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The Radio Society of Great Britain Members' Magazine

RadCom

£3.95 Vol 80 No. 5 May 2004

HF

Just some of the antennas at 3B9C. Read Don Field's report direct from Rodrigues. p65

Antennas

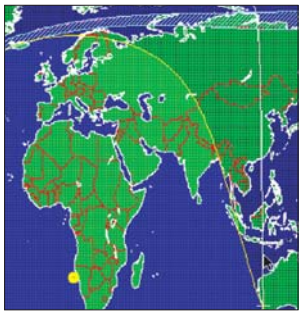
G3LDO looks at the problem of modelling mobile HF antenna installations. p44

IC-7800 launch

RadCom was at the official launch in the UK of this HF/6m transceiver that seems sure to set new standards in receiver performance. p37

DXAID

A propagation prediction software package that will be of particular interest to low-band enthusiasts. p34



INSIDE

WIN! A West Mountain Radio RIGblaster Pro. With a RIGrunner for the runner-up. p75

WATERS & STANTON

PAY NOTH

NO DEPOSIT NOTHING TO PAY FOR 12

HOCKLEY OPEN DAY
30TH MAY 2004
see opposite →
GB4FUN BUS VISITING!

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

NEW IC-7800 In Stock!

At last the Radio has arrived! It has the world's "quietest" receiver - and you get two of them! Plus 200 Watts output and a host of unique features including:

110dB dynamic range, +40dBm IP3, steep pre-IF roofing filters, Auto Hi-Q preselector, ultra low phase noise, multiple AGC loops, Digital "build-your-own" IF filter, Digital PBT, 4 x DSP units for receive and TX audio and band scope, 2 x receivers from antenna to stereo phones, spectrum analyser from 5kHz to 500kHz, 7-inch colour screen, external VGA socket, Internal RTTY/PSK31 - just add USB keyboard, Flash card storage, voice synthesizer, 200W out at full duty, wide-range speaker, DSP mic equaliser, DSP RF speech processor. digi voice recorder, 4 programmable antenna sockets, memory keyer etc. ***Free CD of off-air SSB signals exclusively available from W&S.***

The most advanced amateur band transceiver ever produced!

£6400

Price** including Heil Classic Pro mic (HCLic) **£6589

BUY NOW PAY LATER AT ALL THREE STORES

You won't find a better deal!

Proof that at W&S you get the best possible deal. On selected items it is now possible to pay nothing for a whole year without incurring any interest charge. Amazing but true. And what's more, you get probably the best prices in the business. Give us a call today or visit one of our branches.

If you can find a better advertised deal we will match it!

0% APR TYPICAL EXAMPLE OF BUY NOW PAY LATER. CASH PRICE £600. PAY NO DEPOSIT AND PAY THE FULL AMOUNT 12 MONTH'S LATER. PAY NO INTEREST.

OR AFTER TWELVE MONTHS

29.8% APR REPAY £31.53 PER MONTH FOR 36 MONTHS. TOTAL AMOUNT DUE £1135.08. INTEREST IS CALULATED FROM THE DATE OF THE AGREEMENT.

ALL FINANCE SUBJECT TO STATUS WRITTEN QUOTATION ON REQUEST.

ICOM IC-756 PRO II £1899 C

Flagship of the Icom range of HF transceivers. HF & 50MHz, features large colour LCD with spectrum scope, auto ATU and 32-bit floating point DSP unit.

ICOM IC-7400 SPECIAL OFFER £1299 C

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

ICOM IC-703 NEW £589 C

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

CLAIM FREE IC703 LOGBOOK

ICOM IC-706 IIG DSP £769 C

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

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

ICOM IC-718 £449 C

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

KENWOOD TS-2000 £1599 C

Top-of-the-range Kenwood transceiver. HF/VHF/UHF or up to 23cm with the optional module. Built-in auto ATU, DSP and its unique TNC.
ARCP Control Software. **£44.95**

TS2000X fitted with UT-20 23cm unit **£1899**

KENWOOD TS-870S DSP £1399 C

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

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

KENWOOD TS-570DGE £849 C

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

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

ICOM IC-910X with 23cm £1249 C

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

UT-106 DSP unit **£84.99**

Basic Model IC-910H £1099

YAESU FT-1000 MKV £2349 C

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

YAESU FT-1000 FIELD £1749 C

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

KENWOOD TS-480SAT & TS-480HX

NEW

The **TS-480SAT** is the 100W version of this new HF+6m transceiver from Kenwood. Smaller than the TS-2000/ TS-B2000 it has many similar features.
TS-480SAT £999 C
The **TS-480HX** is the 200W version of this new HF+6m transceiver. **TS-480HX £1099 C**

YAESU FT-897 £899 C

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

YAESU FT-847 £1199 C

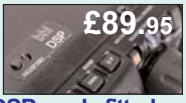
1.8 to 440MHz, this all-in-one transceiver offers unbeatable value. 100W on HF plus 6m, and 50W on 2m and 70cm. You get genuine RF clipping on SSB for up to 6dB gain and there are 4 separate antenna sockets.

YAESU FT-857 NEW £729 C

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

YAESU FT-817ND £499 C

bhi NE-DSP1061 Module available!



160m - 70cms. Up to 5W output all modes. ***Ours includes*** **battery and charger.** **Add £90 for DSP ready fitted.**

NEW DSP Module

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

TOKYO HY-POWER HL-50B £269.95 C

FT-817 VERSION !

This Linear Amplifier has been specifically designed for use with the FT-817. Enjoy up to 50 Watts output

HING 'TIL 2005!

MONTHS ON SELECTED ITEMS MARKED BY £

THE ONLY THING WE CUSTOMER SERVICE WON'T DISCOUNT

ICOM IC-E208 NEW £279 C

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

ICOM IC-2725E £269 C

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

ICOM IC-2100H £229 C

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

YAESU FT-8900R NEW £339 C

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

YAESU FT-2800M NEW £159 C

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

YAESU FT-8800E £289 B

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

YAESU FT-7800E NEW £239 C

*2m/70cms Dual Band Mobile *High power 50W 2m /40W 70cms *Wide receive inc. civil & military airband *CTCSS & DCS with direct keypad mic. *Detachable front panel *1000 memories plus five one-touch

We Price Match!
Call 08000 73 73 88

KENWOOD TMD-700E £449 C

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

KENWOOD TM-V7E £359 C

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

KENWOOD TM-G707E £289 C

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

YAESU VX-7R £299 B

6m/2m/70cm

Available in Silver or Black

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

YAESU VX-150 £125 B

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

YAESU VX-2E NEW £169 B

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

ICOM IC-E90 £269 B

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

ICOM IC-T3H £129 B

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

KENWOOD TH-D7E £319 B

DATA COMMUNICATOR

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

KENWOOD TH-F7E £249 B

WITH EXTRA WIDE RX COVERAGE

- 144-146MHz Tx/Rx: FM
- 430-440MHz Tx/Rx: FM

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

KENWOOD TH-G71E 199 B

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

YAESU VX-110 £119 B

Combining the ruggedness of the VX-150 with the simplicity of 8-key operation, the VX-110 is a fully featured 2m hand held ideal for the most demanding of applications. With its die-cast case, large speaker, and illuminated keypad, it is particularly well suited for most conditions. The VX-110 is a very affordable, rugged and reliable handheld.

Hockley Open Day
30th May. 10am
The BIG EVENT!

With Queues this long it must be good!

Our **Massive Open Day** gives you bargains galore! FREE food and drink plus raffle. Support from Yaesu, Icom, Kenwood, repeater groups. Check web for details.

30th May, 10am
GB4FUN Bus Visiting!

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SCOTTISH STORE
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WATERS & STANTON

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THE ONLY THING WE CUSTOMER SERVICE WON'T DISCOUNT

VERTICAL ANTENNAS

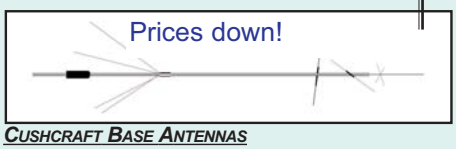
Hustler Mobiles

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

Resonator

MA5V Base vertical
No radials needed

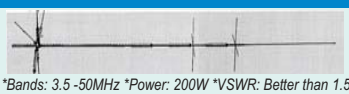
Base section MO-3 or MO-4



CUSHCRAFT BASE ANTENNAS

MA6V *NEW*	20-17-15-12-10-6m 250W PEP	**£269.95**	C
MA5V	20-17-14-12-10m 250W PEP	**£239.95**	C
R8	40-30-20-17-15-12-10-6m 1.5kW	**£469.95**	C
R6000	20-17-15-12-10-6m 1.5kW PEP	**£329.95**	C

DIAMOND CP6 £239.95 C



*Bands: 3.5 -50MHz *Power: 200W *VSWR: Better than 1.5:1
*Socket: SO-239 *Height: 4.6m *Radials: 1.8m adjustable

Covers five popular HF bands and the 6m band. Low angle radiation makes it ideal for DX work. Outperforms dipoles for long distance contacts and compares favourably with beams located 10m+ above ground. It doesn't need long wire radials. Adjustable rigid radials, DC return helps the antenna get rid of static noise. Antenna is adjustable for each band.

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

HARI High quality German Baluns
SO-239200W 1:1, 4:1 or 6:1 £25.95 ea.
1kw 1:1 £34.95 4:1 or 6:1 £41.95 ea

HORIZONTAL BEAMS & DIPOLES

CUSHCRAFT Prices down!

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

X-7	20/15/10m 7 el. Yagi 2kW	**£669.95**	D

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

MA-5B	10-12-15-17-20m 4 el. Yagi 2kW	**£369.95**	C
A4-S	10-15 & 20m 4 el. Yagi 2kW	**£569.95**	D
A3-WS	12 & 17m 3 el. Yagi 2kW	**£379.95**	D
D-3	10-15-20m dipole element 2kW	**£249.95**	C

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

D-3W	12-17-30m dipole element 2kW	**£249.95**	C
D-4	10-40m dipole element 2kW	**£349.95**	C
D-40	40m dipole element 2kW	**£319.95**	C
TEN-3	10m 3 el. Yagi 2kW	**£229.95**	C
ASL-2010	13.5-32MHz 8 el. log periodic	**£749.95**	C

RADIO WORKS

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

CW-160	160-10m 76.8m long	**£129.95**	C
CWS-160	160-10m 40.5m long	**£119.95**	C
CW-80	80-10m 40.5m long	**£89.95**	C
CWS-80	80-10m 20.1m long	**£109.95**	C
CW-40	40-10m 20.1m long	**£84.95**	C
CW-20	20-10m 10.36m long	**£89.95**	C
CW-620	20-6m 9.7m (32ft) long	**£89.95**	C
G5RV PLUS	80-10m with balun 31m (102ft) long	**£59.95**	B

WATSON FC-130 FREQUENCY COUNTER £59.95 B

*1MHz-3GHz *Impedance 50 Ohms
*LCD readout *10-digit display
*16 segment bargraph
*BNC Whip Antenna
*Black anodised case *Internal Ni-Cads
*600mAH *6 hours operation
*AC charger *9V DC 300mA
*68 x 80 x 31mm*240g

WATSON HUNTER FREQ. COUNTER £49.95 B

*10MHz-3GHz *Impedance 50 Ohms
*LCD readout *8- digit display
*BNC Whip Antenna
*Black anodised case *Internal Ni-Cads
*AC charger *9V DC 300mA
*68 x 80 x 31mm *210g

PORTABLE ANTENNAS

MIZUHO (FOR FT-817)

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

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

AT-80	Single band 80m whip with BNC	**£19.95**	A
AT-40	Single band 40m whip with BNC	**£19.95**	A
AT-30	Single band 30m whip with BNC	**£14.95**	A
AT-20	Single band 20m whip with BNC	**£14.95**	A

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

AT-17	Single band 17m whip with BNC	**£14.95**	A
AT-15	Single band 15m whip with BNC	**£14.95**	A
AT-12	Single band 12m whip with BNC	**£14.95**	A
AT-10	Single band 10m whip with BNC	**£14.95**	A

Zero Space - - DX Antennas

From Hustler USA

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

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

4BTV
40-20-15-10m. 6.52m high. Full band coverage.
£149.95 C

5BTV
80-40-20-15-10m. 7.64m high. Full band coverage (100kHz on 80m).
£179.95 C

6BTV
80-40-30-20-15-10m. 7.3m high. Full band coverage (100KHz on 80m).
£209.95 C

MFJ Compact Portable Tuners

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

MFJ-902 Travel Tuner
Smallest 150W ATU in the world! 3.5 - 30MHz coax or end fed wires. Real air spaced capacitors! **£74.95 B**

MFJ Power Tuners

MFJ-989C £359.95 C
3kW 1.8 - 30MHz. Wire, balanced and coax feed. Full metering and switching

3kW fast differential tuning design. 1.8 - 30MHz. Wire balanced and coax systems. Full metering and switching.

MFJ-986 £329.95 C

MFJ Popular Tuners

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

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

MFJ-948E £139.95 B

MFJ Match Makers

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

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

MFJ-914 £64.95 B

Antenna Analysers

MFJ-259B £259.95 B

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

MFJ-269 £349.95 B

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

MFJ-969 ATU £199.95 B

The latest design from MFJ, this unit features an active power meter for really accurate PEP measurements. Powered by an internal PP3 battery (not supplied) or an external 12V source. This is one of the most popular 300W models, having a very wide frequency range an excellent power and VSWR accuracy.

MFJ-260C DUMMY LOAD £37.95 B

MFJ-260C 1.5MHz - 150MHz 300W 50 Ohm SO-239
*Size 180 x 57 x63mm • Weight 450g

Handles 300W for 30 seconds and lower powers proportionally longer.

MFJ-901B VERSA TUNER £85.95 B

This compact tuner is a low cost alternative where the main station already has a VSWR meter and just requires the 'bare bones' tuner. It will handle all types of aerials, match coax fed systems, long wires and balanced feeders and is very simple to use. It retains the basic MFJ T-network that has a wide impedance matching capability.

MFJ-461 MORSE READER £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.

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

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OF GREAT BRITAIN

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WHICH REPRESENTS UK
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Details of the Society's volunteer officers can be found in the RSGB Yearbook 2004

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RSGB matters

Former IARUMS R1 coordinator Ron Roden, G4GKO, SK

PHOTO: IARUMS WEBSITE

Ron Roden, G4GKO, in his Hassocks, West Sussex, shack, HQ for the IARU Region 1 Monitoring System 1990-2002.

Ron Roden, G4GKO, died on 28 March 2004 at the age of 80. Ron was the IARU Region 1 Monitoring System Coordinator for 12 years from 1990 to 2002. He was born in Cardiff on 27 January 1924 and had a long and successful career as a telecommunications engineer. During WWII he worked on cable ships, positioning and repairing deep-sea cables. During this period he met Ines, a Brazilian student, and married her in 1948. Later, Ron worked for Cable & Wireless, with assignments in Canada, Malaysia, Gibraltar, Singapore, Fiji, New Zealand, Cameroon, USA and Antarctica, working his way up to Chief Engineer and eventually General Manager of Cable & Wireless.

Ron held many overseas callsigns, including VP8OA, VP9IR and ZB2DN. He represented the Israel Amateur Radio Club at international amateur radio conventions and was awarded the callsign 4X8RR.

After his retirement in 1990 he was appointed Coordinator for Region 1 of the IARU Monitoring System, cajoling monitoring reports out of national societies across the breadth of Region 1 and introducing a monthly Monitoring System newsletter. A major success was his action against the Swiss watch manufacturer Swatch, which wanted to launch an advertising satellite with a downlink on amateur radio frequencies.

Ron was presented with an IARU medal of honour as a token of appreciation for his work in defending the amateur bands. Our condolences go to Ron's wife Ines, his children and grandchildren. (*Thanks Ulrich Bihlmayer, DJ9KR, DARC Monitoring System Coordinator. Further details at http://iarums.com*)

INTERFERENCE TO GERMAN BROADCAST TRACED TO UK AMATEUR

Listeners to the DK0WCY solar /geomagnetic information broadcast on 3579kHz have recently experienced interference from an unmodulated carrier on the channel. This interference, which appeared to be deliberate jamming, was reported by the DK0WCY team to the authorities in Germany who identified that the interference originated from the UK. With support from the RSGB Amateur Radio Observation Service (AROS) and UK amateurs, the UK authorities traced the interference to an amateur station in the Chepstow area. The interference ceased abruptly at 0608UTC on 25 March 2004.

TRAIN THE TRAINERS SESSION HELD AT BLACKPOOL

Twelve delegates from around the UK attended another successful 'Train the Trainers' session at the Northern Amateur Radio Societies Association Rally in Blackpool on 21 March. The session included briefings on the new licence scheme, organisation of training courses and examinations, and teaching techniques. The Society would like to thank the NARSA Rally organisers for hosting the event and in particular Dave Wilson, M0OBW, for arranging the necessary facilities. 'Train the Trainers' is a RSGB initiative to improve the availability and quality of training within amateur radio and is aimed at all those offering training within the hobby. Further sessions will be scheduled in other parts of the country, subject to demand and suitable venues. Registered Lead Instructors wishing to attend are requested to contact Brian Reay, G8OSN, at brian.reay@bigfoot.com

RSGB SOUTH & SOUTH-EAST REGION 10
Invites you to an Open Meeting to meet the Regional staff.
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Hawthorn Crescent
Cosham Hants
on SATURDAY 1 MAY AT 2.00pm
Rail station nearby. Car Parking.
For further information contact Ivan, G3GKC: g3gkc@rsgb.org.uk

EXAMINATION FEES

In response to a number of letters received at RSGB HQ on the question of the Radio Communications Examination fees (see 'RSGB Matters', *RadCom* March 2004 page 6), General Manager Peter Kirby, G0TWW, writes: "Whilst it is unfortunate that the examination fees had to rise at all, it is a fact of life that the examinations should not be subsidised by RSGB members. The fee for the Foundation licence was unrealistic at £5.00 and the other two fees are lower than those set by City & Guilds. Even with the increase in the fees, the RSGB will still be making a loss on the examinations at the end of the financial year.

"You cannot compare the new UK structure with the USA. The numbers taking the examinations keep the US fees low. Neither can you compare the new structure with what went before under City & Guilds. Yes, it is correct to say that if you sit all three examinations on the same day it will cost more. It is unlikely that anyone under the age of 18 will do this, so it is unlikely that parents will have to bear this cost.

"I think it worth making the observation that if a more commercially focussed body were running these examinations - and I include City & Guilds in this observation - the fees would be considerably higher than they are now, even with the increase. Just because it is the RSGB and just because it is a hobby does not mean that examinations should be subsidised or run at a loss. The Society relies heavily on volunteers to assist in running the scheme, however, you cannot run the administration of the scheme on volunteer help alone. There are fixed and variable costs to take into consideration and these must be met."

AROS TALK

The RSGB Amateur Radio Observation Service coordinator, Barry Scarisbrick, G4ACK, is giving a talk on the work of AROS at the Leiston ARC on 4 May. For further details please contact Paul, M3MIG, tel: 01728 74044 or e-mail: m3mig@aol.com

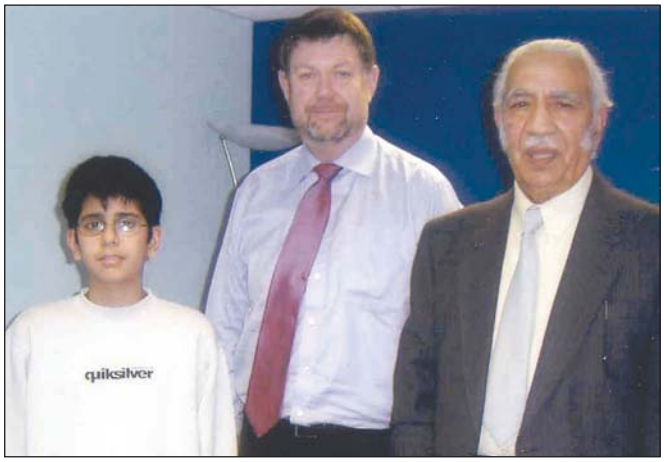
145MHz BAND PLAN

As a result of feedback from a GB2RS news item regarding the use of 145.2MHz and 145.8MHz by the International Space Station, the RSGB Spectrum Forum felt some clarification was required. The following joint statement was agreed with the IARU Region 1 Satellite Co-ordinator, the RSGB's Radio Communications Voluntary Services and The Radio Amateurs' Emergency Network Spectrum Forum members: "Although both the frequencies 145.2MHz and 145.8MHz have historically been used for domestic UK emergency communications, it was agreed at the IARU Region 1 Conference in 1996 to allocate 145.2MHz as an FM uplink channel with 145.8MHz serving as the downlink side of the pair. This particular frequency pair, which applies only for Region 1, had earlier been agreed by IARU internationally after discussions with NASA and AMSAT.

"The likelihood of an active ISS pass taking place at the same time as *bona fide* UK emergency communications operations using 145.2MHz and / or 145.8MHz is considered low and due to the nature of circumstances would only be for a brief period in any case. In addition, the UK amateur radio emergency communications community has for many years discouraged the use of 145.8MHz as far as possible, and even then only using low power and vertical polarisation, due in any case to its proximity to the satellite sector.

"UK terrestrial stations are therefore again requested to check for activity from ISS before transmitting. Details of the ISS orbits can be found on the Internet at http://spaceflight.nasa.gov/realdata/tracking/index.html"

VISITING AP PRESIDENT



General Manager Peter Kirby, G0TWW, with the President of the Pakistan Amateur Radio Society, Nasir Khan, AP2NK, on a recent visit to RSGB HQ. Also in the picture is Mr Khan's grandson Zakir Mirqa, who is studying to take the Foundation licence. Zakir lives in Southampton.

QSL BUREAU NEWS

David, M0CHR, the former RSGB QSL Bureau sub-manager for the M0D to M0Z series of callsigns, has written to point out that he gave up that role in October 2002. At that time Simon, G0SJH, took over as sub-manager for this series of callsigns. David reminds everyone that envelopes for the collection of QSL cards should be sent to Simon and not him. All envelopes David has received have been forwarded, but he moved house last year and although he arranged for mail to be redirected to his new address it has become apparent that many letters have gone astray. Anyone concerned could check Simon's website at www.g0sjh.com, where he keeps records of which stations have envelopes lodged with him.

VHF AWARD NEWS

A new entrant to the lists from Scotland, James Kelly, GM1VKI (KY), gains the first two rungs on the '2-way Countries' ladder with a successful claim which contained cards going back to the early days of 6m.

Graham Badger, G3OHC (YO), gains a 100 square sticker with a varied selection of cards mainly from 2001 and 2002. Graham commented: "Regarding 2003 on 6 - I found overall conditions not as good as the last two years. Worked overall 11 new countries and 64 new squares (to take me to 233). I now run 160 watts from a Tokyo Hi-power amplifier with the FT-736R and 3-element, the extra 150 watts does help the QSO rate - wished I had it in 2001 when the band was open Stateside!"

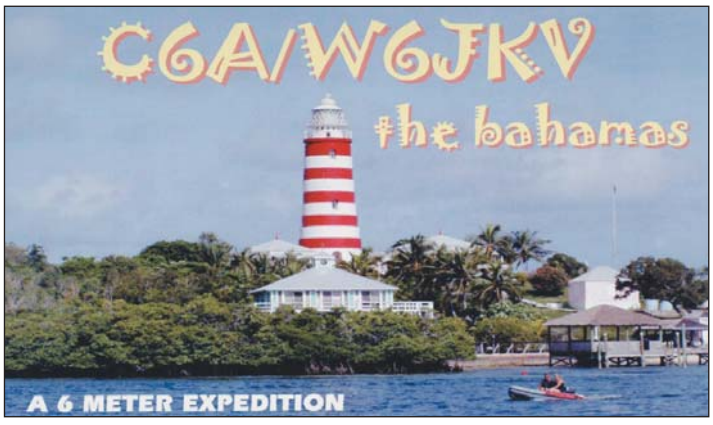
Colin Fallaize, MU0FAL (GY), gains stickers for 350 and 375 squares as well as upgrading his 2-way Country tally to 110. Colin says: "2003 was a great Es season and added some nice USA squares as well as a few new countries." One of those cards from last season is shown here.

Last month Heath Rees, GW3HWR (SA), submitted a claim for 50MHz. This month Heath moves up to 144MHz with a successful claim for the 100 Square / 20 Country increment. The cards in this submission were for a variety of modes: CW, MS, aurora and SSB, underlining what superb conditions there were at times during the latter part of 2003. On the downside there would seem to be a dwindling interest in Squares awards for some of our medium to high bands - this being the first claim at this level for nearly four years.

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 Internet at www.argonet.co.uk/users/tonyg6ttl/awards/awards.htm Queries may also be sent E-mail to vhf.awards@rsgb.org.uk

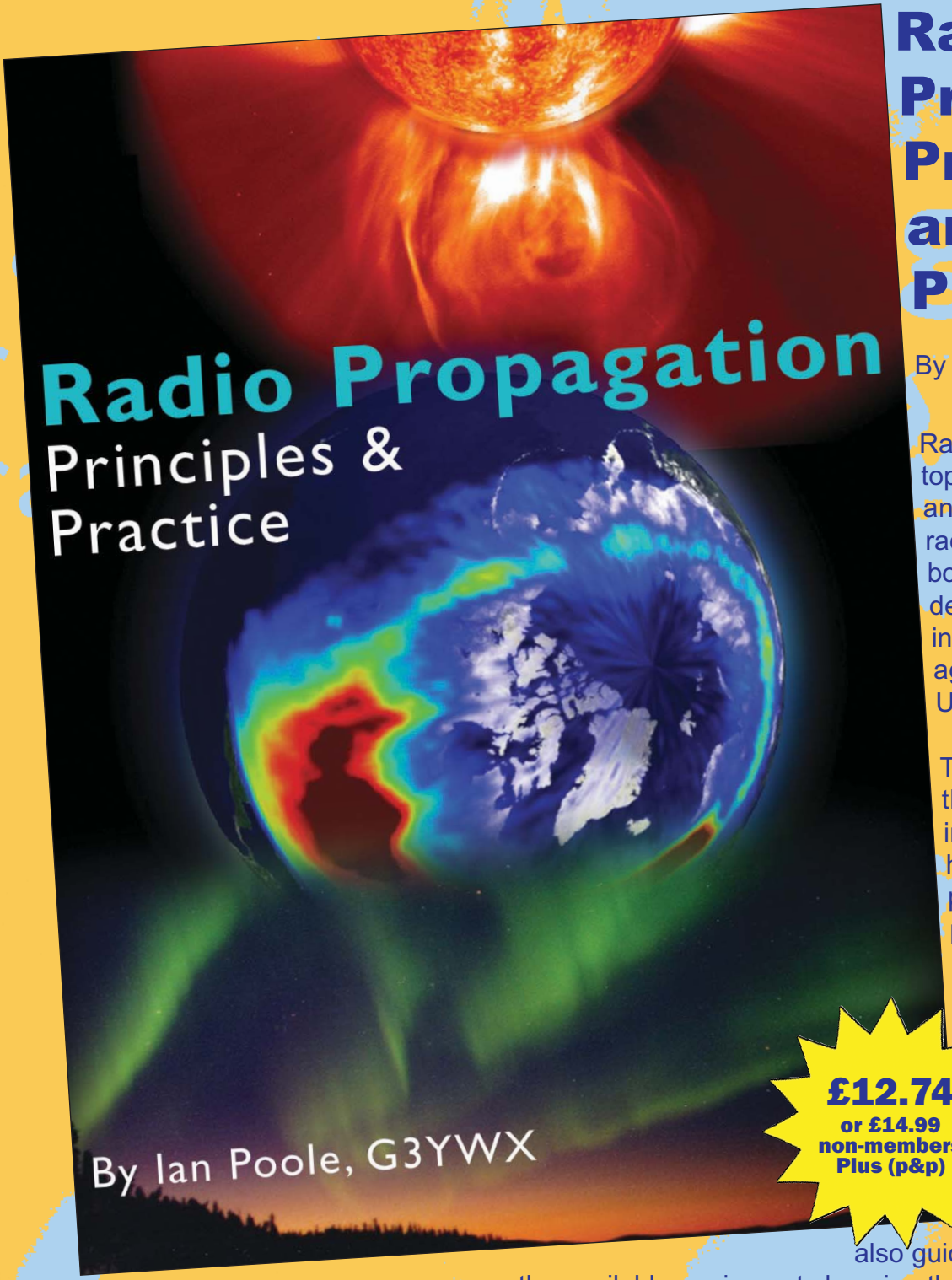
Summary of Award Recipients

50MHz: 10 Countries (2-way): GM1VKI. 20C: GM1VKI. 110C: MU0FAL.
100 Squares: G3OHC. 325S: MU0FAL. 375S: MU0FAL.
144MHz: 100 Squares / 20 Countries: GW3HWR. ♦



Rare 6m QSL from the Bahamas, submitted by Colin Fallaize, MU0FAL.

EW NEW NEW NEW NE



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

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p28 – 2004 marks the 50th Anniversary of the Radio Amateurs Invalid and Blind Club

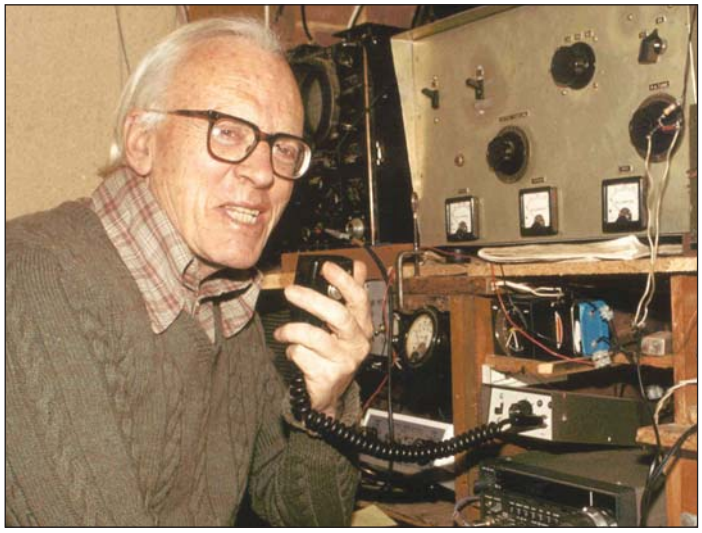
p85 – Rapidly gaining in popularity, SSB Field Day is an ideal club event in which all classes of licensee can take part

Amateur-developed transceiver used to rescue cavers in Mexico

Heyphone to the rescue

The amateur-developed 'Heyphone' transceiver played a major role in the rescue in March of the six British cavers who were trapped in a cave in Mexico. The experienced cavers became trapped after unexpected heavy rain caused rising water levels to block the entrance to the cave. The six kept in contact with the surface using a Heyphone, developed and constructed by John Hey, G3TDZ. Following the rescue, John was interviewed on BBC 1's *Breakfast News* programme (the interview can be seen on the Internet at http://news.bbc.co.uk/media/video/39967000/ rm/_39967091_caverphone07_hey_vi.ram). John said that his design had not been patented, and anyone can build one from plans and circuit boards that he can provide. He personally makes no money out of the Heyphone. John supplied a total of 79 Heyphones to the Cave Radio & Electronics Group (CREG - www.sat.dundee.ac.uk/~arb/creg) and these can be borrowed by cavers upon payment of a deposit. John Hey described the Heyphone in 'Cave Radio: the Story so Far', *RadCom* July 2000.

Les Moxon, G6XN, SK



Les Moxon, G6XN, in 1983.

Leslie A Moxon, BSc (Eng), CEng, MIEE, G6XN, has become a silent key after a long life in radio. He died on 3 March, less than two weeks short of his 95th birthday. Growing up in the 1920s he was soon attracted to the then front-line science of short-wave radio. First licensed as G6XN in 1928, he joined the RSGB in April 1929. That year also saw him obtain a University of London degree in electrical engineering. After two years of research he joined Murphy Radio on R&D in broadcast reception. In 1941, he moved to HM Signal School, Portsmouth, developing radar receivers. Post-war, as a member of the Royal Naval Scientific Service, he stayed at the Admiralty Surface Weapons Establishment.

In 1949 his book *Recent Advances in Radio Receivers* was published by Cambridge University Press. It covered advances made from 1939-49 with particular emphasis on the then new concept and measurement of noise factor, pulse reception, new kinds of receivers etc.

Living until retirement at an excellent site in Petersfield, Hampshire, he was able to pursue his life-long interest in HF antennas and propagation, contributing articles to British and American journals on new forms of multi-band quads and low-angle propagation, and taking over responsibility for the 'HF Antennas' chapter of the RSGB's *Radio Communication Handbook*. He was the first British amateur to draw attention to and make use of the work of Dr H J Albrecht, VK3AHH / DL3EC, on chordal hop propagation.

In the early 1980s, already in his 70s, Les wrote *HF Antennas for all Locations*, which will surely ensure that his expertise will live on. The book is still in print, after more than 20 years.

His son, David, said: "As well as being passionately involved in amateur radio until a few years ago he was a keen traveller. The two meshed well, and reading diaries of trips to distant countries such as Australia, New Zealand and Japan it is striking how often those radio contacts turned into meetings from which many friendships developed."

QSL Communications open day

The QSL Communications Open Day is to be held on Sunday 16 May. Everyone is welcome. Representatives from Yaesu, Kenwood and Icom will be attending with their latest equipment. Will the new Icom HF transceiver be at the open day? We don't know yet - go along to find out! David Wilkins of Kenwood (UK) will be demonstrating the new TS-480 transceiver and will be happy to answer your questions. Go along to QSL Communications, Unit 6, Worle Industrial Centre, Coker Road, Worle, Weston-Super-Mare BS22 6BX; tel: 01934 512757.

Back to School for Mike Foale

On 17 March pupils at the School of Back on the Isle of Lewis had a contact with astronaut Michael Foale, KB5UAC, on board the Inter-national Space Station. The contact was made by amateur radio through the ARISS programme - but not direct to the Outer Hebrides. The school was out of range for a direct contact with the ISS at the time, so Nancy Rocheleau, WH6PN, in Hawaii contacted the Space Station and a teleconference call provided two-way audio for the pupils at the school.

The School of Back was chosen by Mike Foale himself following a visit he made there last summer. The school has around 190 pupils and is committed to teaching in the Gaelic language. Responding to one of the questions, Mike said he enjoys simply looking back at planet Earth from outer space. He said that it was possible to see features of Scotland, including Harris and Lewis, when the ISS passes over the UK.

The 10-minute contact was made with the assistance of GB4FUN manager Carlos Eavis, G0AKI, and IARU Region 1 Satellite Co-coordinator Graham Shirville, G3VZV. The contact provided some good publicity for amateur radio in the *Scottish Daily Mail*, the *Daily Record* and *The Highlands and Islands Press and Journal*.

RAIBC 50 years old

RAIBC, the Radio Amateur Invalid and Blind Club, is 50 years old in May (see the article by Quentin Cruse, GW3BV, on page 28). The club will be holding a celebration at the Drayton Manor rally on 16 May, which will include special event station GB50INC. Committee member Madge, G0JBK, will draw the raffle, with prizes from Waters & Stanton and Kenwood (UK), at around 2.30pm. RAIBC thanks the Midland Amateur Radio Society and especially Norman Gutteridge, G8BHE, for making this possible.

NEWS BRIEFS

- Norway and San Marino, T7, have authorised amateur radio operation in the 7100 - 7200kHz band on a Secondary basis. T7 amateurs gained the band on 25 February, while Norwegian amateurs can use 7100 - 7200kHz with a maximum power of 100W from 1 April. Croatia was the first European country to expand its 40m band in December 2003.
- Last month we reported that Geoffrey Wiggins had been installed as the Worshipful Master of Radio Fraternity Lodge No 8040. His callsign was given incorrectly: it should read G4XMJ.
- The Norfolk repeater GB3NB on 145.625MHz (94.8Hz CTCSS) has received an antenna upgrade. Reception reports would be helpful and should be sent to Mark, G0LGJ, by AX25: G0LGJ@GB7LDI or via the GB3NB website www.gb3nb.org.uk
- Dutch national society VERON (www.veron.nl) club station PI4AA will celebrate 75 years of on-air activity by using the special call PI75AA from 1 - 16 May.
- An amateur radio fair was held on 8 March at the University of Baghdad, to introduce amateur radio to the staff of the university.
- 'Power Line Telecommunications: Bane or Bonanza?' is a lecture at the Dorset and South Wiltshire Branch of the IEE at Salisbury College on 11 May at 6.30pm (tea at 600). Members of the public are welcome (free admission, no booking required). Free refreshments.
- There is a new Scottish amateur radio web portal at www.scotham.net developed by Jurij Phunkner, MM0DFV.
- The American manufacturer SGC Inc has announced the passing of its founder and president, Pierre Goral, on 12 February. Pierre led an adventurous life, working in the jungles of Brazil as a young engineer, and travelling the world to represent SGC, which he founded in 1971. In his spare time, he was an artist, photographer, skier and snowboarder.

Amateur radio boot sale comes of age

The Dunstable Downs Radio Club is holding its 21st amateur radio car boot sale (www.ddrcbootsale.org) at Stockwood Park, Luton, just off junction 10 of the M1, on 9 May. This event has run continuously for 21 years and has grown in popularity with visitors travelling from Ireland, Germany and Holland. Last year over 250 pitches were taken, making this the biggest event of its kind in the UK.

Proceeds from the event support the local St John Ambulance, Sea Cadets, and the operation and development of the club's 23 and 13cm TV repeaters, GB3TV and GB3TZ, plus GB3LT on UHF.

High honour for Huddersfield ham

Ian Halliwell, M0ALT, has received the Lord Lieutenant Certificate for exceptional service to the Air Training Corps. The award ranks immediately below the MBE. Ian joined the Huddersfield ATC 46 years ago, but such was his commitment that he stayed on as an adult instructor. He became an Adult Warrant Officer in 1984 and is involved in all the cadet activities at the Thongbridge Cadet Centre, particularly radio instruction and supporting the Duke of Edinburgh Award scheme. He received the honour from the Lord Lieutenant, John Lyles, at Pudsey.

Lord Lieutenant John Lyles presents the Certificate to Ian Halliwell, M0ALT.

ATC takes to Foundation licence

The Foundation licence has significantly raised the profile of amateur radio among the Air Training Corps. Although the ATC has its own qualifications which allows cadets to operate on certain spot frequencies on HF and VHF / UHF during ATC duties, some cadets find this too restrictive and not enough of a challenge. The solution at 497 Squadron in Daventry was to make the Squadron an amateur radio examination centre. Its most recent course was held at neighbouring 495 Squadron in Sutton Coldfield for cadets and staff from 497, 495 and 8F (Coventry) Squadrons and ended with 10 new licensees, including Flt Lt Jenkins RAF Volunteer Reserves (Training Branch), the Commanding Officer of 8F Squadron.

David Pink, M0ZTT, Pilot Officer RAF VT (T), says "Some of the cadets have now been on the air so much in the last couple of months that they sound as experienced as those of us who have been on for years. If you really enjoy amateur radio and you want new operators on the air, go to your local ATC Squadron and volunteer to teach it. It's more fun than you think!"

The Wing training team and students.

At just 12 years old, Charlotte Powers, student at Brooke Weston CTC, Corby, took the last old style RAE in December 2003. As part of a small group, she worked through the G3JIX distance learning course, supported by her father. Now licensed as M0DOI, she can use her dad's equipment to communicate around the world.

Short Wave Mag listening contest

The *Short Wave Magazine* listening contest takes place on Monday 3 May. G3SWM, manned by editor Kevin, G7TZC / M3SWM, columnist Clive, G4SLU, and volunteers from the Dorset Police Radio Club, will operate from the Isle of Portland between 0700 and 1600 mainly around 7070kHz. The object is for listeners to log as many contacts made with G3SWM as possible, including the report given to G3SWM and the serial number allocated by G3SWM. G3SWM will listen exclusively for Foundation licensees for 10 minutes on every hour. The full rules can be found in the March issue of *Short Wave Magazine* and at www.discovery-com.org/swm/contest

National Mills Weekend

The Denby Dale and District Amateur Radio Society (www.qsl.net/g4cdd) is co-ordinating the amateur radio side of the Mills Weekend (www.spab.org.uk/mills) on 9 / 10 May. This year over 400 wind/watermills are expected to be open to the public. This is your opportunity to put on a special event station at a mill near your home. A Mills Award is available for £3, with proceeds going to Society for the Protection of Ancient Buildings (SPAB) to help with mill restoration. 2003's donation was £125.

Club and Regional News

1 Scotland West & Western Isles

AYR ARG
1, 2, Foundation Course.
12, Island hopping, Alex Johnsen.
28, AGM. John, MM1JAS, 01292 445599.

PAISLEY (YMCA) ARC
12, Operating mobile.
26, AGM. Jim, GM3UWX.

2 Scotland East & the Highlands

ABERDEEN ARS
7, Junk sale.
28, Morse class, on air. Ellis, GM4JLZ, 01224 580594.

COCKENZIE & PORT SETON ARC
14, 1st 144MHz DF Hunt. Bob, GM4UYZ, 01875 811723.

LOTHIANS RS
10, Propagation Phenomenology, Brian, GM4DTH.
24, DF hunt, Peter, GM4DTH. Toby, MM0TSS, 07739 742367.

3 North West

CENTRAL LANCS ARC
3, Logie Baird and early TV, G4LND: Priory Club, Leyland. Bill, G3NQX, 01772 703957.

SOUTH MANCHESTER R & CC
7, Indoor DF.
14, Uses of plumbing in amateur radio, Chris, G8APB.
21, AGM, Foundation licence.
28, Mini lecture. Ed, 0161 969 1964.

STOCKPORT RS
4, HF for former Class Bs, Keith, G3RTU.
18, Datamodes with the PC. David, M1ANT, 0161 456 7832.

THORNTON CLEVELEYS ARS
10, On air.
17, Auction.
24, Talk by Colin, G0EPY. Jack, G4BFH, jack.duddington@btinternet.com

4 North East

GOOLE R&ES
12, On air, Barmby Tidal Barrage.
19, Social evening, *Black Swan*, Asselby.
26, Bill Richards DF Trophy. Richard, G0GLZ, 01405 769894.

GREAT LUMLEY AR & ES
5, 12, Intermediate course, on air.
19, PMR & VHF mobile technology, Richard Marsden, Senior communications specialist, YEDL.
26, On air. Nancy, 0191 447 0036, 07990 760920, Nancybone2001@yahoo.co.uk

GRIMSBY ARS
6, Table top sale.
20, Weather satellites, Dave, G0IIQ. George, G4EBK, 01472 887720.

HALIFAX & DARS
18, Broadcast radio, G4YDI. Tom, M0TKA, 01484 715079.

KEIGHLEY ARS
27, Talk by Paul, G0SKB. Cath, G0OSA, 01535 656155.

NORTH WAKEFIELD RC
6, 13, On air.
20, IOTA debrief, QSL card evening.
27, BBQ, John G4RCG. www.g4nok.org

SHEFFIELD ARC
1, Guides International Weekend, Common Lane, GB2SG.
3, Closed.
10, Yorkshire Jamboree introduction, Stewart, G6VUE.
17, 'Take your PIC', Graham, G3YJR.
24, HF radio.
28, Land Rover Rally, Carsington, Derbyshire, GB4WD.
31, Closed. Nick, G4FAL, 0114 255 2893.

WAKEFIELD & DRS
4, Fish 'n' chips supper, *Wetherby Whaler*.
11, Contest operating, John, G4RCG.
11, Quiz.
18, On air.
25, DF aerial practice. Rick, G4BLT, 01924 255 515, www.wdrs.org.uk

YORK ARS
29, 30, Special event station. Keith, G3WVO.

5 West Midlands

BROMSGROVE & DARC
7, AGM.
14, Packet demo.
21, Surplus equipment sale.
28, TBA. M0BQE, 01905 776869.

COVENTRY ARS
7, On air, tuition, CW practice.
14, Cheese and wine social.
21, Portable evening including contest, Balsall Common. John, G8SEQ, 024 7627 3190, johng8seq@ntlworld.com

GLOUCESTER AR & ES
3, /P from escarpment site.
10, 17, On air HF, workshop.
24, Valve audio projects.
31, /P from escarpment site. Tony, 01452 618 930 office hours.

KIDDERMINSTER & DARS
4, Contests, Lee, G0MTN, RSGB HF Contests Committee. Tony, G1OZB, 01299 400172.

MAXPAK
5, Midlands radio amateurs history, Bill, G3CAQ. Miles, G4GSB, 01952 585447, G4GSB@GB7MAX or milesclifford@aol.com

MID-WARWICKSHIRE ARS
11, ARDF forum, Rod, G0FBY.
25, 'The Laxey Wheel and Joseph Lucas', Arthur Astrop. Bernard, M1AUK, 01926 420913.

ST LEONARD'S ARS
6, Shack night.
13, Club scopes demonstration, Keith, G0FXS.
20, Shack night.
27, Earth potential, John, G8HWI. Derek, G0EYX, 01785 604904.

STRATFORD UPON AVON DRS
10, Test your 'foxhunt' kit.
24, Eddystone radio, G0EYO. Terry, G3MXH, 01789 294387.

TELFORD & DRS
5, On air, open evening. Mike, G3JKX, 01952 299677.

6 North Wales

CONWY VALLEY ARC
5, 'Hidden Llandudno', John, GW8WFS. Wynne, GW6PMC, 01745 855068.

DRAGON ARC
3, RSGB video.
17, Sale of surplus equipment. Les Hayward, MW0AQZ, 01407 760986.

WREXHAM & DARS
4, VHF operating, contest committee.
18, Junk sale. Mark, MW3MDH, www.qsl.net/wars

7 South Wales

No club details received.

8 Northern Ireland

BANGOR & DARS
5, Digital modes, Harry, GI4JTF. Mike, GI4XSF, 028 4277 2383.

9 London & Thames Valley

BROMLEY & DARS
1, 5, 12, 19, 26, Intermediate course. Alan, G0TLK, 020 87770420, www.bdars.org

CHESHAM & DISTRICT ARS
5, Boot sale planning.
9, Dunstable boot sale.
12, Radio construction, Stewart, G3RXQ.
19, On air.
26, VHF Field Day planning. Terry, G0VFW, terence.thirlwell@eds.com

COULSDON ATS
10, Surplus equipment sale. Steve, G7SYO, 01737 354271.

CRAY VALLEY RS
6, Project evening, Chris, G0FDZ. Bob, BRS32525, 020 8265 7735 after 8pm & weekends.

LOUGHTON & EPPING FOREST ARS
14, HF data, on air.
23, Club field day.
28, QSL cards. Marc, G0TOC, 0208 502 1645.

RS OF HARROW
2, GB2DHH on air.
3, 'May Day at the Manor' medieval theme.
6, Informal, *The Moon and Sixpence*, Hatch End.
9, Dunstable Downs boot sale.
21, Informal.
29 - 31,3-day visit to F6KRK. Jim, G0AOT, 01895 476 933 or 020 7278 6421.

SHEFFORD & DARS
6, The Elecraft K2, Stewart Baker.
13, What radio specifications really mean, John Benton.
20, Waters & Stanton, Mark Francis.
27, Pedestrian DF hunt. David, G8UOD, 01234 742757.

SILVERTHORN RC
7, Junk sale.
14, 'Foxhunt' demonstration.
21, Informal.
28, On air. Les, G0CIB, 07980 275081.

SOUTHGATE ARC
13, Receiver design, Dave Sharpe, ATC. Mike, M0ASA, 020 8366 0698.

SURREY RCC
10, Constructing evening. Ray, G4FFY, 020 8644 7589.

WIMBLEDON & DARS
14, Surplus equipment sale.
28, Members PicATUne building. Jim, M0CON, 020 8874 7456.

10 South & South East

ANDOVER RAC
4, Make and mend.
18, 'Secret Wireless War' video, G4NWJ. Terry, G8ALR, 01980 629346.

FAREHAM & DARS
11, How does it work?: the frequency counter, Dave, G8IOJ.
18, Basic amateur satellite communications, Mick, G4ITF.
25, Quiz, Pete, G8TXK. Steve, G7HEP, 01329 663673.

FARNBOROUGH & DRS
12, Radio navigation, Bernd, M0COH.
26, Kit building, Alan, M5AMN. Norman, G0VYR, 01483 835320.

HARWELL ARS
7, Lunchtime shack activity.
11, Capacitors, Colin, G3NNG.
14, 21, Lunchtime shack activity.
25, Shack activity evening.
28, Lunchtime shack activity. Angus, G0UGO, hars.g3pia@tiscali.co.uk

HASTINGS E & RC
19, Robertsbridge Air Museum. R C Gornall, G7DME, 01424 444466.

HORNDEAN & DARC
4, Social evening.
25, Club members' 10-min talks. Stuart, G0FYX, 023 9247 2846.

HORSHAM ARC
6, Police communications. David, G4JHI, 01403 252221.

ITCHEN VALLEY RC
14, Bhutan slide show.
28, RSGB and new licensing structure. Sheila, G0VNI, 023 8081 3827, sheila.williams@ivarc.org.uk
MID-SUSSEX ARS
7, History of timekeeping, Bob Monro.
14, Chinese meal.
21, Table top sale.
28, Construction contest. Alan, G8YKV, 01273 844511.
RIDGEWAY REPEATER GROUP
12, AGM, Nationwide House, Pipers Way. Rob, G4XUT, QTHR.
SOUTHDOWN ARS
10, 'Bring your own thing', items from club members. John, G3DQY, 01424 424319.
SWINDON & DARC
13, 144MHz contest preparation.
20, DF contest, social evening. Mike, M5CBS, 01793 826465.
TROWBRIDGE & DARC
5, Lightning and the radio amateur, Hugh, G7KET. Ian, G0GRI, 01225 864698 evenings / weekends.
WORTHING & DARC
5, Salvington Mill, talk.
9, Mills on air, Salvington Mill.
12, Early gramophones.
19, Setting up your station.
26, Planning for Buckingham Park SES.
31, Buckingham Park SES. Roy, G4GPX, 01903 753893.

11 South West & Channel Islands

CORNISH RAC
3, Dartmoor Rally (new venue) details Ron 01822 852 586.
10, Computer section. John, G4LJY, 01872 863849.
SOUTH BRISTOL ARC
5, Computer & software clinic.
12, HF workshop, contest planning.
19, Annual maintenance club aerials.
26, On air. Len, G4RZY, 01275 834282.
SOUTH DORSET RS
11, APRS / PSK31, Martin Poynter-Smith. Carol, 2E1RBH, 01305 820400.
WEST SOMERSET ARC
4, Talk by Oli, G3FNY. Jean, G0SZO, 01984 633060.
WESTON-SUPER-MARE ARS
10, Guest speaker. D Welch, G0ATD, QTHR.

