RSGB IOTA Honour Roll and Annual Listing

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0701

RadCom

This Month's Special Offers See Page 49

£3.95 Vol 77 No 7 ♦ July 2001 The Radio Society of Great Britain Members' Magazine

Understanding Software Radio - the Future for Receivers?

ICOM IC-910 REVIEWED

WATERS & STANTON

HOCKLEY SHOP
Mon-Sat: 9am-5.30pm
Tel: 01702 206835
01702 204965
Fax: 01702 205843

MATLOCK SHOP
Mon-Fri: 9am-5pm
Sat: 10am-4pm
Tel: 01629 582380

22 Main Rd, Hockley, Essex, SS5 4QS
Chesterfield Rd, Matlock, Derbyshire, DE4 5LE

TS-2000

KENWOOD 160m - 70cms + 23cms

£1695 Plus £7.50 Carr.

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

IC-706MK2G 160 - 70cm All Mode

ICOM

£1099 Plus £7.50 Carr.

Still a firm favourite with mobile operators and those who want a compact all-mode, all-band station. Phone for latest leaflet.

QAMP Single band 20 Watt Linear

Ideal for the FT-817 but only available as a kit. Models for 80m, 40m, 20m
£49.95 Case £13.95

FT-817

Z-11 Auto ATU for FT-817
160m - 10m 199.95
Kit £169.95

£799.95 Plus £7.50 Carr.

OTT-1 One Touch Tune

Plugs into rear of FT-817and gives immediate carrier for adjusting ATU or checking VSWR **£59.95**

FT-817 is an incredible design feat by Yaesu, and world reviews agree that there has never been anything like it. It's not expensive either. So why not get out in the fresh air, or put one in the car, and put the fun back into your radio. Check out the exciting AT & ATX portable antennas on elsewhere on this page.

FT-1000MP Mk-V 200W HF All Mode Transceiver

YAESU

£2899 Plus £7.50 Carr.

The New Industry Standard ..... Would a Serious DXer accept anything else ?

In choosing the FT-1000MP Mk V, you will be proud to own a rig with an impressive specification, reputation and lineage. Its outstanding performance and attention to detail, makes this the premier HF transceiver for the 21st Century. This radio is a class leader.

FT-1000MP AC

YAESU 160 - 10m All Mode

SAVE

£1799 Plus £7.50 Carr.

19.4% APR Available

If you are looking for the rig with every feature including dual receive - then look no further!

It has stood the test of time and used by the worlds top DXers and DXepeditions. Its excellent receiver combined with its superior transmitted signal makes this a natural choice for the HF enthusiasts.

19.4% APR: Deposit £199 and 36 months at £57.77.

IC-746

ICOM 160m - 2m All-mode

£1395 Plus £7.50 Carr.

Your chance to purchase one of the most popular "all-band, all-mode" transceiver at a very competitive price. The IC-746 offers 100 Watts output on all bands and has a receiver performance to match. Limited stock at this price.

19.4% APR: Deposit £145 and 36 months at £45.13.

TM-241E 2m Mobile

KENWOOD

SAVE £100

£149 Plus £7.50 Carr.

Your chance to purchase this 50W 2m mobile at a fraction of the original price. We have purchased the entire stock. Includes CTCSS tones and can be wide-banded. Limited stocks available.

19.4% APR: Deposit £129 and 36 months at £35.02.

19.4% APR: Deposit £229 and 36 months at £71.13.

IC-756PRO 1.8 - 62MHz 100W

ICOM

£1895 Plus £7.50 Carr.

Free desk/mic

You've read the rave reviews, and you have seen our recommendation on the web site. This radio with its amazing receiver and digital filtering, also includes auto ATU and real-time spectrum scope. A great DX rig.

19.4% APR: Deposit £299 and 36 months at £90.27.

FT- 920AF HF 160m-6m-100w

YAESU

SAVE £1099 Plus £7.50 Carr.

Includes full DSP and internal ATU. High tech receiver with dual tuning controls. Uses many of the FT1000 MP features but at a more attractive price. Full break-in on CW and includes a data port for TNC.

19.4% APR: Deposit £129 and 36 months at £35.02.

IC-775 DSP 200W HF

ICOM *Last of The Many*

SAVE £900

£2099 Plus £7.50 Carr.

FT-847

YAESU 160m - 70cm All Mode

SAVE

£1199 Plus £7.50 Carr.

SCOOP!

The FT-847 has firmly established itself as a true all-band, all-mode transceiver. Loved by the VHF & UHF operators, and superb for satellite operation, it also offers great HF performance. We have sold more than any other dealer, which says a lot about our reputation and our price. Phone for free leaflet today. And remember, our stock is genuine UK, not modified overseas models!!

19.4% APR: Deposit £129 and 36 months at £38.63.

TS-570DG 160 - 10m All Mod

KENWOOD

£849 Plus £7.50 Carr.

19.4% APR Available

Probably the most underestimated transceiver on the market. Don't be fooled by the low price, the TS-570 has one of the best receivers around. One of the best buys if you want top HF performance on a budget.

19.4% APR: Deposit £89 and 36 months at £27.43.

TS-50S HF 100W

KENWOOD

SAVE £499 Plus £7.50 Carr.

Kenwoods TS-50S has stood the test of time. 100W from 160m to 10m makes this a great value rig. Ideal for mobile or portable

YAESU

VX-5R Plus Freebies !

£269 Plus £6.00 Carr.

Free Case, SU1 and SPM-102 speaker mic.

* 6m / 2m / 70cm Handheld
* 5W Output on 13.8V DC
* CTCSS Encode / Decode
* 25 / 12.5kHz Steps
* Auto Repeater Shift
* AM Airband Receive
* Lithium Cells & Charger

YAESU

VX-1R Plus Freebies !

Free Case, CN-3 and SPM-102 speaker mic.

* 2m /& 70cm Handheld
* 500mW or 1W Output
* CTCSS Encode / Decode
* 25 / 12.5kHz Steps
* Wideband receive
* AM Airband Receive
* 290 Memories

YAESU

Super Price!

FT-50R

* 2m / 70cm Handheld
* 5W Output on 13.8V DC
* CTCSS Encode / 1750Hz tone
* 25 / 12.5kHz Steps
* 30 Memory Channels
* AM Airband Receive
* Ni-cad Cells & Charger

£169 Plus £6.00 Carr.

KENWOOD

TM-D700E

2m / 70cm Data Mobile

£449 Plus £7.50 Carr.

SAVE

Just arriving, this new model has built-in TNC, port for GPS, Data connector for SSTV, RTTY etc., CTCSS/DCS, Switchable TX/RX deviation, Dual receive, Wide receive option, Detachable head unit, 50 Watts on 2m, 35 Watts on 70cm, 200 memories, Alpha tag memo capability and a lot more. And who has the best price? - look no further!

hy-gain

TH-11DX

11-Element Broadband 6-band Super Thunderbird

£995.95 Plus £7.50 Carr.

The all new Hy-Gain TH11DX 5-band Super Thunderbird is designed to give the maximum performance for the serious amateur. It features a lossless log-periodic driven array on all bands with monoband reflectors. It also includes the new BN-4000 high power balun. This standard feature contributes to produce a maximum power rating of 2kW continuous duty, 4kW PEP on all modes. The TH11DX also features a new corrosion resistant wire boom support system, hot dipped galvanized and stainless steel parts. Stainless steel hardware and clamps are used on all electrical connections.

IC-910 VHF/UHF Transceiver

£1299 Plus £7.50 Carr.

IC-910 VHF/UHF Transceiver - The new IC-910 from Icom with 100W on 2m and 75W on 70cms, plus the option of 1.2GHz. Well placed to take advantage of satellite operation, you can simultaneously operate 2 bands at once. Optional 23cms + £400

YAESU

FT-11R

2-Metre Handheld

SCOOP!

Another find in a warehouse! Brand new, boxed with AC chargers and ni-cad packs. 75 Alphanumeric memories, AM airband rx mod possible. Last selling price £249! Very limited stocks.

£119 Plus £6.00 Carr.

ICOM

IC-2800H In Full Colour!

* 2m & 70cm Mobile
* Colour TV Screen
* Full CTCSS and 1750Hz Tone
* 50W 2m 35W 70cm

Includes FREE Remote head cable.

FREE 3 YEARS WARRANTY

£419 Plus £7.50 Carr.

KENWOOD

TH-D7E

£259 Plus £6.00 Carr.

* 2m & 70cm Handheld
* 6W Output on 13.8V DC
* CTCSS & 1750Hz Tone
* Built-in Packet Modem
* 200 Alphanumeric Memories
* DTMF Keypad & AM Airband
* Ni-cads & AC charger

YAESU

FT-90R Can you believe the size?

2m/70cm Dual Band

SAVE

£309 Plus £7.50 Carr.

The tiny dimensions of the FT-90R from Yaesu, are hard to believe. Yet it produces 50W on 2m and 35W on 70cm. Auto repeater shift on UK channels and switched 12.5 / 25kHz deviation, make this a number one choice.

ADI AR-147

AM Airband Receive

£199 Plus £6.00 Carr.

* 2m 50 Watt Mobile Airband Receive
* Full CTCSS Encode / Decode
* 81 Memories 25 / 12.5kHz Steps
* Keypad microphone & Mounting Kit

WMM-3

Data Modes

£69.95 Plus £6.00 Carr.

If you want to receive data, then connect the audio output of your receiver to the WMM-3 and the output of the modem to your PC serial socket. A CD-ROM is provided with lots of software, this will get you started.

hy-gain

DX-88

8-band Vertical

The DX-88 offers coverage of all the HF bands of 80 through to 10m. The key design features are the adjustable capacitors that eliminate many of the tuning problems found with other verticals. The DX-88 handles the maximum legal power on all bands, features low-loss traps and has a low angle of radiation for good DX performance. Self supporting, the DX-88 comes with stainless steel hardware for long term reliability.

£TBA Plus £7.50 Carr.

ICOM

IC-207H

£279 Plus £7.50 Carr.

* 2m / 70cm
* 50W / 35W
* 180 Memories and 7 Tuning Steps
* Detachable Head Unit / Clear Display
* Microphone, Mounting Bracket etc.

KENWOOD

TM-G707E

£289 Plus £7.50 Carr.

* 2m and 70cm
* 50W and 35W
* Full CTCSS
* 180 Alphanumeric Memories
* Detachable Head with Amber Display

YAESU

FT-8100R

£369 Plus £7.50 Carr.

* 2m and 70cm
* 50W and 35W
* Wideband RX AM & FM 208 Memories
* 7 Tuning Steps DTMF Remote Front panel
* Very compact, supplied with all hardware.

KENWOOD

TM-V7E

£359 Plus £7.50 Carr.

* 2m / 70cm Mobile
* 50W 2m, 35W 70cm
* Clear LCD Readout
* CTCSS & DTMF
* 8 Frequency Steps & 280 Memories
* Includes Microphone & Mounting Bracket

WATSON

Dual Band VHF Yagi

This is a fabulously well-built dual band 2m/70cm Yagi with dual gamma matching. 5 el. on 2m and 9 el on 70cms gives you 7dB and 12.5dB gain. Fitted with SO-239 and rated to 100 Watts FM. £79.95 Carriage £7.50

MasterCard

Orders only: 08000 73 73 88

VISA

Web: www.wspl.com E-mail: sales@wspl.com

WATERS & STANTON

Order details on inside page

Out and About Antennas

Mobile "Drive About" 80m - 6m

Driveabout Mobiles

Multiband base loaded whip. Choice of powers. 3/8" stud base.

Driveabout LP 50W	£69.95
Driveabout HP 200W	£89.95
Centre load adaptor	£t.b.a.

Walkabout Portables

Multi & single telescopic whips. Covers 80m to 6m BNC. Ideal for FT-817 and similar QRP radios.

ATX Walkabout 80 - 6m	**£69.95**
AT-80 Single band	**£24.95**
AT-40 Single band	**£24.95**
AT-20 Single band	**£19.95**
AT-17 Single band	**£19.95**
AT-15 Single band	**£19.95**
AT-12 Single band	**£19.95**
AT-10 Single band	**£19.95**

WMM-3 Data Modem

£69.95
Carr. £6.00

This modem permits a wide range of data to be sent and received. Starterdisc for SSTV, CW, RTTY, Pactor, 1200baud Packet etc included. The unit is powered from the PC serial socket.

WEP-400 Earpiece

This high quality earpiece fits snugly over the ear and provides extra fidelity over normal models. Fitted with 3.5mm mono plug.

£14.95
Carr. £2.00

Mobile 12V DC Leads

£6.95
Carr. £2.00

Fused DC lead with ... match current ...

WSA-1 PSK-31 Adaptor

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

£39.95
Carr. £2.00

F3I-B Almost Invisible!

This skin coloured earpiece is almost invisible at a distance and is left/right adjustable. Fitted with 3.5mm mono plug.

£9.95
Carr. £2.00

Flexweave Antenna Wire

£6.95
Carr. £2.00

It won't tangle and is ideal for wire antennas

SP-170F Mobile Speaker

Fitted with volume control and switched filter, it measures 97 x 67 x 27mm and has a 3m lead with 3.5mm mono plug.

£12.95
Carr. £2.00

Handy Adaptors

Connector Set

Connect anything to anything. 6 mating pcs. to produce "N", BNC, SO-239, PL-259, SMA, Mini UHF, TNC, plugs or sockets

PL-5/8	PL-259 to 3/8" socket £3.95
W-CN3	SMA to BNC socket £3.95

£49.95
Carr. £2.00

WM-30B Base Mic

The perfect answer for a high quality base microphone. Built-in pre-amp powered from rig or 2 x AA, electronic PTT and FM/SSB response switch. Includes lead with 8-pin plug.

£59.95
Carr. £6.00

NiMH Cells & Chargers

1400mAh AA size cells for high current applications.
Pack of 4xAA £9.95
Automatic 4-way AC charger for NiMH and Ni-Cad cells.
230v AC charger £9.95

Torch Radio with Dynamo & Solar Panel

£12.95
Carr. £3.00

This amazing torch incorporates a full FM and AM radio. It can be powerd from 4 x AA cells (extra), the internal dynamo, or from the solar panel on top. And all at an amazing price!

HF Mobile Whips

All whips are 2-section helical 2.25m.

WHF-160	£49.95	**WHF-17**	£18.95
WHF-80	£19.95	**WHF-15**	£18.95
WHF-40	£18.95	**WHF-12**	£18.95
WHF-30	£19.95	**WHF-10**	£18.95
WHF-20	£18.95		

Whip Accessories

W-BM1	Ball mount 3/8"	£19.95
MMT-1	Impedance matching xfr.	£19.95
3401	3-way mag mount 3/8"	£39.95
SS-504	Heavy duty spring 3/8"	£6.95

Station Clock WWC-411

This smart wall clock offers 12 or 24 hour display. It also indicates date and temperature in C or F. Size is 26.6cm diameter and it requires 2 x AA cells.

CS-600 2-way Coax Switch

This well-made 2-way coax switch is ideal for HF, 2m and 70cms. Fitted with SO-239 sockets.It will handle up to 500 Watts RF

£12.95
Carr. £3.00

Avair VSWR Power Meters

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

AV-200	1.8 - 200MHz 5/20/200/400W	£49.95
W-400	140 - 525MHz 5/20/200/400W	£49.95
AV-600	1.8 -525MHz 5/20/200/400W	£59.95

All fitted with SO-239, PEP/RMS readings, 3W for FSD approx. AV-600 has dual sensors.

HF Accessories

ECW	50m 16g enamelled copper wire	£12.95
HDCW	50m hard drawn 16g copper	£14.95
PVC-50	50m clear covered multi-strand	£39.95
WAL-55	16.76m alloy wire 3.5mm	£7.95
WEW-50	50m Lightweight pvc wire	£9.95
WGR-330	30m Polyprop 14kg strain	£6.95
WGR-430	30m Polyprop 45kg strain	£14.95
WGR-630	30m Polyprop 130kg strain	£29.95
Kevlair	60m 181kg strain (Dacron)	£22.95
Insul-8	Black ribbed insulator	£0.99
LadderLoc	Centre insulator for 450 Ohm	£12.95

WCT-321 Lapel Talker

Earpiece with combined lapel hanging mic and PTT. Models to suit most radios.

£19.95
Carr. £2.00

DS-112 Speaker Mic

Models for Yaesu, Kenwood, Icom, Alinco and Motorola.

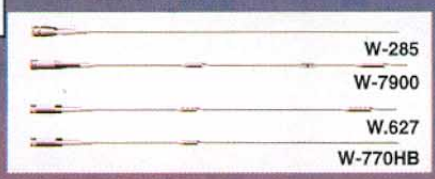
£16.95
Carr. £2.00

WATSON

Great value mobile antennas

W-285	2m 5/8th whip with PL-259 base	£14.95
W-7900	2m/70cm 5 & 7.5dB length 1.58m	£32.95
W-627	6m / 2m / 70cm 2 / 4.5 7.2dB length 1.6m	£34.95
W-770HB	2m/70cm whip 3dB / 5.5dB length 1.1m	£24.95

All with tiltover bases.



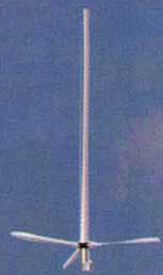
Base Co-linears 2m/70cms Fibre Glass

W-30	3/6dB L1.15m	£39.95
W-50	4.5/7.2dB L 1.8m	£49.95
W-300	6.5/9dB L3.1m	£59.95

These antennas are pretuned and have short base radials

Base Antennas

2m / 70cm fibre glass colinears with stainless steel fittings, 3 short radials and SO-239 sockets. Pre-tuned and all hardware for mast mounting.



Dual Band 2m/70cms

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

Triple band 6m/2m/70cms

W-2000	0/6/9dB 2.5m long	£69.95

Frequency Counters

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

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

Hands-Free Mobile!

Models to suit almost any rig. Head/neck band with adjustable mini-mic boom and transmit/receive switch box. **Drive safely!**

£44.95
Carr. £2.00

Portable Supply

Houses 13.8V 17Ah sealed cell. Has 2 x cigar sockets, 3-6-9V outputs at 1A and large crock clips. Will power 100W rigs! Package includes AC charger.

£69.95
Carr. £2.00

W-6MV Deluxe Key

A high quality Morse key made of brass with wood base. Full set of adjustments

£39.95
Carr. £2.00

SPM-102 Speaker Mic

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

Limited stocks.

£9.95
Carr. £2.00

ICOM IC-R3
PICTURE THE DIFFERENCE

NEW

Phone Plus £7.50 Carr.

* Full UK TV coverage
* 0.495-2450 MHz
* Advanced Lithium battery
* ALL DAY battery life
* 450 Memories
* FM / WFM & AM
* 2" TFT colour display
* Bandscope & automatic squelch
* 8 background colour choices
* Size 61 x 120 x 33mm

also receives 23 & 13cm amateur FM-TV 900-1300MHz 2250-2450MHz

MFJ-269 ANALYSER

160m - 70cm On-site Antenna Analyser.

£299.95 Plus £6.00 Carr.

MFJ-259B 1.8 - 170MHz £229.95

Imagine being able to plug into your antenna or feed line and make meaningful adjustments on site. Or be creative and turn hours into minutes and ideas into antennas! Read what RadCom says and make your own mind up. One of the best investments you will ever make!

HEIL AUDIO

Appointed by Heil as UK Distributor

Proset-4	H'phone/boom mic	£129.95
Proset-5	H'phone/boom mic	£129.95
Micro-4	Lightweight ver.	£99.95
Micro-5	Lightweight ver.	£99.95
AD-1	Cables Y. K. or I.	£14.95
HM-10-4	Stick mic	£69.95
HM-10-5	Stick mic	£69.96
CC-1	Cables Y. K. or I.	£25.95
HC-4	Spare insert	£32.95
HC-5	Spare insertt	£32.95

You can convert your mic to Heil by simply pur chasing HC-4 or HC-5 insert.

NEW

MFJ-CUB QRPERS

The MFJ Cub single band transceivers are small enough to sit in the palm of the hand. They provide up to 2 Watts CW output (variable to mWs), have full break-in and on-air sidetone. Available ready built or as a half kit. The kit version has all the surface mounted components installed. You only need to add the larger items, knobs and case.

Kit £89.95 Built £139.95

Models available for 80m, 40m, 30m, 20m and 15m.

Includes cabinet and controls.

Postage £6.00

AVAIR AV-600

£59.95 Plus £5.00 Carr.

1.8 - 525MHz VSWR Meter 5/20/200W scales. Dual sensors, PEP reading. More accurate than built-in meters.

KH-WS1 WORLD SPACE DIGITAL RECEIVER

£99.95 Plus £5.00 Carr.

This radio has its own mini satellite dish and receives digital WorldSpace broadcast signals via the AfriStar satellite. As well as all the normal VHF FM programmes, you can switch to satellite broadcast signals from CNN, BBC, Bloomberg (multi language), World Radio networks 1 & 2, and lots more. High quality mono via the internal speaker and stereo via the headphone socket. Runs from AC, 4 x D cells (not supplied), or external 6V.

SEC-230 SMART TUNER

£359.95 Plus £7.50 Carr.

Covers 1.6 - 30MHz and handles 3 - 200W. Designed for end fed wires, just connect to 12V and feed with RF via coax. Can be mounted outside or at top of mast.

MICROSET AMPLIFIERS

All FM/SSB with GaAsFET preamps and RF switched. 13.8V DC powered.

R-25	2m 1-4W in / 30W max out	£84.95 B
RV-45	2m 3-15W in / 45W max out	£95.95 B
R-50	2m 1-7W in / 50W max out	£89.95 B
SR-100	2m 4-25W in / 100W out	£169.95 B
SR-200	2m 10-50w in / 200W max out	£299.95 B
VUR-30	2m/70cms 1-5W in / 20/30W out	£199.95 B
RU-20	70cms 3-15W in / 20W max out	£119.95 B
RU-45	70cms 3-15W in / 45W max out	£165.95 B
RU-432-95	70cms 6-12W in / 95W max out	£499.95 C

WCN-3 Adaptor. For all transceivers using SMA connector. Converts to BNC £3.95 A

SPEAKER MICS.

Including Yaesu and Icom 4-way jack.

QS-112-Y Yaesu £16.95
QS-112-K Kenwood £16.95
QS-112-Y4 4-way £16.95
Phone if in doubt about suitable mode!

QS-112

£16.95 Plus £2.00 Carr.

HANDS-FREE MOBILE MICS.

£42.95 Plus £2.20 Carr.

Comes complete with PTT switch box for mounting on gear lever. Head/shoulder band makes for easy wear. Models for almost every transceiver. Phone for confirmation of model number to suit your rig.

THE TOUGHEST JAPANESE ROTATORS

These are tough rotators that weigh almost twice as much as similar priced units and have great turning capacity. Made by Create of Japn, they will handle 4 element HF yagis with ease. Our own Create model has been on our roof for 12 years turning a 4-element HF beam. We wouldn't use anything else!

RC5-1 Standard control box, OK for 4-el Yagis - needs 7-core cable £349.95C

RC5-3 Control box features pre-set or manual control. Otherwise the same as RC5-1 above £449.95 C

MC-2 Lower mast clamps £49.95 B

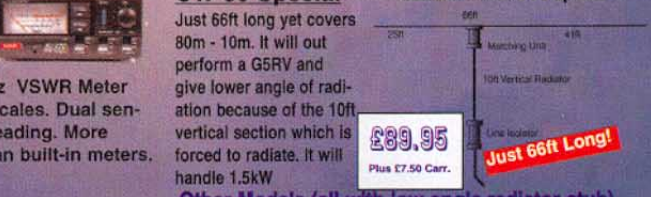
80-40-20M MINI DIPOLE

The "80 plus 2" Mini - Dipole was designed by our Director, Peter Waters, G3OJV. Just 52ft long, it uses linear loading - no tuned traps. It can be directly fed without ATU and also operates at 2.5:1 VSWR on 15m. Amazingly efficient, it handles 400 Watts and is balun fed. Erect it as an inverted V and it takes up less than 40ft of space. If you have a small garden, don't miss out on the LF bands anymore. £79.95 Carr. £6.00

CAROLINA WINDOMS

CW-80 Special

Just 66ft long yet covers 80m - 10m. It will out perform a G5RV and give lower angle of radiation because of the 10ft vertical section which is forced to radiate. It will handle 1.5kW



£89.95 Plus £7.50 Carr.

Just 66ft Long!

Other Models (all with low angle radiator stub)

CW-160	160 - 10m 171ft long	£109.95
CWS-160	160 - 10m 133ft long	£99.95
CW-80	80 - 10m 133ft long	£84.95
CW-40	40 - 10m 66ft long	£79.95
CW-20	20 - 10m 34ft long	£77.95

Plus £7.50 Carr.

POWER SUPPLIES

SEC-1223
13.8V PSU
23 Amps - 3.2lbs!

£99.95 Plus £6.00 Carr.

Back In Stock

Beware of cheap noisy supplies that have poor filtering & construction!

Lighter than an IC-706 and about the same size! The SEC-1223 switch mode power supply delivers 23 Amps at 13.8V Thermo fan cooled, it measures just 57 x 177 x 190mm. Will power all 100W rigs and can be changed for 115V AC

LINEAR AMP UK AMPLIFIERS

British made Amplifiers with a Pedigree

Full Range Stocked

Challenger	HF 2 x 3CX800 AT 1.5kW out	£2095 D
Explorer	HF 2 x 3-500ZG 1.3kW out	£1595 C
Hunter	HF 1 x 3-500ZG 750W out	£1195 C
Hunter	6m 1 x 3-500ZG 800W out	£895 C
Ranger	HF 4 x 811A 800W out	£895 C
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Front Cover:

Icom's latest VHF / UHF transceiver, the IC-910, is given the full technical review treatment by Chris Lorek, G4HCL. See page 17.

July2001

Contents

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Radio Communication

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

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News and Reports

Technical Features

Down To Earth - Amateur Radio From The Ground Up

Reviews

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RADIO SOCIETY OF GREAT BRITAIN

THE NATIONAL SOCIETY WHICH REPRESENTS UK RADIO AMATEURS

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Member society of the International Amateur Radio Union
Patron: HRH Prince Philip, Duke of Edinburgh, KG, KT

Membership is open to all those with an active interest in radio experimentation and communication as a hobby. Applications for membership should be made to the Subscriptions Department from which full details of Society services may also be obtained.

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MEMBERS! - HELP US TO SERVE YOU!

HOPEFULLY YOU will have noticed that this month's 'flyer' is a little different: it doesn't highlight the latest book offer. Instead it contains a number of questions that we would like you to answer. You are all probably a little tired of answering questions and putting ticks in boxes! However, we think that it is important that we know a little more about you so that we can tailor the service that we provide to you.

Let me assure you that this is not some kind of 'Big Brother' exercise. The last membership survey that we carried out was in 1991. The information we gained then has been very useful to us. But it is now very much out of date.

The questions in the new survey are straightforward and very relevant to what we are trying to achieve as a Society.

For instance, we need to know your date of birth so that when you reach a subscription break, such as reaching the age of 65, we can adjust your subscription accordingly without you having to write in and apply for the lower subscription. This will save you and the Society time and money.

We ask you for your e-mail address (if you are on e-mail). This is important because we would like to be able to contact you quickly to let you know of important changes in amateur radio legislation and to get your opinion of such things as the new licensing proposals. Electronic mail is easy and fast to use and as a representative organisation the ability to canvass our members swiftly and securely will be an important tool in our armoury.

We'd like to know where your amateur radio interests lie. This will enable us to get the balance of *RadCom* right and produce the amateur radio books that you really want and not what we think you want.

And finally, we would like to know what other interests you have. We want to develop a full range of membership benefits and this information will greatly assist in the process.

Completing the survey is very simple - just fill in the blanks, tick the boxes, fold the paper and pop it in the postbox. Postage is free and there is the chance to win a substantial prize for just giving a couple of minutes of your time.

And lastly can we reassure you that the information that you provide is for Society use *only*. Our policy continues to be that we do not pass on any membership data to a third party. Thank you for your help. It's greatly appreciated.

By the way, we don't want you to miss out: this month's special offer is on page 49!

G5RP TROPHY: NOMINATIONS WANTED

THE G5RP Trophy is an annual award to encourage newcomers to HF DXing. It is awarded for making recent rapid progress in DXing, which only newcomers have the scope to do. However, the award is not limited to youngsters or the newly-licensed - the DX bug can bite at any age and after many years of experience.

Seasoned HF DXers are able to reward and encourage newcomers by nominating an up-and-coming DXer for this award. Your nominations for the 2001 - 2002 award are needed now.

The trophy is awarded jointly by the Vale of White Horse Radio Society and the RSGB HF Committee, and will be presented at the RSGB International HF and IOTA Convention on 13 / 14 October 2001.

Nominations should be sent to Colin Thomas, G3PSM (QTHR), c/o RSGB HF Committee, or by e-mail to: hf.chairman@rsgb.org.uk or by post, to arrive not later than 10 September.

NATIONAL COUNCIL ELECTS NEW PRESIDENT

AT ITS MEETING in May, the National Council (comprising the Board and Regional Council members) elected Bob Whelan, G3PJT, as President for 2002 - 2003. Bob will take up his appointment at the beginning of January 2002.

Commenting on his election, Bob said, "I am honoured to have been elected by the National Council to be your next President. I look forward to working with you in the advancement of amateur radio."

Don Beattie, G3BJ, the retiring President said, "The tasks facing the Society are considerable over the next few years. Bob Whelan is an excellent choice for the next President, and I look forward to working closely with him on a seamless handover during the next six months."

STOP PRESS

Peter Sheppard, G4EJP, the RSGB President in 1996 and now RSGB Board Member responsible for regional matters and the RSGB Regional Manager for North-East England, was involved in a serious road accident on 10 June, while on his way to the Elvaston Castle rally. Peter remains in hospital in intensive care. Updates will be published on GB2RS and on the RSGB's web site at www.rsgb.org

BOARD HIGHLIGHTS - MAY 2001

THE BOARD MEETING in May was immediately followed by the first full meeting of the new National Council. The following is a brief summary of the issues discussed at both meetings.

The Board approved two new Committee Chairmen – Hilary Claytonsmith, G4JKS, as Chairman of the EMC Committee, and Stephen Purser, G4SHF, as Chairman of the Planning Advisory Committee.

The Board reviewed the portfolio reports, noting:

- the good progress being made in the full implementation of the Regional organisation, and the creation of Regional Managers and their deputies;
- the progress being made with the RA on the way on which EMC issues were investigated;
- the work being done both nationally and internationally by the RSGB to combat the renewed threat of HF interference from power line communications and other forms of wideband data transmission over unscreened cables;
- the work being done to develop further the concept of the Foundation Licence and the successful outcome of the teachers' RAE course at Harrogate in April 2001;
- the report from the RA Economics department stating the radio amateurs are prepared to pay £81 pa for their licence. The General Manager had written to the Chief Executive of the RA on this matter;
- the satisfactory financial outcome of the Bletchley VHF Convention, and the measures needed to improve the venue facilities for next year;
- the work underway to develop a demonstration vehicle facility for use at public events, schools and colleges;
- the financial position of the Society, which is still on track for a near-break-even outcome for the year;
- the planning activities underway for the RSGB HF Convention 2001.

Although the appointment of the President for 2002 / 3 is a matter for the National Council, the Board determined its position on this, as an input to the National Council meeting later in the day.

The Board discussed and endorsed the proposals for a closer working relationship with STELAR as part of the development and promotion of amateur radio.

Early discussions were held on the possible shape of the delegation for the 2002 IARU Region 1 Conference. The Board determined that a properly-briefed RSGB delegation could be much smaller than the one sent to Lillehammer. It was agreed to ask Committee Chairmen, through the Board members, for initial thoughts about RSGB papers for Lillehammer.

The National Council met after the Board meeting.

Council received brief summaries from each Board member of work being undertaken in the respective portfolio. In particular:

- Council discussed the future of amateur licensing in the UK, noting that the respective views of the RA and the RSGB were converging;
- Council received a presentation by Robin Page-Jones, G3JWI, on Power Line Telecommunications and the work being done by the Society to try to ensure its impact on the HF spectrum was minimised.

The development of the Regional organisation was discussed, providing the opportunity for each of the Regional Managers present to update and raise issues of concern. The progress in appointing Deputy Regional Managers was noted, as was the early experience of Regional teams attending rallies with a mini-bookstall.

Council discussed the election of a President for 2002 / 3 and determined, as announced opposite, that Bob Whelan, G3PJT, should become President for the following two years. The Board next meets in July, and the National Council at the end of the year.

BOARD AND NATIONAL COUNCIL ELECTIONS 2002

AT THE Annual General Meeting in December 2000, Members approved a new structure of Governance for the Society. This has been progressively implemented since then, creating a Board of nine people, and 12 Regional Managers, covering the various Regions of the UK. Two Regional Managers also serve on the Board.

Because the new structure was only approved in December 2000, there was insufficient time to hold elections for many of the Regional Manager appointments (although some currently hold office by virtue of having been elected as Zonal Council members under the previous structure).

In the elections for Board and Regional Council members later this year, we therefore will need formally to elect members to each of the vacant Board and Regional positions, including those Regional roles which have been filled by co-option since the 2000 AGM.

The Board expects that there will be four Board appointments to be filled by direct election. These arise from the following changes:

Dick Biddulph, M0CGN, retires at the end of six years on the Council / Board and is not eligible for re-election.

Richard Horton, G3XWH, currently holding the amateur radio development portfolio, has decided not to stand for re-election to the Board at the end of 2001.

Robin Page-Jones, G3JWI, currently holding the technical portfolio, retires at the end of his first three year period on the Board, but is eligible for re-election.

Bob Whelan, G3PJT, currently holding the business, commercial and publications portfolio, has been elected as President for 2002 / 3 and his Board seat as a portfolio-carrying member of the Board becomes vacant.

Don Beattie, G3BJ, retires as President, but is eligible for re-election as an ordinary Board member for a further three year period.

In addition, members of the Regional Council need to be elected for all Regions except Northern Ireland and South Wales. **Peter Sheppard, G4EJP,** Board Member for Membership, and also Regional Manager for the North-East, retires by rotation, but is eligible for re-election to the Regional Council and, should that Council so determine, to the Board.

Elections are therefore needed for appointments to the Regional Council. The full list of present Regional Managers can be found on **page 73**. In most cases the existing Regional Manager is willing to stand for election. However, in Scotland East & the Highlands, **Tom Menzies, GM1GEQ,** is not eligible to stand again, and a new candidate will need to be appointed.

Members of the Society who wish to stand for election need to obtain the nomination and supporting signatures from at least 10 Corporate members of the Society. Forms for this purpose are available from the General Manager. For the Regional vacancies, candidates must reside in the relevant Region.

The formal notification of the vacancies will be included in the September edition of *RadCom*, and the formal voting papers will be despatched with the November 2001 *RadCom*.

RMC NEWS

A NEW RSGB Repeater Management Committee Regional Manager has been appointed. He is Len Baddeley, G8LXI, who becomes the RMC Manager for Zone B, the East Midlands. Len's address is *not* correct in the current *RSGB Yearbook*, but he may be contacted via Fiorina Sinapi at RSGB headquarters.

SPECIAL OFFER

THIS MONTH the members-only special offer is a fantastic 33% off any RadCom or RSGB Bulletin CD-ROM. Each set is available for just £19.99 (plus P&P). See the ad on page 49 for more details.

RadCom NEWS

Reuben Meeks, President of the Dayton Amateur Radio Association, presents the Dayton Hamvention Technical Excellence Award to RSGB President Don Beattie, G3BJ, who accepted it on behalf of Peter Martinez, G3PLX. The award was made for G3PLX's development of the PSK31 data mode.

GT3FLH at Island Games

THE ISLE of Man ARS club call, GT3FLH, will be on the air between **7 and 14 July** from the Island Games, an international athletics event taking place on the Isle of Man. Athletes from 22 islands including the Falklands, Rhodes and St Helena will be competing in sports such as archery, football and swimming.

Victims of Our Own Success

CAN ANYONE help the organisers of the RAE crash course for teachers [see page 32 - *Ed*]? At the end of the course, the teachers were asked to put forward a case, arguing why their schools should be selected to receive a piece of HF / VHF equipment to go towards the formation of a radio club in their school. Five pieces of equipment had been donated with a view to them being found a home in schools. The dilemma is that 11 first-class submissions have been received! Can any members help? Do you have any surplus HF or VHF equipment (working and safe) which you would be prepared to donate to this worthy cause? Here's hoping not to disappoint six schools who already have the promise of radio shacks, students for the Novice / Foundation licence, and help with funding towards antennas. If you can help, please contact Hilary Claytonsmith, G4JKS, via RSGB HQ or by e-mail: g4jks@btinternet.com

● SURPLUS EQUIPMENT is also being requested to get ZD9BV and ZD9CO back on the air, following a hurricane which devastated Tristan da Cunha in May. Reports from the island say the antennas, tower and transceiver of Andy and Lorraine Repetto were destroyed. If you can help, please e-mail Colin Topping: gm6hgw@hotmail.com

● THE FIRST Notice of Variation has been granted to a Novice licensee. Phillip Moore, 2E1CJT, was granted an NoV with effect from 1 June to allow Internet linking on 145.3375 and 431.1250MHz.

● S O Hesketh, RS164359, has written to say that he did not place the request in 'Helplines' that was published, in good faith, under his name. Apologies to Mr Hesketh for any inconvenience caused.

W&S Open Day

THE WATERS & STANTON open day on 13 May was blessed with blue skies and a temperature of 27°. The event was well attended with a queue of customers waiting for the 10.00am start. Everyone made straight for the bargain stand in the marquee, where items from WWII equipment to end-of-line bargains and service department write-offs were to be found. At 1.00pm the free prize draw for a VX1R, kindly donated by Yaesu, took place. Other prizes were donated by Kenwood and Icom, and all three manufacturers had stands within the marquee.

In the afternoon, Mark Francis held his famous 'everything must go' auction. A wide range of products was sold off, and judging by the large number of boxes and bags leaving the premises, all those that attended had an enjoyable time and picked up some bargains.

YOUR OPPORTUNITY TO HELP THE SOCIETY

A Plea from President - Don Beattie, G3BJ

YOU WILL SEE elsewhere on page 9, early notification of the likely vacancies on the Board and Regional Council for 2002 / 3.

The workload of the Society continues to increase, and both Board members and Regional Council members (as Regional Managers) carry important roles in the governance and management of the Society.

Board members now each carry a portfolio, drawn from the following areas:

- **Business, Commercial & Publications**
- **Technical (2)**
- **Spectrum**
- **Sport Radio**
- **Amateur Radio Development**
- **Regulatory & International**
- **Membership**

The Board determines the allocation of portfolios at the first meeting of the new year. Those wishing to stand for election to Board should feel able to contribute actively as a portfolio-carrying Board member in at least one of the above areas. I am particularly keen to encourage new faces to join the Board. If you feel you could contribute to any of the above areas, and would be willing to give time to supporting your Society through membership of the Board, please would you consider standing for election? There are up to six Board meetings a year, held at Potters Bar. Most other work is done by e-mail. Please if you feel you can help, contact the General Manager or myself (g3bj@rsgb.org.uk) for further details.

Regional Managers carry a different responsibility, but no less important. They are the prime links between the Society's Board and the membership at club level. The new Regional structure is in its infancy, and needs strong and willing helpers to build its effectiveness. We have been co-opting many people who fill this profile during the year, but all these will need to stand for election at the end of 2001. Elsewhere, we are looking for new candidates in these important roles. Regional Managers are expected to attend up to four meetings a year at Potters Bar, but also to be very visible in their Regions at clubs and other amateur radio events. Again, details can be obtained from the General Manager or myself.

As the challenges for amateur radio increase, and the load increases on the Society, so we need more able and committed people to help out. Please, if you feel you can help, would you consider standing for a Board or Regional vacancy?

Cq-Scotland.Net

MIKE Langley, ex-MM0CKR, was formerly the webmaster of the Cq-Scotland.Net site, but closed it several months ago following continued and persistent attacks by a hacker. Mike reports that it appears that someone is still using the webspace to post offensive material and wishes it to be known that this has nothing to do with the official Cq-Scotland.Net He has taken steps to ensure this cannot happen again.

Help 'Baby'

THE CHESTER &DRS is planning a visit to the Manchester Museum of Science and Industry this month and is trying to help the museum with the rebuilding of the early computer known as 'Baby'. Valves, transformers and other hardware are required and anyone who can help by donating parts is requested to contact Bob Campbell, tel: 01244 378699. Anyone interested in joining the club's visit to the museum should also contact Bob for further information.

RadCom NEWS

Morse Code Reader Update

G4MDU HAS pointed out some errors in his article on p17 of the June issue. On Fig 1, Pins 2 and 3 of IC1 should be reversed. D1 and D2 labelling should be swapped. C1 and C3 polarities should be reversed on Fig 1 and Fig 2. On Fig 2, the resistor immediately below TR1 should be R6. G4MDU says "The mistakes were made during the drawing of the circuit diagram from my working PCB. I apologise to any reader who may have been inconvenienced." Our thanks to readers who pointed out the errors.

Trans-Atlantic Bicycle Mobile

BOB MCTAIT, G2BKZ, in Stevenage made contact with WB2PDW/M on 20m on 5 May. The contact was Vincent Diak's first SSB DX contact using a 5W FT-817 transceiver to an Outbacker Perth mobile antenna - mounted on his bicycle! Bob says that Vincent was clearly "over the moon in making his first trans-Atlantic mobile QSO".

Calling QSL Managers!

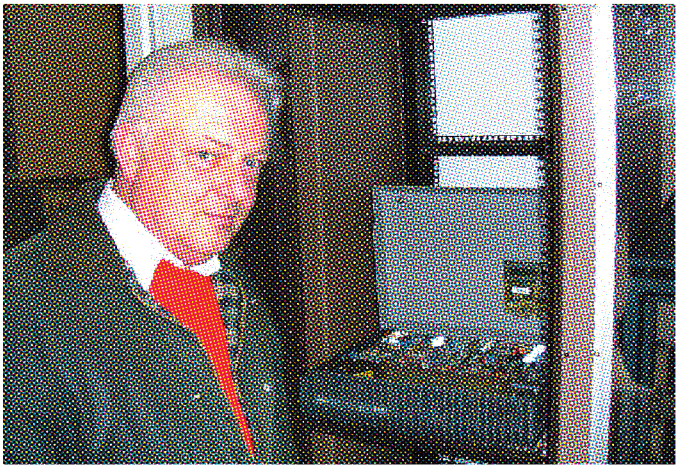
RSGB HQ has received a request from the Leukaemia Research Fund (registered national charity 216032) asking for used postage stamps in order to raise funds for research into that dreadful disease. Please send any unwanted stamps (foreign or UK) to the fund, c/o Geoff Miller, 98 High Meadows, Midsomer Norton, Radstock BA3 2RY.

GB3YC Repeater Provides Vital Link

Fire Brigade Calls on Radio Amateurs for Emergency Comms

AMATEUR RADIO has once again shown its value in providing vital communications in an emergency. On 19 May Richard Pullen, G0OII, the keeper of the GB3YC 'Yorkshire Coast' 2m repeater, was monitoring activity on 'YC. He received a call from Simon Hopkins, G8PXB/M, who was working as a volunteer ranger in relation to the foot and mouth crisis in the nearby National Park. Simon had discovered a moorland fire that was getting out of control and was assisting another ranger to beat out the flames. The fire's intensity increased and Simon attempted to alert the fire brigade by mobile phone, but without success as there was no cellular network service to that remote part of the moors. However, GB3YC was offering an 'end-stop' signal and he used the repeater to contact Richard, with a request that he call the fire brigade by ringing 999. This was done immediately and six fire appliances attended at the scene.

Soon after, Richard was phoned by an officer at the North Yorkshire Fire and Rescue control room in Northallerton. He said that they had lost contact with their appliances, as their radio system had no coverage in the area where the fire was burning. He asked if a link via the amateur radio repeater could be set up with those at the scene to relay status messages so that they would know when their appliances had arrived and the state of the incident.

