow Buro'

I wish to complain about how slow the QSL bureau has become, and ask what can be done about it. I worked my friend Costas, SV1XV, on 21 August this year and his card arrived, via the bureau, on 1 October. Some 40 days from QSO to QSL. Who says your subs ain't worth it?

Dick Whittering, G3URA

Caveat Vendor

Will you please print this as a warning to others who have agreed to sell equipment [privately]? Please wait for the cheque to clear before releasing the gear. The problem is that during the selling period many people will want the items for sale, so who do you trust? This really does make everyone very suspicious. I hope this letter will help everyone in the future.

Trev Harris, G2KF

Black Boxes vs 'Homebrew'

RadCom is still featuring amateur construction but 'black boxes' apparently warrant most space. I wonder how many 'amateurs' actually have a go at any construction work? I was licensed in 1951 and returned to radio after a gap of 35 years when I retired. What a difference. No one seems to talk radio any more and the stereotype QSO soon palls.

I find construction immensely satisfying and although my rigs do not have 200 memories, bells and whistles, they have a respectable performance. I think many hams are intimidated by the unnecessary complication of commercial rigs, older and simpler design still has some advantages although not viable commercially. I hope the series on the CDG2000 will encourage more hams, old and new, to try their hand and they will then have something to chew the rag about. 'Technical Topics' is a continuing source of interest as are most practical articles.

Brian Harris, G3HZR

[*The perception may be that 'black boxes' warrant most space in* RadCom*, but the reality is that this year - ignoring adverts and Technical Topics - pages devoted to construction outnumber those devoted to black boxes by about 40%* - Ed]

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The "80 plus 2" Mini - Dipole was designed by our Director, Peter Waters, G3OJV. Just 52ft long, it uses linear loading - no tuned traps. It can be directly fed without ATU and also operates at 2.5:1 VSWR on 15m. Amazingly efficient, it handles 400 Watts and is balun fed. Erect it as an inverted V and it takes up less than 40ft of space. If you have a small garden, don't miss out on the LF bands anymore.

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Match into that G5RV or similar

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When Bob Heil came to the Donington show this year, he gave a seminar on the art of good audio. He didn't have to sell, he just demonstrated! That was enough to convince everybody!

NEW CLASSIC — £259 B

QUALITY RETRO-LOOK DESK MIC

Fitted standard element plus HC4 DX or HC5 or ICOM type. Acclaimed as the "Best Yet" with soft touch PTT and voucher for call-sign transfer. Requires CC-1 adaptor to match your radio. (£29.95)

GOLDLINE — £129 B

HAND/DESK MICROPHONE GM-4/GM-5/GM-V

The Gold Line range brings distinctive quality to your transmissions. Choose between HC-4 for DX work or HC-5 for normal response, or GM-V for high impedance vintage radios. Either way you will experience the Heil amazing audio quality, famous around the world. Requires CC-1 adaptor for your radio £29.95)

NEW TRAVELER — £89-95 B

HEADSET BOOM MICROPHONES FOR FT817/1C706/ICOM 8PIN

Nothing more to buy. Ready wired for your choice of rig above. Includes PTT in-line switch. Great audio that will punch through and be loved!

BM-10-4/5 — £89-95 B

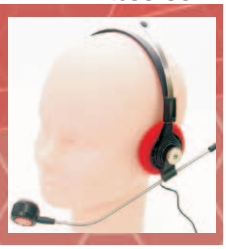
LIGHTWEIGHT DUAL HEADSET/BOOM MIC

Now everybody can experience the convenience and quality of "hands-free" operation, plus Heil quality. Choose the DX (HC-4) or normal (HC-5) insert. You will need an AD-1 adaptor to match your radio (£16.95).

BM 5-4/5-5 — £69-95 B

LIGHTWEIGHT SINGLE HEADSET

A single earpiece version lets you communicate with others in the room but gives "hands-free" operation, plus Heil quality. Choose the DX (HC-4) or normal (HC-5) insert. You will need an AD-1 adaptor to match your radio (£16.95).



NEW PRO-SET PLUS & IC — £199.95 B

HEADSET DUAL INSERTS SWITCHABLE PHASING

Not only do you get dual inserts (HC-4 & HC-5), you also get the unique phase switch for DX monitoring in the earpieces. Amazing! Requires AD-1 adaptors for your choice of radio.