12 East & East Anglia

BRAINTREE & DARS
3, Mills planning.
17, AGM. John, M5AJB, 01787 460947.
CHELMSFORD ARS
2, BBC World Service, Simon Gosby, Project Manager, BBC Transmission Services. George, G3UTC, 01277 622707, george3utc@btopenworld.com
FELIXSTOWE & DARS
9, National Mills Day, GB2WTM.
17, ESWR planning evening. Paul, G4YQC, paul.whiting@bt.com
HARWICH ARIG
12, Pedestrian Mobile DX, Tom, G0SBW. Tony, G4EYE, 01255 886065.
LOWESTOFT & D & PYE ARC
23, Vintage military radio, Flixton Aviation Museum. David, G3OEP, 01493 662323.
NORFOLK ARC
5, Fault finding in radio circuits, Colin, G7UVY.
12, Club team challenge briefing.
19, Team challenge: setting up field HF station.
26, Norfolk Repeater Group AGM.
13, Informal. Jack, G3NJQ, 01603 747637.

13 East Midlands

EAGLE RADIO GROUP
11, HF aerials and tuning units, Charles, G0CBM. Terry, G0SWS, 01507 478590 or 07979 733640.
LINCOLN SW CLUB
1, 8, Foundation course. Baz Matthews, 01636 612440, m3dmv@btopenworld.com
LOUGHBOROUGH & DARC
4, 1st DF of 2004, easy starter 2m.
11, On air.
18, Vintage radio & equipment, bring something along.
25, 2nd DF of 2004, 160m. Chris, G1ETZ, 01509 504319.
MELTON MOWBRAY ARS
21, Construction contest, G6KQP trophy. Phil, G4LWB, Phil@croxtonkerr.fsnet.co.uk
RAF WADDINGTON ARC
13, *Enola Gay,* Mike, M1MSF. Martin, M3MDF, martin@farmer4.freeserve.co.uk

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.

GB2OWL FOR 'THINKING DAY ON THE AIR'

The Oldham Amateur Radio Society set up an extensive station at Royton ATC for the Guides and Brownies 'Thinking Day on the Air' (TDOTA) event. GB2OWL was the callsign for two HF stations, one on 20, 15 and 10m and the other, on 80 and 40m, contacted other TDOTA stations across the UK. A 2m FM station using an omni-directional antenna was run by 14-year old Elizabeth, M0LIS, who had just received her Advanced licence. There was also a separate HF receiving station so the Guides and Brownies could get experience of tuning in stations. An activity that generated a lot of interest was sending Morse using an oscillator. One of the club's younger members, 12-year old SWL Rosanna, supervised those sending and made sure they got their dits and dahs right. Around 70 Brownies and Guides attended the event and all gained their communications badges as a result.

14-year old Elizabeth, M0LIS, operating GB2OWL on VHF.

GUIDING THE WAY TO AMATEUR RADIO

On 21 February, Mexborough and District ARS operated special event station GB0SMG for the St Margaret's Brownies and Guides at its HQ in Mexborough. The girls and their leaders took to amateur radio like ducks to water. Chris Colclough, G1VDP, says: "I would like to thank all the stations who worked / called us, as it would not have been possible if they hadn't replied to CQ calls or broke in on other contacts. Also a big thank you goes to Tom Sheppard, G0KSK, for organising the event with the St Margaret's Brownies, Swinton, South Yorkshire."

One of the Brownies passes a Greetings Message on 2m while another waits her turn.

TWO TOWERS FOR HOBBITS' HOBBY?

Wythall Radio Club will be activating GB2ME ('Middle Earth'), at the J R R Tolkien Weekend on 15 / 16 May. The event is held every year at Sarehole Mill near Birmingham, where Tolkien spent his childhood and where he formulated many of the ideas for the *Hobbit* and *Lord of the Rings*. In 2003 the club erected two 100ft trailer towers for the station, in honour of *The Two Towers* film. This year ▶

The Two Towers at GB2ME.

the club will again be active on all HF bands, 2m and 70cm. Last year over 5000 visitors attended the event.

NEW FOUNDATION LICENSEES AT OTLEY...

On 17 March five candidates passed the Foundation licence exam at Otley ARS in W Yorkshire. Special mention goes to Lewis Larkins who attained a 100% pass mark. This was the fourth course run by the Otley club and attracted students from Bradford, Bingley, Harrogate and Skipton as well as Otley. Further information on future courses can be obtained from Rick Leach, M1RAL, at m1ral@m1ral.co.uk

... AND CHARLIE DELTA ARC

The Charlie Delta ARC's (CDARC - www.cqdx.co.uk) first Foundation course was a big success with all six candidates passing with flying colours. The members of CDARC thank the tutor Barry, G0OJR, for his work teaching the course, and also invigilators Dave, M0DCM, and Geoffrey, G7NZM. The club has started its first Intermediate course, run by Dave, and is hoping for similar success. Further information from m0dcm@blueyonder.co.uk

TYNEMOUTH YOUNG MEMBER

Alistair McGann, M3HSI, from Whitley Bay is, at 11 years of age, one of the youngest members of the Tynemouth ARC. He gained his licence after instruction by one of the club's oldest members, John Knowles, G2FXS.

PLYMOUTH RADIO CLUB IS REFORMED

The recently-reformed Plymouth Radio Club held its inaugural meeting on 17 February at the Welbeck Manor Hotel at Sparkwell Golf Club near Plympton, Devon. New chairman, Chris Wingate, M5CJW, welcomed Barry Scarisbrick, G4ACK, the RSGB Regional Manager for Devon, and Pam Helliwell, G7SME, his Deputy, and more than 30 others, many of whom were members of the original club. Meetings now take place on the first and third Tuesdays of the month: new members welcome. Events manager Den Perryman, G7NMA, is on the lookout for interesting ideas for meetings: please contact club secretary Frank Russell, G7LUL, tel: 01752 263222 or e-mail: frank@foxonezero.fsnet.co.uk

Members of the newly-reformed Plymouth Radio Club.

100% SUCCESS AT NORFOLK ...

Five more candidates from Norfolk Amateur Radio Club (NARC - www.norfolkamateurradio.org) took their Intermediate exam on the evening of 24 February and all passed. When added to the seven who took the exam in January, it takes the total number of new NARC Intermediate licensees to 12 already this year. The new Intermediate courses, principally instructed by Colin, G7UVY, and Rex, G0CLR, were designed to build on the Foundation courses run last year by Mark, G0TMT; Alex, M0UKR; Rex and Colin.

All the new 2E0s in the county mean there is interest in taking 'the last step', so NARC is planning its first Advanced course later in the year. There will also continue to be Foundation courses.

Five successful Intermediate candidates with invigilators after being presented with their pass certificates at the Rosebery Hall exam centre on 24 February.

...AND CHELMSFORD

In November seven candidates started the second Intermediate course run by the Chelmsford Amateur Radio Society (www.g0mwt.org.uk). In December two of them sat the final City & Guilds RAE, they both passed and now have Advanced licences. The remaining five sat the Intermediate exam on 23 February and they also all passed. For further information on all amateur radio training courses in Chelmsford, contact Clive Ward, M0SIX, tel: 01245-224577; mobile: 07860-418835; or e-mail: training@g0mwt.org.uk

SEAREG BEAVERS AWAY

George Mills, G0SSC, Treasurer, and John Williams, G8LGC, Secretary, of SEAREG at the Finningley Beaver Group.

The Special Events Amateur Radio Educational Group (SEAREG) located in S Yorkshire recently gave a talk and radio demonstration to the Finningley Beaver Group at Doncaster. Of the 20 children attending, 12 spoke on the air to Brian Spittlehouse, G7IMD, the Chairman of SEAREG.

140 TARS MEMBERS

The AGM of the Torbay ARS was held on 20 February. A review of the year's activities was given to the members present which concluded on a high point: TARS membership had increased to 140 over the last year following an influx of new members, thanks to the success of the club's Foundation courses. A new committee was elected: the chairman is Larry, M1ARW, who takes over from Dave, G6FSP, who has been the chairman for the last few years. The new secretary is Mike, G1FON, who takes over from Walt, G3HTX, while the treasurer is Tony, M0THJ, who takes over from Ken, M0APB, who is retiring to Ireland. All are contactable by e-mail by using their callsign @tars.org.uk. The committee hopes to bring a packed program of events and activities for 2004/5.

SCARBOROUGH SPECIAL EVENTS GROUP

SSEG, the Scarborough Special Events Group, starts its 2004 programme on 1 / 2 May with GB4RFA. In 2002 the group commemorated the decommissioning of Scarborough's adopted warship *HMS Fearless*. Her replacement will be the Royal Fleet Auxiliary vessel *Wave Ruler*, one of the most modern ships in the fleet, with a displacement of some 31,500 tonnes. The QSL will be a full colour photograph of the ship.

General Manager and Financial Controller raise funds for RCF ♦ RCF awards its first grant

RCF up and running

At 12 noon on Sunday 7 March a sunny but windswept Silverstone race track saw Society General Manager Peter Kirby, G0TWW, and Financial Controller Marilyn Slade line up to run the adidas Flora London Half-Marathon on behalf of the Radio Communications Foundation.

Around 8000 runners took part in the race, which took place in less than ideal conditions. Completing the course in just under two and a half hours, Peter and Marilyn raised £300 for the RCF. Marilyn now takes a well-deserved rest while Peter goes on to run the full London Marathon on 18 April.

Entry into this year's race is a precursor to the 2005 Flora London Marathon where it is planned to field a team of at least 10 runners taking part to raise funds for the Radio Communications Foundation. ♦

RSGB General Manager Peter Kirby, G0TWW, and Financial Controller Marilyn Slade, with their cheque to the RCF for £300.

C'mon Peter - only three miles to go! Peter Kirby, G0TWW, at the 10-mile mark.

And they're off! The 8000 starters of the adidas Flora Half-Marathon

RCF awards its first grant

The Radio Communications Foundation (RCF) has awarded its first grant. The recipient is the Amberley Working Museum Amateur Radio Club, which operates and runs the permanent special event station GB2CPM at the museum site. The £1000 grant will be used to replace and upgrade the station's HF facility. The museum, which is on the outskirts of Amberley, West Sussex, is open from March to November, and annually attracts around 60,000 visitors. ♦

Peter Kirby, G0TWW, Secretary of the RCF, presenting the cheque to Anthony Leigh, Secretary of AWMARC.

Supporters of the Radio Communications Foundation

We asked members when renewing their membership to include a donation to help to continue to support the work of the Radio Communications Foundation. 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 RCF, c/o RSGB HQ.

RCF 'Big Hitters'

A Howell-Jones M0THJ

H Walker	2E0KOI	J P Bennett	G0NLF	R J Rogers	G3LIA	N Mackinnon	GW3PPQ	J Dixon	M3LKD
E A Young	2E1FRY	N B Irwin	G0SSO	R C Rand	G3MRU	N Cole	GW7VJK	P Nixon	M3VXZ
J von Geisau	DH4JG	P D Hart	G0THD	J T Saunders	G3OLU	H Nasvik	LB9RE	R Dadge	M3WRM
G Barak	EA7ESM	P Vukasinovic	G0UPA	R Farrance	G3TRH	P Poore	M0BSJ	R Gaisford	MM0FWG
N J Sherwood	G0CMK	W E Stainforth	G0VHI	J Wresdell (on behalf of late J Hargreaves, G5VO)	G3XYF	I T W Gibbs	M0ITW	M McKay	MM0MMK
A P Jay	G0JAY	H Asmussen	G0WAZ			P I Badley	M0PIB	D W Wishart	MM5DWW
Gp Capt B Bate	G0JOA	K D Hatcher	G0WCW	G R M Haynes	G4FLY	R R Reeves	M0RRR	R Brys	RS172165
I Walder-Davis	G0KCA	J Hall	G3FJL	B J Newman	G4TGN	Trewellard		A W T Salmon	RS180146
R A Brown	G0NGG	J E Saunders	G3KAZ	N I Bazley	G6AFB	RA Group	M0TRG	E Shakespeare	RS185408
				I Poyser	G6NWN	D N Pope	M1BRU	B Van-Nuil	RS94334
				P H Dickens	G6PHH	M Poulter	M1CLI	A Simms	RS96658
				B J H Fox	G7PVG	D J Wilkinson	M1CLK	T A Kazancioglu	TA1CAK
				B K Sankey	G7RWY	A F Hunt	M1FIN	Dr M D Brown	VA3GRL
				G Tiller	G7UHE	R G Warren	M1RGW	M E Bazley	VK6HD
				K Pascoe	G8ZQM	C Matthews	M3CRD	B Harper	VK6JW
				J S Wardem	GM0JZV	K G Henney	M3DMQ		
				T Callaway	GM0WJY	A S Hodson	M3HOD		
				N Crawford	GM4OEW				
				I G Findlay	GM7VYR				
				C D Evans	GW0IRP				

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.

National Science Week -

We have reports from Portland, Loughton & Epping Forest, Caithness, the West Midlands, York, Rainhill and Telford on the special event stations and other demonstrations of amateur radio that were put on for National Science Week

PORTLAND

The Portland Amateur Radio Club (www.portland-amateur-radio-club.org.uk) set up a demonstration station in the visitor's centre at Portland Bill Lighthouse on Sunday 14 March, activating their permanent special event callsign, GB2PBL.

Despite a fine start to the weekend, the weather deteriorated by Sunday, which proved to be one of stormiest days in recent months. High winds whipping around the lighthouse tower and frequent rain made setting up even a modest HF wire antenna a challenge to say the least. The main station in the visitor's centre included HF and VHF radios, with modern modes such as PSK31 and *UI-VIEW* being on show (indeed, PSK31 was the most popular mode of operation during the event). Whilst not strictly amateur radio, there was also a demonstration of weather satellite reception; appropriate, given the weather conditions on the day.

There was also a second HF / VHF station set up at the top of the lighthouse tower, which was on show to those energetic visitors who climbed the 150 steps from ground level. The local 2m GB2RS news broadcast was read from here in the morning, and some HF SSB contacts made during the day.

Due to the very inclement weather, visitor number were lower than usual, but the station attracted interest from the public, and a good day was had by all the PARC volunteers!

LOUGHTON & EPPING FOREST

Members of the Loughton & Epping Forest ARS set up special event station GB2EFC at the Loughton college for three days during Science Week. Stations in Austria, Latvia, Finland, Russia, the Czech Republic and Ireland were contacted - as well as some in the UK. Students at the college were given the opportunity to find out about amateur radio and how to gain a licence. One student who did so during Science Week last year, Selim Alpuvan, was so impressed that he joined the club and went on to take out a Foundation licence. He returned this year as one of the operators of GB2EFC. The story of the special event station was reported, with a large photo, in the *Loughton, Buckhurst Hill and Chigwell Guardian* on 25 March.

CAITHNESS

The Secretary of the Caithness Amateur Radio Society (http://cars.webhop.biz) wrote to describe the part that the society played in Science Week at Wick and Thurso High Schools. The Caithness Amateur Radio Society supported Science Week by setting up a demonstration station in Wick High School on Sunday 14 March and in Thurso High School on Wednesday 17 March. Radio contacts were made with stations throughout the UK and 10 other countries, from San Marino to Finland, and the hobby explained to visitors. The Caithness Amateur Radio Society organises training for anyone interested in taking up the hobby.

One station contacted, G3AJX from Winchester, knew Caithness well, having been introduced to radio at the Bower Radio Station between 1943 and 1946!

Handouts were provided by the RSGB, who also donated a pack of radio books to each of the schools involved.

The Caithness Amateur Radio Society was re-started just over a year ago and is well supported. Members meet monthly at the Nethercliffe Hotel in Wick, generally on the first Wednesday of the month at 7.30 pm. New members welcomed!

WEST MIDLANDS

On Monday 15 March, members of the Charlie Delta ARC were at St Thomas More School, Willenhall. Everything went smoothly, and a handful of the pupils from each class spoke to amateurs, mainly in the UK, despite poor band conditions. Dave, M0DCM, the Foundation and Intermediate course instructor at the Charlie Delta ARC, was contacted by a number of the pupils who wanted more information about the Foundation course. The local press reported on the school visit in the paper two days later.

On Tuesday 16 March the group visited the Bentley West Primary School, Walsall. This event went even better than the previous day! The children, aged between 7 and 11, all thoroughly enjoyed the day. Demonstrations included two plastic cups with a piece of string between, and three PMR446 446MHz handhelds, which "went down a treat", with each student taking it in turn to speak to each other.

PORTLAND

You had to be keen to brave the elements for the Portland Science Week exhibition!

One of the young visitors at the GB2PBL station.

Left Mike, G3JME, right a visitor having a go

YORK

Children from the Bentley West Primary School, Walsall, listen to an amateur radio contact for the first time.

WEST MIDLANDS

12 - 21 March

CAITHNESS

Laurie Dickenson, MM3FMY (right), presents a set of books to William Bruce, Deputy Rector of Thurso High School.

Left Ian, G4EMA, right Chris, G4ESU

TELFORD

Building the crystal sets at the Ladygrove Primary School, Telford.

After lunch, children from Years 4 and 5 were given the chance to pass a few greetings messages over the radio, and this time conditions on HF were much better, and messages were sent to New York and Canada.

YORK

Keith Cass, G3WVO, the Hon Sec of the York ARS, sent in a report on GB2YFD, which was active from a public library in York. Keith writes, "It worked well due to the tolerance of the wonderful staff. It cannot have been easy for them, even though we did try to keep the volume as low as possible. The bands were in poor shape but we managed to make lots of nice contacts. We were visited by BBC Radio York and did a 12-minute live insert at about 1440 on 11 March. Katie, the interviewer, did a very good job. As a result, lots of local people visited us, which must have lessened the number of log entries but is no doubt better for the hobby. An almost non-stop supply of tea was provided: what lovely people!"

RAINHILL

Tony, G6FIT, along with Arthur, G7BQY; Rod, GW7TKZ; Mike, G1CZU; Patrick, GW4WSU; Graham, GW0HUS and Ron, M3RJF, organised a special event station Tony's daughter's school, Oakdene Primary, Rainhill, on Friday 19 March. The callsign used was GB2RHT, standing for 'RainHill Trials', which commemorated the world-famous locomotive steam trials held there in 1829, and which were won by George Stephenson's *Rocket*.

The response from the 70+ children in Years 5 and 6 was very impressive. Tony reports that the RSGB DVD presentation really captivated the children's imagination and on both sessions that he ran he had to field many interesting questions.

There were three demonstrations: an HF station using a G5RV antenna, a VHF / UHF station for local contacts, and a Morse code set-up so that the children could practice sending using a proper key.

Although there was only a limited time to run the event - three hours in the afternoon - due to school activities, there was a tremendous response not only from the children, but also from the teachers who participated. Several children were given the opportunity to send Greetings Messages over the air, and Tony reports that "not many were microphone shy!"

Tony commented: "I think there will be quite a lot of interest in pursuing the Foundation licence course. The lesson that I learnt was that we can not do enough to encourage the youngsters of today to join the hobby and more importantly get them interested in a career which utilises modern technology such as aerospace, communications and, dare I say it, engineering."

TELFORD

As part of the Science Week activities, members of the Telford & District ARS were invited to Ladygrove Primary School, which is the nearest school to the club HQ in Telford, Shropshire. Club members wanted to do something practical, and with the support of the headteacher, Peter Sanderson, they settled on making basic crystal sets with Year 4 children. It is a big class, with 40 children in it - and all were present! As there was only one afternoon available in the children's busy timetable to do the construction as part of their science and Design & Technology curriculum, it was decided that the receivers would have to be part made before the day. Club members thought that the youngsters would prefer to each have their own set to take home, so it was with some trepidation that TDARS members decided to provide enough kits for every single child to build his / her own set. Thus, 40 kits were made ready - using water pipe coil formers, hot glue and drawing pins to fix the parts to a base-board. A prototype worked after quite a bit of fiddling and it tuned the higher end of the medium wave.

It was a bright, sunny afternoon on 16 March when three club members entered the classroom and got stuck in. The youngsters were incredibly enthusiastic, especially when they realised they would each be able to take their own radio home at the end of the afternoon. Some thumbs ached a bit pushing in drawing pins, but it all went to plan, and by 3.30pm, every set was complete and tested out. It was a very hectic two and a half hours.

We are claiming a record: has any group built more than 40 receivers in a single session? The TDARS members involved were Martyn, G3UKV; Richard, M1RKH; and Mike, G3JKX, and other club members helped by preparing the kits. ♦

WAB

The Worked All Britain (WAB) awards group ran a special award scheme called 'The Man Who Shrunk the World' for Science Week. The award, costing £3, is available by scoring 40 points on HF / VHF or 20 points on VHF only during the period 12 - 21 March 2004. One point could be claimed for each WAB area and each WAB book-holder worked. Working the club stations G4WAB or G7WAB count 5 points each.

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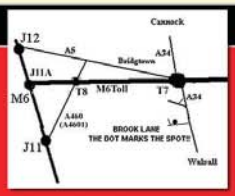

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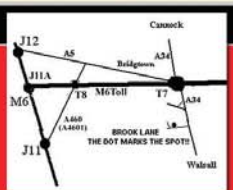

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By Steve Hartley, GOFUW

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Newcomers' news

Steve Hartley says, "Another busy month with lots of feedback, please keep it coming!"

Jamboree on the Air is always a good time for introducing youngsters to the hobby. The Chester Scout Group put on a special event station with the call GB2COS last October. They managed some coverage in the local press and the North Wales Newspapers have been kind enough to let us reproduce a super photograph of two of the Scouts enjoying amateur radio and some superb autumn sunshine.

SPACE STATION UPDATE

My report on the status of the International Space Station (ISS) in the March column stirred up a good bit of interest. First to respond was Jim Heck, G3WGM. As the Honorary Secretary of AMSAT-UK, Jim has been campaigning on to get Ofcom to allow some access to satellites for Foundation Licence holders. So he was very pleased to hear that some access to space communication had been agreed. However, Jim asked if this includes the use of either transponders or specifically the packet radio node onboard the ISS.

The short answer is "no". Only voice communication is allowed. The space station is defined as "a vehicle when manned" and it therefore follows that communications should be from amateur to amateur as it would be with any other mobile station. I am not aware of mobile packet mailboxes!

Ofcom is keeping a close eye on how this works out. If there is any abuse of the privilege, or if the wider amateur community can demonstrate that the arrangement is not working, then I am assured that it will be reviewed fairly swiftly.

A Adams, G1EGZ, reports that he has heard some M3s attempting to use the ISS downlink to speak to the space station, as well as a group using the 145.950MHz for local chatter. That would indicate that some people are unaware of the uplink / downlink split, and / or that they not reading their IARU band plans. Whilst the band plans are not legally binding they are internationally respected rules of 'fair play'. If you are intending to contact the ISS, please ensure you understand about split frequency working and if you are only working local stations please check the band plans for agreed simplex frequencies. Copies of the band plans and information on operating practices can be found in the *RSGB Yearbook*, which is available from the RSGB bookshop. Information about space communications is available form AMSAT-UK (see Webserch below).

DEALING WITH EMC

Dennis Carter, M3JWJ, sent in details of an encounter with Ofcom, the new regulatory body for amateur radio. Dennis had a problem with a neighbour complaining of television interference from his station. So he contacted Ofcom asking for advice on the matter.

From the initial "yes, we will help you" from the receptionist, to a manager who offered to send leaflet/books on the subject and the technician who offered practical guidance, he found them all helpful and positive.

Dennis told his neighbour that he had spoken to Ofcom and she allowed him to carry out a test whilst monitoring the transmission at the neighbour's home. Nothing was seen or heard and repeating the test again and again still showed nothing. It was agreed that Dennis was not the source of the problem but if the problem returned Dennis would come back and take another look.

Well done to Ofcom and Dennis. It just goes to show that dealing with neighbour's complaints in a friendly and efficient manner normally results in an amicable solution.

ADVANCED FEEDBACK

I have received reports indicating that some students are finding the new Advanced syllabus and textbook a little daunting. Having been heavily involved in the syllabus, and in writing a few of the chapters of the book, I would like to reassure those who might be put off by the look of it all. There are very few new topics in the syllabus, it is just more explicit than the old City & Guilds syllabus. The book has been written to cover the syllabus, but also includes some explanatory material that is not in the syllabus. Syllabus points are clearly highlighted with a 'mortarboard' symbol.

We started our Advanced classes in Bath in February and no-one has run away screaming yet! If you have any observations, either as a student or as a tutor, I would be glad to have them to share with others through the column.

PHOTO COURTESY OF NORTH WALES NEWSPAPERS.

Two young Scouts enjoying a day at GB2COS.

RSGB HF CONVENTION IDEAS

The RSGB HF Convention in October is always well attended, but not by very many newcomers. Last year but one the Society's Amateur Radio Development Committee demonstrated how to put a simple HF station on the air and that attracted some newly-licensed members. This year I have been asked to speak on 'HF Newcomers' and I am looking for input from readers on what would be of most interest to those new to HF. What would you like to see included?

One of my suggestions is to make all three levels of Radio Communications Examinations and assessments available at the Convention. From the start of the licence syllabus review process there has been pressure to make it possible to take all three qualifications 'in one sitting'. Well, this could be your chance. Full details will follow in due course but, if you want a target to aim for, the HF Convention could be the one for you! ♦

WEB SEARCH	
JOTA	www.radio-scouting.org.uk
AMSAT-UK	www.uk.amsat.org

By Joachim Braun, DH5JBR

E-mail: dh5jbr@t-online.de

An SSTV 'how-to'

Most radio amateurs or listeners will have heard those strange bleeping sounds around 3730, 14230, 21340 and 28680kHz. These are slow-scan television (SSTV) pictures. If you have a PC with a soundcard and Internet access in order to download the software, you are equipped to work SSTV. Joachim Braun, DH5JBR, gives some tips on getting started on this mode, and particularly how to prevent sending and receiving badly slanting pictures.

Most software is available free of charge for evaluation after downloading from the Internet. Some do not allow you to do certain things or display the fact that they are a demo version. This article is intended to show you the ropes if you wish to get started on this mode.

Some software can be very demanding on computer resources, leading to dropouts in transmission while you do other things such as when saving a file. Receiving stations would see a sudden side shift in the picture as a result. So if you play around with the packages, be sure that your PC has enough muscle to handle the program.

The connection to the soundcard also needs consideration. The transceiver should ideally have line level in- and outputs, as should the soundcard. It is also possible that the radio might pick up unwelcome noise from the PC. There are solutions for that available commercially that use opto-coupling and also allow for level adjustment both ways and control of the PTT over a serial port [see for example Chris Lorek's review of the RIGblaster Pro, *RadCom* April 2004 p42 - *Ed.*]

FIRST, LISTEN!

The first step is to listen, as you would using any new mode. The frequencies mentioned above always have some activity.

First, the signal level to the sound card should be adjusted. You can use the volume control in *Windows*, but if you have to pull the faders down too much, external attenuation is called for.

The software should be installed and set up to work with the soundcard. Some can be used with other interfaces, too. With proper level adjustment you will see something on the screen when you receive the distinctively pulsating SSTV signal.

Most software packages have a mode auto-detect feature. Talking of modes, there is a great variety of them, but only two are commonly used. These are 'Scottie' and 'Martin' and both come in several flavours. There is Scottie/Martin 1 and Scottie/Martin 2. The '-1' modes take two minutes to transmit a picture whereas the '-2' modes do it in one minute, but at a quality trade-off. Scottie mode also has a DX-variety that takes four minutes for a picture, but at higher reliability.

There is no way to tell Scottie from Martin signals just by listening, but you can detect the '-1', '-2' and 'DX' varieties easily. The adopted standard call mode is Martin-1. Listen to what your PC delivers and send it to speakers instead of the radio and you will know what to expect.

ADJUST THE SLANT

If you do see a good picture coming in, *panic!* Usually the initial picture received will come in with a heavy sideways slant (**Fig 1**). Why? The software writers cannot anticipate the component tolerances in the PC clock, so it is either pure chance that you get a good picture or something else - something which can have a nasty side effect.

The normal procedure is to adjust the slant. You will need to go into the depths of the help files and find out how to do that. Virtually all programs have a tool to make this adjustment. It is a 'set and forget' affair, but it is very important and it must be done up front. Essentially, you need to show the PC which line in the received slanting picture should be vertical. This is computed into an offset value which must be stored. Once you have done it in one mode, it is good for all other modes.

It certainly does not matter if you see a slanting picture and are happy with it. But think again! The picture you are going to transmit eventually will slant by the same amount and the other way for another station.

MMSSTV is one common piece of software used in conjunction with a soundcard. It is very rich in features, but there is a pitfall. This is a feature called 'Auto slant adjustment'. Unfortunately, it is set to 'On' by default and will show all pictures coming in nicely. However, this is *not* good news! Your pictures are bound to be slanting at any station that does not use *MMSSTV*.

One way to test the new mode is to make a sked with a friend. If your friend is also a novice and uses *MMSSTV* you will have instant success among yourselves and be confident, but people with different software packages that do not have this feature will yell at you and leave you puzzled, because other stations sometimes have great difficulties reading your signals even if you can see their pictures perfectly.

You might argue that *MMSSTV* is simply the superior software and should be used as standard. Now, I like *JVComm32* (**Fig 2**), because I can have a full-screen receive window if I choose to and I can view hi-res modes such as P3, (P5, P7) in their full sizes. Even the simpler software *GSHPC* has its merits for

FIG 1

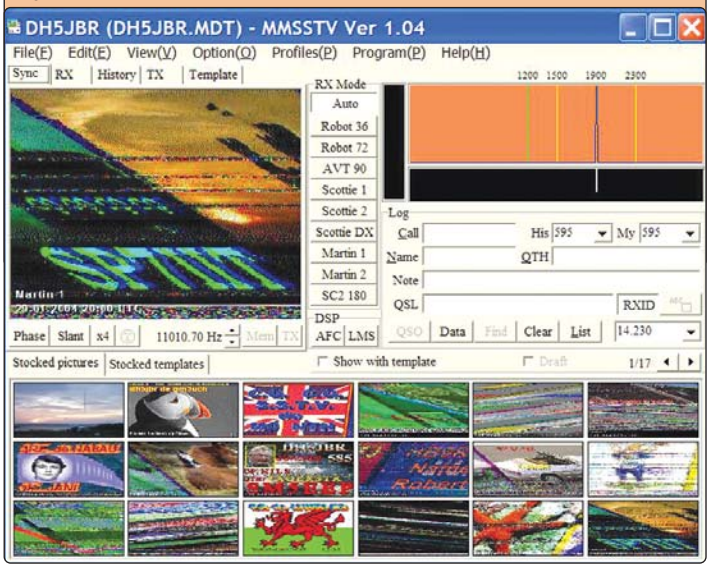

FIG 2

easy operability and low demand on processing power. To be blunt: *MMSSTV* is not the only software on the planet.

SEND STRAIGHT!

So, what do you need to do to set up *MMSSTV* to transmit straight pictures? The procedure takes about five minutes and a handful of mouse clicks. It starts with turning *off* the 'Auto slant adjustment'. *Yes!*

♦ Right-click on the picture receive area and view the pop-up menu. Make sure the entry 'Auto slant adjustment' (about half-way down) is not ticked. Do not be alarmed if you see terribly slanting pictures coming in. This is how *your* pictures will look to other stations if you don't do anything about it.

♦ If you have a slanting picture on the screen, click on the 'Sync' register immediately under the word 'File' in the menu bar.

♦ You will see the button 'Slant' as the second one in from the left underneath the picture area.

♦ Click on it and you are in the mode to show the PC a vertical line.

♦ Look for an edge in the picture that should be vertical (but isn't). You should be able to follow it some way down towards the bottom without touching the border.

♦ Click on that edge near the top of the picture.

♦ You will notice a rubber-band line that originates in the point of the click and is linked to the mouse cursor at the other end.

♦ Now move the mouse cursor to the bottom of the picture and be sure to align the rubber-band line precisely in parallel to the would-be vertical edge in the picture and click. This is a very fine and delicate setting.

Fig 1
The tools used to get rid of picture slant. Note the different slants in the shortlisted icons at the bottom. Pictures come in like this, or worse, with deactivated slant correction.

Fig 2
Screenshot of JVComm32. The receive window can be any size up to full screen and many pictures can be open to select for transmitting. Note the CQ picture in large letters and response picture with a gap for callsign and report.

♦ After this second click, the button 'Mem' (also underneath the picture area) becomes clickable. You click on it, and that is it.

♦ Now restart the software as you are prompted to do.

♦ If your offset was far out (ie if the picture was *very* slanting) the procedure may have to be repeated.

♦ Be sure to monitor a number of stations and settle for a setting that satisfies the largest number of them.

♦ Do not do this calibration with your pal who also has just started using *MMSSTV*. Use external references.

All this is very neatly described in the help file of the program (but who reads that?) It is a little involved, yet it is what we all had to do, no matter what software we use.

Good stations to calibrate on are SM5EEP (Nils, who has worked over 200 countries on SSTV), Russian (non-*MMSSTV*) stations, or myself (DH5JBR, always willing to assist and send a test grid).

SENDING PICTURES

So once the slant has been eliminated, the next thing is to obtain pictures for transmission. If you have no way of obtaining pictures, you can use plain backgrounds and still use the mode. The trick is to have some pictures made up ready for use in order to be quick to reply.

All programs cater for this need in some way. My trick is to have a range of response pictures with name and location and all static information already in place, leaving only a space for the remote call and report to be filled in with one click. Once you are on the way, you will find out which pictures you want to prepare.

Some programs allow very fancy shaping of letters and fancy typefaces and there are stations about who put such lettering on top of a very colourful and detailed picture - *not* a good idea! There are stations that call "CQ DX" in very tiny letters or operators who wear their baseball cap with an embroidered callsign somewhere very tiny in the picture and assume that you can read it after it travelled across the Atlantic Ocean - *no way*.

People interested in DX should use plain backgrounds and large, simple typefaces in contrasting colours. Another good idea is to put the CQ information also near the bottom of the picture. This way, people can still get the message if they tune in towards the end of the transmission. If you are calling CQ and have your 'CQ de call' *only* at the bottom of the picture, the remote station could be slow to respond, having to finish the response picture at short notice. So, if you are calling CQ it helps to put the callsign information somewhere in the middle of the picture as well.

OPERATING PRACTICES

In response, some stations only transmit the header bearing the callsign. This is the practice in contests. It is very polite, but leaves very little time to complete the return picture and leaves a gap for other stations to grab the frequency.

The best practice to start is to respond to a CQ call or wait at least one picture's length before you call CQ in case someone in the skip zone is currently on the air that you cannot hear. Also, try to decode some of the faint signals you might pick up. It is interesting to look at QSOs between LU and CE stations and even better if they become aware of you. ♦

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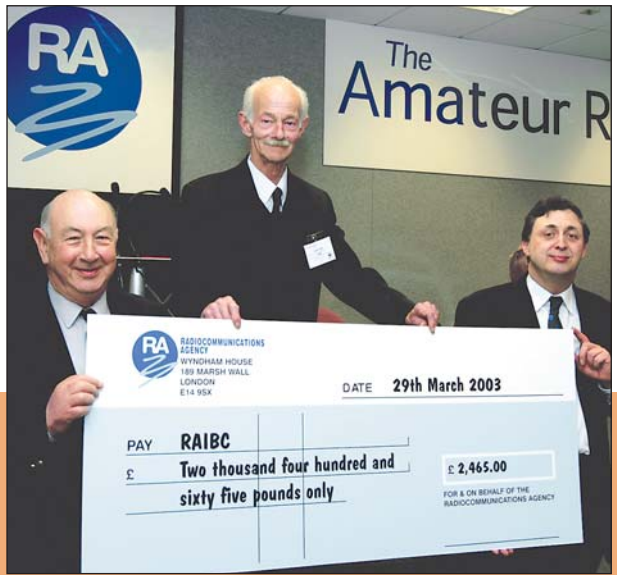

A donation of £2465 from the RA. Left to right Alec Gaffin, G0MWO; RAIBC chairman David Jones, G0HHP, and Alan Betts, G0HIQ (RA).

2004 marks the 50th Anniversary of the Radio Amateurs Invalid and Blind Club. This article, contributed by GW3BV for and on behalf of the RAIBC, has been prepared to celebrate the Golden Jubilee of this wonderful charity, provide a potted history, and an insight into the workings of the RAIBC.

50 years

As long as radio and amateur radio has existed a large part of the interest has come from those of us whose health makes our lives more than a little difficult and challenging. There are many reasons for this. For myself, I wanted to have an interest that would be educational and would stretch my mind, I also wanted a way of communicating with different people without leaving my home. The other joy for me in amateur radio is that I can dip in to it even for just a few minutes and still feel that I have accomplished something. However, oftentimes help is needed by the less able to get started in our hobby. Radio amateurs tend to be very helpful and generous souls, and one organisation that epitomises this spirit is the Radio Amateurs Invalid and Blind Club.

A SHORT HISTORY

In the first half of the last century an organisation called the World Friendship Society of Radio Amateurs had what was known as a 'Bedfast Section'. This operated to assist the disabled and bedbound and did so until the WFSRA was wound up in 1953. Out of the ashes arose the Radio Amateur Invalid and Bedfast Club. This was started in the first half of 1954 by among others, Frances Woolley, G3LWY, and her husband. The assets of the Bedfast Section were taken over by the RAIBC. The total in the kitty? The princely sum of £6/4/-1/2p! The first president of the club was John Gill. The title of president was later changed to chairman, with the first chairman being Bill Scarr, G2WS. Our present chairman is David Jones, G0HHP, and the patron of the RAIBC is Lord Rix Kt CBE DL, G2DQU.

The club's newsletter *Radial* was first published in November 1954. Yearly subscription was 4/- and remained so for 14 years. *Radial* continues to be a superb read, and well worth the membership fee alone.

The RAIBC became affiliated to the RSGB in 1963 and since then has always endeavoured to exert a positive influence on the RSGB's attitude to the disabled. The 25th anniversary of the RAIBC was commemorated by a special AGM at Alexandra Palace where the club's name was changed to Radio Amateur Invalid and *Blind* Club. In 1990 the club applied for, and was granted, charitable status.

AIMS & ACTIVITIES

So what were the aims of the RAIBC? Basically its members wanted to do whatever they could to assist those amateurs who were disabled, to help those interested in the hobby to get started, and to provide a like-minded group of individuals who could sympathise and empathise with one another. Those initial aims have never changed. The RAIBC aims to help get members on the air, with transceivers or receivers. Many amateurs have donated equipment to the RAIBC, which is then passed on to those who can benefit from it.

When finances permit, new equipment is purchased and loaned out to members. One example is the Kenwood TS-570, an excellent rig with a large readout and optional voice synthesiser unit, which makes it ideal for those with vision problems. All these items are loaned to members, but always remain the property of RAIBC. The club is also able to give advice on the suitability of various rigs for those with different disabilities.

The other area that the RAIBC assists with is audio tape editions of the club quarterly newsletter *Radial* and much more radio-related material. For example, the old *RAE Manual* was available on tape, and now of course the Foundation Licence pack is as well. Other items are also available.

RAIBC also get involved in other radio events. For example, in 1994 RAIBC members Ivan, G2BPW; Derrick, F/G3DHB, and Johnny, G3MJK, crossed to France in a gale-force wind much as they had done 50 years earlier on the D-Day invasion of northern France. The plan was to operate special event station F/GB0IBC. The location for the station was Derrick's home, only 200 yards from the beaches. The station started work at 0655 and was soon very busy with numerous contacts across the UK.

HELPING YOU

So how can the RAIBC help the disabled SWL or amateur? If you interested in amateur radio but not yet licensed, the RAIBC might be able to lend you a receiver and if necessary audio tapes of material to help you on the road to becoming licensed. The RAIBC also has an education officer who can help find the most effective way to get you licensed.

Perhaps you are already licensed? The RAIBC may be able to lend you

of the RAIBC

a transceiver to get you on the air. Perhaps due to your disability or sight problems you find it difficult to operate standard equipment, in which case the RAIBC may be able to supply you with suitable equipment. There may also be members in your area who would be willing to come and help you get going. (Sadly, due to insurance problems, RAIBC cannot help with the erection of antennas.)

Two of RAIBC's youngest members are Bethany, M3CUP, aged 9 and Peter, M3CPA, aged 6. The youngsters are both visually impaired and were fascinated by the noises coming from the radio shack of their granddad, Pete, M0PCA. Bethany and Peter were both able to take and pass the Foundation exam. Their story was told in *Radial* by M0PCA. This illustrates the interest that the disabled / visually impaired have in radio and the positive influence it can exert.

ASK NOT WHAT THE RAIBC CAN DO FOR YOU!

So then, what if you are *not* disabled or visually impaired? Well, there is plenty you can do. First and foremost join the club! The membership fee is only £6 a year and the more members the better, as the more funds become available.

As with many aspects of amateur radio the age of the membership and the committee is a cause for concern, so fresh, young blood is needed and welcomed. Would you be willing to be an RAIBC volunteer and give assistance to its members? Do you have any spare equipment, rigs or receivers? These can be loaned out to its members by the RAIBC or may be used to raise funds. Any support you can give will be most welcome.

Assistance and support is often given by other organisations, including Kenwood (UK), Martin Lynch & Sons and, formerly, the Radiocommunications Agency, which donated £2465 to the charity last year (see photo). In 1996 the National Lottery Charity Board awarded the RAIBC £7000 to purchase recording equipment to improve the level of service given to blind members. So if there is anything you think you could do to assist us, please get in touch.

TROUBLE & STRIFE

On a personal level I still cannot get over the generosity of the RAIBC. My rig is an absolute delight and makes operating a real pleasure. However, it did very nearly cause marital strife. Although I do not have sight problems the rig is set up so it can be used by someone who is visually impaired. This meant that when I select a menu option or enter a frequency a young lady talks to me and tells me what I am doing. My wife wanted to know who exactly was in the shack with me and what we were doing!

I know that many amateurs are not able to afford the latest equipment available, however, for those who find life very difficult and who struggle to do things that the average person can do without thinking, the loan of a transceiver really does make a huge difference. The ability to get on the air, to talk to others in a similar situation and to know that others care, can make a very positive impact on a disabled person's life.

On the 10th anniversary of the club in 1964 Frances Woolley, G3LWY, wrote, "If the club makes the strides in the next 10 years that have been made in the past 10 years, we may, in 1974 be celebrating something even more spectacular." As in any organisation there have been ups and downs and periods of reorganisation. However, I don't believe there would be any doubt that as one of the founding members of the RAIBC Frances would be delighted that we are celebrating the RAIBC's 50th anniversary, and I am sure she would be pleased with the achievements of the organisation over this last half a century. Long may it continue! ♦

GW3BV's talking Kenwood TS-570D transceiver on loan from RAIBC.

Young RAIBC members Bethany, M3CUP, and Peter, M3CPA, with their granddad, Pete, M0PCA.

RAIBC Helpline 020 8204 2347

RAIBC NETS

The first official club net took place on 8 February 1957 on 40 metres. These nets remain one of the lynchpins of the club, providing regular communications for the members. The RAIBC now has numerous nets during the week on both HF and VHF. The main HF nets are:

Tuesday at 1000 on 7050kHz SSB, net controller G0MZI (G4IBC) or GI4GVS (GI0IBC).
M0AID operates an 'Early Birds' net from 0915 until the main net starts.

Tuesday 1400 on 7025kHz CW G0FLP (G4IBC).
Wednesday 1400 on 7050kHz SSB G0MZI and G0KME (G4IBC).
Friday 1900 on 3743kHz SSB during the *summer* months, or
Sunday 1500 on 3743kHz SSB during the *winter* months.

For the VHF nets please check the website or get in touch through the Helpline.

WEB SEARCH	
RAIBC	www.raibc.org.uk

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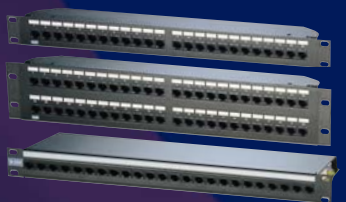

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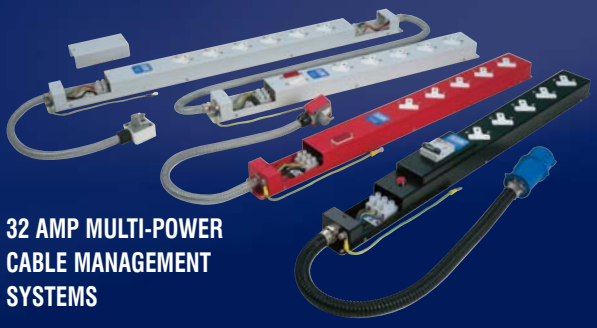

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By Ian Poole, G3YWX

5 Meadway, Staines, Middx TW18 2PW

E-mail: ian_poole@lineone.net

Digital Radio Mondiale
the new revolution in broadcasting

Numerous radio amateurs have come to the hobby over the decades after 'discovering' short wave or medium wave international broadcast stations. Now the nostalgic sound of pops and whistles and the phase distortion associated with AM broadcasts may soon be a thing of the past. Will DRM finally signal the end of 'Ancient Modulation'?

Since the dawn of radio broadcasting, amplitude modulation (AM) has been widely used on the long, medium and short wave bands. Today its use is as widespread as ever. Now this is all set to change, with the introduction of a new digitally-based system called Digital Radio Mondiale (DRM). It promises to provide a significant improvement in audio quality whilst also being able to provide a raft of new services.

DRM is a consortium of organisations including broadcasters, research organisations, receiver manufacturers and transmitter companies that came together to develop a digital radio system for use where AM is currently used.

ADVANTAGES

The main advantage is the significant improvement in audio quality that DRM provides. Although not giving quite the same performance as DAB digital radio transmissions on VHF it is nevertheless a quantum leap improvement over AM transmissions.

It is also possible to tailor DRM transmissions to suit a variety of bandwidths. With the USA using 10kHz channel spacing on medium wave, Europe using 9kHz and the short-wave bands using 5kHz, it is necessary for the new standard to be able to be compatible with these and with the possibility of other bandwidth options for the future. It has even been suggested that a 3kHz version be made available for amateur use, although this is not in the standard.

Data is transmitted which supplies the information required for decoding the signal and allows text to be transmitted in support of the programme. The system also transmits a list of alternative frequencies so that listeners can be transferred to better channels as conditions change.

Another advantage of DRM is that it can support what is termed a single frequency network (SFN), whereby the same frequency can be re-used even within the coverage area of the first transmitter thus allowing far more efficient use of the available channels.

THE DRM SYSTEM

There are two main elements: the audio coding and the RF modulation. Audio encoding employs two techniques. The first is Advanced Audio Coding (AAC). This operates by analysing each part of the audio spectrum and then encoding only those elements of the sound that will actually be perceived (see **Fig 1**). It is found that a strong sound on one frequency will mask other sound close to it. AAC on its own is not sufficient to provide the quality required within the very stringent bandwidth limits for the signal as a whole. Accordingly a second technique known as Spectral Band Replication (SBR) is employed. This analyses the sounds in the highest octave and sends data to the receiver that will enable them to be reconstituted later.

A number of different data channels are transmitted. The main payload for the signal is known as the Main Service Channel (MSC) and this includes the audio signal data. Two subsidiary channels, the Fast Access Channel (FAC) that provides essential data required to decode the signal and the Service Description Channel (SDC) are also transmitted.

The transmitted signal uses a form of modulation known as Coded Orthogonal Frequency Division Multiplex (COFDM), shown in **Fig 2**. This form of modulation is very resilient to many common forms of interference and fading. The signal consists of several carriers, and the data is spread equally across all of them. The carriers are equally spaced, where the spacing is equal to the inverse of the symbol period of the data applied to the carrier. With this spacing the energy density in the sidebands has nulls that correspond with the position of the next carrier. In this way interference between nearby carriers is eliminated.

EQUIPMENT

It is possible to modify many modern transmitters to DRM use. The transmitted signal can be split into phase and amplitude elements. The phase elements can be generated in a new signal generator module, and then amplitude elements added as high-level modulation at the final output However, one of the major factors in the successful deployment of a new system such as DRM is the availability of suitable receiving equipment. It is intended that low-cost receivers that can be widely used will be produced. In the short term, though, existing receivers can be modified (further details are on the DRM receiver website).

DRM has been tested for some time with experimental transmissions from broadcasters including the BBC. Now scheduled transmissions are taking place from a number of broadcasters including Radio Netherlands. It is likely that more broadcasters will introduce DRM when DRM-capable receivers become more widely available. ♦

FIG 1 © RADCOM 135

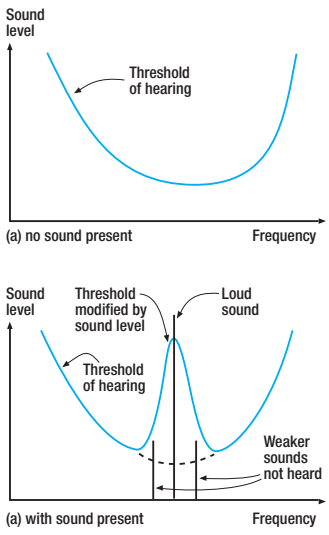
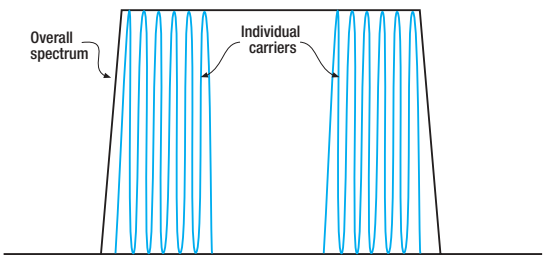


Fig 1
Responses of the ear.

Fig 2
COFDM signal spectrum.

FIG 2 © RADCOM 136



WEB SEARCH

General DRM and broadcast information	www.radio-electronics.com
DRM website	www.drm.org
DRM receiver information	www.drmrx.org
Ian Poole professional radio site	www.adrio-communications.com

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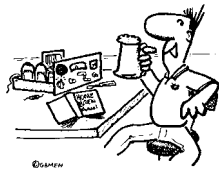

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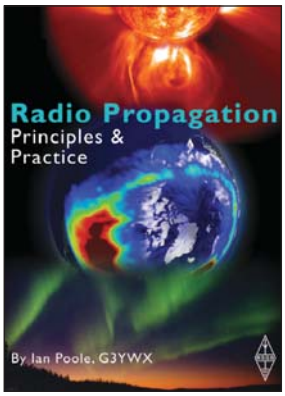
Book review

Two new RSGB books make their appearance this month - *Radio Propagation - Principles & Practice* by Ian Poole, G3YWX, and the new *40th Anniversary Edition* of the *RSGB IOTA Directory, ed*ited by Roger Balister, G3KMA.