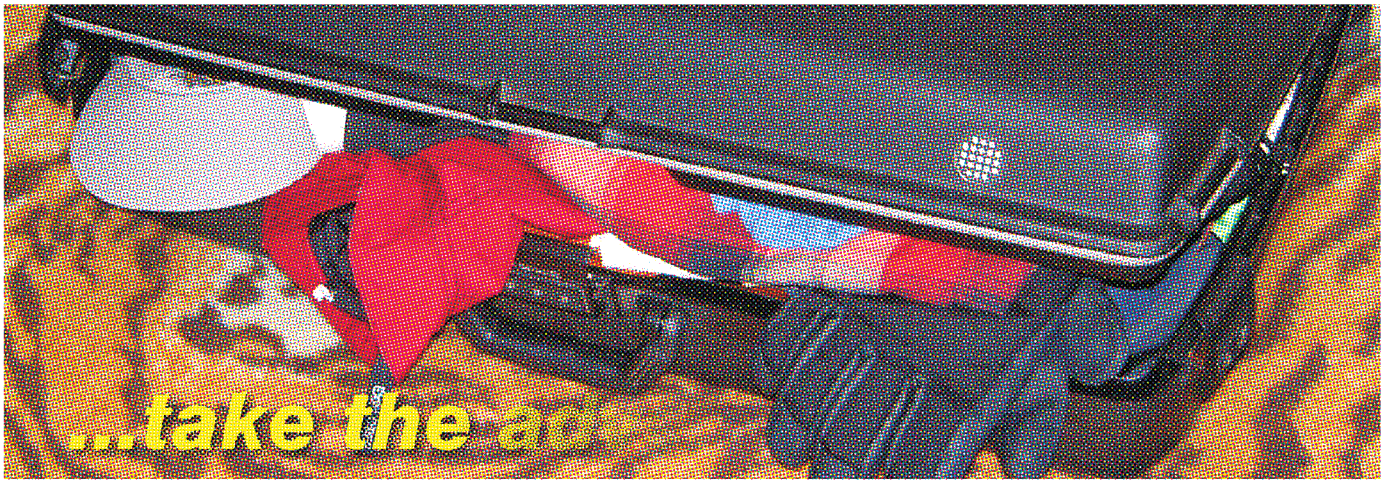


Richard Pullen, G0OII, with the GB3YC 'Yorkshire Coast' 2m repeater.

Later Richard was contacted by a control room officer, who thanked the radio amateurs for their co-operation and praised the quality of service provided to the area by GB3YC. Two hours later Simon called back through GB3YC to report that the fire was extinguished and that the appliances had left the scene. Later in the day Richard was interviewed by BBC Radio York about the incident and this was used in regional news bulletins over the weekend.

Lighthouse Weekend

THE INTERNATIONAL Lighthouse and Lightship Weekend takes place over the weekend of 18 / 19 August. Already over 100 stations have confirmed their participation from either a lighthouse, lightship or maritime beacon. There is still time to register if you wish to take part in this event from a lighthouse or lightship. Contact Mike Dalrymple, GM4SUC (QTHR), or e-mail: gm4suc@compuserve.com



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ALINCO DR 510E ....2M/70CM MOBILE TRANS.....179
ALINCO DR 610 .....TWINBANDER 2/70.....270
ALINCO DR MO6.....10W 6M MOBILE TRANSCEIVER 149
ICOM IC280E .....2M FM MOBILE 85
ICOM IC2100H .....2M FM MOBILE TRANSCEIVER ..169
ICOM IC2500E .....70/23CM MOBILE TRANSCEIVER 329
KENWOOD TH 79E ..2M/70CM HANDIE TX.....159
KENWOOD TM 231E..2M MOBILE 139
NAVICO AMR1000S 2M FM MOBILE 75
STANDARD C8900 ..2M FM MOBILE 125
TRIO 751E .....ALL MODE 2M MOBILE.....325
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BEARCAT UBC60XLT..HANDHELD SCANNER.....69
BEARCAT BC120XLT 100 CHANNEL SCANNER 89
COMMTEL COM510..HANDHELD SCANNER.....139
GRUNDIG YB400 .....SHORTWAVE RECEIVER 79
ICOM R10 189
ICOM R71E.....BOXED, PERFECT EXAMPLE.....325
ICOM ICR72 .....HF RECEIVER 399

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HI-MOUND HK802 ..BRASS HAND KEY 49
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KENWOOD VS2 .....VOICE BOARD 40
KENWOOD MC85 .....BASE MICROPHONE.....69
MFJ 784B.....DIGITAL FILTER 139
MW MODULES 432/144.....2M/70CM TVTR 59
SWAN WM6200 .....50-150MHZ PWR/SWR M 30
TIMEWAVE DSP FILTER 59+.....
TOKYO HX-240 .....2M - HF TRANSVERTER 99
TONO Q-550 .....TERMINAL UNIT.....125
YAESU FC-1000 .....AUTO ATU FOR FT767GX.....189

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- 4:1 Balun

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40M - 70cms on ONE ANTENNA!

40/*20/15/10/6/2/70cm
** 20 optional coil*

A 6/2/70cm Whip that accepts 1, 2 or 3 HF coils for up to 6 Band operation. Simply screw on any combination of HF coils you choose.
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Memories 170

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- VOX board
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A full featured HF Transceiver with a patented built-in keyboard interface. Data may also be sent to a dumb terminal for display via a RS232 built-in serial port.

- Powers 1 - 100W
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- Built-in keyer

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LOSS PER 10 MTRS FREQ	LOSS
28MHz	0.20dB
50MHz	0.25dB
100MHz	0.35dB
400MHz	0.82dB

100 METRE DRUM QUANTITY PRICE ~~£95~~ £59 £10 p&p MAINLAND UK

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Popular low loss 50 Ω cable

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400MHz	1.47dB

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Popular lightweight coax cable

LOSS PER 10 MTRS FREQ	LOSS
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50MHz	0.97dB
100MHz	1.4dB
400MHz	3.0dB

100 METRE DRUM QUANTITY PRICE ~~£38~~ £25 £10 p&p MAINLAND UK

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Low loss small diameter cable

LOSS PER 10 MTRS FREQ	LOSS
28MHz	0.69dB
50MHz	0.86dB
100MHz	1.28dB
400MHz	2.82dB

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AKD	6001 6m FM TRANSCEIVER	£135.00
ALINCO	DJ-G1 HANDY TRANSCEIVER	£129.00
ALINCO	DJ-G5EY DUAL BAND HANDY	£199.00
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ALINCO	DR-150E 2M 50W MOBILE TRANSCEIVER	£140.00
ALINCO	DR-M06 6M FM TRANSCEIVER	£140.00
ALINCO	EDX-1 ATU	£140.00
AMERITRON	AL-1500 1.5KW AMPLIFIER	£1,499.00
AOR	AR-2029 HF - VHF RECEIVER Inc converter VHF	£450.00
AOR	AR-3030 HF RECEIVER	£399.00
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BEARCAT	UBC-9000XLT RECEIVER	£199.00
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DAIWA	NS-660P SWR &PWR MTR	£40.00
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ICOM	AI-1500 AUTOMATIC ANTENNA TUNER	£200.00
ICOM	FL-100 500Hz CW NARROW FILTER	£40.00
ICOM	FL-222 1.8KHz SSB NARROW FILTER	£100.00
ICOM	FL-223 1.9KHz SSB FILTER	£40.00
ICOM	FL-52A 500Hz CW NARROW FILTER	£99.00
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ICOM	IC-2100H 2M MOBILE TRANSCEIVER	£150.00
ICOM	IC-229H 2M 50W FM Mobile TRANSCEIVER	£130.00
ICOM	IC-229H FM TRANSCEIVER	£140.00
ICOM	IC-251 2m MULTIMODE TRANSCEIVER	£295.00
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ICOM	IC-821H VHF - UHF MULTIMODE TRANSCEIVER	£699.00
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KANTRONICS	KPC-3 TNC	£89.00
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YAESU	FT-736R 2m / 70cm / 6m TRANSCEIVER	£750.00
YAESU	FT-7400 70cm MOBILE TRANSCEIVER	£160.00
YAESU	FT-747GX HF TRANSCEIVER	£399.00
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Just get **as many people as you can** to sponsor you for **every contact** you or your club makes on the air during the weekend of 15th – 16th September 2001.

The money YOU help to raise will help us ease the isolation of blindness by providing specially adapted audio equipment, FREE FOR LIFE, to UK-registered blind people who are in need.

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For full details of prize categories, your **FREE QSL CARDS** and **SPONSORSHIP FORMS**, please contact the **BWBF, Gabriel House, 34 New Rd, Chatham, Kent ME4 4QR.**

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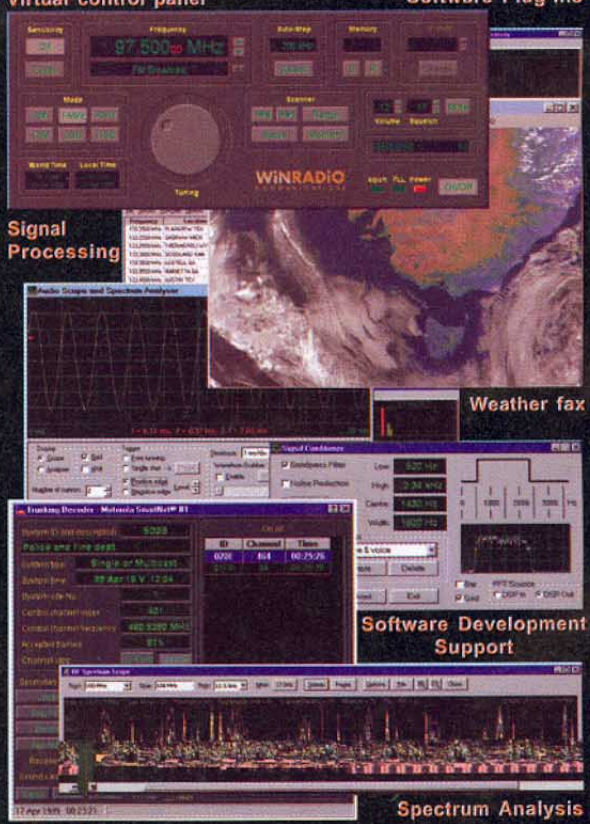

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THE ICOM IC-910 TRANSCEIVER

Chris Lorek, G4HCL*, looks at Icom's new Multimode VHF / UHF Transceiver

ICOM HAS A solid history in VHF and UHF SSB transceivers. There can't be many 'old hand' hill-top 2m DXers who haven't either used, or known of, the IC-202 2m SSB transportable rig, used also by many as an IF for transverting to other frequencies, including the microwave bands.

The 'traditional' way of getting a DX-capable station on 2m or 70cm has indeed usually been via the transverter route. I still use an HF rig with 6m, 2m, 70cm and 23cm transverters, even though I also have a self-contained satellite-capable 'do everything from 160m to 70cm' multimode base station in my shack, which doesn't have the overall performance of the former system. So it was with great interest that I accepted Icom's latest 2m / 70cm multimode base transceiver, complete with its fitted 23cm option, to test for *RadCom* readers.

BANDS

THE IC-901H covers 144 - 146MHz and 430 - 440MHz on USB, LSB, and FM with switchable 12.5kHz (FMN) and 25kHz (FM) channel spacing. The transmit power output is specified as 100W on 2m and 75W on 70cm, with a variable power reduction facility down to 5W. An optional UX-910 module can be internally fitted to add 1240 - 1300MHz (23cm) coverage with a 1 - 10W transmit power output range. Any two bands can be used at any one time.

FRONT PANEL

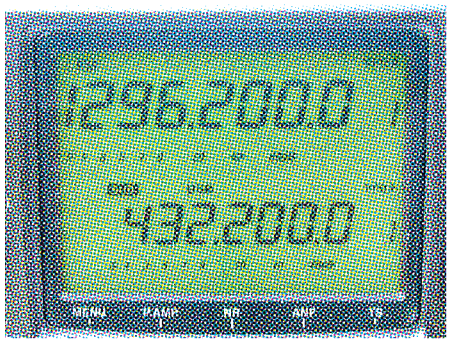
THE FRONT PANEL is well laid out with an uncluttered array of controls. A large backlit LCD is used to display the operating frequency etc along with a separate bargraph S-meter for each displayed operating band. This bargraph can also be used as a simple band scope, which visually sweeps either side of your tuned frequency and indicates detected signals along the bars.

Concentric to the separate volume control for each band is a combined RF gain and squelch outer knob. This uses the same method of control as on some other Icom transceivers, where from clockwise up to the 12 o'clock position it's an RF gain control with open squelch, and 12 o'clock onwards is maximum RF gain but with an increasing squelch level. Below these, two tiny knobs are fitted for mic gain and transmit RF power setting. An audio speech compressor can be switched in for SSB transmit, together with a VOX (Voice Operated Transmission) facility on both SSB and FM. Semi break-in is available on CW. A receive attenuator can be switched in on each band, this being continuously adjustable from 0 to 100% of the maximum attenuation, independently on each band, via the transceiver's 'set' mode. As many DX and satellite operators - to whom the IC-910 is aimed - will be using a mast-head receive preamp, a front-panel control is again available to switch this in and out.

Further buttons below the main display are fitted for a switchable SSB noise blanker, slow or fast AGC, selectable fast or slow VFO tuning steps, and a VFO 'dial lock'. SSB / CW can be pre-set to be tuned in 1, 10, 50 and 100Hz steps, FM on 0.1, 5, 6.25, 10, 12.5, 20, 25 and 100kHz steps, using the large tuning knob which has a brake tension adjustment which you can set as you like. For FM a switchable AFC (Automatic Frequency Control) is available, and a green 'busy' (squelch open) LED next to each volume / RF gain knob can act as a simple centre-tuning indicator, the LED flashing when an off-centre signal is received. The RIT control can shift the receive frequency by up to ±1kHz on SSB / CW and ±5kHz on FM, with double this shift on 23cm. To reduce the level of adjacent-frequency signals, an IF shift lets you move the receive passband up or down by up to 1.2kHz. The IF Shift and RIT controls can also act as a sub-band tuning control, by changing the sub-band operating frequency continuously at a variable speed. An internal keyer is fitted for CW with variable speed and keying weight, and you can alter the CW sidetone and pitch to your liking.

VFOs AND MEMORIES

TWO VFOs, A and B, are available on each operation band, together with five quick-access 'memo pads' to store and recall frequencies and operating modes. A further 'call' channel and 99 extra memory channels are also available for each band, each storing the frequency and operating mode together with offset and tone frequencies if programmed. Another six memory channels are fitted to store lower and upper scan edge frequencies, which the IC-910 can automatically search between to find activity. Up / Down buttons are provided for memory channel change and the programmed memory channels can also be automatically scanned for activity, the scan halting when the receive squelch opens. For FM, as well as a front panel press-button 1750Hz toneburst for repeater access, CTCSS (sub-tone) encode and decode is available either for repeater access or for quiet channel monitoring. A CTCSS Scan is available, which can cycle through the available tones while you're monitoring a re-



Close-up of main display screen.

*PO Box 400, Eastleigh, Hants SO53 4ZF.

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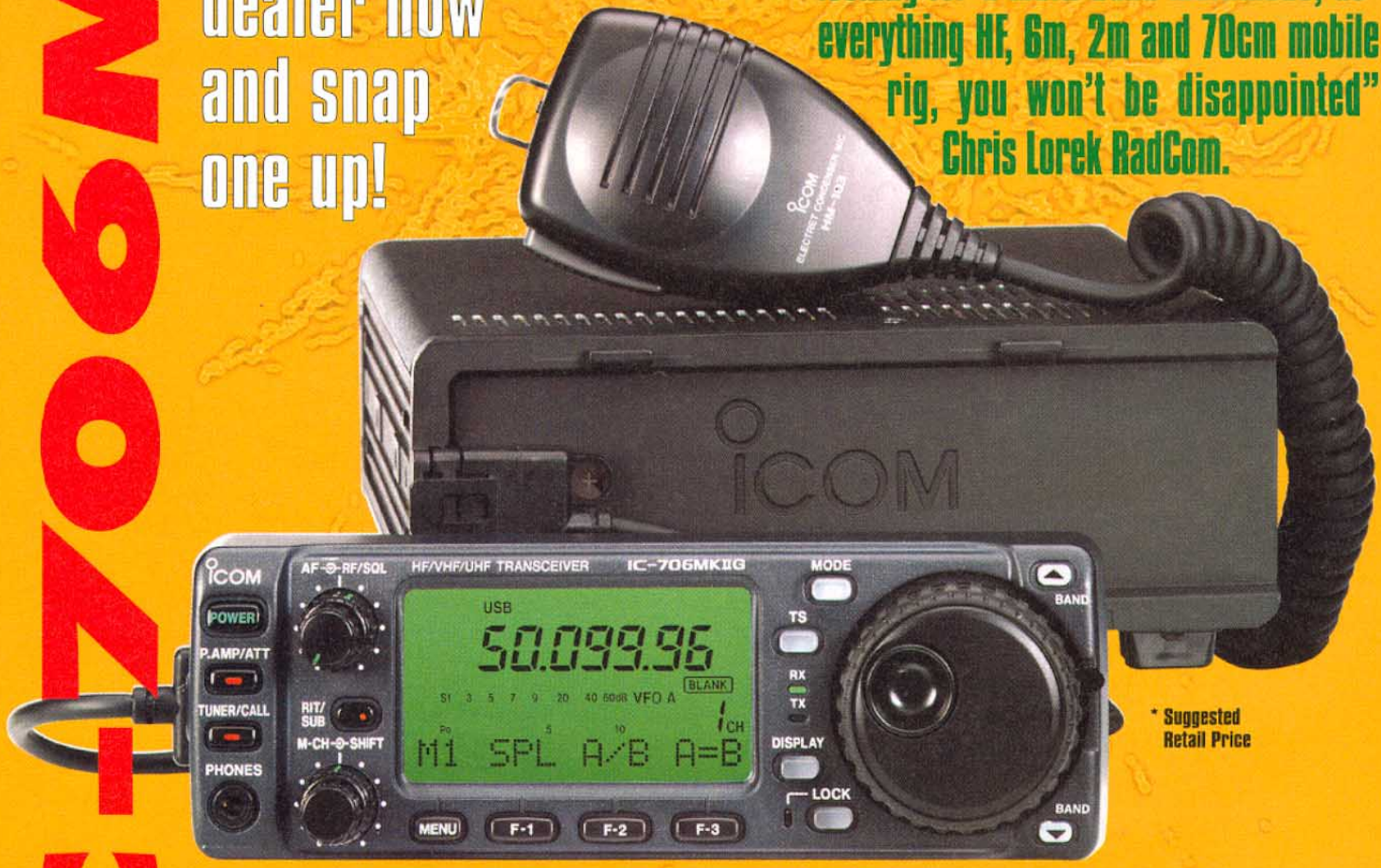

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ceived FM signal and show you which, if any, sub-tone is being used. Split-frequency transmit / receive using VFOs A and B can be swtched in, and fixed TX / RX offsets can be programmed on each band for repeater use.

BAND OPERATION

TWO RECEIVER sections and a single transmit section are used within the transceiver, with two bands, the 'Main' and 'Sub', being used at any one time. So, you can have 2m and 70cm, 70cm and 23cm, or 2m and 23cm in use. Full-duplex cross-band transceive is available, with transmit capability on the Main band (although the Sub band is the TX band in 'Satellite' mode). Dual-band simultaneous receive operation is possible on the two selected bands, although it's not possible to set the Main and Sub bands to the same frequency range for twin-frequency receive operation.

CIRCUITRY

SSB RECEIVE ON 2m uses a single-conversion superhet with IFs of 10.85MHz and 10.95MHz for the main and sub bands respectively. 70cm SSB uses a double-conversion superhet with a 1st IF of 71.25MHz (Main) and 71.35MHz (Sub), the second IF being 10.85 (Main) and 10.95MHz (Sub). 23cm also uses double conversion, but with a higher first IF of 243.95MHz for both Main and Sub bands, again with a second IF of 10.85MHZ (Main) and 10.95MHz (Sub). In all cases. FM receive adds a further down conversion to a final IF of 455kHz.

The transmit power amplifier uses separate PAs for 2m and 70cm each using two bipolar transistors in parallel, 2SC5125 types on 2m and 2SC3102 types on 70cm, as the final high-power stage.

The 23cm PA uses an M57762-02 block PA module, with a mechanical transmit / receive relay for low loss. An internal fan comes into operation when needed to keep the transmit power amplifier circuitry cool.

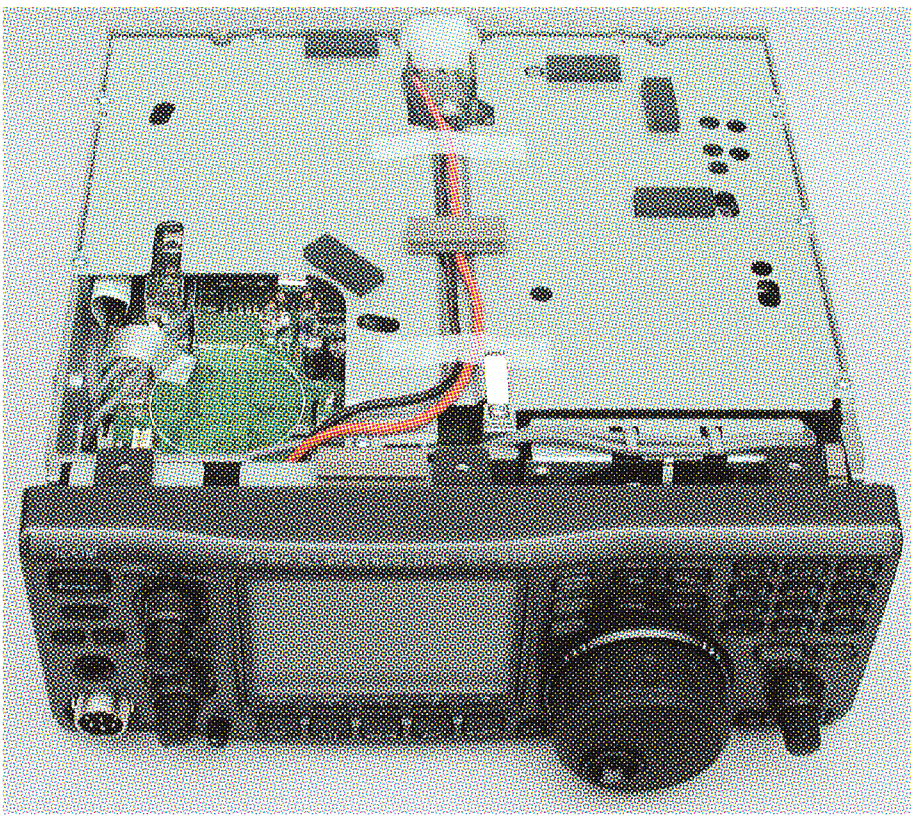
CONNECTIONS

ALONG WITH THE front panel microphone and earphone sockets, separate rear panel connectors are fitted for external Main and Sub band speakers, separate 6-pin mini DIN data sockets for the Main and Sub bands for packet TNC etc interconnection, and a separate antenna connector for each band - two (for 2m and 70cm) as standard, with an additional socket if the 23cm option is fitted.

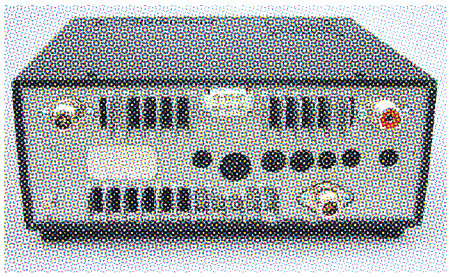
A further 8-pin accessory socket lets you connect a common data terminal / TNC, and this socket provides a handy 13.8V output to power your TNC as well as an ALC input for use with an external power amplifier.

There's a stereo jack for either a straight or paddle Morse key, and a CI-V remote control connector is fitted for you to control remotely the radio from your PC; you'll need an optional CT-17 external interface or similar in line between the radio and PC for this.

The transceiver measures 241W x 94H x 239Dmm and weighs 4.5kg, the UX-910 23cm module adding a further 850g. It's



IC-910 with top cover removed.



Rear panel connections on the IC-910.

powered from an external 13.8V DC supply which you'll need to provide, the maximum current requirement being stated at 23.0A at maximum transmit power.

ACCESSORIES

THE TRANSCEIVER comes with a fist microphone, a fused high-current DC lead (fairly short at 1m), spare fuses and an 83-page user instruction manual together with circuit diagrams. Optional accessories include narrow CW filters for main and sub bands, a high-stability crystal unit, external speaker, desk mic, the 23cm band unit (which was fitted to the review sample), CI-V level converter for PC control, voice synthesiser unit to announce the operating frequency, mode etc, mobile mounting bracket, a carrying handle, and weather-proof preamps for 2m, 70cm and 23cm. Finally, an optional internally-fitted UT-106 DSP unit adds audio-based DSP (Digital Signal Processing) to the receive side. You can select automatic noise reduction for weak-signal work, and an automatic notch filter which will notch out audio beat tones etc even if they're varying in frequency.

ON THE AIR

TO REPLICATE A variety of situations, for the on-air tests I used the IC-910H with two different roof-top mounted 2m / 70cm / 23cm collinear antennas as well as a telescopic tower-mounted azi / ele steerable array comprising a 23cm loop Yagi plus 2m / 70cm switched vertical / horizontal / circular crossed Yagis.

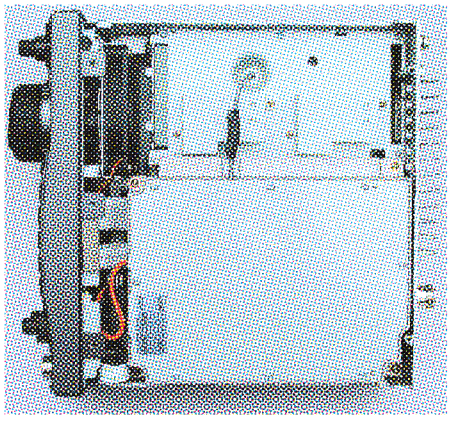
When generally tuning around, I appreciated the 'memo pad' channels which stored the various frequencies I'd manually tuned to on a first-in, first out basis with a single button press each time. This way, I could have an initial tune, find out what's happening, and cycle back quickly to see if the contact was finishing or whatever. Five of these memo pads are the default, although I could increase them to 10 in the 'set' mode; the higher number could be useful during busy periods such as a contest weekend.

As the Main band is used for transmit in normal operation, I found it handy to be able to use this while tuning or scanning around on the 'sub' band, also being able to keep a continuous ear open for activity on, say, 23cm while I was chatting away on one of

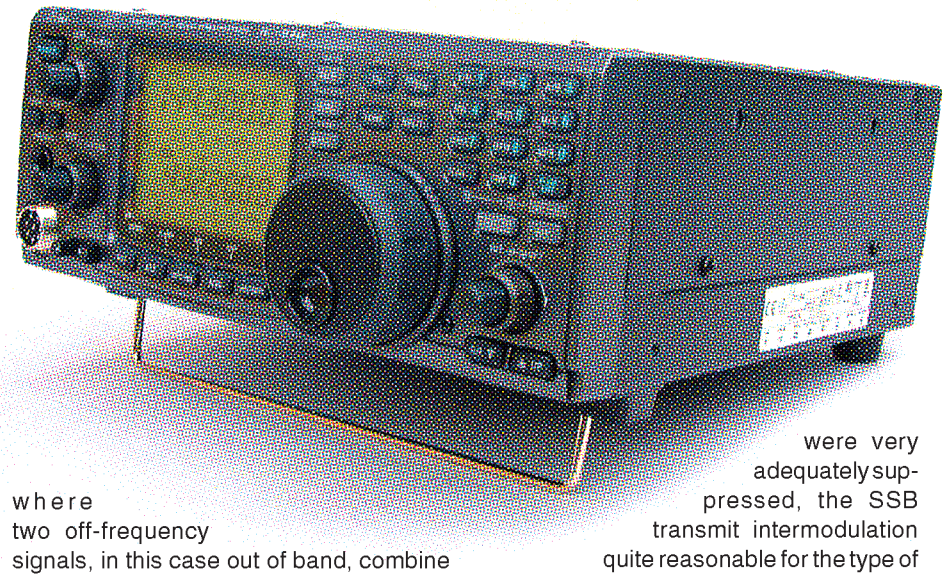
the other bands. I appreciated the programmable band search, and often left the transceiver in this mode, searching two bands simultaneously, while I was doing other things in the shack. Try as I might, I found the combined RF gain and squelch control difficult to get used to. Fortunately, Icom had already pre-empted this and allow, via the 'set' mode, for this to act instead just as a squelch control on FM and just an RF gain control on SSB / CW, which I preferred. I found a handy facility was a memory channel 'mode scan', where I could scan just those channels programmed with USB frequencies, or those with FM frequencies - quite useful! Overall I was very pleased with the general operating capabilities, especially the smooth tuning, my only regret was that I couldn't have all three bands active at the same time!

I found 9600 baud packet data to work perfectly with the transceiver, with none of the messy 'fiddling' I sometimes have to do for weak signal demodulation - top marks Icom. On FM speech, switching in the NFM mode gave me excellent rejection of even strong 12.5kHz-spaced FM signals. On both SSB and FM, all audio reports on my transmitted signal with the supplied fist mic were positive, and I found the high transmit power available on both 2m and 70cm was useful in getting my signal where I needed it. The rear panel ALC input would be handy for use with an external transmit amplifier, although most users would find the drive level on 2m and 70cm to be too high for most use. A quick initial adjustment of the front panel power control would be in order here. Only on 23cm did I sometimes switch in my 50W linear amplifier when needed, the 10W drive on 23cm being perfect for this. I did seem to encounter a slight degree of noise on even very strong local 23cm SSB received signals, less so on 2m and 70cm, but it did suggest to me that synthesiser phase noise could be creeping in here.

With my omni-directional antenna, or the beam pointed at a local PMR (Private Mobile Radio) site, I did occasionally come across the odd burst of receive intermodulation, where two off-frequency signals, in this case out of band, combine within the receiver to give a third unwanted signal. But this was never enough for me to miss out on a contact and I do admittedly live in an RF congested area. However, hill-top contest operators may need to take care.



IC-910 with bottom cover removed.



SATELLITE OPERATION

BOTH SATELLITE Mode B (70cm uplink, 2m downlink) and Mode J (2m uplink, 70cm downlink) can be used, and with the 23cm module fitted, satellite Mode L is added. Normal and reverse VFO tracking is available, depending whether you're using an inverting transponder or not. For example, with an inverting transponder, when you tune upwards in frequency on 2m you'll need to tune downwards, ie in the reverse direction, on 70cm. To save twisting multiple VFOs while you're trying to 'net', the IC-910 does it for you by automatically linking the VFO on each of your selected bands. The set usefully also has 10 satellite memory channels to memorise both uplink and downlink frequencies and operating modes so you don't need to re-initialise each time you switch satellites. This worked fine in 'real-time' use on the 'birds', and the useful sub-band tune facility let me manually correct for the different Doppler shifts between bands.

LAB TESTS

THE RECEIVE performance figures show the IC-910 to be adequately sensitive, the 23cm receive sensitivity being excellent, with reasonable if not outstanding unwanted strong-signal rejection all-round. The FM adjacent channel rejection was very good, although the SSB / CW skirt selectivity started to broaden out a little down below -50dB or so, possibly confirming the slight amount of phase noise I suspected from on-air tests. The close-in intermodulation rejection likewise appeared to be artificially improved by the noise masking the signal levels. On transmit, the harmonic levels were very adequately suppressed, the SSB transmit intermodulation quite reasonable for the type of PA in use, although some close-in noise was evident on the recorded 23cm plots.

PSU LIMITATION

I TESTED THE IC-910H using three different amateur-specification (non-Icom) power supplies, each capable of at least 30A output, and I had severe problems with one. Here, when transmitting on maximum power on 2m and occasionally on 70cm, even when into a dummy load, the indicated current on the front-panel PSU meter would slowly rise and the transmission became unstable, the transceiver eventually switching itself off. Transmitting at 25W or below was fine.

Investigation showed this to be RF fed via the DC cable back into the CE-marked PSU, which affected its operation and regulation. The mandatory standard for commercially-available amateur equipment, ETS 300 684, has an optional 'exclusion' in the required tests for short DC cables, eg less than 3m in length, where tests of such RF levels etc at the DC port need not be made. Could this explain the fairly short 1m DC cable supplied with the IC-910H? Mind you, a short cable is by far the best for reducing voltage drop!

CONCLUSIONS

ALTHOUGH I wouldn't term the IC-910H a hill-top contest grade transceiver, it should very adequately fulfil the needs of many VHF / UHF DXers and amateur radio satellite users, as well as being a powerful FM transceiver in its own right for speech, data, and *DXCluster* use. The facility of built-in remote masthead amplifier control will be a boon to many serious users, and the 23cm option is a welcome addition especially for mode L satellite enthusiasts as well as terrestrial and 'moonbounce' operators.

Our thanks to Icom UK, tel: 01227 741741, for the loan of the review transceiver. ♦

ICOM IC-910 LABORATORY RESULTS

All measurements carried out on 144.300MHz in USB mode, with attenuator disabled (default setting) and with set powered from stabilised 13.8V DC using supplied length of DC lead, unless otherwise stated.

RECEIVER

FM Adjacent Channel Selectivity
Measured on FM as increase over 12dB SINAD level of interfering signal with 400Hz modulation at 1.5kHz deviation, causing 6dB degradation in the 12dB SINAD on-channel signal.

	FMN	FM
+12.5kHz	60.3dB	29.6dB
-12.5kHz	60.2dB	31.6dB
+25kHz	68.5dB	67.7dB
-25kHz	68.3dB	68.6dB

3rd Order Intermodulation Rejection
Increase over 12dB SINAD level of two interfering signals giving identical 12dB SINAD on-channel 3rd order intermodulation product.

10kHz spaced signals:	81.5dB
20kHz spaced signals:	83.2dB
50kHz spaced signals:	78.1dB
100kHz spaced signals:	77.1dB

S-Meter Linearity

Indication	Sig Level	Rel Level
S1	0.29µV pd	-18.8dB
S2	0.33µV pd	-17.7dB
S3	0.39µV pd	-16.3dB
S4	0.47µV pd	-14.6dB
S5	0.65µV pd	-11.8dB
S6	0.88µV pd	-9.2dB
S7	1.23µV pd	-6.3dB
S8	1.85µV pd	-2.7dB
S9	2.56µV pd	0dB ref
S9+20dB	20.9uV pd	+18.3dB
S9+40dB	153µV pd	+35.6dB
S9+60dB	902µV pd	+51.0dB

SSB / CW Selectivity

-3dB	1.89kHz
-6dB	2.34kHz
-20dB	2.81kHz
-40dB	3.43kHz
-60dB	4.45kHz

Blocking
Measured as increase over 12dB SINAD level of interfering signal, unmodulated carrier, causing 6dB degradation in 12dB SINAD on-channel signal.

±50kHz:	88.2dB
±100kHz:	94.0dB
±200kHz:	99.4dB

S-Meter S9 Level

Freq MHz	Sig Level
144.300:	2.56µV pd
433.200:	2.98µV pd
1296.200:	1.85µV pd

Sensitivity
Input level in µV pd required to give 12dB SINAD.

SSB / CW	
144.300MHz:	0.07µV pd
433.200MHz:	0.09µV pd
1296.200MHz:	0.08µV pd
FM	
145.500MHz:	0.16µV pd
433.500MHz:	0.16µV pd
1297.500MHz:	0.14µV pd

Image Rejection
Increase in level of signal at the first IF and second IF image frequencies, and the first and second IF, over level of on-channel signal, giving identical 12dB SINAD signal.

Freq MHz	1st Image Rej	1st IF Rej	2nd Image Rej	2nd IF Rej
144.300	88.8dB	96.4dB	-	-
433.200	86.4dB	98.0dB	94.5dB	94.2dB
1296.200	>100dB	>100dB	72.9dB	>100dB

TRANSMITTER

FM Deviation

	Peak	Toneburst
145.500MHz (FMN):	2.40kHz	1.65kHz
145.500MHz (FM):	5.09kHz	3.50kHz
433.500MHz (FMN):	2.37kHz	1.66kHz
433.500MHz (FM):	4.95kHz	3.46kHz
1297.500MHz:	5.10kHz	3.71kHz

Harmonics
Measured level of transmit harmonics up to 2GHz.

Freq	2nd	3rd	4th	5th	6th	7th
144.300	-78dBc	-72dBc	>-90dBc	>-90dBc	>-90dBc	>-90dBc
433.200	-87dBc	-71dBc	>-90dBc	-	-	-
1296.200	-	-	-	-	-	-

SSB IMD Performance
Measured with a two-tone AF signal, results given as dB below PEP level, measured at mid ALC with SSB processor off. Tabular figures refer to level of unwanted signal below (lower in frequency than) the wanted two-tone signal, and above (higher freq than) the two-tone TX signal.

	3rd	5th	7th	9th	11th Order
144.300MHz					
Below 2-tone sig:	-38dB	-56dB	-52dB	-58dB	-62dB
Above 2-tone sig:	-38dB	-53dB	-54dB	-56dB	-62dB
433.200MHz					
Below 2-tone sig:	-35dB	-43dB	-48dB	-52dB	-58dB
Above 2-tone sig:	-34dB	-41dB	-46dB	-52dB	-57dB
1296.200MHz					
Below 2-tone sig:	-29dB	-38dB	-42dB	-43dB	-44dB
Above 2-tone sig:	-29dB	-36dB	-41dB	-43dB	-45dB

TX Power and Current Consumption

Freq MHz	Max Power	Min Power
144.300:	101W/19.2A	2.23W/7.6A
433.200:	71W/21.8A	1.53W/7.0A
1296.200:	10.2W/4.7A	0.23W/2.6A

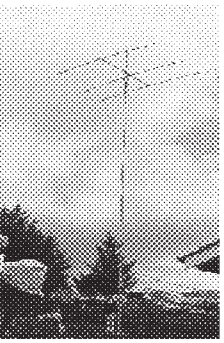
Frequency Accuracy

144.300MHz:	+182Hz
433.200MHz:	+104Hz
1296.200MHz:	-86Hz

product news

TENNAMAST AMATEUR RADIO MASTS

TENNAMAST (SCOTLAND) Ltd offers belated congratulations to the GM5V team on winning the 2000 RSGB IOTA contest, as reported in last month's *RadCom*. The mobile mast which the group used to support their TB3 beam is a 35ft mobile Tennamast (see photograph on page 54 of the June *RadCom*). Similar units have been supplied to Raynet groups, Eindhoven University, Humberside Police, British Gas Northern and East Sussex Fire Service. Tennamast has also supplied Windsock masts to most UK and Irish airports.



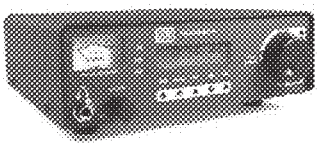
The new Radio Amateur Mast brochure from Tennamast is currently with the printers and will be available shortly. To obtain a copy, together with prices, contact **Norrie Brown, GM4VHZ, at Tennamast (Scotland) Ltd, 81 Mains Road, Beith, Ayrshire KA15 2HT; tel: 01505 503824; e-mail: nbrown@tennamast.com; Website: www.tennamast.com**

AMLOG LOGGING SOFTWARE

***AMLOG* version 5** is the latest release of the **Amlog logging software** designed to replace the paper logbook in the shack. While having many features, it is still easy to use. Demo disks are free, updates from earlier versions cost £8 and the full version, which arrives on two 3.5in floppy disks, costs £19, inc P&P. For further details please contact **Eric Gaze, G8NKA, Zentek, 132 Gladstone Street, Darlington, Co Durham; tel: 01325 482344; fax: 01325 255009; e-mail: zentek@ic24.net**

NEW FROM NEVADA

THE NEW **Palstar R30 portable communications receiver** has recently been introduced to the UK by **Nevada**. The R30 HF shortwave receiver is a compact, high-performance radio capable of receiving multimode signals in the 100kHz to 30MHz spectrum. It provides excellent strong signal handling, high sensitivity and dynamic range to eliminate annoying intermodulation interference. The radio also features 100 programmable memories, variable rate tuning and switchable bandwidths in all modes. The R30 receiver is also equipped with a 10 x AA cell internal battery pack that automatically connects to the radio when the external adaptor plug is disconnected, allowing portable operation and making it an ideal receiver for the traveller. The R30 sells for £399.



Palstar has also introduced a new **4:1 balun,** the **B4000**, rated at 4kW. The balun is designed for outdoor use and may be used to terminate open wire or balanced feeders before they come into the shack. It can be mounted remotely at the base of a mast or tower, or just outside the shack window. Used with an open wire fed doublet antenna, the balun (with a suitable ATU) will give coverage of all nine HF amateur bands. The B4000 will sell for £79.95.

The **Alinco DJ-X3** is a new **handheld scanner** covering 100kHz to 1300MHz on AM, FM and WFM. It has 700 memory channels and provides 8.33kHz tuning steps for the airband. There is a built-in stereo decoder, providing stereo VHF / FM reception when used with headphones. The DJ-X3 sells for £129.95 and it and the Palstar products are available from **Nevada, Unit 1, Fitzherbert Spur, Farlington, Portsmouth PO6 1TT, tel: 023 9231 3090; e-mail: info@nevada.co.uk; Website: www.nevada.co.uk**

WORLDSPACE AT NEVADA

The satellite broadcasting company **WorldSpace** has appointed **Nevada** as an official UK distributor for its portable satellite radio range. WorldSpace owns and operates three geostationary satellites transmitting over 40 direct digital audio broadcast programmes to a large part of the world. Commenting on the appointment, Mike Devereux, G3SED, MD of Nevada said: "WorldSpace has ambitious plans for future satellite broadcasting and wants to increase rapidly sales of its satellite receivers in the UK. Our success in distributing portable radios for Grundig, Roberts and the BBC World Service made Nevada an ideal partner."

Atef Awad, WorldSpace Corporate Development Director, concluding the distribution deal with Mike Devereux, MD of Nevada.

For more information on the WorldSpace system visit www.worldspace.com or contact **Nevada** distribution on **tel: 023 9231 3095** for details of the WorldSpace radio range and your nearest stockist.

HAYDON BREAK-IN

HAYDON COMMUNICATIONS reports that it has recently suffered two break-ins at its headquarters in Aveley, Essex. Mike Haydon warns individuals to be vigilant when purchasing second-hand items, particularly if they are sealed or appear to be in brand-new condition. Anyone with suspicions is invited to call Mike with the serial number and description of the item.

Haydon Communications, Unit 1, Thurrock Commercial Park, Purfleet Ind Est, London Road, Aveley, Essex RM15 4YA; tel: 01708 862524.

iLINK INTERNET LINKING

RECENTLY RELEASED and in beta stage, the new UK **iLINK** system is already proving a great success. iLINK is an Internet remote repeater / link access project running under Windows that allows access over the Internet and also via radio. The iLINK system is controlled by DTMF tones from your radio keypad - and from here you can connect to any other iLINK system - be it a repeater or simplex link. There is no VOX unit as the PTT is driven by the software using an intelligent interface. Further information can be obtained from the Website at **www.aacnet.net**

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

NEW KENWOOD HANDHELD & SCANNER

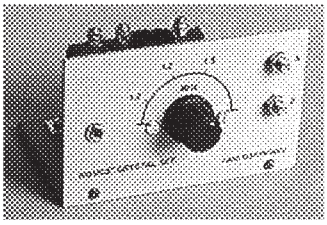
KENWOOD UK has confirmed information issued at the Dayton show, where visitors saw the first **Kenwood** amateur **144/430MHz portable transceiver** featuring a built-in full-range **scanner**. The sample shown at Dayton was a prototype of the American-market triple-band radio, which includes the 220MHz band not available in Europe. The UK / European version does not cover this band on transmit and therefore will have a different model designation – it will be called the **TH-F7E**. The TH-F7E's main features include:

- Receives two frequencies simultaneously, even on the same band.
- 0.1 - 1300MHz reception.
- FM, FM-W, FM-N, AM plus SSB / CW receive.
- Internal VOX.
- Internal ferrite rod antenna for AM broadcast reception.
- 1200 / 9600 packet ready (with external TNC).
- 434 memory channels.
- Lithium-Ion battery as standard (7.4V / 1550mAh) giving 5W output.
- Windows Memory Management software (free download from Kenwood Website).

The price is not yet fixed, but is expected to be under £300 and first deliveries will be in the autumn.

THE 'NOVICE' SOLDERLESS CRYSTAL SET

DESIGNED PARTICULARLY with the youngster in mind (or, come to that, the 'oldster' with a touch of nostalgia!), the **Lake Electronics 'Novice' Crystal Set** brings back something of the flavour of the 1920s. Original-style components can no longer be obtained except as high-priced and rare vintage items, so Lake has used their modern counterparts. With this set, there is *no need to solder* as all connections are made to screw terminals. All parts are supplied, including the smart front panel - the only thing you have to find is a piece of wood for the base-board. *Don't* expect to be able to listen to the world on this receiver! However, you will have great fun building it and it *will* bring in some strong stations given a reasonable aerial and earth. You can treat yourself to a little bit of nostalgia for just £8.00 plus £1 P&P.