£219.95 ICOM TYPE

MFJ BEST SELLER

MFJ 461 MORSE CODE READER

JUST PLACE NEAR YOUR RECEIVER AND INSTANTLY DECODE CW - NO CONNECTION REQUIRED

£84.95 B

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.

New DSP Extension Speaker — NES CB

This new DSP speaker has a pre optomised DSP module that radically reduces all forms of interference, both in fixed station and mobile use. Simply connect to extension speaker output of your radio and connect to 12V supply. Hear the interference drop away.

£79.95

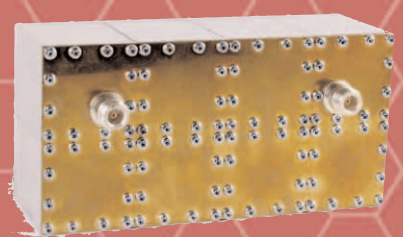
SP-170F MOBILE SPEAKER — £12.95 A

-8 Ohms
-Variable Volume Control
-Switchable Filter
-3m of lead & 3.5mm plug
-Fitted 3.5mm mono jack plug
-Size 97x67x27mm

DCI-145/430-DB — £189.95

DUAL BAND PASS FILTER

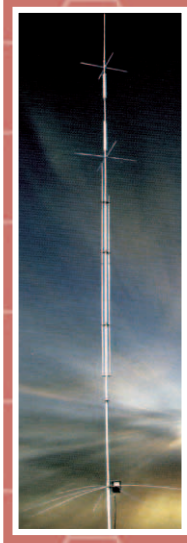
This bandpass filter will remove all adjacent band breakthrough, no matter what. If it does not solve your problem we guarantee to offer you a full refund. The filter is centred on 145MHz and 435MHz with less than 1dB insertion loss and very steep skirts.



CUSHCRAFT
COMMUNICATIONS ANTENNAS

WORLD CLASS PERFORMERS

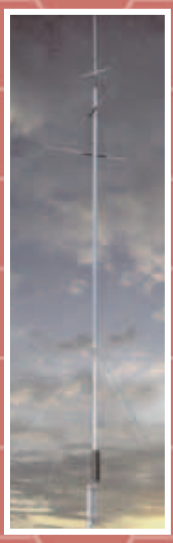
R8



- 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

£529.95 C

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

£229.95 C

MA 5B

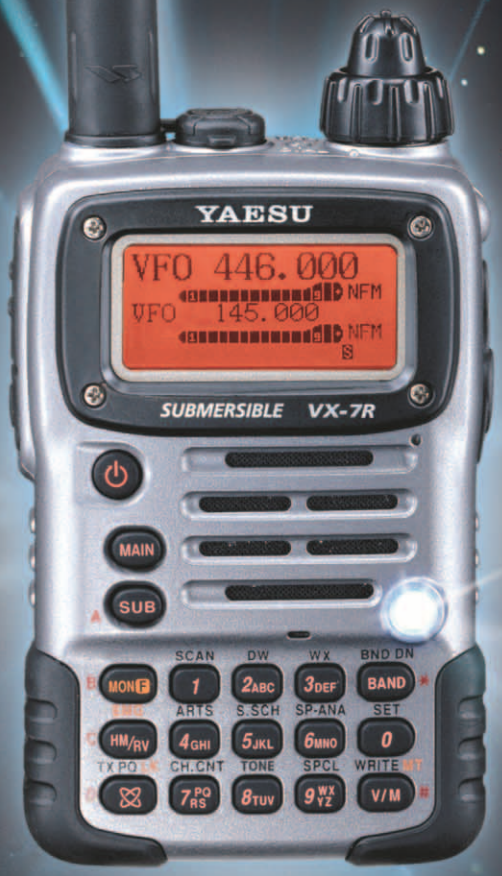
- Bands: 10, 12, 15, 17, 20m
- Gain: varies with band
- Front to back ratio: 10, 0, 12, 0, 22dB
- Power rating: 1.2kW
- VSWR: 2:1
- Bandwidth: varies with band
- Boom length: 2.2m
- Longest element: 5.2m
- Turning radius: 2.7m
- Weight: 12kg

£349.95 C

50/144/430MHz 5W FM Transceiver

VX-7R

ULTRA-RUGGED, SUBMERSIBLE TRI-BAND MAGNESIUM HANDIE



The Brightest Star in the Ham Radio Galaxy

YAESU
Choice of the World's top DX'ers