Radio Propagation - Principles & Practice
by Ian Poole, G3YWX
Reviewed by RSGB Staff

Any new book that helps radio amateurs understand radio propagation is to be welcomed. *Radio Propagation - Principles & Practice* is a new and easy-to-read guide to propagation across the RF spectrum.

It starts by describing the properties of electromagnetic waves, then takes a look at the various layers that make up the atmosphere. Chapter 3 focuses on the sun, sunspots, the solar cycle, solar disturbances, flares, coronal mass ejections and all those things that can affect radio wave propagation on earth.

Chapter 4 looks at 'Propagation near the ground' - ie surface wave, as used by medium wave broadcast stations. The book really gets to grips with its subject matter in the following chapter, which offers a detailed explanation of ionospheric propagation. It covers the main layers of the ionosphere, D, E, and F1 and F2 separately, clearly explaining how signals are attenuated or refracted by these layers. Terms such as critical frequency, maximum usable frequency and optimum working frequency are explained. The chapter also discusses specialised forms of ionospheric propagation such as chordal hop, Spread F, and NVIS.

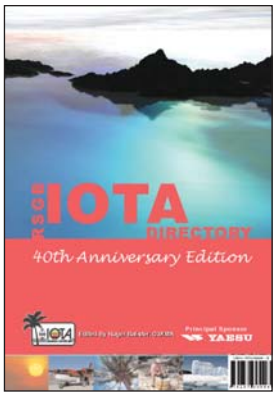
Radio Propagation - Principles & Practice goes on to look at how geomagnetic storms can affect propagation on earth by causing HF radio blackouts but also, if you know when and how to make use of it, by offering *enhanced* VHF propagation thanks to radio auroras.

Another chapter is dedicated to *predicting* ionospheric propagation. It looks at the likely conditions on each of the HF bands before turning to solar flux and the geomagnetic A and K indices and how these can be used to make detailed predictions of conditions.

So far, *Radio Propagation - Principles & Practice* has covered mainly HF propagation, but the VHF / UHF spectrum is by no means left out. Chapter 8 explains how and when the normally line-of-sight communications experienced on 2m, 70cm and higher can suddenly be extended to many hundreds of kilometres by tropospheric propagation. Nor are specialist VHF / UHF forms of propagation, such as meteor scatter and even EME ('moonbounce') forgotten.

Radio Propagation - Principles & Practice will not make you a world expert on radio propagation overnight. Such expertise takes years of study or, more likely in the amateur context, years of experience gained through the use of our bands. What it *will* do is give you a solid grounding in the subject so that you will get to know *why* signals from Australia or New Zealand are much stronger than you would perhaps have expected, why you cannot make DX contacts on 80 metres in the middle of the day while (at certain times of the year) our neighbours in Scandinavia *can*, and why your low-power 2m signal might occasionally be answered by a station in the French alps or Bavaria. This book provides the reader with a *practical* understanding of radio propagation so that it can be made to work for you. It is an essential read for anyone associated with radio communications.

Radio Propagation - Principles & Practice
RSGB
Paperback, 174 x 240mm, 112 pages
ISBN 1-872309-97-6
Members' price £12.74 (non-members £14.99) plus p&p
Available from the RSGB Shop.



RSGB IOTA Directory
- 40th Anniversary Edition
Edited by Roger Balister, G3KMA
Reviewed by RSGB Staff

Are you getting a little blasé about your amateur radio operating? Are you losing interest in going on the bands? Do you get fed up chatting to the same group of people all the time? If the answer to any of these questions is "yes", you should consider taking up 'island chasing'! The RSGB's Islands on the Air (IOTA) programme is the focus of a worldwide amateur radio on-air activity which could revitalise any jaded radio amateur's operating. Founded 40 years ago this year by British SWL Geoff Watts, the IOTA programme continues to attract new participants all the time.

This new 40th anniversary edition of the *RSGB IOTA Directory* is essential reading for those who wish to become involved in island chasing, containing, as it does, the only complete, official listing of IOTA islands available, with the many recent changes that have been made. It lists all islands that qualify for IOTA, grouped by continent, and indexed by prefix. It also details the award rules, and includes application forms.

For existing IOTA enthusiasts, the 40th anniversary edition brings the IOTA island group listing right up to date: 1018 of the 1200 IOTAs are now numbered. Hundreds more islands have been added to the listing of islands that qualify. Also new in this edition is a special feature looking back over the last 40 years of IOTA, articles on recent major IOTA DXpeditions from Canada, Mexico, French Polynesia and Australia, a listing of accepted operations from the 650 rarest IOTA island groups, and a fully updated list of 'Most Wanted' island groups, with notes of operations in recent years.

RSGB IOTA Directory - 40th Anniversary Edition is illustrated in full colour. With more and more IOTA activity on the bands all the time, this book is as important an operating aid as a prefix list or world map and is essential reading for all active amateur radio operators. With 32 more pages at the same price as the previous edition, it also represents excellent value for money!

RSGB IOTA Directory
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RSGB
Paperback 297 x 210mm, 136 pages
ISBN 1-872309-96-8
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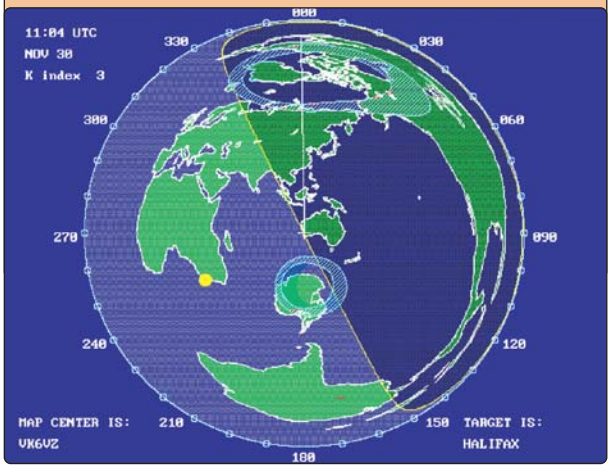
By Steve Ireland, VK6VZ

PO Box 55, Glen Forrest, WA 6071, Australia.

FIG 1



Having a computer in the radio shack allows you to make quick and accurate HF propagation predictions. Steve Ireland reviews *DXAID* 5.0, a value-for-money product that does just that.

Propagation prediction in

When it comes to HF DXing, there are several excellent pieces of propagation prediction software available that enable radio enthusiasts to find out the best times for contacting or hearing particular countries around the world. These programs let you carry out a propagation prediction from your location to that of the desired DX but they don't let you actually look at the path in real-time, enable you to model sunrise and sunset, or to view the shape and progress of the 'terminator' - the constantly moving line that separates night from day - across the globe. This information is vital if you are a 'low-bander' like myself and concerned with predicting - or seeing in real-time - the radio propagation that could occur between your sunset and the following sunrise.

A program such as *Geoclock* maps the movement of the terminator across the world but does not show the ever-changing auroral ovals that exist over the northern and southern polar regions. The presence of these has a marked effect on radio signals at the lower end of the short-wave spectrum and can be a barrier to 1.8, 3.5 and 7.0MHz signals. They vary in size, depending upon the level of geomagnetic disturbance in the earth's magnetosphere. Geomagnetic activity is measured by the K-index and when geomagnetic activity increases, the auroral ovals increase in size, along with the K-index.

When solar activity is high, although a DX contact may appear to be possible using grey-line propagation along the terminator, if signals have to pass through an auroral oval the chances of a contact are very much reduced. According to the experts, absorption of signals passing through an auroral oval can exceed 35dB [1]. Assuming an 'S' point is about 6dB, that is the difference between an S7 signal and one that is S1.

Fig 1
***DXAID* 5.0 screen showing great circle world map projection centred on the location of VK6VZ at his sunset (at 1104UTC) on 30 November. The map also shows the direct (short) path from VK6VZ to VE1ZZ and the auroral ovals (in light blue shading) around the north and south poles.**

MAKING A DREAM PROGRAM

Now, if an HF propagation prediction program could be combined with a day / night mapping program and carry out both predictions and real-time work, it would be great for radio enthusiasts who work from 1.8 to 30MHz. If we added to this 'dream program' the ability to show the auroral ovals, as they vary with the time of year and ionospheric conditions, we would have a super piece of software. The good news is such a piece of software already exists and it is called *DXAID*.

The maps generated by the latest version of the software - *DXAID* 5.0 - are in both azimuthal (great circle) and Mercator (cylindrical) projection, which can be either centred on your location or on any other you desire. These maps can be configured to display, in real time, the current regions of day and night for any specified date / time of year.

DXAID 5.0 gives you a choice of ionospheric models to use, either the CCIR or the URSI reference ionospheres. The author of *DXAID*, Peter Oldfield, says that the internationally-used CCIR ionospheric model lacked "fine grain detail" in the area of the Southern Ocean, so he specifically added the URSI model for those of us who live in the southern half of the world.

The program uses either of the ionospheric models to calculate Maximum Useable Frequencies (MUFs) for the paths that radio waves take when going from one place to another across the globe. My friend and propagation expert Bob, NM7M, particularly likes *DXAID* 5.0's ability to give you a spot check of the MUF for stations operating within particular *CQ* zones. As he says, it is very useful if you are working on the Worked All Zones (WAZ) award or taking part in one of the *CQ* contests and want to know on which bands propagation is possible to the zone(s) you wish to contact.

For a location within a given zone (either entered manually in latitude / longitude or selected from a database of capital cities), *DXAID* 5.0 will 'sweep' through the hours of the day, showing predicted signal levels for a given Solar Flux Index (SFI) and ionospheric absorption (K-index) levels.

These signal levels are shown for each of the amateur bands from 3.5 to 28MHz, in dBuV or dBm compared with the signal-to-noise ratio for a chosen 'noise environment', depending on where you live (you can select either from either 'industrial', 'city' or 'rural' categories).

The current SFI and K-index for each day can be found on the Internet, eg on the *DXSummit* site. K-index values can also be obtained by listening to the WWV broadcasts on 2.5, 5, 10, 15 and 20MHz, which give suitable values at 18 minutes past the hour.

GOING LOW

For those who are interested in predictions below 3.5MHz where the MUF is irrelevant, *DXAID* 5.0 is indeed a dream come true. Its 'Lo Prop' facility enables you to follow the path of darkness on a great circle or Mercator map, in either 'real' or 'imagined' time, showing the auroral ovals.

FIG 2

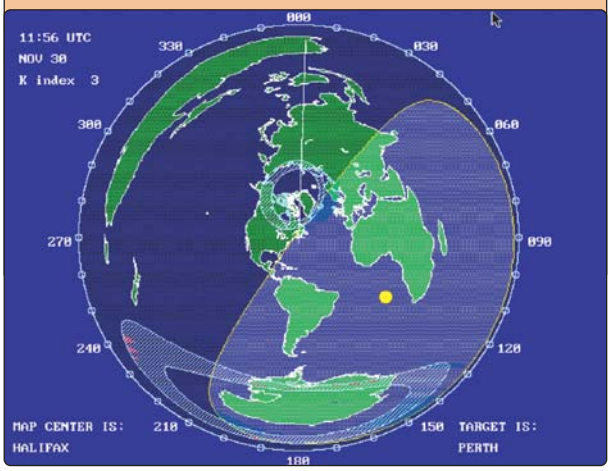
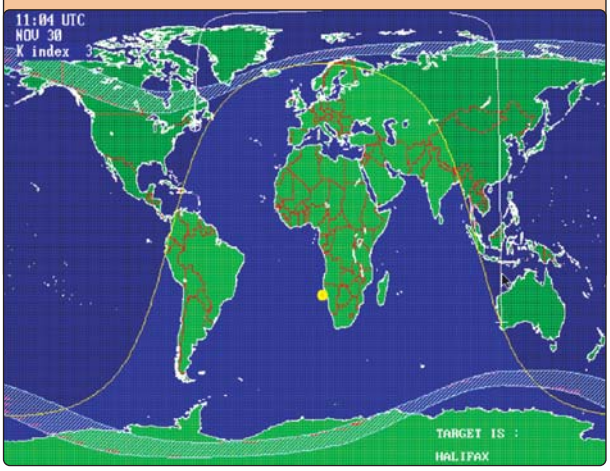


FIG 3



the computer age

Let's deal with the imagined time scenario first. You can set the program to start mapping the path of darkness from your sunset on a given day, so that, for example, every five seconds ('DX Time') the map will advance in a 15-minute jump ('User Time'). That way, you can review an eight-hour period of darkness in under three minutes. Even better, you can then use the left and right arrow keys to send the map backwards / forwards in time. If you want to set up the program to map things in 'real-time', you can set the 'DX Time' to match the 'User Time'.

Once you have done some modelling and want to set up *DXAID* 5.0 to run in real-time from your sunset for a night of 1.8MHz or medium-wave DXing (so you can view the progress of the night / day terminator on a Mercator map), you simply set 'DX Time' to 1 minute and 'User Time' to 60 seconds and away you go. You have the choice of 1, 15 or 60-minute steps for 'DX Time' and 5, 30 or 60-second steps for 'User Time'.

Let us now run through an example of how we could run a Lo Prop type prediction using *DXAID* 5.0. Imagine I wanted to model the progress of night and day on 30 November 2003, focussing particularly on the geometry of the path for a contact close to sunset from my QTH in Glen Forrest, Western Australia, with well-known 1.8MHz operator, Jack Leahy, VE1ZZ, located near Halifax, Nova Scotia, in Canada. **Fig 1** shows the great circle map that can be produced by *DXAID* 5.0. It is centred on VK6VZ and contains a line showing the short path to VE1ZZ. Note the auroral ovals over Greenland and Northern Canada and over Antarctica. In **Fig 2** you can see a great circle map centred on the location of VE1ZZ at his sunrise on 30 November. If I wanted to produce a Mercator projection of the world instead showing the short path from VK6VZ to VE1ZZ, a 'Cylindrical' option can be chosen from the menu (**Fig 3**).

A window will appear requesting you to input the K-index that is expected and prompting you to change the date for which the night-day map will be generated, if you desire. Once everything is input as required, the map type selected will appear. Instantly, the time will start incrementing, enabling one to review the entire night of 30 November at VK6VZ, where sunrise or sunset openings may occur and where the terminator is likely to intersect with the auroral ovals in both hemispheres (rendering communications along these paths less likely).

Fig 2
Great circle map centred on the location of VE1ZZ at his sunrise on 30 November.

Fig 3
***DXAID* screen showing Mercator map projection and the terminator (line separating night and day) at VK6VZ's sunset on 30 November.**

CONCLUSIONS

At US$25, *DXAID* 5.0 is by far the best value-for-money propagation prediction program I have seen and could become indispensable for serious amateur HF operators or short-wave listeners. The Lo Prop facilities are a revelation to a keen 1.8MHz operator like myself.

That being said, there are currently a few drawbacks to using the program which hopefully its author Peter Oldfield will soon address. Peter is now working on a *Windows* version of *DXAID* (for *Windows 2000 / XP*), which he hopes to complete in mid- to late-2004. Peter is a keen broadcast bands listener, so the main location database (location.ldb) reflects this interest, using capital cities rather than prefixes. However, to increase the program's attractiveness to radio amateurs, he has also provided a database called zones.ldb. This lists the *CQ* zones from 1 to 40, with DXCC countries / prefixes as sub-categories within each zone. Unfortunately, using the *CQ* zone as the major category means the user has to know what zone a desired DXCC country / prefix is in, making this database rather cumbersome to use. As most amateur radio DXers are more familiar with DXCC prefixes than *CQ* zones, the use of the DXCC prefix / country as the major category in this database, with the zone as the sub-category, would make the program more user-friendly to most radio amateurs.

My only other gripe is *DXAID* 5.0's printing facilities, as it appears to suffer from software incompatibilities with my Canon BJC-7100 printer. Six IBM/Epson-compatible printer drivers were supplied with my copy of *DXAID* 5.0, three dot matrix - 9-pin and two 24-pin variants - plus 'Inkjet' and two laser drivers, but it is necessary for me to use an additional graphics program to print the excellent *DXAID* maps. The *DXAID* maps print out in black and white, although they appear on-screen in colour.

DXAID 5.02 costs US $25 or £15 post-paid for a 1.44MB floppy disk or despatched to you via e-mail. Those users who have bought an earlier version of *DXAID* can upgrade it for US $10 or £6. Peter can be contacted at PO Box 306, Sundre, Alberta T0M 1X0, Canada, or by e-mail to: p.oldfield@telus.net ♦

REFERENCES

[1] *Low-band DXing*, John Devoldere, ON4UN, ARRL 1999, pages 1 - 16, section 2.2.1 on auroral absorption.

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WATERS & STANTON

By Steve Telenius-Lowe, G4JVG

RadCom Editor, c/o RSGB HQ.

E-mail: radcom@rsgb.org.uk

Icom IC-7800 launched in UK

"Nothing Else Comes Close" is Icom's proud boast. Is it true? Icom (UK) invited members of the amateur radio trade and, on 17 March, the amateur radio press to their headquarters in Herne Bay, Kent, for the official launch in the UK of the new Icom flagship transceiver, the IC-7800.

Top left
Icom (UK)'s General Manager Don Turner, G4TKR, describes the IC-7800's technical performance.

Right
Peter Hart, G3SJX, gets a first 'hands-on' try of the IC-7800 at Icom (UK)'s press launch day.

On first sight, it strikes one that the IC-7800 is a *big* transceiver. At 424W x 149H x 435Dmm and weighing in at a hefty 25kg, the IC-7800 certainly moves away from the trend of ever-smaller rigs with tiny controls. What is special about the IC-7800, though, is not so much its size and weight, as the extraordinary receive performance and the multiplicity of functions offered. Icom claims that the IC-7800 has a 110dB receiver dynamic range, with a +40dBm third order intercept. Both these figures are several dB better than any other amateur transceiver on the market.

Basically, the IC-7800 is an HF / 6m transceiver with 200W output power. There are two completely independent receivers built in, both with the same superb specifications. Because they are entirely separate receivers, with no shared circuitry, it is possible to receive on two different bands simultaneously. There are four separate antenna connectors with a programmable auto antenna selector.

In addition to the 'usual' modes of CW, SSB, FM and AM, the IC-7800 is also fully RTTY and PSK31 compatible - without the necessity of having a separate PC. A 'waterfall' display appears on the rig's huge 7in-wide full-colour TFT LCD screen, while a standard keyboard can be plugged into the transceiver for datamode transmissions.

If the display still isn't big enough for you, a VGA output on the rear of the transceiver allows you to connect an external monitor or, for that matter, a projector to project the display on to a screen.

Icom must have been listening to those amateurs who say they dislike 'bargraph' power and S-meters, for the LCD screen sports meters that look and respond exactly like analogue meters with pointing needles (even though they are, in fact, part of the digital display.) And if you *do* prefer bargraph meters, you can switch to these, or even edge-width 'VU'-type meters instead. Talking of the LCD screen, a large part of it is dedicated to a real-time spectrum scope, allowing you to 'see' the whole of each band, or a smaller part of the band, as you wish.

Each new transceiver that comes out seems to have more and more sophisticated DSP circuitry, and the IC-7800 is no exception. It has four 200MHz 32-bit floating point DSP units (one for each receiver, one for the transmitter and one for the Spectrum Scope display). On receive, the IC-7800 allows you to 'build your own' digital IF filters, adjusting shaping, bandwidth and centre frequency.

A CF memory card permits operators to store their own settings of all the transceiver's various parameters, including digital voice recorder messages, to allow more than one operator to 'personalise' a single IC-7800.

Icom (UK) says the IC-7800 has been in development for over five years already, but emphasises that it is a constantly-evolving product, and as future developments come along they will be incorporated into the rig, presumably by means of software upgrades. Naturally, such innovation, high specification and attention to detail comes at a price. Each IC-7800 is individually hand-built and costs £6400 inc VAT. A package including SM-20 desk microphone, external Icom flat screen monitor, and keyboard is available at £7095 inc VAT.

Peter Hart, G3SJX, took away an IC-7800 from Icom (UK)'s press launch day and his full technical review is scheduled to be published in the August *RadCom*. ♦

TT

A close look at stub-feeding monoband λ/2 and 5λ/8 verticals ♦ Multi-band verticals ♦ A current regulator designed for controlling the brightness of super-LEDs ♦ Further information on electrically-small transmitting antennas.

STUB-FEEDING λ/2 & 5λ/8 VERTICALS

A recent letter from G3GUB/ AC4UA rekindled an interest in the problems of feeding vertical antennas longer than the traditional quarter-wave monopole/ground-plane. Bryan needed help. He wrote: "I am off to Panama to help an American lady sailor-ham tweak her communications for a trans-Pacific voyage. ATUs don't like the salt-laden atmosphere (crud on capacitor plates/roller-tuning!). Last year I installed for her a 42ft (5λ/8 on 14MHz) with a chain dangling into the sea as 'earth'. It works well, but I recall that somewhere in 'TT' was a system using a coax-stub and tapping point that gave a 50Ω match and which took account of the velocity factor of the coax cable. Can you tell me what issue?"

I must admit that I had absolutely no recollection of the item and came near to giving up the search. Perhaps not surprising as, when finally located, it proved to have been a very short item in an issue exactly 33 years ago: May 1971, p323. It read as follows: "Many references have been made in 'TT' and elsewhere to the attractive vertical radiation pattern of the five-eighth-wave vertical monopole. This works out at about 41ft overall and is complete with a base insulator. This suggests that there could be plenty of interest in a simple coaxial-line matching transformer (stub) described in *QST* (January 1971) by Robert Earl, W1DRV, specifically for feeding a 14MHz five-eighth-wave vertical from 50Ω coax: see **Fig 1**. W1DRV based his design on an article by Pete Czerwinski, W2JYJ (*QST*, June 1961), who used a coaxial-line transformer to feed a half-wave 'beer-can' vertical for 14MHz"

Delving further, I traced the original *QST* references quoted above. That of W1DRV turned out to be a short letter in the 'Technical Correspondence' column. He noted that W0JF had reminded us of the useful low-angle radiation of the 5λ/8 vertical antenna in the August, 1970 *QST* - quoted very briefly in 'TT' December 1970, including **Fig 2** providing a summary of matching conditions for base-fed verticals of varying lengths. W1DRV felt that the W2JYJ and W0JF articles went well together as the basis for the coax stub design shown in Fig 1.

FIG 1 © RADCOM 149

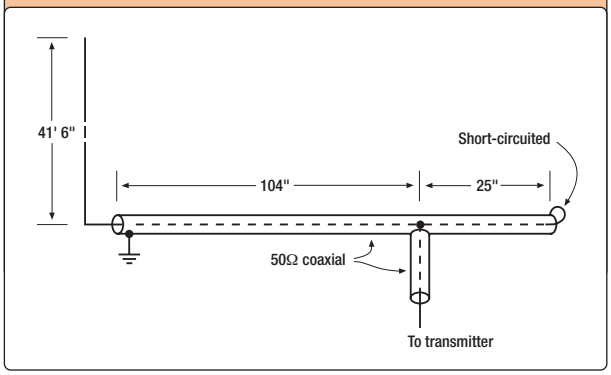


Fig 1
Use of coax-line (stub) impedance transformer to voltage-feed a 14MHz 5λ/8 vertical antenna as suggested by W1DRV in 1971, based on an earlier article by W2JTJ (see text). A similar arrangement could be used to feed other voltage-fed antennas such as the 'inverted ground plane' (see Fig 5(c)).

Fig 2
Summary of basic matching requirements for mono-band verticals as explained by W0JF in 1970.

He added: "My hastily-constructed 5/8-wave vertical antenna (inspired by W0JF's results) consists of a supporting structure made from sections of 2 x 2in lumber upon which four lengths of 300Ω TV ribbon are affixed. Each section of ribbon line is 41ft 6in long. A length of this line is attached to each side surface of the 2 x 2 support mast, then the ends (top and bottom) of all four line sections are connected in parallel to form a single [fat] vertical conductor. The coax line dimensions are near those of W2JTJ, and are shown in Fig 1. The VSWR varies from a flicker of reflected power at 14,000kHz to 1.5:1 at 14,350kHz. (My next task is to get that lowest-VSWR point shifted to 14,275kHz). The whole thing is leaning against a tree, almost vertical, and seems to work well."

The earlier *QST* article by W2JTJ gave a more detailed explanation of this simple coax-transformer matching device, showing how the tapping point could be accurately determined for the lowest possible VSWR. **Fig 3** shows how a shorted quarter-wavelength of transmission line is equivalent to a parallel-tuned circuit. A match is obtained in either case by connecting the feed-line at a tap point. Note use of T-connector once the tapping point for lowest VSWR at the desired frequency has been found. For coax line, the velocity factor of the cable (typically 0.66) is used to obtain the length of the shorted line. W2JTJ, for a design frequency of 14,100kHz gives the length needed as 11ft 6in. If your radiator is not precisely a half-wave long (and it need not be), it will be either capacitive or inductive, depending on whether it is slightly shorter or longer, respectively, at the design frequency. This is of no consequence, for the resultant susceptance of the stub and the radiator will automatically be cancelled during the tuning procedure. However the length of the coax section should be made longer to allow for this.

For adjustment, W2JTJ advised the use of a GDO and VSWR bridge: "First, solder the inner conductor (point A) of the coaxial transformer RG-58 to the radiator, and the outer conductor (point B) to the ground system. Now measure 26in from the shorted end and remove a half-inch-wide band of the vinyl jacket. Spread the braid carefully to expose a spot on the polyethylene inner insulation. Solder a sewing needle to the exposed end of the inner conductor of your feed coax coming from the transmitter. Insert this needle through the prepared opening in the exposed braid of the stub so that it makes contact with the inner conductor. Now spot-solder the feed-

FIG 2 © RADCOM 150

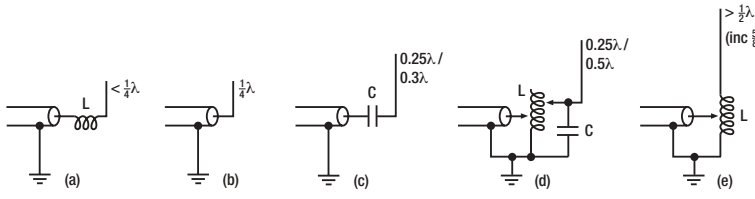


FIG 3 © RADCOM 151

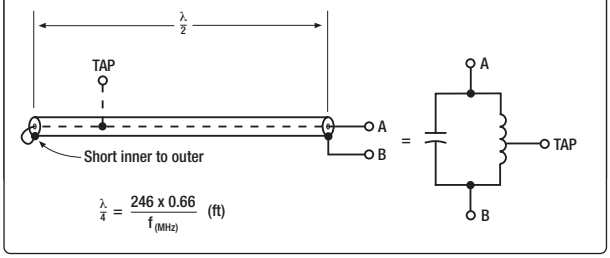


Fig 3
A shorted quarter-wavelength of transmission line (coaxial, open- or twin-wire) is electrically equivalent to a parallel tuned circuit. An impedance match can be obtained by tapping a 50Ω or 300Ω feeder at a suitable point (see text).

Fig 4
Dimensions suggested by W1DRV for a 14MHz 5λ/8 14MHz antenna.

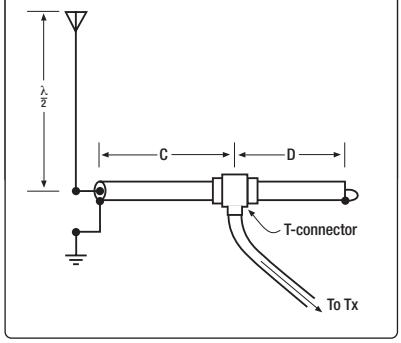
Fig 5
Showing alternative use of open-wire transmission line as impedance-matching transformer for voltage-fed antennas such as half-wave verticals or 'inverted ground-planes'

line coax and stub braids together. Excite the line from the transmitter with the GDO and read the VSWR bridge.

"If you are lucky, the reading will be close to a null (no reflected voltage). If not, then make an adjustment on the length of the coaxial transformer by inserting a second needle approximately one inch from the shorted end, making sure that it is shorting the braid to the inner conductor. Repeat this adjustment, moving the short an inch at a time, as long as it improves the bridge null. Then make a similar adjustment on the location of the tap by moving the first needle approximately 3in either way, after baring two new spots. This will show in which direction the tap should be moved; the final adjustment can be made by trying the tap at smaller intervals.

"When a bridge null is obtained and the GDO dips best at the design frequency, carefully measure the

FIG 4 © RADCOM 152



dimensions C and D of **Fig 4**, and make up a new cable using a coax T-connector at the tap point."

It should be appreciated that there will be high RF voltage across the coax cable towards the radiator end, but W1JTJ reported that "There was no sign of voltage arc-over using a DX-100 with 175W input. For higher power, it is recommended that RG-8/U be used. When the coax transformer is completed, the open ends should be sealed with plastic tap; then it can be wrapped into a coil around the base of the antenna." His 'beer-can' radiator is mounted on an insulated base and is virtually at ground level. There will be high RF voltages over the first few feet of the radiator that could be a hazard to children and animals etc – precautions should be taken to prevent accidental touching of the radiator.

It should be appreciated that virtually any length of radiator (voltage- or current-fed) can be accommodated by this form of 'resonant-line' coaxial-transformer system or by using the line in conjunction with a 'Zepp-type' ATU. **Fig 5** shows three ways of using open-wire feeder stubs. Note that the bandwidth of any vertical or horizontal element is increased by the use of a tubular mast or multi-wire element, as with the 'beer-can', or two or four twin-wires as described above.

MULTI-BAND VERTICALS

The antennas described above, using tapped coaxial line matching transformers, are essentially monoband systems. However several multiband antenna systems have been described in 'TT' and can be found in the *Antenna Topics* collection (RSGB, 2002). An ingenious use of a 13m vertical element for 3.5, 7 and 14MHz, from March 1971 (*AT,* p45) originated by LA1EI and using three feeders, is shown in **Fig 6.** This represents a 5λ/8 vertical on 14MHz, but an electrically shorter, but still effective, vertical antenna on 3.5 and 7MHz. It uses loaded matching RG-8/U sections to allow the same radiator to be used on 3.5 and 7MHz with gamma-matching feed on 3.5MHz. C is about 68pF and L about 2.8mH. If n is an even number, the impedance is 75Ω at 3.5MHz, 34Ω at 7MHz and 75Ω at 14MHz.

A triband vertical, originated by Frank Regier, OD5CG (who in 1984 was kidnapped and held hostage for several weeks in Beirut), appeared in 'TT' (April 1970 and *AT,* p33) using 300Ω twin feeder line suitable for 14, 21 and 28MHz, **Fig 7(a)**. The radiator (A) comprises 22ft of 300Ω feeder shorted at each end. The ground plane (B) comprises quarter-wave radials for each band (12 wires in all). The matching section C is 27.8ft of 300Ω feeder. The reactance matching section is shown in detail in **Fig 7(b)**, the coil L1 comprising 7 turns of No 16 wire 1in in diameter and 1in winding length. It can be set up using only a GDO. C1 is adjusted so that L1-C1 resonates at 35.83MHz. Then C2 is temporarily connected in parallel with L1-C1 and set so that the circuit now resonates at 21.37MHz.

The matching section comprises some 27.8ft of 300Ω, with 22ft of this type of feeder also used for the radiator, with the ends short-circuited. The matching section assumes a cable velocity factor of 0.82, and a slightly different length would be needed with cables having a significantly different velocity factor. The ground-plane comprises four radials each consisting of λ/4 of wire for each of the three bands (12 wires in all). Further details in *QST* (December 1969) or 'TT' or *AT* as cited above.

REGULATOR FOR SUPER-LEDs

À propos of my comments on the new ranges of bright LEDs ('TT' November, 2003, p90) it was interesting to see an item 'Super-LED Regulator', in the 'Circuit Ideas' feature of *Electronics World,* September 2003, p22. This drew attention to the

FIG 5 © RADCOM 153

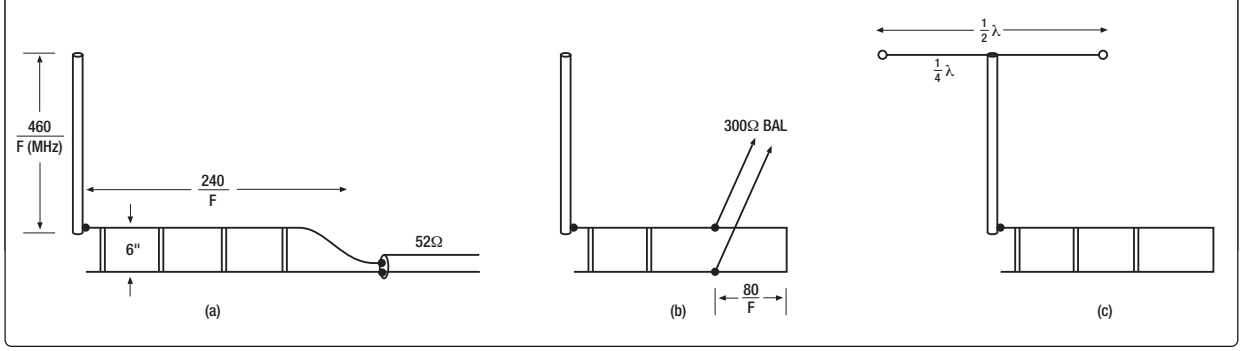
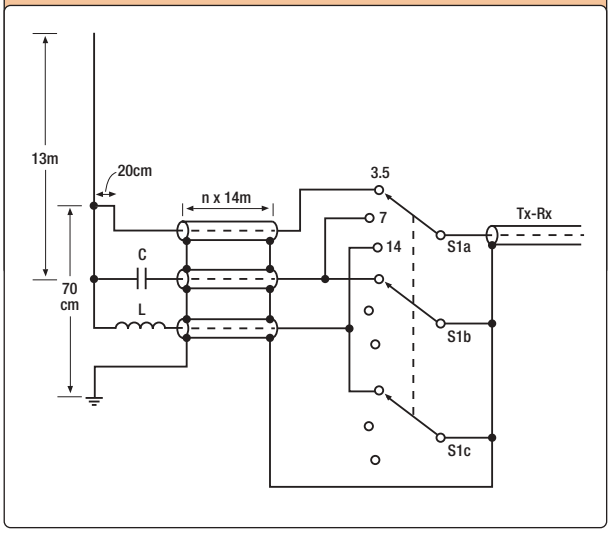


FIG 6 © RADCOM 154



Luxeon range of high-brightness LEDs from Lumileds in California. Available in various colours, the white Star/O variant includes optics to give a forward beam of about 10° making it ideal for a powerful torch that can be dimmed to extend battery life. Maximum device current is 350mA at 3.4V. There is a built-in heat sink that requires plenty of fresh air or conductive cooling to avoid damage due to overheating.

Fig 8 shows an arrangement that provides a variable regulated current enabling the brightness of the Luxeon to be set from 'off' to 'full on', and will keep the LED bright as the battery voltage beings to fall. With integral optics providing a 10° beam, it provides an excellent torch when powered by three NiMH AA batteries. The circuit uses an LM10 IC op-amp which, when wired as shown, provides 200mV at pin 1. The 4.7kΩ resistor and 1kΩ pot divides the 200mV to 0-35mV fed to the non-inverting input of IC1b. As a result of feedback, the voltage across the 0.1Ω resistor matches the 0.35mV from the reference section, enabling the current through the LED to be varied from 0 to 350mA. As the battery voltage drops, the voltage at pin 6 rises and the 'battery low' LED functions. It is claimed that, run on three NiMH cells, the circuit is over 90% efficient at full power and tops 80% for most of the range. Although current is under 1mA at minimum brightness an on-off switch should be fitted. Choice of the ZTX692B transistor is fairly critical since the device must have a low-saturation voltage at low base current since pin 6 of the LM10 cannot supply much current and there is only 200mV headroom between the 3.6V NiMH battery voltage and the 3.4V Luxeon voltage

The Luxeon device is available in small quantities in the UK through www.futureelectronics.com See also www.luxeonstar.com

Fig 7
The OD5CG triband vertical antenna for 14, 21 and 28MHz.

Fig 8
Current regulator designed for use with the Luxeon super-LED.

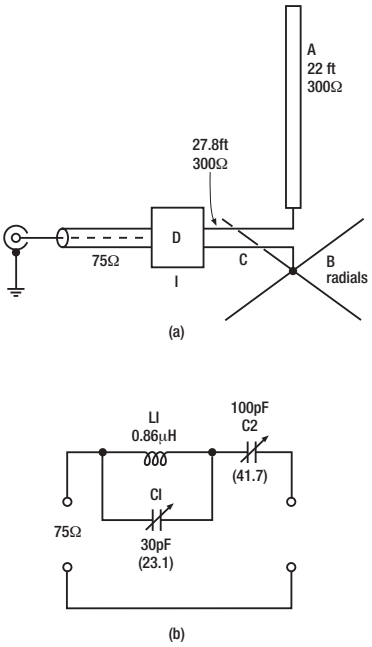
ELECTRICALLY-SMALL TRANSMITTING ANTENNAS

In view of the spectacular claims for the efficiency of the new generations of electrically-small transmitting antennas such as the CFA, CFL, EH and the small loops investigated by Prof Mike Underhill, G3LHZ, and his student Marc Harper. I would emphasise that there is, for a critic, a difference in commenting on these projects. The first three are being exploited commercially and criticism incurs the risk of trade libel. G3LHZ's work is in pursuit of scientific knowledge and has been presented at professional conferences for discussion by (sceptical) professional peers as well as thrown open to discussion in professional as well as amateur journals.

But not only my eyes were raised on seeing the Arno Elettronica advert (facing the opening page of the March 'TT') claiming >95% efficiency for their 3.5MHz and 1.8MHz E/H models. I am not in a position personally to comment on these claims, but would draw attention to a long, detailed Test Report *Investigation of the Far-Field Radiation Gain Pattern of the 20-metre Backpacker EH Antenna*, by Adam MacDonald, N1GX and Kevin Prosser, WA1ZEB (March 2003), and an additional Test Report on continued investigation of this antenna by Adam MacDonald, N1GX.

These two very professional reports, running to nearly 50 pages, were found on a private website, presumably that of N1GX and brought to my notice by Dr Brian Austin, G0GSF. As he comments, "These reports certainly represent some very comprehensive experimental [expert] work on the EH antenna and should lay to rest the mythology …." While the reports cover only the 14MHz Backpacker Antenna, mounted on a short PVC mast with resonant sloping ground-

FIG 7 © RADCOM 155



plane radials, the authors state: "It is expected that the results obtained from the 20m 'Backpacker' version of the EH antenna can be easily extended to other similar short-dipole EH antenna arrangements".

To quote briefly from the summary of the initial Test Report: "… Baseline test data were collected by feeding the test antenna with a very short length of coaxial feed-line. Additional data were collected by feeding the test antenna with approximately one physical wavelength (70ft) of coaxial feed-line… Far field radiation… fed by a very short length of coaxial cable was measured at an average 28dB loss referred to the azimuth radiation pattern of the quarter-wave reference antenna… Fed by 70ft of [sloping] coaxial feed-line was measured at between approximately 12 and 28dB of loss relative to the reference antenna, dependent on the azimuth of the [car-mounted] measuring receiver. Inclusion of the feed-line… caused significant increase in the

FIG 8 © RADCOM 056

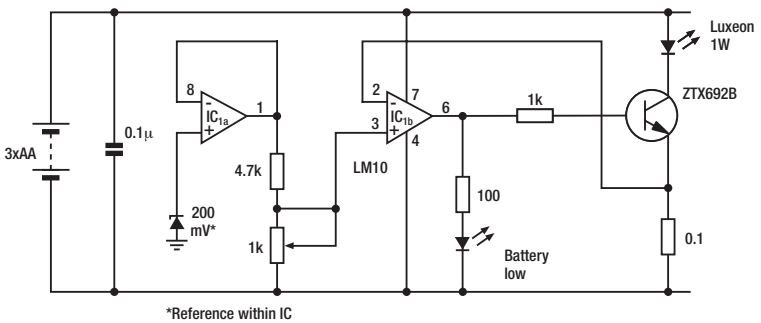


FIG 9 © RADCOM 157

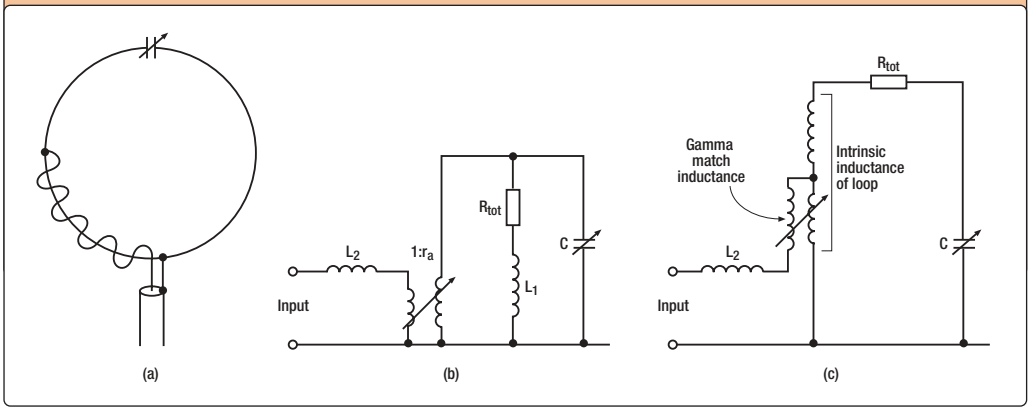


Fig 9
(a) Physical realisation of the Underhill/Harper small loop antenna. (b) Idealised electrical equivalent as used in their papers. (c) 'Real' equivalent circuit as propounded by G3UUR.

measured far-field pattern received power at all but one point along the perimeter of a circular measurement range. No data were collected that suggest that the test antenna obeyed physical laws other than those properties well described in the common body of experimental and theoretical electromagnetic literature."

To quote from the summary of the second Test Report: "The far-field radiation [when] fed by a moderate length of coaxial feed-line was compared to a similar-height reactively-matched monopole reference antenna... Far-field received power measurement data were collected for both the reference and test antenna over a total of 23 test positions, six of which were locations which provided an opportunity to explore the elevated gain pattern at angles up to approximately 21° above the horizon... Far-field radiation of the small test antenna fed by an 11ft length of coaxial cable was measured and found to be essentially indistinguishable from the far-field gain pattern of a loaded monopole reference antenna of the same overall height."

To turn to the Underhill/Harper controversy: G3LHZ asked me to forward to Dave Gordon-Smith, G3UUR (see brief comment in the April 'TT') a copy of one of the two papers presented on their work at the IEE HF Radio 2003 Conference at Bath University: 'The Estimation and Measurement of the Efficiency and Effectiveness of Small Antennas in an Environment'.

G3UUR has since provided comments on this paper and also on papers found on Marc Harper's web pages on the University of Surrey's website. He writes:

"One of the papers I found there discusses the equivalent circuit of the small loop arrangement that has been used for the research that has provoked the storm of controversy in 'TT'. The matching method used by Harper and Underhill to excite their loop (see **Fig 9(a)**) is a bizarre and messy arrangement, which I know will severely distort the characteristics of the loop as seen by the transmitter. The main problem with a gamma match approach is that it cancels some of the self-inductance of the loop. In this case, it cancels quite a lot because it covers so much of the loop circumference and couples so well to the high-*Q* loop. The loss of the loop, of course, remains the same as if it had not had this inductance cancelled, and therefore the *Q* appears to the outside world as if it is lower than the real intrinsic *Q* of the loop alone. Their equivalent circuit, **Fig 9(b)**, is an idealised version; the real equivalent circuit is shown in **Fig 9(c)**.

"The net effect of operating the loop like this is that the apparent *Q* of the loop, as seen by the transmitter, will be very much lower than the natural *Q* of the loop. This explains the exaggerated values of radiation resistance measured by them. Only a truly 'clean' and 'transparent' magnetic method of coupling to the loop will give a true representation of the behaviour of the loop at the transmitter. Their arrangement is not such a method!

"So, whereas I had suspicions about G3LHZ's claims of high intrinsic efficiency for small transmitting loops before, now I have no doubt that he is wrong, and I know why! With regard to his theoretical calculations of new limits to the minimum *Q* of small antennas, I reject these totally, because they are based on a mode that cannot be excited in a small loop or short folded dipole. The basic physical principles of induction would not allow the currents in the upper and lower arms of a short folded dipole to be in phase as claimed in their paper. Only physical size would allow enough phase shift for the standing waves on a pair of parallel conductors to attain the in-phase condition."

Although not based on personal experience but purely on comments by and reported experiences of others, including the above, I would offer the following views:

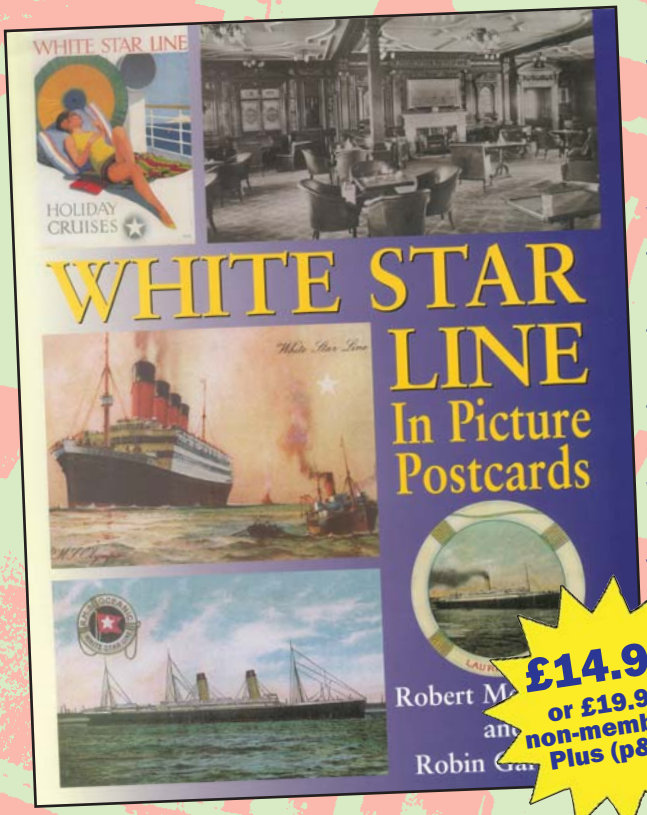
The transmitting loop with the dimensions and suitable construction can, in certain circumstances, form a useful antenna for amateurs in situations where space is severely restricted. In particular, a mobile-mounted or loop at low height can outperform a whip antenna (whether loaded or a quarter-wave monopole) for NVIS/medium-distance operation because of the vertical null of whip/vertical antennas

There is no convincing evidence that the radiation efficiency of a small tuned loop, the EH or CFA antenna, contravenes the established theory of electrically-small antennas. With dimensions of only a small fraction of a wavelength, efficiency is most unlikely to exceed about 15 to 20% although, when located at a height, in clear surroundings above good earth conductivity, the performance may prove entirely satisfactory. Bandwidth will be narrow and the antenna needs to be carefully retuned (remotely) when the frequency is changed. As G3LHZ emphasises, all antennas are only as good as their environments. Height and size matter! But remember that even an antenna with a radiation efficiency of less than 5% can still be satisfactory over some NVIS paths.

Bandwidth is dependent on the working *Q*. This will usually be significantly lower than the intrinsic *Q* of the element as a consequence of the matching/phasing arrangements as in the CFL, EH and, as outlined by G3UUR above, apparently the G3LHZ antennas. This seems to result in an apparent but illusory violation of the Chu-Wheeler, etc formulae.

For all antennas, and particularly loops, near-field measurements can be highly misleading. To be convincing, HF far-field measurements need to be expertly planned and implemented. To be entirely convincing they need to be based on measurements taken at a number of surrounding (azimuth) and overhead (elevation) points. The tests conducted by N1GX and WA1ZEB (see above) are probably as reliable as possible without flying a field-strength meter in a plane, helicopter, or balloon.

However, the single- and multi-turn loop undoubtedly still offers a useful field for further experimentation. G3LHZ should be encouraged to continue, but to reconsider his >90% claims. For those investing in commercial products, as always, *caveat emptor.* ♦



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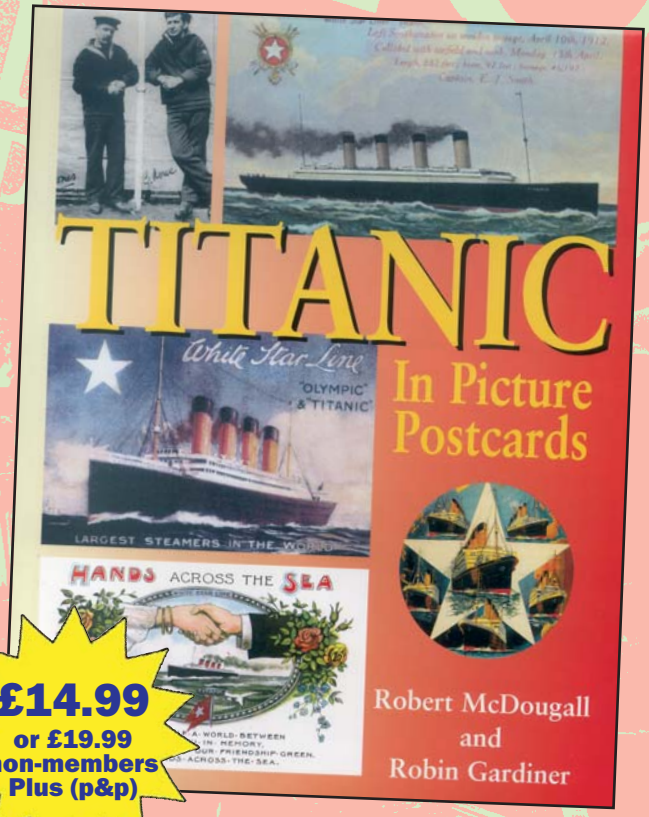

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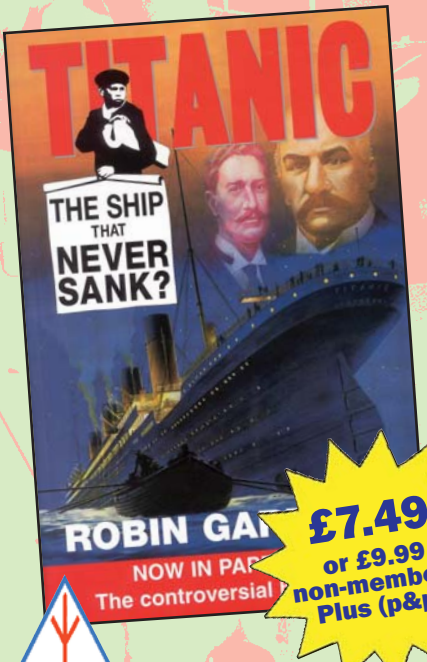

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Antennas

This month, G3LDO concentrates on mobile antennas, and illustrates the results of computer modelling and practical field-strength tests for two makes of antenna

VQ4HX/M on a family outing in Kenya, circa 1961. The rig comprises an ex-army 19-set mounted into the dashboard of an old left-hand drive Armstrong Siddeley convertible. The set was powered by the original 12V dynamotor PSU and used the original variometer ATU to load a bumper-mounted whip antenna.