Lake Electronics is now also supplier of a range of **vintage books**. Stock can change very quickly, so always phone or e-mail before ordering. Books are available mail order only: because many items are not kept at the Lake Electronics address, they are not available for examination except by prior arrangement.

Lake Electronics, 7 Middleton Close, Nuthall, Nottingham NG16 1BX; tel: 0115 9382509; e-mail: g4dvw@btinternet.com

MORSE KEY COLLECTOR'S CD

ATTENTION ALL collectors of Morse keys! These days, Morse keys are seen as a 'collectable' item, and not just by radio amateurs. If you're a collector of keys, or are thinking of starting a collection, the ***Telegraph Collector's Reference*** **CD** is an absolute must. Compiled in USA, where Morse key collecting has been a major off-shoot of the amateur radio hobby for decades, Tom Perera, W1TP, lists many thousands of Morse keys dating from the 19th century up to the 21st. There are thousands of pictures and descriptions, including 'Camelback' keys, semi-automatic 'bugs', sounders, Vibroplex, McElroy radio keys, WWII models from USA and Japan, 'spy' keys and numerous others.

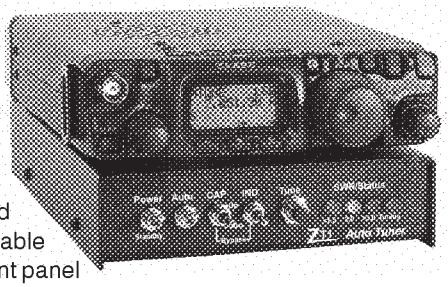
The *Telegraph Collector's Reference* CD is available from **RSGB Sales**: see the advertisement on page 25 for further details.

BROADCASTS IN ENGLISH

THE SUMMER 2001 edition of *Broadcasts in English* is now available from the British DX Club. It was compiled by BDXC-UK editor Tony Rogers and lists international broadcasts in English on shortwave and mediumwave for the Summer 2001 (A-01) schedule period. It is in time order throughout and covers all target areas. Transmitter sites are included where known. A comprehensive guide to DX and media programmes is also included. Copies of this 40-page booklet are available to non-members of BDXC for just £2 inc P&P (UK: overseas orders please check price) from: **British DX Club, 126 Bargery Road, Catford, London SE6 2LR; Internet: http://www.bdxc.org.uk**

NEW FROM WATERS & STANTON

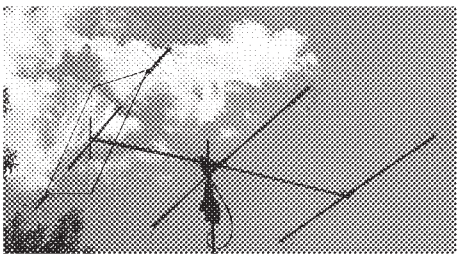
WATERS & STANTON are now stocking the new **LDG Z11 Auto Tuner**, a **30W automatic ATU** designed for the FT-817 and similar QRP HF transceivers. The ATU is able to match a wide range of impedances from around 6Ω to 800Ω. This allows it to be used with any coax-fed system and some medium-impedance end-fed wire configurations. The unit is triggered by RF, and levels as low as 100mW are capable of driving it. Comprehensive front panel controls enable it to be used as a fully automatic ATU or with manual intervention for fine tuning. A bypass position is also included and four LEDs monitor the VSWR status. Power requirements are 11 - 15V and, in line with QRP operation, the unit draws around 75mA whilst tuning and zero once tuned. The last tuning adjustment remains stored even when power is disconnected. Rear terminations are SO-239 sockets, size is 127 x 216 x 32mm and weight is 425g. The price is around £190.



The **SG-239 HF 'Smartuner'** is a **compact, low-cost automatic ATU** from **SGC** which, despite its small size, is capable of handling 200W. It covers 1.8 to 30MHz and is suitable for long wires, dipoles or line fed antennas as it can handle impedances from 0.2 to 5000Ω. The unit is not waterproofed, so is intended for shack use. The SG-239 costs £249.95.

W&S now stock the new **Heil HS-706 headset and boom mic** for the Icom IC-706. Primarily designed for mobile operation, the HS-706 comprises a single earpiece headset with adjustable boom microphone, PTT button and mic plug. The unit incorporates an FET amplifier for correct drive to the IC-706 and the audio is fed directly through so that VOX operation is also possible for true hands-free operation. The retail price is £59.95.

Two new **mini-beams** are available from **TGM Communications** to complement the successful MQ-1 and MQ-2 two-element beams. They are the **MQ-3**, covering 6, 10, 15 and 20m and the **MQ-4**, covering 6, 10, 12, 15, 17 and 20m. Both have three elements on a 3.12m boom, with the reflector being a quad element. The MQ-3 is available at £399 and the MQ-4 is £499. **Upgrade kits** are also available to convert the two-element beams to three elements: the **MQ 3KT** costs £99.95, while the **MQ 4KT** is £129.95.

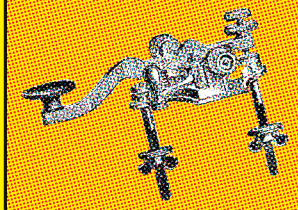


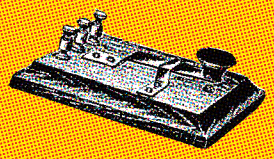
Waters & Stanton plc, 22 Main Road, Hockley, Essex SS5 4QS; tel: 01702 206835; e-mail: sales@wsplc.com; Website: www.wsplc.com

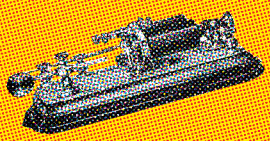
NEW CD PRODUCTS

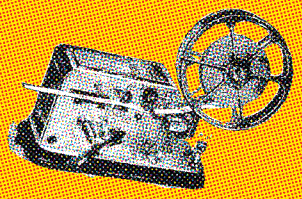
PERERA'S MORSE KEY COLLECTORS CD

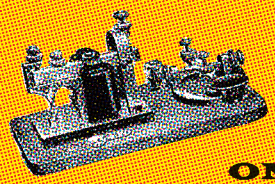
A MUST FOR ALL COLLECTORS OF MORSE KEYS

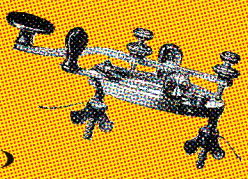












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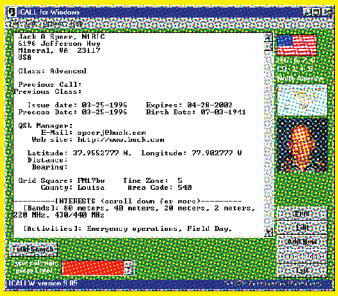

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RSGB IOTA ANNUAL LISTINGS 2001

by Roger Balister, G3KMA*, RSGB IOTA Manager

LAST YEAR'S rash statement was "the 2001 Honour Roll will make interesting reading". Revision 2000 had led to the addition of 58 new IOTAs, almost all split from existing groups. The Committee had decided that QSLs for past contacts with islands in these new groups could count, but only after reference numbers had been issued following fresh activity. The need for a further operation was considered essential, not just to stimulate activity but, more importantly, to level the playing field. Acceptance of old cards meant of course that credits for the 'original' groups would need to be rechecked to ensure that they properly counted. The unknown factor in all this was the extent to which members could, by the Honour Roll deadline, produce valid QSLs for the new groups and replacements where necessary for the original ones. This could significantly affect scores. The result could be very similar to throwing a pack of playing cards in the air and seeing how they landed!

A word on why all this was necessary. A close comparison of the 1998/99 and 2000 *RSGB IOTA Directories* will show that IOTA groups now have their geographical co-ordinates precisely defined with all valid islands within the resulting 'rectangles' listed. This exercise necessitated restructuring of some groups to avoid confusing overlaps while at the same time identified for removal those previously listed groups which were found to have no valid islands. This, together with the rounding up of the IOTA group ceiling to 1200, created scope for the addition of the 58 new groups. The revision was crucial to the long-term future of the programme. Now done, there is no compelling reason why it should ever need to be repeated!

*La Quinta, Mimbridge, Chobham, Woking, Surrey GU24 8AR.

ONE NEW IOTA A WEEK

A RECORD 55 previously unnumbered IOTAs saw activity in the 12 months under review. This included a staggering 36 of the 58 'New Groups' announced in the *Directory*. Already by early July DXpeditions were beginning to trip over each other in the rush to be the first to operate. The impact was most noticeable in Europe where some groups had resident amateurs or were otherwise quite easy to activate. Soon a lot of attention was being paid to the new groups fringing the Black Sea, where the littoral countries had pressed so long for IOTA recognition. This was their day! Most of the new groups outside Europe were more difficult to access, so it took longer but they shared in the activity.

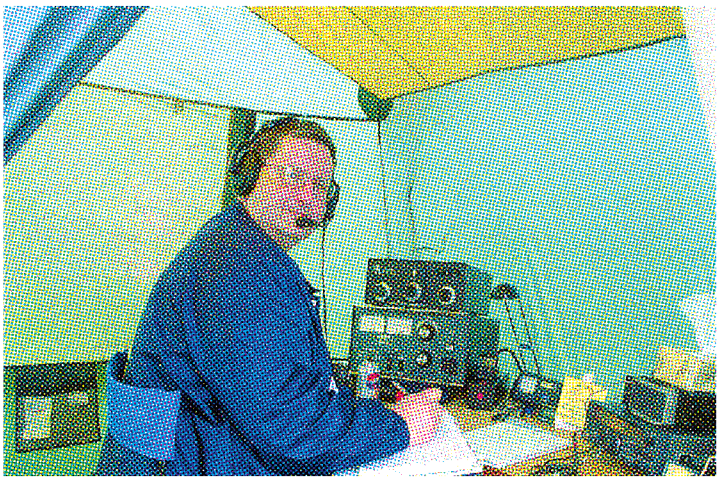
EFFECT ON SCORES

WITH A SCORE of 970 Jean-Pierre, F9RM, still holds number one position, although, following recent activity from some of the rarest FO groups, the margin is now noticeably closing. Livio, I1ZL, has marked up 962 groups; Claudio, I1SNW, 956 and Antonio, EA4MY, 955. John, G3AAE, who so sadly became a Silent Key last autumn, had sufficient QSLs to place him equal sixth with Garry, VE3XN, and Don, W9DC, at 949 groups. Eddy, ON6HE, follows close on their heels with 948 with Mat, ON5KL, one behind. Interestingly, despite the unsettling effect of the changes, the top nine stations appear within the top 10 positions in the same order this year as last. The close correlation continues down through to position 50 with only four stations breaking through to join them. The speed of progression from the Annual Listing to the Honour Roll has increased with 24.3% of the membership now having a score of at least 492 representing 50% of the total number of activated groups.

IOTA: THE ACHIEVEMENT

THE REAL achievement of the high scorers in IOTA needs to be acknowledged. It is easy to focus on the IOTA groups that are 'easy' to work, but they probably number less than one third of the total 1000 groups. An equal number come into the category of being very difficult, having had less than five valid operations, very few lasting longer than three or four days. The remaining

28



The remote location (left) and operating tent (right) of KL7AK/P, who operated from Cove Island in the Kudiakof Islands, NA-216 (part of the Aleutian chain of islands in Alaska) in August 2000.

IOTA HONOUR ROLL - MAY 2001

(minimum qualification = confirmed QSOs with half of activated IOTA island groups)

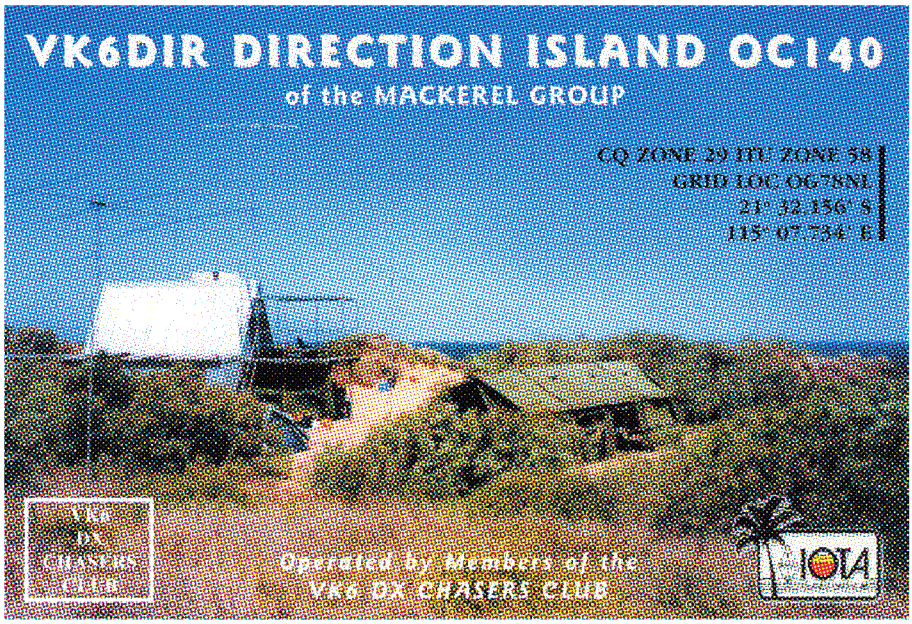
1	**F9RM**	**970**	73	DF2NS	847	143	JE1DXC	756	217	DL5ZG	664	288	IK2ILH	600	362	DL5MX	532
2	**I1ZL**	**962**	74	K8SIX	846	143	KD1CT	756	217	I4UDV	664	288	JH1QVW	600	363	G4XOP	531
3	**I1SNW**	**956**	75	DL6MI	843	147	DK2UA	754	219	PA3EXX	661	288	W7OF	600	364	F5NPS	529
4	**9A2AA**	**955**	76	IK4CWP	838	147	N6BOI	754	220	OH5PA	659	292	KM4RX	599	365	HB9BHY	527
5	**EA4MY**	**951**	76	OK1JKM	838	149	I5ZJK	752	221	OZ1ACB	658	293	OE1MEW	598	365	IK0AZG	527
6	**G3AAE**	**949**	78	I1WFF	837	150	AA5AT	750	222	N5FW	657	294	CT1AHU	597	365	OZ1HPS	527
6	**VE3XN**	**949**	78	N5UR	837	151	F6FHO	748	223	G3SMP	655	294	DL6KVA	597	368	IK8JWA	526
6	**W9DC**	**949**	80	DL1SDN	835	151	KC8PG	748	223	G3UAS	655	294	G0RCI	597	368	IT9RZR	526
9	**ON6HE**	**948**	80	F6ELE	835	153	DK2PR	745	223	W1ENE	655	297	IK8JVG	596	370	IK1AOD	525
10	**ON5KL**	**947**	82	ON4QP	829	153	VE3MDQ	745	226	G0ANH	654	298	K8AJK	595	370	IK4DCS	525
11	**I8KNT**	**946**	83	DK6NJ	827	155	VK7BC	742	226	I4GAS	654	299	N3ERM	591	370	IK4SDY	525
12	**GM3ITN**	**945**	83	G3VJP	827	156	G0LRJ	741	228	I2JSB	653	300	PA2JHO	588	370	VE2NW	525
13	**I8XTX**	**944**	85	I8YRK	823	156	G0MYC	741	228	N7RO	653	301	HB9CEX	586	374	EA3JL	524
14	**IK1JJB**	**943**	85	W2FXA	823	156	G3ZBA	741	230	CT1EEN	652	302	SM7TE	585	374	IK4IDF	524
15	**F2BS**	**932**	87	OE6MKG	820	159	AD5A	738	230	DL6MST	652	303	DL6ATM	584	374	W0GAX	524
16	**DL8NU**	**931**	87	ZL2VS	820	160	K5MK	736	232	G3HTA	650	304	CT1BY	583	377	DL1XE	523
17	**G3GIQ**	**929**	89	ON5NT	819	161	CT4NH	734	233	DL6DK	648	305	K1OA	582	377	F5RBB	523
17	**ON7EM**	**929**	90	SM0AJU	818	162	I1CAW	733	234	IK4HLU	645	305	N4AH	582	377	JR7TEQ	523
19	**K9PPY**	**927**	91	F6DZU	817	162	N6VR	733	235	JH2AYB	641	307	IT9YRE	580	377	KB5GL	523
19	**ON4AAC**	**927**	92	F6CUK	814	164	W6ED	732	235	S52KM	641	308	G3XON	579	381	G3EZZ	522
21	WD8MGQ	926	93	IK8PGC	813	165	N5ET	731	235	W1OX	641	308	W8WFN	579	382	DK6IP	520
22	IT9GAI	925	93	N8JV	813	166	G3TOK	730	238	JA1QXY	636	310	S51TE	573	382	HB9BMY	520
23	F6AJA	924	95	G4SOZ	810	167	I1EEW	729	238	UA4SKW	636	311	DL8YR	572	384	K2SHZ	518
24	VE6VK	923	96	SM6CVX	808	168	JF1SEK	728	240	I2LXA	635	311	I4CSP	572	385	7K3EOP	517
25	DK6NP	916	97	EI7CC	807	169	EA5KB	727	240	S51ZY	635	311	ON4ADN	572	385	OE2KGM	517
25	OM3JW	916	98	G3TJW	806	170	UY5XE	725	242	DL5SBA	633	314	DL2MEV	570	385	OE3JHC	517
27	N7TZ	915	99	G3OCA	805	171	N4QQ	724	243	DL8DXL	632	315	HB9CMZ	569	385	WC6DX	517
27	OH2QQ	915	99	G4BWP	805	172	DL5MU	722	243	VE3JV	632	316	PY2DBU	568	389	I4JBJ	516
29	K8DYZ	914	101	G3XTT	804	172	W9HAO	722	245	DK8UH	631	317	IK2PZG	566	389	JA2CEJ	516
30	ON4XL	913	101	GW3ARS	804	174	EA7ABW	721	246	F5IL	630	317	IK4PMA	566	389	K5FNR	516
31	G4WFZ	912	101	VE7YL	804	175	WF1N	718	246	I1FY	630	319	DL1BDD	565	389	K8LJG	516
31	I0OLK	912	104	HB9AFI	803	176	GM0KCY	717	246	I1ZXT	630	320	DJ9HX	564	389	W6YOO	516
33	G3ZAY	907	105	F6CYV	802	177	I4EAT	714	246	JO1WKO	630	320	WF5E	564	394	G3PFS	515
34	W4BAA	905	105	SM5DJZ	802	177	I8YZP	714	250	DJ8QP	627	322	G0MSM	563	394	HB9BIN	515
35	DK1RV	902	107	EA7DUD	801	179	ON4ON	711	250	DL9JH	627	323	IK4WMA	562	396	HA5DA	514
35	I2YDX	902	108	K8NA	800	180	G3MLX	710	250	PY5PS	627	323	JA1EY	562	397	F6IMB	512
35	W5BOS	902	108	W3KH	800	180	I8LEL	710	253	G3SJX	625	325	N5OUE	559	397	G3RTE	512
38	9A2TW	901	110	W9HA	796	182	ON5TW	708	253	JA9IFF	625	326	JA1GRM	558	397	IK7MXB	512
38	EA5AT	901	111	EA3KB	795	183	DL8DSL	706	255	G4DUW	623	326	JA5IU	558	400	ON4BB	511
38	I1HYW	901	112	IK1ADH	793	183	K1HTV	706	256	SM5CZY	622	328	DF9ZN	557	400	WB3DNA	511
38	IK2MLY	901	113	HB9RG	792	183	K3FN	706	257	IK2UEC	619	329	JA8IYI	555	402	DL4MCF	510
42	IK1AIG	899	114	CT1EEB	791	186	EA1KK	703	258	F5PAC	618	330	IK8CVZ	552	403	GW0VMZ	509
42	K7SO	899	115	4X4JU	786	187	W9NZM	702	259	AB5EB	617	331	KC5E	551	403	PY4OY	509
44	K6DT	898	115	KB8O	786	188	IK2IGX	700	259	DL8MLD	617	331	VE2FVD	551	403	SM5BMB	509
45	I8ACB	897	117	GM0AGN	784	189	K2VV	699	259	IT9HLR	617	331	VE3LYC	551	406	I2MQP	508
46	I4LCK	896	118	KH6WU	783	189	RW4HW	699	262	N6JV	616	334	5B4AFB	550	406	JH2KXN	508
47	4Z4DX	894	119	G4LVQ	781	189	WT2O	699	263	NN2C	614	334	IK1NEG	550	408	JM1XCW	507
48	F6BFH	892	120	N6AWD	780	192	UR5LCV	698	263	WB2YQH	614	334	W3KO	550	409	G3ZQQ	506
48	OE3WWB	892	121	N6PYN	779	192	W2JZK	698	265	F5HNQ	613	337	G0KIK	549	409	IK4MSV	506
50	G3ALI	891	121	OZ5MJ	779	194	EA9PB	697	266	EA5OL	612	337	OE6GRG	549	409	OH3MIG	506
51	I2MWZ	889	123	GJ3LFJ	777	195	DL8FL	696	266	JA7JI	612	339	DL2DXA	548	412	DL1DWT	505
52	I2FUG	888	124	G0APV	775	196	VE3NSZ	694	268	IK1QFM	611	340	DL3ECK	547	412	HA0HW	505
52	OZ4RT	888	125	IK2EUY	774	197	W1CU	692	268	VO1XC	611	341	EI2HY	546	412	UA6AF	505
54	F6DLM	883	126	I2YWR	773	198	DK6AO	690	270	VE6PW	610	341	G3LAS	546	415	WA7OBH	504
55	EA8AKN	881	127	W1DIG	772	199	N5XG	688	271	W0BBT	609	341	G4XRX	546	416	W3SI	503
55	IK8DDN	881	128	G8JM	771	200	G3YAA	683	272	HK3JJH	608	341	KH7RS	546	417	CT1DIZ	502
55	ON4FU	881	129	HB9BVV	770	201	DL7CW	682	272	S51RU	608	345	DL5AWI	543	417	K2XF	502
55	VE7IG	881	130	CT1UD	769	202	KA5TQF	680	272	SM6TEU	608	346	KD6WW	542	417	W1KSZ	502
59	WB9EEE	877	131	AA7AV	768	202	VE3PRU	680	272	WD0FTD	608	347	DL8MER	541	420	DK1FW	501
60	IK1GPG	873	132	I1TBE	765	204	DL1SCQ	678	276	F8PX	607	347	F2YT	541	420	F6HMJ	501
61	CT1ZW	872	132	OH2BLD	765	204	F9MD	678	276	HB9BZA	607	349	IT9FXY	540	420	SM3TLG	501
62	I2VDX	871	134	DL8USA	762	206	G3PMR	675	278	LA2PA	606	349	K0DEQ	540	420	SP5TZC	501
63	F6AXP	866	134	F6CKH	762	207	IK8TWV	673	279	DL1BKK	605	349	N3CWP	540	424	KI6T	500
64	W1NG	863	136	SM6CAS	761	208	HA1AG	672	279	DL2NES	605	352	AB5C	539	424	W5RQ	500
65	N5JR	862	137	ON4IZ	759	209	W4ABW	671	281	JA8RJE	604	352	JA4UQY	539	424	WA3HUP	500
65	VE7IU	862	138	F5XL	758	210	AA9DX	670	281	W7MO	604	354	HA6NF	536	427	4X4RE	499
67	W4DKS	860	138	G3RUV	758	210	WW1V	670	283	I0ZYA	601	355	DJ4GJ	535	427	F5NLY	499
67	ZL1ARY	860	138	W5KN	758	212	G3HSR	669	283	IK4HPU	601	355	EA3BT	535	427	W9CZI	499
69	HA0DU	857	141	DJ4XA	757	213	GI0TJJ	668	283	KQ4YI	601	355	G3AEZ	535	430	WB1BVQ	498
70	F9GL	855	141	OE3SGA	757	214	IK2WAL	666	283	SM5JE	601	358	I2PQW	534	431	DF7GK	497
71	VK9NS	849	143	DL2SCQ	756	214	VK3UY	666	283	SM7CNA	601	358	JR6SVM	534	432	G4VXT	495
72	VE3LDT	848	143	G4RFV	756	216	N6JM	665	288	G3OAG	600	358	OZ7DN	534	432	JA1BNW	495
												361	G3KYF	533	434	WD9FEN	493

IOTA ANNUAL LISTING - MAY 2001 (RSGB MEMBERS)

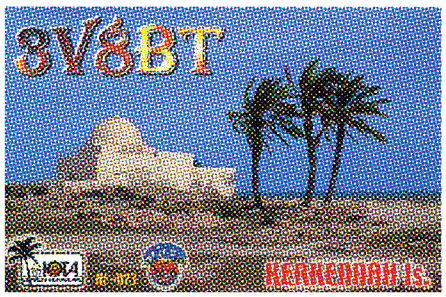
(minimum qualification = confirmed QSOs with 100 IOTA island groups)

435	G3SWH	489	818	GM0OYU	278	1084	G3JUL	202	1300	G3CWW	141
452	GM3BCL	466	836	G4MVA	271	1100	G0SWG	201	1300	GM0LVI	141
458	G3DZS	461	841	G3OLY	269	1109	G3DCC	200	1307	G2BFO	140
471	G4NXG/M	449	845	G4FAM	268	1109	G3IZM	200	1314	G2FQR	138
491	GW3NXR	436	845	MM0ABJ	268	1109	GM4CHX	200	1337	G3KNU	134
493	G3XPO	435	850	GW4OFQ	266	1119	GM4SID	199	1343	SM6CZU	133
495	G0NXJ	434	853	G3VOO	265	1129	G4VMX	197	1353	G4TGK	132
500	G0VBD	432	858	G8DR	261	1135	G5MY	196	1356	G3JQJ	131
505	I1BUP	429	864	G0FUV	259	1135	GM4PVC	196	1356	GM4ELV	131
511	G3KWK	426	864	G3GHY	259	1139	G4FVK	195	1374	G3WCY	127
533	AB5EU	412	868	G0SBQ	258	1142	G4YYR	194	1374	G4ZME	127
533	GM0PKX	412	868	G3VOF	258	1147	G4POF	190	1379	G0SJC	126
537	G3NDC	410	871	G0PHN	257	1149	G0GRK	189	1379	G0XBI	126
537	G4DOW	410	871	GW4TSG	257	1151	GW0SLM	187	1379	G3WRD	126
548	G4CMT	405	876	G0PCF	255	1153	G3JYP	186	1405	G0OOF	123
551	G4GIR	404	878	G3SBP	254	1154	G0DVT	185	1405	G3ASG	123
555	G3LUW	403	883	G0UKX	251	1156	G0EAA	183	1405	G8FF	123
573	G0PAJ	393	884	G0WAX	250	1156	G0UWW	183	1415	G0KEY	122
611	G3LHJ	364	884	G3VDL	250	1156	G3ECS	183	1422	G2HLU	121
615	G4KBX	362	887	G0ARF	249	1156	G3ZKW	183	1431	G3PJT	120
631	G3MDH	353	890	G4RTO	248	1156	G4SDJ	183	1431	GD0ADV	120
635	G0FYX	352	894	G3NKC	247	1164	OZ4ZT	181	1456	G3FNM	119
637	G0GKY	350	905	GW0ANA	244	1169	GI0KVQ	177	1456	MM0BPP	119
647	G4KGT	342	908	G2FFO	242	1169	MW0CBC	177	1479	G0HBB	118
647	G4OBK	342	916	G3DPX	241	1180	G0VYR	173	1507	GM3PGO	117
652	G0TYV	340	930	G0PSE	235	1185	G4NAQ	171	1529	G0PPK	116
653	G3GMY	338	936	G3HQH	234	1186	G3PSY	170	1529	GW0PUP	116
654	9V1RH	337	942	G3NOH	231	1197	G3ZJF	166	1551	G3IZD	115
654	G0CGL	337	982	G4PZO	219	1199	G8GG	165	1563	G4ZOY	114
658	G0WRE	335	982	G4ZYP	219	1199	GU4WQP	165	1578	G0ZMC	113
679	G4UZN	324	1002	G3EKJ	215	1203	G3KDE	164	1592	GI0VJV	112
689	G4JFS	320	1020	G4ZKJ	211	1207	G3JTO	163	1604	GW0HUT	111
692	G3YEC	319	1020	GM4KHE	211	1212	GM3EDZ	161	1615	G0DHZ	110
711	M0ADG	316	1020	M0BRK	211	1232	G3DNF	157	1634	GM0VRP	109
733	G3TLG	308	1030	G0VLK	209	1232	G3LIV	157	1655	G0KRL	108
739	G0REP	307	1030	G2HW	209	1253	G3LCG	152	1687	G4ASL	106
739	G3LPS	307	1030	G3LSW	209	1253	G3XLF	152	1703	G3FIC	105
739	GW0IWD	307	1030	G4SSH	209	1262	G0BFJ	151	1703	G6QQ	105
745	G0MUR	306	1059	G3GZJ	205	1269	G3HQX	149	1714	G0AEV	104
790	G4YRR	298	1059	G4DJC	205	1275	G3IMK	147	1714	G0HXN	104
793	G2ATM	297	1069	MM0BQI	204	1278	G0DNV	146	1714	G3TTC	104
798	G4BGW	293	1084	G0AHC	202	1288	G2HDR	144	1733	G4EHT	103
810	G3DEF	284	1084	G0MTN	202	1293	MM0BCR	143	1746	G3RGD	102
815	GW4BYA	279	1084	G2ART	202	1300	G0DEZ	141	1760	ZC4IW	101

The full IOTA Annual Listing may be seen on the official IOTA web site: www.rsgbiota.org/



VK6DIR operated from Direction Island, OC-140, in November 2000.



Once the rarest IOTA group of all, AF-073, the Tunisian Kerkennah Islands, was activated by an Italian team, with Tunisian helpers, in March 2000.

3D2	7	H4	12	V73	3		
9M6/8	3	KH5	2	VK	46		
A35	5	KH6/7	2	VP6	3		
DU	21	KH8	4	YB	42		
FK	6	P2	18	YJ	4		
FO	16	T32	2	ZK1	8		
FW	2	V63	10	ZL	9		

Table 1: Oceania countries with more than one IOTA group.

third are of routine difficulty with some activity on a regular or sporadic basis.

Just look for a moment at what someone with a top score will have got close to working. The examples given in **Table 1** are from Oceania, the most difficult area for a European station - a different selection would make the point better eg for a West Coast American member. These are countries where there is more than one IOTA. The numbers represent different island groups, not just different islands or just contacts. For example, a top station would have had to work close on 42 distinct island groups in Indonesia!

Now add the other 20 or so DXCC entities in Oceania which coincide with a single IOTA - these also have to be worked - and you will see the scale of the achievement. In answer to the comment that they were all made on lists or nets, this is just not so - this feature of IOTA has long since passed and some of the high scorers have never been on a net in their life. Similarly the charge that the IOTAs rarely operate CW is also no longer strictly true. Although there is still an imbalance towards SSB, this is reducing and most recent operations have used both modes.

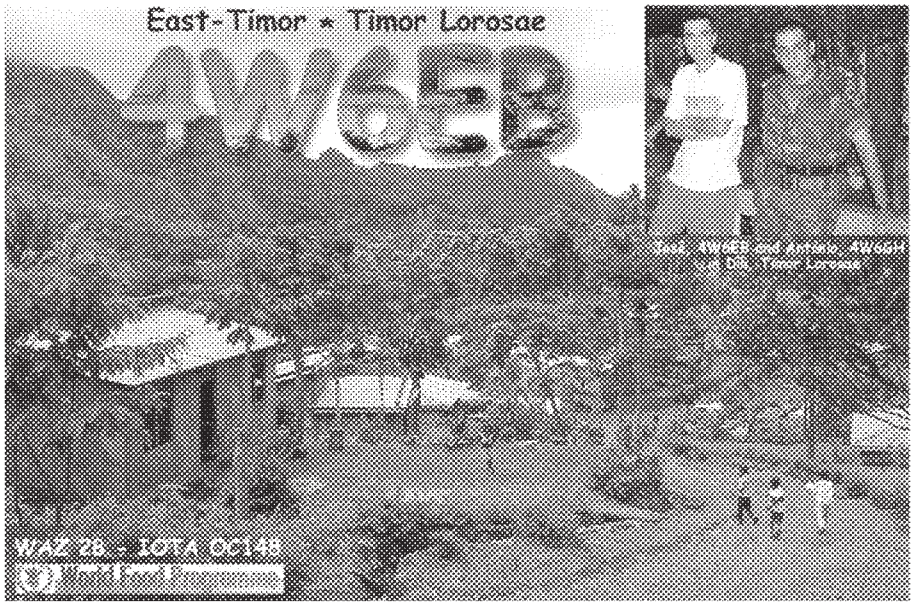
YJ0AXC was operated by JE1DXC from the very rare Banks Islands in Vanuatu in August 1999.

THANKS

IOTA SAW A further 11% increase in award applications in the period under review. This healthy rate of entry into the programme, which has continued for many years, would not be possible without the strong support and commitment of our checkpoints. This year they had to cope with substantial additional work handling the conversion of members' records on to the basis of *Directory 2000*. We owe them all a big vote of thanks - we could not have done without them. Finally, thanks are due to Martin, G3ZAY, for his help in the compilation of the data. ♦

FURTHER READING

RSGB IOTA Directory 2000 - the essential guide to participating in the RSGB IOTA programme. Available at a specially reduced price of £7.49 for a limited period only from RSGB Sales - see pages 86 / 87 for details of how to order.



Not just a rare IOTA, but also a new DXCC country: East Timor, OC-148, was activated by Jose, CT1EEB, as 4W6EB in spring 2000.

PARTICIPATION BY DXCC ENTITY

	Hon. Roll	Ann. List	Total		Hon. Roll	Ann. List	Total
W	96	262	358	CO	-	3	3
DL	48	182	230	GI	1	2	3
I	69	145	214	IS	-	3	3
G	45	141	186	SV	-	3	3
JA	21	149	170	YU	-	3	3
F	25	49	74	BY	-	2	2
EA	10	61	71	CU	-	2	2
VE	15	24	39	EA9	1	1	2
HA	5	30	35	EU	-	2	2
PY	3	29	32	HC	-	2	2
ON	13	17	30	YO	-	2	2
SM	11	19	30	ZC4	-	2	2
UA	3	23	26	ZP	-	2	2
HB	9	16	25	5B	1	-	1
CT	8	11	19	9V	-	1	1
GM	3	16	19	A9	-	1	1
OE	7	11	18	C2	-	1	1
UR	2	13	15	CT3	-	1	1
GW	2	10	12	EA6	-	1	1
OK	1	10	11	FR	-	1	1
VK	2	8	10	GD	-	1	1
4X	3	5	8	GJ	1	-	1
OH	4	4	8	GU	-	1	1
OZ	5	3	8	H4	-	1	1
RA9/0	-	8	8	HK	1	-	1
ZL	2	5	7	HS	-	1	1
9A	2	4	6	KH2	-	1	1
KH6/7	2	4	6	KH8	-	1	1
KL	-	6	6	LY	-	1	1
PA	2	4	6	P2	-	1	1
LA	1	4	5	T7	-	1	1
S5	4	1	5	TI	-	1	1
EA8	1	3	4	UN	-	1	1
EI	2	2	4	VK9N	1	-	1
HL	-	4	4	VR2	-	1	1
LU	-	4	4	XE	-	1	1
LX	-	4	4	YB	-	1	1
OM	1	3	4	ZK1	-	1	1
SP	1	3	4	ZS	-	1	1
CE	-	3	3	**Total**	**434**	**1351**	**1785**

IOTA SWL LISTING - MAY 2001

1	DE0MST	960	30	W1-7897	254
2	BRS-8841	892	31	ONL-4234	229
3	DL-SWL P Sinke	859	32	JH8GAU	226
4	I1-21171	703	33	ONL-5923	212
5	I1-12387	694	34	DE0OLL	210
6	DL-9286	680	35	DE0THM	206
7	ONL-7681	679	36	DE1ABM	205
8	BRS-47426	646	37	EI-982/G	197
9	F-16332	591	38	F-10437	177
10	NL-4276	555	39	DE0RFE	172
11	DL-312WW	546	40	OM3-28013	170
12	DL-20064	516	41	I2-66508	169
13	W0-20276	499	42	UA0-124-451	166
14	JA1-20784	498	43	F-10371	162
15	BRS-94761	496	44	PS7-54418	157
16	UA3-147-412	494	45	DE1LSL	152
17	WDX3JFH	474	46	EA-1033	121
18	EI-1260	419	47	UA1-136-644/MM	120
19	WDX2TAU	403	48	I1-4851/TO	119
20	DE0RFR	355	48	DG3YGT	119
21	OE3-3008372	346	50	BRS-30493	118
22	F-10255	345	51	I3-2514/VE	116
23	BRS-94436	342	51	OH3-911	116
24	RS-96462	330	51	DE1ABL	116
25	UA6-150-1367	322	51	DE0KAY	116
26	F-14368	320	51	DE3HLA	116
27	DE7KKB	318	56	DE9DIG	109
28	DE1JSH	265	57	HE9RFF	101
29	F-10046	258	58	PY1-13332	100

PARTICIPATION BY CONTINENT

Europe	1093
North America	408
Asia	200
South America	44
Oceania	31
Africa	9
Total	**1785**

IOTA CLUB STATIONS LISTING - 2001

Pos.	Callsign	Score			
1	UT7WZA	772	7	DL0TU	375
2	YL1XZ	712	8	DL0IOA	336
3	SK6PJ	683	9	9A1BHI	254
4	DL0BMW	614	10	G3CSR	168
5	HA3KNA	449	11	SK7DX	153
6	YU7JDE	400	12	RZ3AZO	118
			13	DL0AKR	102

WWW.

RSGB IOTA web pages: **http://www.rsgbiota.org**
IOTA Manager's website: **http://www.eo19.dial.pipex.com/index.shtml**

The RSGB HF and IOTA Convention 2001

by Bob Whelan, G3PJT*

THE RSGB HF AND IOTA Convention is for many the highlight of the year, a great opportunity to meet the experts, pick their brains and exchange ideas on HF.

This year we are organising three lecture streams for the two-day convention; one stream on HF technology, one on HF operating and one on HF DXing.

In a series of lectures, forums and informal meetings you can hear about the latest thinking on such topics as 'HF Digital Voice' from Andy, G4JNT, on the threats to our HF bands from PLT from Robin, G3JWI, and on propagation at 136kHz. HF operating will include topics such as 'DX Intelligence Service' from John, G3LAS, and a view of what's left of Cycle 23 propagation.

And don't forget the DX lectures from Roger, G3SXW, on his trip to the Cocos (Keeling) Islands, from the teams which went to ZD7, to 3B6, to VP8 and of course the record-beating D68C Comoros team. A complete morning will devoted to IOTA, the fastest growing DX awards programme. We will show you how to organise your own IOTA DXpedition - it doesn't cost a fortune and it's great fun!

Try out some of the latest software for logging and digital modes, exchange views with Martin Lynch, the man himself, and with the people from Yaesu on the FT-1000MP Mk V and the fabulous FT-817. And don't forget the RSGB bookstall, your one source for all amateur radio publications.

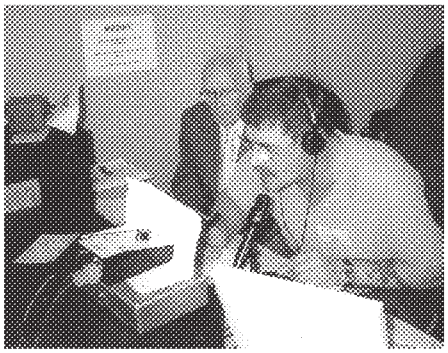
With DXpedition reports, HF operating, IOTA, technical information on digital, HF equipment, antennas, amplifiers - you name it, someone there will know the latest info. Meet many of *RadCom's* leading contributors, such as Don, G3XTT, and Steve, G4JVG, the editor.

We haven't forgotten the social side, the 'DX Dinner', with its unique party atmosphere, and the bar, where many of the new ideas are aired.

The prize draw is one of the biggest at any UK amateur radio event with fantastic prizes.

Above all, it's a chance to meet and make new friends. A great value weekend - see you there. Book now to receive a £5 per person discount on all the package prices! ♦

Left: Martin Lynch with a display of the latest HF equipment.
Standing-room only at one of the popular lectures.
Above: The RSGB HF contest awards are also presented at the Convention. Here, Roger Western, G3SXW, receives a trophy from President Don Beattie, G3BJ.
The RSGB IOTA stand, with Martin Atherton, G3ZAY, and Roger Balister, G3KMA, on hand to answer questions.



Try your hand at operating the state-of-the-art HF demonstration station. Last year the callsign was MB2HFC. The unique MB prefix created a *lot* of interest on the HF bands!

HFC 2001

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Package B

Two-day package, as for 'A' but for two people. Partners' programme on the Saturday and Sunday also included. £255.

Package C

One-day package for one person. This includes accommodation on the Saturday night, 13 October, DX Dinner on Saturday evening and breakfast on Sunday. £100.

Package D

One-day package, as for 'C' but for two people. Partners' programme on the Sunday included. £145.

Book by 1 August and receive a discount of £5 per person on all package deals!

Or come for the day: day passes just £6 per day

Further details on the RSGB web site (see below); tel: 0870 904 7373; or fax: 0870 904 7374.

WWW.

HF Convention (information):
www.rsgb.org/hfc2001
HF Convention (booking):
www.rsgb.org/shop

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TM 733 2/70cm	£200.00	
TM 455E 70cm M/M	£350.00	
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DJ 191	£95.00	
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YAESU FL 2100Z 1KW	£495.00	
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AEA 300 ATU	£125.00	
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KENWOOD CW YG-455-CN-1	£125.00	
KENWOOD SSB YK-88S-1	£60.00	
KENWOOD SSB YK88SN	£60.00	
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ICOM BC-01	£10.00	
ICOM BP-200	£35.00	
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ICOM CP-11	£20.00	
ICOM CP1	£10.00	
ICOM HM-77 mic	£50.00	
ICOM HM-70 mic	£29.00	
ICOM HM-46 mic	£30.00	
ICOM HS-51 H/set	£45.00	
ICOM HS-10 H/set	£30.00	
ICOM HP-1 H/phones		
MARINE-RADIO'S		
ICOM M127EURO	£250.00	*NEW*
ICOM M3 EURO	£100.00	*NEW*
ICOM M1EURO	£200.00	*NEW*
ICOM S3F	£100.00	*NEW*
ICOM ICT22 E	£165.00	*NEW*
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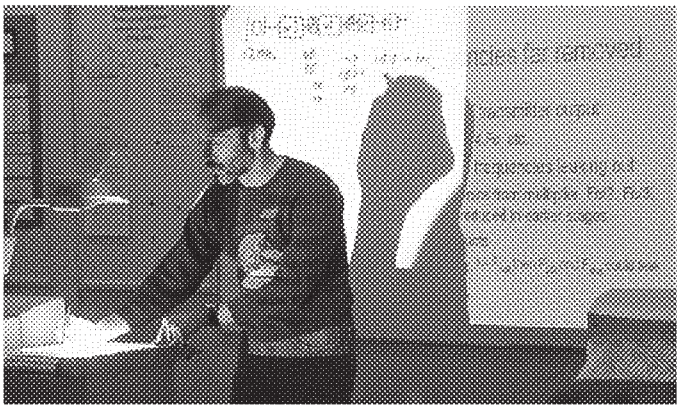
FREE AND EASY? NO WAY!

A report on the recent RAE 'crash course' for teachers



The mysteries of transmitters explained.

ONE OF THE best ways to introduce amateur radio into schools is to lead by example. Schools where there are enthusiastic radio amateurs on the staff can benefit from what amateur radio can bring to the school curriculum. In an ideal world, each school should have an amateur on the staff. One of the means of accomplishing this is to 'educate the educators'. This is exactly what the free 'crash course' for teachers aims to do.

This year, thanks to the generosity of the three major sponsors, the RA, the RSGB and STELAR, Richard Horton, G3XWH and Hilary Claytonsmith, G4JKS, were able to organise four days of mental gymnastics at Harrogate Ladies' College for 19 science teachers with no previous experience of amateur radio.

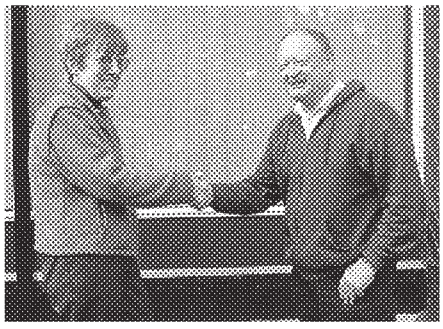
Starting at 9.00am and working through until 6.30pm every day, the students (13 men and six women) ploughed through basic electronics, rules and regulations, operating practice and procedure, EMC and transmitter interference. Those bearing the brunt of imparting all this knowledge to the extremely receptive audience were Andy Talbot, G4JNT; Alan Betts, G0HIQ; Alan Wright, G0KRU; Phil Mayer, G0KKL and Hilary Claytonsmith, G4JKS. Decanting the contents of the *RAE Manual* [1] and *BR68* in four days tested the skills of the lecturers as well as the endurance of the students. Amazingly, all were still smiling on the last day, even with the prospect of the RAE looming at 3.30pm.

Thanks here must go to City & Guilds who gave permission for the students to sit a real RAE paper (one drawn up especially for the occasion) rather than the 'mock' examination of previous years. David Pratt, G4DMP, in his role as Chief Examiner, oversaw the examination and marked the papers. The teachers were given the results on the spot. 18 out of the 19 passed. The remaining candidate re-sat the RAE in May, and is feeling quietly confident.

To quote a teacher from Roedean School, "Thank you for all your hard work in organising the course. It was quite a shock to the system, but definitely worthwhile, and even enjoyable."

Donations of HF transceivers had been received by the organisers, with a specific request that they should benefit schools. The teachers were asked to produce a case for their school being awarded one of these transceivers. The four best submissions will benefit from the generosity of the donors.

Arrangements are being made to provide follow-up support to these teachers in setting up radio clubs in their schools over the next few months.



Janet Machalski and Ken Head after being given their pass results.

FURTHER DETAILS

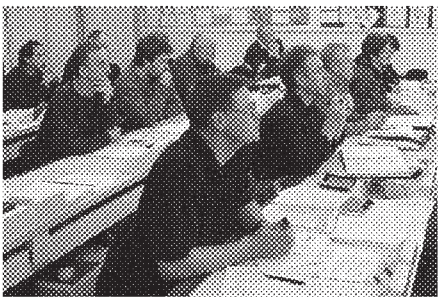
FOR FURTHER information on teachers' RAE training courses please contact Hilary Claytonsmith, G4JKS, 2 Falcon Drive, Hartford, Huntingdon, Cambs PE29 1LP; e-mail: g4jks@btinternet.com

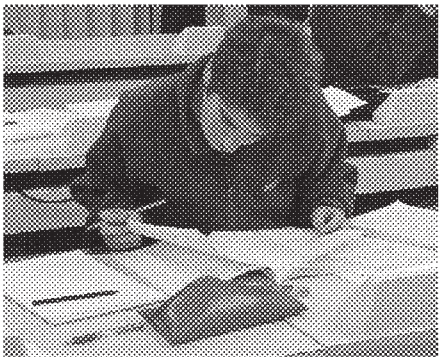
FURTHER READING

[1] *Radio Amateurs Examination Manual*, 16th edition (RSGB), edited by John Case, GW4HWR, and Hilary Claytonsmith, G4JKS. For details of how to order see pages 86 / 87. ♦

WWW.

How to become a radio amateur, RAE and Morse courses: www.rsgb.org/getlicensed





Above and right: Concentration!

Top: Phil Mayer, G0KKL, helps Janet Machalski with a tricky part of the RAE syllabus.

Newcomers' News

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

THIS MONTH we have news of newcomers at three clubs from around the country. Please keep your news and pictures coming in. The e-mail and postal addresses are at the foot of the page.

RADIO SOCIETY OF HARROW

EVERY YEAR Don Lamb, G0ACK, takes his Novice students up a hill to put up some aerials and exchange a few greetings messages. This year he was assisted by Gary, M1FGS, who was himself newly licensed. It is good to know that there are newcomers who are willing to help others to gain their licences.

In the early spring Don and Gary took their group to Horsenden Hill in Ealing (locator IO91UN) before the dreaded foot and mouth struck. They were blessed with a lovely sunny day and managed to put up a 7-element beam for 144MHz and used a whip antenna for 50MHz. Although activity on the bands was sparse, all the students managed to exchange greetings messages with other UK stations.

Don's letter included a copy of the club's latest newsletter *QZZ* and in amongst the meetings calendar was one idea that I think other clubs might like to take up. A 'Magazine Evening' involves distributing amateur radio magazines to local doctors' and dentists' waiting rooms with labels on them giving contact details for the club. The magazines (not too ancient) are donated by club members. What an excellent way of letting people know who you are and where to find you!

For the benefit of any readers in the area, the Radio Society of Harrow meets on Friday evenings at the Harrow Arts Centre. Further details can be obtained from Chris, G4AUF, tel: 01895 621310.

WARRINGTON ARC

FOLLOWING difficulties organising courses and examinations at the local technical college it looks like the Warrington Amateur Radio Club is going to have to take on the whole thing. In my experience this is no bad thing. Clubs can normally run courses much more cheaply than educational establishments who have to cover their costs, and having club members on hand gives the courses a practical slant.

Albert Heyes, G3ZHE, is the Novice tutor for the club and he sent in details of a couple of his success stories. David Middlehurst is just 12 years old and following Albert's tuition is now 2E1HZW. David is involved with the local Scouts, so look out for him on the next Jamboree on the Air (JOTA).

John Finnie is not as young, but he too sat the Novice Radio Amateurs' Exam (NRAE) in May of last year and gained the callsign 2E1HWS. He carried on with his studies and was rewarded in December with a pass in the full Radio Amateurs' Exam (RAE). He is now licensed as M1EYD. Well done John!

The Novice class complete with the plastic aerial (see WIDNES & RUNCORN ARC).

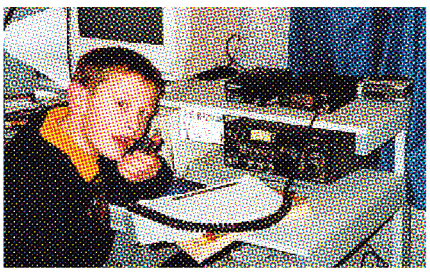
WIDNES & RUNCORN ARC

DAVE WILSON, G7OBW, from the Widnes and Runcorn Amateur Radio Club sent details of his Novice classes. Dave has been a registered Novice Instructor since December 1994 after helping Sam Bell, G0SBI, for a number of courses. Since then he has taught over 50 students - all of whom have been successful in the NRAE exam and have taken up their licences, alas not all are on the air.

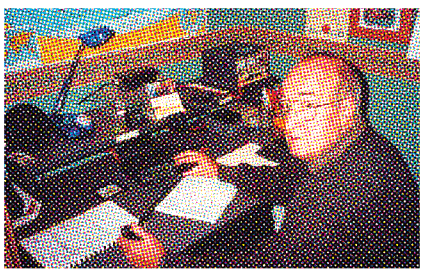
During discussions on antennas on the latest course he happened to say that anything metal can detect radio waves. This must have been playing on the students' minds as a couple of weeks later one of them turned up at the classes with an 'antenna' made out of plastic rods which he had covered with aluminium foil in the form of a dipole. He had attached a piece of co-axial cable to the two halves of the antenna, connected that to a handheld and had listened to a number of local amateurs chatting on the local repeater. Needless to say, Dave urged him not to use it to transmit!

The latest batch of students took the March Novice exam and they heard just before Easter that they had all been successful. Courses are held at 'The Beacons' in Frodsham, where the club runs Novice, RAE and Morse code classes every Friday evening. Dave, G1PIX, and Graham, G1IVV, teach the RAE and Pat, M0PAT, gives Morse tuition. Martin, G4LUQ, assists in the Novice courses.

As you can see this is a team effort and the most important members of the team are Kath, M1CNY, and John, M5HFJ, who provide tea, coffee, biscuits etc. Sounds good to me. ♦



Young David Middlehurst, 2E1HZW, calling! (see WARRINGTON ARC).



John Finnie, M1EYD, at the helm (see WARRINGTON ARC).

Spread The Word!

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

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

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Down To Earth

The Voices

Part Thirteen, by Gordon L Adams, G3LEQ *

LAST MONTH I discussed various military activities on the island of Cyprus – and in particular radar 'voices'. There is more to be said about the role of radio on the island, and also about the political background to the Turkish invasion. Unfortunately, there is not the space available in *RadCom* to consider further the effect of 'The Voices' on all this; but I shall expand on the subject in a book version of 'The Voices', which the RSGB plans to publish before Christmas.

THE BBC EVOLVES

MY TREATISE on 'The Voices' would be seriously incomplete without a consideration of the British Broadcasting Corporation's contribution to overseas listening. Broadcasting in the United Kingdom officially began on 14 November 1922, under the auspices of the newly-created British Broadcasting Company, when 2LO came under its control and transmitted from masts on the roof of Selfridge's department store in Oxford Street, London. The following day the Company took over the privately-operated stations 5IT in Birmingham and 2ZY in Manchester. The BBC's first General Manager, John Reith, was appointed a month later. Prior to this, pioneering broadcasting had been in the hands of several electrical companies and a few enthusiastic radio amateurs. In fact, the first *regular* broadcasting within the United Kingdom started with 'Two Emma Toc' (2MT) coming on the air from Writtle, Chelmsford, on 14 February 1922 under the aegis of the Marconi Company.

Station 2MT used a Marconi transmitter of similar design to that employed for communications at Croydon Airport in 1920. Initially, it operated on 700 metres (428kHz) with just 200 watts into a 140ft-long inverted-L antenna supported between two 110ft portable masts. However, on 22 May 1922 it had to change to 400 metres (750kHz), because it was interfering with the Croydon station GBL on 900 metres (333kHz). 2MT closed down soon afterwards on 17 January 1923. UK radio amateurs, using spark transmitters around 1000 metres (300kHz), were also cited as a similar cause of interference. As a result, they were allocated a precise wavelength of 440 metres (682kHz) where spark transmissions were prohibited. A new Transmitter & Relay section of the RSGB was set up - especially to look after the interests of transmitting radio amateurs and to protect their "freedom to experiment". Captain Peter Eckersley was elected as the President of the T&R Section.

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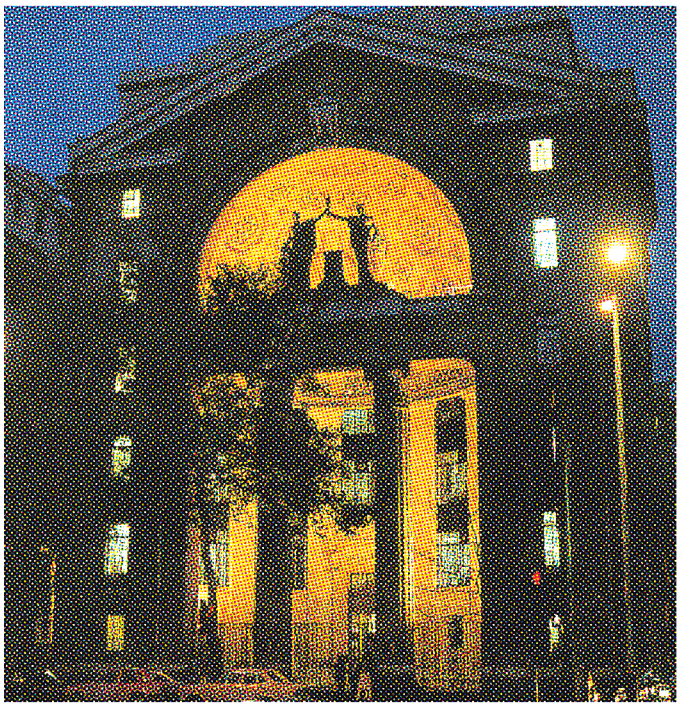


Aldwych entrance to Bush House, headquarters of the BBC's overseas services from March 1941.

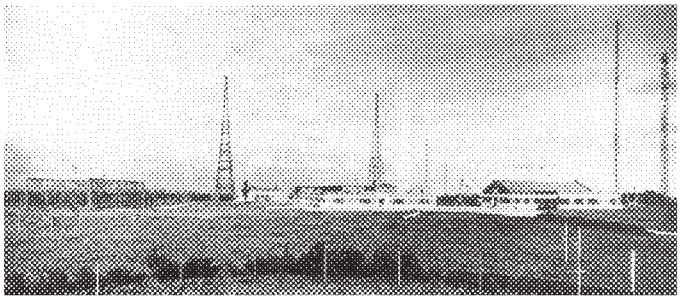
SHORT WAVE BROADCASTING

THE BBC'S first experimental venture into short-wave broadcasting employed a transmitter, callsign G5SW, which was rented from the Marconi Company. The 'G' callsign prefix was introduced in order to indicate that the station was of UK origin. Their first transmission using this Chelmsford HF sender, carried a live broadcast of the Armistice Day Cenotaph Service on 11 November 1927. It was only then that the British government encouraged the BBC, now reconstituted under Royal Charter as the British Broadcasting Corporation with effect from 1 January 1927, to continue experimental short-wave transmissions from the Marconi works in Chelmsford. The frequency used was 12.500MHz, but this was changed to 11.750MHz on 1 January 1928. There was a two-hour broadcast each day using material from the BBC's Home programme, and reports from overseas indicated that their efforts were much appreciated. However, it quickly became apparent that various frequencies and transmission times were required, in order to meet the propagation conditions applying to different parts of the Empire. The propagation mechanism via the ionosphere was not understood at the time, and I shall save a discussion on this fascinating subject for the book version of 'The Voices'.

£100 PER WEEK FOR THE BEEB

THE AUDIENCE WAS perceived to consist only of expatriates. In spite of this, the government was not inclined to assist the BBC by funding this new 'Empire Service' broadcasting venture. The outcome was that the BBC decided, in 1931, to use UK-raised licence revenue to fund its first 'voice' broadcasting to the Empire. On 19 December 1932 its own short-wave transmitting facility came on the air from Borough Hill, Daventry, with a broadcast directed to Australia. The new station was able to operate in eight different, and newly-defined, short wave 'bands'. Six days after this inaugural short wave transmission from Daventry, King George V was able to deliver his first Christmas Day message to the Empire. Queen Elizabeth II was then just six years old. Such was the success of the King's Christmas broadcast, that the BBC was given, by the government, an allocation of £100 per week to meet programming costs.

Soon listeners at home, as well as overseas, were hearing the announcement "This programme is also being radiated through GSF – F for Fortune and GSG – G for Greeting – the Empire broadcasting transmitters at Daventry". The Daventry site was already the home of the only UK long-wave station 5XX, which had commenced broadcasting on 27 July 1925 running 25kW on 1604 metres (187kHz). By 21 August 1927 the BBC was able to offer listeners a choice – with a second programme from Daventry on 491 metres (611kHz) using callsign 5GB.



BBC station 5XX at Borough Hill, Daventry, Northamptonshire.

BBC Chief Engineer pre-WWII, Captain Peter Pendleton Eckersley.

The BBC Chief Engineer in the 1930s was a well-known radio enthusiast, Captain Peter Pendleton Eckersley. He had previously been much involved with the operation of 2MT at Writtle. As a schoolboy, Peter had been initiated into the mysteries of wireless communication by his elder brother Tom L Eckersley FRS - who was a brilliant physicist and mathematician. Unfortunately Peter Eckersley became a victim of the BBC's strict moral code in the 1930s, when he was required to resign after being cited in a divorce case. He later went to work for Sir Oswald Mosley on a project for broadcasting to Great Britain from Sark or Heligoland. Eckersley also evolved a system of radio distribution via the mains supply. Both these projects were scuppered by the advent of war with Germany. Interestingly, this idea of superimposing a radio frequency carrier on wires was applied in the UK during the 1960s, when warning of a military attack could be sent to police stations, over the BT speaking clock telephone lines. The carrier frequency was between 72kHz and 73kHz (radio amateurs take note!) and audio tone modulation was used.

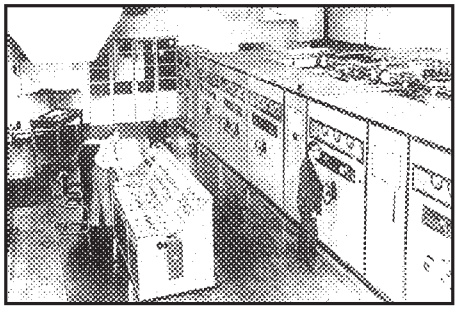
Other commercial interests in Europe had seen an opportunity for broadcasting to the UK, and Radio Luxembourg launched its English language service on 15 January 1934. Four years on, the BBC introduced its first foreign language transmissions on 3 January 1938 with short-wave programmes in Arabic. The need for an Arabic service came about as a result of fascist Italy's belligerent broadcasting to North Africa and Arabia from a short-wave transmitter at Bari on the Adriatic (see part 7 of 'The Voices' in January 2001 *RadCom*).

'LORD HAW-HAW'

AT THE START of WWII Peter Eckersley's second wife Frances Dorothy found herself working for the German's English-language propaganda stations as an announcer. In April 1939 an ex-British Army officer, Norman Baillie-Stewart, began broadcasting for Germany's English 'voice', and soon became known as 'Lord Haw-Haw', because of his nasal upper-class accent. In May 1939 the Duke of Windsor made a world-wide radio appeal for peace, but this was banned from all BBC transmissions within the UK. The Duke and Baillie-Stewart were known to each other, as they had both served in the same regiment. It was not until after the war had begun that William Joyce started writing propaganda scripts and subsequently broadcasting for Germany's English-language service. He then adopted the role of 'Lord Haw-Haw' which had been created by Baillie-Stewart.

At the beginning of the war in Europe, the BBC had only eight HF transmitters, all located at Daventry. Although three more senders were brought into service there during 1940, it was decided that another location was needed, and short-wave facilities were installed at the medium-wave station at Start Point in South Devon. It was from here that the new 'Forces Programme' was put out on 877kHz, commencing on 7 January 1940. In September 1940, the MF transmitter at Clevedon, Bristol, was converted to HF operation to carry the European Service.

Seaforth Highlanders - Norman Baillie-Stewart, later to become the first 'Lord Haw-Haw' (top right), and the Duke of Windsor (bottom left).



Richard Benham-Holman, G2DYM, tuning up the modulated amplifier stage of the 300kW Sender 21 on 1050kHz at Start Point, Devon, in 1942.

RADIO WAR HOTS UP

BESIDES THE THREE short-wave sites so far mentioned, the BBC had acquired - in November 1939 - a 189 acre site on Rampisham Down, near Maiden Newton in Dorset. Here they installed four 100kW Marconi type SWB-18 HF senders and an antenna system to give world coverage. This was the first BBC station to employ four-wire transmission lines. The station came into service on 16 February 1941. Nine months later, on 20 November 1941, they commissioned another 100kW SWB-18 HF transmitter at their Lisnagarvey MF site near Belfast. This was about the time that the British offensive was launched in the Western Desert, and Lisnagarvey carried the Forces Programme on 6.140MHz and 877kHz. From 7 November 1942 it switched to carrying the Overseas and European Services of the BBC. This date coincided with the landing of British and American Forces in North Africa.

In 1943 two large HF stations were opened at Skelton, near Penrith in Cumbria. This comprised a 320 acre site, which was large enough to accommodate two transmitter buildings approximately one mile apart. Skelton thus became the largest short-wave transmitting site in the world, having 12 100kW HF senders. Six of these were Marconi type SWB-18, whilst the balance were STC type CS8. The transmitters were phased into service between 15 April 1943 and November of that year. Another high-power HF station was planned at Woofferton, near Ludlow in Shropshire. This was a 183 acre site, which unfortunately suffered from an extremely high water table. The Marconi and STC types already mentioned could not be used at Woofferton, because they required crypts to house the valve cooling equipment, and ingress of water would have been a danger. Therefore, six RCA 50kW transmitters were ordered from the USA, and the station opened - after some delivery delays - on 17 October 1943. These senders were Class B anode-modulated types, but were not designed for rapid frequency changing. On 28 August 1944, Woofferton was closed down for nearly three months whilst some of the transmitters were borrowed to assist with the war effort. They were taken to the Foreign Office Political Warfare Executive station at Crowborough in Ashdown Forest in order to carry out disruption experiments against German radio navigation systems. At the end of the war, the staff at Woofferton had to carry out modifications in order to speed the process of frequency band changing. The station suffered a further shutdown for economic reasons on 26 June 1948, before coming back into service three weeks later under Voice of America financial sponsorship.

Next month, in the penultimate edition of 'The Voices', I shall summarise some of the more important radio 'voices' of the 20th century. ♦

The coat of arms of the British Broadcasting Corporation.

Down To Earth

A pnp Transistor Tester

Following on from the npn Transistor Tester, here is another design by David Clark

RECENTLY, a *RadCom* reader expressed interest in a follow-up project to the 'npn Transistor Tester' that appeared in the January 2001 issue. The requirement was for a similar device that would test pnp transistors, and would preferably also give an audible indication of correct transistor operation.

This article describes such a device, and also gives details of a simple modification to the original npn transistor-testing circuit so that this too will give an audible indication of a properly-functioning transistor.

INTRODUCTION

THIS TRANSISTOR tester is a companion project to the npn transistor tester device documented in 'Down to Earth' in the January *RadCom*. The device uses the same principles of operation, and so the constructor is referred to that article for a detailed description of 'how it works'. However, for convenience, the main method of operation of the npn transistor tester is briefly summarised within this article. The new tester also incorporates an extra facility for providing an audible as well as a visual indication of a good transistor. This article also describes a simple modification to the original npn transistor tester that can be 'retro-fitted' to add the audible indicator facility.

THE PNP TRANSISTOR

THE pnp TRANSISTOR is a complementary device to the npn transistor. Both can be considered structurally as a 'sandwich' of two types of semiconductor, the npn bipolar transistor being a p-type semiconductor between two slices of n-type and the pnp type being an n-type semiconductor between two slices of p-type. This structure can be visualised as a pair of diodes connected 'back-to-back' (see **Fig 1**), which gives rise to one way of checking whether a transistor is undamaged or not. This involves taking measurements of the resistance between all combinations of the base, collector and emitter terminals in both directions, a total of six measurements. The situations where a p-n junction is forward-biased (conducting) should give a low, ideally zero, resistance. A reverse-biased junction (non-conducting) should give a high, ideally infinite, resistance, as should the collector-to-emitter test in both directions.

This can be a pretty haphazard method of testing a transistor, however. The resistance values for a 'real' device are far from the ideals of zero or infinite, hence giving a possibly ambiguous result. Furthermore the test itself, apart from being inconvenient in requiring multiple connections and reconnections, can destroy the device it is testing if care is not taken.

The reason for this is that the forward voltage for the test must be greater than the junction voltage of around 0.6V before the junction will conduct at all. Once it *is* conducting the current flow must be limited because a high current can destroy the junction. Similarly, too high a voltage across a reverse-biased junction will destroy it - usually the reverse bias between the base and emitter must not exceed about 5V. This is because of the very small thickness of the junction (necessary for transistor operation). Even a small voltage appearing across a very thin junction gives a very high electric field strength within that junction.

A better method, therefore, is to test whether the transistor does what it is supposed to do - amplify current. This approach also avoids having to make numerous connections and disconnections in order to take all the necessary resistance measurements.

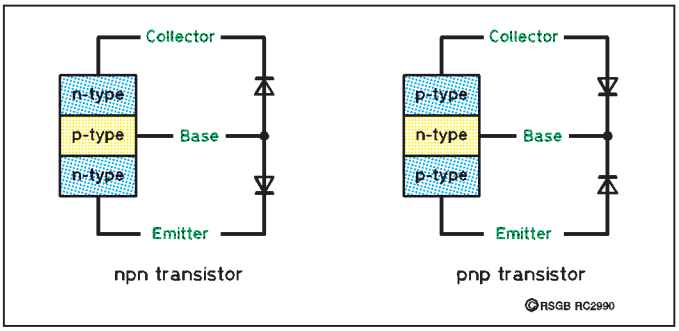


Fig 1: npn and pnp transistors.

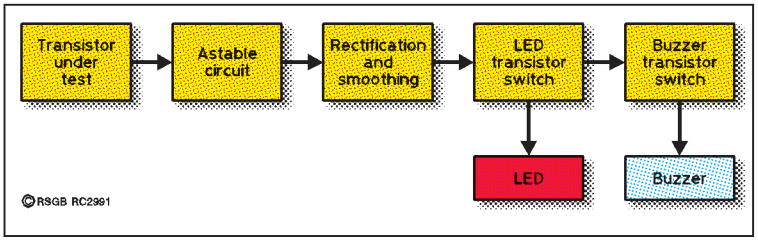


Fig 2: Block diagram of the Transistor Tester.

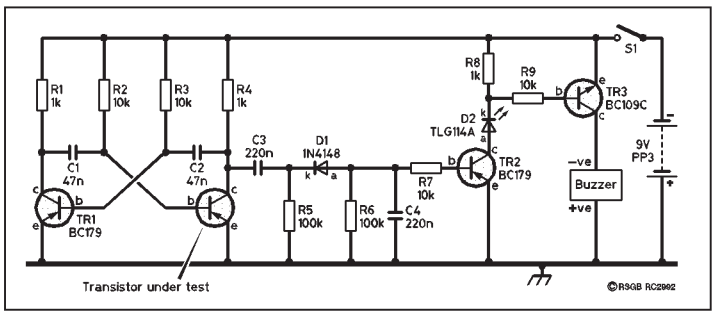


Fig 3: Circuit diagram of the pnp Transistor Tester.

HOW IT WORKS

The pnp tester makes the transistor under test part of an astable (free-running) oscillator circuit. This is then linked to a detector and an indicator circuit (see **Fig 2**). If the transistor is working correctly, the astable circuit will oscillate and the oscillations can be rectified and smoothed, and the resulting voltage used to switch appropriate transistors on, causing an LED to light and a buzzer to sound. If the transistor is faulty, oscillation will not occur and the LED will remain unlit and the buzzer silent. **Fig 3** shows the circuit diagram for the pnp Transistor Tester.

In fact, the transistor, TR3, controlling the buzzer is switched via the action of TR2, controlling the LED, D2. When TR2 is switched off there is no current through R8 (and the LED is unlit). There is therefore no

* *58, Murray Road, Sheffield S11 7GG.*

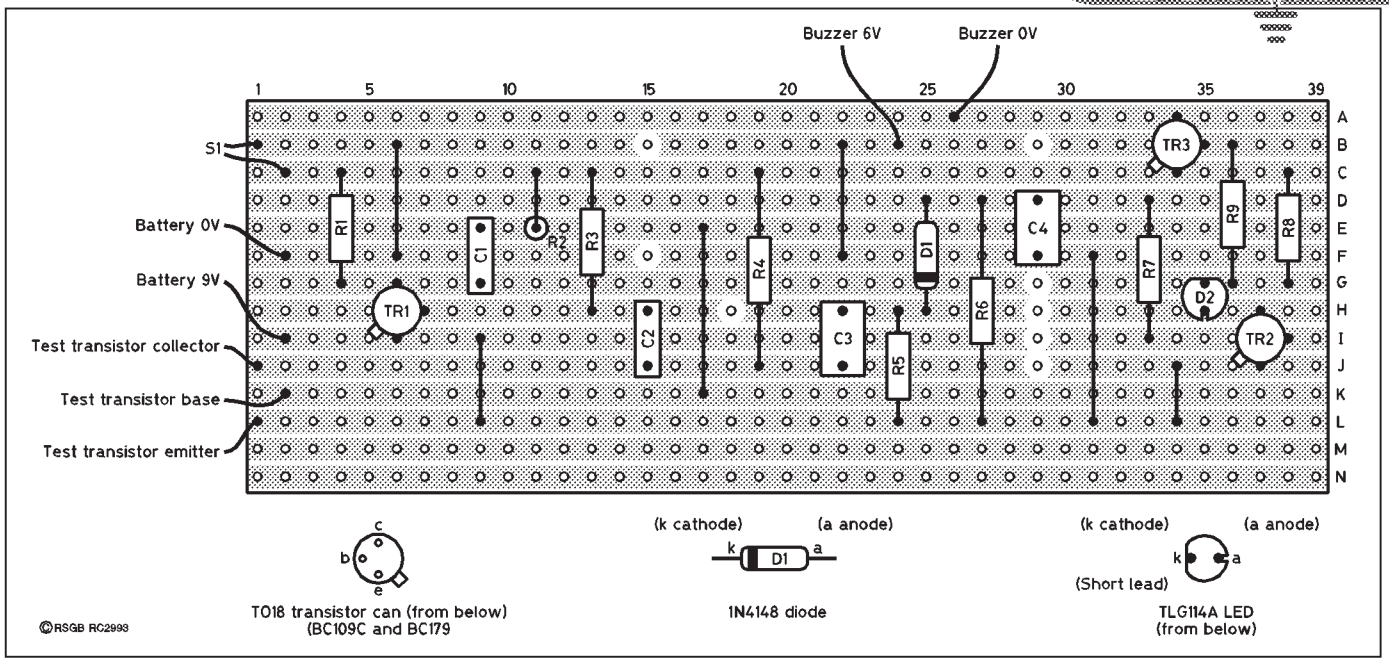


Fig 4: Stripboard layout and wiring diagram.

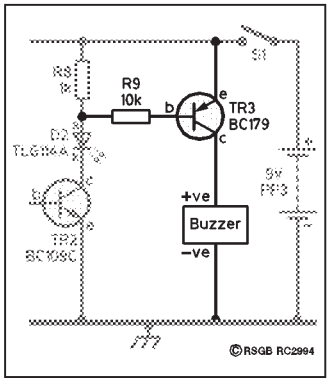


Fig 5: Modifications to the npn Transistor Tester, shown in bold.

voltage between the base and emitter of TR3 and it remains switched off, hence there is no current through the buzzer (ie it is silent). If TR2 is switched on, however, current flows through R8 and a voltage is dropped across it (and the LED lights). A voltage of around 0.6V then appears across the base-emitter junction of TR3, the current being limited by R9, as TR3 begins to conduct. Current thus flows through the buzzer which then sounds.

For very simple circuits it is fair to say that if npn transistors are replaced by pnp transistors (and vice versa) with equivalent operating parameters then it is only necessary to reverse the polarity of the battery or power supply. Any other devices in such a circuit that also have a polarity associated with them (diodes and electrolytic capacitors, for example), must also be reversed. This is the case for this circuit, and in fact, apart from the modifications and additions needed to give an audible indication of a good transistor as well as a visual indication, the stripboard layout for this device is the same as that for the npn transistor tester. **Fig 4** shows the stripboard layout for the pnp Transistor Tester.

CONSTRUCTION

CONSTRUCTING the tester is straightforward but care in ensuring the correct orientation of the transistors and diodes is important. The correct polarity of the buzzer also needs to be observed if the recommended buzzer is used (see the note in the component list); the positive and negative connections are indicated by red and black leads respectively. Fig 4 also shows the configurations for the appropriate components. As with the npn transistor tester, it is useful to terminate the test leads with small crocodile or test clips, and it helps to colour code them.

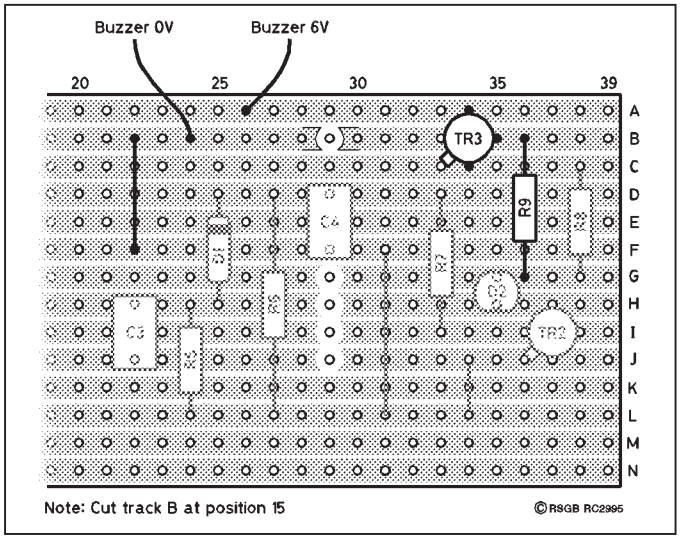


Fig 6: Modified stripboard layout for the npn Transistor Tester.

COMPONENTS LIST

Resistors (all metal film, 0.6W, 1%)

R1, R4, R8	1kΩ
R2, R3, R7, R9	10kΩ
R5, R6	100kΩ

Capacitors (all polyester film)

C1, C2	47nF
C3, C4	220nF

Semiconductors

TR1, TR2	BC179
TR3	BC109C
D1	1N4148
D2	TLG114A green LED

Miscellaneous

S1	SPDT switch
6V buzzer	
Stripboard	
Battery clip (for PP3 power supply battery)	
Test clips or small crocodile clips	

npn TESTER MODIFICATIONS

R9	10kΩ
TR3	BC179
6V buzzer	

Note: The buzzer used was a 6V type obtained from Maplin Electronics (part number FL39N), but any buzzer operating from a nominal 6V supply and with a nominal impedance of around 250 ohms, ie with a current consumption of up to a few tens of milliamps, should work satisfactorily.

MODIFICATIONS TO THE ORIGINAL

BECAUSE OF THE similarity of the stripboard layouts of both the npn and the pnp transistor testers it is simple to 'retro-fit' the audible indicator facility to the npn transistor tester. **Fig 5** and **Fig 6** show the additions to the circuit diagram and stripboard layout. The additional components, track cuts and link are shown in bold.

IN USE

CONNECT THE TEST leads to the transistor under test and switch on. A correctly working transistor will cause the LED to light and the buzzer to sound. ♦

WHATEVER NEXT

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COMPRESSING data files is something most of us will be familiar with, especially when it comes to backing up computers.

The kind of compression that, say, Zip employs is loss-less, which means that the data can ultimately be reconstituted in an identical form.

This is important for many purposes, one example being that Zip can be expected to reduce the size of a text file by about 60 - 80%. When unzipped the file returns to its original size and is identical in content to the original.

One type of file where you can get away with losing some detail when compressing is a picture, so long as you cannot see the difference when it is displayed (or printed out). A prime example of an image file that employs lossy compression is the '.JPG' - the so-called JPEG (after the Joint Pictures Encoding Groups). If you try to Zip a .JPG file it sometimes gets bigger, which indicates that it was very efficiently compressed in the first place!

In the field of audio, one file type that just about all of us have come across at one time or another is the CDA (CD audio). It is a PCM (Pulse Code Modulation) type file, which means that it is simply constructed from a stream of digitised samples of the original analogue audio. On a CD, the left and the right channels are sampled 44.1 thousand times a second, each time encoding two pairs of voltage values (one for the left channel and one for the right channel) into two 16 bits values. Consequently, CD audio consumes 44,100 x 16 x 2 = 1,411,200 bits (172 kilobytes) per second. One minute of CD-quality PCM requires over 10 megabytes of storage. If you Zip a CDA file, it is only likely to get about 10% smaller.

LOSSIER COMPRESSION

MPEG1 Layer-3 (after the Motion Pictures Encoding Groups) files, commonly called MP3, can be looked upon as the audio equivalent of the JPG. They also lose some of the detail when being encoded, but the algorithms were designed so that the human ear can barely perceive the difference upon playback. This small amount of loss in quality is, for most purposes, quite acceptable; especially when you consider the fact that a CDA file of, say, 60MB ends up as an MP3 file of around one tenth the size! The important thing to consider though is that, although MP3 players etc are still relatively new to the market, the MP3 standard itself was defined no less than nine years ago.

Nine years is an awfully long time in the world of computing, so it should come as no surprise to learn that others have been looking at (or should I say listening to?) other methods of audio file compression, with a view to creating a better standard. That now seems to have happened, the heir apparent coming in the shape of AAC (Advanced Audio Coding).

Compared with MPEG-1 Layer 3 (MP3) audio, AAC provides higher quality audio reproduction, yet requires approximately 30% less data. That means music that sounds better, downloads faster, and takes less space. It is the latest technology developed by experts in the art and science of audio compression, and standardised under the MPEG-2 specification. Several organisations - AT&T, Dolby Laboratories, Fraunhofer Institute for Integrated Circuits, and Sony Corporation - worked together to develop AAC, and the group has appointed Dolby Laboratories to administer an AAC licensing program and streamline the licensing process.

The method of coding employed in AAC is quite complex, but a synopsis may be of interest to readers. **Fig 1** refers.

Filter Bank

The first task of an audio coder is to break an audio sample into segments, called blocks. A time-domain filter, called a window, provides smooth transitions from block to block by modifying the data in these blocks. Choosing an optimal block size, given the wide variety of audio material, is a problem facing all audio coders. AAC handles the difficulty associated with coding audio material that vacillates between tonal (steady-state, complex spectra signals) and impulsive (transient signals) by dynamically switching between two block lengths: 2048-samples, and 256-samples, referred to as long blocks and short blocks, respectively. This, in itself, is not unique; block switching can be found in other coders, though the size of the blocks may differ. What is unique to AAC is the switching between two different types of long blocks - sine-function, and Kaiser-Bessel derived (KBD) - the selection of these two long block types being based on the nature of the complex spectra of the input signal.

Temporal Noise Shaping (TNS)

The TNS technique provides enhanced control of the location, in time, of quantisation noise within a filter bank window. This allows for signals that are somewhere between steady-state and transient in nature. If a transient-like signal lies at an end of a long block, quantisation noise will appear throughout the audio block. TNS allows for greater amounts of information to describe the non-transient locations in the block. The result is an increase in quantisation noise of the transient, where masking will render the noise inaudible, and a decrease of quantisation noise in the steady-state region of the audio block. TNS can be applied to either the entire frequency spectrum or to only a part of the spectrum.

Intensity Stereo

Intensity stereo coding is based on an analysis of high-frequency audio perception. Specifically, such perception is based on the energy-time envelope of this region of the audio spectrum. Intensity stereo coding allows a stereo channel pair to share a single set of spectral values for the high-frequency components with little or no loss in sound quality. This is achieved by maintaining the unique envelope for each channel, by means of a scaling operation so that each channel produces the original level

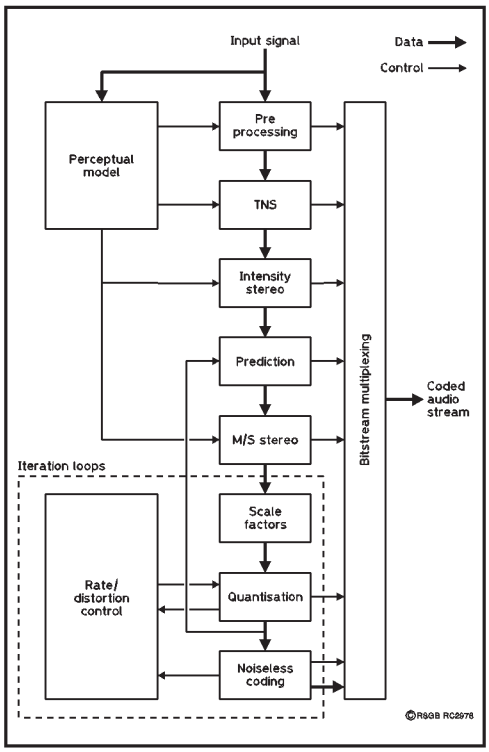

Fig 1: The method of coding employed in Advanced Audio Coding.

after decoding.

Prediction

The prediction module is used to represent stationary, or semi-stationary, parts of an audio signal. Instead of repeating such information for sequential windows, a simple repeat instruction can be passed, resulting in a reduction of redundant information. The prediction parameter is adapted on a block-by-block basis.

Mid / Side (M/S) Stereo Coding

M/S stereo coding is another data reduction module based on channel pair coding. In this case channel pair elements are analysed as left / right and sum / difference signals on a block-by-block basis. In cases where the M/S channel pair can be represented by fewer bits, the spectral coefficients are coded, and a bit is set to note that the block has utilised M/S stereo coding. During decoding the decoded channel pair are de-matrixed back to their original left / right state.

Quantisation and Coding

While the previously-described modules attain certain levels of compression, it is in the quantisation phase that the majority of data reduction occurs. This is the AAC module in which spectral data is quantised under the control of a 'psychoacoustic model'. Its role is to determine the level and location of the resultant quantisation noise. Furthermore, the number of bits used must be below a limit determined by the desired bit rate. Huffman coding is also applied in the form of 12 codebooks, allowing smaller amounts of data to represent more frequently-appearing spectral coefficients. In order to increase coding gain, scale factors with spectral coefficients of value zero are not transmitted.

Noiseless Coding

This method is nested inside the Quantisation and Coding module. Noiseless dynamic range compression can be applied prior to Huffman coding. A value of ±1 is placed in the quantised coefficient array to carry sign, while magnitude and an offset from base, to mark frequency location, are transmitted as side information. This process is used only when a net saving of bits results from its use.

Bitstream Multiplexing

AAC has a very flexible bitstream syntax. A single transport is not ideally suited to all applications, and AAC can accommodate complex audio transport logic, or can simply deliver raw data. The bitstream is broken down into two parts: transport and block, and the program configuration element contains information on copyright, number of audio channels, sampling rate, etc.

At this time there are three distinct markets with significant focus on AAC technology.

DIGITAL BROADCASTING IN JAPAN

The Japanese Association of Radio Industries and Businesses (ARIB) has selected AAC as the audio coding scheme for all of Japan's digital broadcast systems, including standard-definition television (SDTV), high-definition television (HDTV), digital radio, and new multimedia services.

DIGITAL RADIO IN THE USA

Digital radio via terrestrial, satellite, or cable transmission is emerging around the world. While numerous international markets have adopted a spread-spectrum technology for terrestrial transmission using MPEG-1, Layer 2 audio, regulators and broadcasters in the United States are contemplating the use of AAC for In-Band On-Channel (IBOC) transmission and other applications.

ELECTRONIC MUSIC DISTRIBUTION

Internet or Electronic Music Distribution (EMD) applications represent strong near-term markets for AAC. With its demonstrated advantages of higher audio quality at lower bit rates, and richer multichannel capabilities, AAC provides numerous advantages over MP3 and other competing audio coders. It is expected that AAC will be implemented both in PC-based players and portable storage / playback devices, as well as in networked entertainment system components.

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

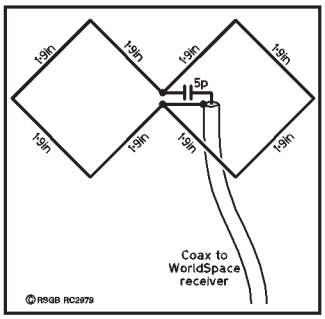

Fig 2: Take a length of stout copper wire, bend it as shown, then connect it to 75Ω coax via a 5pF capacitor.

WORLDSPACE ANTENNAS

FOLLOWING THE feature on WorldSpace ('Whatever Next', *RadCom*, February 2001), several readers have asked me about antennas that would be suited for use outdoors on a permanent basis.

The satellite antenna that is supplied with the Hitachi KH-WS1 doesn't look particularly waterproof, but I decided to take a look inside it to check. In fact it contains a rubber membrane that ought to protect it quite well (in the short term, at least). Unfortunately (for the home constructor, that is) it also contains a pre-amp (2.4 volts is fed along the inner of the coax, to power it), so my initial thoughts were that it would not be viable to build a simple outdoor antenna to replace the supplied one.

Now that the analogue Sky TV service from Astra is being discontinued, there are a lot of redundant 60cm dishes being taken to local dumps. I wondered if one of these would provide sufficient gain for a simple antenna to be placed at the focal point. **Fig 2** shows what I put together for an experiment. It consisted of a length of stout copper wire, bent into a 'bow tie'; ie two quad loops fed in phase. As the WorldSpace receiver feeds a DC voltage along the coax, it was necessary to prevent this from being shorted-out, by connecting the antenna to the coax via a capacitor. All connections were made as minute as possible, as we are talking about microwave construction here and even the odd millimeter can make a significant difference to performance.

Afrisat, the WorldSpace satellite serving Europe and Africa is located quite close to Astra, so I reasoned that if I was going to get a signal at all, I should get one without having to move my dish. With a certain amount of trepidation I climbed the ladder and held my improvised antenna just above the existing Astra LNB (see **Fig 3**). To my delight, the receiver burst into life, the improvised antenna receiving the WorldSpace service at the same strength as the supplied antenna. ♦

WWW.