One of the great challenges for antenna design is the mobile antenna. It has to be compact, preferably with multiband capability. When I was first licensed in 1957, mobile operation was very popular, particularly on 160m. Although commercial equipment was not available then (except for some ex military sets, see the photograph), it was relatively easy to build a 10W transmitter for this band, and the ground-wave coverage was in the region of 30miles (50km) even with what must have been rather inefficient antennas.

Modern vehicles present more of a challenge when it comes to installation of mobile equipment and antennas. However, now that radios are so small, there is usually a place where one can be installed and VHF antennas can be installed using a magmount. HF antennas are usually mounted at some low position on the vehicle so as to have maximum length (and highest radiation resistance and lowest losses) for a given overall height. Modern vehicles do not usually have the nice convenient bumpers for mounting HF antennas used by earlier generations of mobilers. If a shorter roof-mounted HF antenna is used, the losses would be greater, but the area of maximum radiation will higher from the ground.

My vehicle is fitted with a tow-bar, so it is quite easy to install one of the larger mobile antennas such as the Texas BugCatcher. A new antenna on the market is the motorised High Sierra Sidekick antenna. This antenna is only just over a metre long and uses an electric motor, controlled from a switch box from inside the vehicle to adjust the inductance of the loading coil. On the face of it, this seems the answer to the problems noted above and this month I will try to show how this antenna compares with the more traditional bumper-mounted version. I have an aluminium plate antenna rack which is fixed to the roof rack bars, which has a SO-239 socket for VHF antennas and a $^{3}/_{8}$in stud base for HF antennas. Initially, I planned to mount the Sidekick antenna on this base with tests to follow on a magmount later. The mobile test set up is shown in the second photograph.

Before conducting the tests, I would like to illustrate, using computer modelling, that the HF mobile installation on the higher frequencies is not omnidirectional. Directivity is affected by the position of the antenna, the size of the vehicle and the frequency of operation.

COMPUTER MODELLING

Before making the measurements on the two antennas, I made a computer model using *EZNEC3*. The vehicle is modelled using a wire grid of roughly the same dimensions as my estate car. This is now a standard way of modelling vehicles, originally described in [1] and expanded in [2] and [3].

A computer model of the High Sierra Sidekick antenna on the rear of my vehicle is shown in **Fig 1**. The vehicle structure and antenna currents are indicated by red and green lines respectively. The distance between the vehicle line and its associated current line is an indication of relative current flow. The circles and the squares on the antenna element are the feed-points and the loading coils, respectively. In fact, two loading inductors are used to try to model the fact that the real mobile coil is distributed along a proportion of the element length. Also shown is the fore and aft elevation section of the antenna polar diagram. This shows some directivity, which becomes more pronounced as the frequency is increased with the antenna mounted on the rear of the vehicle As you can see in Fig 1, there is a fairly high current in the metal structure of the vehicle near the base of the antenna element. It follows that, when an antenna is radiated against the body of the vehicle, the vehicle itself is part of the antenna system and radiates also.

The model predicts a maximum gain of -4dBi and a F/B directivity of 6dB on 18MHz. The Texas Bug-Catcher antenna was also modelled, predicting a maximum gain of -0.7dBi and a F/B directivity of 7dB. On 80m, the radiation pattern is almost omnidirectional on both antennas.

FIELD STRENGTH TESTS

It is always a good idea to check computer models with the real world if possible. From the space in the car park of a local supermarket I made some mobile field strength tests with Peter Craw, G3CCX, at his home, located about one mile away. With the vehicle facing G3CCX, and using the High Sierra Sidekick, a 10W

Mobile antenna test arrangement. The unused antenna is removed during the actual test.

High Sierra Sidekick installation with improved earthing strip. Also shown are the power leads (with RF chokes) to the antenna motor.

mobile carrier produced an S8 signal on G3CCX's Yaesu FT-1000MP. From the rear of the vehicle the signal strength was S6.8, a F/B directivity of S1.2. A rough calibration of the 1000MP gave 3dB per S point (in keeping with other rigs, see [4]) which, in turn, represents a F/B of around 4dB, fairly close to the computer model, see Fig 1.

The Texas BugCatcher gave S8.1 forward and S5.8 from the rear, a F/B directivity of S2.3. I was surprised how well the small High Sierra Sidekick performed relative to the Texas BugCatcher. There might have been factors affecting the performance of this antenna. For example, it was mounted on a tow-bar with no special RF connector to the vehicle body, although a resistance check showed that the resistance was very low.

VSWR & MATCHING

A mobile antenna is normally fed with 50Ω coaxial cable with the centre connected to the antenna and the braid to the vehicle body. However, the radiation resistance of the antenna will generally be lower than 50Ω and, for a given antenna size, depends on frequency. In practice, the feed impedance will include the RF resistance of the loading coil and the resistance losses, which are in series with the radiation resistance. The loss resistance, taken in total, is usually much greater than the radiation resistance, particularly at the lower frequencies. A low VSWR is no guarantee of a good performance. In fact it could possibly mean the opposite - that the loss resistance is high.

The easiest method of matching a mobile antenna to 50Ω feeder is simply by the addition of a shunt capacitor directly across the antenna feedpoint. Exact values can be determined experimentally and will need to be switched for multiband operation. The way that this works can be seen by referring to **Fig 2**. The curve A represents the feed impedance of a Pro-Am antenna in the frequency range 3.55 to 3.65MHz. At the lower frequency, the impedance is about 10 - 50jΩ, while at the higher frequency it is 70 + 70jΩ. On no part of the curve is the VSWR better than 2:1. By increasing the inductance of the loading coil slightly and compensating with a capacitor across the feed-point, the curve can be shifted to B to achieve an improved match at resonance. Other matching methods are described in [5].

While on the subject of resistance losses, it should be noted that a small antenna like the High Sierra Sidekick has a lower radiation resistance than the standard 8ft mobile antenna. It follows that the connection from the antenna base to the body of the vehicle should have the lowest RF resistance and inductance possible to obtain the best performance, particularly on the higher frequency bands. The handbook for this antenna has some interesting remarks about ground leads and recommends 25mm (1in) wide flat copper strap for vehicle ground leads.

Originally, my aluminium plate antenna rack was connected to the vehicle with a short 2mm diameter wire. After reading the Sidekick manual I changed the wire for 25mm close-woven braid (I didn't have any flat copper strip to hand). The installation is shown in the photograph, and the improvement in VSWR can be seen in **Fig 3**. I have yet to try a copper strap.

GENERAL

I was impressed with the High Sierra Sidekick antenna, which performed well considering how small it is. On 80m the losses are probably fairly high. This can be judged by comparative VSWR curves shown in **Fig 4**. The Texas BugCatcher required around 900pF of shunt capacitance to get this curve; without it the VSWR was above 3:1 at resonance. The Sidekick antenna required no shunt matching at all, which implies that the resistance losses are high on this band. However, for operating convenience, the Sidekick wins hands down. My thanks to Waters & Stanton for the loan of the High Sierra Sidekick antenna.

I have not mentioned magmounts in this column. The reason is that, from the experimental work done so far, I feel the subject needs a column to itself - a case of watch this space. ♦

FIG 1 © RADCOM 158

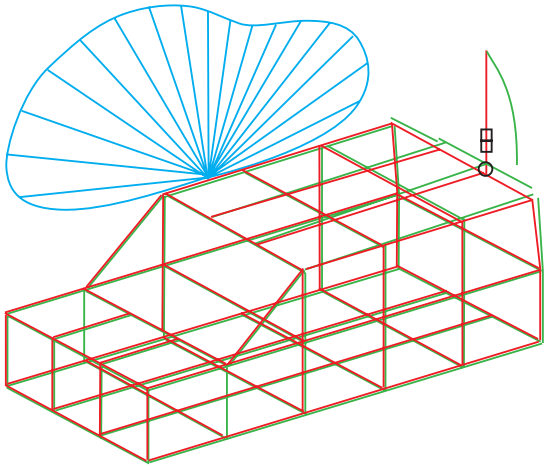

Fig 1
Computer model of a HF mobile installation on 18MHz using the High Sierra Sidekick antenna. The model predicts a maximum gain of -4dBi and a F/B directivity of 6dB.

FIG 2 © RADCOM 159

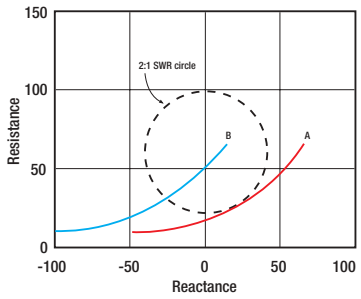

Fig 2
Shifting of frequency/impedance curve using a shunt capacitance to obtain a 50Ω match.

FIG 3 © RADCOM 160

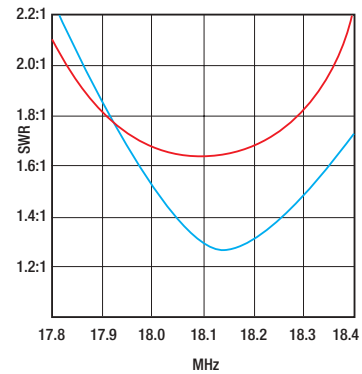

Fig 3
VSWR curves of the High Sierra Sidekick on the 18MHz band. The lower VSWR resulted from changing the earthing connector from a 2mm solid wire to 25mm wide braid.

FIG 4 © RADCOM 161

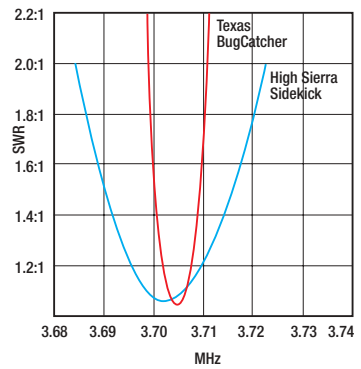

Fig 4
Comparative VSWR curves of the Texas BugCatcher and the High Sierra Sidekick on 80m. The BugCatcher appears much more efficient, but the VSWR 2:1 bandwidth is limited to 12kHz for a particular setting.

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WATERS & STANTON

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By Steve White, G3ZVW

c/o RSGB HQ

This month, G3ZVW looks at near-field devices, and reports on a new type of lens which uses the magnetic and electrical components of optical frequencies to produce a 'perfect lens'

Whatever next

Alan Messenger, G0TLK, sent in a copy of some pages from the January 2004 edition of *Card Technology*, which contains a feature about the use of wireless technology to authorise credit card payments. The technology is based around unpowered chips that are embedded in, stuck on, or contained in a clip-on cover for a mobile phone.

Alan comments; "45 million users at 13.56MHz could make 20m an interesting band!". As soon as I saw mention of 13.56MHz I remembered discussing short-range communication at the so-called Industrial Scientific and Medical (ISM) frequency in this column a while back. It was in December 2002 that I wrote an item entitled 'Short Range Comms', which detailed work being jointly undertaken by Philips and Sony into Near Field Communications (NFC). Philips had named its NFC chip Mifare™ and Sony had named its chip FeliCa™. Thanks to input from a Senior Engineer working in the RFID industry, I was able to write a follow-up entitled 'Near Field Feedback' in March 2003, which explained how NFC devices operate and why radio amateurs don't have anything to fear from them. To summarise, NFC devices are designed to use magnetic field coupling to induce power into the transponder and reply by 'load modulating' the transmit field by partially shorting their own antenna coil. This results in a very small receive signal 'sitting' on top of the transmitted (powering) signal. The transmit antennas are optimised to generate the maximum magnetic field, the electric field being very small (typically 60dB below the magnetic field). The system is intended to operate over a range of only 20cm.

Reading the *Card Technology* feature, you could be forgiven for thinking that the technology I described as 'under development' at the end of 2002 is finally coming to market, because Sony has now tied-up a deal with Japanese cellphone company DoCoMo (who have 45 million customers) to fit FeliCa chips as standard to all third-generation phones by the middle of this year. However, that would not true, because the technology used in the 'Oyster Card' now being used by hundreds of thousands of London Bus and Underground travellers to open the barriers at tube stations and to pay for boarding a bus is already here and it uses the Philips Mifare chip.

PERFECT LENSES

Electromagnetic radiation at visible wavelengths contains electrical and magnetic components, but conventional optical lenses respond to just one of the two - the electrical. This is because almost all materials are magnetically inert at optical frequencies. However, newly-designed materials could *eventually* lead to 'perfect lenses' - able to focus on features smaller than the wavelength of light.

Employing 'metamaterials', new composites are being constructed using nanotechnology that can tap into a range of magnetism that cannot be harnessed using known naturally-occurring materials. According to the March 2004 edition of *Science*, the newest metamaterials respond in the terahertz (THz) frequency range, which lies between microwaves and infrared. Microcircuits can be made from elements such as copper, or compounds that are not in themselves magnetic.

Harnessing the electrical and magnetic components of optical frequencies is the Holy Grail of optical engineers and could lead to lenses with vastly better resolutions than conventional types. Such lenses could focus on features smaller than the wavelength of light and would be limited only by the materials they are constructed from. According to Professor John Pendry of Imperial College, London, "The march of magnetism towards the visible will enhance our power to control and use electromagnetic radiation in these frequency ranges", but scientists concede that pushing these new materials into the range of optical frequencies is still some way off.

In fact, some experts in the field of optics question whether it is possible to develop materials capable of producing a perfect lens at optical frequencies. "Theoretically, if you construct the elements we've made at terahertz frequencies, make them even smaller and then scale them up to optical frequencies, you could have perfect lensing at those frequencies" said co-author Dr Willie Padilla of the University of California, San Diego, "but there are theoretical limits to how these things work because you're scaling them smaller and smaller. Once you get to the point where this material is just a few atoms thick, it's not even clear how that material is going to behave."

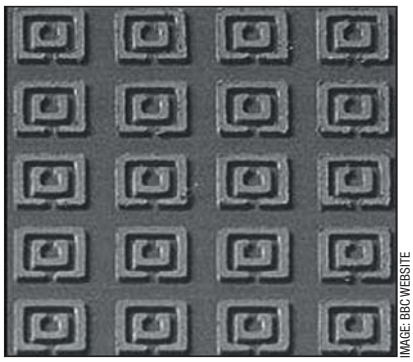

IMAGE: BBC WEBSITE

Split rings about 50 microns wide form tuned circuits at frequencies in the terahertz range. A matrix of them can be used as a lens.

IMAGE: OYSTER CARD WEBSITES

The Oyster Card employs Near Field Communication technology to open the barriers at London Underground stations and pay for boarding buses. Three million cards are said to have been produced for use by London Underground and London Bus users.

The new materials are based on a 'split ring' structure (see the photograph), which makes a circuit that can be tuned to achieve the desired magnetic response. More immediately, terahertz technology will open up a range of new applications such as scanners, which are thought to have great potential at this frequency range. Up until now their use has been limited because of the lack of inexpensive methods to generate and detect frequencies in the terahertz range. "Images taken using terahertz rays have good contrast between similar density objects", says Padilla, "so when building aircraft, terahertz scanners could be used to image components, even if the components were of similar densities."

Terahertz technology could also be useful for medical imaging, because it is non-ionising and therefore far less destructive than X-rays. Metamaterial composites are also likely to find applications in enhancing the capacity of optical storage media. ♦

WEB SEARCH

Oyster Card and **Philips Mifare**	http://tube.tfl.gov.uk/content/tickets/oyster.asp www.oystercard.com www.semiconductors.philips.com/markets/dentificationarticles/success/s75/index.html
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In practice

Wiring up more-complex connectors and checking them on completion

MORE 'GOOD-ENOUGH' CONNECTORS
This continues last month's information about assembling small multiway connectors and cables.

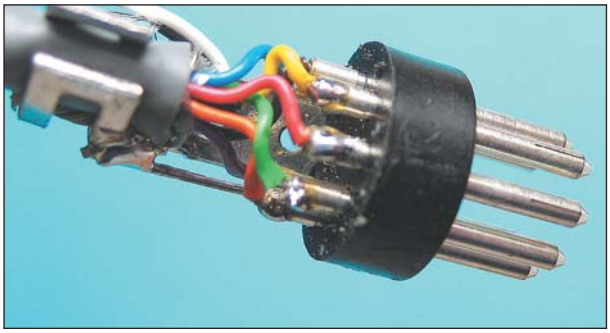
Last month, we looked at some tools and techniques, and got as far as connecting simple coaxial signal cables to DIN connectors. Now we'll continue with multi-way DIN connectors, and then move on to miniature DINs and the 'D' connectors used for PCs.

Assembling multi-way cables to DIN connectors is mostly an extension of last month's techniques. Once again, the key skills you need to develop are:

- Accurate, repeatable wire-stripping
- Clean, quick soldering
- Getting every step *right first time* - and the more connectors you assemble, the easier it gets!

Here is the assembly procedure, step by step. Much of it is very similar to the procedure given last month, but you might want to go back and review some of the more detailed hints. The major difference is in the suggested way of connecting the screen of the cable to the ground pin and metal shell of the connector (**Fig 1**). I always connect these three points together unless there is a very specific reason for not doing so, and in that case I don't use an additional ground wire inside the screen. The reasons for this are EMC-related, but that's a different story [1].

1. Dismantle the plug, removing the cable grip, and hold just the plastic pin header in the swivel vice.
2. Slip the connector shell onto the cable *now*! Even if the other end of the cable is free, this is still a very good habit to develop.
3. Strip back about 20-25mm of the jacket of the screened cable. I described last month how to do this without damaging the fine wires of the screen.



Attaching an 8-way screened cable to a 7-way DIN plug.

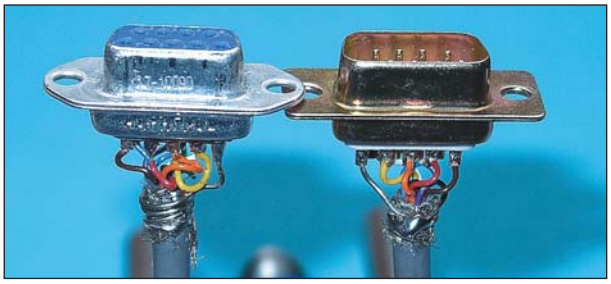
4. Use the sharp-pointed scriber to unravel the screen, and twist the wires from one side into a pigtail (using all the wires would be too bulky). Use the nail scissors to trim off all the unused strands - and check that you *have* removed all of them.
6. Strip back the insulation from each of the wires inside the shield to leave about 7-9mm of insulation, and quickly tin the bared strands to hold them together. The soft PVC insulation will shrink back with the heat, so this step needs some experience and judgement. Then snip off the excess bare wire so the end of each wire will go nicely into the hollow end of the correct pin.
7. From the equipment manual, identify the first pin that you want to connect [2]. *Always* work from the pin numbering that is moulded into the header of the real-life connector. Support the cable so that this first wire sits comfortably in the hollow end of the correct pin, and solder it.

   As described last month, getting the first wire in is the trickiest part because you don't have enough hands. Experienced constructors support most of the weight of the cable from either an overhead bench lamp or over the shoulder. The deluxe solution, of course, would be to use *two* fully adjustable table vices! For this first soldered joint, don't bother about electrical quality - any kind of mechanical connection will do for now, and you can reflow it later.
8. Continue to solder in the remaining wires, in a sensible order. Use the resistor colour code (brown = pin 1, red = pin 2 etc) as far as you can, so that when you come to assemble the other end of the cable, you'll already know which pin is which without having to keep special notes.

   As I said above, if you're grounding to the cable screen, don't use a ground wire inside the screen as well - clip that coloured wire off at both ends of the cable. If you need to solder the centre pin 8 of an 8-pin DIN plug, do this pin first because you won't be able to reach it later. The pin header should now be beginning to look like the photograph - note the spare white wire, which is turned back and cut short.
9. Solder a piece of solid tinned copper wire into the pin that is to be grounded. Tin the cable clamp where this wire will attach, let it cool and then assemble the cable clamp onto the pin header as shown.

   If you're using a plastic-bodied DIN plug with the split metal half-shells, use the half-shell that is also the cable clamp. But first, check that no stray strands of wire will short between the pins or onto that lower half-shell.
10. Ease the cable forward so that every wire has a little slack, as shown in the photograph. Then solder the ground wire, the screen pigtail and the cable clamp together, again as shown. Try to avoid melting the outer jacket, and don't squeeze the cable clamp tight until it has cooled.
11. Make a final all-round visual check for stray strands of wire or blobs of solder. Assemble the rest of the connector, and then confirm that there are open-circuits between adjacent pins, and only the ground pin is connected to the metal shell.

When proof-reading last month's article, *RadCom* Technical Editor George Brown asked about miniature DIN connectors, or the high-density DIN connector on the back of the IC-706 that crams no less than 13 pins into a normal-size header. My best word of advice for assembling those connectors is - don't! Do everything you can to find some other way, by adapting an existing cable that already has the right connector on it. For example, a standard PS/2 mouse lead has four wires and a screen, connected to a moulded 6-way miniature DIN plug. Video leads use 5-pin and 8-pin miniature DIN connectors. Plug-to-plug jumpleads and adapters are also a good starting-point because they give you extra ready-wired plugs [3]. For the IC-706, you can connect the 13-pin DIN lead supplied with the rig to a 15-way 'D' socket, which is much more manageable - see below. George also points out that on some mobile rigs, the plastic bodies of many normal mini-DIN plugs may not fit into the deeply recessed hole in the chassis. In that case you'll either need to carry on searching, or else do something creative to remove some



Plug and socket ends of a fully wired 9-way 'D' extension. Things to note: the 'wire wrap' method of connecting the ground pin 5 to the cable screen; wire numbering follows the resistor colour code; and the wiring of the two connectors is mirror-imaged.

excess plastic.

If all else fails, you *can* buy mini-DIN plugs with solder terminations [3]. If you're already pretty good with normal DIN connectors, the assembly techniques already described will work for high-density and sub-miniature connectors too... but I guarantee that you won't enjoy it.

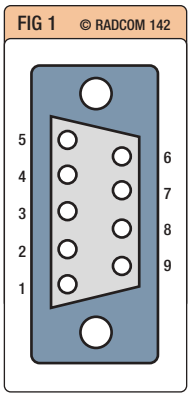
'D' CONNECTORS

Let's move on now to the 'D' connectors that are used on PCs for the COM/serial port (9-way), games port (15-way) and printer/parallel port (25-way). With increasingly tight integration between computers and radios, assembling these connectors has become another very common task.

The 9-way 'D' connector is the most common, so as an example I'll describe how to attach an 8-way screened cable. The technique is very similar to that described above for multi-way DIN connectors, but we'll be using the cable screen as the ninth, grounded conductor. The second photograph shows the plug and socket of a simple extension cable. You don't have to bend your brain over the fact that the plug and the socket are wired as mirror-images. Simply follow the pin numbering that is moulded into the actual component. That way, it doesn't matter whether it's a plug or a socket, front or back view, or whether the numbering is like **Fig 1** or its mirror image.

The pin allocation for RS-232 serial port connectors is standardised, and pin 5 of a 9-way 'D' plug or socket is always the ground connection. The second photograph shows how the extra wire can be attached to the screen. When you have removed the outer jacket, fold the screen back over the end, and then trim it using the sharp-pointed nail scissors. Leave about 10mm of screen lying neatly back over the jacket. Now wrap several turns of solid tinned copper wire over the screen, binding it down and leaving a free tail of wire at the connector end. Very quickly and lightly solder the wire to the screen. Don't try to run solder all around, or you'll melt the soft jacket and make a mess that cannot be soldered at all. Remember, this is only supposed to be a 'good enough' job, so just aim for a sound electrical connection. Let the plastic cool before moving on to the next step. (You'll also notice in the photograph that there are some stray strands of screen wire, but they are all well away from places where they could cause trouble.)

Fig 1
Standard pin numbering for a 9-way 'D' connector - but this may be mirror-imaged. Always follow the pin numbering moulded into each individual part.



Now you're ready to connect the individual wires. The ground wire is the strongest, so that should be the first, connected to pin 5, of course. Then go back to pin 1 and connect the rest of the wires, in resistor colour code order but missing out the green wire that would go to pin 5. With most 8-core cables, you'll probably find that you have all the correct colours except grey, so use the spare green wire for pin 8. If a higher-numbered wire comes out of the cable on the wrong side, feed it through the middle of the bundle of wires rather than stretching it all the way around the outside.

It's very important to have a consistent policy for wire colours, because serial data links are notoriously unforgiving. Until the hardware connections and the software configuration are both exactly right, the link will probably remain totally unresponsive, leaving you uncertain about what to try next. So you really need to *manufacture* as many certainties as you can. To achieve the greatest possibly certainty that your cables have been made up correctly, you need to have a logical numbering policy. Then always follow it... and then check the whole cable.

CHECKING A CABLE

Here is a 'universal' procedure for checking multi-way cables and connectors for correct continuity and absence of short-circuits. Hold both ends of the cable close together in a vice, so you can see them both at once, and use a multimeter that has a continuity beep function. Also use very fine test probes that can make a selective contact to only one pin, or will fit inside a small socket contact. I normally use clip-type meter probes, but for this particular job I clip them onto sharp ball-ended dressmaking pins.

1. Assemble all connectors into their final configuration, ready for use - including the body shell.
2. Hold one probe onto the metal shell of one connector, and test continuity to all other pins of that connector. Normally every pin should read open-circuit, except for the one that is deliberately grounded to the shell.
3. Confirm that this pin has the correct number, if necessary by adding a matching connector and reading the numbering from that instead. This check also confirms that you haven't completely mirror-imaged the connector.
4. If the other end of the cable also has a connector, repeat steps 2 and 3 for that end too.
5. Select the socket end of the cable - let's call this end A - and insert a test probe into pin 1. (If the cable has only plugs, attach a free socket to one end and connect to the rear of the socket instead.) Hold the probe firmly so that it makes a solid, reliable connection throughout the next step.
6. At the other end of the cable - end B - systematically run the test probe over all the pins or sockets. Only pin B1 should give a beep (unless there are deliberate crossovers in the wiring, in which case adapt these instructions accordingly).
7. Advance the probe at end A to pin 2, and repeat the test at end B. This time, only pin B2 should give a beep.
8. Repeat this process for all the other pins, until you're done.

If the cable passes that thorough verification test, you know it's a good one. ♦

NOTES AND REFERENCES

[1] Grounding at the connector avoids the risk of ungrounded cable screens inside the transceiver introducing stray RF and noise. See 'In Practice' for July 1993, September 1995 and December 2001.
[2] Real-life DIN connectors are always numbered correctly, but the drawings in Japanese or American manuals sometimes aren't, so it pays to check! The numbering should be as shown in Fig 1 last month, or a mirror-image of it.
[3] CPC (www.cpc.co.uk) has probably the UK's best selection of audio-visual connectors and ready-made leads and adapters.

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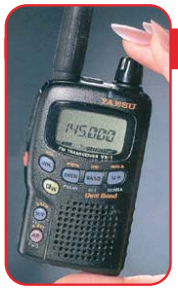

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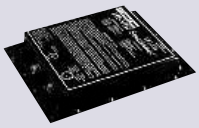

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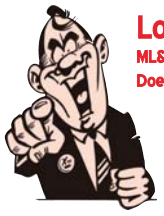

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The CFA controversy

"The RSGB Technical Committee reviews technical articles prior to publication to ensure that they do not give incorrect or misleading information. Like all peer-review activities, however, this process can result in controversial views being suppressed, albeit with the best of intentions. It has been decided that we will, from time to time, and if the subject appears appropriate, publish articles of a controversial nature in order to stimulate debate. The following two articles fall into that category and carry the caveat that their publication does not imply that the RSGB, its Technical Committee or *RadCom* necessarily agrees with the contents."

Tony Plant, G3NXC
Chairman, RSGB Technical Committee

The Crossed Field Antenna (CFA), invented by Maurice Hately, GM3HAT / G3HAT, claims to use a novel technique that has not been exploited by any previous design. This technique has become known as Poynting Vector Synthesis.

Here, G3PLX explains why he is not convinced by the CFA theory. On p55, G3HAT comments on his remarks.

The flaw in the Crossed-Field Antenna theory

In this article, I would like to present a reasoned proof that the CFA claim is flawed. I will do this by means of a simple thought experiment in which I 'swap' one aspect of the antenna design and use well-understood electromagnetic theory to show that, if it radiated more power than a conventional antenna before, it would now radiate less. I then show, using simple electrical theory, that this transposition only imparts a phase-shift to the radiated signal. I deduce that the antenna radiates neither more nor less than a conventional antenna either way round, and then go on to identify the false assumption which leads to the flaw.

THE CFA

I will first describe the CFA itself and give a simplified account of how it is claimed to work. There is a dipole version, but it's easier to study it in its ground-plane version, **Fig 1**. At 0.6m above the ground-plane, there is a horizontal disc of 4m diameter. Above this, and co-axial with it, is a vertical cylinder 2m diameter and 2.5m high, with its base 1.2m above the ground-plane. The antenna has two feed-points, one at the centre of the disc and one at the base of the cylinder, both fed against the ground-plane from a phasing unit. The phasing unit maintains the voltage on the disc so that its phase lags that of the cylinder voltage by 90°. As far as I know, this description is sufficient, although additional information would be needed about the internal workings of the phasing unit, were I to discuss bandwidth - which I am not. I have given the sizes which I believe were used on a medium-wave CFA installed in Egypt but, clearly, CFAs of almost any size are possible for other frequencies.

Although the published accounts of how the antenna works are somewhat technical, I present here a simplified version to help readers follow the steps in my subsequent reasoning; I believe I have included all the salient points.

HOW IT WORKS

The electric field, E, from the cylinder, forms E-field lines which spread out from it and curve down to the ground-plane. Electromagnetic theory shows that, as this E-field oscillates, a magnetic field, H, is generated, the field lines of which form horizontal circles around the cylinder. There are similar E-field lines and similar H-circles around the disc. Poynting's theorem can be used to calculate, at any point around the antenna, a quantity called a Poynting Vector (PV), which is derived from the E- and H-fields at that point. The PV has units of watts per square metre (Wm^{-2}), and can best be thought of as 'a bit of electromagnetic power heading in a particular direction'.

It becomes easier to understand when we see that summing up all these bits of directed electromagnetic power at all the points on a surface surrounding the antenna, taking into account which way they are heading, will tell us how much power is radiating from the antenna. The PV of E and H is usually written as E x H (E cross H) and is a measure of several factors combined. The PV will be large if E is large, H is large, E and H are at right angles in space, and E and H are in-phase in time. It will be zero if either E is zero, H is zero, E and H are parallel, or E and H are 90° out of phase. If the E-field is vertical and the H-field is horizontal, which is the case for a conventional ground-plane for example, the direction of the PV is 'outward' as we would expect intuitively. Reversing the phase or direction of E or H will reverse the PV. So far this is all well-accepted theory.

In a conventional antenna, especially a small one, the E- and H-fields near to the antenna are high in magnitude and at right angles, which is good, but almost 90° out of phase, which is not so good. Only when we get outside the near field are they in phase but, by then, the E- and H-magnitudes have dropped considerably. Many antenna workers found this frustrating and wondered if there was a way to get the E- and H-

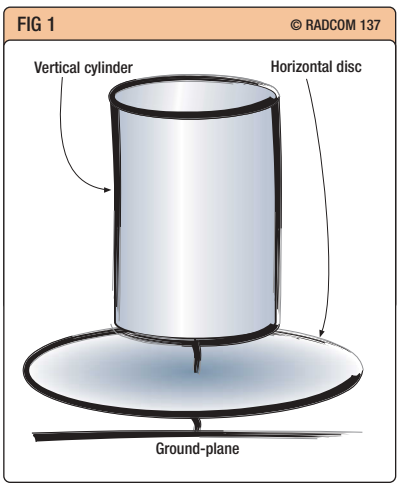

Fig 1
The structure of the CFA antenna.

fields into phase nearer to the antenna and thus radiate more power. The CFA claims to have done this, and in a novel way.

To understand how it achieves this, it helps to separate the E-field at any point in space around the antenna into two components - E_c caused by the cylinder voltage, and E_d caused by the disc voltage. The corresponding H-field components, H_c and H_d, lead their respective E-fields in phase by almost 90° and form field lines in the form of horizontal circles around the cylinder and the disc respectively. Some of the E-field lines from the disc will cross the H-field lines from the cylinder, and vice versa. This means that, at any point in space around the antenna, we have to consider four PV terms, namely $E_c \times H_c$, $E_c \times H_d$, $E_d \times H_c$, and $E_d \times H_d$.

$E_c \times H_c$ is small because E_c and H_c are almost 90° out of phase. This is also true of $E_d \times H_d$. These are the 'conventional' contributions to the radiation from the antenna, as if the cylinder and the disc were acting alone. However, the two cross-terms, $E_c \times H_d$ and $E_d \times H_c$ are much larger because their E- and H-fields are in-phase as a result of the intentional 90° phase-lag applied to the disc voltage. If we check the directions, we find that the $E_c \times H_d$ vector points outwards and the $E_d \times H_c$ vector points inwards. The claim for the CFA is that the chosen cylinder-disc geometry results in the $E_c \times H_d$ vector being larger than the $E_d \times H_c$ vector, so the net effect of these two terms is significant power radiated outward from the antenna. The asymmetric shape of the CFA disc/cylinder structure, combined with the 90° phasing, is the key to its novel claim.

This theory has created tremendous controversy. Quite apart from the theoretical arguments, laboratory tests on CFA antennas have produced uncertain results because the feed-point impedances are very difficult to drive. Not only are they highly capacitive, but if you try to drive power into one feed-point, much of it emerges from the other feed-point and has to be re-cycled if the efficiency is not to be compromised. It has been suggested that it would be very difficult to model the vector interactions mathematically, and it is not at all clear to what extent the asymmetry and the phasing will result in a benefit. Against that, there are reports of remarkable performance, including the medium-wave broadcast antenna mentioned above, which reportedly achieves the same performance as the 75m (quarter-wave) vertical which it replaced, in spite of being only 3.7m tall. The arguments continue.

FIG 2 © RADCOM 157

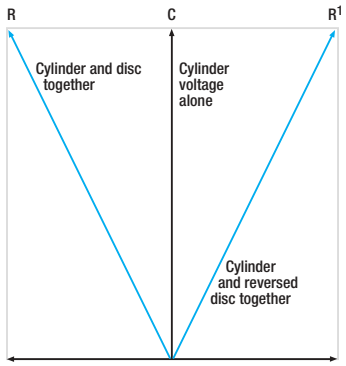

Fig 2
Phasor diagram of combined received signals.

A THOUGHT-EXPERIMENT

I would now like to describe my thought-experiment. I simply reverse the polarity of the voltage on the disc, so that instead of lagging the cylinder voltage, it leads by 90°. Tracing through what happens to each of the four PV terms, we find that there is no change to the $E_c \times H_c$ term because the cylinder voltage hasn't changed. There is no change to the $E_d \times H_d$ term because both E_d and H_d have reversed and this leaves the resulting PV still heading outwards. The 'conventional' radiation from the CFA is thus unchanged. However, the cross-terms $E_c \times H_d$ and $E_d \times H_c$ will both change direction. If the CFA claim is valid, instead of an increased outward power we should experience a decrease. I am not concerned here with how much change there might be, but just to note that reversing the disc voltage polarity will reverse the claimed gain. This simple experiment thus provides a neat way of verifying the claim.

At this point I could build a CFA and do the experiment. I will need to make sure that the voltages on the cylinder and disc stay correct, in spite of the known cross-coupling effects. This means either having zero-impedance voltage sources or some way to monitor the voltages and compensate for any interaction. However, it's not difficult to predict the result from theory alone. I will show that changing the polarity of the disc voltage has no effect other than a phase-shift on the radiated signal from the antenna.

Suppose I set up a vertical antenna some distance away from the CFA, and have some way of displaying the amplitude and phase of the signal received by it. I switch on the CFA cylinder voltage alone. Let's suppose that gives me a received voltage which I can represent by the vertical line OC on a phasor diagram (**Fig 2**). The length of OC represents the magnitude of the signal and the angle of the line to the vertical represents its phase. If I switch this same voltage to the disc alone, and I can assume that the antenna dimensions are small compared to a wavelength, I will also receive a signal, probably lower in amplitude but at the same phase. If I now make the disc voltage lag in phase by 90°, my received signal will also lag by 90° compared to the signal received from the cylinder. I can show this on the phasor diagram as the line OD, where the angle DOC is a right angle. If I reverse the disc polarity, I receive a signal represented by the line OD', in the opposite direction but of the same magnitude.

If I now switch on disc and cylinder voltages together, vector theory tells me that the combined signal received can be represented by the line OR, where the point R completes the rectangle of which C, O, and D are the other corners. With the disc polarity reversed, the combined signal will be the line OR', where C, O, D' and R' also form a rectangle. The length OR is clearly the same as the length OR'. The signal received is thus the same magnitude in both polarities of the disc voltage. Only the angle changes between OR and OR', so only the phase of the received signal changes.

I showed earlier that if the cross-terms $E_c \times H_d$ and $E_d \times H_c$ were different, there would be a change in the radiated power when I switch the disc polarity, but the above reasoning shows that when I do switch, nothing changes except the signal phase. I conclude that the two cross-terms must in fact be equal and opposite. This means they make no net contribution to the behaviour of the antenna and therefore the CFA claim is flawed. The root of the flaw is the assumption that the asymmetry of the antenna geometry makes the $E_c \times H_d$ term bigger than the $E_d \times H_c$ term. The asymmetry is evidently deceptive and these two terms must always cancel. There is zero benefit from the combination of the cylinder/disc structure and the phase lag of the disc voltage. The Crossed-Field Antenna cannot work as claimed.

This article arose out of stimulating correspondence with Bob Henly, G3IHR, whom I thank for his patience, and my thanks also go to Jack Belrose, VE2CV, and Mike Underhill, G3LHZ, for their help. This article is not intended to question the on-air performance of the CFA or any related antenna. ♦

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The ground-plane form of Crossed-Field Antenna

Poynting published a paper in *Proc Royal Institution* 1884, showing that whenever electrical power moved there was always an electric field (E) geometrically crossed with a simultaneous magnetic field (H). Maxwell had died in 1879 (aged just 48) without having had time to experiment and look for the metre-length electromagnetic waves he had predicted to exist. Kelvin and many others doubted the hypothesis, and I feel that Poynting wanted to encourage the search for radio waves by writing his paper. Anyway, Prof Helmholtz in Germany put his newest young research student, Heinrich Hertz, on the task and, in 1886, he announced success - using resonant rods. And that is where the science of radio-wave generation has been stuck for a century.

Heaviside re-wrote Poynting's presentation of Maxwell's theory in the modern form of vector maths: S = E x H, where S is the radio wave density in Wm^{-2}, E is RF electric field in Vm^{-1}, and H is RF magnetic field in $A.turns.m^{-1}$.

Dimensionally this is correct. Turns are dimensionless, so the x (cross product) gives S in units of $V.A/m.m = Wm^{-2}$.

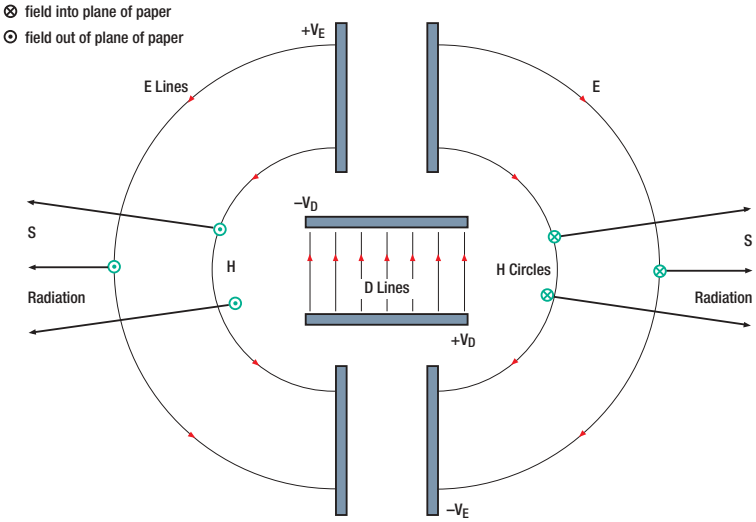
Of course, there are some necessary conditions to be obeyed and five were obvious from the above maths. It took just three weeks for my PhD student, Fathi M Kabbary, to discover the last one which the above theory had not guided us to use. These are the Hately-Kabbary criteria for Poynting Vector Synthesis:

1. Fields to stress the same space.
2. Fields to cut across at right angles.
3. Fields to be absolutely synchronised.
4. Fields to be proportioned to match Z_0 of space (377Ω).
5. Fields to have correct spin to cause outwards energy flow.
6. Fields to have the same curvature.

Fig 3
The prototype CFA.

Fig 4
The barrel-shaped CFA.

FIG 4 © RADCOM 139

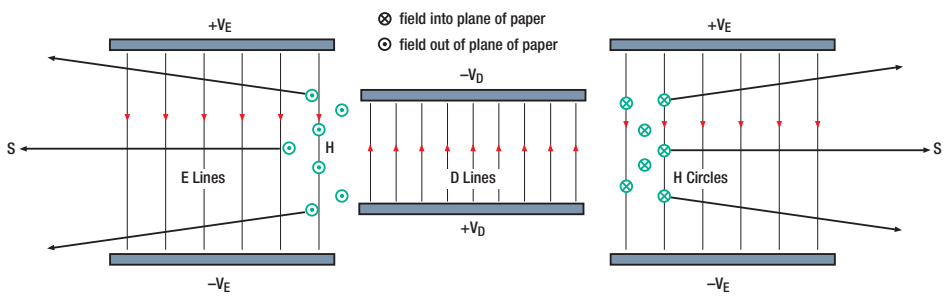


2 Hollow cylinder E-plates; 2 Circular D-plates

PRACTICAL WORK

In September 1986, Poynting's hint was followed up, and we performed (and named) Poynting Vector Synthesis by using two carefully synchronised half-powers of RF. One half was used to create a fierce E-field, and placed across it, was a half power of a synchronised strong H-field. As predicted, the two half powers amalgamated and radio waves of the full power were created, and receded at the velocity of light.

FIG 3 © RADCOM 138



4 Rectangular E-plates; 2 Circular D-plates

The work is described as follows.

An experimental programme was commenced on 3.75MHz (ie around 80m) using a prototype layout with four square 40cm plates creating two intense E-fields crossing two spaces near a pair of 60cm circular plates to create a separate electric displacement field, D. The D-field was used to generate the circular H-field (as explained by the fourth Maxwell equation $J + dD/dt = \nabla \times H$). The J term is absent, and displacement current D alone is used; the requirement for synchronism between the E- and H-fields necessitates a 90° phase change between the E- and D-fields (in order to undo the effect of the differentiation dD/dt). **Fig 3** shows the physical arrangement.

For three weeks, much experimentation was tried, particularly attending to the phase relations between the separate power amplifiers feeding the E-plates and the D-plates via step-up transformers.

Field strength indicators were present in the lab, and from time to time a telephone call was made to a friendly retired amateur residing some 4km from the roof-top wooden aerial laboratory where the work was carried out, to check whether the device was radiating. On many

occasions Bill Mitchell, GM3FRI, reported "very weak signal heard way down in the noise. You are radiating only a few milliwatts".

Worrying about his work, as a good student should, Kabbary trawled backwards and forwards through his knowledge of vector maths until he found that, in the solution to Z_0, one step indicated we might have produced a generator not matched to the Z_0 of space. *Was* our Z_0 around 377Ω? His analysis indicated that, in using a straight line E-field system, the Z_0 produced was probably infinite. Of course, like all magnetic fields, our H-field had considerable curvature. His mathematical analysis suggested we should be using a curved E-field as well. What if we modified the rig so that the E-field was similarly curved?

The change took precisely 25 minutes to implement (see **Fig 4**) and, when it was done, adjustment of the phasing networks immediately caused the antenna to draw power, and the field strength indicators in the lab all moved over to full scale. A quick call to GM3FRI produced the reply, "That's it. You are a medium power signal. What have you done?" Naturally we didn't say over the air, merely taking away the power amplifiers and moving the transceiver alone on to the CFA. There we found that GM3TDI was in full *two-way* contact mode with GM3FRI ie, as expected, the new antenna was reciprocal in behaviour, *receiving and sending*. During the next few hours, the phasing circuits were modified to operate on other frequency bands. The CFA prototype enabled us to enjoy excellent contacts on the 40, 20, 15 and 10m bands all around Europe. The firm conclusion was that the 1m x 1m x 1m Crossed-Field Antenna was a device capable of excellent general purpose radio usage over an adjustment bandwidth of at least 10-fold in wavelength (or frequency).

Further measurements, and more development was undertaken, of which only the first step will be reviewed here; namely the ground-plane (GP) version. It was soon verified that a very useful form for short wave omni-directional radiation could be made by removing the lower E-plate cylinder and D-plate disc, and making the device 'single ended', drawing both electric fields to a common ground-plane, see **Fig 5**. It worked well, thus confirming that this would make a very useful antenna for medium wave broadcasters.

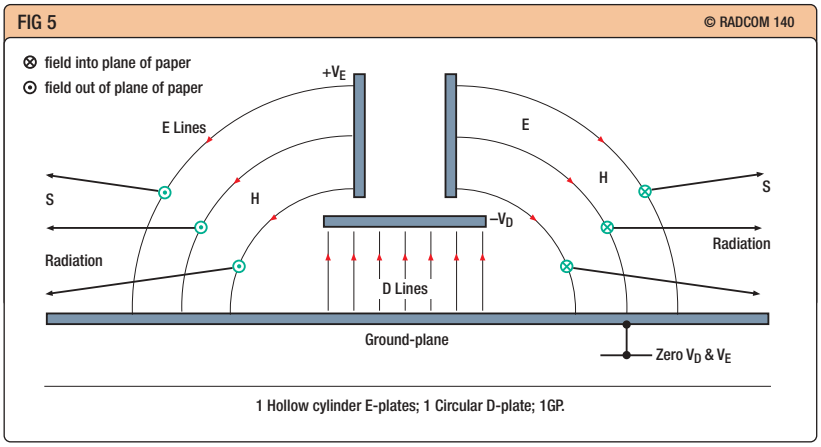


Fig 5
The ground-plane CFA.

ANSWERING G3PLX

So that the challenges of the G3PLX article in this issue can be answered, some deeper understanding of the behaviour of E-lines and H-lines has to be taken into consideration. Note that E-lines emerge normal to their generating conductor, but bend round to travel independently at the velocity of light to the nearest anti-potential, or earthy, surface. They repel each other and maintain independent identity.

H-lines emanate from the space around a current, whether flowing in a conductor or flowing as displacement current in space. H-lines are also independent, but under tension so they try to find the shortest path around their source. Their moment of maximum flow is at the time of maximum *change* in current, ie during the slope maximum between sine current peaks. The magnitude of magnetic flux (ie number of lines) is controlled by a kind of 'Ohm's Law' for magnetism, ie

Equation

$$\text{Magnetic flux} = \frac{\text{Magneto-motive force}}{\text{Reluctance}}$$

Long path-lengths have high reluctance, and *vice versa*. Hence, magnetic lines crowd around a wire, and become sparse farther out. If they meet a magneto-motive force (MMF) of opposite polarity whilst flowing, they subtract towards zero magnitude. (In permanent magnets this results in a repulsive force).

Not all of the effects mentioned by G3PLX are problems. For instance, when the drooping lines from the E-plate towards the GP are changing through zero between E-voltage maxima, they constitute a uniformly dispersed volume of E-lines and cannot produce magnetism flowing through themselves. Thus the "horizontal circles around the cylinder" do not occur. Furthermore, the reluctance of the paths around the top environment of the antenna cylinder is high as they are long in length and, again, there is very little unwanted H anywhere around the GP CFA. When both fields reverse, the action continues in the outwards sense.

The feeds to the two capacitive stimulators each experience resistive input impedance when the PVS is happening. If an experimenter is finding that power is circulating from the D-plate into the E-plate system, the interaction has not been achieved. Similarly, if the field spin of the synthesis is directed inwards, no power can flow away, and the feeds indeed experience high impedance capacitive or inductive reactance, which reflects the transmitter power back into itself. In other words, the CFA then shows a very high SWR, and no-one can hear the transmission.

We showed in our 1990 paper [1] that there is quite a narrow range of phase difference within which the CFA action operates. This is because the PVS process is 'self-encouraging'. Once the action starts in one plate the other plate finds itself feeding into lower impedance and so sends more charge into the interaction zone. There is reinforcement by positive feedback. The action occurring in the CFA is not modulation, it is not addition of power, it is a combination process analogous to a chemical reaction, eg burning charcoal –

Chemical potential $C + O_2 = CO_2 +$ heat, similar to

Electrical power E x H = S + Radiation of power at velocity of light.

THE FUTURE?

This leads me on to some newly-patented work [3]. I have modernised and simplified the circuits. They are now self-phasing, and therefore are superbly easy to operate. As these new devices are, like the GP CFA, no larger than one or two percent of a wavelength in size, I have called them 'radio photon antennas' (RPA). These devices have only one adjustment and can be optimised using a simple field strength indicator. Please make one or both of these designs – the patents are available for private investigation – if *they* don't convince you…

Yes, the Crossed-Field concept is capable of success in many ways. If it were not a completely new technique, how else would it be possible for us to make antennas work well in such small formats in three ways (with two voltages on plates, or one voltage on a plate and one current in a conductor, or two currents in two wires)?

Ladies and gentlemen, we rest our case. Poynting Vector Synthesis exists. ♦

REFERENCES

[1] *Electronics World* December 1990; Hately, Kabbary & Stewart.
[2] *Electronics World* Letters May 1991.
[3] Patent Application GB 2,387,969, 29 October 2003, 'Radio Antennas'.