Advanced Audio Coding
www.aac-audio.com
WorldSpace
www.worldspace.com

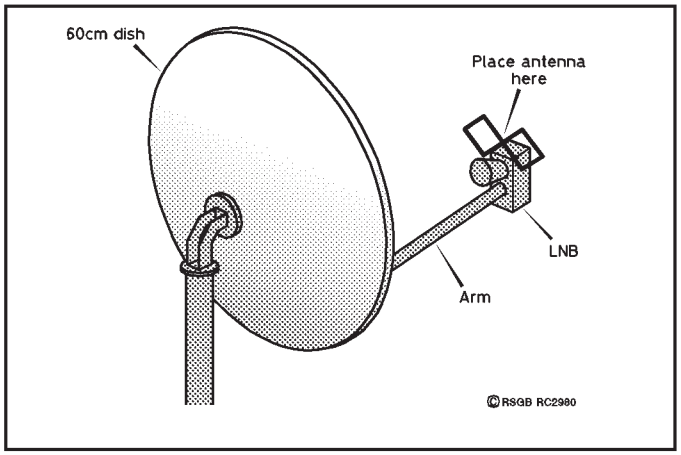

Fig 3: Placing the improvised antenna in this position brought in the WorldSpace service. Voila! An effective antenna at minimal cost, and a new job for an old dish. If you live in Britain, you don't even have to move the dish.

THE NATIONAL SPACE CENTRE AMATEUR RADIO SOCIETY

by John Heath, G7HIA*

THE NATIONAL Space Centre opens its doors for the first time on 30 June 2001. Through its close association with Leicester University, it brings together the academic and practical sides of space research. The National Space Centre is a multi-million pound millennium project with major visitor attractions. One of its declared aims is "to bring space to the people" and it is anticipated that it will receive 300,000 visitors a year.

Following months of negotiations by John Heath, G7HIA; Andy Thomas, G0SFJ, and Stewart Bradshaw, G8GMB, the go-ahead was received from Alex Barnett, Creative Director at the NSC for amateur radio to become a fully integrated part of the exhibits.

With the official go-ahead, the National Space Centre Amateur Radio Society was formed in June 2000 by G7HIA, G0SFJ, G8GMB and Geoff Dover, G4AFJ, with the objective of facilitating the involvement of amateurs to demonstrate space amateur radio in the best possible light to visitors to the centre. The NSC-ARS may appear to be 'just another radio society', and in some ways it will be, with affiliation to the RSGB and AMSAT-UK, a permanent special event callsign, GB2NSC, 'on air' activity events and demonstrations. However, in many ways it will be much more.

AMATEUR RADIO AT NSC

AMATEUR RADIO will be fully integrated into the visitor attractions and we will be working with the professionals at the NSC to ensure maximum visitor interest. Our station will present the modern face of amateur radio, with voice contacts with astronauts on the International Space Station, as well as voice and data communications with all the satellites in the Amateur Service. We will demonstrate real-time computer data links to satellites, image capture from the various camera experiments currently in orbit on amateur radio satellites, SSTV from the International Space Station, APRS, real-time satellite telemetry, data from orbiting spacecraft, and more.

The NSC officials have given us a high-profile location within the 'Space Now' public area and are designing and building our operating desk, in the NSC corporate livery so that we are a fully-integrated part of the NSC's offering. We expect to attract excellent publicity both locally and nationally for the station through our own efforts, and with the aid of the PR professionals on the NSC staff.

EDUCATION, EDUCATION, EDUCATION

ONE OF THE declared aims of the NSC is education. It has the only Challenger Learning Centre outside North America and is forging close links with schools in the City of Leicester. Geoff Dover, G4AFJ, a science teacher at Rushey Mead School already has an operational amateur radio station, G4RMS, which has proven capability to contact astronauts on *Mir* and the Space Shuttle. The interest generated by this project has resulted in a neighbouring school becoming active on amateur radio. We will have the opportunity to build on these links and make amateur radio part of the information and project packs that will be prepared for school visits.

Our station at the NSC will expose people to amateur radio who have no prior knowledge of our hobby. For example, youngsters with a computer interest or those who have taken early retirement and are looking for a challenging technical hobby.

Forging strong links with local radio societies is a cornerstone of our plans as they will give the interested NSC visitor a practical follow-up route at a local level. This won't happen by chance. We plan to develop it very actively with presentations to all of our local clubs. One such presentation has already taken place, attended by over 30 club members, where Andy Thomas, G0SFJ, Chairman of NSC-ARS, gave a presentation on the potential for amateur radio operations at the NSC. This was followed up a few weeks later with a similar presentation to a group of over 60 local schoolteachers.

SETTING UP

WE HAVE COMPLETED the NSC-ARS team recently by recruiting our fifth and final committee member, George Barnett, Technical Director at the NSC and a US Technician class operator. We believe we now have just the right mix of skills and experience to get the job done, not only in amateur radio, but also in the professional skills of the individuals concerned.

We plan to be a flagship station to present modern amateur radio. Our society will be actively promoting the hobby and fully expects to achieve positive national publicity for amateur radio when the first Leicestershire school children make voice contacts with astronauts on the International Space Station.

The RSGB has recognised the importance of this exciting project with its potential to bring several exciting facets of amateur radio to the general public. As a valuable recruiting ground for new amateurs, the RSGB has granted us substantial funding so that we can present a fully capable modern station.

Our other major supporter, AMSAT-UK, has recognised the potential too, and awarded the NSC-ARS equipment sponsorship to the value of £2000.

Major amateur equipment importers in the UK have been approached and Yaesu (UK) has donated an FT-847 transceiver and PSU. Kenwood has donated a TH-7DE transceiver. Waters & Stanton have given us additional discounts and substantial help with the equipment they have supplied to augment the items already donated.

Setting up the station is of course just the beginning. We will need practical help from operators who can run the station, and help from those with specialist interests in operating modes like PSK31, 38K4 satellite data links etc.

If there is any further information that you would like about this project, or if you would like to offer your practical help, please do contact me, John Heath, G7HIA, Secretary NSC-ARS, by fax: 01455 828295 or e-mail: g7hia@amsat.org ♦

WWW.

National Space Centre:
www.spacecentre.co.uk.
National Space Centre ARS:
www.nsc-ars.fsnet.co.uk

FINDING THE NSC

The National Space Centre is located in Exploration Drive, Leicester LE4 5NS. It can be found just off the A6, two miles north of Leicester city centre, midway between Leicester's inner and outer ring roads. Information hotline tel: 0870 607 7223; fax: 0116 258 2100; e-mail: info@spacecentre.co.uk
Entrance costs £7.50 for adults and £5.50 for children aged 5 to 14, with concessionary admission for senior citizens, students and disabled people. Family tickets and season tickets are also available.

*Chestnuts, Desford Lane, Kirkby Mallory, Leicester LE9 7QF.

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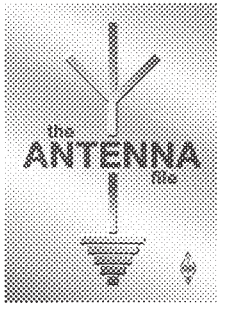

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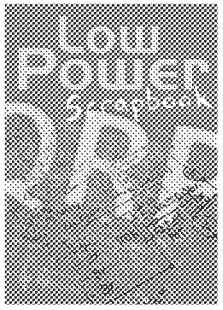

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TECHNICAL INFORMATION ON THE WEB

MANY PEOPLE e-mail me to ask, "Where can I find some kind of technical information on the web?". Here's how to find out for yourself!

IF YOU HAVE e-mail, you almost certainly have a web browser too, and if you have a web browser, you have access to a vast amount of information. There's already information on more subjects than you can possibly imagine, and it's growing month by month. Technical information on topics related to amateur radio is more likely to be on the web than not - we've already passed that milestone - so the key question now is: where?

I'll concentrate on the kinds of technical information that 'In Practice' readers might want to find, and this kind of information crosses the boundaries between corporate and amateur web sites. On the corporate sites you can expect to find data on components and other products, while the amateur sites tend to provide more practical 'how-I-did-it' information. The tool for finding information on the web is called a search engine - it's free, but you need to know how to use it to best effect.

For these examples I will use the Google search engine. There are many other search engines, all with slightly different user interfaces, but Google is the one I use most frequently because its 'advanced' user interface gives a nice balance between simplicity and control. (I don't like the simple 'one-line' user interfaces because they tend to find too much information, most of which you don't want. It then becomes very difficult to refine your search using only that one-line input.) Go to **www.google.com/advanced_search** and what you see is something like **Fig 1**. The shaded panel allows you to find web pages containing certain keywords, using any combination of four methods:

- Pages containing **all** of your keywords
- Pages containing an **exact phrase**
- Pages containing **any** of your keywords
- Pages **without** certain keywords.

This gives you tremendous power to select just the few pages that contain the information you need, and to avoid seeing irrelevant pages.

Here's an example. We're going to look for information about a 160/80/40m vertical antenna called the 'Battle Creek Special', which is mentioned in ON4UN's book *Low Band DXing* as being a great favourite for DXpeditions, but only the basic principle is described. Has anybody published some detailed constructional information on the web? They certainly have - and here's how to find it. Go to the Google page, type *Battle Creek Special* into the **exact phrase** box, and then click the **Google Search** button. What happens next is that Google searches through its indexed catalogues of millions of web pages, which it obtains by continually trawling through the entire World Wide Web.

While Google is searching for us, let's think what would have happened if we'd used one of the other boxes instead. The first option - **all** of your keywords - looks tempting, and indeed it will find the pages you want. But it will also find a large number of irrelevant pages, because Battle Creek is the name of several towns in the USA, and the **all** keywords option will find every page that uses the word *special* about any single thing in any of those towns - and that's 125,000 pages!

In probably less time than it took you to read that paragraph, Google comes back with a list of about 150 possible web pages, giving a short extract from each page. Each underlined title is a hyperlink - click on one, and you'll jump straight to that page. Click the **Back** button on your browser toolbar, and you'll come back here. **Fig 2** shows the first three results for *Battle Creek Special*, and sure enough they're all 'hits'. At the top of the first results page is the total number of hits, and these are normally listed ten to a page. At the bottom of each page is a continuation bar where you can move on to other pages.

This example is typical in several ways. First, the most relevant pages are likely to be quite close to the top of the list (probably because these pages mention the key phrase several times, and the search algorithms use this feature to sort the list of hits). Second, many of the pages are actually links and cross-references to the pages that actually contain the information; you soon learn how to spot these, and they do serve to show which sources have been found most useful by other people. Third, there are several unexpected and irrelevant references: we had no way of knowing that *Battle Creek Special* is also the name of a type of fishing fly and a type of beer.

To eliminate these irrelevant references, you can use Google's 'pages **without** the words' box. If you click the **Back** button on the browser toolbar (more than once if necessary), you'll get back to the original search form. In addition to the **exact phrase** information that you typed in originally, in the **without** box type *fly beer* to elimi-

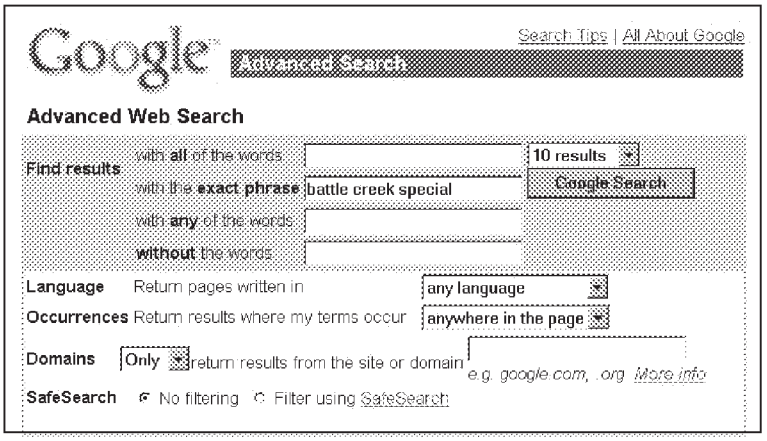

Fig 1: The Google Advanced Web Search interface, ready to search for the 'Battle Creek Special' antenna. (Some search engines take notice of capital letters; Google ignores them.)

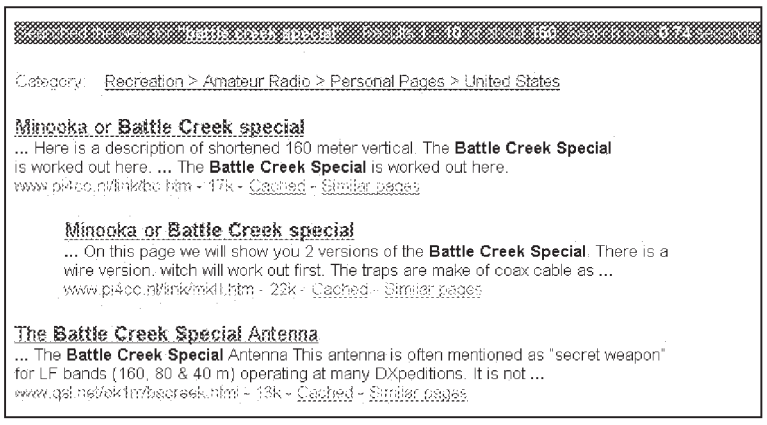

Fig 2: First results from a search for 'Battle Creek Special'. The best references are generally towards to top of the list.

nate pages containing either of those words. Click **Google Search** again. This time the number of references has been cut down to a more manageable 88. There are still a few unwanted ones, for instance because they contain only the word *flies* rather than *fly*, or *ale* or *brew* rather than *beer*, but it's hardly worth eliminating these few additional strays.

The only further improvement you could make would be to select English from the **Languages** drop-down list, rather than the default of 'any language'. But that isn't always wise - if there are a lot of references in other languages, that implies there is some information that you might need to know about. Don't get into the bad habit of limiting the results to English, even if you think that's the only language you can read. In fact you do know another language - the language of technical information, which crosses all boundaries. That means you can often puzzle out technical data from diagrams and tables, even if you can't understand a word of the main text. Also, Google and many other search engines offer the option of an automatic translation. For technical material this can often result in total nonsense, but it may help you to work out a few important words.

Moving on to a different example, we radio amateurs have something that makes searching very easy: our callsigns. If you can relate a piece of information to a specific callsign, eg G5RV, just type it in and click **Search**. With that particular callsign, be prepared for a flood of results! If you want information on the G5RV antenna, you need some way to eliminate all the station descriptions that merely say "I'm using a G5RV". The search engines do a fairly good job of sorting the results for probable relevance, but you cannot tell them to look specifically for pages containing technical data - the search algorithms are based on word content rather than meaning. However, you can sometimes guide the search by requiring an additional word that is only likely to turn up on a technical page. In the case of the G5RV antenna, a good way would be to enter *G5RV impedance* in the 'containing **all** of the words' box.

In all kinds of computerised searching, you often have to use some imagination to think of words that are likely to be there in the pages you want - or can be used to eliminate the pages you don't want. Often, a search for information about a piece of equipment will also find 'for sale' and 'wanted' ads. Some handy words to eliminate those are 'sale', 'fs' (a common abbreviation of 'for sale') and 'wtb' ('want to buy').

As a final example, how do we find data on a particular transistor or IC? This isn't quite so easy, because the web sites of semiconductor manufacturers can be very large, and search engines tend not to explore deeply enough to find the pages where the device number is listed explicitly. We have to take alternative routes. One of my favourites is called ChipDocs, a site which specifically catalogues semiconductor data. This has its own specialised search engine which understands that semiconductor names usually have a 'core number' which does not vary between manufacturers or package outlines. For example, a MC78L12ACT voltage regulator can be found by its core number of 7812, and the ChipDocs search engine will list all devices that share that core number. ChipDocs is a commercial service that allows subscribers to click on any device name to go straight to its data sheet. However, you can use it free by clicking on the manufacturer's name, and on the next page clicking on the link to the manufacturer's own web site, which you can then search for yourself. ChipDocs can therefore be used as a free 'front-end' search to fully identify a device if you don't already know the manufacturers.

The ChipDocs list of semiconductor manufacturers' web sites is also very useful, although some of them have become more difficult to find in the past few years, owing to the craze for de-merging and re-naming. Manufacturers' web sites vary greatly in layout and ease of navigation, but you can usually search down through progressively more detailed lists of categories to find lists of individual devices. Many corporate homepages seem to be written for stockbrokers rather than engineers; **Products** is usually the magic word to reveal information on devices. Although most sites include search engines, they are often poor at understanding and finding device names, so don't give up if a top-level search fails to find the device you want. Use the product category lists instead. If all else fails, many common semiconductors are second-sourced from more than one manufacturer, so if you're getting nowhere on one manufacturer's web site, think of another that might also make that device (or find another one listed in ChipDocs) and try its site instead.

Ultimately you'll want to find the device data sheets, which are usually available in PDF format. If you don't already have the free Adobe PDF Reader, get it now. You can either download it direct from the Adobe web site or pick it up from almost any cover CD that comes with a computer magazine. Once PDF Reader is installed on your computer it will allow you to read a wide range of documents distributed in this near-universal format - including the CDs of RSGB and ARRL back-issues. You can then either save the data sheets as the original PDF files on your own hard disk, or print them out.

To sum up:

- Learn how to use a web search engine, and add it to the Favourites/Bookmarks list of your web browser. Read the Help pages for your chosen browser, and don't be afraid to experiment - it's all free. Find ways to focus your searches by eliminating unwanted references.
- For device data, bookmark a selection of links to manufacturers, and also to general 'front-end' sites such as ChipDocs. Have PDF Reader already installed on your machine.
- Keep aware of changing service providers, changing company names, reorganisations of web sites and the many other factors that can contribute to 'link decay'. This is in the very nature of the World Wide Web, so you have to be prepared to search out new links from time to time.
- All the services I've described are completely free. At most, it only costs you phone time to have access to all the technical data on the entire World Wide Web.
- Whatever you're looking for, assume it's there, somewhere on the web. It probably is - or soon will be - so don't give up until you find it!

RF RESISTANCE - CORRECTION

I SLIPPED a factor of 10 in the formula for RF resistance given in the May column. The constant is 0.560, and the resistance in the example should be 0.36Ω. Thanks to G3VLF for pointing this out. ♦

WWW.

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ChipDocs part number finder
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ChipDocs links to manufacturers' web sites
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All these links are also on the 'In Practice' web site, together with a selection of other useful links for finding data on RF devices.

If you have new questions, or any comments to add to this month's column, I'd be very pleased to hear from you by mail or e-mail. Please remember that I can only answer questions through this column, so they need to be on topics of general interest.

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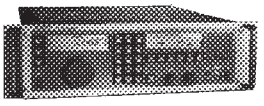

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Software Radio: a Closer Look

Part one by Gerrit Buhe, DL9GFA, translated from CQ DL by Erwin David, G4LQI *

A GOOD RECEIVER should be able to detect weak signals without being swamped by strong signals outside its intended passband - it should have a wide dynamic range. If the top of the dynamic range is inadequate, intermodulation products of strong broadcast stations will interfere with weak DX stations; if the RF pre-amplifier is switched off or an attenuator switched in to move the dynamic range upwards, a weak DX station sinks into the noise, because the receiver sensitivity has become inadequate.

The dynamic range is measured by the parameters *Noise Figure* (a measure of sensitivity) and the *third-order intermodulation point*, IP_3 (a measure of strong-signal performance) [4]. From them, *the intermodulation-free* and *blocking* dynamic ranges can be determined. The greater the front-end bandwidth of the receiver, the greater the signal power which the receiver must handle linearly; for a given sensitivity, this requires a greater dynamic range, hence a higher IP_3.

Limiting the front-end passband reduces the total number of all signals within this band, which permits the following stages to operate in a manner approaching linearity. These considerations are equally significant for digital receivers; they dominate the design of the front-end of the receiver and determine where in the receiver chain the key *analogue-to-digital converter* (ADC) should be placed.

ADC LOCATION

IN MANY BLOCK DIAGRAMS of HF digital receivers, the ADC is exposed to the whole frequency range from 0 - 30MHz. This has many advantages, one being that the local oscillator can be a variable digital *numerically-controlled oscillator* (NCO). But at what price in terms of system performance?

If, indeed, this whole spectrum reaches the ADC, the vector sum of all these signals must not overdrive the ADC, lest clipping should create so much distortion that the demodulated signal is practically unreadable. To avoid overdriving in the presence of many strong broadcast stations, so much headroom would have to be provided that it would occupy a considerable fraction of the ADC's total dynamic range. This means wasting precious dynamic range on unwanted signals. The very high ADC IP_3 values seen (40 to 60dBm) are measured at levels well below full scale (-5 to -15dB); they represent only the linearity at the measurement level. Exceeding full-scale, however, is such a non-linear process that it cannot be defined by an IP_3 value.

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The subject of Software Radio has already been introduced [1 - 3]. The present article should add to its understanding and is aimed at practical implementation. Enticing as the thought of digitising straight from the antenna may be, it achieves simplification of the hardware only by sacrificing performance; that is unacceptable to amateurs.

Where in the receive chain should the analogue-to-digital conversion take place? A compromise between effective dynamic range and input bandwidth must be made. Present-day ADCs with sampling rates of several tens of megahertz are available with resolutions of 12 or 14 bits. The usable dynamic range is calculated from:

$$SNR = 6.02dB \times n + 1.76dB + PG,$$

where n is the number of bits and
PG is the *Processing Gain* (oversampling gain).

According to the Nyquist sampling theorem, the sampling rate (f_s, number of samples per second to be converted to digital numbers) must be at least twice the bandwidth of the wanted signal, in order to extract all the information it contains. A further increase in the sampling rate permits the handling of broader signals but, at constant bandwidth (eg 2.4kHz for SSB voice communication), it spreads the digital noise resulting from the *quantising error* in the ADC over a wider frequency range and thus lowers the noise floor in the wanted band. Every doubling of the sampling rate increases the SNR by 3dB.

This *Processing Gain* is thus calculated from the ratio of the Nyquist bandwidth ($f_s/2$) to Δf, the bandwidth of the wanted signal:

$$PG = 10\log_{10}[(f_s/2)/\Delta f].$$

Actual oversampling gains achievable with some ADCs are shown in **Table 1.** Specifications from different manufacturers often make comparison difficult as measurement methods are not standardised, but it is clear that the performances of these ADCs are compatible with the overall specifications expected from high-performance HF receivers, provided that signals in a bandwidth not much wider than that of the wanted signal are offered for digitisation; in an HF receiver, this condition is met only after a narrow IF (crystal) filter.

This implies that a high-grade front end is required, as was described by DC4KU [5]; with present-day components, the circuitry between the antenna and the amplifier terminating the crystal filter must still be analogue. The receive path in the transceiver in **Fig 1** bears this out.

IF CONSIDERATIONS

WITH THE ADC in the IF chain, the digital receiver can prove its advantages. Even with very strong interference (S9 + 20dB) getting through the crystal filter next to our S1 wanted signal, the ADC is not overloaded and can digitise both signals in a linear manner. Steep-sided digital

filters can then separate the two - see **Fig 2**. Even though the stronger signal would reduce the pre-amplification by virtue of the AGC, the ADC has sufficient dynamic range to lift the weaker signal well above the noise. Expensive additional crystal filters for bandwidths narrower than those required for SSB are therefore superfluous. As the latter serve only to reduce the input level due to unwanted signals ahead of the ADC and not to suppress the unwanted sideband (this being done by the phasing method in the digital domain), the crystal filters might be home-made with shallower skirts [6].

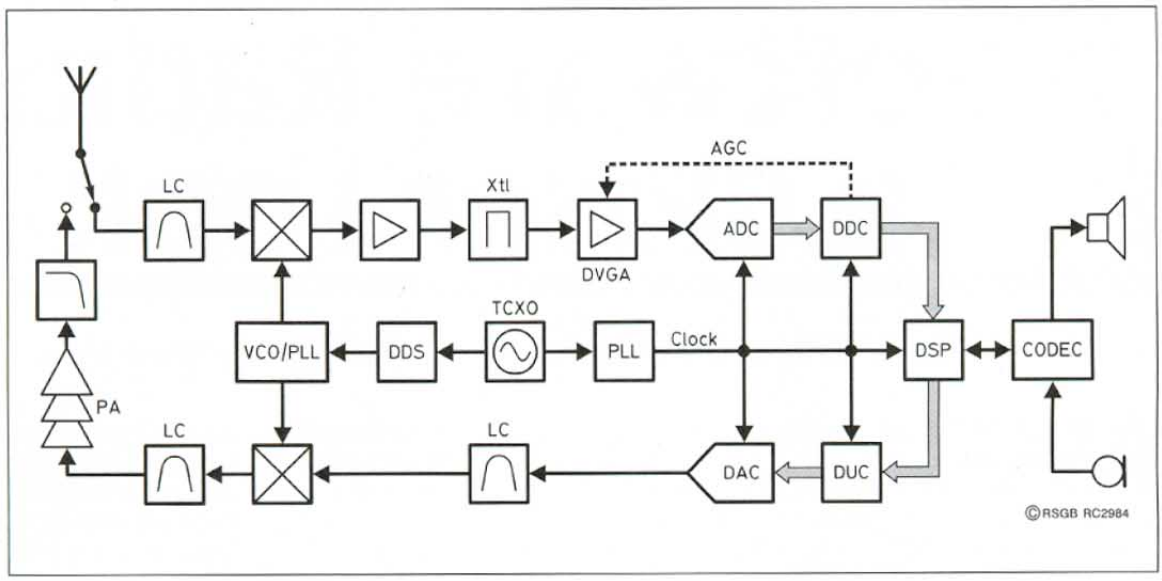

Fig 1: Block diagram of a digital transceiver.

The use of an intermediate frequency can also avoid another limitation of ADC dynamic range. In addition to the static non-linearity, an ADC also produces a dynamic error which is expressed as its *spur-free dynamic range* (SFDR). Depending on the architecture of the ADC and the relationship between input signal and quantising error, the resulting quantising noise is not evenly spread over the frequency range 0 to $f_s/2$, but may be concentrated at various harmonics of the signal frequency which can be folded-back (aliased) into the first Nyquist zone 0 to $f_s/2$, as illustrated in **Fig 3(a)**.

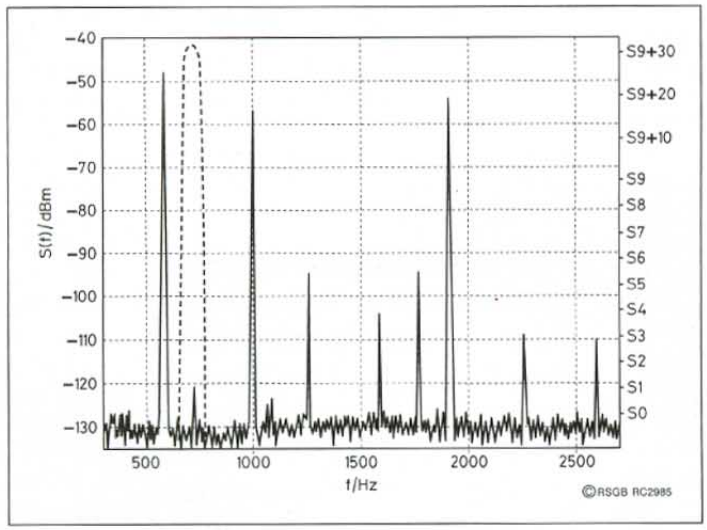

Fig 2: Selection of the wanted signal by a digital filter (dotted).

It is seen that, after the sampling process, spurii can appear which limit the dynamic range if they fall within the signal passband. This can be counteracted by the process of *dithering* [7] at the expense of a small reduction in the wanted-signal level necessary to avoid overload due to additional noise as shown in **Fig 3(b)**. However, by a judicious choice of sampling rate and IF so that none of these spurii fall within the signal bandwidth, the need for dithering and the resultant reduction in dynamic range is avoided.

The IF need not be lower than half f_s, the sampling rate. The Nyquist theorem is also satisfied if the IF is much higher, as long as the sampling rate is at least twice the width of the signal passband.

ADC model	AD6644	CLC5958	LTC1742	CLC5957	SPT7938
Manufacturer	Analog Devices	National Semiconductors	Linear Technologies	National Semiconductors	Signal Processing Technologies
Resolution (bits)	14	14	14	12	12
Sampling rate (MHz max)	65	52	65	70	40
Undersampling up to (MHz)	250	to 30 70	100	300	250
$SNR_{Nyquist}$ (dB full scale)	74	71	74?	66	62
SFDR (dBc)	90	90	90	74	73
PG (dB max) for 2.4kHz BW	41.3	40.3	41.3	41.6	39.2
Max total dynamic range: SNR + PG (dB)	115.3	111.3	115.3	107.6	101.2
Power dissipation (mW)	1300	1400	900	640	170

Table 1: Information on analogue-to-digital converters from several manufacturers.

UNDERSAMPLING

IF THE SIGNAL FREQUENCY is greater than half the sampling rate (ie > $f_s/2$, outside the first Nyquist zone), the procedure is called *undersampling*. This process can be visualised as mixing the signal frequency with the sampling clock and its harmonics. An example: when sampling at f_s = 52MHz, signals at

52 - 4 = 48MHz,
52 + 4 = 56MHz,
2 x 52 - 4 = 100MHz,
2 x 52 + 4 = 108MHz...

would, in the digital domain, all appear at 4MHz and be indistinguishable from one

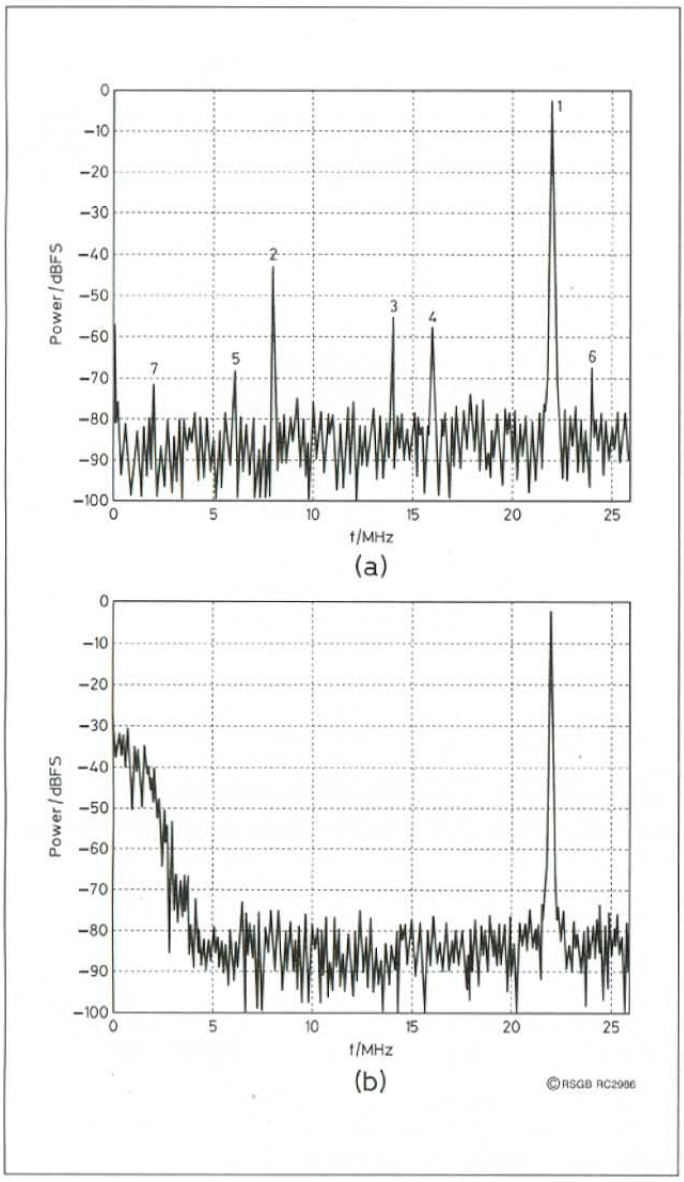

Fig 3: (a) Harmonic spurii - the wanted signal is at 282-5x52=22MHz; (b) Suppression of the harmonic spurii by dithering.

another - see **Fig 4.** Limiting the signal bandwidth before sampling assures that only signals in the desired bandwidth are digitised.

When undersampling, the ADC clock must be phase-locked to the IF to prevent slow beats in the demodulated signal. Usually, the reference clock of the VCO/PLL (see Fig 1) and the ADC clock are one and the same; if so, there is no problem.

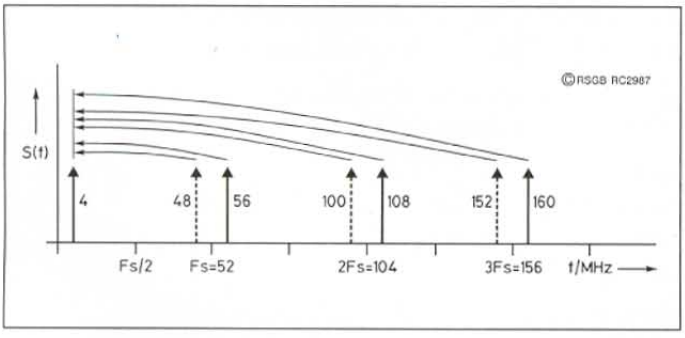

Fig 4: Undersampling: the dotted frequencies appear in the reverse sideband.

Another important consideration is the quality of the clock signal; if its *jitter* (phase noise) is too great, sample amplitude errors cause additional noise which can limit the SNR. The size of the error depends on the slope of the input signal at the instant of sampling, ie on its amplitude and frequency, as **Fig 5** shows. At twice the signal frequency, the sampling noise is 3dB higher, which is harmful if it exceeds the quantising noise of the ADC. For undersampling, the clock jitter should not exceed a few picoseconds.

Within the input bandwidth of the ADC, the IF may be chosen according to the usual criteria for analogue receivers [2]. The author has achieved good performance with IFs from 9 to 280MHz at a sampling rate of 52MHz.

THE DIGITAL DOMAIN

THE ADC OUTPUT is a 12- or 14-bit data stream at a clock frequency of, say, 52MHz. Finally, the digital domain has been reached where digital building blocks permit software control of the receiver's properties and any errors can be easily corrected by reprogramming.

The building block following the ADC is the *digital down-converter* (DDC) or *digital tuner.* Its functions are conversion of the signal to the baseband, *decimation* (reduction) of the sampling rate, and provision of channel filtering. Decimation of the sampling rate has two purposes: firstly, to enable ordinary *digital signal processors* (DSPs) to handle the data stream; secondly, because digital filters can be configured more effectively at lower clock frequencies.

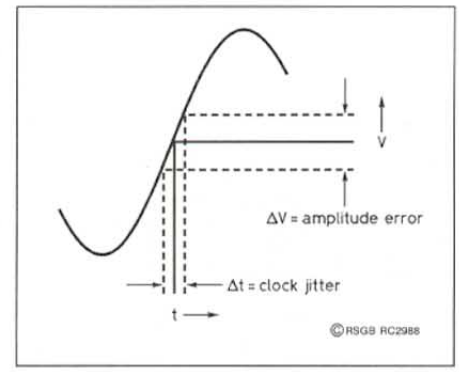

Fig 5: The amplitude error resulting from clock jitter increases with signal voltage and frequency.

Fig 6 shows the architecture of the National Semiconductors model CLC5902 (typical of DDCs made by several manufacturers, eg AD6620 or HSP50214B). This IC also offers a very flexible programmable AGC function, which controls the gain of a *digital variable gain amplifier* (DVGA) inserted ahead of the ADC. This DVGA can be controlled to give gains of -12 to +30dB, a range of 42dB = 7bits. Applied to the scaling of 12 for a14-bit ADC, this provides a total resolution of 19 for 21 bits. The AGC, if enabled, is completely transparent and provides virtual adjustment of the ADC headroom to suit the amplitude of the input signal.

In the DDC, the data stream from the ADC is first multiplied with the sine and the cosine stream from the NCO, which mixes the signal down into the audio range. The NCO frequency must equal the chosen IF or, in the case of undersampling, equal the distance to a harmonic of the sampling frequency. This quadrature demodulation has the great advantage that the desired sideband can be chosen by shifting one channel by 90° and then taking either the sum or the difference. The quadrature process is especially advantageous for digital modes, because both the I *(in-phase)* and Q *(quadrature)* signals are available at the output.

After the mixing, the corrections according to the setting of the AGC are made, and the data stream, still clocked at 52MHz, is fed into the low-pass decimation filter, which is a CIC *(cascaded integrator comb).* This is a very favourable implementation as only delays, sign reversals and additions are required. At this point in the CLC5902, a decimation ratio of 8 to 2048 can be chosen, which

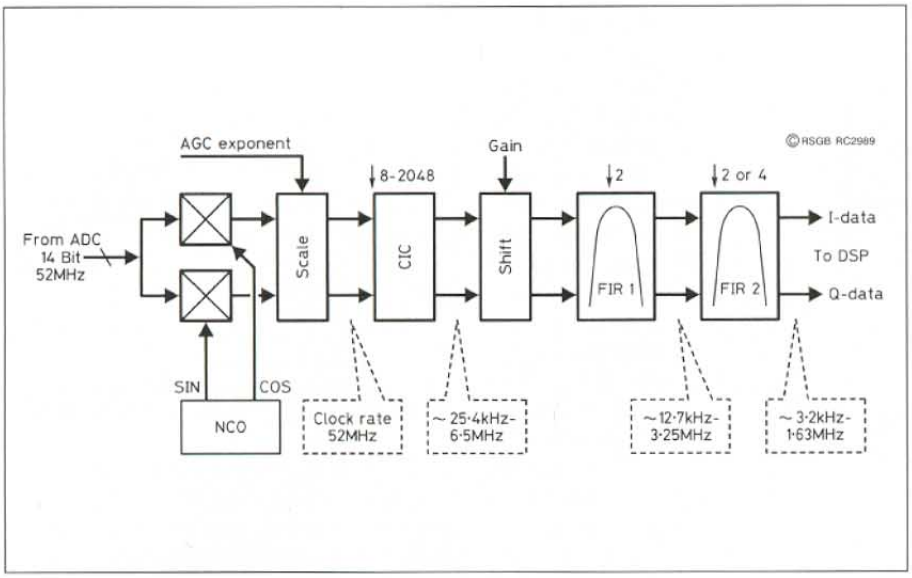

Fig 6: Block diagram of the CLC5902 digital down-converter.

yields an output frequency of approximately 25kHz to 6.5MHz.

Two programmable FIR *(finite impulse response)* filters follow: the first of these decimates by a factor of two; the second by two or four. For an input clock frequency of 52MHz, this yields an output sampling rate for this IC of between about 3.2kHz and 1.6MHz.

A facility to change the gain of the above signal path by bit-shifting is provided, but this ought to be done very prudently lest any single stage be overdriven. The CLC5902 has a debug mode by which the signal can be observed between any two stages, a real help in fault-finding.

The DDC output can now be sent to a DSP, as serial or parallel data, and in one of several formats. The DSP then does further processing, such as additional filtering and the decoding of digital modes or, in the simplest case, it sends the data samples to an audio CODEC IC driving a headset or loudspeaker.

NEXT MONTH...

THE AUTHOR TURNS his attention to the transmitting side of the system; he considers the attractions of using an IF, generating the signal digitally, and using software for the PA. ♦

REFERENCES

[1] 'Eurotek', *RadCom*, July 2000, pp38 - 40.

[2] 'Technical Topics', *RadCom*, September 2000, pp53 - 56

[3] 'Technical Topics', *RadCom*, November 2000, pp60/61

[4] *Radio Communication Handbook*, 7th Ed, RSGB, chapter 6

[5] 'Eurotek', *RadCom*, November 2000

[6] 'The Belthorn SSB IF Module', G4GXO, *RadCom*, April 2000, pp16/17

[7] 'Overcoming Converter Non-linearities with Dither', by Brad Brannon, www.analog.com/techsupt/application_notes/AN-410.pdf

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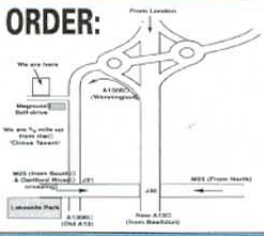

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Technical Topics

PAT HAWKER, G3VA
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MOSFET 6V6 VALVE SUBSTITUTE

AS SOMEONE WHO, by the time you read this, will have been around for almost exactly 2.5 gigaseconds [congratulations - *Ed*], I hope that I can be excused for still having a soft spot for (and indeed still largely using) equipment dating from the valve epoch. This is not to say that I can work up much enthusiasm for those who collect ancient broadcast receivers regardless of whether they were ever capable of good quality or good sensitivity. Most of the domestic sets marketed between 1935 to 1960 possessed no particular merit and were often housed in large but non-descript cabinets of little artistic merit. There were a few exceptions - some of the Murphy sets, the original costly RGD radiograms, and a few of the sets intended for export.

These criticisms do not apply to several 'classic' communications receivers which, in this period, were designed by top-notch engineers for professional, commercial, military and amateur radio applications. One thinks immediately of the National HRO, the Super Pro series and some other Hammarlund receivers, the RCA AR88, the post-war Collins receivers, the Marconi CR150, the Racal RA17, a few of the many Hallicrafters and post-war Eddystone models, and some of the American and German wartime models such as the BC312, BC342 and BC348 etc.

These models, although designed in the AM era, are still capable of excellent performance when used for SWLing, beacon watching etc, and can often be modified for (or can already provide good reception of) SSB signals, particularly if given TLC and attention to the inevitable ravages of time. The original mechanical design and construction needed to be of a high standard, rather than 'built down to a price' to make them worth collecting and restoring.

Replacement valves can be a problem. This is especially the case with audio output valves which, passing substantial current and generating a lot of heat, tend to lose emission if used regularly. Valve types such as the 6V6 beam-tetrode or KT61 pentode and other roughly-similar pentodes (eg 6F6), were widely fitted in some of the popular receivers and are not easy to obtain today, even from firms offering large stocks of NOS (new old stock) post-war surplus military valves.

Dave Allen in *Electronics World*, April 2001 pp316-17, shows how a high-voltage MOSFET can be substituted as a plug-in replacement for a 6V6 and potentially for almost any octal or large British-based audio output valve provided that its base connections are known. Later miniature glass valves are usually available from suppliers and it would be less easy to provide a MOSFET plug-in replacement.

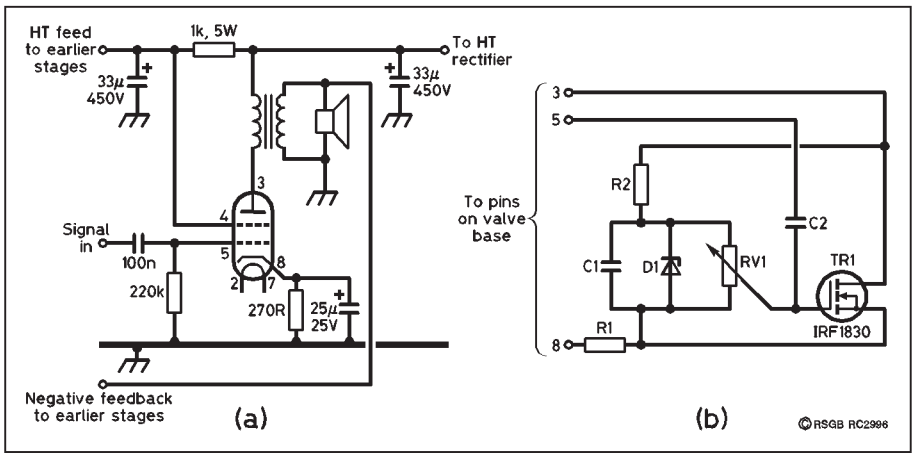


Fig 1: (a) Typical audio output stage using a 6V6 or KT61 valve. (b) Plug-in replacement based on a high-voltage MOSFET. R1 100R, 0.6W, R2 1M, 0.6W, RV1 220k horizontal mounting preset. C1, C2 100nF, 63V metallised polyester film, 5mm spacing. D1 18V, 400mW Zener diode. 1RF1830G high-voltage MOSFET (Farnell).

His plug-in modules are intended to replace directly a variety of octal-based output valves wired in a parallel heater chain without further modification to the original equipment.

Fig 1(a) shows a typical output stage using a 6V6 valve indicating the pin connections. Only three of the eight pin connections are used for the MOSFET replacement module: (3) anode; (5) grid; and (8) cathode. **Fig 1(b)** shows the MOSFET substitute module, using a IRF1830G high-voltage MOSFET (available from Farnell) which has an insulated tab so the heat sink is not at HT potential.