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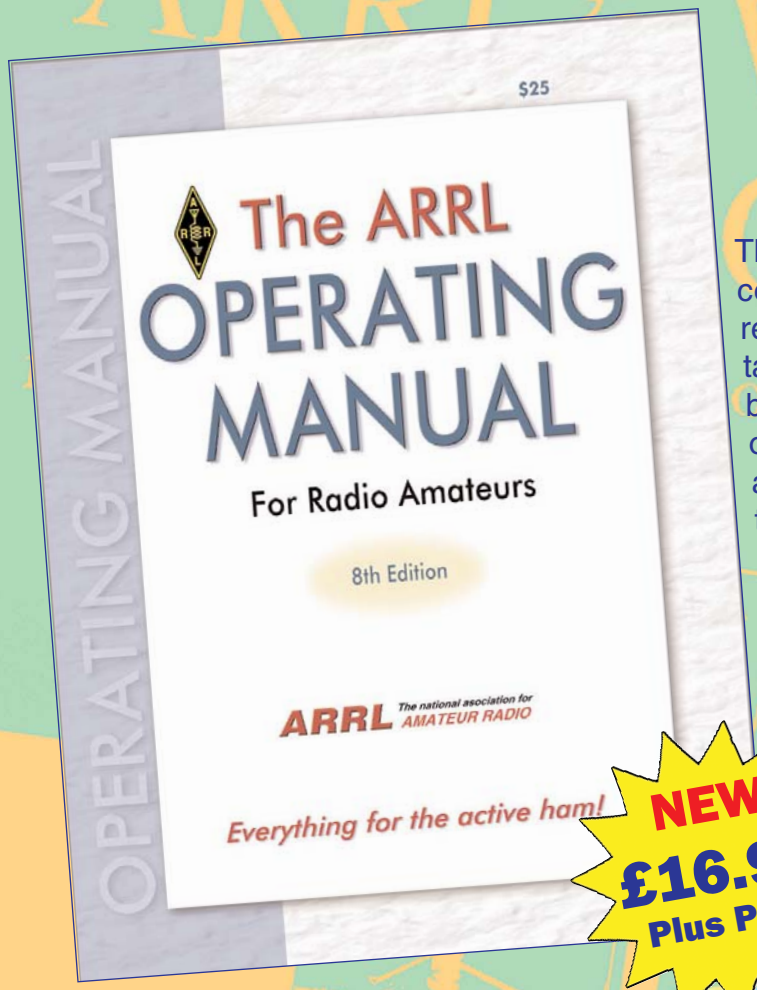

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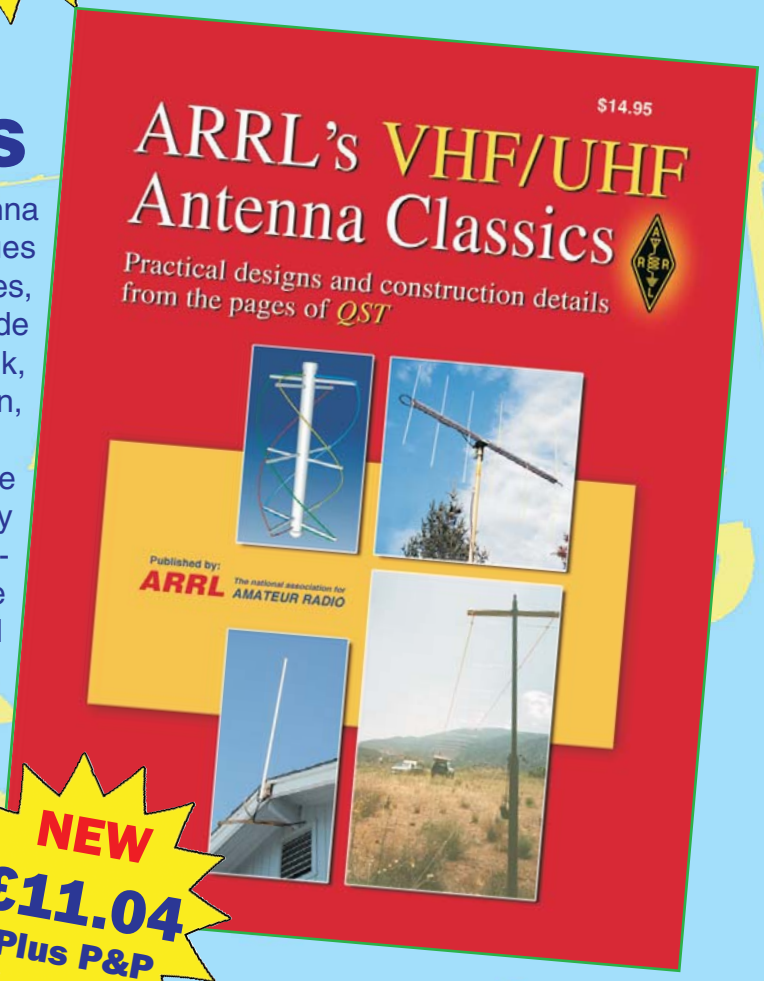

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40 Mtr RADIAL KIT FOR ABOVE **£99.00**

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OPTIONAL 10-15-20mtr radial kit **£39.95**

VR5000 5 BAND VERTICAL FREQ:10-15-20-40-80 Mtrs GAIN: 3.5dBi HEIGHT: 4.00m RADIAL LENGTH: 2.30m (included). POWER: 500 Watts **£189.95**

EVX4000 4 BAND VERTICAL FREQ:10-15-20-40 Mtrs GAIN: 3.5dBi HEIGHT: 6.50m POWER: 2000 Watts (without radials) POWER: 500 Watts (with optional radials) **£119.95**
OPTIONAL 10-15-20mtr radial kit **£39.95**
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OPTIONAL 10-15-20mtr radial kit **£39.95**
OPTIONAL 40mtr radial kit **£14.95**
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EVX8000 8 BAND VERTICAL FREQ:10-12-15-17-20-30-40 Mtrs (80m optional) GAIN: 3.5dBi HEIGHT: 4.90m RADIAL LENGTH: 1.80m (included) POWER: 2000 Watts **£319.95**
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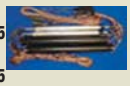

UTD160 FREQ:160 Mtrs LENGTH:28m POWER:1000 Watts **£49.95**
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10mtr RG213 Mil spec PL259 to PL259 lead **£14.95**
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By Lawrence D Woolf, BA (Hons), BSc, Dip Math (Open), GJ3RAX

E-mail: gj3rax@werewoolf.org.je

In this final part, GJ3RAX considers the rôle of the all-pass filter as a phasing device.

Comparison of SSB phasing

Imagine a filter that will always allow the same signal amplitude to appear at the output as has been applied to the input. This seems to conflict with what we normally expect from any of the usual filter circuits. The commonly-used varieties will pass a particular range of frequencies and remove others.

The most popular type that we use is the band-pass filter, which might be wide enough to pass frequencies across a whole band or narrow enough to pass just one signal within the band. The band-reject filter, or band-stop filter, has the inverse characteristic and is used to eliminate unwanted signals, perhaps as a notch filter. There are simpler filters used to provide high-pass or low-pass functions. These options cover most of the common varieties and can be implemented as active circuits, using amplifiers, or as passive circuits using just capacitors, inductors and, occasionally, resistors.

The all-pass filter is not intended to attenuate the amplitude of the signal. It shifts the phase of the signal over a particular range. It is less well-known than the other filter types as it has fewer applications in radio circuits. It has been used, in recent years, as one of the methods of generating and receiving SSB signals by the phasing method.

Fig 19
The all-pass filter.

Fig 20
Phase angle diagram.

FIG 19 © RADCOM 143

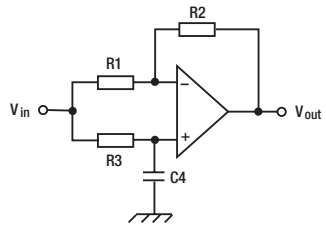
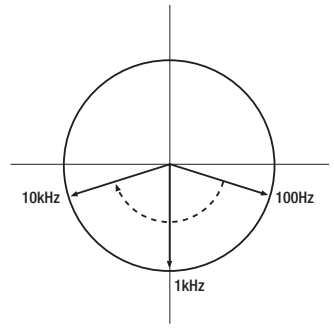


FIG 20 © RADCOM 144



THE FILTER

The all-pass filter uses an operational amplifier in a configuration that looks similar to a differential amplifier, but with only one input signal port. In the configuration shown in **Fig 19**, the input signal is applied to the differential inputs via a pair of resistors, R1 and R3. The resistor normally connected between the non-inverting input of the differential amplifier and ground is replaced by a capacitor, C4. R1 is set equal to R2 to give unity gain.

By inspecting the circuit of Fig 19, we can see that, at high frequencies, the non-inverting input is effectively decoupled by C4. In this situation, R3 has virtually no effect on the signal path. The circuit operates as a unity-gain inverting amplifier because R1 = R2. Therefore $V_{out} = -V_{in}$, which is equivalent to a phase shift of 180°. At low frequencies, C4 exhibits high impedance, and the full input signal is applied to the non-inverting input. R2 now provides heavy negative feedback to the inverting input, which causes this input to assume a potential very close to ground. R1 then has no effect other than to provide some shunt loading on the input signal, and the circuit operates as a unity gain non-inverting amplifier, with $V_{out} = V_{in}$. There is now zero phase shift between input and output. As the frequency of the input signal varies, the relative phase shift between the input and output changes between 0 and 180°, but the gain remains nominally constant at unity, and herein lies the value of the circuit.

The equation that allows us to find the gain and phase shift at all frequencies is shown in **Equation 11**.

Normally, the arctangent function is used to find the phase angle; however, this can give misleading results because there appears to be a discontinuity when the phase angle is 90°. The discontinuity occurs because the real part of the expression equates to zero when the angle is ±90° and the arctangent function only gives correct results between, but not including, the values of -90° and +90°. In this case, we really need a function that will work from 0°, through -90°, to -180°.

A significant, and defining, input frequency to the all-pass filter is given by **Equation 12**.

At this frequency, the phase shift at the non-inverting input, defined by R3 and C4, is -45°. The corresponding phase shift at the output of the amplifier is -90°. This

Equation 11

$$\frac{V_{out}}{V_{in}} = \left(\left(\frac{1-(2\Theta f\,C4\;R3)^2}{1+(2\Theta f\,C4\;R3)^2}\right) - j\left(\frac{4\Theta f\,C4\;R3}{1+(2\Theta f\,C4\;R3)^2}\right)\right)$$

Equation 12

$$f_c = \frac{1}{2\Theta\,C4\;R3}$$

Equation 13

$$\frac{V_{out}}{V_{in}} = \left(\left(\frac{1-(1)^2}{1+(1)^2}\right) - j\left(\frac{2}{1+(1)^2}\right)\right) = 0 - j$$

methods Part 4, conclusion

frequency has been called f_C as it is the centre frequency of the filter on a logarithmic scale. The phase-shift range of the RC circuit is 90°, corresponding to a 180° range at the output of the amplifier.

If this frequency is used in Equation 11 it simplifies to **Equation 13**.

This represents a phase angle of -90°. At one-tenth of this frequency, the phase angle may be shown to be -11.42° and at 10 times the frequency, the angle is -168.58°. These values can be indicated on the phase angle diagram shown in **Fig 20**, where the frequency at which the phase shift is -90° has been chosen to be 1kHz. This is also where the arctangent function appears to break down.

An alternative rectangular representation of phase shift against a logarithmic frequency scale is shown in **Fig 21**. In this case, f_C is 1kHz, and it can be seen that there is no discontinuity at f_C, as the phase passes through 90°.

It is also possible to achieve a similar phase shift against frequency by interchanging the resistor, R3, and the capacitor, C4, in the circuit of Fig 19. They would then be designated as C3 and R4 in **Fig 22**. The shape of the graph would be the same as in Fig 21, but translated above the zero phase axis. This would give a phase shift of +168.58° at 100Hz, +90° at 1kHz, and +11.42° at 10kHz. The phase angle diagram, as shown in Fig 20 would then also show the angles above the axis instead of below and is shown in **Fig 23**.

Fig 21
Phase shift of an all-pass filter.

Fig 22
An alternative all-pass filter.

Fig 23
The phase angle diagram.

FIG 21 © RADCOM 145

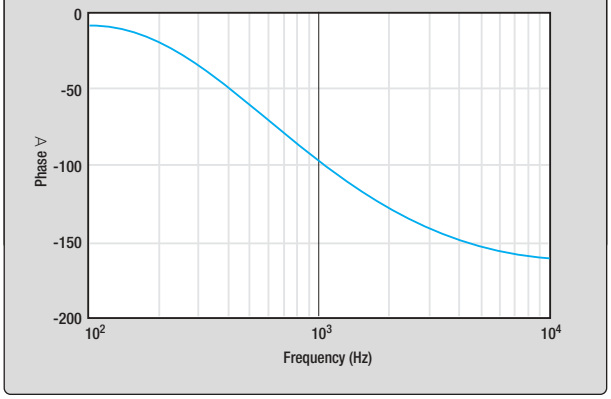


FIG 22 © RADCOM 146

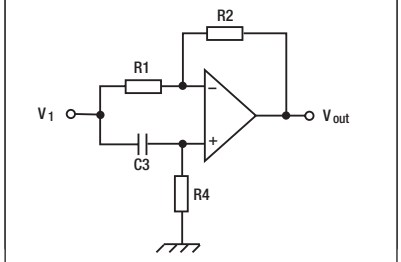
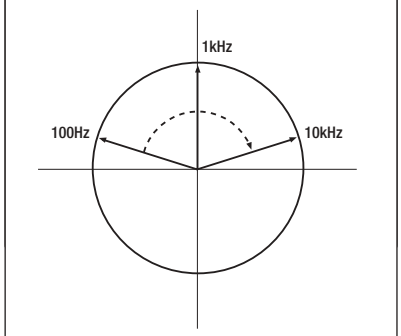


FIG 23 © RADCOM 147



USING THE ALL-PASS FILTERS

Recall that the objective in designing an audio phase-shift network suitable for generation of SSB signals is the ability to generate a pair of audio signals having a differential phase shift of 90° over the required frequency range. This can be achieved by using a pair of all-pass filter networks with suitably-selected values for f_C, as shown in **Fig 24**. The outputs o/p1 and o/p2 are applied to a pair of balanced mixers having their carrier signals applied in quadrature. In Fig 21, the phase-shift curve deviates from the ideal straight line; however, an approximation to the desired characteristic can be obtained by cascading several all-pass filter sections. In the example of Fig 24, three sections are connected in series in each of the signal paths.

Since a finite number of all-pass filters is cascaded in each path, the required 90° phase difference is approximated only over the range of interest, and the composite response exhibits ripples superimposed on the ideal straight line. This effect has also been seen on the previous types of phase-shift circuit - for example the bridge types - where the ripple was quite pronounced and became greater if the bandwidth was expanded. With the polyphase network, it was possible to reduce the ripple by placing the 90° frequencies closer to each other. To maintain, or increase, the effective bandwidth, more sections had to be included. In a similar way, the all-pass filter system can be expanded by adding more filters in each path.

It is not as easy to determine the combination of 90° frequencies as in the case of the polyphase network. There is an interesting article on this subject by DB2NP [11]. This article includes the design equations, which appear to be based on a series approximation for a Jacobian Elliptic Function. As calculations of this type are not easy to perform, I have incorporated the methodology into a computer program. The program designs the all-pass filter system and

FIG 24 © RADCOM 148

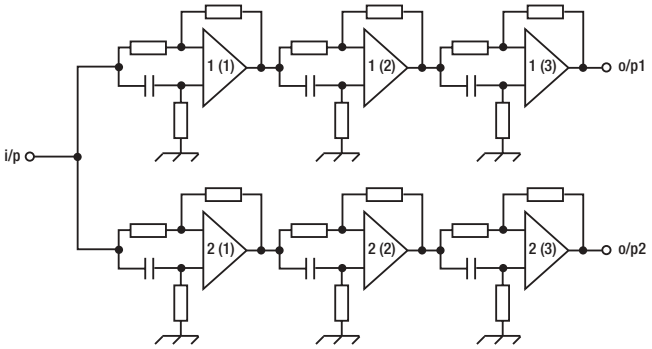


Fig 24
All-pass filters for an SSB phasing exciter.

Fig 25
All-pass filter design with three filters in each path.

Fig 26
The all-pass filter design by KK7B.

Fig 27
The all-pass filter design by N4BCU.

also shows the graphical analysis of the resultant circuit. A few parameters need to be specified, such as the lowest and highest frequencies of interest, the number of filters in each path and the initial capacitor value used in each filter. After the ideal design has been derived, the resistor and capacitor values can be changed to more realistic ones. The graphs of phase error and opposite-sideband suppression show whether or not these changes are acceptable. In many cases, a relatively small change in a value can degrade the performance beyond acceptable levels.

The program is available for download from my website [12]. It allows the user to choose from one to six filters in each path. Normally, three would be the minimum suitable for an SSB speech signal, although just two could be used for CW or some data modes. There are also penalties for using more filters in each path, because the results seem to become even more critically dependent on component tolerances. A change of just 1% in one component can degrade some versions more than would be acceptable. In order to get a useful component set, a digital capacitance meter should be used to select a set of near-identical-value capacitors and then resistors with a tolerance of better than 1% would be needed. In order to get the exact resistor values, it might be necessary to use them in series or paralleled pairs.

ALL-PASS FILTER DESIGNS

The program defaults to a frequency range of 270Hz to 3.6kHz with all capacitors set to 10nF. The filters are set to three in each path. The result is shown in **Fig 25**. It has calculated the frequencies, f_C, at which each filter gives a phase shift of 90°. From these frequencies, it then calculates the resistor value to go with each capacitor. The graphs show a very even ripple in the phase-error curve, with a maximum error, within the chosen frequency range, of less than 0.15°. The troughs of the opposite-sideband suppression are nearly 60dB over this range, which is quite acceptable. The problem is that the resistors are very non-standard values, which have been calculated to six decimal places.

To convert this idealised design to a real one, we have to overwrite the resistor values with ones that we can actually find. It is possible to obtain resistors with a tolerance of just 0.1%. However, we are unlikely to find many that are the actual values that we need. The values usually come in steps of about 2.5%, which are still too far apart. Careful use of a calculator should allow us to choose pairs, to be connected in series or in parallel, that will be much closer to what we need. Then, we just calculate the actual values and feed them back into the program by overwriting the displayed values. Select the button marked 'Phase' and the program recalculates the graphs and we can see if we are going to achieve a useful and practical design. If it still looks good enough we can go ahead and make it.

The choice of resistors has assumed that the capacitors are perfect, which is not a safe assumption. The closest tolerance we can normally find for capacitors is 1%. We have to obtain rather more than we expect to use and use a digital capacitance meter to select a matched set of virtually-identical values. There is a good chance that any batch of close-tolerance capacitors will be reasonably well-matched to start with.

We can now test the effect of tolerances by changing values in the program. Leaving the resistors as calculated, change just one capacitor, say C1(2), by 1% to 10.1nF. The results are quite dramatic. The phase error increases from about 0.15° to about 0.7° and the resulting opposite-sideband suppression has degraded from nearly 60dB to about 44 or 45dB at 1kHz. This could still be considered useful, but it is getting marginal. An error of just 0.1%, using a capacitor of 10.01nF, degrades the opposite-sideband suppression from 59dB to 55dB, which is probably close enough. This is just the effect of one component, and any more errors as small as this can add to the problem if we are over-ambitious with the expected results.

The main advantages over the polyphase network are the use of fewer critical components and that the insertion gain, which is nominally unity, should be virtually constant over the required frequency range. Nevertheless, the polyphase network does have some frequency-dependent insertion loss which is at a maximum in the centre of the range, although this should not matter for most amateur radio applications.

THE KK7B DESIGN

The all-pass filter designs by KK7B are probably the best-known. The receiver module is called the R2 [13] and the transmitter module is called the T2 [14]. These were originally published in *QST* and later in various editions of the *ARRL Handbook* as well as some of its other publications. They are also available in kit form in the USA. The R2-Pro details can now be found in a recent ARRL publication [15].

In **Fig 26**, we can see the predicted performance of the R2 and also the vital component values. The results do not seem quite as good as those shown in Fig

FIG 25

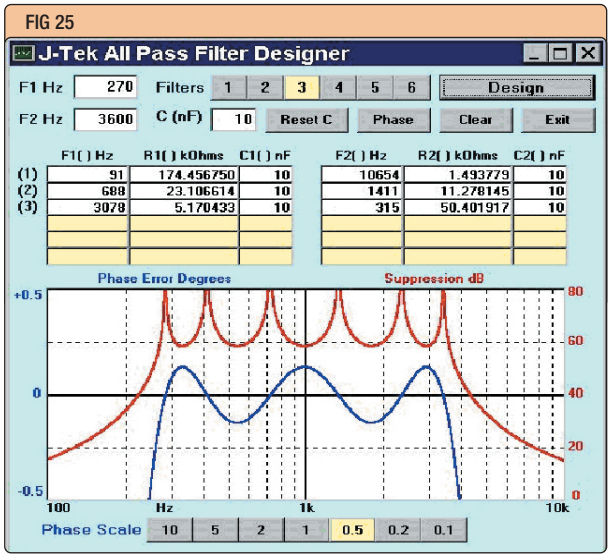


FIG 26

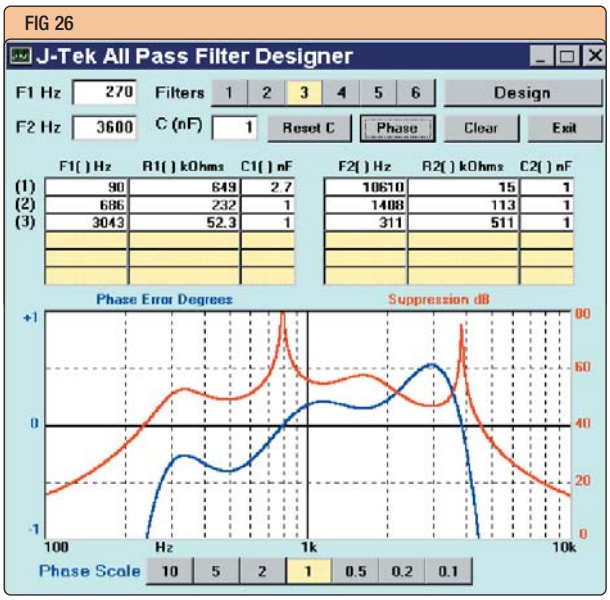
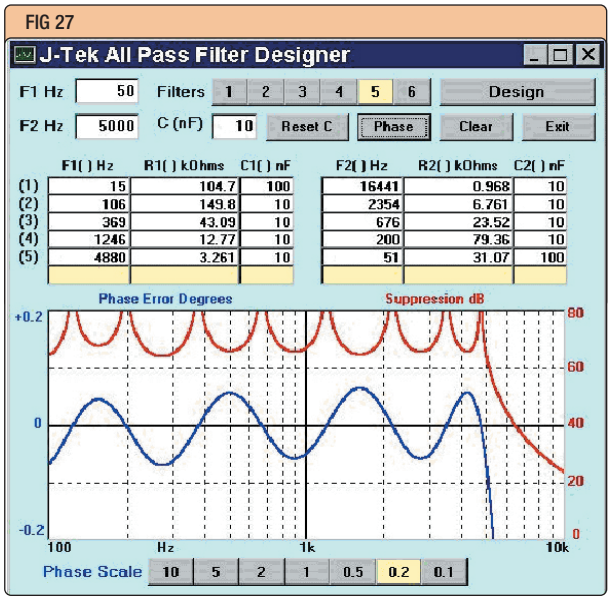


FIG 27



25, but this is the result of using real component values, so is a very practical compromise. The opposite-sideband suppression that was calculated for the early bridge-type circuits appeared to be less than 40dB at certain frequencies within the range of interest. This version is shown to be potentially about 6dB better, although a further 10dB could probably be achieved with ideal component values.

THE N4BCU DESIGN

One of the other interesting designs, using all-pass filters, was found on the Internet on the website of Michael G Ellis Sr, N4BCU [16]. This version uses five all-pass filters in each path and can achieve an opposite-sideband suppression of well over 60dB from 50Hz to 5kHz, if the exact component values are used.

The design in **Fig 27** shows a worthwhile improvement on most other designs in both the opposite-sideband suppression and the bandwidth. In order to achieve this performance, it would be necessary to select and match all the component values to tolerances that would be hard to measure. If you have downloaded the program [12] and then you have entered the values, you can make very small changes to them, *one at a time*, in order to see how sensitive it really is. A couple of changes of just 0.1% were found to degrade the opposite-sideband suppression by about 6dB. This suggests that using real components, selected as carefully as possible, can produce good results over a relatively-wide frequency range. The practical performance should not be expected to be as good as the program prediction, since the program provides the best possible theoretical result.

CONCLUSIONS ON ALL-PASS FILTERS

You can now use this program to design a set of all-pass filters automatically to your own specification. You can choose your own compromise between the bandwidth and the number of filters in each path that will give a suitable amount of opposite-sideband suppression. The design can then be tested for real component values and spreads before construction. You might prefer the polyphase network, with entirely passive components. I doubt if you would now want to choose the old bridge-type circuits, but there are still more options that could be considered.

ACKNOWLEDGEMENTS

The sources of inspiration for comparing and analysing these circuits have been mostly from issues of *RadCom*, *QST* and *QEX*, as well as other publications from the RSGB and the ARRL. 'Technical Topics' in *RadCom*, written by G3VA, has always been particularly interesting. I have had many discussions on the radio with VE3OWV, who was also kind enough to check and comment on my draft script. N4BCU tried out various versions of my program for the all-pass filters and made some very useful suggestions.

Further help with sources of information was given by KN4BS, who devised the polyphase circuit, and by KK7B, who designed the R2 and T2 using all-pass filters. ♦

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HF

Our 'HF' columnist, Don Field, G3XTT, reports from Rodrigues Island on what will probably be the biggest DXpedition the world has ever seen.

This month's column is by way of a dispatch from the front, that front being Rodrigues Island, 3B9C. As I write this we have been active for four and a half days and have over 50,000 QSOs in the log, with this figure increasing by about 12,000 a day. We are seeing many UK stations going into the log, including M3, G7, 2E0 and similar prefixes. Hopefully there will be many more before the expedition comes to a close. And this is very much an example of how the Internet can enhance the pleasure of DXing. We have been able to update photographs and news to our website on a daily basis, and the number of 'hits' is several thousand a day. We are also uploading the logs every 24 hours, to allow those who worked us to check that they have been logged correctly. And the qrz.com website has seen over 1000 requests per day for the 3B9C QSL route.

A question that comes up from time to time in the context of DXing is about when, and how often, you can ethically work a rare DX station, island or even a rare country. Let me explain. Suppose, for example, that a station comes on the air from one of the rarer countries in Africa, but is only in the country for a month, and is actually there to do some work on an aid project and can only operate in his leisure time. You'll have seen news items about similar operations in this very column. There is an argument, in such a case, for saying that if you already have that country, particularly if you have it on that band and mode, that you should remain silent and leave this one to those whose need is greater than yours. Others would argue that, if our particular amateur radio interest is DXing, then any new station is fair game, though it wouldn't be fair to then go on and make a daily QSO with that station - get in and out quickly, and allow him to move on to work others. Even this rule isn't sacrosanct. On 160m, for example, it is not uncommon, especially in the wee small hours, to hear a rare station CQing from, say, West Africa, and getting no replies. If you worked him a couple of days ago, do you call again? There is a case for doing so, simply to alert him that there is indeed propagation, so that hopefully he'll stick at it until someone else comes on to call him. Of course, there's another solution to that dilemma nowadays; spot him on the *Cluster* system and he'll probably get an instant pile-up (this leads me on to when you should 'spot' DX stations, but I'd better leave that question for another column)!

"Up she goes!" One of the 20m monoband Yagis at 3B9C goes up on the water's edge.

3B9C team leader Neville Cheadle, G3NUG, operating the Yaesu FT-1000MP MkV transceiver and VL-1000 Quadra amplifier combination.

In practice, the general rule nowadays is that it is fair game to work a DX station once on each band / mode combination. A second QSO on the same band and mode, at least in the case of a DXpedition of limited duration, is bad form unless you were genuinely unsure of the first contact and need what is frequently referred to as an 'insurance' contact. These are less likely nowadays, because many DXpeditions post their logs to the Internet as the DXpedition progresses, and you can check whether you are safely in the log or not.

Of course, if every 'big gun' DXer worked a rare on, say, five band / mode slots, that could easily account for 25,000 QSOs pretty quickly (on the assumption that there are maybe 5000 such 'big guns' on the bands). This is very much finger-in-the-air logic, by the way! But suppose that figure is of the right order, and suppose that we are talking about a two-man DXpedition on the air for two weeks. The rule of thumb for DXpeditions is 1000 QSOs per operator per day, so our two-man effort can expect make maybe 28,000 QSOs. Lo and behold, the 'little pistols' (those with somewhat more modest stations!) have only 3000 QSOs to fight over between them. Surely that isn't fair either? Of course, that is why the really big DXpeditions plan on being able to achieve maybe 80,000 QSOs or more, which should be enough opportunity for pretty much everyone who wants a QSO to get into the log. Of course, the D68C DXpedition, current record holder with almost 170,000 QSOs, proved that potential demand was much greater than had previously been thought and, astonishingly, even towards the close of that DXpedition, something like 20% of the QSOs going into the log were 'unique' callsigns, ie stations who were only then making their first QSO with D68C. But at the same time, D68C was active long enough, and with enough stations, that the team were happy to make what, in other circumstances, might have been considered duplicate QSOs. It will be interesting to see whether the 3B9C effort produces similar statistics. But this really does suggest that, if the old hands take a back seat occasionally, there are plenty of would-be DXers waiting in the wings for a QSO.

If the DX station is a resident, and relatively active, it may be assumed that rather different guidelines apply. For those who chase annual totals, for example, the DX station concerned will probably be happy to be worked once a year. If he is active

in contests he will, of course, be happy to work you in each and every one of those contests, too. But some such DX stations (maybe an ex-pat in a rare location for a two- or three-year contract) take a somewhat stronger line, sticking rigidly to the one QSO per-band-per-mode rule. If this is the case, don't try to force the issue; they are under absolutely no obligation to work you at all!

Can we draw any conclusions? Only that there are no hard and fast rules but that, as a courtesy to your fellow DX chasers, if there is clearly a big demand for a rare one (judged by the size of the pile-up), and it's one you already have in the log, then the decent thing to do is to hold fire, either not trying to make the QSO or maybe waiting until later in the DXpedition when demand has dropped (at such times you may well hear the DXpedition calling CQ without replies).

As always, your views and relevant anecdotes are more than welcome.

DX NEWS

In view of my earlier remarks about the number of contacts made by DXpeditions, I was interested to see a report on the recent 5V7C (Togo) DXpedition. By all accounts this one was very active, with two or three stations operational round the clock. My own tally was eight QSOs on seven bands. But their overall QSO total was a relatively modest 17,500. I would assume they were somewhat harder to work from the USA, especially the West Coast. The boot was very much on the other foot, though, with the XF4IH Revilla Gigedo expedition. The *Cluster* system was full of spots for them on all bands and modes, but almost exclusively from the USA. Here in Europe there were well nigh inaudible for most of the time, even when there was propagation to Mexico and the southwestern USA.

Mark, G4AXX; Dick, GU4CHY; Steve, G4EDG; Steve, G4JVG; and Rich, M5RIC, are active as 7Q7MM (see 'Websearch') from **Malawi** from 18 April to 1 May on 160 to 10m CW, SSB, RTTY and some PSK31. QSL via G3LQP.

Kevin, ON5DRE, and Erwin, ON4QJ, expect to be active from the **Faeroe Islands** from 3 to 13 May, all bands.

Mike, GW3UOF, will be on holiday in **Corfu** and active as SV8/GW3UOF from 3 to 13 May.

Jim, MM0BQI, will sign MM0BQI/P from the **Treshnish Islands (EU-108)** from 30 April to 3 May, 80 - 10m, SSB, CW and RTTY. QSL to his home call.

Walter, DL3LBP, will be active from **Mauritius** as 3B8/DL8LBP from 1 to 21 May, 40 to 10m, SSB, CW and RTTY. QSL to his home call.

DL8DXL/P expects to activate a number of **German IOTAs** as follows: 16-19 May Baltrum Island EU-047; 20-23 Neuwerk Island EU-127; 22 Scharhoern Island EU-127; 24-27 Oland Island EU-042; 27-29 Langeness Island EU-042; 29 Langeness Island EU-042. Some of these will also count for the Lighthouses series of awards.

D2U (CT1BFL) and D2DB (CU3BW) are in **Angola** for the next few months. D2U will concentrate on digital modes and SSTV. D2DB will focus on SSB and some digital too. QSL via EA7JX.

G3KHZ, IZ1CRR and 9M2/G3TMA were due to be active from Pulau Muara Besar, an island belonging to **Brunei**, V8 (IOTA OC-184) and Pulau Satang Besar (IOTA OC-165), **East Malaysia**, the first from 21 April, and the second starting a few days later. They will have two transceivers, a beam, vertical and dipole, to operate CW and SSB. The callsigns are not yet known. QSL via G3KHZ. The first island is uninhabited. The second has two permanent-resident wardens who protect sea turtles there.

VK6YS and others will activate one new and one rare **Australian** island from 22 April to 2 May. I have no other details at this time.

Gerard, ON4AXU, is going to French Polynesia including the **Marquesas** and **Austral Islands**. Look for him to be active as follows: 13 - 16 May Papeete (OC-046); 16 - 24 Tubuai (OC-152); 24 - 26 Papeete (OC-046); 26 May - 1 June Moorea (OC-046), Huahine (OC-067), Raiatea (OC-067); 2 - 11 Hiva Oa (OC-027); 11 Papeete (OC-046). Further information, including callsigns to be used, from his web page.

EU ENLARGEMENT

On 1 May the Republic of Hungary becomes a full member of the European Union (EU). The EU, which currently consists of 15 member states, will become a union of 25 European countries. Throughout the year of this accession, members of MOM Radioclub will be using the special callsign HA2004EU. Their aim is to make the year 2004 a remarkable event for ham radio operators world-wide, whether or not they live in the EU. They would like to make as many amateur radio contacts as possible using different amateur radio equipment and various operating techniques. They are looking forward to a year full of interesting experiments and amateur radio ventures. One of the principles of the EU is the easy travel within the Union. To symbolise what that freedom of movement means for amateur radio operators, they plan to visit several current and new members states of the EU, and make amateur radio contacts from all the countries they visit. Besides the operation of the special callsign from Hungary and other member states, the MOM Radioclub also plans to issue an award to those amateur radio operators of the world who can fulfil its requirements. For more information, expedition announcements and stories, please visit their web page.

Also associated with EU enlargement, 11 special event stations will be active from Ireland on 1 and 2 May, with callsigns EI25CY, EI25ES, EI25HA, EI25LY, EI25ML, EI25OK, EI25OM, EI25SL, EI25SP, EI25YL and EI25EU, the suffixes indicating the new member states. The Irish Radio Transmitters Society (IRTS) is issuing an award for

QTH Corner

3B9C	FSDXA, PO Box 73, Church Stretton SY6 6WF, UK.
3B9MM	Mart Moebius, DL6UAA, Kirchplatz 10, D-04924 Dobra, Germany.
3D2ZF	Rolf Niefind, DK2ZF, Rademacher Kamp 2, 21255 Tostedt, Germany.
5H1BP	Hans-Peter Blättler, HB9BXE, Chriesibüel 15, 6030 Adligenswil, Switzerland.
7Q7MM	Roger Brown, G3LQP, 262 Fir Tree Road, Epsom KT17 3NL, England.
9J2KC	Hisashi Hayashi, JL1NKC, SBE Copperbelt University, PO Box 21692, Kitwe, Zambia.
9M2/G3TMA	Ian Buffham, Bekay Court, Lorong Enau, 55000 Kuala Lumpur, Malaysia
9U5M	Dennis Robbemond, PA7FM, Loggerhof 11, 3181 NS Rozenburg, Netherlands.
A45WD	Alex Panoiu, YO9HP, Pleasa, Prahova, RO-107113 Romania.
EA7JX	Rodrigo Herrera, PO Box 47, 41310, Brenes, Sevilla, Spain.
EM1HO	Antonio Petroncari, I2PJA, Via Enzo Togni 87, 27043 Broni PV, Italy.
EY8MM	Theodore F Melinosky Jr, K1BV, 12 Wells Woods Rd, Columbia, CT 06237-1525, USA.
F8DVD	Francois Bergez, 6, rue de la Liberte, F-71000 MACON, France.
HR5/OH3JF	Jukka Tamminen, OH3OJ, Lopentie 47 As 5, FIN-11710 Riihimäki, Finland.
J88DR	J D Cree, G3TBK, 24 Old Lincoln Road, Caythorpe, Grantham, Lincs NG32 3EJ, England.
JY9QJ	Ullrich Helgert, DL5MBY, Appenzeller Str 53, D-81475 Muenchen, Germany.
R1ANF	Nick Shapkin, RK1PWA, P.O.Box 73, Amderma, Archangel, 164744 Russia.
S21YY	Yoshitomo Naito, JM1HXU, 387 Abiko, Abiko-City, Chiba 270-1166, Japan.
T30ZF	DK2ZF (as 3D2ZF, above).
TG7/OH3JF	OH3OJ (see HR5/OH3JF above).
V26DX	Steven M Wheatley, KU9C, PO Box 31, Morristown, NJ 07963-0031, USA.
VK9LB	Baerbel Linge, DL7AFS, Eichwaldstrasse 86, 34123 Kassel, Germany.
VK9NB	DL7AFS (as VK9LB, above).
XF4IH	Enrique Garcia Munive, XE1IH, PO Box 118-481, 07051 Mexico - DF, Mexico.
XU7ADI	Pete Arninge, SM5GMZ, Publicera Publishing Inc, PO Box 6105, SE-102 32 Stockholm, Sweden.
XU7POS	Jack Vandenabeele, ON4AJV, Ten Poele 36, 8430 Middelkerke, Belgium.
XZ1DA	Kurt Schips, DL1DA, Eduard-Pfeiffer-Str 71, D-70192 Stuttgart, Germany.
YA8G	Liv Johansen, LA4YW, Kolstadtunet 4c, 7098 Saupstad, Norway.
YI9ZF	Eric Wennström, SM1TDE, PO Box 94, SE-62016 Ljugarn, Sweden.
ZD8A	Terry F Baxter, N6CW, 5243 Mt Burnham Dr, San Diego, CA 92111, USA.

COUNTRIES WORKED, 2004

(Sorted by CW totals)

CALL	CW	SSB	DATA	MIXED
W1JR	193	180	93	224
G3XTT	175	77	74	204
G3SXW	126	0	0	126
G3TXF	113	0	0	113
G4IRN	112	0	0	112
G4KFT	110	0	0	110
G4OBK	106	72	41	161
GM0TGE	104	127	0	164
G3YVH	98	21	0	111
G3LHJ	87	12	62	114
G4WXZ	78	68	0	115
MU0FAL	73	41	0	80
G3YMC (QRP)	64	0	0	64
VK4BUI	60	31	0	77
M0BVE	45	0	0	45
G4DDL	37	5	10	38
G4FVK	28	41	0	49
G4FVK	28	41	0	49
GM8OEG	24	21	58	61
M5AEF (1W)	9	20	0	25
M0CNP	4	56	48	72
MM1APX	0	57	62	73
M0BKV	0	61	29	72
G0LGJ/M	0	54	0	54
G0GFQ	0	43	12	45
G7CLY	0	38	0	38

amateurs (and for SWLs on a heard basis) who work these stations. I have no details at this stage, but will put them on my web page once I do. I daresay their will be other similar special events and activities associated with the accession of other countries to EU membership. Last time I mentioned an award for working EU countries I was accused by one reader of using this column for political purposes, but I trust the majority of you will appreciate that I pass on the above details for information only!

2003 EXPEDITION OF THE YEAR

The Italian *425 DX News* recently carried out an on-line vote for the best DXpedition of 2003. The winner was ST0RY (Sudan) followed by TO4E (Europa Island) and 3C0V (Annobon). The full results are on the website.

CORRESPONDENCE AND TABLES

Damian, M0BKV, has been collecting some premium islands for the IOTA 2004 award, including DU9/G4UNL (Philippines) and ZL4IR (New Zealand South Island). I believe these were both on 15m. David, M0CNP, reports adding to his totals with A61AR (UAE), J79JRC (Dominica) and 9K43NLD (Kuwait, special prefix) on 20m, plus AP2JZB (Pakistan) on 17m.

ZL3AO sends an extensive report on his mobile activities on 80m over the DX season. I can only give the highlights here, but I note the log even includes some mobile to mobile QSOs with G0DKM/M in Somerset. It looks as though UK and Ireland QSOs were possible most days, though on some occasions the only UK stations workable were those using large arrays (several nowadays are using 4-square antennas). The period of operation was around the first half of February, and the trick seems to have been for ZL3AO to park his car as close to the water's edge as possible. As someone who has been repeatedly amazed at how well one can get out on an IOTA operation with just 100 watts and a vertical, I can certainly relate to the benefits of being extremely close to saltwater.

THANKS

Special thanks go to the authors of the following for information extracted: *OPDX Bulletin* (KB8NW), *The Daily DX* (W3UR) and *425 DX News* (I1JQJ). Please send items for the **July** issue by **15 May**. ♦

WEB SEARCH

3B9C	www.fsdxa.com/3b9c
3B8/DL8LBP	www.dl3lbp.de
425 News Survey	www.425dxn.org/trophy_2003
7Q7MM	www.malawi.digital-crocus.com
HA2004EU	http://ha2004.eu
MM0BQI/P	www.qsl.net/mm0bqi/eu108.htm
ON4AXU	www.qsl.net/on4axu
V8/9M6 islands	www.425dxn.org/dxped/borneo

HF F-Layer, Propagation Predictions for April 2004

	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	2.....157	73.....2677	65...1115767	..534444672.	...676.687..	.....	.....
*** ASIA							
Yakutsk	.....	.....	311....12444	255433446673	..145552....	....221.....	.....
Tokyo	.....	.....2..	.....14..	.....113..	.....11.2..	.....	.....
Singapore	.....	.....11.	.....231.	.....33..	.....232..	.....12...	.....
Hyderabad	.....	1	1233	12453	.121.126664.	..122236....	...22.....
Tel Aviv	6.....234	76.....2666	774...126775	4.35332577..	...1..1.....	.....	.....
*** OCEANIA							
Wellington	.....	.....	.....	.....1.....	.....	.....	.....
Well (NZ) (LP)	.1.....3..	798.....953	899.....998	888.....898	..6.....87	.....8.	.....
Perth	.....	.....	.....1..	.....	.....	.....	...11.....
Sydney	.....	.....1..	.....11..	.....1...	.....	.....	.....
Melbourne (LP)	.....	.57.....	2784.....	3465.....4	24	.....2.	.....
Honolulu	.....	.....	.....	...11.....	.....	.....	.....
Honolulu (LP)	.....	.....	.....	.2.....14...	133...137411	..31112.652.	...222..65..
W. Samoa	.....	.....	.....	...11.....	....111.....	.....	.....
*** AFRICA							
Mauritius	.....	111	.....11.	.....111.	.....1...	.....1....	.....
Johannesburg	24.....12	57.....3677	11.....6654	..1.....631.	..1....12...	..11..11....	...32355....
Ibadan	.....	12.....111	552.....445	..73...13654	..886656784.	..78.22377..	...7.....
Nairobi	.....	1.....	11.....1	33.....123	.12....12562	..421112463.	..11223562..
Canary Isles	33.....242	554.....1665	6641....2547	3272..116577	...77667787.	...5336678..	.....23..
*** S. AMERICA							
Buenos Aires	.1.....	665.....16	334.....24	112.....133	..2.....664	.....165.	.....1..15..
Rio de Janeiro	.....	11.....12	12.....122	221	....1...1874	....1111375.	....1.1136..
Lima	.....	111.....1	111.....11	11	...3.....152	.....23.	.....11..
Caracas	.....	.....	1	..11.....11	....1.....1.	.....1..	.....2..
*** N. AMERICA							
Guatemala	.....	.....	.....	.....	.....	.....	.....
New Orleans	.....	.....	1.....	.....	.....133335.	.....11132.	.....
Washington	.....	11.....1	433.....2	1...1....125	3334451	.....111122.	.....
Quebec	51.....2	761.....17	211.....13	.....1112.	.....3..	.....	.....
Anchorage	.....	.....	.....	...1....1.1.	.....2.	.....	.....
Vancouver	.....	.....	.....	.....	.....11.	.....	.....
San Francisco	.....	.....	.....	.....	.....	.....	.....
San Fran (LP)	.....	.....	.....	.....	.1....131...	..1....4321.	..1....332..

Key: Each number in the table represents the expected circuit reliability, e.g. '1' represents reliability between 1 and 19% of days, '2' between 20 and 30% of days, etc. No signal is expected when a '.' is shown. Black is shown when the signal strength is expected to be low to very low, blue when it is expected to be fair and red when it is expected to be strong.

The RSGB Propagation Studies Committee provides propagation predictions on the Internet at http://members.aol.com/g4fkhgwyn The page is updated monthly. The provisional mean sunspot number for March 2004 issued by the Sunspot Data Centre, Brussels, was 48.9. The daily maximum / minimum numbers were 88 on 27 March, and 23 on 4 March respectively. The predicted smoothed sunspot numbers for May, June and July are respectively: (SIDC classical method - Waldmeier's standard) 46, 44, 43 (combined method) 52, 51, 50. Longpath predictions are shown with (LP) following the path name. Higher input power and superior aerials have been used for these predictions; less well-equipped stations may find the longpath predictions somewhat inaccurate.

By Roger Balister, G3KMA

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Woking, Surrey GU24 8AR.

E-mail: g3kma@dsl.pipex.com

IOTA

Roger Balister introduces the new IOTA Directory and looks at some forthcoming IOTA activity.

IOTA 2004

MAY 2004

AF-013	5R	Madagascar
AF-016	FR	Reunion Island
AF-024	S7	Seychelles
AF-032	5H	Zanzibar Island
AF-049	3B8	Mauritius Island
AN-015	8J1	Queen Maud Land group
AS-002	A9	Bahrain
AS-004	5B/ZC	Cyprus/UK Sovereign Bases
EU-019	R1F	Franz Josef Land

JUNE 2004

There are over 100 European counters in June. Look also for:

AF-018	IH9	Pantelleria Island
AF-019	IG9	Pelagie Islands
AF-023	S9	Sao Tome Island
AF-044	S9	Principe Island

JULY 2004

In addition to many European counters look for:

AF-003	ZD8	Ascension Island
AF-004	EA8	Canary Islands
AF-005	D4	Cape Verde, Leeward Islands
AF-014	CT3	Madeira Islands
AF-022	ZD7	St Helena Island
AF-029	ZD9	Tristan da Cunha Islands
AF-030	ZD9	Gough Island
AF-086	D4	Cape Verde, Windward Islands
AN-016	Various	Antarctica

AUGUST 2004

EU-089	CU8/9	Flores Island
NA-018	OX	Greenland
NA-021	8P	Barbados
NA-027	VO1	Newfoundland
NA-032	FP	St Pierre & Miquelon
NA-063	CY0	Sable Island
NA-094	CY9	St Paul Island
SA-002	VP8	Falkland Islands
SA-003	PY0F	Fernando de Noronha Archipelago
SA-026	PP5	Santa Catarina State Centre group
SA-046	PY7	Pernambuco State group
SA-068	8R	Guyana group

Table 2: Some of the regularly activated island groups counting for premium points during May to August 2004. For further information on this current activity programme, see the CDXC website.

RSGB IOTA PROGRAMME,
PO BOX 9, POTTERS BAR, HERTS EN6 3RH;
E-MAIL:IOTA.HQ@RSGB.ORG.UK

It's new *Directory* time! The 40th Anniversary Edition of the *IOTA Directory* was published a few days ago. Larger than ever with 136 pages, it's crammed with all you have come to expect of the *Directory* - the latest IOTA island listings, DXpedition stories, the Most Wanted List, and articles on how to get started in IOTA. This anniversary edition features an historical review, much of which has never previously been published, as well as Geoff Watts' original IOTA list of 1964, fascinating for what it includes as well as for what it omits.

Readers who have been active on the bands for several years and want help in identifying operations that count, will find the listing of operations accepted for credit quite invaluable. This list was first introduced in the 2002 *Directory* and is now updated and expanded to cover the 650 rarest IOTA groups. Using it you could save hours in preparing your application.

For the first time the *Directory* includes the current year's Honour Roll and other performance listings. To whet your appetite, an extract of the top 30 stations is given in **Table 1**.

NEW CERTIFICATES

The *IOTA Directory* announces the addition of three new certificates to the programme's current range, for contacting 800, 900 and 1000 IOTA groups. These will be of the same design as other certificates in the 100 series. The 1000 Islands certificate will be sent free of charge to each member reaching that level whether or not the 1000 Islands Trophy is requested. The 800 and 900 Islands certificates will be charged for on the same basis as other certificates. To ensure fairness of treatment in the issue of low number 800 and 900 Islands certificates, a period of several weeks will be allowed for members to apply through their checkpoints. At the end of that period the certificates will be issued, numbered in the order of the applicant's score on the central IOTA database. So, if you qualify and are interested, please apply before 1 August 2004 via your checkpoint. Certificates will be despatched in September.

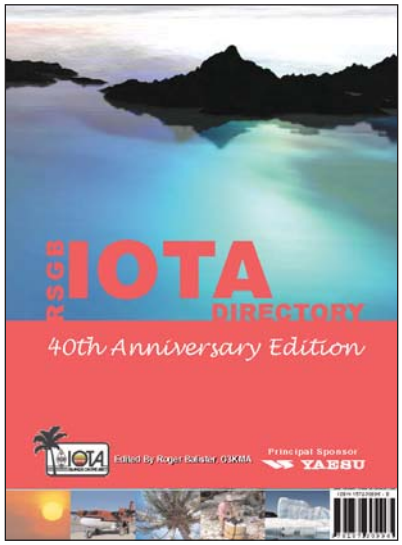
FORTHCOMING ACTIVITY

The following operations have been reported:

♦ MM0BQI/P will be QRV from the Treshnish Islands EU-108, 30 April - 3 May 2004 and from the Summer Isles EU-092, 22 - 26 July & 18 - 27 October 2004. QSL both operations via the bureau or direct to Jim Martin, MM0BQI.

♦ GM6TW/P, GM0UZP/P, MM0UTD/P, GM0MMH/P, members of the South Cheshire ARS, will be QRV from Jura, Colonsay and Islay EU-008, 15 - 22 May 2004. QSL via the M or MM bureau to M0UTD.