The components are assembled on a piece of 0.1in matrix stripboard with 11 strips by 32 holes, with three short flying leads connected to the board and taken to the relevant pins on a valve base carefully salvaged from a dead glass octal valve (use safety goggles and gloves when reclaiming the valve base). With class-A operation (typically 20mA current, about 5.55W dissipation with 280V HT), a good heat sink is needed. Dave Allen recommends at least 9.9°C/W. The 18V/400mW Zener diode keeps the gate voltage stable and enables the module to be used in different receivers having different HT voltages.

When installing the module, rotate the wiper of RV1 until it is at the anode end of the Zener diode (D1), to ensure that the gate of the MOSFET is not positively-biased when first switched on. Dave Allen writes: "Now insert the module into its socket and connect a meter switched to the 20V DC range across R1. Switch on the set and let it warm up for about ten minutes. Slowly rotate RV1 until the MOSFET springs to life. This will happen quite suddenly. Finally adjust RV1 for a drop of 2V across R1. This corresponds to a current of 20mA." He reports that his original module has been in use for about two years with no problems: "As a bonus, the audio is much improved – especially at the high frequency end."

I wonder whether anyone has tried using a high-voltage MOSFET module as a replacement for a 6V6 crystal oscillator as found in a number of wartime and post-war transmitters?

MORE ON 4-PATH POLYPHASE

THE 'TT' ITEMS on the Gingell 4-path polyphase network in the April, May and June 2001 issues of *RadCom*, have certainly had the result of stirring up interest in its use in conjunction with the Tayloe 3253 switching mixer. There can be little doubt that this represents a most promising approach to low-cost high-performance direct-conversion HF receivers and transceivers.

First, a surprising development in the form of an airmail letter from Dr Michael Gingell, KN4BS, of Raleigh, North Carolina. To quote: "I am the Michael Gingell who was at STL so many years ago, to whom you talked about my original (1973) article on polyphase. I worked on it and other related filter and modulation techniques for some 10 years, from about 1966. By the end, we had switched to all-digital techniques, but not before I had designed and built an SSB system with all-digital filters using the same ideas but digitising them. In 1974 I got a PhD from London University for my work on polyphase filtering and SSB while continuing to work at STL. This took me about six years from 1968 to 1974 on and off. I am glad that my principal

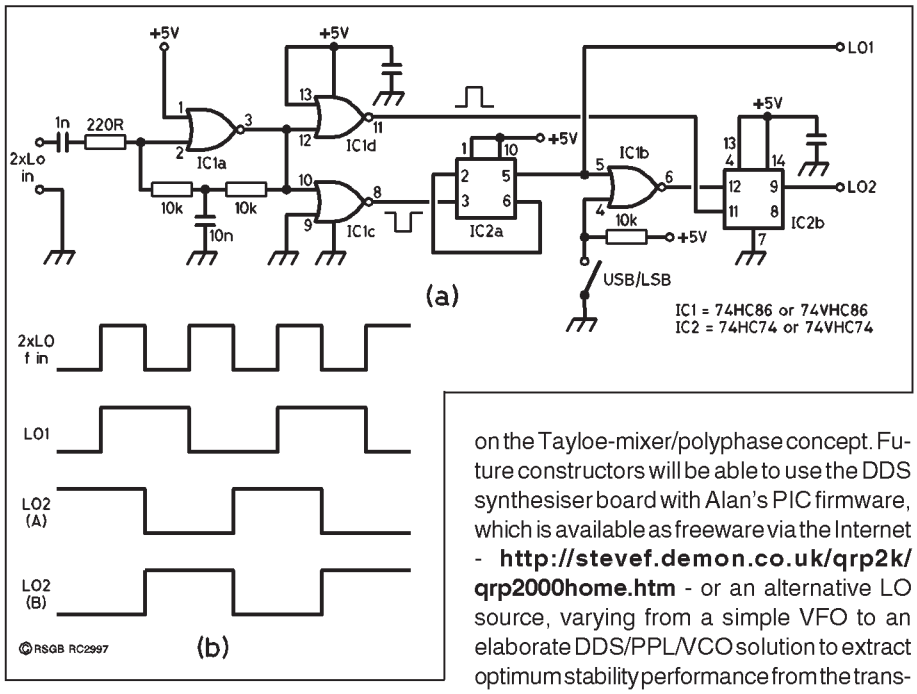


Fig 2: G0BBL's improved system of obtaining switchable quadrature LO outputs obtained from one 2 x *f* source and suitable for use in single-signal D-C receivers including the QRP 2001 based on the Tayloe mixer/polyphase concept, etc.

university examining professor was one of the world's experts in filter and phase-splitting design, Professor W Saraga.

"The first publication I produced on asymmetric polyphase was actually in June 1968, when two documents were submitted to the UK Patent Office, and subsequently in the USA and many other countries. They were in the search phase for a year and a half before being published on 17 December 1969. [Noted in the June 'TT' – *G3VA*]. Publicly available for anyone to see – if you know that they exist in the first place.

"In 1979 I got an inter-company transfer to the USA where we have been ever since. I became a ham 12 years ago - KN4BS - and joined the ARRL. However the RSGB magazine is better - and your writing for it is a major factor - so I joined that too. It is also a link with home ... I am going to add to my web site copies of my patents and my PhD thesis containing a lot of material of interest even today... my web page is: http://users.vnet.net/gingell/... Go to the page for polyphase filters and methods for single sideband and see what I have got so far."

In the June 'TT' I noted that, unknown to G3OGW, an experimental D-C receiver prototype was developed in 1999 by Jan Verduyn, G0BBL (ex PA0VDR), and colleagues, and described in the winter 1999/2000 issue of *SPRAT* based on the Tayloe mixer/polyphase concept.

G0BBL writes: "Since the original 'QRP 2001' article was written, Steve Farthing, G0XAR, Alan Rowe, M0PUB, and I have continued work on a joint project to design an HF SSB/CW transceiver exciter board based on the Tayloe-mixer/polyphase concept. Future constructors will be able to use the DDS synthesiser board with Alan's PIC firmware, which is available as freeware via the Internet - **http://stevef.demon.co.uk/qrp2k/qrp2000home.htm** - or an alternative LO source, varying from a simple VFO to an elaborate DDS/PPL/VCO solution to extract optimum stability performance from the transceiver board.

"The following notes on our work since the 'QRP 2001' article was published may be of interest to 'TT' readers:

- A worthwhile improvement may be obtained by driving the Tayloe 3253 mixer with the novel circuit shown in **Fig 2**. This generates two LO signals in quadrature from a 2 x *f* source rather than the usual 4 x *f* source. At the same time, it also offers a simple method of changing sidebands. The consequence of using quadrature LO signals is that the switching sequence of the Tayloe mixer is no longer 1, 2, 3, 4, 1 etc, but becomes 1, 2, 4, 3, 1, 2, 4 etc. This means that the connections for 180° and 270° to the AF op-amps need to be swapped over. Advantages are better sideband suppression and no need for separate adjustments with the polyphase network. We find it is relatively easy to achieve good sideband suppression at a given frequency by adjusting the relative gains of the quadrature audio signals, but it is much harder to maintain good suppression over a wide RF range. By driving the Tayloe mixer this way, we achieve a minimum of 40dB suppression over the entire MF and HF spectrum, without the need for manual adjustments. Several other methods of driving the Tayloe mixer have been tried but with inferior results.
- The Tayloe mixer has been used successfully as an SSB modulator for transmit purposes as shown in **Fig 3.** The concept provides good sideband suppression. However, measurements indicate only 30dB carrier suppression and further work is aimed at improving this. At present we are not sure whether this problem is caused by leakage around the FST3253 bus switch or by an imbalance in the four phase signals to this IC. In recent correspondence, Dan Tayloe, N7VE, mentioned that he had not experienced this problem; however he used only I and Q signals. Note that the 5.1V Zener diodes shown in the diagram are essential, otherwise the 3253 chip will be destroyed on transmit.
- The Tayloe/polyphase transceiver concept has been used on 28MHz by John Law, G8BTR, a self-professed penny-pinching Yorkshireman. He has been much attracted by the simplicity and low-cost of this concept and has done significant work to prove this design on transmit! He has made several 70MHz SSB contacts using a transverter from 28MHz. Stations worked report tight, crisp audio quality; however, to date, the carrier is clearly audible. He obtains a 56MHz LO source from a Hands' DDS 3 Synthesiser kit, which is filtered by a 7-pole bandpass filter. This improves the SDR of the LO and eliminates birdies that would otherwise be present on receive when using an LO output generated directly by the AD9851 10-bit DDS. This is exactly what we found when we designed our quadrature DDS LO module in 1999.

"The divide-by-two quadrature circuit, shown earlier, will be submitted later this year to *SPRAT* as an improvement to my original

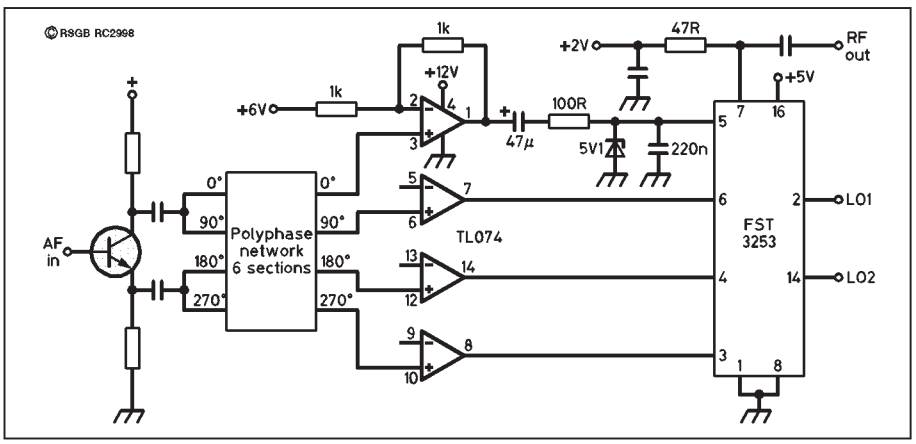


Fig 3: G0BBL's method of using the Tayloe/polyphase concept for an SSB transmitter exciter.

article and as an alternative method of driving the R2 two-phase receiver designed by KK7B and described in the *ARRL Handbook,* as well as originally in *QST* (January 1993)."

Duncan Layne, G0AHK, has drawn attention to an *IEE 2000* lecture paper 'A Low-IF Polyphase Receiver for GSM Using Log-Domain Signal Processing', by a number of Philips engineers and using a polyphase filter network. To quote briefly: "Polyphase filters were studied some ago by Gingell. As implemented then, they were largely passive, four-port devices comprising a matrix of resistors and capacitors. Whilst they had clear merit, it was not until active gyrators were studied by Voorman, that a more attractive implementation could be realised on a silicon integrated circuit." Brief details are given of the integrated circuit polyphase filter although, as shown, it is intended for a GSM UHF receiver rather than for HF applications. One wonders whether the use of gyrators would impair the dynamic range compared with the original RC filters.

But it is clear that the polyphase approach is undergoing reappraisal both as a receive filter and for SSB modulators. In this connection, Maxim has described an SSB modulator that draws only 5mA at 2.7V as a two-page 'Design Showcase' feature in *Maxim Engineering Journal,* No 29. A related idea appeared in a 1997 issue of *EDN.* This is claimed to be capable of generating SSB signals from 35MHz to 80MHz using a standard RC polyphase filter (HA5WH values with 5% tolerance components). It combines wideband, low-voltage op-amps (MAX494) with an IC (MAX2452) that integrates all the necessary functions. The MAX2452 includes an oscillator stage, but would need to be used in conjunction with a PLL stabiliser or a stable external 2x *f*source. The generator is claimed to be suitable for use on the 50 or 70MHz amateur bands. The sideband discrimination was measured as 35dB and carrier suppression as 27dB, but there seems no reason why these figures could not be improved upon with more attention to the polyphase filter component matching and provision of amplitude adjustments. To save my limited space, any reader wanting further details should send a stamped, addressed envelope plus an extra 19p stamp for a photocopy of the complete Maxim Design Showcase article, including circuit diagram.

A late, but very interesting letter and notes have arrived from Graham Rogers, G3TFL, based on his work on polyphase filters in the 1970s. To quote from his letter: "In a throw-away sentence, Gingell's 1973 article points out that 'Some of these filters, suitable for single-sideband modulation, can be constructed using only resistors and capacitors, making thick- or thin-film construction a practical possibility'. This really would make the design so much more attractive - accurate balancing of the components in each stage would fall out of the production process for free, as would a considerable size reduction over discrete components.

"A point not brought out in most articles on SSB polyphase modulators is the need for audio filtering. With a D-C receiver, you would expect to include sharp low-pass SSB and CW filters on the output, but with an SSB exciter, any audio fed into the filter outside its design pass-band will come straight out on both sidebands. For this reason it is desirable to be generous with the top frequency the filter can handle. That way, you don't need such an elaborate filter on the audio input. I went for an eight-stage design covering 200Hz to 5kHz. This allows an audio filter to be used which rolls off from 3kHz and should be quite steep by 5kHz. The G3PLX six-stage filter covers 600Hz to just over 4kHz so, for the sake of an extra couple of stages, you really need an audio filter twice as good – and you're still losing an octave of useful bass.

"It is interesting that G3PLX [and other published designs - *G3VA*] went for a fixed resistor value, requiring six different values of capacitor. I made exactly the opposite design choice on the basis that the capacitors are the more costly components and, in order to select matching sets of four, you need to buy quite a lot of extras. For eight stages I needed 32 capacitors. I fixed these at 47nF and found that, from a box of 50, it was easy to select eight matched sets of four. Furthermore, the best matches could be selected to go at the end of the chain where 0.2% tolerance is desirable (Gingell's *Monte Carlo* calculation result). For the resistors, I bought eight of each value and picked out the best-matched four… I never did build the transceiver, but I did produce the 8-stage filter (**Fig 4**) and my friend John Beddows, G3NQK, built one into an SSB exciter and its measured performance showed 60dB rejection over its whole working range. One day when I retire..."

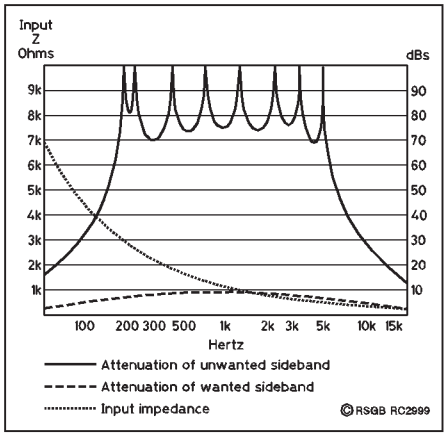


Fig 4: Final design characteristics of the G3TFL eight-stage polyphase filter based on preferred-value components and using a fixed value for the 32 capacitors (47nF) with the four resistors for each stage selected for close match: R1 680R; R2 1k; R3 1.5k; R4 2.7k; R5 4.7k; R6 8.2k; R7 15k; R8 18k.

In a late letter, G3PLX expresses annoyance at the suggestion that his filter values were wrongly chosen. He stresses that the filter should extend above 4000Hz even at the cost of frequencies below 600Hz.

ATUs & PVC OR POLYETHYLENE?

Dr DICK BIDDULPH, M0CGN, noted the item from G3OUC on the unsuitability of using Araldite or PVC, with their high dielectric losses, as insulators in situations subject to high HF or VHF voltage. G3OUC described a problem he had encountered with his antenna tuning unit ('TT' May 2001, p64).

M0CGN writes: "I was interested in G3OUC's ATU problems, largely because he had come up with an arrangement similar to the one which evolved by happenstance rather than by design to feed my long-wire antenna: **Fig 5.**

"L is a coil of 40 turns, tapped every five turns of 1.4mm enamelled wire on a former of 55mm diameter and 70mm in length. It has an inductance of 57μH. The 50Ω coax from the transceiver is connected to the 10th turn. C is a 500pF medium-spaced variable capacitor (originally salvaged from a Gee indicator unit). The result gives a 2:1 or better SWR on all bands from 1.8 to 30MHz, including the WARC bands, with a 45m long-wire antenna. I work all over the UK and into eastern Europe on 1.8MHz at night and into

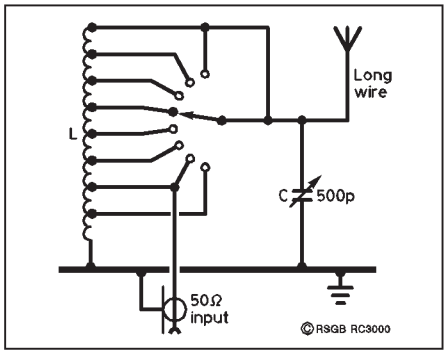


Fig 5: M0CGN's HF antenna matching unit.

most of Europe on 7MHz and eastern USA on 14MHz."

[A small but not unimportant improvement over the G3OUC unit is the connection between the 'hot' end of the coil and the 'hot' side of the variable capacitor, since this will limit the RF voltages developed at the end of the coil on the higher bands due to the auto-transformer effect. – *G3VA*]

M0CGN continues: "Incidentally, some plastic waste pipe is polyethylene or polypropylene, *not* PVC. Both the former are excellent RF insulators and make excellent coil formers etc. A quick test to determine which is which is to take a shaving, set it on fire and blow it out and then carefully sniff the fumes/smoke. Both PE and PP smell like a paraffin-wax candle in the same circum-

stances, ie smouldering. PVC smells very acrid, and has a green-tinged flame. Believe it or not, this is a standard technique for qualitative analysis of polymers. There are a lot of other smells from other polymers, eg a fishy smell from nylon."

THE SMOKER'S LEGACY

TRADITIONALLY THE wise amateur, when buying second-hand receivers, transmitters or transceivers, avoids equipment used by heavy smokers (and so quite likely to appear in Silent Key sales). Gunge and discoloration are obvious signs, but some problems may be less obvious.

Michael O'Beirne, G8MOB, draws attention to an article 'Carbon Tracking on Valves and Valve Holders' by Ted Moore, founder-editor of *Lighthouse* (Eddystone Users' Group Newsletter), February 2001. This describes how a correspondent (a smoker) had traced poor performance of an AR88 (heavyweight) receiver to a brown gummy deposit that had formed on valve sockets and bases around the pins. On the AF output valve this had turned to black carbon. A sniff by a non-smoker confirmed the tobacco connection. The greasy nature of the goo indicated that the added lubricant found in switch cleaners had played a part in binding with the tobacco smoke residue. In this instance some pure trichloroethane was used as a cleaner, care being taken that the window was open and the room well ventilated.

G8MOB has written to Ted Moore recalling how he was once offered an Eddystone EC958, but noted that it looked a bit 'tired' outside and was full of disgusting brown residue inside. "The vendor was smoking large cigars! A friend, the late Allen Langer, did eventually buy the receiver, stripped it down to its bare bones, cleaned out all the mess and rebuilt it - after which it performed very well."

G8MOB adds: "I am reliably told that a good way of cleaning tobacco-polluted radios is to remove all the valves (if any) and then wash the set in a bath of detergent (protecting the bath's base with a rubber mat) and finishing off with a hand-held shower. Then blow-dry very gently with a hair drier at a suitable range to avoid damage and deposit the set in a warm cupboard for a week to dry out fully. A surprising amount of brown residue will usually be found in the bath afterwards.

"On a visit to the Royal Navy Dockyard in Gibraltar in the late 1960s, I remember seeing an entire radar cabinet from a frigate under refit being dunked into a huge ultrasonic bath with the aid of a crane. The ultrasonic vibrations converted a dusty, gungy interior into a set almost factory fresh. In earlier days, the technicians would have had to strip the entire wiring harness out of the set, clean everything by hand and put it all together again, a job taking much longer.

"The moral is to be very careful when buying radios from smokers, unless the set is a fully-sealed military unit such as the R210 receiver. Tobacco smoke and electronics just do not mix. Is it any surprise that older computers had to be housed in special environmentally-controlled rooms?

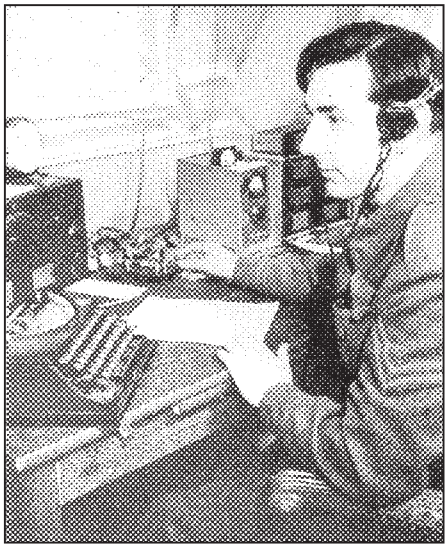
10 - 30MHz IC TRIPLER

THE FEBRUARY 2001 issue of *Electronics World* (p140) includes a CMOS 10MHz to 30MHz frequency tripler that needs no adjustment, contributed by J N Wells: **Fig 6**. The first NAND gate generates a low-impedance square-wave, followed by a second-order 'coil-saving' elliptic bandpass filter capable of providing sufficient selectivity to reject the fundamental and fifth harmonic frequencies. A second gate then squares up and buffers the output. J N Wells built the circuit with two sections of a 74AC00 quad 2-input NAND gate, each with one input wired high and claims it worked without further adjustment. The idea could be adapted for other frequencies by modifying the component values of the elliptic bandpass filter.

THE PASSING YEARS – GM3AVA SK

IN THE NOVEMBER 1989 'TT' I underlined the importance to amateur radio of retaining the interest and support of those in positions of media or political influence, adding "The ideal situation is where the persons of influence are themselves in their spare time (if any) enthusiastic radio amateurs. One who has for the past five years ideally fulfilled this situation has been Scottish farmer Watson Peat CBE, GM3AVA, who has just retired as National Governor for Scotland of the BBC."

It must have been unique for a member of the BBC Board of Governors to be an active radio amateur, President of the Ariel Radio Group (the BBC's amateur radio club), making his interest in the hobby clear to the Board and to the staff, and including it in his *Who's Who* entry. Here he listed his 'recreations' as amateur radio and flying. As a Board Member, he played a major role in the final BBC takeover in 1985 of responsibility for running the transmitters including Orford Ness that had previously been



A 1944 photograph of the late Watson ('Bill') Peat CBE, GM3AVA. At the time, he was a Special Communications operator at Eindhoven, Holland and is shown operating a 'bug' key made by G6NM with a Whaddon Mk III transmitter (6V6co-807pa) and HRO receiver (the typewriter belonged to G3VA, but the traffic was copied with a pencil).

run by the Foreign Office and which have featured in G3LEQ's 'The Voices' series in *RadCom*.

He was made CBE in 1973 for his many services to Scottish agriculture (president 1966-67 and council member 1959-78 of the Scottish NFU and member of umpteen committees concerned with agriculture and the environment). He regularly broadcast on farming topics and was also a partner in a firm holding the Cessna light aircraft franchise for Scotland. He was also at one time involved with the running of a recording studio.

Sadly, Watson ('Bill') Peat, an enthusiastic member of RSGB for over 60 years, died on 1 May 2001, aged 78, after being bedridden for some 16 months, making his final radio contacts (including the Ariel 3.5MHz net) in December 1999. I knew him first in 1941 as BRS3740 when he joined me as a Radio Security Service intercept operator at Hanslope Park; later we were both at the MI6 clandestine control station at Weald, near Bletchley, then both in SCU9 in Normandy, Paris and in the winter of 1944 in Eindhoven (see the photo). In 1945 he was commissioned and left for the MI6 base in Calcutta (where he was with Dave Williams, G3CCO), operating in the immediate post-war period as VU2WP. In the 1990s, Watson operated every winter in Barbados, keeping regular schedules with many UK amateurs. In Scotland, he had a large log-periodic antenna that was the envy of many. A good friend, a keen amateur who will be much missed.

Condolences to Jean, his wife since 1955, his two sons and his daughter. ♦

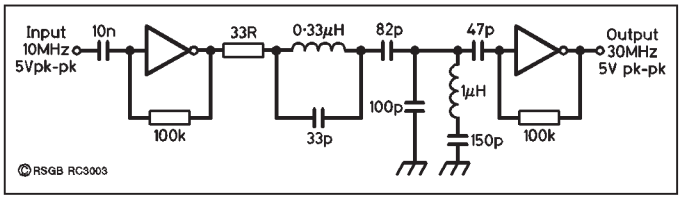
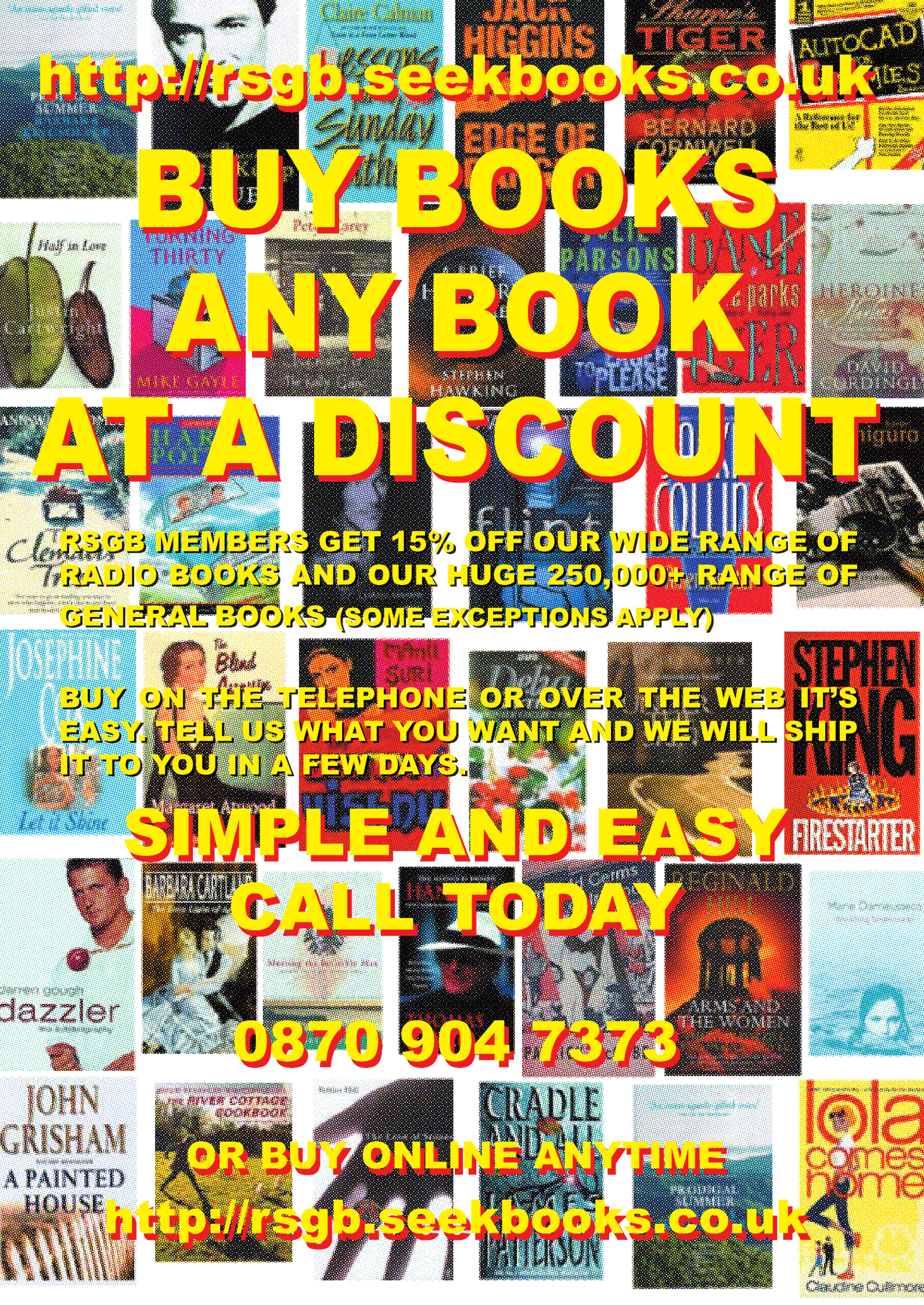


Fig 6: CMOS tripler that requires no adjustment and takes advantage of the non-linear characteristics of advanced CMOS logic. (*Electronics World*).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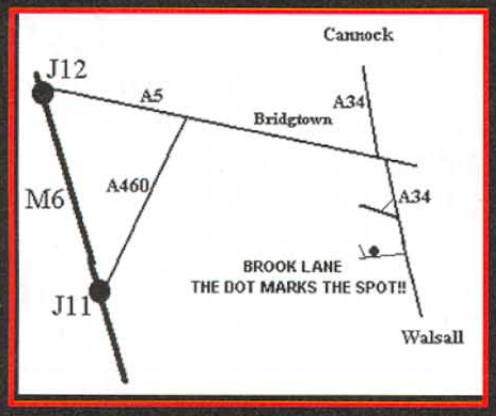

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BARGAINS! Icom 746, still has 12/12 guarantee, £795. MFJ-962 1½kW tuner, £80. MFJ-948 300W tuner, £50. MFJ-931 artificial earth, £50. Kenwood PS-50, £60. Earth resistance meter, £130. Accurate capacitance meter, £50. 3-off 811 valves, £9 each. Morse tutors: Datong, £50; MFJ pocket, £60. Butternut vertical 160-6m, £175. MFJ aerial analyser, £110, ono some items. Junction 4 M2 motoway Collect/carriage extra. 01634 379 140 (Gillingham).

COLLINS separates 75S-3B (WARC), 32S-3, 312-B4 and PSU 516F-2. Tcvr KWM-2 and PSU 516-F2. AOR DDS-2A synthesiser for Collins rigs, unused. Complete set of Collins mans on CD. Rcvr's Watkins-Johnson HF1000 and Racal RA1792. Icom 735 with CW filter. AH2 auto ATU. Marconi TF2370 spectrum analyser. Open to all sensible offers. Stuart, G4MIB, QTHR. 020 8674 6452 (South London).
E-mail: stuart_senior@email.msn.com

ICOM IC-251E 2m multi-mode with Mutek front end, matching IC-451E 70cm multi-mode, both with mans and mics, £199 each. Yaesu FT-757GX multi-mode HF, general coverage receive, CW filter and FP-757HD PSU with all mans, £349. Also FT-200 HF 80-10 matching PSU and set of spare valves £99. 01784 458 583 (Staines).
E-mail: g3wwt@thersgb.net

ICOM IC-32E 144/433MHz FM h/held tcvr, boxed, charger, quantity of batteries, £100. Icom CM-35 pod-style rapid charger for IC-32E with three 13.2V 1200mA batteries, £25. Icom CM-60A six-pod rapid charger for IC-32E and similar, £30, all plus postage. Kenwood HMC-3 VOX/PTT headset for TH-G71E/TH-D7E portable, £20. Richard Perzyna, G8ITB, QTHR. 01689 602 948 (Bromley, Kent).

ICOM IC-706 MkIIG HF/50MHz plus 144/430MHz all-mode mobile/base tcvr, narrow CW and SSB filters, many mobile mount options included, boxed, as new, £700 plus postage. Icom AT-180 HF/50MHz automatic antenna tuner, matches IC-706 series, boxed, as new, £200 plus postage. No offers. Richard Perzyna, G8ITB, QTHR. 01689 602 948 (Bromley, Kent).

TOWER P60 ready for collection, new cables, Ham III rotator with control unit and cable, buyer collects, bargain, £275. 01625 536 241 (Cheshire).

YAESU FT-847 tcvr & PSU, many extras, immac cond, £650. Buyer collects, gone QRT. G6WZR, QTHR. 01329 822 794 (Gosport).

YAESU FT-901DM fully checked with new PA valves and driver, exc order with optional CW/FM filters fitted, SP-901 and FTV-901 (three modules fitted) plus extra FT-901 for spares, £485. Yaesu FR-101/FL-101 separates, exc cond and boxed, £275. Kenwood TM-742E mobile in superb cond c/w 10-6-2m and 70cm modules, only £550. Ferrograph series 7 tape recorder with case, £100. Simon, M5POO. 01434 633 913 (Corbridge).
E-mail: simon@nomis.co.uk

10-METRE 4-ele monoband Yagi, £65 (new) 30A Palstar PSU new, £70. G4SGV. 01527 545 304 (Redditch)

2-SECT 40ft Versatower with superb ball-race head unit, all cables plus 1 winch, £120. Ground post (not concreted) available extra if required, but must be removed by purchaser. Excellent FT-221R 2m multimode rig, £80 ono, regret plus carr. 01332 735 896 (Derby).
E-mail: linearity@cwcom.net

90FT tower nine sections, vgc, self supporting, £250. 45ft extendable mast, 3 sections, tiltover, £175. 50ft tiltover mast, 5 x 10ft sections, £175. Latter two items can be bolted together. Tailtwister rotor & cage as new, £375. All guides for latter two items and tensioners etc. All HD galv, £95. 01267 222 445 (Carmarthen).

ALTRON wall-mounting tilt-over telescopic mast 3 sections height up to 31ft, buyer collects. 01242 603 682 (Winchcombe, Glos).

AMERITRON AL-800 1.2kW PEP amplifier, 3 years old, mint cond, £900. TS-870, SP-31, MC-60, mint cond, £850. Please call Karl evenings. 01296 435 815 (Aylesbury).
E-mail: karl@heines3.netscapeonline.co.uk

AMP-UK linear amplifier Explorer 1200, soft start, 2 x 3-500ZG, little used, unmarked cond, going QRP. Cost £1600, £800 ono. 01823 400 926 (Taunton).
E-mail: eddie-hayden:clara.co.uk

AZDEN PCS-6000 2m mobile tcvr with air band plus mag mount aerial, £50. 01332 514 462 (Derby).
E-mail: jwilsonuk.@lineone.net

BIG gun! Henry 2KD classic linear amplifier, superb unmarked cond, lopes along at legal power; check out Henry web site for full spec only £550, buyer collects also KW Ezmatch, will work ok with Henry, £85. 01673 849 470 (Market Rasen).

COLLINS KWM-2, PM2, MP1 (12V PSU), 351D-2 mobile mount, CC-2 carrying case. Not collector quality, but very clean and fully working, £450 the lot, no offers. AEA PK-900 dual TNC, has gateway facility, late model in exc cond, £120. 01954 210 374 (Cambridge).
E-mail: peter@g3ggk.freeserve.co.uk

COLLINS KWM-2A tcvr complete and working with AC power supply, £420. John, G3SGV. 01752 660 028 (Plymouth).

COMPLETE set up. Icom 706-Mk2 as new, 25-35A PSU, rotator, 6m 5-ele Yagi beam, Diamond V-2000 triband antenna, all perfect cond, £750 ovno. 01205 724 360 (Boston, Lincs).
E-mail: david.meeds@ntlworld.com

EDDYSTONE 680X for sale, exc cond, £80 ono. 01799 528 885 (Saffron Walden).

EDDYSTONE EC958/1/RM working order, buyer inspect and collect, £180. 01752 491 517 (Plymouth).

ELEVATED radial kit for Butternut vertical HF6V new, unused, £30. Carolina Windom, 133ft long, gc, one year old, £45. 01462 711 255 (Hitchin).

FOR sale pair matched, boxed, unused, USA, GE 6146B with unused NEC 12BY7A, £34. Heathkit VTVM, £15, prefer collect, carriage extra. 01795 477 431 (Sittingbourne).
E-mail: g3isd@ehatch.freeserve.co.uk

FREE triangular lattice mast 2-segment, closed 20ft, extended 35ft, no groundpost or winches. New owner collects. 01525 752 418 (Flitwick, Beds).
E-mail: steve_long@ntlworld.com

FT-1000MPAC (late serial number), remote keypad, SP-8 speaker, MD-100A8X base mic, YH-4775TD headphones, all boxed and as new, £1200. 01952 506 885 (Telford).
E-mail: xtc99@madasafish.com

FT-101ZD MkII, WARC bands, with spkr, Yaesu mic, man, £220. 01507 533 225 (Horncastle).
E-mail: satelect@aol.com

FT-901D HF tcvr, daily use, gwo very good cond, mains supply, ideal beginners rig, recent new valves, bargain, £150 plus postage. 01579 344 935 (Liskeard).
E-mail: imatog@aol.com

FT-901DM HF tcvr, £150. Spare 6146B pair, £10. WVT901 homemade transverter 10W 6m/2m/70cm, works well with FT-901, £50. G4AEP. 0118 978 6870 (Wokingham).
E-mail: billg4aep@lineone.net

GE1606B RF bridge, £50. Bruel & Kjaer heterodyne voltmeter, £50. 01803 845 304 (Devon).

HF linear amp. Ranger 811H, rarely used, £450. Cushcraft AP8A 8-band vertical, never used, £130. G2DYM aerial, £75. 01788 331 804 (Rugby).
E-mail: m0asd1@ntlworld.com

HIGHLANDER mobile ant 80-6m, £90. ProAm whips 80-40-20m, £10 each. FT-290R, charger, mic etc, £90. Kenwood TM-241E, £110. 01327 350 632 (Northants).

HYGAIN EX14 4-ele Triband beam, £120 or exchange HF vertical - buyer collects. 01274 674 933 (Halifax).
E-mail: bazhub@freeuk.com

IC-706 MkIIG mint, £725. Kenwood TS-50S, £375 gc. Kenwood TW-4100E 144/430MHz 45W, £130, including mobile brackets for both Kenwoods, all boxed with mans and in gwo. G1OPZ, QTHR. 01373 834 483 (Frome, Somerset).

ICOM 290E multimode1/10W output c/w mic, original box, h/book and wiring diagrams, gc, bargain, £200. 0113 294 3211 (Leeds).

ICOM IC-728 100W HF tcvr, AC power supply, Icom AT-160 automatic ATU, exc cond, little used, £350. Ted, G3LPU. 01865 511 769 (Oxford).
E-mail: ewb@edandjill.freeserve.co.uk

ICOM IC-W2E dual band 2m/70cm h/held, c/w two AA nicads, wall charger, wide band rcvr, man, £150 ono. Chris, G0CNG. 01922 494 680 (Walsall).
E-mail: chris.g0cng@nasuwt.net

KENWOOD PSU33 20.5A formerly powered and colour matched TS-450S, c/w spare power transistors, £80, instruction man etc included. 0116 287 5241 (Leicester).
E-mail: r73@beeb.net

KENWOOD TL-922 linear amplifier, 160-10 man, leads, £600. Trio TS-940S HF tcvr, mic, MC-60A desk mic, man, £525. Kenwood station monitor SM-220 with BS-8 pan adapter, £150, man, leads etc. Hy-Gain DX77 vertical HF antenna 7-band automatic band switching, £150, man. 01332 880 633 (Derby).

KENWOOD TL-922 linear amplifier, new valves two years ago, good working cond, £800. Force 12 N10/12m dual-band Yagi 7-ele on 15ft boom, single feedline, cost £379, good order, £100. 01751 476 380 (Pickering, N Yorks).

KENWOOD TR-751E 2m multi mode, vgc, £325. Emotator 105-STX rotator, control, 25m cable, medium HF, £175. Storno 6000, 100ch 25W 70cm, £60.Yaesu FTC-4625, 7ch 70cm 25W, xtals RB4/RU24B, SU16/U272, 1750Hz t/burst, £60. Europa, £10 + £5 towards p&p. M0ACF, QTHR. 01480 394 679 (St. Ives, Cambs).
E-mail: hugh.philps@ntlworld.com

KENWOOD TR-751E 2m multimode with box, book and mobile bracket, exc cond, £300. Dick, G0XAY, QTHR. 01454 218 362 (Bath).
E-mail: g0xay@aol.com

KENWOOD TS-430S fitted FM and narrow CW filter and SSB filter in vgc with Yaesu YH-35 fist mic, £300. Trio TM-411E UHF tcvr mobile, complete, £120. G-Whip mobile antenna, 80-10, £50. Jim, G4PFR, QTHR. 01296 623 802 (Wendover, Bucks).

KENWOOD TS-430S fitted FM and narrow CW filter. Matching PS-430 PSU. Original boxes, man, immaculate, £350. G4GLP, QTHR. 01276 507 864 (Camberley).
E-mail: dennis.dale-green@ntlworld.com

KENWOOD TS-530SP, WARC bands, narrow CW filter, man, fwo, exc cond, £200. FT-290R Mk1, carry case, charger, boxed, man, £150. Chrome bencher plus Dewsbury memory keyer, £70, buyer collects or pays carriage. 0121 605 2877 (Birmingham),
E-mail: colin@drof96.freeserve.co.uk

KENWOOD TS-850SAT exc cond, internal ATU fitted, 500Hz CW filter, man, boxed, £650. G4GBS. QTHR. 01709 817 717 (Rotherham).
E-mail: terry@g4gbs.screaming.net

KENWOOD TS-850SAT tcvr 1.8kHz SSB filter fitted, £600. Matching DSP-100 sig proc unit, £200. PS-52 PSU, £100. All threee items, £800. Desk mic MC-85, £50, all boxed with mans and cables, purchaser collects or pays carriage. G0SWF, QTHR. 01202 821 813 (Verwood).

KENWOOD TS-870 1yr old transmitted 5 times only, as new, boxed, mans etc, going QRT, £950 bargain. 01962 878 106 (Winchester).
E-mail:- arthurg0wnz@aol.com

KENWOOD TS-870S HF tcvr, little used, boxed, mans, mint cond, £995. 01952 212 989 (Cambridge).
E-mail: dghill@tesco.net

KENWOOD TS-950S HF tcvr, all bands, internal ATU etc, vgc, £900. Trio TR-7500 2m mobile, £90. MFJ-986 3kW tuner, £150. Emoto 747SR rotator-control-cables, £80. Trio DM-800 GDO, £50. Arrow KRT-500 test meter, £15. Vibroplex Side Swiper key, £50. Antenna switch 5-way, £20. Silent Key Sale, buyer pays carriage. GM4FSB, QTHR. 01382 543 069 evenings between 1800-2200 (Newport, Fife).

LIST of equipment for sale ex-G8GTP. ICOM IC-970H tcvr all mode. Icom SM-8 desk mic. Icom IC-3230H dualband tcvr. AOR AR8000 scanner. VHF weather satellite rcvr. Timestep Prosat for Windows interface. Hansen FS-500V 50-150MHz power meter. AE SWR400B 430MHz power meter. Microwave Devices 500W 50ohm dummy load. Daiwa CN650 1.2 to 2.5GHz SWR/PWR meter. Watson 10MHz to 3GHz freq counter. AVO model 8 multimeter. Velleman h/held scope. Thurlby Thandar TSA1000 spectrum analyser adapter. Hewlett-Packard 8654A 10-520MHz sig gen. Hewlett-Packard 432A power meter. Heathkit IT3120 transistor tester. Philips PM2528 auto RMS digital multimeter. Daewoo Video Plus 6-head video recorder.

CONGRATULATIONS

To the following whom our records show as having reached fifty or sixty years' continuous RSGB membership this month:

50 years		*60 years*	
G3IJW	Mr G S Garrett	G2HAX	Mr S P Shackleford
		G3AEZ	Mr J Greenwell
		G3DAM	Mr H Barnett
		GJ3EML	Mr J H E Watson
		GM2FVV	Mr W Girvan

Our apologies to Mr J W Hayes, GW3FPH, a member of some 53 years' standing, whose callsign was truncated in the Old Timers' Honour Roll which appeared in the May 2001 issue of *RadCom*.

Marconi TF2303 modulation meter. Greenpar N type to BNC adapter kit. Hatfield 0-100dB BNC variable attenuator. Sterivision 8in colour monitor. Quintrix 6in colour monitor (mains/batt). Mitsumi CR4804TE CD writer (new). Sharp 14in colour TV. Heathkit IM4180 FM deviation meter. PG753 satellite finder kit. HC2500I 0-200Mohm insulator tester. G1MFG 13cm TV tx new. Trio DM800 dip meter. Pentium P200 MMX PC - no monitor 1.3GB HD, 64MB RAM, 48XCD. 486 DX2/50 with CD – no monitor. 486 DX2/66 32XCD, 3½ + 5¼ FDD, no monitor. 4-way D25 parallel printer switch. Xircom USB network hub. Relysis parallel port A4 scanner. Hauppage Wintv 40015 video capture. Black Widow TV encoder. 4-way kbd/mouse/monitor switch. Vguard VA203 video dubbing machine. IRD SRE250S integrated satellite decoder. Maplin gas torch kit. New 1/8 pop rivet tool/rivets. Black & Decker DN66 router. Black & Decker Jobber workbench. Talco 39-piece carbon steel tap/die set. Professional wire crimping tool. Black & Decker vertical drill stand. Trumeter Trudrill spirit level drill attachment. Innovations battery manager ultra nicad charger. 0161 761 5083 (Bury, Lancs).
E-mail: mikebainbridge@compuserve.com

P60 tower with ground post, as new, £550, dismantled. Yaesu FT-736R 2m 70cm 6m 1296MHz, CTCSS, gc, £650. G6FIO. 0121 745 3354 (Solihull).
E-mail: tojeff@ic24.net

P60 tower with ground post, rotator cage, bearing winches and cable. Dismantled, space needed! Bargain, £300. 2-ele quad antenna with boom £30. G4FCA. 01886 880 335 (nr Worcester).