♦ MJ0DLQ/P and several MJ/ON*/P stations, all members of 'the Minkieboys', will be QRV from Les Minquiers Islands EU-099, 22 - 26 July including the IOTA Contest. QSL via the bureau or direct to Danny Commeyne, ON4ON. ♦



NEW REFERENCE

NA-226 XE1 Colima / Michoacan State group (Mexico)

2004 HONOUR ROLL

Pos	Callsign	Total
1	F9RM	1038
2	9A2AA	1033
3	I1ZL	1031
4	I1SNW	1030
5	EA4MY	1025
6	ON6HE	1024
7	I8XTX	1023
8	I8KNT	1022
9	VE6VK	1021
10	I8ACB	1020
10	ON5KL	1020
12	W9DC	1019
13	F2BS	1018
13	IK1JJB	1018
13	VE3XN	1018
16	GM3ITN	1014
17	WD8MGQ	1012
18	IT9GAI	1011
19	DL8NU	1010
20	K9PPY	1009
20	ON7EM	1009
22	K8DYZ	1008
23	ON4AAC	1005
24	F6AJA	1003
25	G3GIQ	1002
25	OM3JW	1002
27	CT1ZW	1001
28	G3ZAY	1000
28	I2YDX	1000
28	N7TZ	1000

Table 1: Extract from the current year's IOTA Honour Roll, showing the leaders.

WEB SEARCH

RSGB IOTA Programme	www.rsgbiota.org
IOTA Manager's website	www.g3kma.dsl.pipex.com
IOTA Contest rules	www.rsgbhfcc.org
CDXC	www.cdxc.org.uk

By Bob Treacher, BRS32525

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E-mail: brs32525@compuserve.com

Bob Treacher with a round-up of correspondence from UK's top listeners.

SWL news and views

Heartfelt thanks to all the SWLs who wrote this month. Although it represents a small percentage of the listeners who are members of the Society, it does show a sizeable increase in comparison with recent months. It may have dawned on readers that no interest now might have further repercussions next year. Please let me have your news in time for the July column (deadline 1 May).

CORRESPONDENTS

Philip Davies, RS95258, considers the apparent lack of interest in SWLing stems from changes in our way of life. Both Philip and I were first enticed into amateur radio by tuning around the short-band bands and hearing AM signals on 40m. As most domestic radios no longer have the short-wave bands and radio amateurs no longer use AM on 40m, this route to becoming an amateur bands SWL is lost. Philip suggests that the advent of the M3 licence has had a detremental effect on the number of active listeners [if beneficial to the ranks of licensed amateurs! - *Ed*]. He feels that the SWL movement is now an ever-decreasing group of pensioners who find it harder and harder to fit in all the things they want to do. An interesting theory. Let me have any opposite opinions to air next time.

Philip's main amateur interest has turned to the vintage wireless scene. He has a complete collection of *Bulletins* and *RadComs* and even boasts copies of *The Journal of The Wireless Society of London* dating back to 1920. He started SWLing in the 1940s when he heard KV4BB (American Virgin Isles) on 20m on his family radio. He went on to own an R1155, an R208 and an Eddystone 840A (which he still has). Coming right up to date, Philip remarks that he heard 57 DXCC countries during the SSB leg of the February *CQ* 160m DX contest.

Listeners should pay due attention to the WARC bands as there is some good DX to be had - and they QSL! The once very rare DXCC country of Cambodia is now becoming easier to log, thanks to a relaxation of licensing for visiting amateurs. XU7ABD was a recent operation by Spanish amateurs.

Peter Webb, RS53907, comments on the variability of band conditions, with 7MHz good in the evenings. As proof, Peter mentions H44MS and VK9LB. Peter comments on the often poor operating practice he hears from G stations who seem unaccustomed to HF DXing. He cites the example of European stations calling "CQ DX". This means that the station is only interested at that time in working stations outside his own continent. So, if a UK station hears an S5 (Slovenia) station calling "CQ DX", he does *not* want a call from a station in England!

Robert Small, BRS8841, expressed disappointment at the column moving away from its monthly slot and felt that some possible reasons were poor conditions and the Internet. He says the Internet takes the skill and enjoyment out of finding the DX when you can log on to the *DX Summit* and see straight away where the DX is. He feels that re-introducing the monthly and all-time band score tables might increase the number of correspondents. I'm happy to give the idea a run so, from the July issue, I'll feature both. Entries to me by 1 May, please.

Doug Johnstone, BRS54163, thinks an SWL contest in the summer will increase listener interest. I'm not sure this would work as there used to be an SWL contest linked to a major contest in July that was dropped because of poor support. However, at least Doug is thinking on the positive side, which I applaud.

Finally, a view from Wyn Mainwaring, GW8AWT, about antennas. Back in 1973, he rigged up a vertical on the flagstaff of an Olympic-sized saline swimming pool mainly to listen to the QSOs made by the Flatholm Island special event station celebrating the 75th anniversary of Marconi's tests across the Bristol Channel. He received their signals at 59+ on an Eddystone EC10 and heard almost every QSO they made. Ever since he has experimented with vertical antennas and considers that listeners should give serious thought to using one to improve their DXing. My Cushcraft R6000 vertical has certainly proved its worth over and over again. How many listeners use a vertical, and with what results? Let me know and I'll include your views here next time.

By the time you read this, I will be back on e-mail. Therefore, as well as mail by post, you can e-mail your news to brs32525@compuserve.com by 1 May. I look forward to a really bumper crop of contributions for the July column. ♦

3B9C DXPEDITION

By the time this column appears, the Five Star DXers Association's 3B9C DXpedition will have finished. I hope that many listeners log them on several bands / modes and that there will be some British entries for the Nevada Trophies (brief rules on p11 of April's RadCom). With the debate about listeners and 'cluster loggings', I was delighted to see the rules for the SWL trophy requiring listeners to log three consecutive QSOs. With an expedition working over 100,000 QSOs I find it really difficult to understand why listeners might send an SWL report on only one QSO.

I am, once again, handling the SWL QSL cards for the group and will be pleased to send QSLs to all listener reports that match the log. Try to include more than one QSO on each band and, if reporting multiple QSOs on one card, please keep your reports in date and time order (not band order) as this makes it easier to check your report against the log. Also, remember to include either a stamped, self-addressed envelope, or $1 or an IRC with a self-addressed envelope. Make sure your writing is legible, and most importantly, make sure the QSO details are correct - if the basic details are incorrect, you are unlikely to get a 3B9C QSL! In fact, anything to make the QSL manager's job easier really is appreciated.

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Edited by Roger Balister, G3KMA

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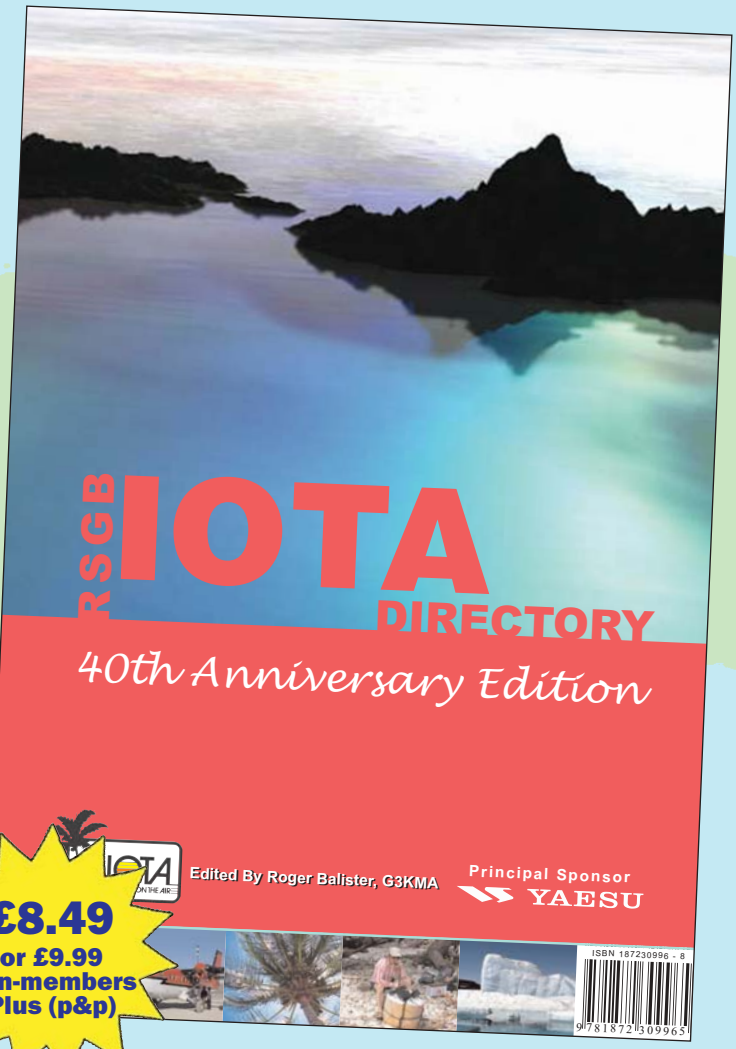

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Contest

This month, results of last year's Slow Speed Cumulative contest on HF and of the 4th and 5th 144MHz Backpackers events on VHF.

Although as it write this, sitting here in the snow in March, it seems hard to believe it, May always feels like the start of the main part of the VHF portable contesting season. The May 144MHz contest on 15 / 16 May is always a good one and the Backpackers series kicks off as well. On the higher bands, the 432MHz to 248GHz event on 1 / 2 May is a great opportunity to try out gear on frequencies where the bands are often very quiet. 9 May brings the 70MHz CW and by that time, there should be the possibility of some Es propagation. With increased European activity this year, this contest could well take on a new lease of life.

At HF, the RSGB 80m Club Championships continue and form an excellent activity period, even if you can't be on for the whole contest. Many people who have had family or other commitments earlier in the session have been coming on for the last half hour and still notching up some great scores. So please continue to support these sessions and help continue their success.

The main world-wide HF contest this month, on 29 / 30 May is the *CQ* WW WPX CW contest. As we've said before, this is a good contest to do from the UK, with many prefixes being available in Europe and the USA. Ex-Class B licensees who can rattle a key may well find themselves in demand!

CONTEST CLUB FINLAND

Fred, G4BWP, wrote a very interesting review of the CCF meeting held in January. It's the 10th anniversary event next year and they are planning a big bash! Here's what Fred had to say about this year's meeting: "I went to Helsinki at the weekend for the CCF (Contest Club Finland) meeting. Although they are a contest club it's posted as a Contest and DX meeting. About 100 people attended. There were seven UK calls; G0MTN, G4FSU, G3ZAY, 5B4WN (also G0WWW), 5B4AFM (M0BBB), M3MYL and G4BWP. It was held in a hotel near Helsinki (Vantaa) and the airport. Entry was 10 euros which included a sandwich lunch and a coffee. The program was expertly chaired by Mikka, OH2BAD. The whole proceedings were in English! There were many interesting sessions including Small Station Contesting by OH3BU, Comparing HF Contest Software by OH4JFN, VHF / UHF contesting in Finland by OH5LK, Contesting in Japan by JH4RHF, and the new EA8AH 'superstation' by OH1RY." ♦

G0VTL fixing the G5B 9-ele Yagi during the 2003 4m trophy contest.

CONTEST CALENDAR

HF Contests

Date	Time	Contest	Mode	Bands	Exchange
3 May	2000-2130	RSGB 80m Club Championship	SSB	3.5	RST+SN
8/9 May	2100-2059	CQ-M International DX	CW/SSB/SSTV	1.8-28	RST+SN
12 May	2000-2130	RSGB 80m Club Championship	DATA	3.5	RST+SN
20 May	2000-2130	RSGB 80m Club Championship	CW	3.5	RST+SN
29/30 May	0000-2359	*CQ* WW WPX	CW	1.8-28	RST+SN

VHF Contests

Date	Time	Contest	Mode	Bands	Exchange
1 May	1400-2200	RSGB 432MHz trophy	ALL	432	RST+SN+Locator
1 May	1400-2200	RSGB 10GHz trophy	ALL	10G	RST+SN+Locator
1/2 May	1400-1400	RSGB 432MHz - 248GHz	ALL	432-248G	RST+SN+Locator
4 May	2000-2230*	RSGB 144MHz activity contest & Club Championship	ALL	144	RST+SN+Locator
9 May	0900-1200	RSGB 70MHz CW	ALL	70	RST+SN+Locator +Postcode+QTH
11 May	2000-2230*	RSGB 432MHz activity	ALL	432	RST+SN+Locator
15/16 May	1400-1400	RSGB 144MHz	ALL	144	RST+SN+Locator+ Postcode
16 May	1100-1500	RSGB 144MHz Backpackers	ALL	144	RST+SN+Locator+ Postcode
18 May	2000-2230*	RSGB 1.3GHz/2.3GHz activity	ALL	1.3G/2.3G	RST+SN+Locator
25 May	2000-2230*	RSGB 50MHz activity	ALL	50	RST+SN+Locator

* Local time

SLOW SPEED CUMULATIVES, 2003

There were an average number of entries and stations on the air during the five sessions, with a few new calls. There were three clubs that took part this time: Reading & DARC with operators G0VQR,G8FIF and M1CYL; Meirion ARC using GW4LZP, and the Midland Contest Group with operators M0BLT and M0CDL. There were a few M3s active during the contest but none sent in an entry. Congratulations to the leading club, Reading & DARC, and the leading full licensee Mick Puttick, G3LIK. In second place was Dick Sellen, G3YAJ. Leading 'first timer' was Stephen Cocks, G4ZUL.

Derrick Webber, G3LHJ.

Pos	Call	1 Sep	9 Sep	17 Sep	25 Sep	2 Oct	Totals
1*	G3LIK	200	205	-	#	250	655
2*	G3YAJ	200	205	#	#	225	630
3	G3RSD	-	210	185	-	200	595
4	G4EBK	205	170	#	-	215	590
5	G4BLI	190	-	155	195	#	540
6	G2HLU	180	#	170	-	165	515
7+	Reading &DARC	-	130 (G8FIF)	145 (G0VQR)	-	145 (M1CYE)	420
8	G0IBN	-	160	90	105	-	355
8	G4CVA	-	115	130	#	110	355
8	GW4LZD club	#	100	105	#	150	355
9	G0VYR	145	165	-	-	#	310
10	G3ZRJ	-	205	-	-	95	300
11	G0RPX	85	120	85	-	-	290
12	GI0RQK	#	#	80	105	95	280
13	G0FYX	#	#	90	105	80	275
14	G4PTE	#	75	85	-	110	270
15	M5HFD club	70	-	-	75	105	250
16	G0BON	65	-	80	-	90	235
17	G3ZDD	80	-	#	70	80	230
18+	G4ZUL	-	#	55	55	75	185
19	G0WWD	-	-	55	55	50	160
20	M5ALG	-	-	-	65	90	155
21	PA0FEI	-	-	-	-	25	25

*, + = Certificates
Check log session. Thanks also to G3EAO, GM3UM, GX3NJA for their check logs.

4th 144MHz BACKPACKERS, 2003

In contrast to the third 144MHz Backpackers session, the band conditions in the fourth session were very variable with most stations reporting little or no DX. Tim, M0AFC, found that he had equipment problems when he arrived on site. He discovered that his IC-706 would only produce between 0.5 and 1W. Undeterred, Tim decided to enter the 3W section rather than the 10W section he had intended to operate in - the result: a convincing win!

The standard of logging continues to be extremely variable. Once again, three stations managed to lose not a single point during adjudication - well done. At the other end of the scale, four stations had the misfortune to lose over 20% of their claimed score. The average loss of points was 11.5%. Several stations submitted logs with times recorded in BST rather than in GMT as required by the General Rules (and by your licence conditions). Please ensure that you record the time of each QSO in GMT.

Congratulations to the following stations for winning their respective sections: GW8ZRE/P (10W Single Operator); GW0PZO/P (3W Single Operator); M1LOL/P (10W Multi Operator); M0AFC/P (3W Multi Operator); M3RNA/P (Leading Foundation station). All winners and runners-up will receive certificates. Thank you to G3MEH for a very useful checklog.

Ian Pawson, G0FCT

3W Multi-Op

Pos	Call	Loc	QTH	QSOs	Score	Mults	Total	DX	km	Power	Ant
1*	M0AFC/P	IO84SA	BB	66	13123	65	852995	F6CBH	611	1	13el
2*	G0HDV/P	IO93UK	LN	44	7546	48	362208	GI0RQK/P	405	3	13el
3	G0RMX/P	IO82TA	WR	47	5999	44	263956	G7ANV/P	362	3	17el

3W Single Op

Pos	Call	Loc	QTH	QSOs	Score	Mults	Total	DX	km	Power	Ant
1*	GW0PZO/P	IO83ID	LL	80	12582	74	931068	ON1GZ	582	2.5	9el
2*	G4HLX/P	IO82NN	SY	64	10010	65	650650	ON1GZ	534	3	13el
3	GW4EVX/P	IO83JD	LL	53	7080	50	354000	G1WKS/P	330	2.5	9el
4	GM4IGS/P	IO74WV	DG	30	7049	44	310156	G4ZTR	467	3	9el
5	G8XQS/P	IO85VE	NE	29	5791	38	220058	G4RRA	504	2.5	9el
6	G4CZB/P	IO92LE	NN	33	4947	39	192933	GI6ATZ	409	2.5	7ZL
7	G1WKS/P	JO01ED	TN	27	5332	31	165292	MM3CDO/P	543	3	9el
8	M5CSM/P	JO01GP	CM	20	4364	33	144012	GI6ATZ	531	2.5	11el
9	G3JKV/P	IO91TE	RH	23	4007	34	136238	MM3CDO/P	526	2.5	9el
10	G6DDQ/P	IO83UR	BB	23	2515	29	72935	G4RRA	346	2.5	3el
11	G7ARW/P	IO83RP	PR	27	2283	28	63924	GI0RQK/P	264	2.5	7ZL
12	G0NFO/P	IO82RJ	SY	20	2395	25	59875	M5CSM/P	227	2.5	7ZL
13	G0OIW/P	IO91MP	HP	13	1289	19	24491	GW8ZRE/P	216	2	5el
14*	M3RNA/P	IO81QJ	BS	12	1124	15	16860	GM4IGS/P	402	2.5	7ZL

10W Multi-Op

Pos	Call	Loc	QTH	QSOs	Score	Mults	Total	DX	km	Power	Ant
1*	M1LOL/P	IO83WE	SK	51	6753	51	344403	F6CBH	522	10	9el

10W Single Op

Pos	Call	Loc	QTH	QSOs	Score	Mults	Total	DX	km	Power	Ant
1*	GW8ZRE/P	IO83JA	LL	82	12977	73	947321	ON4ZN	567	10	7ZL
2*	G4RQI/P	IO94AD	BD	45	6772	44	297968	G4RRA	397	10	4Q
3	G3IZD/P	IO84KD	LA	32	6205	44	273020	G1WKS/P	409	10	10el
4	G3YDY/P	JO01FQ	CM	26	4049	36	145764	GW3HWR	311	10	4el
5	M0BAO/P	IO80LV	TA	20	3995	30	119850	G7ANV/P	492	10	8el
6	G6GVI/P	IO83RO	BL	14	1320	21	27720	G7ANV/P	189	10	HB9CV
7	G4YNK/P	IO83RO	BL	5	315	10	3150	G4HLX/P	118	10	HB9CV

Checklog: G3MEH.

5th 144MHz BACKPACKERS, 2003

Rain showers greeted some of the contestants in the fifth and final 144MHz Backpackers contest of 2003. Band conditions were variable with deep QSB for prolonged periods. Several stations reported hearing plenty of European DX operating in the IARU 144MHz contest. However, most of the DX could not hear the QRP Backpacker signals.

The general standard of logging improved remarkably in this session. This time, 10 stations managed to submit perfect logs - well done. A further five stations lost less then 2% of their claimed score. However, five stations had lost over 20% of their claimed score and the average loss of points was 9.2%.

Congratulations to the following stations for winning their respective sections: GW8ZRE/P (10W Single Operator); GW0PZO/P (3W Single Operator); M0AFC/P (3W Multi Operator); M3RNA/P (Leading Foundation station). All winners and runners-up will receive certificates. Thank you to PE1EWR, G8HGN and G3UFY/P for their very useful checklogs.

Ian Pawson, G0FCT

10W Single Op

Pos	Call	Loc	QSOs	Score	Mult	Total	Best DX	km	Power	Ant
1*	GW8ZRE/P	IO83JA	104	22344	36	804384	F6KSL	793	10	7ZL
2*	G0PQF/P	JO01AX	53	11124	30	333720	GM4ZUK/P	576	10	9el
3	G3IZD/P	IO84KD	46	10736	23	246928	F6IFR	581	10	10el
4	G0KYS/P	IO80AQ	40	10036	22	220792	LX/PA1TK/P	723	10	10el
5	G3YDY/P	JO01FQ	56	8529	24	204696	G4ADV/P	425	10	4el
6	M0BAO/P	IO80LV	34	8676	21	182196	GM4ZUK/P	673	10	17el
7*	M3RNA/P	IO90LU	15	3161	12	37932	GM4ZUK/P	684	10	7ZL
8	G4WVD/P	IO70NN	9	1580	5	7900	G4DEZ	446	10	10ZL

3W Single Op

Pos	Call	Loc	QSOs	Score	Mult	Total	Best DX	km	Power	Ant
1*	GW0PZO/P	IO83ID	73	14896	33	491568	DK0PU	706	2.5	9el
2*	G4HLX/P	IO91FN	68	13308	32	425856	TM9R	673	3	13el
2	G4HUN/P	IO92XA	60	11557	31	358267	GM4ZUK/P	570	2.5	7ZL
3	G1WKS/P	JO01ED	54	10876	30	326280	GM4ZUK/P	671	3	2x8el
4	GW3ATZ/P	IO82KW	64	11711	24	281064	PA6NL	502	2	10el
5	G8XQS/P	IO94AO	31	9307	25	232675	F6IFR	586	2.5	9el
6	G0BVW/P	IO92QA	36	7266	27	196182	GM4ZUK/P	561	3	9el
7	M5CSM/P	JO01GP	37	6956	23	159988	DF0OL	540	2.5	11el
8	G3JKV/P	IO91TE	37	6147	24	147528	DK0WD	510	2.5	9el
9	G4CZB/P	IO91XF	34	5692	22	125224	F6KSL	500	2.5	7ZL
10	GW4EVX/P	IO83JD	49	6970	14	97580	ON4WY	478	2.5	9el
11	G7ARW/P	IO83RP	29	5197	16	83152	GM4VVX/P	502	2.5	7ZL
12	G0LJD/P	JO01GH	21	3526	17	59942	PA6C	454	2.5	12ZL
13	G0OIW/P	IO91GI	22	2901	15	43515	PA6NL	391	2.5	5el

3W Multi-op

Pos	Call	Loc	QSOs	Score	Mult	Total	Best DX	km	Power	Ant
1*	M0AFC/P	IO84SA	94	23424	34	796416	DL0NS	715	3	13el
2*	GW5NF/P	IO81KR	66	16740	33	552420	DL0WAE	783	2.5	2x9el
3	G0RMX/P	IO82TA	69	11633	26	302458	GM4ZUK/P	547	3	17el
4	M0DBX/P	IO90NX	41	7944	25	198600	TM1Y	751	2.5	5el
5	G1WAR/P	IO92IO	18	4485	21	94185	F6HPP/P	490	2.5	9el
6	G6ZME/P	IO82NN	19	3350	13	43550	GM4ZUK/P	487	2.5	13el

Checklogs: PE1EWR, G8HGN, G3UFY/P.

70MHz TROPHY 2003

Contests on 4m have a character all their own. With only the UK within tropo range, QSO numbers are quite low and with Es propagation the only real mode available to extend distances, DX is quite rare. This seems to give proceedings a rather 'gentlemanly' quality. As M5MUF noted: "Only on 4m do you get contacts saying 'We haven't worked before - welcome to the band!" Many people make an effort to get on the band for this contest, either to put in an entry or just give away points. However, sadly, a number of stations seem to come on only to work their own club station, refusing to work anyone else. As QSOs are at such a premium on this band, this habit can have a noticeable affect on the results. Although no table positions were affected this year, I would like to discourage this rather partisan operation in future.

This year's contest was again very well supported, with entries coming in from all ranges of experience, from past winners to 4m rookies. Judging from the comments in the logs the weather seemed to be very variable over the UK - no surprise there then! It was generally agreed that conditions had been better the day before the contest, certainly the Es was better only a few minutes before. Nevertheless, some good contacts were made although scores were well down on last year.

In the Open Section The Five Bells group return to the top of the leader board, with the Northern Lights down to second. Geoff, G3NAQ, wins the single operator fixed station section from Roger, G3MEH. The top of the SO section is occupied by two stations from opposite corners of the UK, with Colin, GM4CWH/P, in first place just ahead of Peter, G4YPC/P, in second. Steve, G0AEV, gets the certificate for the highest-placed entry in the SF section using a single Yagi and less than 25W - in his case only 15W.

Pete Lindsay, G4CLA

SectionM

Pos	Call	Loc	QSOs	Mults	Total	Best DX	Dist	Power	Ant
1*	GM4SIV/P	IO75DH	70	51	1338750	S51DI	1788	160	2x9
2*	GD0EMG	IO74QD	73	53	1280586	S51DI	1673	160	2x8
3	GM3TCU/P	IO65VO	45	40	667600	G4YPC/P	678	150	4X6
4	G4ADV/P	IO70JH	48	37	600399	GM4AFF	745	150	2x7

Section SF

Pos	Call	Loc	QSOs	Mults	Total	Best DX	Dist	Power	Ant
1*	G3NAQ	IO91HL	56	37	342990	GM4AFF	597	100	7
2*	G3MEH	IO91QS	52	38	325698	GM4AFF	573	160	2x5
3	G3JYP	IO84SN	34	30	253770	G4ADV/P	508	120	8
4	G3WGV	IO84QN	32	27	236493	S52SK/P	1598	100	4
5	G0ODQ	IO91NQ	41	32	231040	GM4AFF	579	100	5
6	G3IKR	IO82XF	37	30	192060	GM4AFF	510	140	4
7	G8SRL	JO01ED	31	27	178470	GM3TCU/P	660	100	7
8*	G0AEV	IO81WL	34	27	166860	GM3TCU/P	532	15	8
9	G3LVP	IO81WV	34	26	135798	GM4AFF	547	150	4
10	G3NKS	IO81XU	33	27	130734	GM3TCU/P	499	100	6
11	GM4AFF	IO86ST	20	16	129088	G4ADV/P	745	70	8
12	M5MUF	IO92JP	24	21	88032	GM4SIV/P	418	50	Delta loop
13	G4AFJ	IO92HO	23	21	80724	GM3TCU/P	459	130	5
14	G4CZB	IO92MF	13	13	22971	GM4SIV/P	463	10	Dipole
15	S51DI	JN76VL	3	5	17790	GM4SIV/P	1788	100	8
16	GM4DIJ	IO85IW	8	10	11420	GD0EMG	217	50	4
17	M0WYE	JO01LE	8	8	9256	GD0EMG	500	10	HB9CV

Section SO

Pos	Call	Loc	QSOs	Mults	Total	Best DX	Dist	Power	Ant
1*	GM4CWH/P	IO74WV	52	43	651579	G4YPC/P	533	150	5/5+2/2/2/2
2*	G4YPC/P	JO00EW	44	44	600116	GM3TCU/P	678	160	8
3	G1EHF/P	IO91GI	50	38	307040	GM4AFF	610	30	4
4	G1KHX/P	IO81MH	43	34	279106	GM6VXB	712	90	4
5	G4BVY/P	IO82TF	39	28	164388	GM4AFF	510	160	7
6	G6GVI/P	IO81PH	35	25	134775	GM3TCU/P	530	15	5el HB9CV
7	GW3VWH/P	IO82LQ	29	25	127400	GM3TCU/P	384	10	3
8	G0PQF/P	JO01AX	19	18	59616	GM4SIV/P	530	10	3
9	S52SK/P	JN86AI	5	5	16840	G3WGV	1598	100	2x6
10	G3VQO/P	IO90QW	2	3	450	G3NAQ	80	10	mobile whip

By Norman Fitch, G3FPK

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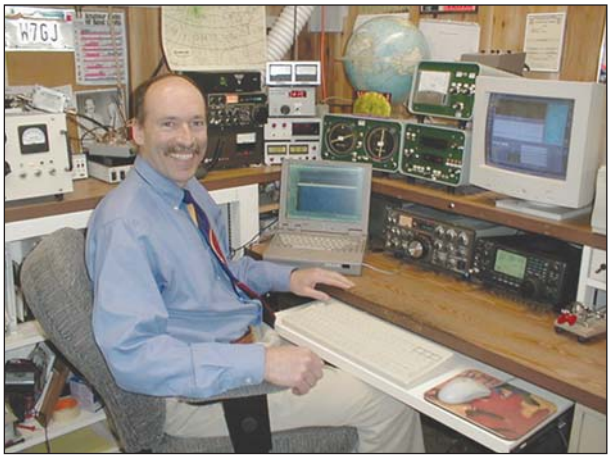
Spring - and a young amateur's fancy lightly turns to thoughts of - spring cleaning? With apologies to Alfred, Lord Tennyson, Norman Fitch recommends some annual preventative maintenance on the amateur station and antenna systems.

VHF/UHF

The need to have things serviced on a regular basis is well appreciated these days, examples being the mandatory annual MoT for our vehicles and the regular servicing of domestic equipment, such as boilers for central heating systems, on safety grounds. It is highly desirable to install smoke alarms and to test them regularly. So it seems logical that we amateur radio operators should consider periodic maintenance and upgrading of our stations.

Now that spring is with us it is a good time to get outdoors to inspect our antenna systems to see how well they have survived the winter winds, rain, atmospheric pollution and possibly snow and ice. Many of us use guy wires or ropes on our antenna masts so it's important to inspect these for signs of deterioration and replace them if necessary. Some interesting correspondence on the subject of guys took place in the vhf-dx-discuss reflector in July 2002 and here's what one contributor, Mike Tubby, G8TIC, wrote: "Having used all sorts of ropes over the last 20 or so years I now only use 8mm 'braid over braid' marine rope. This is very durable, non-stretchable (in wet and dry), easy to handle, long lasting and doesn't give you rope burns. It's easy to use with slide adjusters made from 6mm SRBP approximately 30mm x 120mm with two 9mm holes in it. The rope we purchased over five years ago is still in 'nearly new' condition (although it's been in the washing machine a couple of times to remove excess cow excrement). Look out for Marlow and English Braids - both we have found high quality, etc. We bought complete 100m drums and did the maths to minimise the waste."

Such ropes are best bought from yacht chandlers and one source mentioned in these e-mail exchanges was Jimmy Green Marine. I've had a look at their excellent website - see the list - and if you click on the 'Ropes' button and then choose 'Halyards' you'll find all the details. Look in your local *Yellow Pages* under Yacht Chandlers or do a 'Google' search on the Internet for more suppliers.



This is Lance Collister, W7GJ, one of the world's leading EME enthusiasts who is now promoting 6m operation on the mode. Lance has held a number of calls and is now located in Frenchtown, Montana (DN27UB).

Beam antennas can suffer from corrosion, which varies according to local atmospheric conditions, eg a coastal installation subject to salt spray will suffer more than a similar one in a remote, inland rural area. Junction boxes where coaxial cable is connected to the driven element are often the source of corrosion due to the plastic material deteriorating under ultra-violet radiation and possibly splitting so allowing water to ingress.

Coaxial cable doesn't last forever and if it's been up for a decade it could well be lossier than when it was new, so it's worthwhile inspecting it. Connectors both outdoors and indoors can deteriorate with time so it's a good idea to check every one to make sure that the contacts are clean, that plugs are pushed home and, if retaining rings are used, that they are tight.

Another problem is dust and dirt, which can accumulate inside equipment, particularly computers and rigs that have fans inside. High voltage inside cathode ray tube computer monitors is a magnet for dust. Sometimes the build up is enough to cause tracking across printed circuit boards, so it makes sense to have a look inside the cases from time to time and carry out a little spring cleaning, with the equipment disconnected, of course! A little attention to all these points can make a significant difference to overall station safety and performance.

SOLAR AND GEOMAGNETIC DATA

In the 30 days to 9 March the 10.7cm solar flux was pretty steady at an average of 109.6 units, within a whisker of last month's figure. The maximum was 122 on 27 February and the minimum was 90 on 3 March. The SESC sunspot number only exceeded 100 on three days, the maximum being 107 on 25 March and the minimum 22 on 17 February. Again, only 16 new regions were recorded.

There was a little less geomagnetic activity compared with last month with only 10 days when the middle latitude A-index at Fredericksburg reached double figures. The maximum was 17 on 29 February and the minimum was 2 on 19 and 26 February and 8 March. Incidentally, Fredericksburg is the one in Virginia and the correct latitude/longitude is N38/W77 and not as stated in one of the NOAA tables. I pointed out the error to Larry Combs at the Space Environment Center so they will amend it some time.

BEACON NOTES

As reported in the 7 March GB2RS News, the 4m Wessex beacon, GB3SWX, was switched on at 1838 on 1 March and was then operating at 2.25W into a 5-ele Yagi at 90ft AGL: other details are as on p81 in the April *RadCom*. Thanks to Dave Boniface, G3ZXX, for this information.

Luis Albergaria, CU2IJ (HM77), reports that some amateurs in the Azores are planning to build a 2m beacon. The project has been "... blessed by the local club (ARA)..." but will take a while to realise. Thanks to Heath Rees, GW3HBR, for passing along this information which originated with a message from Luis on the WSJT/JT44 bulletin board.

METEOR SCATTER

The Eta-Aquarids meteor stream is the next significant shower in the MS calendar and OH5IY's comprehensive MSSOFT software predicts the peak at 0030 on 5 May with a maximum zenithal hourly rate (ZHR) of 51. This shower is a very broad one and can provide useful reflections for at least a couple of weeks either side of maximum. Its radiant is above a mid-UK horizon in the 0200-1330 period.

MSSOFT and the accompanying documentation can be downloaded from OH5IY's website - see the list - in the form of zipped files, which you can select from a menu on the left side of the opening screen. Although MSSOFT is a DOS program, it works on my Windows XP system.

When you open MSSOFT you can select from four options, Shower Peaks, Geometry, Sked Editor and MS Operating. Clicking on Shower Peaks brings up a list of 12 major showers and when you click on one you get a graph showing the elevation of the radiant from your QTH and a histogram of ZHR data from 1980.

The Geometry option lists 39 showers and when you select the one you want up comes a grid map of Europe. Pointing to your sked partner's grid and clicking brings up a screen showing efficiency, path loss, the azimuth and elevation of the radiant and the ZHR at hourly intervals in graphical and tabular form. Other data include your antenna bearing, the distance, antenna offsets, the optimum antenna elevation and the period when the radiant is above both participants' horizon.

Sked Editor is pretty obvious and MS Operating is where you set up the actual operating and type in the messages you are going to send. This control is accomplished by hitting the appropriate F1-F12 function keys. The documentation in the large MSDOCS file is extremely thorough. Within a few days of each shower, Ilkka posts the .M file to registered users, which you can add to the MSDATA folder. Basic MS operating procedures, though before the advent of WSJT software, are covered in the 'Operating' chapter in The VHF/UHF DX Book available from the Society's Book Shop.

MOONBOUNCE

Al Katz, K2UYH, reports in the March *432 and Above EME News* that the 23cm SSB EME contest in February had the smallest turn-out in years, probably due to generally bad weather and high winds in Europe and in parts of North America. At the time of editing there were no scores in from any of the usual 'big guns'.

Simon Freeman, G3LQR (JO02), had weather problems and only heard OE9XXI. Peter Blair's, G3LTF (IO91), activity was also totally disrupted by the gales over the 7/8 February weekend and he wasn't able to unlock his dish antenna until the Sunday evening when he had a long CW chat with Howard Ling, G4CCH.

Humble apologies to GW3XYW who is Stuart Jones in IO71 and not as stated in the March 'VHF/UHF'. In the SSB contest he completed with OE9XXI, OZ6OL, G4CCH and K5GW for a new initial, after which an inhibit relay in his PA gave up forcing him to go QRT. He replaced his Septum feed to his dish with a 70cm feed for the first leg of the *DUBUS*/REF contest on the 7/8 March weekend.

G4CCH has now fixed his elevation readout problem, which was due to a bad edge connector to the interface. After losing all tracking calibration he replaced the touch memories in the VE1ALQ interfaces then re-calibrated the elevation sensor. He found low activity in the SSB contest on 23cm and closed down at 0330 on the 7th due to high winds, consequently Howard only completed 12 QSOs. These were GW3XYW (IO), OE9XXI (JN), HB9BBD (JN), K5GW (EM), N2UO (FN), DL4MUP (JN), F2TU (JN), K5JL (EM), W7BBM (DM), OZ6OL (JO), K2UYH (FN) and VE6TA (DO). He made his first JT44 contact at 2316 with OE9ERC (O/O). On 5 March a sked with 9H1ES at 1930 was completed (O/RO) for a claimed 'first' G/9H on 23cm.

9H1ES is Fortunato Bonnici and is a new station on 23cm with 500W to a 2.4m dish. He prefers the station working him to transmit first. He then puts his TX frequency (QRG) on the signal he hears from his partner leaving the latter to correct for Doppler effect. His e-mail address is fbonnici@hotmail.com if you'd like to make a sked with him.

Chris Bartram, GW4DGU (IO71), has been working on his 70cm equipment and just managed to get it running in time for the first leg of the *DUBUS*/REF contest. The PA comprises four 120W solid state devices each employing a Semelab D1020UK dual DMOSFET operating at 28V giving 400W. The antenna array consists of four home-designed and home-made 17.3dBi Yagis and he is now up to seven initials.

Just before the contest he made his first 70cm JT65b QSO with HB9Q where they use a 15.3m dish. Their signal was 20dB above his threshold for copying JT65b signals so he reckons anyone with 100W, a single long Yagi and a reasonable receiver should be able to work them. Shortly afterwards he completed with GW3XYW for a claimed 'first' GW/GW EME QSO on 70cm. On 2m Chris is still using a single Yagi and JH2COZ (PM94) was his fifth continent and a new country. DF7KF (JO30) uses a 16 Yagi array, so has a big signal. W4SW in Virginia (FM18) was a new US state and grid. These QSOs were made using JT65.

G3SEK's *Lunar Weekend Calendar* suggests 1/2 May for the next activity weekend when London latitude stations will have 23.5 hours of Moon time. The declination varies from +7.84° to -5.01° and the 144/432MHz sky temperature range is 239/18K to 360/27K. The signal degradation referred to perigee varies from -0.91dB to -0.29dB and the Sun offset at Saturday midnight is +141°.

BAND REPORTS

50MHz

Just too late for inclusion in last month's report was Ted Collins's, G4UPS (IO81), account of activity on 11 February. At 1720 he heard G3NVO calling 'CQ aurora' but it wasn't until 1729 that he heard the GB3RMK beacon (IO77) at RST56A. At 1732 he heard LA8BCA working EI5FK, both 55A at 10° bearing after which Ted worked OH3XA* (KP21) and SM7FJE (JO65). All signals faded out by 1750 and neither the GB3BUX nor GB3MCB beacons were heard during the event.

Maurice Charpentier, F5NQL, the DX Editor of the French magazine *MegaHertz*, forwarded the news that the Togo DXpedition, 5V7C, made 80 QSOs on the band on 10 March. Countries worked were CT, EA, EW, F, I, IS, IT and 9H. They heard a station in SV.

70MHz

The latest news on the 4m website - see the list - is that, following a talk by Rob, MW0DMK, to the Dragon Amateur Radio Club in Anglesey, several new stations are now QRV on the band. These include Rob himself; Dave, GW4JKR; Steve, GW0GEI; Patrick, GW1SXN; John, MW0BER; and Kevin, MW1CFA, all on FM with Rob, MW0REH, and Brian, GW4KAZ, joining the group soon. All monitor 70.450MHz and the Irish FM calling frequency 70.2625MHz. Most stations are using Ascom SE550 transceivers.

In another contribution, Dave Butler, G4ASR, wrote that he had just returned from the IARU VHF/UHF 2004 Interim Meeting held in Vienna on 28/29 February where he found quite a lot of interest in a European 70MHz allocation. The IARU link person into CEPT was at the meeting and said he would definitely get 70MHz on the agenda "when the opportunity arose." Meantime it is hoped that other national societies in Europe will apply to their administrations for allocations following the licensing of amateurs in Croatia, Denmark and Slovenia.

144MHz

The aforementioned e-mails between GW3HBR and CU2IJ revealed that Luis is planning to experiment with FSK441. He has an FT-290 Mk2 and is making a 12- or 13-element Yagi. He says a bigger antenna would be nice but that winds are a problem in the Azores. He will have a GaAsFET preamp and a small 60-70W PA. Heath has given him some very useful advice regarding stations to con-

tact, propagation modes and beacons to monitor. The distance (QRB) to southern Ireland and the southwest of England is about 2000km so Es and MS modes are quite feasible. Also we know that tropo ducting in excess of 3000km occurs in that general direction from the British Isles.

Bryn Llewellyn, G4DEZ (JO03), was QRV in the RSGB 144/432MHz Contest over the 6/7 March weekend but found very low UK activity so over 65% of his contacts were with continental stations. Niels Montanana, G8RWG (JO01), has had computer problems when a hard disc failure ruined his logging programs and the records of grids worked. He has re-installed a 9-ele Yagi and hopes to double up soon. He managed a short period in the contest finding conditions average and, like G4DEZ, little UK activity. His best DX (ODX) was DL0PVD (JN49) at 607km on the Sunday morning.

Rob Harrison, G8HGN (JO01), was QRV in the UK Activity Contest session on 2 March and completed 29 QSOs with stations in 14 grids and four countries, DL, G, ON and PA for a claimed score of 406 points. ODX was DC0NAC (JO43) at 661km and he summed it up as, "Lots of activity and some DX. Search and pounce mode tonight." He also gave away a few points in the 6/7 March contest but so far the weather, conditions and DIY have restricted his operating times.

ANNUAL VHF/UHF TABLE - JAN TO DEC 2004

Callsign	50MHz Dist	50MHz Ctr	70MHz Dist	70MHz Ctr	144MHz Dist	144MHz Ctr	430MHz Dist	430MHz Ctr	1.3GHz Dist	1.3GHz Ctr	Total Points
G4DEZ	32	7	17	3	79	10	27	6	4	2	187
G8RWG	-	-	-	-	18	6	-	-	-	-	24

The District Codes are the 124 listed on page 56 in the January 2003 RadCom. Up to 6 different GI stations and up to 3 different GM stations in each Scottish district may be counted. Countries are the current DXCC ones plus IT9. The deadline for the nest issue is 11 May.

DX RECORDS

In the October 2003 'VHF/UHF' I mentioned that Tommy Björnström, SM7NZB, is the official keeper of DX records for IARU Region 1. I see that the latest update was made on 11 January 2004 and that a different website is now operative - see the list. However, the records are not up to date, as they do not list the more recent claims as reported in the October 2003 column for example. So I suggest that those who think they have made a new record have a look at the website and then e-mail Tommy at sm7nzb@svessa.se

SIGN OFF

It's been a poor month for reports for which, no doubt, a lack of auroral and tropo propagation is to blame. Another reason is that some of the erstwhile VHF-only licensees are now exploring the HF bands, which can, understandably, be more rewarding than listening to hours of white noise on the VHFs. I've included the Annual Table even though there are only two entries. The copy deadline for the June issue is **13 April** and for July it's **11 May**. The telephone answering and fax machine is on 020 8763 9457, although it's rare nowadays to receive any messages on it, and my CompuServe ID is g3fpk. ♦

WEB SEARCH

Guy ropes	www.jimmygreen.co.uk
OH5IY	www.kolumbus.fi/oh5iy
4m news	www.70mhz.org
IARU Region 1 DX records	http://ham.se/vhf/dxrecord/040111.htm

WIN!
A West Mountain Radio RIGblaster Pro with a RIGrunner for the runner-up

A West Mountain RIGblaster Pro worth over £200 can be won in our exclusive competition, courtesy of West Mountain Radio and Waters & Stanton plc, with a RIGrunner as second prize.

The West Mountain RIGblaster Pro was reviewed by Chris Lorek, G4HCL, in last month's *RadCom* (see April 2004 *RadCom* pages 42 - 43). It is the top-of-the-range rig to soundcard interface and comes complete with audio connection cables, power leads, and a CD containing many of the programs required to get you going on data modes. Chris Lorek described the RIGblaster Pro as "the absolute ultimate in versatility" when it comes to rig-to-PC interfaces. The RIGblaster Pro is the first prize in our competition.

The second prize is a RIGrunner. The RIGrunner provides the most convenient and safe way to connect all your 12V DC equipment to a power source. It is a 13.8V DC power panel using Anderson Powerpole connectors that allows you to standardise all the 12V DC connections in your shack.

The full rules are listed below. (Hint: re-reading Chris Lorek's review in the April 2004 *RadCom* will help you with the answers!)

COMPETITION RULES

Look at the three multiple choice questions below. Write your answers on **a postcard or the back of a sealed envelope** (no letters accepted) and send to: RIGblaster Competition, RSGB, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE. Entries must be received at RSGB HQ by first post on **Friday 28 May**. You *must* be a current member of the RSGB on the closing date of the competition (28/5/04) in order to enter. The winner will be announced in the July *RadCom*.

Q1. *The RIGblaster Pro will work with:*
(a) Yaesu and Icom transceivers (b) Kenwood and Ten-Tec transceivers (c) all of these.

Q2. *The RIGblaster Pro allows you to operate which of the following modes?*
(a) RTTY, PSK31, SSTV (b) RTTY, PSK31, SSTV, CW (c) RTTY, PSK31, SSTV, CW, AmTOR.

Q3. *The current price of the RIGblaster Pro in the UK is:*
(a) £209.95 (b) £259.95 (c) £299.95.

THE SMALL PRINT

Only one entry per member (multiple entries will be disqualified). No other correspondence can be entered into. All entries will become the property of the RSGB and of Waters & Stanton plc. Please state on your entry if you do *not* wish to receive further promotional material or offers from the RSGB or Waters & Stanton. The competition is open to current RSGB members only. Employees of the RSGB and of Waters & Stanton plc are not eligible to enter.

By Mark Lewis, GW7KDU

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E-mail: rmcwales@ntlworld.com

Repeaters

The CTCSS encode/decode unit devised by G3VVT ♦ Vacancy on the RSGB Repeater Committee ♦ Repeater Proposal Status

LATEST CLEARED REPEATERS

Callsign	Type	Channel/Frequency	Keeper
GB3FF	New 2m, Lochgelly, Fife	RV48 Input 145.000MHz Output 145.600MHz	MM0EEY

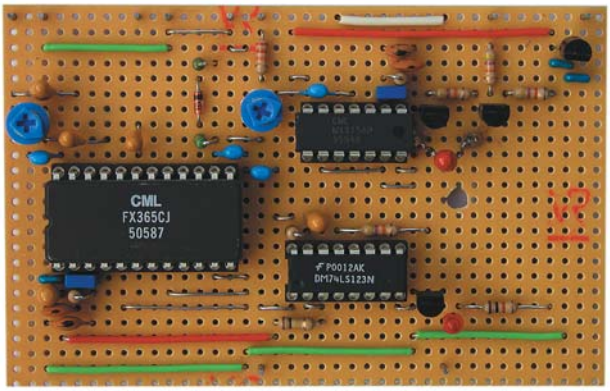
Bob Wilkinson, G3VVT, has added a CTCSS facility to the GB3US MkI logic on GB3LF using CML Microcircuits' FX365CJ and FX315P2 devices. Here is a photograph of his project together with a circuit diagram, **Fig 1**. Readers wishing more details of the circuit should send me an SAE.

REPEATER MANAGEMENT COMMITTEE VACANCY

The RMC currently has a vacancy for a regional manager for the East Midlands. If you are interested in filling this vacancy, please write to the Chairman of the RMC, Carlos Eavis, G0AKI, c/o RSGB Headquarters.

REPEATER PROPOSAL STATUS AS OF 8 MARCH 2004

The latest clearance status can be obtained from the RMC website. 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. ♦



WEB SEARCH

CML Micro	www.cmlmicro.com
RMC	www.coldal.org.uk/rmc

OUTSTANDING VOICE REPEATER PROPOSALS SUBMITTED FOR LICENSING

Callsign	Type	Process Stage	Proposed Keeper
GB3AA	New 23cm, Alveston, North of Bristol	PU	G4CJZ
GB3AI	New 2m, Amersham	RIS	G0RDI
GB3BO	New 2m, Bolton	RIS	G4YYB
GB3BW	New 23cm, Weston-super-Mare	RIS	G4SZM
GB3FK	New 2m Folkestone	Ofcom	M1CMN
GB3GO	New 2m, Llandudno	RIS	MW1DSB
GB3JF	New 2m, Lincolnshire	RIS	G8LXI
GB3KD	New 2m, Kidderminster	RIS	G8PZT
GB3KI	New 2m, Herne Bay	RMC	G4TKR
GB3LG	New 2m, Lochgilphead, Argyll	RIS	MM1FEO
GB3LP	New 6m, Liverpool	Ofcom	M1SWB
GB3MI	New 2m, Manchester	RMC	G0TOG
GB3SH	2m site change, Southampton	RIS	M1AFM
GB3TY	New 6m, Carrickfergus	RMC	GI6IXD
GB3VM	New 2m, Woofferton	RMC	G4AIJ
GB3WE	New 2m, Backwell, North Somerset	NFAP	G4SZM

FIG 1 © RADCOM 141

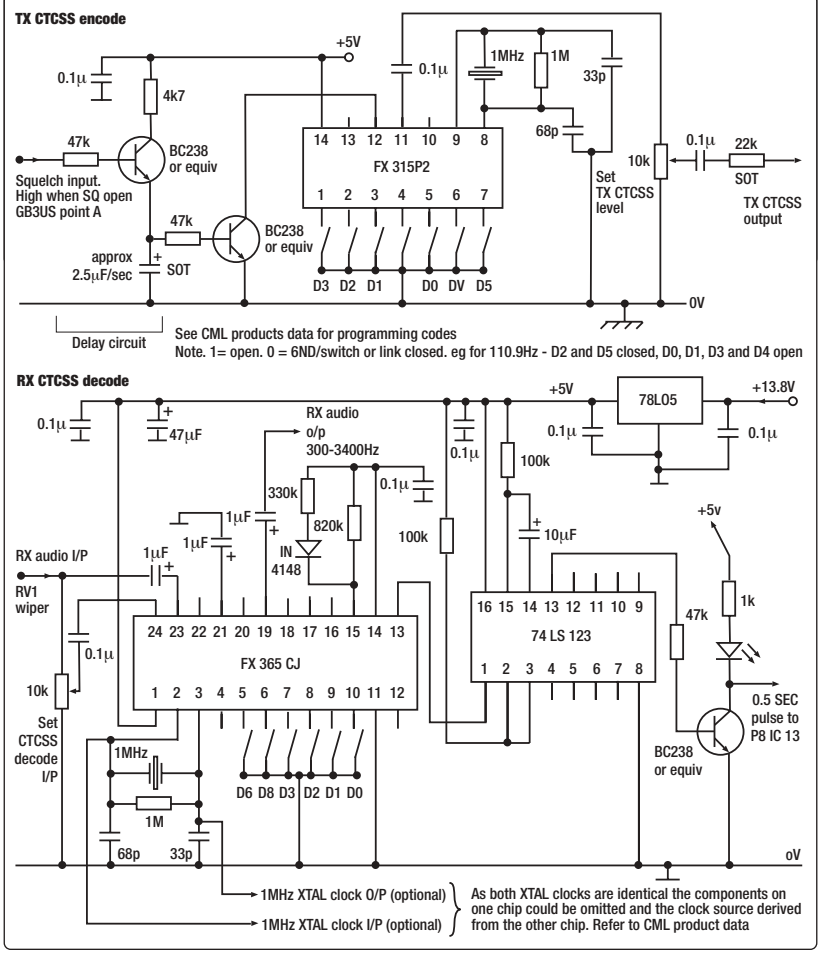


Fig 1 GB3LF CTCSS encode/decode circuit diagram.