PANASONIC full-size professional camcorder case, leads, accessories, vgc, man, £350. 020 8806 4470 (Clapham Common).

RACAL 1792 HF rcvr. Back-lit model with BITE. Exc cond, £750. 020 8459 1413 (London).

RACAL RA17L rcvr c/w spare set of valves and in case, £150 ono. Admiralty (Murphy) HF/MF rcvr (goes down to 60kHz), £50. Heathkit DX100U AM/CW transmitter, £20. 01242 604 268 (Cheltenham).
E-mail: derek@cooknelld.fsnet.co.uk

RF test equipment. Stabilock 4010A test set, £300. Marconi 2370/1 spectrum analyser, £150. Marconi TF2304 mod meter, £80. HP8407A network analyser, £100. HP8405A vector voltmeter, £50. HP4815A vector impedance meter (no probes), £25. Racal 2-tone source, £35. Power meters and loads from £20. Scopes from £60. Various PSUs, multimeters, AVOs, bridges, also FT-101ZD £160. John Chapman, G4FIT. 07973 502 741 (Ely).

SHACK clearance. DX-394 HF rcvr, £60. Trio TS-130V HF tcvr, £150. FDK Multi11 2m tcvr FM, £50. Yaesu FT-102 HF tcvr, £200. Icom IC-240 2m FM tcvr, £70. FDK Multi 800D 2m FM tcvr, £80. All above gwo. The following items require attention. FDK FM-2030 2m FM tcvr, £40. Icom IC-255 2m FM tcvr, £30. Buyer inspects, all above costs plus carriage at cost. Wanted FRG-7, VFO-230, AT-230, SP-230, SM-220. M0CNP, QTHR. 01263 511 000 (Cromer).
E-mail: david@m0cnp.fsnet.co.uk

SHACK clearout test gear, CWTx, filters, ATU, masts, printers, thousands of electronic components, send SAE for lists. G3JYL, QTHR. 01403 253 764 (Horsham).
E-mail: rwood45579@aol.com

SHACK clearout, rotator Daiwa DC7011 plus control box. key Hi-Mound BK-100. Kenpro 2m KT200E. AR2001 25-550MHz rcvr. Yaesu FT-720R 2m. FT-720R 70cm. Antenna TET 2m. Power meter SP350 Welz. Offers? 020 7731 5673 (London).

SILENT key sale (G0GOC). Kenwood TS-850S, Kenwood PS-52, £800. Trio TS-711E, Trio PS-430, £350. Kenwood MC-80 mic, £50. AKD HF wavemeter, £25. MFJ deluxe Versatuner II model MFJ-949E, £100. Would prefer to sell as one lot, £1200. Jacqui Poat (daughter). 01483 211 497 (Guildford, Surrey).
E-mail: jpo4t@aol.com

SILENT key sale (G3EPK). IC-735 gwo, £350. 01480 456 781 (Huntingdon).

SILENT key sale. Tennamast standard 35ft, dismantled for buyer to collect, £400. Yaesu rotator G1000C c/w masthead bearing, controller and cables, £450. ZX Mini 2000 tribander beam, £150. All items as new, contact G3JPM for details QTHR. 01379 642 489 (Diss, Norfolk).
E-mail: b.wyatt-grainge@talk21.com

SILENT key sale. Yaesu FT-840 HF tcvr, nearly new, boxed, £375. Star Master Key electronic keyer, £40. Bencher paddle, £40. 80m MFJ QRPer, £50. Altai TE-20D HF signal generator, £30. All complete and in vgc. G3KJY, QTHR. 01282 816 033 (Barnoldswick).
E-mail: bwkyork@aol.com

STANDARD C501E 144/430MHz h/held with man and belt holster, £60 ono, carriage extra at cost. Self-assembly scaffold tower, 6-14ft, ideal for antenna maintenance, £40 ono, buyer collects. One-room mobile air conditioning unit, strong fan, ideal for shack with man, buyer collects, £50 ono. Marconi 801m Nixie tube frequency meter, 125MHz, heavy, free if collected, with man. G8ILK, QTHR. 01483 723 506 (Woking).
E-mail: jane@folkcorp.co.uk

STRUMECH 30ft tower with ground post, rotator cage and winch, dismantled, buyer collects, £100. CDR rotator with cable and info. G4ANU, QTHR. 01623 634 916 (Mansfield).

SUBSTANTIAL QTH for sale. Beautiful 5-bedroom 15/16th century traditional Welsh farmhouse with yard & buildings, one partially converted to dwelling in approx 15 acres incl 4 acres Bluebell Wood, further 40 acres available near fast growing town of Carmarthen, 1½h to Severn Bridge. Right of access to trig point on adjoining land, possible employment opportunities in the electrical/generator field. Offers around £235,000. Estate Agents Bob Jones – Tel 01267 236363. SA32 7ER. GW0ALR 01267 222 445 (Carmarthen).

SWAN Cygnet tcvr 3.5/30MHz, 260W PEP, spare valves, £170. 144MHz 5-ele Yagi Swedish Vargarda, £40. CDE rotator, complete, £50. GM3WED. 01463 241 211 (Dingwall).

TB3 3-ele beam c/w spare driven element and traps, £80. KR-500 elevation rotator with control cable, £80. Microwave Modules 70cm 100W amplifier, £150. G Griffiths, G3POX. 01903 690 019 (Worthing).
E-mail: geoffreyg3pox@aol.com

TENNAMAST 35ft galvanised, free-standing, ground socket, telescopic tilt-over, with rotator and 3-band minibeam, £300. GM3NVQ, QTHR. 01383 728 019 (Dunfermline).
E-mail: gm3nvq@hotmail.com

TENNAMAST 50ft crank-up mast, exc cond, new G-450C rotator with 2-ele tribander beam for 10-15-20m, £500 ono. 07748 568 744 (Manchester).
E-mail: normanhiggs@cwcom.net

TOWER 60ft 3-section post-mount, c/w head section, £400. 01361 810 584 (Greenlaw).

TRIO TS-430S for repair or spares, all parts, owners and workshop mans, £100 plus postage. G4CVA, QTHR. 01262 601 189 (Bridlington).
E-mail: johnwardle@talk21.com

TS-940S 100W HF rig, superb rcvr, as new cond, mic, man, boxed, £625. Buyer pays carriage. Don, G4PLE. 01453 758 311.
E-mail: chat@cwcom.net

TWO new boxed GE 6146B valves, plus one partly-used but OK GE 6146B, £25 the three. G5BM, QTHR. 01531 820 960 (Newent, Glos).

YAESU FL-2100Z linear 160-15m (no 10/12m). Ideal for those not interested in 10/12m. Recent overhaul by Castle Electronics. New valves fitted, vgc, man, £300. MFJ-989C antenna tuner. 1.8-30MHz, rollercoaster tuning inductance, built-in Balun, built-in dummy load, as new, 1 yr old, boxed, man, £200. Lowe HF-235 rcvr, 30kHz-30MHz, as new, ex cond, very little used, man, £200. Buyer collects. 020 8543 8440 (Morden, Surrey).

YAESU FR-DX-400 rcvr, vgc, spare set of valves and instruction man, suit SWL or beginner, £120. 01442 256 632 (Hemel Hempstead).

YAESU FT-101ZD with FM board, £250 ono. Sommerkamp FT-277ZD with matching ATU, £375 ono. Both in good cond. RN Electronics 6m tvtr 144MHz IF with 25W output, £90, carriage extra. Neil, M1AFB, QTHR. 01332 736 362 (Derby).
E-mail: m1afb@cwcom.net

YAESU FT-480 SSB, CW/FM 2m 10W tcvr, £100 c/w h/book and mic. 01656 733 729 (Maesteg).
E-mail: lukes@btinternet.com

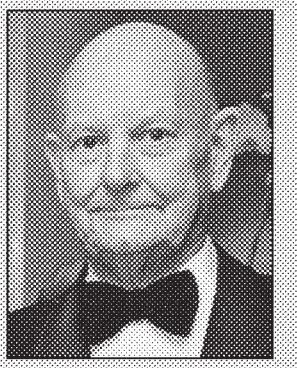
YAESU FT-736R 2m 70cm, CTCSS, boxed with man, good cond, £500. M0CGL. 01526 353 093 (Woodhall Spa). Mobile 07799 346 396.

YAESU 736R+50 as new, boxed, £750. Alinco DR150E as new, boxed, £180. Manson power supply EP925, £50. Diamond power/SWR meter SX-1000, £45. Books and magazines, job lot, £50. Owner emigrating. 01633 664 444 (Newport, Gwent).
E-mail: k.keepin@ntlworld.com

RON GLAISHER, G6LX

THE WORLD OF amateur radio has lost another of its pioneers with the death on Saturday 12 May of Ron Glaisher, G6LX, aged 81. He started his amateur radio involvement as BRS2357 in 1936 before becoming 2BFL. After the second World War, he became briefly G2BFL before assuming his more-familiar callsign of G6LX in 1946.

Starting his working life with F C Heayberd, manufacturers of rectifiers and battery chargers, he later joined the Air Ministry as a civilian radio technician after the outbreak of war, at the Kidbrooke radar unit. Subsequently, he worked with Peter Pennell, G2PL, at Electronic Transmission Equipment. Following this, he then contributed to the work of Mullard, Solartron, Elliott Brothers and Ardente, eventually setting up his own company, Communication Technology.



Ron spent nine years as Chairman of the IARU Region 1 Contest Sub-Group and, in 1996, received the Region 1 Medal for his work. He also spent many years on the RSGB HF Contests Committee. He was also member of the RSGB IARU committee and in 1999 was made an Honorary Vice-President of the Society.

He was a member of the Surrey Radio Contact Club (SRCC) for over 50 years, the partnership of G6LX and G3BFP organised the Croydon Group-SRCC National Field Day station, outright winner of the NFD Trophy in 1967 and 1971-73, achieving the highest score on 15m on 17 occasions.

During remission of his illness in 2000, he spent a holiday in Cyprus, seizing the opportunity to operate as 5B4/G6LX. He was dedicated to our hobby, never too busy to offer help when it was needed. He will be sadly missed.

WANTED

CRYSTAL sets and early valve radios wanted; all old equipment, valves, horn speakers, Morse keys, spark Txs. Spy sets are of interest; keen to find Hallicrafters SX42 or similar rcvr, also Meccano and Bassett Lowke crystal sets. Jim, G4ERU, QTHR. 01202 510 400 (Bournemouth).

COLLINS rcvrs type 51S1 and 75S3, must be in good cond and gwo. Tom Coates. 01723 870 933 (Scarborough).

CUSHCRAFT 10-4 CD Skywalker 10m 4-ele Yagi, mint or damaged. Phone after 6pm or e-mail. 01851 810 657 (Isle of Lewis).
E-mail: donmor@madasafish.com

DISABLED fan of old days seeks QSL cards, log books etc. Can you help complete my magazine archive: RSGB mags pre-1950, *QST* pre-1951 and 1960-1975, *CQ* 1945 to 1970; your price. Mike, 8 Windsor Road, Southwold, IP18 6PQ.

FT-840 CW filter YF-112C, also Yaesu phones YH-77ST. Bill, G3GGS, QTHR. 01772 433 945 (Leyland).

HANSEN FS-710H SWR-PWR meter, Datong FL3 multi-filter unit, both must be mint cond and functioning 100% - your price. GW4RLP,QTHR. 01286 675 264 (Caernarfon).

HELP! Has anyone a copy of the technical manual for the Yaesu FT-One tcvr - borrow, photostat or buy. Ken, G3RDG. 020 8455 8831 (NW London).
E-mail: kennethb@btinternet.com

KW204, Sphinx, Vespa, Cannonball or any valve transmitter to match my EA12. Must be in gc, working or not. For sale, Pye Reece Mace Navy transmitter, perfect cond, AM/CW, 1.5MHz to 16MHz with PSU, suit collector, £75 ono. 01634 719 703 (Rochester).
E-mail: g3vtt@aol.com

NEEDED to complete station: pair undrilled four-pin plug-in coil formers. G4IMT, QTHR, Bernard Litherland. 01225 891 254 (Chippenham).

RA17 cabinet or 19in rack, potentiometer knobs, Racal mains transformer, voltage selectors and plugs, anything RA17 considered, please help. 01637 875 848 (Newquay).
E-mail: m0bga@thersgb.net

RACAL Speedrace MA275 oscillator coupling unit. Racal MA79 drive unit including unused modules and spares. Racal table-top and 'picture frame' 19in equipment cabinets. Racal communications mans, catalogues and sales information. Plessey PV213A RTTY current converter. Mans for Plessey TSG20 and PV318 RTTY equipment. Nigel, G0UGD. 01327 357 824 (W), 01323 486 822 (H) (Eastbourne).

SERVICE man for Kenwood TS-940S and MC-60A desk mic. Not too expensive please. G0NRO. 01252 373 257 (Aldershot).
E-mail: w.dimmock@ntlworld.com

SILENT key clearout or just not needed. Wanted for research project, QSL accumulations, old call books etc, can collect. 0113 269 3892 (Leeds).
E-mail: g4uzn@qsl.net

STANDARD CMB5900 remote control head bracket for standard C5900DA, top price paid. Tony Miled, 18 Lorraine St, Stoneferry, Hull HU8 8EG. 07778 543 555 (Hull).

WANTED for Kenwood TK-240 VHF PMR h/held. Service man, alignment details and/or programming information. Tony Cox, G8TEE. 07836 326 983 (Bracknell).
E-mail: cox_t@hotmail.com

WANTED valve transmitter to get onto 160m, older equipment, home-brew etc, no problem, must be complete, gwo. G4VUN, works tel: 01287 634 397, ask for Peter (9am - 5pm) (Ripon).

SILENT KEYS

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

DK3LP	Mr P Lessig (former President of DARC)	09/05/01
G0BEM	Mr R H Moores	30/05/00
G0HYV	Mr R Sanderson	15/03/01
G0IUG	Mr E Yallop	31/03/01
G0MDU	Mr R V Leedham	18/12/00
G0SNY	Mr E S Wagner	12/03/01
G0TKN	Mr H E Ritchie	23/04/01
G1UVB	Mr J T Hencher	13/04/01
G2FQR	Mr N W Austin	03/07/00
G3BOC	Mr H Synge	24/04/01
G3DSC	Mr W E Taylor	09/02/01
G3FNJ	Mr N F Joly	20/04/01
G3HKJ	Mr C Page	12/03/01
G3JEB	Mr G E Bartle	11/05/01
G3SQE	Mr E B Longstaffe	24/01/01
G3UZL	Mr F A Cook	30/01/01
G3VW	Mr R H Newland	31/03/01
G3WHV	Mr K J Brackley	10/05/01
G4BGZ	Mr J Stanyon	17/04/01
G4BHV	Mr A T Berstein	
G4GBR	Dr P Parnaby	30/04/01
G4KXD	Mr H S Spooner	27/05/01
G4NQ	Mr L A Hunt	24/04/01
G6AON	Mr D A Rhymes	16/05/01
G6DP	Mr D E Palin	01/05/01
G6TQ	Mr R R Smith	11/04/01
G8CKD	Mr G P Webb	30/04/01
G8GMT	Mr R Mainwaring	30/03/01
G8PY	Mr D Bell	05/05/01
GM0HVD	Mr A Doran	04/07/00
GM3AVA	Mr W W Peat	01/05/01
GU4WRO	Mr E J Cobb	
GW4NZ	Mr S Roberts	15/03/01
LA5QK	Mr A Almedal	11/00
M0MND	Mr N E Bacon	25/04/01
M1CJQ	Mr C L Stainforth	08/02/01
RS29820	Mr H Marshall	23/04/01
RS3580	Mr I M Gaye	10/05/01
RS85976	Mr IAJ Dudley	
ZS6PW	Mr F Anderson	01/04/01

Rallies & Events

30 JUNE 2001

DRAGON ARC Marconi Centenary GB100HD - Holyhead, Anglesey, on 80m and 40m, from the site of the Holyhead Coastal Wireless Station. Martin, GW3PRL, QTHR, 01248 430 848.

1 JULY 2001

ALEXANDERSON DAY 2001 - 'Great Radio Station', SAQ, Grimeton, Sweden. On 17.2kHz at 0830, 0845, 1230 and 1245 UTC. Also amateur station, SA6Q, on 137.7kHz slow CW, with SSB on 80,40, 20, and 17m, and CW on 40, 17 and 15m. QSL to SA6Q. No amateur operation possible during 17.2kHz transmissions. See www.telemuseum.se/grimeton/default.html for general information about the station.

YORK RC 11th Radio Rally - Knavesmire Building, York Racecourse. OT 10.30am, £2 under 14s free. CP, TI on S22, SIG, LB, C, MT (two photos required). Pat, G0DRF, 01904 628 036 or pat.trask@lineone.net

5 - 8 JULY 2001

FINNISH RADIO AMATEUR LEAGUE Annual Summer Camp - 'Hietahami 2001', hosted by the University of Oulu Radio Club, OH8TA. The camp site is located close to the centre of Oulu, which can be reached by train, plane or bus. http://oh8ta.oulu.fi/hietahami/en/ or e-mail hietahami@sik.oulu.fi

8 JULY 2001

FENLAND REPEATER GROUP Horncastle Amateur Radio Rally - Horncastle Youth Centre, The Old School, Cagthorpe, Horncastle (near Horncastle Police Station). OT 10.30am, £1. TS, MT (two photos required), C, WIN. 01526 860 320 or 07778 274 535. Web site www.fenlandrepeater.org.uk

SUSSEX Amateur Radio & Computer Fair – Brighton Racecourse, East Sussex. OT 10.30am. Ron, G8VEH, 01903 763978 or 01273 417 756 (office hours).

14 JULY 2001

CORNISH RAC Radio Rally & Computer Fair - Penair School, Truro. OT 10.30am. B&B, TI, CP. Robin, 01209 820 118.

15 JULY 2001

HULL & DARS 8th Humber Bridge Radio Rally - Hessle High School, Hessle. OT 10.30. TS, C, MT (two photos required), TI on S22. Phil, M1BLO, 01482 879 396 or www.sydney.karoo.net/hadars

McMICHAEL RALLY & CAR BOOT SALE - Reading Rugby Football Club, Sonning Lane (B4446, just off A4) near Reading, Berkshire. OT 9am, £1.50, under-18s free. CP, CBS, C, LB, TS, TI on S22 by GB6MMR. First Aid post. Dave, G4XDU, 01628 625 720 or g4xdu@amsat.org - web site http://come.to/mcmichaelrally

16 JULY 2001

HUMBER BRIDGE Radio & Computer Rally - Hessle High School Sports Stadium. Phill, M1BLO, 01482 879 396 or John, M1ESA, 01482 839 340.

27 - 29 JULY 2001

AMSAT-UK COLLOQUIUM - University of Surrey, Guildford. www.uk.amsat.org/colloquium.htm

29 JULY 2001

COLCHESTER AMATEUR RADIO SOCIETY 33rd Annual Radio Rally & Computer Fair - St Helena School, Sheepen Road, Colchester. OT 10am. TI, TS, CBS, C, LB, CP free, MT, DF, B&B. Richard, 01376 571 239 (evenings) or www.g3co.ccom.co.uk

RUGBY ATS Annual Rally - BP truckstop on A5, 3 miles east of Rugby, 2 miles from M1 jn 18. OT 10am, £1. CP free, TI on S22 (GB1RRR), C, DF. Peter, G0JEW, 01455 552 449 (eve) or e-mail rally@g0jew.fsnet.co.uk

5 AUGUST 2001

LORN ARS Radio Rally - Benderloch Hall (north of Connel). C. Shirley, GM0ERV, 01631 566 518 or s.mclennan@freeuk.com, or John, GM8MLH, 01838 200 304.

5 - 10 AUGUST 2001

NORTH WALES RRC DXpedition to Bardsey Island - from Bardsey lighthouse and Plas Bach. All bands from 160 - 6m. Edward, GW0DSJ, 01745 336 939. Web page www.nwrrcw.org.uk

10 AUGUST 2001

COCKENZIE & PORT SETON ARC 8th Annual Radio Junk Night - Cockenzie & Port Seton Community Centre, South Seton Park, Port Seton. OT 6.30pm, £1. Bring your own junk and sell it yourself. C, DF, WIN. Bob, GM4UYZ, 01875 811 723 or GM4UYZ@GB7EDN or e-mail bob.gm4uyz@btinternet.com

12 AUGUST 2001

FLIGHT REFUELLING ARS Hamfest 2001 - Flight Refuelling Sports Ground, Merley, Wimborne. OT 10am. TS, crafts, CBS, TI on S22. Overnight camping on Saturday. Keith, G1VHG, 01202 5777 937.

KING'S LYNN ARC 12th Great Eastern Radio & Computer Fair - Park High School, Queen Mary Road, King's Lynn. OT 9.45/10am, TI on S22 and SU22, B&B, CBS, C. No dogs. Derk, G0MQL, 01553 841 189, e-mail Derk.Fraklin@tesco.net or Fred, G0KZI, 01760 440 570.

LORN ARS Village Fun Day - Dalavich, Argyll. Callsign GS0LRA (Lorn Radio Amateurs). Shirley, GM0ERV, 01631 566 518 or s.mclennan@freeuk.com, or John, GM8MLH, 01838 200 304.

19 AUGUST 2001

LEEDS & DARS Outdoor Rally & Car Boot Sale - Yarnbury Rugby Club, Brownberrie Lane, Horsforth, Leeds. CP free. J A Mortimer, M0JAM, 01943 874 650.

26 AUGUST 2001

COLERAINE & DARS Annual Radio & Computer Rally - Bohill Hotel, Cloyfin Road, Coleraine.

MILTON KEYNES ARS Rally - New venue: St Paul's School, Leadenhall, Milton Keynes. OT 10am. Dave, G3ZPA, 01908 501 310, or by e-mail to rally@bletchley.net. Web site www.madasafish.com/~mkars/rally.html

TORBAY ARS Mobile Rally - Churston Grammar School, Greenway Road, Churston, Torbay. OT 10am, £2. TI, CP, C, TS, WIN, B&B, MT (two photos needed). John, G4VUD, 01626 205 514 or e-mail rally@tars.org.uk

27 AUGUST 2001

HUNTINGDONSHIRE ARS Radio Rally - Ernulf Community School, St Neots (near Tesco on A428). OT 10am, £1.50. C, CBS on hard standing, TI on S22. Peter, M5ABN, 01480 457 347 (1800 - 2200).

2 SEPTEMBER 2001

TELFORD ARRG Telford Radio Rally - RAF Cosford Museum, off jn 3 M54. OT 10am, £2. TS, FM, CBS, SIG, CP free, C, MT (two photos needed). Dave, M0VZT, 01952 222 101. Web site www.TelfordRally.org.uk or e-mail bob@somrob.u-net.com

9 SEPTEMBER 2001

LINCOLN SWC Hamfest - Lincolnshire Showground, on A15 five miles North of Lincoln. OT 10.30am, £2. Celebrating the Club's 80th Anniversary, there will be an aircraft fly-past, model aircraft, boats and cars, oil engines, B&B, plants, Police, Fire and RAF displays. John, G8VGF, 01522 525 760 or 07968 050 318.

15/16 SEPTEMBER 2001

TRANSMISSION 2001 - 9th annual event to raise money for British Wireless for the Blind Fund. John 01634 832 501.

16 SEPTEMBER

BARRY ARS Welsh Amateur Radio Exhibition - Memorial Hall, Barry. Brian, 029 2083 2253.

21/22 SEPTEMBER 2001

LEICESTER Amateur Radio Show – Donington International Centre, Castle Donington, Leics. Geoff, G4AFJ, 01455 823 344, fax 01455 828 273 or e-mail g4afj@argonet.co.uk

7 OCTOBER 2001

GREAT LUMLEY AR & ES Rally - Nancy, 0191 274 4274 (W) or 07990 760 920, or e-mail lumley.rally@ic24.net

MANSFIELD ARS Radio, Computer & Electronics Rally - David, G0RDP, 01623 631 931 or david.g0rdp@lineone.net or web site www.andange.btinternet.co.uk/rally.htm

12 - 14 OCTOBER 2001

RSGB International HF and IOTA Convention HFC 2001 - RSGB, 0780 904 7373.

WACRAL 2001 Conference - G4EZU, QTHR or 01474 533 686.

13 OCTOBER 2001

THE G QRP CLUB MINI-CONVENTION - George, G3RJV, g3rjv@gqrp.com

14 OCTOBER 2001

NORTH WAKEFIELD RC 18th Amateur Radio & Computer Rally - 01924 824 451 or www.nwrc.mcmail.com

21 OCTOBER 2001

BLACKWOOD & DARS Radio, Computer and Electronics Rally - Dave, GW4HBK, 01495 228 516 (eve).

28 OCTOBER 2001

GALASHIELS & DARS Annual Rally - Jim, GM7LUN, 01896 850 245 or e-mail jimk@gm7lun.freeserve.co.uk

3/4 NOVEMBER 2001

NORTH WALES RRC Rally 2001 - Muriel, GW7NFY, 01745 591 704 or www.nwrrcw.org.uk

6/7 NOVEMBER 2001

LOW POWER RADIO ASSOCIATION Radio Solutions 2001 - 01422 886 463 or www.lpra.org or e-mail info@lpra.org

11 NOVEMBER 2001

SOUTH YORKSHIRE REPEATER GROUP Great Northern Hamfest - Ernie, G4LUE, 01226 716 339 or 07787 546 515.

18 NOVEMBER 2001

COULSDON ATS Bazaar - Andy, G0KZT, or coulsdon_ats@hotmail.com

MIDLAND AMATEUR RADIO SOCIETY 12th Radio & Computer Rally - Peter, G6DRN, 0121 443 1189.

WEST MANCHESTER RC Red Rose Rally - Don, G3BSA, phone/fax 01942 871 620 or e-mail don@g3bsa.freeserve.co.uk

24 NOVEMBER 2001

ROCHDALE & DARS Traditional Radio Rally - John, G7OAI, 01706 376 204 (eve), or e-mail radars@mbc.co.uk Please note that this is a *Saturday*!

24/25 NOVEMBER 2001

LONDON AMATEUR RADIO & COMPUTER SHOW - 01923 893 929, www.radiosport.co.uk

25 NOVEMBER 2001

BISHOP AUCKLAND RAC Rally - Mark, G0GFG, 01388 745 353 or Brian, G7OCK, 01388 762 678.

20 JANUARY 2002

OLDHAM ARC Rally - Steve, 01706 848 092 or m5aeg@btinternet.com

3 FEBRUARY 2002

SOUTH ESSEX ARS Rally - Brian, G7IIO, 01268 756 331 or www.southessex.ars.btinternet.co.uk

13/14 APRIL 2002

RSGB Spring Radio & Computer Show (incorporating **RSGB National VHF Convention**) - Jan, 0870 904 7377.

19 MAY 2002

MIDLAND ARS Drayton Manor Radio & Computer Rally - Peter, G6DRN, 0121 443 1189 (eve).

KEY *Rallies & Events*
TI - Talk-In; **CP** - Car Park; **£** - admission; **OT** - Opening Time - time for disabled visitors appears first, eg (10.30/11am); **TS** - Trade Stands; **FM** - Flea Market; **CBS** - Car Boot Sale; **B&B** - Bring and Buy; **A** - Auction; **SIG** - Special Interest Groups; **MT** - Morse Tests; **LB** - Licensed Bar; **C** - Catering; **DF** - Disabled Facilities; **WIN** - prize draw, raffle; **LEC** - LECtures / seminars; **FAM** - FAMily attractions; **CS** - Camp Site.

GB calls

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.

29 Jun GB100HD: Holyhead Coast Wireless Stn. Holyhead, Anglesey. L (GW3PRL)
GB100LD: Lizard Coast Wireless Stn. Helston, Cornwall. LH (G3PLE)
GB8MCG: Manchester Commonwealth Games. Hudsons Walk, Rochdale. V27 (G7BRJ)

1 Jul GB0LUF: Lower Upham Fete. Lower Upham, Hampshire. LH (G0PPH)
GB0RAF: Royal Air Force. Co. Durham. LH2 (G0NRK)
GB2RVF: Reedham Village Fete. Reedham, Norfolk. TLHV27 (G3IWC)

4 Jul GB4AFS: Air Formation Signals. Colerne, Wiltshire. TLHV27P (GW4XKE)

6 Jul GB0ACR: Applemore College Radio. Dibden Purlieu, Southampton. L2P (G0UUW)

7 Jul GB2EAS: Elston All Saints. Newark, Notts. LH (G3VMK)
GB2EK: East Kirkby. Spilsby, Lincs. LH27 (M5ZZZ)
GB2HHS: Hungerhill School. Doncaster, S.Yorks. LH27 (G0VIK)
GB2SEA: Sea - Jubilee Yacht Race. Scarborough, N. Yorks. LH2 (G4SSH)

8 Jul GB2HSF: Hereward School Fete. Loughton, Essex. HV27P (G0TOC)

9 Jul GB2IVO: St Ivo School. Huntingdon, Cambs. LH2 (G4KJJ)

12 Jul GB2RVS: Rettendon Village Show. Rettendon, Essex. (G4ZPE)

15 Jul GB25SF: Scout Fellowship. Notts. LH (G0GDU)
GB6MMR: McMichael Mobile Rally. Reading, Berks. 27P (G8FRC)

16 Jul GB4YOU: Youlbury Scout & Guide Radio. Boars Hill, Oxford. TLH27P (G0REL)
GB4YOU: Youlbury Scout & Guide Radio. Boars Hill, Oxford. TLH27P (G0RJX)

18 Jul GB2CV: Compton Verney. Warwickshire. LH2 (G3MXH)
GB2SOE: Special Operations Executive. Nr Paddock Wood, Kent. (G3GWD)
GB2XML: Ex-Military Landrovers. Paddock Wood, Kent. LH27 (G0BNE)
GB2XML: Ex Military Landrovers. Paddock Wood, Kent. LH27 (G0CLR)
GB2XML: Ex-Military Landrovers. Paddock Wood, Kent. LH27 (G4GWJ)
GB5XML: Ex-Military Landrovers. Paddock Wood, Kent. V27 (G7UVY)
GB5XML: Ex-Military Landrovers. Paddock Wood, Kent. V27 (G0CLR)
GB5XML: Ex-Military Landrovers. Paddock Wood, Kent. V27 (G7HNM)

21 Jul GB100MPD: Marconi Poldhu Centenary. Mullion, Cornwall. LH27P (G0JVR)
GB4CW: Cowes Week. Ryde, Isle of Wight. (G0MWU)

25 Jul GB0MCG: Manchester Commonwealth Games. New Moston, Manchester. LHV27S (G0UNJ)
GB2CG: Commonwealth Games. Rochdale. TLHV27S (G0WHL)
GB2MCG: Commonwealth Games. Crumpsale, Manchester. LHV27S (G0TOG)
GB4CG: Commonwealth Games. Milnrow. TLHV27S (G0HXQ)
GB4MCG: Manchester Commonwealth Games. Lees, Oldham. H2 (G0RFM)
GB8MCG: Manchester Commonwealth Games. Rochdale. V27 (G7BRJ)

26 Jul GB5SI: Summer Isles. Summer Isles. LHV (MM0BQI)

28 Jul GB2APF: Apple Pie Fair. Paignton, Devon. LH2 (G3LHJ)
GB2WFB: Worthing Fire Brigade. Worthing, Sussex. LH2 (G3NDJ)
GB5MCG: Manchester Commonwealth Games. Ashton Under Lyne, Manchester. V27S (G7JTL)

29 Jul GB1RRR: Rugby Radio Rally, nr Rugby, Northants. 27 (G0JEW)

Regional and Club News

Scotland West and the Islands Region

No club details submitted.

Scotland East and the Highlands Region

ABERDEEN ARS
6, Junk sale. Robert, 01224 896142.

BANFF AND DARC
27, 'ATUs I have known', George, GM3OXX. George, MM1CNA, 01346 518251.

COCKENZIE & PORT SETON ARC
6, Normal club night. 28, 29, RSGB IOTA contest from Tiree. Bob, GM4UYZ, 01875 811723.

North West Region

CHESTER & DRS
22, Visit to Manchester Museum of Science and Industry. Bob Campbell, 01244 378699.

ISLE OF MAN ARS
10, Video. David, dave@md0bxx.iofm.net

MID CHESHIRE ARS
4, TBA. 11, Activity night. 18, Use and abuse of co-ax cable, Rob, G8XMZ. 25, Annual BBQ. Niall, G0VOK, 01606 871413.

STOCKPORT RADIO SOCIETY
11, 'The Brain Revisited', Chris Pomfrett. 25, Ladies' night: a journey from Marple to Llangollen, Gordon Mills. David, M1ANT, 0161 4567832.

THORNTON CLEVELEYS ARS
2, Software evening. 9, Sale of surplus equipment. 16, 'How I became a Radio Amateur', G4FWM. 23, On air. 30, Talk TBA. Jack, G4BFH, jack@jduddington.fsnet.co.uk

North East Region

FINNINGLEY ARS
28, Open day: demonstration stalls, games, refreshments, ample parking. 31, Ladies' social evening & raffle. Eric, G3KPU, 01302 840166.

GOOLE RES
13, TBA, Barnes Wallis Inn. 20, HF mobile on air at tidal barrage, Barmby. 27, Talk TBA at Courtyard Centre. Richard, G0GLZ, 07867 862169.

Club NEWS

GREAT LUMLEY AR & ES
4, On air, net on VHF and HF. 18, Committee meeting. Nancy Bone, e-mail: lumley.rally@ic24.net

GRIMSBY ARS
2, HF night. 5, Pub quiz (not radio), Rob, M1BYQ. 19, Construction night: CW oscillator, Joe, G4CFO. Brian, G4DXB, 01472 312383.

HALIFAX & DARS
17. A trip to Utah & Nevada, Gerald, G3SDY. Ray, G0PMU, 01274 600297.

HAMBLETON ARS
11, Junk sale. John, G0VXH, 01845 537547.

HORNSEA ARS
4, 'Foxhunt'. 11, Simple wire antenna revisited, G0DEB. 18, 'Bricks and mortar', G7JZD. 21, Special event station at Preston Show, East Riding of Yorkshire. 25, 'Imaginary Currents', G0TPS. Andy Russell, G0VRM, 07050 287279.

HULL & DARS
6, 13, Rally preparation. 15, Humber Bridge Radio and Computer Rally. 20, Rally post mortem. 22, 2m 'foxhunt'. Leigh, G0UBY, leigh@sydney.karoo.co.uk

NORTH WAKEFIELD RC
4, 'On demand' Morse tests. Jim, G3YDL, 01924 824451.

WAKEFIELD & DARS
3, On air. 10, Radio-controlled treasure hunt. 17, Club BBQ. 24, On air. 31, Club pitch & putt competition. John, G7JTH, 01924 251822.

Midlands Region

BROMSGROVE ARS
10, BBQ. 24 On air from Lickey Hills, details for DF hunt 4. Angus, G8DEC, 01257 875573.

CAMBRIDGE & DARC
15, Longstow club BBQ and family day. Clive, G8BOU / M5CHH, 01223 573705.

COVENTRY ARS
6, TBA. 13, On air, Novice class, CW practice. 20, 2m DF hunt. 27, BBQ at club HQ. John, G8SEQ, 024 76273190.

DERBY & DARS
4, Junk sale. 18, Tesla coils - a truly illuminating demonstration, Martin Dale, G6ABU (leave cell phones at home). 25, Clearing the club room. Martin, G3SZJ, 01332 556875.

GLOUCESTER AR & ES
2, On air, 160 / 80m. 9, 160m outdoor operating session. 16, On air, 160 / 80m. 23, DF equipment checking. 30, On air, 160 / 80m. Tony, 01452 618930.

KIDDERMINSTER & DARS
3, Nostalgia night with videos and photographic display. Phil, G4SPZ, 01299 403025.

LEICESTER RS AND COMPUTER CLUB
2, 16, Activities: HF, VHF and computers. 23, Quarterly progress meeting. 30, Activities: HF, VHF and computers. Stan, G3HYH, 01162 242598.

LOUGHBOROUGH & DARC
3, Kite flying - try a vertical aerial. 10, Radio ramble. 17, Annual golf night. 24, 4th DF of the year, 160m, start point TBA. 31, Aerials on the college field. Chris, G1ETZ, 01509 504319.

MAXPAK
2, Using a web cam with your computer. Ron, M0LRD, 01922 684496.

MID-WARWICKSHIRE ARS
10, Club field day planning meeting. Bernard, M1AUK, 01926 420913.

RAF WADDINGTON ARC
5, RAE course. 12, First aid, Duncan, G0NWY. 19, 26, RAE course. Bob, G3VCA, 01522 528708.

SALOP ARS
5, TBA. 12, 3rd 'foxhunt'. 28, 29 RSGB IOTA contest (TBC). Diane, M5DSJ, 01743 341654.

SHEFFORD & DARS
5, TBA. 12, Mobile 'foxhunt'; map and compass essential. 19, Club BBQ and end of term party. 26, 5 or 15WPM Morse tests. Derek, G4JLP, 01462 851722.

SOUTH NOTTS ARC
4, On air HF & VHF. 18, Preparation for SSB Field Day. 25, College closed. Details: 01509 569679.

STOURBRIDGE & DRS
23, Radio applications using Linux. John, M1EJG, 01562 700513.

STRATFORD-UPON-AVON AND DRS
9, Surplus sale. 23, Construction competition. David, G6FEO, 07970 148204.

TELFORD & DARS
4, On air, revenue review. 11, Quiz on the air, M0RJS. 18, High speed digital design, M1RKH. 25, TBA. Mike, G3JKX, 01952 299677.

North Wales Region

NORTH WALES RRC
4, Club net, 3750 and 145.400. 5, Novice course. 11, Club net. 12, Mid-year junk sale. 18, Club net. 19, Mast repair, antenna examination. 25, Club net. 26, 'AROS', Barry Scarisbrick. Ted, GW0DSJ, 01745 336939.

South Wales Region

SWANSEA ARS
5, Car treasure hunt. Roger, GW4HSH, 01792 404422.

Northern Ireland Region

No club details submitted.

London and Central Region

BRACKNELL ARC
11, Construction evening. Baugh@compuserve.com

COULSDON ATS
9, Annual inter-club quiz. Steve, G7SYO, 01737 354271.

CRAY VALLEY RS
21 - 30 Jul Expedition to the Isle of Wight. Bob, BRS32525, 020 82657735 after 8pm & weekends.

CRYSTAL PALACE & DRS
20, An evening of receivers. Bob,

G3OOU, 01737 552170 or Victor, 020 86532946.

DACORUM ARTS
22, Trip to Bletchley Park. Jean, 2E1FOX, 01582 620507.

DORKING & DISTRICT RS
24, Activity night. John, G8SEQ, 024 76273190.

ECHELFORD ARS
12, D68C Comoros DXpedition, Justin Snow, G4TSH. Robin, G3TDR, 01784 456513.

EDGWARE & DARS
12, 'Control Systems', Ian, G4IUZ. 26, Club trip out (members only). David, G5HY, 01923 655284 (days) / 020 89549180 (eve).

GUILDFORD & DRS
13, On air. 27, DF hunt and BBQ. Stella, G0SWE, 01483 831044.

HODDESDON RC
17, BBQ. Don, G3JNJ, 020 82923678.

MAIDENHEAD & DARC
5, 'Cellnet', Eric Rowbotham. 17, Visit to Cable & Wireless earth station, Bletchingdon (nr Oxford). John, G3TWG, 01628 525275.

NEWBURY & DARS
9, Morse test. Mark, M0CUK, 01635 36444.

RADIO SOCIETY OF HARROW
1, GB2DHH operating day from The Mosquito Museum, London Colney. 6, 'Making the most of meters', Eric Holt, G3MHQ. 13, French evening: food wine and operating club station for QSOs to France. 27, Bring & buy. Jim, G0AOT, 01895 476933 / 020 7 2786421.

SILVERTHORN RC
6, Club camp planning evening. David, G0KHC, tel: 020 8504 2831.

Region	RSGB Regional Manager
Scotland West & the Islands Region	John Martindale, GM4VPA
Scotland East & the Highlands Region	Tommy Menzies, GM1GEQ
North West Region	Kath Wilson, M1CNY
North East Region	Peter R Sheppard, G4EJP
Midlands Region	John Layton, G4AAL
North Wales Region	Liz Cabban, GW0ETU
South Wales Region	Simon Lloyd Hughes, GW0NVN
Northern Ireland Region	Jeff Smith, MI0AEX
London & Central Region	Roger Piper, G3MEH
South & South East Region	Ivan Rosevear, G3GKC
South West & Channel Islands Region	Richard Atterbury, G4NQI
East & East Anglia Region	Malcolm Salmon, G3XVV

RSGB Regional Managers (as of 6 June).

STEVENAGE & DARS
3, 2m operating (practical). 10, 17, Chairman's choice. Peter, 2E1CRK, 01462 637404.

SURREY RADIO CONTACT CLUB
2, 'John Logie Baird', Jon, G0GNA. 9, CATS inter-club quiz. Ray, G4FFY, 0208 6447589.

VERULAM ARC
23, BBQ. Walter, G3PMF, 01923 262180.

WELWYN-HATFIELD ARC
2, TBA. 16, New 'foxhunt' / treasure hunt. 23, Construction evening at Lakeside school. dean@g3wgc.freeserve.co.uk

South and South East Region

FARNBOROUGH & DARS
11, 'Experiences of a Web-Footed WOM', Eddie, G0PQN. 25, HF portable operation, Peter, G4MBZ. Norman, G0VYR, 01483 835320.

HASTINGS & RC
18, 2nd auction of surplus equipment. R C Gornall, G7DME, 01424 444466.

HORSHAM ARC
5, Photo quiz. David, G4JHI, 01403 252221.

MID SUSSEX ARS
20, BBQ. Sue, G6YPY, 01273 845103.

OXFORD & DARS
12, Marconi's first trans-Atlantic transmission, Paul Goodhall, BRS176562. Dave, G3BLS, 01865 247311.

QRZ AR GROUP OF SUSSEX
13, 'The Truth about Loop Antennas', Dr Mike Underhill, G3LHZ. 14, 15, Special event station at Hertsmonceux Castle. 27, Club project. 29, Club visit to Amberley Chalk Pit Museum. Stuart, M0CHW, 01435 863020.

SOUTHDOWN ARS
2, 'Systems and Noise', Mike Christienson, G8FCD. Glynn, M0CHO, 01323 765731.

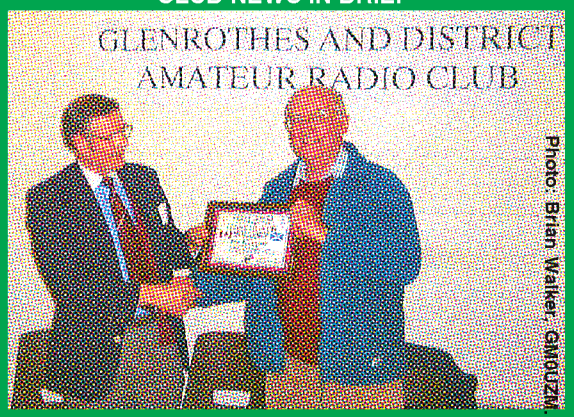
SWINDON & DARC
5, 'Software Radio', Ian, G8JHC. 19, 'Using your Oscilloscope', Dennis, G3LLZ. 26, IOTA contest preparation, Ian, G3YBY. Contact Den, M0ACM, tel: 01793 822705.

TROWBRIDGE & DARC
4, 144MHz direction finding. Ian, G0GRI, 01225 864698 eves / weekends.

WATERSIDE (NEW FOREST) ARS
17, 'Radio Caroline', Malcolm, G0WFQ, wives & partners invited. A Horton, G0LKG, 02380 844316.