By Simon Lewis, GM4PLM

Creoch Farm, Ochiltree, Ayrshire KA18 2QH.

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

GM4PLM gives some details about the UK Microwave Group and its new responsibilities ♦ Microwave Update 2004 ♦ Microwave Round Table ♦ Jack Brooker, G3JMB, SK

MICROWAVE

The UK Microwave Group committee has been in liaison with the RSGB Spectrum Forum via Mike Dixon, G3PFR, the Microwave Manager and in negotiations with the RSGB Board regarding the transfer of the Microwave Newsletter, Contests and Microwave trophies and awards to the UK Microwave Group and affiliation of the Group to the RSGB.

The Group is now recognised by RSGB as the representative body of the UK microwaver. The Group appears on the RSGB's Spectrum Forum organisational tree as the liaising group for your interests. If you have any problems or issues which you wish to be considered at this level, please contact the Group Chairman, Peter Day, G3PHO. UK microwavers are most welcome on the ukmicrowaves@yahoogroups.com reflector and, if you have not already done so, we would advise you to visit Yahoo groups and sign up. The group receives a steady stream of enquiries regarding membership. At this stage we ask you just to register with the club secretary, Martyn Kinder, G0CZD. When the time comes to pay a subscription (most likely during the summer of this year) you will then be contacted.

A subscription figure has not yet been set as the exact nature and quality of the Group's services have yet to be finalised. However, we have very recently been given the go-ahead by the RSGB to plan the transfer of the *Microwave Newsletter* to the Group. This means that current *Newsletter* readers will continue to receive their paper copies until their present subscriptions expire, after which they will be given the option to carry on receiving the *Newsletter*, under its new logo, as full members if the UK Microwave Group. You need not reside in the UK or be an RSGB member to join. The transfer should be complete by mid-2004. Ideally, present readers will only be aware of the change when they see the new logo on the front page! This changeover may take several months, until the last subscription under the RSGB system has expired. The position of the Group *vis à vis* contests, trophies and awards has not yet been finalised but an outcome just as favourable as that of the *Newsletter* is expected. In any case, the contest programme for this and future years is still in the capable hands of its previous organiser, Steve, G4KNZ. An enormous backlog of contest certificates has just been cleared by Martyn, G0CZD. Some of you will have heard the thud on your hall floor as the postman delivered the certificates owing to you for your past achievements in the cumulatives and other microwave contests! Many thanks, Martyn. Contact details are as follows: Chairman: microwaves@blueyonder.co.uk; Secretary: martyn@czd.org.uk

Connoisseurs' choice: the experts poring over components for sale at last year's 'Microwave Update'.

MICROWAVE UPDATE 2004

The North Texas Microwave Society is the proud sponsor of 'Microwave Update 2004' being held in Dallas, Texas on 15/16 October 2004. The conference will be held at the Harvey Hotel, Dallas Fort Worth Airport. Microwave Update is the premier technical conference for the amateur radio operator interested in frequencies above 900MHz. This year's event will host technical presentations on both Friday and Saturday. If you are interested in presenting a paper at the conference, please contact the team running the event.

As usual, the ARRL will be publishing the conference proceedings. A tune-up clinic consisting of noise figure and network analysis equipment to 50GHz will be conducted throughout the event. The usual surplus tour hosted by the ultimate junk hound, Kent Britain, WA5VJB, will be conducted on Thursday. A Friday night flea market for the microwaver will provide the opportunity to both buy and sell. The conference will end with a fabulous Saturday night banquet to wrap up the event.

For partners, a fun weekend of exploring Dallas/Ft. Worth antique shops, restaurants, old villages and much more is planned. Check out the NTMS website, www.ntms.org, and the Microwave Update website, www.microwaveupdate.org, for further information about MUD 2004.

MICROWAVE ROUND TABLE

The UK Microwave Group, with the cooperation of Mike Willis, G0MJW, has organised a Microwave Round Table meeting for Sunday, 25 April, at the Rutherford Appleton Laboratory (RAL), near Didcot, south-west of Oxford. Apologies for this late announcement, but permission to hold the event has only just been granted. Details of the programme for the day are still being worked out, but there will be interesting talks, a trophy presentation, test gear facilities and the usual 'horse-trading table'. It's a one-day event starting at 10am and finishing sometime between 3.30 and 4pm. This is a grand opportunity to meet your microwave pals and test out your winter projects. RAL has an excellent reputation for its restaurant! If you wish to avail yourself of its facilities you must say so when you register for the event. This year, because of the security arrangements, each RAL attendee will need to register his/her intention to come to the meeting **by 20 April 2004**. Registration is mandatory and anyone who turns up out of the blue will, I'm afraid, be refused entry. You can register on-line at the UK Microwave Group's website at www.microwavers.org Please pass this information around to other microwavers. If anyone cannot register on-line, please send in a postal application via G3PHO, whose details are correct in the current *Yearbook*.

JACK BROOKER, G3JMB, SK

It is with sadness that we received news on 12 February 2004, that Jack, G3JMB passed away. He was in his early eighties. Jack, as many UK microwavers will already know, had spent the past few years fighting ill health but, with characteristic fighting spirit, he continued to get as much enjoyment as he could from his amateur radio hobby and, in particular, his microwave activities. Amateur radio and UK microwaves in particular, has lost a most respected and valued member of its ranks. To Margaret, his wife, and to his family, we extend our deepest sympathy. ♦

John Heath, G7HIA / M3BBX

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USA committed to *ISS* until 2010

President Bush makes a telling statement about space progress in the last 30 years ♦ AMSAT *Echo* launch delayed ♦ *AO-40* recovery continues ♦ AMSAT-UK Space Symposium ♦ News about *PCSAT2*

Outlining his goals and vision for America's space programme, President George W Bush gave a firm commitment to complete the *ISS* construction project by 2010, thus meeting its obligations to the 15 international partners in the project. The focus of research on the *ISS* will be in areas of human biology and the effects of long-duration space flight. This is in line with American plans to put a human on Mars. For those of us who remember the American Moon landings, Bush made a telling statement: "In the past 30 years, no human has set foot on another world, or ventured farther into space than 386 miles, roughly the distance from Washington DC to Boston Massachusetts". (Thanks to *Space Flight* magazine, March 2004, where the speech is extensively reported.)

LAUNCH DELAY FOR AMSAT *ECHO*

Robin Haighton, VE3FRH, President of AMSAT-NA announced the new 'official' launch date of 29 June 2004. This is probably the first date of the launch window.

This postponement is due to a delay in delivery of the primary payload and gives us all more time for fundraising to meet the launch cost of $110,000.

RADAR INTERFERENCE

Satellite regulars Malc, G7NFO, and Terry, G1WPR, found their recent QSO on *FO-29* badly disrupted by strong interference on 70cm. Malc described it as being like a mosquito buzz. This is not the first time this has been heard and it's not local. Could this be a high power radar signal from an AWACS plane?

AO-40 RECOVERY CONTINUES

A completely unexpected failure of the main battery took *AO-40* out of service recently. At the time of writing, late February, the command team is trying to cycle the main battery off and the auxiliary battery

Can *you* identify this badge?

on. Instructions in machine code are being sent every orbit, in an attempt to switch the battery, and also turn on the S2 transmitter. If there is enough voltage (10V) to operate the relay, the command team will be able to re establish control. Joining the recovery effort, Brett Dawson, VK2CBD, and members of the observatory staff, have been using the 64m radio telescope at the Parkes Observatory in Australia, to listen for the local oscillator signal from the L1 receiver. The fact that nothing has been heard so far is not completely bad news. The telescope is not really fitted for frequencies below 1.25GHz and the LO may be well-shielded within the spacecraft structure, so that very little signal is being radiated. The L1 receiver is switched on continuously so, if it can be heard, it confirms that 10V is available. I am sure we all thank the command team for their efforts to recover *AO-40*, and wish them every success.

CAN YOU IDENTIFY THIS CAP BADGE?

I am not a stamp collector, but spotting a display of Russian stamps in a Leicester stamp emporium I was easily tempted in to browse. The Russians have produced many attractive stamps to commemorate their achievements in space. The shop had some military items and I picked up, very cheaply, what looked like a Russian Military cap badge, with rocket connections. If there is anyone who can tell me a bit more about it, I would be pleased to hear from you.

AMSAT-UK SYMPOSIUM 2004

This is, without doubt, the number one satellite event in the UK. Hear some great lectures and meet with satellite builders, designers and radio amateurs who specialise in the mode. If you can't make it for the full event, which takes place from 30 July until 1 August, day tickets are available. Having attended no fewer than six Symposia (or Colloquia, as they used to be called), I can thoroughly recommend the event to you. Details are on the AMSAT-UK website.

PCSAT2

Imagine a small flattish suitcase that opens up and is then fixed to the outside of a space station. That just about describes a Passive Experimental Container (PEC). One has flown four times in space, including a year on *MIR*. Now called Materials International Space Station Experiment (MISSE), the PEC will be attached to the *ISS* and a range of hi-tech solar cells will be exposed to the Sun. This latest mission, MISSE5, has given Bob Bruninga, WB4APR, the chance to orbit an amateur radio payload fixed to the back of the case. Operating in collaboration with ARISS, *PCSAT2* will provide a multi-user PSK31 transponder, an FM voice repeater with crew-use possibilities, AX25 packet for UI-digipeating, and telemetry. More details are on the website. ♦

WEB SEARCH

Parkes Radio Telescope	www.parkes.atnf.csiro.au
AMSAT-UK	www.uk.amsat.org
PCSAT2	http://web.usna.navy.mil/~bruninga/pcsat2

By Trevor Brown, G8CJS

E-mail: chairman@batc.org.uk

ATV

More about digital ATV tests in the south-east ♦ Find out about the extensive use of ATV in Edmonton, Canada ♦ A reminder about the BATC BGM, which is only a few days away.

In the last ATV column I reported that GB3HV had been used for DATV experiments and that G8GTZ and G8CKN had received pictures from the repeater over approximately 50-mile paths. The received signal level for analogue produced just-about-viewable, P1-grade pictures, while the QPSK DATV produced P5-grade pictures. Roy, G4WTV, e-mailed me to say that the tests, although interesting, should have been carried out only during manned operation. I don't have the full story, Roy - I am working only from a press release. Roy went on to say that the Worthing Repeater Group's TV repeater, GB3RV, is also digitally-equipped and ready to try DATV when the licence finally arrives. It has been waiting almost a year to receive an NoV to allow it to have a new DATV repeater output on the 10GHz band.

DATV has been developed in order to create a mode which is friendlier to other users, and which can deliver better results. At the time of writing, I have five DATV transmitters on my desk, which are part of a production run of 100 units costing in excess of £500 each. They were designed at Bergische University, Wuppertal and are capable of QPSK (DVB-S), GMSK, QAM, and 8-VSB (ATSC). We can now start evaluating DATV on a European-wide front; yes, I am as frustrated as the rest of you. The best place to carry out the evaluation is at the repeaters. DATV was developed to help share the spectrum with other users. We need to try it and fine-tune if necessary. We can't fix the problems if we are not allowed to try the solutions...

NEW ATV REPEATER NoVs

On a more positive note, the first new ATV repeater NoVs for over 12 months have just been issued by the new Ofcom organisation: GB3WV on Caradon Hill in Cornwall, with 1249MHz in and 1310MHz out - keeper M0AVP; also the first UK cross-band repeater, GB3FV, near Wisbech, with 2390MHz in and 1312MHz out - keeper M0CKE.

Alas, at the time of going to press, there is no news of the five 13cm in-band repeaters, BH, DH, FT, KM and TZ.

ATV IN EDMONTON, ALBERTA

BATC member and one-time RSGB General Manager David Evans, VE6DXX, of the Northern Alberta Radio Club (NARC), has provided information on a TV project with a difference. The TV project was conceived so that pictures of any major emergency or disaster could, in theory, be fed into the City of Edmonton's Emergency Operations Centre (EOC). The project involves two sites, one near the city centre and the second at the club site, about 15km to the east of the city. The Club's permanent site is on a small hill and, several yeas ago, one of the cellular telephone operators approached the club to put up a 200ft tower (see the photograph) on the club's land. An agreement was struck with the cellular operator and, as part of the deal, it erected all the club antennas.

The Northern Alberta Radio Club's 200ft tower. Photo: VE6DXX

This site now has repeaters on 50MHz, 144MHz (two repeaters), 220MHz and 430MHz, in addition to packet links and antennas for 1.3GHz intended for the TV. Multi-coupling on some antennas has been an interesting technical challenge.

At the club's permanent site, the intention is to have a 1.3GHz (in) to 70cm (out) TV repeater. The 70cm transmitter will run 100W to a bay of dipoles at around 150ft. Input on the 1.3GHz band will have horizontal polarisation. The 1.3GHz input signal will be derived from a second TV repeater located near the city centre, which will use Alford slot transmit antennas on 1.3GHz and vertical polarisation on 2.4GHz, which will be the input band. The building currently most likely to host this second TV repeater is about 2km from the city centre and will allow the TV repeater antennas to be at 300ft above ground level

Once the City TV repeater is set up, the City Emergency Operations Centre will be able to take pictures on 1.3GHz from the repeater. As part of the project, there will be a small video mixer and distribution system at the City EOC, so that these amateur radio-derived pictures can be seen on the projection TV screens inside the main part of the EOC where senior staff from all of the local agencies are positioned. Since hearing about the project, other agencies in the city, apart from the City EOC, have asked for a 1.3GHz video feed from the club repeater!

Another part of the project is to build three mobile camera units with associated 2.4GHz transmitters to provide the input for the 2.4 to 1.3GHz repeaters. Local amateurs will need to transmit on 2.4GHz to activate both repeaters for normal use and receive on either 70cm (a disused channel on most domestic TV sets) or on 1.3GHz

Obviously, this TV project will be of benefit not only to local radio amateurs and club members, the vast majority of whom are within line-of-sight of the 2.4 to 1.3GHz repeaters, but also to the local community.

THE BATC BGM

This is being held again at the Shuttleworth Trust, Old Warden, Bedfordshire, on 8/9 May. It starts on the Saturday evening with a get-together in the bar, which has a licence extension. On Sunday there is a full lecture programme, with traders, demonstrations and a car boot sale. Accommodation is available (a good idea after the bar extension...). See the BATC website for details. ♦

WEB SEARCH	
DATV boards	www.datv-agaf.de/
BATC	www.batc.org.uk

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By Dave Lawley, G4BUO

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Learning the code

In this issue Dave Lawley focuses on one of the better methods for learning Morse code at 'realistic' speeds.

The first 'Morse' column in February's *RadCom* seems to have been welcomed, with many nice comments received by post and e-mail, and tales of some truly heroic efforts that people made to teach themselves the code.

There's no longer any pressure to learn Morse: you don't have to pass a test to get on HF, so now you can take your time and include on-air practice. This doesn't just apply to new or ex-class B licensees: I know of people who got through the old 12WPM test but have not used the key since, and some of them are now working to get their skills back to a level where they feel confident to get on the air and make some CW QSOs. I want to address the subject of developing your speed in a future column, but this time is all about how to learn the code in the first place.

There are many approaches to learning Morse, and many tricks have been suggested, some of which do more harm than good. The first thing to do is to forget about dots and dashes, and think instead of dits and dahs. The reason is that dit and dah are more close to the correct symbol lengths. Think of the letter 'C' in Morse not as dash-dot-dash-dot but as dah-di-dah-dit. Assuming you're not reading this in a public place, say dah-di-dah-dit out loud, and that is the way 'C' should sound in Morse. Now say dah-dah-di-dah, and you've just learned 'CQ'.

Most techniques for learning the code get you to memorise a few characters at a time, at a slow speed, and then once you've learned all the characters, you practice receiving text at gradually increasing speed. Most students who follow this route find they hit a 'plateau' at about 8 - 10WPM where they don't seem to be making any progress.

A variation on this is the 'Farnsworth' method in which individual letters are sent at a faster speed, say 12WPM, but the overall message speed is initially set lower, perhaps 5WPM or less. A drawback of Farnsworth is that it makes it harder to appreciate the correct rhythm of Morse code.

THE KOCH TECHNIQUE

Back in the 1930s, when there was a great need for skilled Morse operators both civil and military, a German psychologist called Ludwig Koch investigated the effectiveness of different techniques for learning Morse, and concluded that starting slow and building up speed was completely the wrong approach. The reason is that at low speed the student translates the combination of dits and dahs by mentally comparing it with all the Morse characters he has memorised. The 'plateau' comes about because that is the speed at which the Morse is too fast for a conscious process of translation.

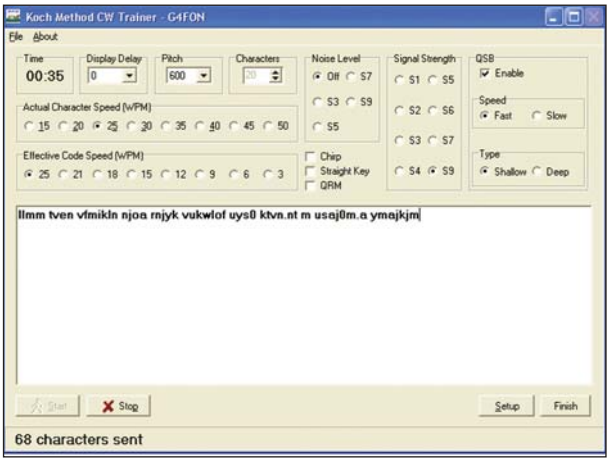
Koch developed a method which builds up a reflex right from the beginning, so that when you hear dah-di-dah-dit you *know* it is C, without any conscious process of breaking it down into dits and dahs. It's the same way a touch typist knows where the letters are on a keyboard.

The other important aspect of the Koch method is that you learn one letter at a time. Once you have practised and built up a reflex so that you automatically copy a letter as it is sent, at full speed, you move on to the next one.

The champion of the Koch method has been Dave Finley, N1IRZ, and his web pages describe how he discovered this method and used it to pass his 20WPM test, when other methods had failed.

Computers did not exist in Koch's time of course, but although you can learn using this method with the help of a personal trainer, it is ideal for self-study using a computer. Refurbished computers can be bought from reputable companies for under £100 which are perfectly adequate for this purpose. Ray Goff, G4FON, has written a Koch trainer which runs under Windows and this is a really excellent tool for learning using the Koch method, and for Morse practice generally.

The slowest character speed that you can set with the G4FON program is 15WPM. For your first run, you just have to copy random groups of two letters. After three minutes, you check what you have copied against the display on the screen, and repeat until you get 90% or more correct, when you can add a third character. As N1IRZ says, there will be good days and bad days, but you can measure your progress towards learning all the characters.



The main window of Ray's, G4FON, Koch Morse trainer software.

Solid copy of random 15WPM groups is not the end of the story, but once you have got this far the steps to copying firstly plain text, and then amateur QSOs, are not nearly so daunting. The advantage is that you will be doing it at a realistic speed, not 5WPM which is far slower than anything you'll ever hear on the bands.

The final stage is to learn how to send. I don't know what if anything Koch had to say about this, but my feeling is that having learned to copy the letters by reflex, you are in a better position to send them correctly. It's at this point that you need to enlist the help of an experienced Morse operator to listen critically to your sending. If you don't know anyone suitable in your area, I can try and put you in touch with a member of the RSGB Morse Proficiency programme who could help.

Ludwig Koch got some of his students up to 12WPM in 13.5 hours. There are 90 days until the next *RadCom* Morse column, which should be more than enough. Good luck learning the code! ♦

WEB SEARCH	
N1IRZ Koch method	www.ees.nmt.edu/sara/sara/finley.morse.html
G4FON Koch trainer	www.qsl.net/g4fon/CW%20Trainer.htm

By Jeremy Boot, G4NJH

E-mail: g4njh2@ntlworld.com

There are few technologies as interesting as radio and its history, slow at first, then mind-blowing in its rapid advance, radically affecting people's everyday lives and attitudes to Science from that time onwards

Radio and its early development

I mentioned in my last article the DX Zone pages, and although in various magazines I have spoken before about the history of radio in general and amateur radio in particular, no apologies for revisiting this theme again. You will find it a good jumping-off point in the URL quoted below from this site on this very subject.

MUTUAL DEBTS OF GRATITUDE

Personally, I think we owe a great debt to those early pioneers of radio: Clerk-Maxwell, Morse, Hertz, Lodge, Marconi. But, conversely, radio owes quite a debt too to those many amateurs who turned professional in the early days of broadcasting both here with the BBC and elsewhere.

Arguably, we could start to trace the history to the ancient Greeks and static electricity from amber, of which they were aware. But let us pass over the centuries and note a neat timetable provided on the 'History of Radio' summary, part of the 'Amateur Radio on the Wirral' pages. According to this chart, we start in the modern era in 1873 with James Clerk-Maxwell who published his theory of electromagnetic waves. The 'Wickford-mafia AM Radio Pages' (Essex) also gives a similar style of table.

FATHER OF RADIO – MARCONI

The Nobel prize for physics in 1909 for the invention of radio went Marconi, surely a hero to all of us amateurs. Visit the 'US Marconi Museum' pages among the many other sites dedicated to Marconi, 'The Father of Radio'. "Radio waves were known as 'Hertzian Waves' when Marconi began experimenting in 1894… Marconi's achievement was to produce and detect the waves over long distances, laying the foundations for what today we know as radio." The pages go on to describe the famous Titanic disaster of 1912: "To understand the role of wireless on the night of April 14th, is to understand the primitive stage of wireless technology of the period… The generated signal of the spark trans-mitter was blunt and broad. The spec-trum it occupied was for example, all of today's broadcast band… Whoever hit the air first, occupied most of the spectrum. Thus, denying stations within close distance, the ability to communicate with others, unless a tuned circuit, such as a wave trap, was employed at the receiver to minimise the interfering signal." Read the rest for yourself.

The Italian 'Sierra Papa Group' is worth a visit. Dedicated to the memory of Marconi, it produces its pages in several languages, of which, fortunately, English is one. A very brief vignette of some of the contributors to radio include Luigi Galvani (he of the frogs' legs), Alessandro Volta, Calzechi Onesti, Augusto Righi, Clerk-Maxwell, Hertz, Eduard Branly and Aleksander Popov – the latter often given more prominence than Marconi in eastern countries. That five of these pioneers were Italian does not go unremarked. There are several images of early transmitters including the 1897 machine, which, sending over all of 19km constituted arguably the first Italian DX!

The 'Hammond Museum of Radio' pages are a treasury of all sorts of goodies. They are full of examples and exhibits of early equipment, both professional and amateur. Since the site is Canadian, their dates are interesting: Marconi's trans-Atlantic transmission to Newfoundland, 1901; first WT Act, 1905; voice transmissions, 1913 with the Radio Telegraph Act; first Broad-cast Station XWA in Montreal, 1919. The BBC's first broadcast was 14 Nov 1922.

THE W1TP TELEGRAPH & SCIENTIFIC INSTRUMENT MUSEUMS

The lists of links are extensive. A fascinating series of articles, includ-ing 'People and Discoveries' appears in a series of educative pages, very nicely put together and called 'A Science Odyssey'. There are articles on Marconi and 'KDKA Begins to Broadcast, 1920'. We read: "For 15 years or so (…from 1907, after the invention of the Audion radio valve), voice radio was the purview of engineers and hobbyists called hams. To most people it seemed amusing, but a novelty that would have no practical application. One obstacle to radio's acceptance was that the equipment was cumbersome and required a fair amount of knowledge and attention. After WWI, prosperity and technological advances… brought more appliances into the home and created more technologically-minded people. In 1920, Westinghouse… had an idea for selling more radios - it would offer programming. Dr Frank Conrad was a Pittsburgh area ham operator with lots of connections. He frequently played records over the airwaves for the benefit of his friends. This was just the sort of thing Westing-house had in mind, and it asked Conrad to help set up a regular transmitting station in Pittsburgh. On 2 November, 1920, station KDKA made the nation's first commercial broadcast."

The colourful Hammond Museum of Radio home page.

VARIOUS SITES

You would expect a good site from Ian Poole, G3YWX, author of so many radio books, and his site lives up to expectations in every respect. On the theme of the history of radio, read the background and a very good article on the development of the radio receiver, from crystals, to diodes and triodes, superhets and such. There is much else on the site to keep you amused.

Porthcurno Museum: Don't forget to visit this site, the Cornish radio museum. A very nice site with good graphics and content.

A comprehensive article appears on what seems to be a Wolverhampton academic site – 'History of Radio' by Bev Parker. On early broadcasts: "The Marconi Company began test transmissions on 2750m, from Chelmsford, early in 1920. Some of the transmissions consisted of readings from Bradshaw's railway timetable, others included gramophone records and recitals by local musicians. Many radio amateurs and ships' radio operators tuned in to the transmissions." How marvellous it must have been to tune in to those primitive broadcasts. ♦

WEB SEARCH

DX Zone pages	www.dxzone.com/catalog/Reference/History/
History of Radio/ AR on the Wirral	www.vwlowen.demon.co.uk/radio/radhist.htm
Wickford Mafia	http://wickfordmafia.freeservers.com/custom2.html
US Marconi Museum Pages	www.marconiusa.org/museum/index.html
Sierra Papa Group	www.sierrapapa.it/e_home.htm
Hammond Museum of Radio	www.hammondmuseumofradio.org/index.html
W1TP Telegraph & Scientific Instrument Museums	http://w1tp.com
A Science Odyssey	www.pbs.org/wgbh/aso/databank/tech.html
Ian Poole, G3YWX	www.radio-electronics.com/
Porthcurno Museum	www.porthcurno.org.uk/
History of Radio, by Bev Parker	www.localhistory.scit.wlv.ac.uk/Museum/Engineering/Electronics/history/radiohistory.htm

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By Alan Hydes, G3XSV

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SSB Field Day 2003

Rapidly gaining in popularity, SSB Field Day is an ideal club event in which all classes of licensee can take part. Here's a look back at the 2003 event. Put a note in your diary now for this year: SSB Field Day: 4 / 5 September 2004.

Iain, G0OZS, and John, G4BAV, operating Ipswich Radio Club's station, G4IRC/P.

The tribander, dipoles - and flags! - at G4ARN/P.

The Norfolk Amateur Radio Club's station, G4ARN/P, at dusk.

It is very encouraging to see the number of entries in SSB Field Day on the increase - 36 this year versus 31 last. One factor in this trend is possibly the dramatic increase in the number of Class B and Foundation licensees appearing in the operator list. Together they accounted for over a quarter of the 225 operators taking part. Let us hope this trend continues and that more newcomers to HF get hooked on Field Days. The top scores were also well up on last year, which appears to be due to improved conditions on the HF bands, despite the general decline in the sunspot cycle.

Although the weather didn't turn out as wonderful as forecast, it was at least dry and warm for most of us. This is always welcome when trying to put up tents and antennas, and of course when cooking the bacon butties in the morning. Less welcome were the scattered storms that caused problems for a few stations.

RESULTS

The Manx Kippers, GD0EMG/P, from the Isle of Man seemed to be in a contest of their own as they romped away with the Open Section, achieving a record number of QSOs. The team, which comprised just four operators - G0HSS, G4XUM, G1GEY and G4MJS - take the Northumbria Trophy for the first time. The combination of the GD callsign and an impressive signal is going to be difficult to beat. The Bristol Contest Group, G6YB/P, kept them in their sights for much of the contest, but in the end finished in second place about 300 QSOs and 25 multipliers behind. Another 200 QSOs adrift were previous winners Lichfield Amateur Radio Society, G3WAS/P, who take third place this time followed by Gravesend Radio Society, G3GRS/P, in fourth.

The Restricted Section is always closely fought and this year was no exception. But the real surprise was that the winners Cray Valley Radio Society, G3RCV/P, had not entered this contest for some years. The four team members G0VJG, 2E0ATY, M3CVN, and G7GLW are first-time entrants, but it is amazing what can be done with enthusiasm, 300ft of wire, and a great location: see their comments below. In the end they made 40% more QSOs than their nearest rivals, Granta Contest Group, M0CAM/P, who take second place. Last year's winners, Granta, found more multipliers, and had an extremely accurate log, but that wasn't quite enough to come out on top. Stratford Upon Avon and District Radio Society, G0SOA/P, took third place narrowly beating Wisbech, M5ARC/P.

OPEN SECTION

			3.5		7		14		21		28						
Pos	Group	Call	Qs	Ms	Qs	Ms	Qs	Ms	Qs	Ms	Qs	Ms	QSOs	Pts	Mults	Errors	Final Score
1	The Manx Kippers	GD0EMG/P	362	35	441	45	626	75	500	81	11	11	1940	6409	247	37	1583023
2	Bristol CG	G6YB/P	174	22	214	39	750	82	476	70	13	9	1627	5508	222	15	1222776
3	Lichfield ARS	G3WAS/P	298	31	293	45	536	71	285	59	7	6	1419	4901	212	38	1039012
4	Gravesend RS	G3GRS/P	215	29	363	47	339	67	233	54	23	13	1173	4112	210	12	863520
5	East Notts CG	G3TBK/P	244	26	338	28	448	55	211	30	2	2	1243	4348	141	22	613068
6	South Cheshire ARS	GW6TW/P	118	13	115	30	438	62	251	37	1	1	923	3235	143	26	462605
7	Ipswich Radio Club	G4IRC/P	236	26	429	33	230	50	48	19	8	6	951	3439	134	19	460826
8	Harlow and District ARS	G6UT/P	307	30	233	23	397	54	51	19	0	0	988	3552	126	41	447552
9	Addiscombe ARC	G4ALE/P	312	28	116	26	188	50	70	23	21	11	707	2628	138	22	362664
*	Ripon & District RS	G1WCY/P	143	18	172	26	298	50	147	29	0	0	760	2740	123	33	337020
10	Sheffield ARC	G3RCM/P	180	19	259	25	234	45	47	23	4	2	724	2742	114	27	312588
*	South Dorset ARS	G3SDS/P	297	25	273	24	231	50	8	5	0	0	809	2874	104	45	298896
11	Clifton	G3GHN/P	202	19	197	27	156	43	52	21	4	2	611	2364	112	14	264768
12	Oxford and District RS	G5LO/P	161	14	94	20	176	51	121	34	1	1	553	2149	120	17	257880
13	Melton Mowbray ARS	G4FOX/P	223	21	97	20	265	46	75	14	0	0	660	2439	101	9	246339
14	Hornsea ARC	G4EKT/P	202	20	98	13	176	49	85	24	0	0	561	2156	106	23	228536
15	Banff and Buchan ARC	GM3GG/P	64	12	40	14	326	53	60	22	0	0	490	1792	101	15	180992
16	Horsham ARC	G4HRS/P	155	15	104	19	115	34	88	28	5	3	467	1797	99	6	177903
17	Edgware & District RS	G3ASR/P	125	12	201	35	108	32	0	0	0	0	434	1764	79	13	139356
18	Stockport and South Manchester RS	G6UQ/P	108	15	83	16	107	39	52	22	0	0	350	1477	92	3	135884
*	Norfolk ARC	G4ARN/P	87	12	109	18	80	30	30	17	1	1	307	1289	78	26	100542
19	Grimsby Amateur Radio Society	G3CNX/P	56	7	108	14	49	24	6	3	0	0	219	953	48	25	45744
20	Bredhurst R & T Society	G0BRC/P	115	13	11	9	30	17	9	4	2	1	167	686	44	21	30184

RESTRICTED SECTION

			3.5		7		14		21		28						
Pos	Group	Call	Qs	Ms	Qs	Ms	Qs	Ms	Qs	Ms	Qs	Ms	QSOs	Pts	Mults	Errors	Final Score
1	Cray Valley RS	G3RCV/P	252	24	306	26	116	34	46	18	5	2	725	2669	104	40	277576
2	Granta CG	M0CAM/P	139	16	137	29	160	44	74	31	2	2	512	2062	122	7	251564
3	Stratford Upon Avon & District RS	G0SOA/P	173	18	118	23	152	41	62	25	0	0	505	2056	107	9	219992
4	Wisbech AR&EC	M5ARC/P	195	22	171	15	135	44	42	16	1	1	544	2156	98	8	211288
5	RAFARS	G8FC/P	147	19	93	20	85	32	13	7	1	1	339	1506	79	5	118974
6	Kilmarnock & Loudoun ARC	GM0ADX/P	102	12	117	15	125	33	24	15	3	1	371	1513	76	24	114988
7	Echelford ARS	G7EAR/P	138	15	132	24	68	25	26	8	0	0	364	1595	72	10	114840
8	Itchen Valley ARC	G0IVR/P	113	11	132	19	84	28	25	14	3	1	357	1512	73	7	110376
9	Finningley CG	M0RHI/P	115	15	121	21	71	29	24	7	1	1	332	1434	73	20	104682
10	Torbay ARS	G3NJA/P	101	12	87	20	80	28	32	14	0	0	300	1300	74	4	96200
11	Horndean & District ARC	G4FBS/P	197	18	47	19	30	20	3	3	0	0	277	1208	60	14	72480
12	Braintree ARS	G3XG/P	51	9	44	12	99	38	33	16	0	0	227	885	75	3	66375
13	South Essex ARS	G4RSE/P	98	10	139	18	40	19	7	4	1	1	285	1181	52	40	61412
14	Worthing Radio Events Group	M0REG/P	86	8	7	4	103	30	19	13	0	0	215	789	55	68	43395
15	Jersey ARS	GJ3DVC/P	6	3	16	9	65	25	30	14	0	0	117	424	51	12	21624
16	Lowestoft and District and Pye ARC	G3JRM/P	95	7	8	5	18	15	13	6	0	0	134	507	33	36	16731

NOTE: * Declared as check logs, but included in the main listing for comparison (see text). Other check logs received with thanks: G3TCR/P, G0VQR/P, G0VZV/P, GW4CC, PA0ELD, K3ZO, F/G3VQO/P.

BAND CONDITIONS

"As good as could be expected" is the best description I could find for conditions during SSB Field Day weekend. 10 metres was essentially dead for everyone during the whole contest with just a very weak opening to South America around 1800UTC on the Saturday.

On 15 metres some of the Open Section stations with high antennas showed a lot of DX in their log, while others found the band hard work. There was a lot of activity from Asia, especially Japan and the Far East, during Sunday morning. As usual the All Asia contest shared the same weekend as SSB Field Day and, provided you give your age as well as a serial number, Asian stations were more than happy to work UK portables. Of course non-Asian stations operating in the AA contest were less co-operative, as they had nothing to gain from working Europe. Overall, SSB Field Day seems to benefit from the extra activity that the AA contest brings, even though it can be confusing and frustrating at times. 15 metres was also open to the whole of the USA on Saturday afternoon including some good signals from the west coast.

20 metres was fairly solid for most of the contest. The band stayed open late with GW6TW/P and G6YB/P still running to the west coast USA till about 0100UTC, but as a result they clearly made fewer QSOs on 40 and 80 metres. 40m produced some nice DX during the depths of the night, though running split to the USA is a laborious business. When 40m got very weak and watery during the small hours there was always 80m to fall back on. G3RCV/P used their 300ft wire to very good effect on both 80 and 40m.

"Quiet! He's on the air." The Sheffield Amateur Radio Club station, G3RCM/P.

Morning mist over Sheffield at G3RCM/P.

The Sheffield Amateur Radio Club SSB Field Day group.

LOGS

Of the 39 logs that were scored, 28 were in the preferred Cabrillo format, nine of the others were in RSGB format, one was a print (.prn) file and one paper log. All logs were re-scored and then cross-checked. The table shows the final totals and the number of errors found during adjudication. So, what were the most common mistakes?

By far the biggest class of logging error was making a station /P when they were not and vice versa. There were a few logs that appeared to have North Korea as a multiplier. When a station signs "portable 9" it should be logged as /9 and not /P9, eg K9QVB/9 and not K9QVB/P9, which the logging software scores as North Korea. Nice try though!

A couple of stations took a short excursion on to 160 metres, but to be fair they did declare these QSOs as void.

Please remember to edit the Cabrillo file before sending it. As well as checking the header information is correct and the file looks complete, it is helpful to add some SOAPBOX: lines to give information about your station, antennas, and some comments.

Three logs were received from stations who had made a big effort, but for various reasons had to resort to using mains power for some of the contest. They have been scored and placed in the listing, but have not been given rankings. One of these was Norfolk Amateur Radio Club, G4ARN/P, who operated as part of public demonstration of hobby at the Norfolk Police Gala Day, a good way of giving amateur radio public exposure while getting the fun of operating a contest.

SOAPBOX

While on the subject of the police, G3RCV/P reports: *"We got raided by the police about 4.00am although in middle of nowhere . . . asked what the hell are four blokes doing in field at 4.00am? It turned out they were looking for an elderly person who had gone missing"*. It seems that some groups were having some trouble with the neighbours. Like G0SOA/P, *"We moved to the far end of the field this year to avoid an archery event but were still subject to co-field interference from the footballers Saturday pm !"*; G4ALE/P: *"Sunday morning was made more lively by sharing the field with the local clay pigeon club!"*; and G7EAR/P: *"Had to move one of the aerial ties on Sunday morning to clear the football pitch."*

But most problems were of the electrical kind. Murphy even visited groups who had back-up generators, like M0RHI/P: *"Generator decided to pack in just before dark. Emergency power failed and generator two had a small fault. Off air for about one hour"*; and M5ARC/P: *"The 15kVA genny played up until about 2300, we had to keep switching to the 3kVA back-up. Finally found the diesel fuel filter was blocked."* Storms were the concern to some: G4FOX/P *"had to close down for a while due to electric storm: quite a display of sparks from the feeder ends."* G8FC/P: *"just finished setting up and we had a thunderstorm but cleared before the contest started"*; and M0CAM/P: *"Wx was generally good. It did chuck it down early Saturday evening which caused us some problems with local arcing noise. We still don't know where it was coming from but it did create S7 noise on all bands for some time."*

Most found the weekend fun, like G6UQ/P: *"A thoroughly enjoyable event with excellent weather. Stockport Radio Society and South Manchester Radio Club's first joint contest. Conditions on 20, 15 and 10 were hard going although some good DX was worked. 80 and 40 were easier bands. Roll on next year!"* And here's the secret of G3RCV/P's success: *". . . very good take-off, good views of London, site was 680ft ASL, wire was on edge of cliff between two trees."*

Some groups commented that it is getting difficult to put together a team, but many others benefited from the participation of new operators and helpers. For example, G0BRC/P: *"We entered the contest with an almost 'virgin' team of participants who had never entered a contest on voice. There were also several Foundation licence holder operators who participated as loggers and check loggers and the essential coffee makers. Age range of 9 to 72 years!"* ♦

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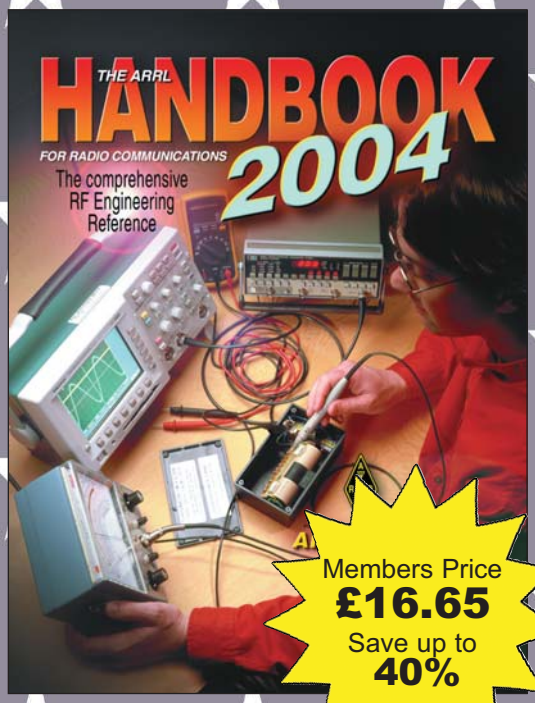

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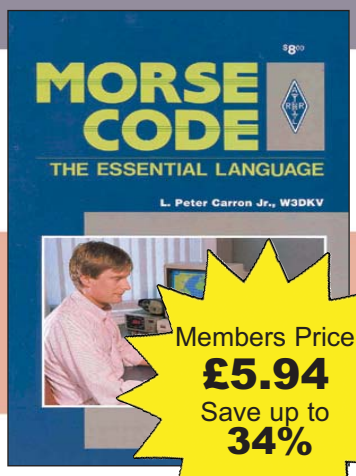

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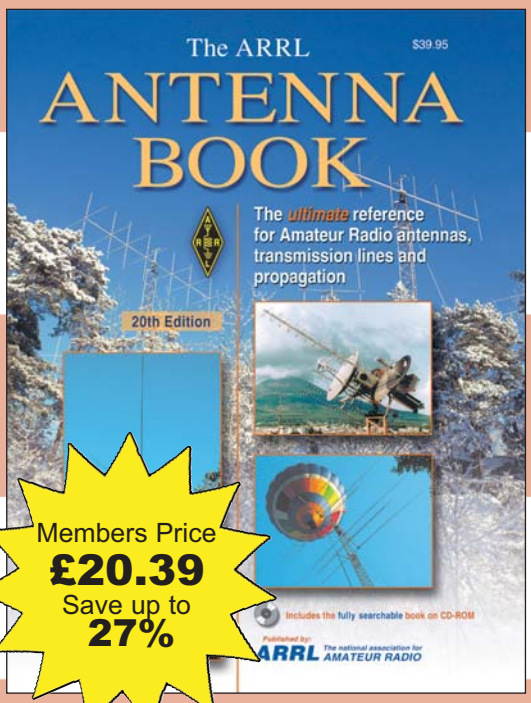

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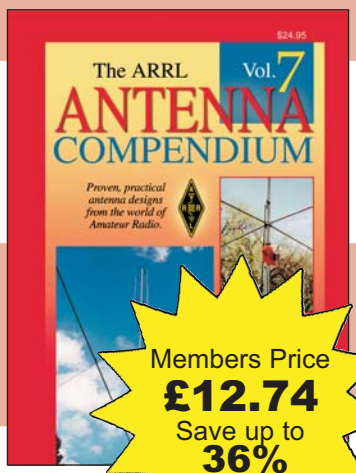

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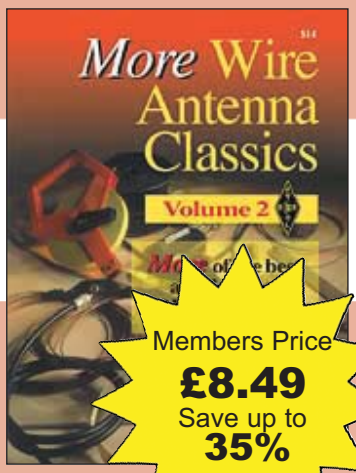

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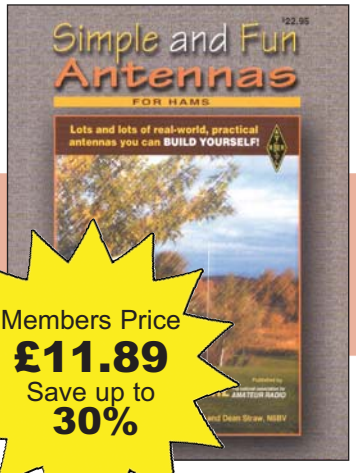

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4CX250FG valve in sealed ring-pull can. Offers? Yaesu FT-480R, £180. FV-901DM, £90. Bird plug-in elements, £50 each covering 6m, 2m and 70cm bands. Bird Termaline coaxial resistor type 8141 50ohm 250W, £85. E F Johnson roller-coaster, £100 ono. Microwave Modules tvtrs: MMT-432/14, £70; MMT 144/28, £40. MML 432/50 linear, £60. Ampere APB/57A 10W/45W 2M linear, £55. QM-70 50W 2m linear, £50. 2, 40W amp, £40. Bencher key, £95 and G3JGX keyer (*RadCom* Aug 97), £40. Hi-Mound manipulator (weighted & cased), £40. Hi-Mound MK-706, £20. Brass GPO key, £15. CDE44 antenna rotator, £150. Marconi FM/AM sig gen TF-895 1.5 to 220MHz, £40. Megger, £30. Advance millivolt meter 77B (0.001-300V), £20. Advance 'Q' meter T2, £40. Advance sig gen (AF) J2B, £30. Electrostatic V/meter 2kV to 10kV, £20. Ammeter 100A AC, £20. K8 PSU, two separate DC outputs regulated at 0 to 10VDC, £15. Plug-in units for Tektronix oscilloscopes, £10 each. Marconi LCR bridge TF-868B, £40. QTH one mile from junction 29 on M6. P&P extra. G3AZI, QTHR, 01772 337 815 (Preston).
E-mail: g3azi@btinternet,com

ALINCO DX-70 TH brand new, £385. Icom IC-735, £325. TM-721E dual-bander, £120. FL-2100Z HF amplifier, £350. Yaesu 50W VHF amp, £70. 50W UHF amp, £70. Hygain 80-10m vertical, £135. KAM multimode TNC, offers? Brand new Hygain TH-11DX 11-ele 5-band beam. Brand new Hygain Tailtwister 2XX heavy duty rotator. 60ft 3-section Versatower with electric winch and baseplate as new. 30ft 3-section Versatower with baseplate as new, both complete with head-units. Offers? DX-70 separation cable, new, £30. GS-065 head bearing, £30. Yaesu rotator clamps, £15. Kenwood DFK-4B remote kit, new, £35. 2kW 4-way antenna switch, £40. Heil interface cable for Yaesu, £9. Icom OPC-118 interface cable, £15. Service mans IC-765, £25. TL-922, £20. FT-757, £15. FRG-7700, £15. THG-71A/E, £10. G0NMP, 01953 884 305, 07970 214 039 (Norfolk).

AMP HF 600W with single 3-500Z valve, by Linear Amp UK, £220. Geoff, G4FAS, QTHR, 0161 437 7784 (Stockport).
E-mail: geoff.royle@lineone.net

CAR number plate R5GBS (like RSGB S). Offer over £1,500. Curtis, 01633 866 488 daytime, 07973 430 430 evenings. E-mail: curtis@curtiscommunications.co.uk

CDR Ham 'M' heavy duty rotator, £60. Brown Bros iambic paddle, circa 50s, £75. Lennart Petersson Morse key (copy Swedish Navy), brass, £75. RAF type 'D' Morse key, £75. 01494 530 018.

SILENT KEYS

We regret to record the passing of the following radio amateurs:

G0LBY	Mr A B Hick	29/02/04
G0NOA	Mr J Clark	25/03/04
G0POS	Dr C Sumner	31/01/04
G2LV	Mr R J Leeves	02/01/04
G3HOO	Mr J R Pechey	25/01/04
G4GKO	Mr R Roden	28/03/04
G4LNE	Mr A W Howorth	03/03/04
G4PHM	Mr D Ferguson	17/03/04
G5VO	Mr J Hargreaves	09/03/04
G6XN	Mr L Moxon	03/03/04
GI4ORK	Mr H Kane	16/03/04
GW2HCJ	Mr R Taylor	19/01/04
RS30511	Mr P A L Beaumont	12/03
RS31278	Mr K Grain	04/02/04
RS87742	Mr D L A Law	03/03/04
VA3JNA	Mr J N Appleby	10/03

COLLECTORS – Codar AT-5 (without case), £30. T-28 rcvr, £30. PR-30 preselector, £25. Mobile PSU, £25. R1155 rcvr (top band model) with PSU, £150. Trio 2200 2m FM, £20. Icom 10m FM with small linear, £20. All cash and collect. G4EHT, 07748 357279 (Lichfield, Staffs).

CUSHCRAFT A35 triband HF beam modified for heavy duty use, £185. Kenwood TR-10 tcvr all-mode. TS-700S in need minor attention + YD-148 mic, £85. All one-owner items. Buyer collects, cash only, no cheques. David, G3MWV, 01263 512 872 (Cromer).
E-mail: g3mwv@evemail.net

DAIHATSU Hi-Jetta camper van, fitted out for mobile/portable, ideal for club portable station, all mod cons (extra batteries), goes into multi-storey car parks, £3400. Robin, G1AHU, QTHR, 01522 509 721 (Lincoln).

EDDYSTONE rcvrs 961, 1990, 990S, EP-17R - all four for £300. Buyer collects. Paul, G6OWI, QTHR, 01254 673 234 (Blackburn).
E-mail: Paulpathaworth@aol.com

E-H antennas. Commercial high efficiency HF, single-band use. 10-15-17-20 and 40m models. Ideal for limited space, £50 each. Less than half price. G4LZU, 01823 442 477 (Taunton). E-mail: eddie.hayden@clara.co.uk

FRG7 rcvr, digital mod, good cond, £90. Buyer collects or pays carriage. Robin, G1ZUC (Bath).
E-mail: robin.d.johnson@btinternet.com

FT-817 with all standard accessories, boxed, mint, £365 plus carriage. Might exchange with cash for IC-703, John, G3GTJ, 01963 240 319 (Castle Cary).

FT-897, mint cond + technical supplement CD, £650. FP-757GX PSU, £50. G4XRV, QTHR, 01494 778 686 (Chesham, Bucks).
E-mail: rupert@g4xrv.fsnet.co.uk

GENUINE Vibroplex Champion key. Little use, £65. Brown Bros twin paddle for electronic keyer. As new, £65. Pair Mullard 4X150A equivalent, Eimac bases and chimneys, unused, £50. G3SKI, QTHR, 01273 506 418 (Brighton). E-mail:
ron@bravery52.freeserve.co.uk

HRO rcvr, six coils 480kHz-30MHz. Rebuilt 'Dog Kennel' PSU, Storage box for five coils, speaker. Recent overhaul, capacitors/resistors replaced. Standard HRO circuit plus stabiliser and output transformer. Copy handbook, £150. Dentron MT-3000A ATU. 1.8-30MHz. 2kW rating, inbuilt power/reflectometer and antenna switching, £95. Collins mech filters, F455 F 05 (500Hz) 526 9318 021, £40. F-455 Z 5 8S2 (LSB 2.7kHz) 526 9365 00, £35. Xtal filter X455K F300 (300Hz) 526 7073 010, £35. All filters plus postage. Other items collect. G3GGK, QTHR, 01954 210 374 (Cambridge).

IC-275H, mint, boxed, mans, £525. IC-575A 28 & 50MHz, 10W, boxed, mans + 100W 50MHz linear, £525. Buyer collects or pays carriage. Tony, G6TTL, 01754 820 038 (Skegness). E-mail: tonyg6ttl@arfonet.co.uk

ICOM IC-746, gen cov, mods, exc cond, h/book and original box, non smoking owner, £750. FL-100 500Hz, RTTY/CW filter, £35. FL-223 1.9kHz SSB filter, £35. FL-222 1.8kHz SSB filter, £80. MFJ-969 300W roller-coaster ATU, HF/6m, exc cond, £120. Extensive shack clearance, phone or e-mail for list of good equipment and components. G8PPR, 01274 651 486 (Bradford, W Yorks).
E-mail: david@g8ppr.fslife.co.uk

ICOM IC-706 MkIIG HF+6+2+70, mint, mic, power lead, man, box, £500 + p&p. M0TIN, QTHR, 01943 816 316 (Ilkley).
E-mail: dave.legrove@talk21.com

ICOM IC-706 MkIIG. 500Hz CW with all leads and man, £625. G0UOO, 01303 863 326 (Folkestone).

ICOM IC-746 HF/6m/2m, built-in ATU, boxed as new, with man and power cord, £750. SM-20 desktop mic, boxed as new, £65. FL-103 SSB wide filter, £45. Icom AT-180 auto ATU boxed, as new, 1.9-54MHz, 120W, suits IC-718, IC-706, £250. Peter, M0PTR, 01202 691 176 (Poole). E-mail:
peter.clifford@which.net

KENWOOD 751E multimode, £225. Kenwood 221E FM, £90. Yaesu FT-712 70cm FM, £80. Dentron GLA-1000 with new valves and bases, £225. Buyer to inspect and collect. Tony, G3JRS, 01509 551 557, 07799 854 859 (Kegworth).

KENWOOD 950SDX mint, boxed with SP-950 and all supplied original accessories, £1350. Icom AT-500 auto ATU boxed, £250. Nag-144XL VHF linear boxed, £175. Trio TM-201A. FM 20W mobile, nice cond, £50. Marconi sig gen types: TF-144H/S and TF-801D both mint, £50 each. Prefer buyer collects or carriage extra. Peter, G4HSB, 01642 816 608 after 6pm (Middlebrough).

KENWOOD TH-78E dual-bander 144/430MHz. New unused as op only interested HF CW, £75 + post. George, G0SED, 01347 848 988 (York).
E-mail: george.bullock@virgin.net

KENWOOD TMG-707E 2m/70cm FM tcvr with DFK-3C separation kit. 45W/35W output, wideband FM/AM rcvr, with mic and instruction man, £160. G0FAJ, 01202 460 174 (Poole). E-mail: les.g0faj@ntlworld.com

KENWOOD Trio TS-711E multi-mode, 25W, boxed, mans. Mains powered, £250. Kenwood Trio TS-811E multi-mode 25W mains powered, man, boxed, £275 mint. G0KGU, 01482 896 471 (Hedon, Hull).

KENWOOD TS-530S 9-band, boxed with mans, £300. Kenwood AT-230 boxed with man, £120. Yaesu 736R 70cm-2m-6m, CTCCS tones, CW keyer, Yaesu MD-1 base mic, boxed and man, vgc, £650. G6HWR, 01629 584 143 (Matlock). E-mail:
mfern@macunlimited.net

KENWOOD TS-570DG. Auto ATU, DSP, narrow SSB filter, hand mic and mans. As new, in original packaging, £525. Kenwood SP-23 speaker (matches TS-570DG), as new, £40. W2IHY 8-band graphic equaliser, mic pre amp and noise gate for superb hi-fidelity Tx audio. Complete with PSU and lead for 8-pin Kenwood, boxed with man. As new, £200. G4MJA, 0191 389 2822, 07958 049 026 (Durham).

OPTIBEAM 5-band OP9, new in box, never assembled, £680 - ono. John, M0CJW, QTHR, 01522 789 959, 07973 462 268 (Nr Lincoln).

P-40 Versatower with winches but less ground post and top rotator section, exc cond, £50. Buyer collects. Dave, G3KLH, 01425 638 542 (New Milton). E-mail:
david@staddle-barn.freeserve.co.uk

QRO oil-filled caps, EHT plate transformers. G4SGV, QTHR, 01527 545 304 (Redditch).

RACAL RA-17 rcvr, gwo, with circuits. *Radio Bygones* articles and spare set of valves. Never failed since bought 16 years ago. Offers around £150. Buyer to see, try and collect. Ian, G4COL, 01727 832 784 (St Albans). E-mail: ianb@g4col.demon.co.uk

RELUCTANT sale TR-851E still in box as supplied by ML&S, £375. TS-830S, vgc, £375. Second hand 48-ele 77 Parabeam, £30. Very rare 100W Icom 575HE, make ideal contest radio, in original box, £450. 10m FM tcvr (OSCAR) unused in box, £30. G2KF, 07974 892 179 (N Cornwall).

SCOPE 20MHz twin-trace by Leader, £99. Geoff, G4FAS, QTHR, 0161 437 7784 (Stockport). E-mail: geoff.royle@lineone.net

SILENT key - FT-840, FM, 6kHz filter, £450. Daiwa PS-340, £50. Adonis AM-808G, £50. Three items above together, £525. Trio R-1000, £120 ono. KW E-Zee Match, £50 ono. Daiwa CN-101 SWR/pwr, £50. SGC-230, £220. MQ-2 minibeam, £220. Dynamic MH-31B8, £15. Wavemeter type D, £10. All vgc, carriage extra. Ten years' *RadCom* free to collector, local club. G3KTH, 01905 774 624 (Droitwich).

SILENT key sale. 2m multimode TR-751E, £200. 6m portable rig FT-690R2 + ant + mic, £150. Inrad CW filter 250Hz 455kHz for IC-746, better than Icom FL-53A, £70. 12V 22A PSU Watson WS-25SM, £50. G3MCK, QTHR, 01572 756 444.

SILENT key sale. RCA Manufacturing Co Inc: Rider Chanalyst. National Co Inc: High Frequency 5TA1 rcvr; A,B,C,D coil set in original wooden box; spkr in original steel cabinet. The following valves (majority still in original boxes and all in perfect cond): GEC 608; RCA 2E26; RCA USN CRC1625 (x2); RCA 80; GEC Y2; Hallran 6Y6G; CBS 605; Collins VR150-30; RCA VT-167A (US Army Signal Corps) (x2); GEC 6X5; GEC 6U8; Sylvania 6BE6; Sylvania 6J6 (x2); CGE 5R4 GY; GEC 5-30-188-20; Triotron ECC81; Brimar 5763; RCA 6K7; UM 6AL5 A6A; National JAN-6HGGT (x2); RCA 2E26; Sylvania JAN-CHS-OD3/VR-150; Sylvania 6BE6/L8E (x2); Sylvania 6V6GT(H); Sylvania I6H6; Sylvania 6H6 (x3); Sylvania 6V6GA; Haltron OB2 (x4); GEC 12 BH7; CBC 5509 (x2); GEC 5-22-188-5 (x2); Triotron 6BA6; GEC 5-22-183-5; GEC 5-35-188-5. Crystals: 9000kHz & 5305kHz, & Collins Radio Co Channel 1-3, frequency 3200kHz. Sensible offers only, please. Tel: 01795 437 277 after 6pm. E-mail: amyers@pattinsonbrewer.co.uk

SILENT Key. Yaesu FT-707 HF tcvr with PSU (FP-707) and ATU (FC-707), £300. Yaesu FT-225RD, Mutek front end fitted, £300. Trio TM-231E, £120. Trio TR-2300 with mobile mount and 10W amp, £80. Icom IC-02E 2m FM, £60. Datong D-70 Morse tutor, £25. Yaesu FRG-7 HF rcvr, £80. Gould 05245A dual-beam oscilloscope, £50. Buyer collects or meet within 50 miles. Paul, G8SEV, QTHR, 01536 743 132 (Corby).
E-mail: pandgmatthews@aol.com

STILL for sale due to time wasters. Icom 756PRO as new, £1100 ono. TS-850SAT, auto ATU, eight filters, £500. TS-820 spkr & ext VFO, £150. Timewave DSP-59 Plus, new, £80. Heathkit SWR meter, £5. Icom IC-706

CONGRATULATIONS

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

60 years

G2DQX Mr R J Woodroffe
G3ADQ Mr A W Walmsley

50 years

G3JNJ Mr D A Platt

Our apologies to Mr L J Avory, G2FQP, for omitting him from a previous list. He joined the Society in March 1944.

CW filter, £40. FT-102 CW filter, £20. XF-112C CW filter, £15. PS-55, £75. PS-31, £100. Colin, G3TA, QTHR, 01285 821 571 (Cirencester).

TEKTRONIX 453, 50MHz d/beam scope g/cond, with probes, £100. SEM Transmatch ATU, with noise match, £40. Farnell bench power supply 0-100V, 0-1A, regulated, current limited, variable, metered, £35. Datong FL-3 filter, £25. Global AT-1000 rx ATU, £35. Radiospares Inter series connector kit, £25. Constructor's shack clearance, phone or e-mail for list of good equipment, test gear and components. David, G8PPR, 01274 651 486 (Bradford). E-mail: david@g8ppr.fslife.co.uk

TEN-TEC Paragon HF tcvr. Good cond with man, £350. G4OSY, 01977 648 413 (Pontefract).

TRIDENT HFV1 80m vertical antenna. Purchased new October 2003, £80 ono. Buyer collects or pays delivery. Peter, G4LHI, 01480 52304 (Huntingdon).
E-mail: peter.rosamond@btinternet.com

TRIO TS-530S HF tcvr for repair or spares. CW filter fitted. Good cond, £75. Harold, G3UYM, 01462 629 871 (Hitchin). E-mail: harold.groves@ntlworld.com

TS-2000, SP-23, £1250. No PX. Hustler 6-BTV, £170. KW-50ohm dummy load, £20. VX-5R, acc, boom mic/headphone/VOX, £200. TSB-3301 2m/70cm. 6.5dB (2m) 9dB (70cm), £40. All plus carriage. G3VLQ, QTHR, 01935 422 973 (Yeovil).
E-mail: merv@v21mail.co.uk

TS-830S, £325. TS-530S, £275, both in vgc. 70cm, SMC 8ch synthesised mobile, £40. 70cm Tait 40ch mobile, £30. David, G8PZL, 01543 307 217 (Staffs).
E-mail: g8pzl@thersgb.net

UNUSED MFJ-9020 QRP portable CW tcvr with plug-in MFJ-412 Curtis chip iambic keyer and MFJ-726 audio filter modules. All mint in original packing. Ten-Tec Scout 555 portable 50W tcvr 5-band modules, desk mic, barely used. G3LYD, QTHR, 01983 840 588 (Godshill, IoW).
E-mail: g3lyd@thersgb.net

VERSATOWER 3-section 60ft tilt-over with base head unit PS-2051 rotator and 6-ele HF log periodic antenna - all £350. GM3NIG, QTHR, 0141 639 7700 (Glasgow).
E-mail: dennis@gm3nig.fsnet.co.uk

VERSATOWER P60, must go: all parts, brand new base section, all cables, new bolts, but no winches. Includes head unit, rotator, cable and controller, £100 ono, buyer collects. Bill, G0OPL, 07887 622 077 (N Norfolk).

VIBROPLEX standard original Bug key. Collector/enthusiast item. OIRO £85. Also G4ZPY single paddle key, £30. G3RZF, QTHR, 01753 537 673 (Slough).
E-mail: g3rzf@ntlworld.com

YAESU FL-2100 linear in good cond, £60 ono. Buyer collects. G3MYN, QTHR, 01258 453 432 (Blandford).

YAESU FRG-7700 rcvr, mems, £85. Yaesu FT-208R 2m h/h, all accs, £75. 6146B matched pair by GE, £30. G3ZUE, 01297 489 239 (Bridport). E-mail: anick@tiscali.co.uk

GB CALLS

These callsigns are valid for use from the date given, but the period of operation may vary from 1 – 28 days before or after the event date. Operating details are provided in an abbreviated form as follows: T = 160m; L = 80 or 40m; H = HF bands (30 – 10m); V = 6 and/or 4m; 2 = 2m; 7 = 70cm; S = satellite and P = packet. Please send operational details of your special event station to the RadCom office at least five weeks before publication. The only QSL Bureau sub-manager for special event station callsigns is as follows: GBxAAA-MZZ – Mike Evans, 322 Heol Gwyrosydd, Penlan, Swansea SA5 7BR, e-mail mw0cna@ntlworld.com. Will organisers of special event stations please ensure that they lodge plenty of envelopes with their sub-manager?

1 May	GB4RFA: RFA 'Wave Ruler'. Scarborough, N Yorks. LH27 (G4SSH)
	GB4WSF: Wray Scarecrow Festival. Wray, Lancs. LH (G0VGS)
6 May	GB4YOU: Youlbury Scout & Guide Radio. Oxford. TLH27P (G0RJX)
	GB4YOU: Youlbury Scout & Guide Radio. Oxford. TLH27P (G0REL)
7 May	GB0PUF: Puff of fresh Norfolk Air. Norfolk. LH27 (G0BXL)
8 May	GB0CMW: Cattells Mill Willingham. Willingham, Cambs. L (G0GKP)
	GB0DGW: Danzey Green Windmill. Bromsgrove, Worcestershire. L2 (M0COP)
	GB0FWM: Ford Water Mill. Ford, Salisbury. LH2 (M0BVO)
	GB0HSM: High Salvington Mill. Worthing, W Sussex. L27 (G3NDJ)
	GB0KLM: Killhope Lead Mine. Co Durham. LHV27 (G0GFG)
	GB0MWL: Museum Welsh Life. Cardiff. LHV2 (GW0WHT)
	GB0NLW: North Leverton Windmill. Nr Retford, Notts. LH27 (G4YRZ)
	GB0OHM: Old Herne Mill. Herne Bay, Herne. LH27 (G3NIR)
	GB0SX: Stone Cross Mill. East Sussex. LV27 (M0RJO)
	GB0WSM: Whitchurch Silk Mill. Whitchurch, Hants. LH (G8NDN)
	GB2CCM: Crabble Corn Mill. Dover, Kent. L (G4GAN)
	GB2FBM: Finzean Bucket Mill. Aberdeenshire. LH (GM4JLZ)
	GB2FWM: Fullwell Mill. Sunderland. TLHV27 (G0YCA)
	GB2GG: George Green (The Miller). Nottingham. TLHV2 (M0RMJ)
	GB2HBF: Horsington Beer Festival. Somerset. LH27 (G0ENW)
	GB2HWP: Herringfleet Windpump. Suffolk. TLH2 (M1TES)
	GB2MMW: Marsh Mill in Wyre. Thornton, Lancs. LH (G4BFH)
	GB2PW: Polegate Windmill. Polegate, E Sussex. TLH2 (G3DQY)
	GB2TMI: Thwaite Mill Island. Stourton, Leeds. LH27 (G0BWB)
	GB2TW: Tuxford Windmill. Nottinghamshire. L2 (M0ADB)
	GB2UW: Upminster Windmill. Upminster, Essex. TLH27 (M0MAC)
	GB4NHM: New Hill Mill. Sutton Coldfield. LH27 (G7MWD)
	GB4SCL: Settle Carlisle Line. Ingleton, N Yorkshire. LH (G0FQN)
	GB5HW: Heage Windmill. Derbyshire. LH2 (G0IYZ)
9 May	GB2WTM: Woodbridge Tide Mill. Woodbridge, Suffolk. LH2 (G4YQC)
	GB4GDS: Guide Dogs Scotland. Irvine, Ayrshire. LH2 (GM4DAE)
15 May	GB0CWF: Caithness Walking Festival. Caithness, Thurso. LHV2 (GM4JYB)
	GB2HDS: Halifax District Scouts. Hebden Bridge, W Yorks. TLH2 (G3TAY)
16 May	GB200RBC: Rail Bicentenary. Keighley, W Yorks. LH (G0FQN)
	GB50IBC: Invalid and Blind Club. Drayton Manor Park, Staffs. L (G0HHP)
22 May	GB2IGB: Intnl Gathering of Booktowns. Wigtownshire, Scotland. LHV27 (GM0HPK)
25 May	GB200RBC: Rail Bicentenary. York. LH (G0FQN)
27 May	GB2BHS: Blairgowrie High School Activity. Blairgowrie. LH (GM0VIT)
28 May	GB4WD: Four Wheel Drive. Derbyshire. TLH27 (G4FAL)
29 May	GB2BPC: Beaudesert Park Campsite. Rugley, Staffs. L27 (M1MSG)
	GB2ELC: Exeter Lions Club. Matford, Exeter. H (G7SZB)
	GB4NGR: Narrow Gauge Railway. Olney, Bucks. TLHV27PS (M0RPM)
31 May	GB0NTC: National Trust Charlecote. Charlecote Park. LH (G0MRH)

YAESU FT-290 MkII, with mobile power lead, 2.5W, used daily, vgc. Also Kenwood h/h TH-47 70cm with fault, £150 ono. David, 2E0DAB, 01865 351 301 (Oxford)

YAESU FT-77 100W. Datong FL-3 filter. Datong speech processor. Cushcraft A3WS 12 17. Hy-Gain TH-3J 10 15 20. Sensible offers please. Reg, G0FXO, QTHR, 024 7631 8059 (Coventry).

YAESU FT-920 HF+6m tcvr, hand mic, gwo, man, boxed, £675. Buyer collects. Mike, M0MFC, 01722 502 877 (Salisbury).

WANTED

1155 rcvr, aluminium case with all DF circuitry. Sky Rider rcvr, any cond. Eddystone EC-10 MkII. Also Hallicrafters rcvrs. Geloso VFO unit. Good price for good stuff! Peter, G8CKM, 01939 290 118 (Shrewsbury).
E-mail: peterparker2@line.net

ALL Racal or Watkins Johnson items wanted by enthusiast and collector in any condition. Any receivers, accessories, spares or manuals. WHY? Especially looking for RA1772, RA1778 or RA6790, also RA17 LF converter and SSB adapter, Cubic 3030, Collins HF-2050, and tall 19in equipment racks to house my radios. Can arrange collection from anywhere. G8WKA, QTHR, 01252 795234 (Surrey). E-mail: richardreich@aol.com

AMTOR terminal unit AMT1 with plug-in cartridge for Commodore 64, also user port interface cable. Roy, G4NYE, QTHR, 01984 623 762 (Taunton).

AR-88 wanted. Must be unmodified, unmarked and in working order with h/book and spares. John, G3JVC, QTHR, 020 8398 0939.

COLLINS 51J-4, & 75A-4, rcvrs required by collector/enthusiast. Good prices paid, other models considered. Also required 6V PSU for WWII Spy Set 'A' MkIII. Tony, G8AQN, 01788 571 066. E-mail: tony.hibberd@ntlworld.com

DISABLED fan of old days seeks pre-1975 QSL cards and pre-1970 magazines etc. Mike, 8 Windsor Road, Reydon, Southwold, Suffolk IP18 6PQ.

DRAKE TR7/TR7A HF trans. Must be in exc cond both inside and outside! Also Drake PSU for above. Might consider Drake TR5 same cond. Ray, 07776 495 381 after 6pm.

FT-102 new set of relays and (I know I'm asking for chicken's teeth) 465kHz crystal for Hallicrafters Super Skyrider. G3PXM, 01297 553 092 (Colyford).
E-mail: richardpavey@onetel.com

FTV-707 external VFO for Yaesu FT-707. Dave, G4ZMP, QTHR, 01329 287 298 (Fareham). E-mail: g4zmp@rnars.org.uk

HAMMARLUND HQ145, HQ170a, Heathkit SB-301, SB-303, Hallicrafters SX115, SX-42. Gonset or similar rcvr for refurbishment, cash collect. G4AFY, 01562 747 480 (Kidderminster).

INSTRUCTION/service man for KW Viceroy SSB transmitter, can photocopy and return if required. Also 6E table-top case for above. John, G4DOE, 01689 831 878 (Orpington).

KENWOOD TM-G707, pref non-working. Also separation cable for same (some kind soul removed the head unit and half its separation cable from my car). 0161 443 0807 (Stockport). E-mail: bob@data-comms.com

MORSE keys wanted please. Early brass keys, especially by Marconi, GPO etc, but all considered. John, G0RDO, 01626 206 090 (Newton Abbot).
E-mail: john@morsemad.com

SILENT Key Clearout or just not needed. I collect QSL cards for their historic interest, preferably from periods before 1970. Please don't throw them away. I can collect or arrange collection. Tony, G4UZN, 01132 693892 (Leeds). E-mail: g4uzn@qsl.net

VIDEO cassette tape rewinder in gwo. Jim, G0KZV, QTHR, 01278 684 717 (Somerset).

VINTAGE ham radio gear: Codar, Collins, Drake, Eddystone, KW, AM/CW transmitters LG300, Panda, etc. Also looking for KW-201, KW-4B VFO, KW-160, KW Vanguard, Valiant, Victor Eddystone spkr, S-meter, Heathkit SB-610. Please let me know what you can help with. Paul, G4CCZ, 01932 342 927 (Woodham, Surrey). E-mail: g4ccz@6metres.com

YAESU YP-150Z combined power meter and dummy load, in gwo. Reasonable price paid. Chris, G0SMO, 07956 815 224 (Wolverhampton).
E-mail: g0smo@btinternet.com

EXCHANGE

HY-GAIN TH3 Senior. Sound, but in need of refurbishment; exchange for old valved equipment with cash adjustments. F-200 or similar. GW4EVJ, 01792 843 948 (Swansea).
E-mail: george.watson@ntlworld.com

SEEKING *ARRL Handbook*s for years, 1930, 1937, 1939, 1948, 1949, 1950. Can swap 1949, 1957, 1959, 1963, 1967, 1983. Seeking *RSGB Callbook*s 1996, 1986, 1982, 1981, 1980, 1978, 1973, 1955 to 1965, 1953, 1952. Offer spares 1951, 1969, 1970. WHY? G3NGX, QTHR, 07741 054 304 (Reading). E-mail: g3ngx@radarc.org

RALLIES

3 MAY 2004
DARTMOOR RC Radio Rally – * New Venue ***** – Tavistock College, Tavistock, Devon. OT 10.15/10.30am. CP, DF, TS B&B, C, TI on 145.550MHz, picnic facilities. Ron, G7LLG, 01822 852 586.

MID-CHESHIRE ARS Rally – Civic Hall, Winsford. OT 09.45/10am. CP, C. David, G4XUV, 01606 77787.

8 / 9 MAY 2004
BRITISH AMATEUR TELEVISION CLUB BGM & Rally – Shuttleworth Trust, Old Warden, Beds. Admission free, LEC, TS, exhibits. [www.batc.org.uk]

9 MAY 2004
CRAG Magnum Rally – Magnum Leisure Centre, Irvine, Ayrshire. OT 10.30am, £3, accompanied under-14s free. TS, LEC, MA, B&B, C. Helen, MM0HLN, 07776 385 247, mm0hln@hotmail.com [www.magnumrally.freeserve.co.uk]

DUNSTABLE DOWNS RC 21st Amateur Radio Car Boot Sale – Stockwood Park, Luton. Access via M1 jn 10. OT 9am, £2 per car. C. [www.ddrcbootsale.org]

9 / 10 MAY 2004
DENBY DALE & DARS National Mills Weekend – Brian, G0BFJ, g0bfj@ntlworld.com [www.qsl.net/g4cdd and www.spab.org.uk/mills]

14 – 16 MAY 2004
DAYTON HAMVENTION – [www.hamvention.org]

16 MAY 2004
MIDLAND ARS Drayton Manor Radio & Computer Rally – Drayton Manor Park, Fazeley, Tamworth, Staffs, on A4091 near jn 9 & 10 of M42. OT 10am. TS in two marquees, FM, SIG, CBS, clubs. Norman, G8BHE, 0121 422 9787 or 07808 078 003, nlgutteridge@aol.com [www.midamradio.co.uk]

QSL COMMUNICATIONS Open Day – Unit 6, Worle Industrial Centre, Coker Road, Worle, Weston-Super-Mare. Yaesu, Kenwood, Icom attending. Jayne, 01934 512 757, jayne@qslcomms.f9.co.uk

1 – 12 JUNE 2004
ROYAL NAVAL AMATEUR RADIO SOCIETY, GB3RN, D-Day Commemoration. The RNARS HQ station will be celebrating D-Day

with a special commemorative QSL card. Contacts made during this period will qualify. Modes: SSB on weekdays with CW on Thursday evenings and weekends. QSL to GB3RN or direct to G0VIX. Dave, G4ZMP, g4zmp@butler95.freeserve.co.uk

6 JUNE 2004

ANGLO-SCOTTISH REPEATER GROUP Radio Junk Rally – Cumwhinton Village Hall, 1 mile E of jn 42 of M6 on B6263. TI, C, DF. Mick, M0AOH, 01228 526 436, mickbarber@zetnet.co.uk

SPALDING & DARS Annual Rally – Sir John Gleed Technical School, Halmer Gardens, Spalding. OT 10am, £2. CP, TI on 145.550MHz, TS, C, DF, CBS. John, G4NBR, 07946 302 815, or Alan, 2E0HGV, 07767 797 296. [www.sdars.org.uk]

WEST MANCHESTER RC 8th Red Rose QRP Festival – Formby Hall, Alder Street (off High Street), Atherton, Manchester. OT 11am, £1.50. TS, Clubs, RSGB, G QRP low-cost B&B, MA, CP free, DF, C, LB, TI on 145.550MHz. Les, G4HZJ, 01942 870 634, or g4hzj@ntlworld.com

13 JUNE 2004

East Suffolk Wireless Revival – Suffolk Showground, Felixstowe Road, Ipswich. OT 9.30am. CBS, B&B, bookstall, MA, HF station, club stalls, C. John, G3XDY, 01473 717 830, or Steve, M1ACB, 07720 412 648. [www.btinternet.com/~thomassg/eswr.htm]

NUNSFIELD HOUSE ARG 35th Elvaston Castle National Radio Rally – Elvaston Castle Country Park, Elvaston, Derby, on the B5010 between the A6 and A52, 5 miles SW of Derby. OT 8am, £5 per car, £12 per coach. Radio, computers & electronics, FM, B&B, crafts, FAM, C, etc. Les, G4CWD, 01332 559 965, les@g4cwd.demon.co.uk

19 JUNE 2004

Reddish Rally – St Mary's Parish Hall, South Reddish, Stockport, at the jn of Reddish Road and Broadstone Hall Road South. OT 11am, £1. TI on 145.550MHz. John, G4ILA, 0161 477 6702, john@mckae.freeserve.co.uk

20 JUNE 2004

NEWBURY & DARS Car Boot Sale – Cold Ash, nr Newbury. [www.nadars.org.uk]

25 – 27 JUNE 2004

HAM RADIO 2004 – New exhibition grounds, Friedrichshafen, Germany. OT 9am. [www.messe-friedrichshafen.de]

27 JUNE 2004

SEVERNSIDE TV GROUP West of England Radio Rally – *Cheese & Grain*, Market Yard, Frome, Somerset, four miles from site of former Longleat Rally. CP free, LB, C, DF. Shaun, G8VPG, 01225 873 003 (OH), 01225 873 098. [www.westrally.org.uk]

SWINDON & DARC Car Boot Sale – Mike, M5CBS, 01793 826 465.

4 JULY 2004

MILTON KEYNES ARS Annual Rally – St Paul's School, Chaffron Way, Leadenhall, Milton Keynes. OT 9am. TI on 145.550MHz and 433.550MHz. Venue 3 miles from jn 14 M1 and 1/4 mile from local Maplin store. Malcolm, M0MBO 01525 874 075, or rally@bletchley.net [www.mkars.org.uk]

NORFOLK ARC Barford Radio Rally – Barford, 9 miles SW of Norwich, near A11 and A47. OT 10am CP, TI, CBS, B&B, C, TS. David, G7URP, 01953 457 322 or 01953 458 844, or radio@dcpmicro.com [www.norfolkamateurradio.org]

YORK RC Rally – York racecourse. OT 10.15 / 10.30am. C, CP free, B&B, DF, WIN, TI, SIG. Arthur, G8IMZ, 01904 787 799 (OH). [www.yorkradioclub.net]

10 JULY 2004

CORNISH RAC Radio Amateur and Computer Rally – Penair School, Truro. OT 10.30am. TS, B&B, C. John, g4ljy@dsl.pipex.com, or Ken, ken@jtarry.freeserve.co.uk

11 JULY 2004

SWINDON & DARC Steam & Radio Fun Day – Swindon & Cricklade Railway, Blunsdon. OT 10am, £3.50, £2 children/OAP, £10 family. CP, C, DF, FAM, CS, TI on 145.550MHz, steam engine trips. Ian, 2E0ZVG, ibrowne2@ntlworld.com [www.swindonradioclub.org.uk]

18 JULY 2004

FENLAND RG Horncastle Summer Amateur Radio Rally – Horncastle Youth Centre, The Old School, Cagthorpe, Horncastle, Lincs (nr Horncastle Police Station). OT 10.30am, £1. C, DF, TI on 145.550MHz. Chris, G0PXB, 07749 715 165. [www.fenlandrepeater.org.uk]

McMichael Amateur Radio Rally & Car Boot Sale – Reading Rugby Football Club, Sonning Lane, Sonning, Berks, just off the A4 at Sonning. Min, G0JMS, 0118 972 3504, g0jms@radarc.org

24 JULY 2004

ALTON & DRC Rally – Valley Nurseries, Basingstoke Road, Alton. OT 10am, £1. CP free, C, DF, TI on 145.475MHz. Richard, G4IBW, 01428 717 524, g4ibw@uku.co.uk, g4ibw1@aol.com

25 JULY 2004

COLCHESTER RAC Rally 2004 – St Helena School, Sheepen Road, Colchester. OT 10am. TS, B&B, CBS, RSGB stall, clubs and associations, C. James, M0ZZO, 01255 242 746, james@mcginty.net, or Gary, M0JJH, 01621 818 620, gary@garycavie.com

30 JULY – 1 AUGUST, 2004

AMSAT-UK Space Symposium – University of Surrey, Guildford. Day pass £10; 2 - 3-day packages inc meals and university accommodation also available. LEC, tours of satellite control centre, beginners' sessions, antenna testing up to 24GHz, GB4FUN available for visitors' use, B&B, etc. Jim, G3WGM, 01258 453 959, or g3wgm@amsat.org [www.uk.amsat.org]

1 AUGUST 2004

LORN ARS Radio & Computer Rally – * New venue ***** – Shirley, GM0ERV, 01631 566 518, or John, GM8MLH, 01838 200 304.

7 AUGUST 2004

RUGBY ATS Rally – Tony, G0OLS, 01455 552 519, thumph3426@aol.com

8 AUGUST 2004

FLIGHT REFUELLING ARS Hamfest – Mike, M0MJS, 01202 883 479, or hamfest@frars.org.uk [www.frars.org.uk]

13 AUGUST 2004

COCKENZIE & PORT SETON ARC 11th Annual Junk Night – Bob, GM4UYZ, 01875 811 723, gm4uyz@btinternet.com

30 AUGUST 2004

TORBAY ARS Communications Fair – Anna, M3LMG, 01803 812 117, rally@tars.org.uk

5 SEPTEMBER 2004

Telford Rally – Bob, M0RJS, bob@somervilleroberts.co.uk

19 SEPTEMBER 2004

LINCOLN SWC Hamfest – Baz, 01636 612 440, m3dmv@btopenworld.com [www.hamfest2004.secretbunker.org.uk and www.lswc.co.uk]

1 / 2 OCTOBER 2004

LEICESTER Amateur Radio Show – Geoff, G4AFJ, 01455 823 344, fax 01455 828 273 or g4afj@argonet.co.uk

1 – 3 OCTOBER 2004

WACRAL 2004 Conference – Geoff & Jan Grundy, 01323 721 352, g4yjw@wacral.org

10 OCTOBER 2004

GREAT LUMLEY AR & ES Rally – Nancy, 0191 477 0036 or 07990 760 920, nancybone2001@yahoo.co.uk

17 OCTOBER 2004

BLACKWOOD & DARS Rally – George, 2W1JLK, 01495 724 942, or Dave, GW4HBK, 01495 228 516.

22 - 24 OCTOBER 2004

GALASHIELS & DARS Annual Rally – Jim, GM7LUN, 01896 850 245, gm7lun@qsl.net

RSGB International HF & IOTA Convention (HFC2004) – John, G3WKL, HFC2004.Chairman@rsgb.org.uk

24 OCTOBER 2004

GALASHIELS & DARS Annual Rally – Jim, GM7LUN, 01896 850 245.

6 / 7 NOVEMBER 2004

18th North Wales Radio, Electronics & Electronics Show – [www.nwrrcw.org.uk]

5 DECEMBER 2004

BISHOP AUCKLAND RAC Rally – Mark, G0GFG, 01388 745 353, or Brian, G7OCK, 01388 762 678.

21 - 23 JANUARY 2005

CONTEST CLUB FINLAND 10th Anniversary – [www.qsl.net/ccf/]

RSGB 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. Please do not send members' advertisements to Manning Publishing Ltd (advertising agents). The closing date for copy is the first day of the month prior to publication, eg the deadline for the May issue is 1 April.

Warning: ***Members are advised to ensure that the equipment they intend to purchase is not subject to a current hire purchase agreement. The 'purchase' of goods legally owned by a finance company could result in the 'purchaser' losing both the goods and the cash paid. Members' Ads also appear on the members-only website: www.rsgb.org/membersonly/membersads***

The Member's Ads order form is published below. 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 seperate 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.

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Tel: 0870 904 7377 Fax: 0870 904 7378 E-mail: adsales@rsgb.org.uk

Payment to: RSGB, Lambda House, Cranbourne Road, Potters Bar, Herts, EN6 3EP

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HOLIDAY

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HAM VACATION Qth Grand Canaria. www.qsl.net/eA8AZC

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Business Cards

The last word

Another use for Morse

From: Tony Wade, G4BQX

Nearly three years ago I was in intensive care with a very severe case of Guillain-Barré syndrome. It is a complaint where nerves to the muscles are destroyed, thus preventing the movement of arms, legs, breathing etc. On a ventilator it is impossible to talk, and contact with nurses, friends and relatives is very difficult to say the least. Some nurses are very good at lip-reading; the majority are rubbish and far better at looking after you.

After a few days I was very frustrated - not being able to move a muscle from neck to toe is bad enough, but not being able to reply in Old English when asked if I was OK was not on.

I therefore developed a system of tongue clicks representing dots and dashes. No, nurses do not read Morse - only the usual tongue clicks aimed at a pretty girl - but when you have a son who is also licensed and very active on CW you are winning. With lips open and stretched wide in a horrible grin click the tongue - a high sound - a dot. Purse the lips as in kissing the aforementioned pretty nurse and click the tongue again - low sound - a dash.

When my son (G4IDL) visited I tried a "CQ". Contact was established and from then on we enjoyed very many 'QSOs' to the delight of both. Usually I only had to 'send' a few letters and my word was understood. And, of course, the reply came back in 'AM'!

I know that there will not be many licensed fathers and sons, but a licensed mate of the patient may be persuaded to visit with the family. For the month I was in that situation it helped enormously - I could converse.

This was in April 2001 when I was 73. Time has marched on and although still in a wheelchair I can now use arm crutches and hope to graduate soon to a walking stick. So don't forget the Morse altogether - you never know...

Letters published in 'The Last Word' do not necessarily reflect RSGB policy. 'Last Word' letters may be e-mailed to radcom@rsgb.org.uk Please note that letters submitted for 'The Last Word' may not be acknowledged. The RSGB reserves the right to not publish any letter, with no reason being given. It is a condition of publication that all letters may be edited for grammar, length and / or clarity. Due to the limited space available, please keep letters as short as possible. Some letters not published in RadCom may be published on the RSGB members-only website at rsgb.org/membersonly/lastword

Not 'taken in'

From: Roy Clayton, G4SSH

Congratulations on the superb wind-up in the April *RadCom* which was well executed and inserted in just the right place. I laughed a lot.

I hope that you have reserved enough space in the May edition to cater for all the irate letters from outraged members. I am going to enjoy listening to all the gullible barrack room lawyers sounding-off on the repeaters.

Amateur radio should be fun. If we cannot laugh at ourselves the hobby would be much poorer. Thank you for brightening my day.

[For those members who did not spot it, the piece Roy is referring to was in the middle of page 5 of the April *RadCom*. We felt the implementation date of 1 April might have been a give-away? - *Ed.*]

Poor business policy is anti-spam measure?

From: William Blanchflower, MI5WJB

Re the letter 'Poor Business Policy' from Ron Hacker, G1DER ('The last word' April 2004), I wonder if he uses AOL for his e-mails and if the following copy of a note on a business site which I use could explain his non-replies?: "If you are an AOL user and you are intending to contact us either for the newsletter or even an order then please can you use a different e-mail address and not your AOL address. AOL is currently not accepting any e-mails from either BT, Freeserve or any other English company because of their spam policies. If you have already sent e-mail from your AOL account then please be aware that we are not ignoring you, we simply can't e-mail you back. Thanks for your understanding."

Decoding Morse more difficult than sending

From: Bill Abrahams ON9CGB / G0MEU

As an infrequent, and poor Morse operator, I was more than perplexed at Richard Johnson's, G2FFO, comment that "the greatest skill is required for sending" ('The last word', March 2004). A large proportion of CW operators use a keyer, with or without memories. The keyer smoothes out much of the inconsistency in sending. Whereas in my humble view the greatest skill is in decoding, whether at high or slow speeds of Morse signals being received. I learnt to send Morse, and at somewhat higher speed than I was able to decode, in a very short time, but learning to decode took very much longer.

Metric units

From: Richard Gosnell, G4MUF

Further to letters on UTC/GMT and metric units in general, a book, *The Measure of All Things* by Ken Alder admirably covers the history of metrication, including the stages of Britain's slow begrudging acceptance of metric. All science (and amateur radio is a science) uses metric, and it seems silly to read antenna dimensions in feet or inches, as is still often seen in RSGB articles, while radio wavelengths are, and always were, in metres.

The term Centigrade was dropped because centi- is one hundredth of the basic unit, not one hundred *of* those units, so it should have been called *Hektograde*. Compare with centimetre and Hectometre. However, a unit, the Grad, exists which is nothing to do with temperature, and is subdivided into hundredths (centigrads) and has seniority, so the risk of confusion between the two led to the temperature meaning being dropped.

The term Celsius is part of a long running plan of the SI boffins to commemorate scientists, and this name-dropping started way back with Watt, Herz, Volt, Henry etc.

Examinations at residential addresses

From: Paul Ferris, G0LLE

I am registered as an instructor for the Foundation licence and I conduct the courses at home and usually on a one-to-one or small-number basis. This can give an opportunity for those that for some reason are not able to attend a course run elsewhere and probably during the evening, a chance to learn about amateur radio and obtain their licence.

The decision that as from 1 April candidates will not be allowed to take the exam in a residential home - that is to say my home at the end of the course - means that this provision will no longer be available. It would certainly not be viable for me to hire a 'public place'!

It is a shame that some of those interested in our hobby will therefore not have the opportunity to follow it through and that, personally, I shall lose the pleasure of encouraging somebody into amateur radio while putting something into it myself. I wonder what the reason is for this decision?

[RSGB General Manager Peter Kirby, G0TWW, replies: "The decision not to allow Foundation licence examinations to be held at private residential addresses was taken to ensure the integrity and security of the examination process, and to allow easy access by inspecting officers. Under the administrative arrangements for the Radio Communications Examination a number of spot checks must be carried out annually. RIS officers

carrying out these checks can be refused entry to a residential address without the necessary court warrants. Public centres are accessible without warrants. This change to the rules beings the Foundation licence in line with the Intermediate and Advanced licence examinations which can only be taken at registered examination centres, and follows the rules formerly laid down by City & Guilds. Provisions for disabled candidates remain in place. Those candidates with a disability that prevents them travelling to a registered examination centre can sit the examination at home."]

PL259 plug soldering

From: Michael J C Burns, G3TCA

I was horrified to see in the December 2002 *RadCom* and reiterated in the February 2004 'Antennas' column G3LDO's method of overcoming the shortcomings of soldering PL259 plugs. The problem is that the metal that these plugs are made from these days, if not silver plated, is not suitable for making sound 50Ω connections with RG213-type coax. I would have thought that an old experienced hand such as G3LDO would have been instructing amateurs the correct way a PL259 plug should be fitted and recommending amateurs (and SWLs) to look around for a high quality plug rather than this very unorthodox type of connection.

I discovered the uncertainty of PL259 connections 25 years ago, even using the old Amphenol-manufactured silver-plated plugs, so I converted to 'N' connectors at every stage where I used RG213-style coax and BNC for lower power circuits. I even dissembled the BN86 balun on my TH3Mk3 beam and put an 'N' socket on this. I realised the extra expense of the 'N' plug and socket system was worthwhile when I discovered my SWR was considerably improved and no more blown PA valves.

The making up of an 'N' plug is far more straightforward and the peace of mind knowing that the connection is secure far outways the extra cost. I would recommend all amateurs to consider this approach.

[Peter Dodd, G3LDO, *RadCom* 'Antennas' columnist responds: "The 'Antennas' column often suggests methods of overcoming problems regarding antennas and their installations, rather than 'instructing'. I personally found soldering the coax braid to PL259 connectors difficult and many readers also found this soldering exercise not easy. Judging by the references to previous uncertain SWR values and blown PA valves, G3TCA also had similar problems. The only coax connector total failure that I am personally aware of was an 'N' type with a soldered braid connection (see 'Antennas', March 2003). Try pressure sleeve PL259s if you don't like soldering or unconventional connections. If you go for a total change to 'N' type connectors on a HF station remember that you will also have to change the sockets on the rig(s), SWR meter, ATU and any test equipment."]

80m 'DX window'

From: John Edwards, GM7NVA

I write to you with mounting despair at the increasing use of the top 15kHz of 80 metres by non-DX traffic. This lack of understanding /observation of the band plan has resulted in some very heated exchanges recently and threatens to spiral into an outright war between opposing parties. I write to you on behalf of all the stations who use the segment, 3775 - 3800kHz for DX. I appeal through *RadCom* to all those not working DX to observe the band plan. In the interest of good practice, example, community harmony and last but not least long distance antenna and propagation experiments, please observe the 'DX window'.

This area needs to be used carefully. Why? One very good reason is that many DX countries cannot work lower than 3790kHz. If it becomes full of local (European) operators, the weak signals of JA, VK and really rare operations will never be heard. As a result many operators will not get the chance of working these great distances on one of the hardest bands to work real DX (160m being the other).

Europe has a huge section available to non-DX chasers. SSB users enjoy some 150kHz below the DX window. The CW section of the 80m band is around 80kHz wide. The DX widow is only 25kHz wide and when you understand that some DX countries can't go below 3790, then it is narrowed to a paltry 10kHz.

In the 20 years I have been active as a radio listener and now a DX chaser, I have never witnessed so much bad behaviour as these past few months of the 2004 DX season on 80 metres. I think it is time that all HF users refresh their knowledge of the band plans. I know that bands are crowded and we could all do with more space, however, let's not sink into the law of the jungle on 80.

Off topic?

From: M Bilton, M0BST

In the latest *RadCom* (March) you printed a story ('RAFARS Members Honoured,' p10) about two individuals, G4RPP and G0TQJ, who received operational honours for service in the Iraq conflict. Given the highly controversial nature of this conflict, I consider it totally inappropriate to highlight such activities.

The individuals concerned may have excelled at duties in their profession. Nonetheless, they are part and parcel of an ongoing occupation of a foreign state brought about by an illegal, immoral, and unjustified invasion. Furthermore, the awards have absolutely nothing to do with amateur radio, beyond the simple fact that Mr Kyte and Mr Vernon happen to hold amateur radio licences. Not only is the piece 'off topic' to begin with, you highlight the matter even more by printing two full-length colour photographs of the men in their combat fatigues. Some people could construe this as an endorsement by the Society of such action.

In future please keep all *RadCom* content to matters that directly concern amateur radio.

[*RadCom* is about amateur radio and that includes radio amateurs. The fact that two UK radio amateurs received prestigious awards makes it a legitimate news story for *RadCom* whether or not you agree with the legitimacy of the Iraq conflict - *Ed.*]

SSB QRM?

From: John Ellerton, G3NCN

I have just spent yet another weekend in frustration, with the CW end of 160 metres being taken over by a large number of SSB stations, occupying the full width of the CW band, with an SSB contest in full swing. I am predominantly a CW operator, and interested in QRP DX on that band. I have to work very hard for any DX contacts, and do not enjoy getting up early to find the band full of SSB. Going down to 40 metres I discovered that the top third of the CW sector was also occupied by strong SSB stations.

I understand that in a contest it becomes urgent to use any available space for QSOs, and that the urgency of a contest drives people wherever they wish to go. However, there is nothing that says that in order to enjoy myself I must encroach on others' preserves and spoil their enjoyment. That is not the way amateur radio stays a harmonious and enjoyable pastime for all.

Why cannot the organisers of contests build into their frequency planning the recommendations of the IARU, so that contacts happening outside the SSB portion of any band become null and void - and police the rule so that contestants heard operating in CW or data sections become disqualified? In the same way CW contestants should be compelled not to leave their designated IARU boundaries. Let everybody live the life they enjoy!

And should not the RSGB be taking this matter up with international partners so that the IARU recommendations are properly followed, before a jamming war starts between radio amateurs, each anxious to preserve their territory?

[The reason SSB encroachment into the CW sections of 160 and 40 metres happens at all is simply a question of supply and demand: there are more stations that want to be active on SSB at that particular time than the amount of spectrum available in the band plans. John's complaint is heard from a small number of CW operators after major SSB contests every year. Yet in reality encroachment happens on maybe three or four contest weekends a year, leaving over 350 days per year SSB-free. That may not make it right, but nor is it the major problem that some suggest. John mentions 160 and 40m, but this problem does not occur on 80m, or 20, 15 or 10m, and by international agreement there is never *any* contest activity at all on 30, 17 or 12m. This also may not make it right, but in practice there is always plenty of spectrum available to make CW QSOs during SSB contests - *Ed.*]

... and finally:

From: Peter Swinbank, G8AHB

Could we have less whining on the letters page? There's room for us all. Kind regards.

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The PL-2 balanced studio microphone boom is compatible with all Heil stick microphones inc the new Classic series. Desk mount will clamp to almost any surface & supports the 45" arm. Standard 5/8" - 27 thread.

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Goldline professional quality dynamic microphone. Three versions available, GM-4 with Studio & HC-4 elements, GM-5 with Studio & HC-4 elements and GM-V Vintage Goldline with Vintage Studio high impedance element, for older valve rigs such as Drake & Collins. Includes stand threaded holder. Requires CC-1 adaptor £29.95.

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FT-736 6M/2M/70CM all mode transceiver	£599.00
IC-T8E 6M/2M/70CM handheld	£199.00
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TR-2300 2M portable	£60.00
IC-R10 all band all mode handheld scanner	£175.00
MVT-7300 scanner full coverage all mode	£170.00
MVT-9000MK2 all mode scanner	£265.00
ROBERTS-RC-828 sw receiver + cassette	£145.00

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FRG-100 Yaesu HF receiver	£295
IC-R75 HF receiver	£450
TS-2000 HF/6m/2m/70cms	£995
TS-850SAT HF transceiver	£600
IC-706MkII VHF transceiver	£395
VX-1R Handheld	£75
VT-225 Yupiteru Scanner	£139

Hockley (Tel: 01702 204965)

SG-2020 QRP HF Transceiver	£399.00
IC-2100H 2m mobile	£169.00
TM-241E 2mFM mobile	£149.00
TM-451E 70cm FM mobile	£249.00
TR-751E 2m Multimode	£329.00
FT-2600M 2m FM mobile	£169.00
DJ-G5 Dual band handy	£169.00
AR-7030 0-32MHz receiver	£449.00
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Lowe HF-225 receiver	£249.00
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Sony ICF-SW55 receiver	£179.00
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bhi NES10-2 DSP SPEAKER £99.95 B

Combined speaker and programmable DSP unit. Offers dramatic noise reduction, even reduces annoying hetrodynes. 8 Ohms, 8 filter settings, 3.5mm plug, 12-24V DC

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Superb headphones with tailored response for radio comms. Excellent sound proofing, can pull in the weak DX.
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1.8 - 60MHz. 3 - 100W pep (40W CW). Min wire length, 7m. 50 Ohm feed. Needs 12V at approx 300mA.

£299.95 c

SG-231 Auto ATU

1 - 60MHz. 3 - 100W pep (50W CW). Min wire length, 7m. 50 Ohm feed. Needs 12V at approx 900mA.

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Mounts on 3-way magnetic mount Handles 200 Watts

Supplied with cables and switch box - can run from cigar lighter.

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A general purpose 3-15V DC, 25A (30A peak) power supply able to provide the needs of the modern 100W HF transceiver. *Dual analogue meters *Over current protection *Large power terminals for rigs *Quick snap connectors for ancillaries

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* Requires 12V DC

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*Ceramic ant. terminal
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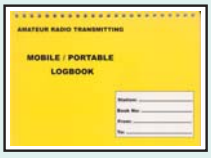

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CS-600 2-way coax switch rated over 1kw (HF) and up to 600MHz @100W. Fitted SO-239 sockets. **£12.95 A**

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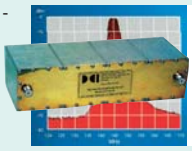

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*25 Amps peak
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With Built-in Frequency Counter!
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From the masters of ATU manufacturing comes the most advanced automatic ATU ever produced. Other models like LDG from USA have no memories, no digital data display and are not able to handle long wires or balanced feeder. The MFJ-973 handles wire, coax and balanced feeder, provides digital display of VSWR data and frequency, has an RS-232 rig interface (not needed for normal rig - atu operation) and and audible signal to aid adjustment. Unlike its competitors, it takes into account impedance when finding the best L/C ratio. And with optional leads you can operate this ATU remotely as well. Finally the 2000 memories make it up to ten-times as fast to tune as units like LDG that use.

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