WORTHING & DARC
4, Satellite receiver conversion for ATV. 11, BBQ. 18, Video evening. 25, Discussion evening. Roy, G4GPX, 01903 753893.

CLUB NEWS IN BRIEF



On his visits back 'home', Ian Kennedy, VE3ONK, calls into the premises of the Glenrothes and District Amateur Radio Club, where he has given numerous talks over the years on his engineering projects in South America on behalf of a charity. During a recent visit, he was presented with a certificate of life membership of the club by Ken Horne, GM3YBQ. The Glenrothes &DARC meets at the Football Pavilion, Station Road, Thornton, every Wednesday evening at 7.30pm. Visitors and potential members are welcome.

South West & Channel Islands Region

APPLEDORE & DARC
16, BBQ. Brian, M0BRB, 01237 473251.

CORNISH RAC
9, Utility programs, by Don, Clive and others. 14, Cornish Rally, Penair School, Truro. Robin, G0MYR, 01209 820118.

POLDHU ARC
13, 'CW', G3TUX. Keith, G0WYS, 01326 574441.

POOLE RS
6, Operating (shack). 13, 'Microwaves in Practice', Colin, G6MXL. 20, Construction (shack). 29, Day in the field. Contact Phil, G0KKL, tel: 01202 700903.

SOUTH BRISTOL ARC
4, Working the SBARC team on Lundy Island. 11, Club BBQ, Bob, G0LHD. 18, Bring & buy sale, Len, G4RZY. 25, BT telephone system explained, Fred, G7LPP. Len, G4RZY, 01275 834282.

THORNBURY AND SOUTH GLOUCESTER ARC
4, Operating night. 11, 'Foxhunt'. 15, Trip to Bristol Aero Collection at Kemble. 18, 'Radio Based Ethernet Lans', John Moorhouse. 25, Video. John Moorhouse, M1EON. 0117 3442686.

TORBAY ARS
20, Talk (TBA), Peter Lewis, G4VFG. Anna, 07879 840304.

WEST SOMERSET ARC
3, PSK demonstration. Alan, M0AOJ, 01643 707207.

YEOVIL ARC
5, 'HF wavefront dynamics', Rob, G3MYM. 12, 'Jenny's Gadgets' (blind SWL). 19, Discussion on club equipment. 26, On air. Derek, M1WOB, 01935 414452.

East and East Anglia Region

BRAINTREE AR & CCC
9, 23, 30, Club net. Keith, M0CLO, 01376 347736.

CHELMSFORD ARS
3, Satellites, Frank Howe, G3FIJ. David Bradley, M0BQC, 01245 602838.

COLCHESTER RADIO AMATEURS
5, Radio rally planning. 17, 18, Club Event: demo station at St Helena School Community Industry Days. 19, Trip (TBC) to EE Control Centre, Ipswich (max 20 people). 29, 33rd Annual CRA Radio Rally. Kevin, M0BCK, 01206 561117.

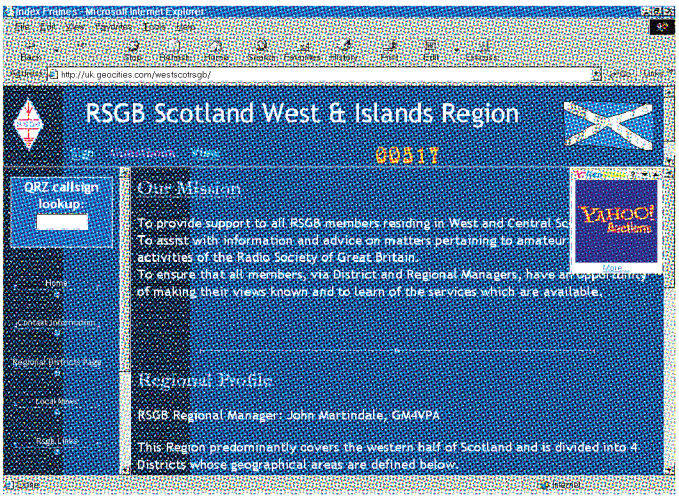
FELIXSTOWE & DARS
1, Darell Day at Landguard Fort. 23, Inter-club quiz vs Ipswich. Paul, G4YQC, 01394 273507.

HARWICH ARIG
11, 'The Great Egg Race', John, G3YYZ. Eugene, G4FTP, 01206 826633.

LEISTON ARC
3, Car rally. Lisa, 2E1HBF, 01728 833202.

REGIONAL AND CLUB NEWS IN BRIEF

SCOTTISH REGIONAL WEB SITE

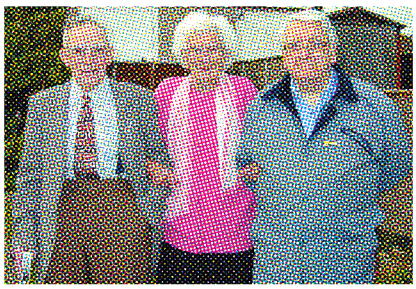


THE RSGB Scotland West & Islands Region has set up its own web page at http://uk.geocities.com/westscotrsgb The site contains local information, RSGB links, a 'QRZ' callsign lookup facility, a sales and wants section and also the means to identify and access much amateur radio related software. For further details contact RSGB Regional Manager John Martindale, GM4VPA, tel/fax: 01698 814746; e-mail: gm4vpa@rsgb.org.uk

BANFF CLUB STALWART

Alexander Innes Duncan, GM3DZB, known to all as Sandy, died suddenly at home on 12 May 2001 at the age of 78 after a long battle with heart disease. Sandy was a founder member of, and a tower of strength at, the Banff and District ARC, actively organising and taking part in special events and field days even through his period of illness. Sandy hit the headlines in 1982 during the Argentine invasion of the Falkland Islands, when he was the last person to speak to the radio amateur in the Falklands who was the islanders' final link with the outside world.

YEOVIL AMATEUR RADIO CLUB, 55 YEARS ON



Nobby Clark, G3BEC, Mary Jeans and Don McLean, G3NOF.

TWO FOUNDER MEMBERS of the Yeovil Amateur radio Club, Don McLean, G3NOF, and Nobby Clark, G3BEC, recently met the landlady of the Wellington Inn, Mary Jeans, where the club had meet for its first meeting on 17 October 1946. Mary, now 84 years old and still living in Yeovil, reminisced about the old days with Don and Nobby for over an hour.

From 23 April to 7 May, Yeovil Amateur Radio Club put on a large shop window display of amateur radio equipment and information. The display, which was set up in the window of the 'About Town' information shop in Yeovil's town centre, engendered a lot of public interest and included vintage and home-made equipment.

The Yeovil Amateur Radio Club now meets at the Red Cross Centre, Grove Ave, Yeovil, Somerset on Thursdays from 1900 to 2200. Further details from Derek Bowden, M1WOB, tel: 01935 414452; or by e-mail: derekbowden@callnetuk.com

Yeovil ARC's shop window display.

Items for club news should be sent to the *RadCom* Office at HQ to arrive by the 26th of the month, ie approximately a month before publication (eg 26 January for the March issue). News items should be sent in writing (fax, letter or e-mail gb2rs@rsgb.org.uk) by the club secretary or the person responsible for publicity. Post cards for this purpose are available from RSGB HQ. A database of all meetings is shared between *RadCom* and GB2RS, so information only needs to be sent once.

Club News is a service for clubs and societies affiliated to the RSGB. The announcements are intended to notify non-members and potential members of your club of specific events, therefore 'informal', 'committee meeting', 'natter night' and 'ragchew evening' etc will only be included if space permits. Basic, unchanged details about RSGB-affiliated clubs are published annually in the *RSGB Yearbook*.

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THE FIRST Sporadic E (Es) events on 144MHz for this year occurred on 21 May but British Isles stations were out of range. After the very high solar activity of late March, the Sun has since calmed down.

All times are in UTC, ODX indicates best DX and QTHR signifies that the operator's address is in the current *RSGB Yearbook*. An asterisk (*) after a callsign denotes a CW contact, (EX), (GU) etc refers to the postcode area and (JN26), for example, is the Maidenhead grid reference.

ICELAND OPERATION

JOHANNES BAARDSEN, LA6HL, is due to start a five-week vacation in Iceland on 4 July. He plans to be QRV on 6m with about 120W and a 5-ele Yagi. In the 20 - 23 July period he will be QRV on 2m EME from Reykjavik (HP93), and possibly on MS, with high power and two 15-ele Cue Dee antennas. His operating frequency (QRG) will be 144.139MHz on CW with 1000lpm on MS. You can e-mail him on j-baard@online.no

PROPAGATION

IN THE MARCH issue of *The Six and Ten Report* Steve Reed, G0AEV, comments on the observation by NASA scientists in a report of 15 February that the Sun's basic magnetic field had just reversed - analogous to Earth's North and South poles having changed places.

This is a well-documented phenomenon and usually occurs some months after the maximum of a cycle. The reversal usually precedes a magnetically disturbed period of more frequent and larger auroras. March and April followed this pattern with some excellent auroras. They are covered in three pages in this issue of *The Six and Ten Report*.

There is the usual table of solar and geomagnetic data and a table showing the three-hourly K-indices at Hartland for each day. There are 18 pages of 50MHz reports from outside Britain. The *Report* is an activity of the RSGB's Propagation Studies Committee (PSC), and is edited by G0AEV and Prof Martin Harrison, G3USF. Subscription inquiries should be addressed to Steve (QTHR), whose e-mail address is g0aev@explore.force9.co.uk

The March edition of *SunMag* includes observations by astronomers, working with a pair of NASA spacecraft, in a piece entitled 'Cannibal Coronal Mass Ejections'. The gist of this is that slower velocity CME particles can be devoured by those from a subsequent faster moving CME. The SOHO spacecraft captured dynamic pictures of one such event. There is a table of the largest solar flares since 1976 and another listing the dates and areas of the largest sunspot groups from 1874 to 2000.

In the April *SunMag* an article entitled 'The Transparent Sun' reports a technique in development by researchers by which they can peer right through the Sun. Thus they were able to monitor the progress of sunspot group AR9393 as it disappeared from view. To achieve this they used two of SOHO's instruments; the Solar Wind Anisotropies Experiment (SWAN) and the Michelson-Doppler Interferometer (MDI). You can see real-time pictures from SOHO on a NASA website - see the list.

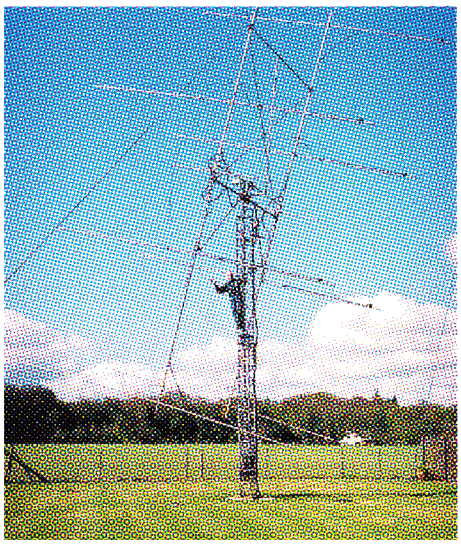
Sunspots are complicated structures and a couple of pages are devoted the 'Modified Zurich Class', a letter coding system to describe their types. Both issues contain tables of daily solar, geomagnetic, particle and sunspot group data and a solar flare list. *SunMag* is compiled and distributed by Neil Clarke, G0CAS (QTHR), whose e-mail address is neil@g0cas.demon.co.uk and he has a website.

The latest data from the NASA's Space Environment Center (SEC) for the period 21 April through 21 May reveal a decline in solar activity. The maximum value of the 2.8GHz radio flux was 210 units on 1 May and the minimum only 129 on the 8th and 9th, giving an average of 161.9. The SESC sunspot number peaked at 193 on 26 April with a minimum of 88 on 8 May, giving an average of about 140. 31 new sun sunspot areas were recorded and their areas varied from 1530 to 440 millionths of the Sun's disc.

MOONBOUNCE

ROY REED, G3ZIG (JO02), forwarded a copy of the 2000 ARRL International EME Competition results published in the May 2001 issue of *QST*. He came 6th in the 144MHz Single Operator category with 580,500 points from 135 QSOs and a multiplier of 43. This was an excellent achievement considering there were 79 entrants: well done, Roy. He was also QRV on 144MHz in the 28/29 April leg of the *DUBUS*/REF contest when conditions were very noisy with rain static, thunderstorms, sun noise, man-made noise and an aurora. Reception was very difficult at times but he finished with 54 QSOs and 22 multipliers. New 'initials' - stations worked for the first time - were LA8KV, OZ4MM, DL1EJA, DK5PD, F1DDG, W7FG, PA4VHF, SM0NKZ, OH3TR, DL6WT and W7MEM, bringing his all-time total to 260. Roy's all home-brew 2m EME antenna array is shown below. It comprises 8 x 15-ele DJ9BV Opt2 Yagis with E & H stacking distances of 4.29m and 4.08m respectively. The main feeder cable is LDF5-50, then to a half-wave combiner, then to two four-way half-wave combiners for each bay of four Yagis. All tails from the combiners to the driven elements are LDF4-50. The coax changeover relays, GaAsFET pre-amp and converter are housed in the mast-head control box with a separate 28MHz IF feeder. The machine screw / hinge arrangement allows elevation of the array up to 60º.

Howard Ling, G4CCH (IO93), was QRV on 23cm in the same leg of this contest completing 44 QSOs - modes not mentioned - with 24 multipliers. Some new callsigns made an appearance and new initials were DL1YMK, DL4MEA, JA6AHB, HB9BCD, F8COZ and DH5RZ bringing his total to 152 in 30 DXCC countries, six continents, 23 US states, 25 fields and 115 grids. He also heard 9H1ES* during a



The home-brew 2m EME array of Roy Reed, G3ZIG.

sked with KA0Y. He was QRV on 22 April, completing with DJ9YW* (549/559) and on the 27th, K0YW* (569/579) and W7QX* (539/549).

Simon Freeman, G3LQR (JO02), was also QRV on 23cm in the April leg of the contest and has improved his antenna system. He completed with OE9XXI, G3LTF, G4CCH, JH5LUZ, SM3AKW, OH2AXH, OZ6OL, F6CGJ, F2FU, OZ4MM, DH9FAG, N2IQ, DK0ZAB, K4QI, JF3HUC, HB9SV, HB9BBD, OE5EYM, DH5RZ and K5JL. Lots of others were heard and he thinks his initials are 82 although he is not sure how many DL stations are the same.

Peter Blair, G3LTF (IO91), was QRV on CW on 70cm on 1 April and completed with WA4NJP, G4ERG, K5JL, OE5EYM, OZ4MM, DL7APV, WB0GGM, K2UYH, DL9NDD, G3SEK, W7CI, S52CW and SM3AKW. K5WXN and UA3PTW were heard and five others were called with no reply.

There were two issues of the *432 and Above Newsletter* for May. Commenting on the April leg of the European contest, the editor remarks on the poor conditions, due to the aurora, when echoes from even the bigger stations disappeared for a time. He thinks that the QSO between WA4NJP and BY4BJA on 70cm at the beginning of May was a 'first' between North America and China. The BY was running just 100W to four 720 Create Yagis with no preamp - "just a raw FT736R."

An addendum to G3SEK's 2001 Lunar Weekend Calendar was published in *DUBUS* 1/2001 identifying the sked weekends. These are 14/15 July, 11/12 August, 8/9 September, 6/7 October, 3/4 November, 1/2 and 29/30 December. This year's ARRL EME competition will be on the 13/14 October and 10/11 November weekends.

For the July sked weekend there will be 27 hours of Moon time for London latitude stations with the declination varying from +4.66º to +12.13º, while the 144/432MHz sky temperature range is 341/25K to 409/29K. The signal degradation referred to perigee varies from -1.42dB to -1.11dB.

ANNUAL VHF / UHF TABLE - JAN TO DEC 2001

	50MHz		70MHz		144MHz		430MHz		1.3GHz		Total
Callsign	Dist	Ctr	Dist	Ctr	Dist	Ctr	Dist	Ctr	Dist	Ctr	Points
G4ZTR	29	14	20	2	91	20	13	5	-	-	194
G4DEZ	8	20	-	-	53	12	1	2	-	-	96
G3FIJ	1	1	19	3	40	10	9	4	3	1	91
G4APJ	3	3	-	-	44	9	12	2	-	-	74
G7CLY	4	1	-	-	15	3	4	1	-	-	28

The District Codes are the 124 listed on page 53 in the October 2000 *RadCom*. Up to six different GI stations and up to three different GM stations in each Scottish district may be counted. Countries are the current DXCC ones plus IT9. The deadline for the next issue is 17 July.

BAND REPORTS

50MHz

A new beacon is QRV from Tel Aviv in Israel (KM72JB). 4X4SIX is on 50.0802MHz and runs 3W to a vertical dipole 3m above the roof and 50m AGL. The transmitter is a modified mobile phone base station that ran 8W in the 70MHz band and the output power on 50MHz was reduced to ensure long life and to avoid over heating. The transmission sequence is 15s key down, followed by ten Vs and "de 4X4SIX de 4X4SIX beacon." Four pages of technical information can be downloaded from 4Z5AY's website - see the list.

There was an aurora in the afternoon of 22 April and David Butler, G4ASR (HR), made eight CW QSOs with stations in DL, ES, GM, LA, OH and OZ between 1537 and 1616. Best beam heading (QTE) was 25º. Richard Roberts, ex-MW1BGE, is now MW0CPZ (SA), after a spell in New Zealand as ZL1CPZ. He enters the All-time Squares table with 285 grids. Paul Thompson, GM6MEN, was QRV in the 22 April aurora and, in a half-hour session from 1700 added five 'local' grids - IO63, 82, 92, 93 and 94.

Jamie Ashford, GW7SMV (NP), lists some nice DX, Es yielding 9H1AW (JM75), IS0GQX and IW0RGN on 23 April. On 15 May he contacted EH7, OH, SM, EW6DI* (KO45) and EH9IB: he heard ZS6PJS and ZS6WB. On the 18th YU, YO and SP stations were worked via Es and an MS contact with PE1GNP was completed in one burst at 27/27 within five minutes of the sked start. Next day brought more Es contacts to 9A, DL, S5 and SM and QSOs with PY5CC and PP5JD. On the 20th OH6HFX (KP14) was a new grid.

David Whitaker, BRS25429, switched on at 1545 on 22 April and heard auroral stations from DL, EI, ES, F, G, GI, GM, GW, LA and PA in 18 grids up to 1720. Laurence Howell, GM4DMA, e-mailed from Anchorage in Alaska, where he will be based for a few years. He has a good sea path out in the bay at 250ft ASL and runs an IC-706 to a 5-ele Yagi 70ft AGL. He is keen to try the difficult transpolar route and monitors 50.105 and 50.110MHz. He has trips to Costa Rica and Mongolia later in the year and may be QRV there.

Ted Collins, G4UPS (EX), is a great gatherer of 6m news and reports that CT3FT had worked club station FY7KE (GJ35) should anyone still need French Guiana. Graham Carrington, 5X1GS, is QRV from Kampala where he will be for two years. With his antenna at 12ft AGL, he has already worked into LU and PY. His home call is G0VNW.

The first-ever QSOs on the band with Tristan da Cunha were made on 5 April by ZD9BV, who was audible at Ted's QTH from 1225 at RS33. He was exchanging 59 reports with stations further north till fade-out at 1251. PZ1AP hopes to be back on the band some time.

The first reasonable Es event in May was on the 5th from about 1500 when Ted worked into EH2, 4, 5 and 7 and CT, completing nine QSOs into IM67, 86, 97 and 98, IN50 and 82. From 1618, South Americans were coming through resulting in contacts with LU9APM* (GF05) and LU3EX* till fade-out at 1720. The morning of the 12th brought QSOs with EH9IB (IM85), EH7CU (IM86), ZB2/G3RWL* (IM76) and EH7KW (IM67) till fade-out at 0850. From 1650, 9J2BO* and 3B6RF* were getting into Europe. Lots of Italians were in from 1748 resulting in two more contacts till fade-out at 1930.

Next day Es mode saw QSOs with DL, OE, OK, OM, SP7, YO, YU and 9A stations ending with SM7GVF* (JO76) at 1301. Other grids worked were JN86, 88, 89, JO51, 52, 73, 76, 83, KN04, 08 and 17. It was the turn of the Scandinavians and Balkans on the morning of the 17th and stations worked were SM1BSA* (JO97), OH7PI* (KP32) and SM3BEI (JP81) till fade-out at 1115. Early afternoon brought ZS6PJS (KG46) and EH7GTF* (IM87).

Ted describes a very strange and very selective opening on the evening of the 18th more reminiscent of what we often experience on 2m. He worked DL, LZ, OE5, OM, S5, YU, 4N and 9A in grids JN67, 76, 88, KN04, 08, 23 and 31. The TF3SIX beacon was copied from 1220 for an hour on the 20th peaking to S6, but no activity, similarly the next day 0950-1120. At 1010 he worked TF3FK (HP94) and heard beacon OX3SIX at S4 at 1135-1144.

144MHz

Ev Tupis, W2EV, e-mailed, "I am searching for anyone in Europe with an Atlantic Ocean view for an experiment. If you are interested in an attempt at the first trans-Atlantic 2m QSO, and are willing to experiment with a new PSK31-based beacon/communication system, please send me an e-mail. We are setting up a well-equipped station in Florida, due to the Gulf Stream water effect, with the hopes that this will be the most likely path to Europe. Others along the USA's Atlantic coast will probably join us once we set up." His e-mail address is w2ev@rochester.rr.com and there is a website.

Gabriel Sampol Duran, EA6VQ, has been collating data about 2m TEP and achieved QSOs, and has put these on a web page including maps of the known contacts -see the list. If you have any information to pass (QSP) to him, please e-mail Gabriel at ea6vq@qsl.net

John Wilson, G3UUT, advises that there is a new beacon QRV from Rabat in Morocco. CN8LI (IM64) operates on 144.465MHz running 30W to a 5-ele Yagi beaming at 25º.

Now the Es openings, the first

of which was on 21 May. In a 3min period from 1634, Alex Della, I4YNO (JN54KP), worked EB7HAF (IM76), EA7GBG (IM67), EA7AJ and EA7GTF (IM87). SV5/DJ2NJ was QRV but not heard. Adriaan, PE2KP (ex-PE1KHP), says that the MUF was up to 167.7MHz producing propagation from Italy to Spain and the Dodecanese. He lists IK2YXK (JN45OP) to EB7HAF, IZ1BPN (JN35) to EA7ERP (IM87), IK5QLO (JN53) to EA7JX (IM77) and IZ1BPN to SV5/DJ2NJ (KM46). This suggests mid-path refracting areas around IM99/JN09 and JN90.

The next event was on the 23rd when Es was available in EA, YO and YU and later in PA and I. He lists EA5EZJ (IM98) to YO6ADW (KN36), YU7ON (KN04) and YU7RF (KN05) from 1813, and PA3BIY (JN22) to I7OXH (JN70) at 2029. He has a Sporadic E web page - see list.

Peter Weatherall, G3MLO (CT), is QRV again now that he is no longer the SySop of GB7DXK (Martin Green, G0BMD is the new incumbent). He runs an FT-1000MP, transverter and 3CX800 PA at 400W into four 12-ele M² Yagis with masthead preamp, 23m AGL, his QTH being 160m ASL. He is willing to make skeds using PSK31 and MFSK16 modes. He was QRV on 1 May in the Nordic Activity Contest, working into DL and OZ, ODX being OZ1CT (JO75) at 1023km.

G4ASR was QRV in the 22 April aurora from 1450 completing 12 CW QSOs with DL, GM, LA, PA and SM stations, ODX being RK2FWA (KO04) at 1578km. He finished at 1720. There was good tropo to Germany in the morning of 2 May and David lists seven QSOs into JO42, 52, 62, 72 and 74 up to a QRB of 1192km.

Nick Shaxted, GM4OGI (FK), was also QRV in 22 April aurora and lists 70 QSOs on SSB with stations in DL, F, G, HB9, LA, ON, OZ, PA and SM. ODX were DG9RCI and DK1FG (JN59) and DL2ARD (JO60). He left his QTE at 95º throughout. On tropo GW7SMV worked TM5N (IN77) on 28 April, IOTA island EU-094.

David Dodds, GM4WLL, operated from a public viewpoint, the quaintly-named Tak-me-Doon Road, Kilsyth (IO76XA) near Glasgow for a couple of hours in the contest on 20 May. Conditions seemed fair in spite of a high noise level. He completed 35 QSOs into EI, G, GD, GI, GM, GU and GW in 13 grids. ODX was GU3EJL (IN89) at 710km.

1296MHz

Derek Gilbert, G0NFA, reports an interesting claim by Carl Mohlin, SM3AKW. To quote, "11 April 2001 at 1650 SM5QA and I were finally able to complete an aurora QSO on 1296MHz. With 500W each end and 20dB antennas and years of trying, finally RST33A signals appeared. JP92AO - JO89WJ. We observed a 5kHz Doppler on the high side and a broad type of signal." So is this a European, or even a world, 'first' auroral QSO on 23cm?

The upgrading of the 23cm station at GM4OGI is progressing well. Having commissioned a new amplifier, Nick can now run 150W. Once he has worked out the switching details, he should have a new masthead preamp in place, 0.6dB in place of 0.9db NF.

DEADLINES

THAT'S IT FOR another month, but I'd like to have a few more entries for the annual table. Copy for the September issue should reach me by **17 July** and for October the date is **14 August**. My answerphone and fax machine is on 020 8763 9457 and the CompuServe ID is g3fpk ♦

WWW.

***DUBUS*:**	http://www.dubus.org
MDI images:	http://sohowww.nascom.nasa.gov/data/realtime-images.html
***SunMag*:**	http://www.g0cas.demon.co.uk/main.htm
4X4SIX beacon:	http://www.iarc.org/4z5ay
W2EV:	http://go.to/beaconet
EA6VQ (TEP):	http://www.qsl.net/ea6vq/tep/html
PE2KP (Es info):	http://home.planet.nl/~vhf-uhf-shf/vhfspe.htm

CONTEST

TIM KIRBY, G4VXE
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WE HAVE RECEIVED lots of interesting correspondence from many of you on the subject of submitting your contest entries on disk. Certainly, most people felt, quite understandably, that *requiring* entries to be on disk was draconian. Many other people felt that we need to make it as easy as possible for the casual contester to submit a log. That's very true and very important. Regular contesters all appreciate the people who casually tune around and work them in a contest, whilst not making a serious entry. Adjudicators really appreciate casual contesters sending in logs, because it means that far more cross-checking can take place, leading to more a more comprehensively validated result.

A number of people commented that the casual contesters will not necessarily have a contest logger available. Perhaps this is why entries have been received in 'non-standard' formats such as Excel. Someone suggested that the RSGB should provide a free contest logging program to do this. Nice idea, but there are plenty of contest logging programs available, and I doubt one of the RSGB's core competencies is software development! Perhaps the most productive work that can be done is to provide some conversion utilities, allowing conversion of Excel data, for example, into ADIF format, which the adjudication software will be able to read. I have already had some discussions with Justin, G4TSH, and Dave, G4BUO, of the HF Contests Committee as a first step towards building some of these utilities. We shall keep you informed.

VHF NFD AND FOOT AND MOUTH DISEASE

YOU WILL PROBABLY have read elsewhere about the postponement of VHF NFD, owing to Foot and Mouth Disease. The VHF Contest Committee would like to hear your views about whether or not you would support a rearranged VHF Field Day the first weekend in September, this year (assuming, of course, that full access to the countryside is restored by then). See the VHF Contests Committee web page at http://www.blacksheep.org/vhfcc for up-to-the minute information and for methods of providing your feedback to the committee, on the subject.

Once again, we have a large number of results to try to fit in. There's a bit of a backlog at present, but we're doing our best to get the results into *RadCom* as quickly as we can. Please bear with us.

CONTEST CALENDAR

HF Contests

Date	Time	Mode	Contest
21 July	*0000-2359*	*CW/SSB*	*RAC Canada Day*
14 - 15 July	*1200-1200*	*CW/SSB*	*IARU HF World Championship*
22 July	0900-1200	CW	RSGB Low Power (3.5MHz Session)
22 July	1300-1600	CW	RSGB Low Power (7MHz Session)
28 - 29 July	*0000-2400*	*RTTY*	*Russian RTTY WW*
28 - 29 July	1200-1200	CW/SSB	RSGB IOTA

VHF Contests

Date	Time	Mode	Contest
21 July	1400-2200	ALL	RSGB 144MHz Low Power
22 July	0800-1400	ALL	RSGB 432MHz Low Power

Microwave Contests

Date	Time	Mode	Contest
29 July	0900-2100	ALL	RSGB 10GHz Cumulative

The full rules of RSGB HF and VHF/UHF contests were published in the RSGB Contesting Guide in October 2000 *RadCom*. Brief rules for non-RSGB contests, which are listed in italics above, can often be found in the 'HF' and 'VHF/UHF' columns. The HF and VHF Contest Committees both have web sites from which comprehensive details are available. These are www.g4tsh.demon.co.uk/HFCC/index.htm and www.blacksheep.org/vhfcc

144 MHz Trophy 2000

FOLLOWING the excellent conditions in 1999, it was inevitable that the conditions this year would return to normal. Contact numbers were well down compared with 1999. Most entrants regarded the conditions as average and a number complained about deep QSB. However, there was an aurora on the Saturday afternoon and evening that allowed a number of entrants to make good DX contacts, though there did appear to be a lack of CW activity. Stations in Scotland had their own private tropo conditions into Scandinavia, though with the beacons at good strength there were few stations active. G8T operating from the Lizard reported a number of scatter modes associated with weather fronts together with meteor bursts and FAI propagation into the Balkans.

A number of stations suffered equipment failures that were either terminal or required motorbike couriers to provide replacement equipment. M6T suffered badly with multiple failures and lost two hours of the event but still managed to work 853 stations!

The weather fronts that affected the propagation provided other forms of interest to the portable stations with driving rain and gale force winds being reported.

At the top of the Multi-operator section, The Northern Lights repeated its1999 victory to retain the Mitchell-Milling Trophy. In the single-operator fixed station section M6T, operated by Andy, G4PIQ, scored an overwhelming victory to win the Thorogood Trophy. Allan, GM4ZUK, took full advantage of the conditions to win the single-operator open section. These stations together with the section runners-up and Richard, G4HGI, who was the highest-placed fixed station entrant running 25 watts or less into a single antenna will receive certificates.

Roger Dixon, G4BVY

144MHz Trophy 2000

Multi Operator

	Callsign	Locator	QSOs	Score	ODX Call	ODXLoc	ODXkm	Power	Ant
1	*MD0V	IO74QD	542	211790	F4CBY	JN16BN	969	400	8*9+4*9
2	*GSB	IO03AD	569	191015	DK8TU	JN48TM	846	400	6*12+4*16
3	G8L	IO90IO	497	165060	LA9GL/M	IO39BF	1066	400	4*17
4	G0VHF/P	IO01HW	444	136237	LA0BY	JO59EW	1078	400	2*15
5	G4HRV/P	IO93LK	289	82479	DL0GTH	JO50JP	818	400	2*9+4*3
6	G8SRC/P	IO91CL	302	66832	HB2MS	JN36GU	794	400	2*17
7	G2XV/P	IO02CE	258	64238	GM0HTT	IO89JC	798	250	Yagi
8	G4RFR/P	IO80UU	270	62555	F6KEX	JN25PO	809	400	14
9	G3WRS/P	IO93FO	252	57643	DL8GP	JN39LH	757	400	4*17
10	G7RIH	IO91RR	158	32649	DF0CI	JO51CH	745	160	17
11	G4ADV/P	IO70MM	128	31047	GM4ZUK/P	IO86RW	731	400	2*8/8
12	G0DLR	JO01EI	119	21430	GM0HTT	IO89JC	891	400	15
13	M2H	IO92DF	127	18737	F6CRP	JN96KE	673	120	12
14	GM4WLL/P	IO78HA	44	17203	SK7MW	JO65MU	1157	200	2*14
15	G3YNN/P	IO00DX	75	12219	GM4ZUK/P	IO86RW	688	25	Yagi

Single Operator Fixed

	Callsign	Locator	QSOs	Score	ODX Call	ODXLoc	ODXkm	Power	Ant
1	*M6T	IO02OD	853	320871	LA2AB	JO59FV	1034	400	2*2*17+17
2	*GM4AFT	IO86NT	222	111366	HB2MS	JN36GU	1266	400	4*9
3	G3MEH	IO91QS	302	75656	F6FHP	JN94TR	783	400	2*10
4	G1GEY	IO94DV	122	40093	DF0QL	IO40BP	812	100	9
5	G0HAS	IO81VH	157	38235	DL0WAE	IO42DC	728	300	2*13
6	*G4HGI	IO83PL	146	31055	LX/PE1IBK	JO30BB	716	25	17
7	PE1EWR	IO11SL	89	24137	DF0YY	JO62GD	623	10	10
8	G3FIJ	IO01KV	71	15609	GM4ZUK/P	IO86RW	602	10	10
9	G3XDY	IO02OB	29	13897	DF0YY	JO62GD	773	400	12
10	G4APJ	IO83UP	61	13368	F1CXX/P	JN09XI	560	25	9
11	G1TWS	JO01HO	57	12508	HB9RF	JN47HD	746	25	11
12	G0GJV	IO91OK	52	11657	PI4GN	JO33KK	565	200	9
13	G4XPE	IO92GU	35	8646	F6KPQ/P	JN87KW	559	25	10
14	G3YJR	IO93EI	25	5284	F6IFR	JN09TT	454	60	9
15	2E1GUA	IO01PS	21	3885	LX/PE1IBK	JO30BB	440	10	13

Single Operator Open

	Callsign	Locator	QSOs	Score	ODX Call	ODXLoc	ODXkm	Power	Ant
1	*GM4ZUK/P	IO86RW	300	152613	OH2BNH	KP20LG	1623	400	4*13
2	*G4IVH/P	IO92WN	295	84267	GM0PWS	IO68UG	744	400	17
3	G8T	IN70IX	204	74473	S52ZW	JN86BT	1608	400	2*10
4	GM2T	IO85RU	145	49919	DK8ZB/P	JN49PU	1035	100	17
5	GW7GRR/P	IO81KW	192	45554	DL8GP	JN39LH	768	400	2*10
6	GW8ASA/P	IO81FP	183	37028	HB2MS	JN36GU	905	200	10
7	M0AFC/P	IO84SA	85	19884	DL8GP	JN39LH	833	10	13
8	GW8ZRE/P	IO83JA	90	17178	DB7IU/P	JO31BC	672	10	7
9	G6FQZ/P	IO91FL	75	15721	HB2MS	JN36GU	780	25	9
10	M5EPA/P	IO81MW	62	8158	DL7ELY	JO30EM	668	50	10

G0VTL and G4YHF of the Five Bells Contest Group, winners of the Open section of the RSGB VHF Championship, 2000

More results over the page . . .

October 2000 UHF / SHF Contest

ANOTHER FAIRLY QUIET contest, with lousy weather and poor conditions. In the single-operator section, John Quarmby, G3XDY, triumphed over Neil Whiting, G4BRK, although Neil was active on all bands to 10GHz. In the multi-op section, however, the South Birmingham club won the multi-operator section through being active on all bands to 47GHz. All activities have been forwarded to the adjudicators of the IARU Region 1 event for that weekend.

Andy Cook, G4PIQ

October 2000 UHF / SHF Contest

Single Operator Overall Results

Pos	Call	Loc	432	1.3GHz	2.3GHz	3.4GHz	5.7GHz	10GHz	24GHz	47GHz	Total
1*	G3XDY	02OB	1000	1000	1000	0	0	1000	0	0	4000
2*	G4BRK	91DP	231	443	525	1000	1000	215	0	0	3416
3	G3MEH	91QS	0	535	439	0	0	0	0	0	974
4	G4LRT	92LJ	27	8	24	208	622	29	0	0	919
5	M0GHZ	81VK	191	456	263	0	0	0	0	0	909
6	GW8ASA/P	81FP	420	0	0	0	0	0	0	0	420
7	G6FQZ	91JR	250	0	0	0	0	0	0	0	250
8*	2E1GUA	01FS	218	0	0	0	0	0	0	0	218
9	G8GSQ	91JI	168	0	0	0	0	0	0	0	168
10	G4GFI	91VH	0	70	0	0	0	0	0	0	70
11	G3YJR	93F1	12	0	0	0	0	0	0	0	12

Multi Operator Overall Results

Pos	Group	Loc	432	1.3GHz	2.3GHz	3.4GHz	5.7GHz	10GHz	24GHz	47GHz	Total
1*	Birmingham RS	82XJ	266	222	330	1000	1000	989	1000	1000	5809
2*	Villa CG	01PU	951	1000	1000	0	0	1000	0	0	3951
3	Eclipse Contest Group	00EW	1000	297	119	0	0	142	0	0	1558
4	Five Bells CG	03CE	0	512	430	0	0	0	0	0	942

432MHz Single Operator

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	G3XDY	20956	1000	61	02OB	250	28Y	DG2NBN	751
2*	GW8ASA/P	8810	420	36	81FP	48	23Y	CT1D	681
3	G6FQZ	5248	250	28	91JR	80	21Y	PA0C	541
4	G4BRK	4851	231	16	91DP	400	21Y	PI4GN	614
5*	2E1GUA	4562	218	22	01FS	10	21Y	DL1ELY	435
6	M0GHZ	4000	191	19	81VK	400	2 x 21Y	PI4GN	654
7	G8GSQ	3517	168	14	91JI	15	22Y	PA0C	556
8	G4LRT	576	27	3	92LJ	250	2 x 18Y	PA0NL	354
9	G3YJR	242	12	4	93F1	10	19Y	G8OHM/P	125

432MHz Multi Operator

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	G0MDW/P	60473	1000	171	00EW	400	4 x 21Y	DH3NAN	764
2*	M1CRO/P	57532	951	161	01PU	400	4 x 21Y	DK0ES	697
3	G8OHM/P	16116	266	71	82XJ	350	4 x 19Y	F6KIM/P	753

1296MHz Single Operator

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	G3XDY	12975	1000	49	02OB	250	8 x 23Y	DL3YEE	501
2*	G3MEH	6943	535	27	91QS	50	4 x 35Y	DL3YEE	630
3	M0GHZ	5912	456	26	81VK	200	55Y	DF0HSV/P	576
4	G4BRK	5753	443	21	91DP	40	67Y	PI4GN	614
5*	G4GFI	908	70	9	91VH	20	28QLY	G3OHM/P	211
6	G4LRT	107	8	1	92LJ	120	27QLY	G3OHM/P	107

1296MHz Multi Operator

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	M1CRO/P	18026	1000	71	01PU	200	6 x 23Y	DH4AE/P	619
2*	G5B	9231	512	31	03CE	300	16 x 23Y	DJ6JI	506
3	G4YPC/P	5360	297	24	00EW	35	4 x 23Y	PI4GN	522
4	G3OHM/P	4007	222	29	82XJ	150	8 x 23Y	PA0NL	463

2320MHz Single Operator

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	G3XDY	4308	1000	20	02OB	30	44QLY	DL1ELY	398
2*	G4BRK	2310	525	13	91DP	5	0.9m	PA0WWM	428
3	G3MEH	1932	439	11	91QS	10	67QLY	PA5DD	368
4	M0GHZ	1155	263	8	81VK	40	44QLY	G0EMG/P	347
5	G4LRT	107	24	1	92LJ	8	45QLY	G3OHM/P	107

2320MHz Multi Operator

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	M1CRO/P	6906	1000	29	01PU	40	2 x 25Y	DG1KJG	422
2*	G5B	2968	430	11	03CE	25	2m	PI4GN	444
3	G3OHM/P	2281	330	13	82XJ	30	1.2m	PA0NL	463
4	G0NFA/P	819	119	5	00EW	5	44QLY	PA0NL	284

3400MHz Single Operator

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	G4BRK	515	1000	2	91DP	8	0.9m	PA0NL	403
2*	G4LRT	107	208	1	92LJ	1	1.2m	G8IFT/P	107

3400MHz Multi Operator

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	G8IFT/P	683	1000	3	82XJ	30	1.2m	PA0NL	463

5700MHz Single Operator

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	G4BRK	172	1000	2	91DP	4	0.9m	G8IFT/P	112
2*	G4LRT	107	622	1	92LJ	8	0.15m Horn	G8IFT/P	107

5700MHz Multi Operator

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	G8IFT/P	1095	1000	0.5	82XJ	15	1.2m	PA0NL	463

10368MHz Single Operator

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	G3XDY	3718	1000	16	02OB	10	0.6m	PI4GN	411
2*	G4BRK	801	215	12	91DP	0.8	0.6m	M1CRO/P	208
3	G4LRT	107	29	1	92LJ	1.2	0.4m	G4MAP/P	107

10368MHz Multi Operator

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	M1CRO/P	2843	1000	13	01PU	5	0.6m	PI4GN	416
2*	G4MAP/P	2813	989	13	82XJ	10	0.9m	PA0NL	463
3	M0BTZ/P	404	142	4	00EW	1	0.6m	G3XDY	137

24000MHz Multi Operator

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	G8IFT/P	24	1000	1	82XJ	0.3	0.3m	G3UKV/P	24

47000MHz Multi Operator

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	G3OHM/P	3	1000	1	82XJ	0.0001	0.3m	G7VDE/P	3

VHF Championship 2000

THE HONOUR of top slot in the Open section this year passes to the Five Bells Contest Group for the first time. The Northern Lights was second and the Villa Contest Group was third. This year, only the winning group managed to enter all of the contests that make up the Championship.

In the Fixed Station section, G3MEH and G3XDY fought for the honours with G3MEH managing to stay ahead. G0GCI was third. In the QRP section G4HGI emerged as the clear winner with G4APJ in second place. 2E1GUA was placed third.

The result table only lists those stations that entered three or more qualifying contests.

Congratulations to the Five Bells Contest Group for winning the Open section. It will receive the Racal Radio Cup for this achievement. Congratulations to Roger Piper, G3MEH, for winning the Single-operator section. He will receive the John Pilags Trophy for this achievement. Finally, congratulations to Richard Staples, G4HGI, for winning the Fixed Station QRP section. He will receive Low Power VHF Championship Trophy. The winners and runners-up will also receive certificates.

Ian Pawson, G0FCT

VHF Championship 2000

Open Section

Pos	Name	Points	No of Contests
1*	Five Bells CG	6764	9
2*	Northern Lights CG	4283	6
3	Villa CG	3795	8
4	Victory CG	3455	4
5	A1 CG	2715	4
6	Matthew Jeffery (GW7ORR/P)	1472	3
7	Bracknell ARC	1329	5
8	Tim Boon (M0AFC/P)	1047	5
9	Cockenzie & Port Seton ARC	683	4
10	Swindon & DARC	662	3
11	Tamera Mor Expedition (GM4WLL/P)	549	4
12	Newquay & DARS	361	3
13	Wythall CG	338	5
14	Culverstone CG	273	3

Single Operator, Fixed Section

Pos	Callsign	Points	No of Contests
1*	G3MEH	6284	9
2*	G3XDY	3330	5
3	G0GCI	1258	3
4	G4HGI	1138	7
5	G0QDQ	1133	3
6	G4APJ	1011	6
7	2E1GUA	496	5
8	G1TWS	250	4
9	G3FIJ	229	3
10	G7NBE	87	3
11	G4XPE	49	3

Single Operator, Fixed, 25W / Single Antenna

Pos	Callsign	Points	No of Contests
1*	G4HGI	5327	6
2*	G4APJ	2474	6
3	2E1GUA	1924	5
4	G1TWS	1307	4
5	G4XPE	479	3

* Certificate Winner

HF HF HF HF

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

DAVE, MD0BXX, reports that **GT3FLH** (club callsign) will be aired on 5 July for Tynwald Day, on 7 - 14 July for the Island Games event and again on 18 - 19 August for the International Lighthouse / Lightship Weekend (further details of which will appear next month).

Special event station **IQ8MFC** is active until 31 July to celebrate the centenary of Marconi's First Transatlantic Contact between Great Britain and Newfoundland. QSL via IZ8AJQ.

A group of Finnish and Japanese operators plans to activate **Market Reef** during the IARU HF World Championship. There will be three complete stations, active on all bands and modes. The group will be active between 12 and 16 July. During the contest they will sign OJ0U (QSL via JP1NWZ) and, outside the contest, OJ0/home call. I spoke to Seppo, OH1VR, at the Dayton Hamvention and he told me there will be a number of operations from Market Reef this year, including some in the winter months to make the reef available on the low bands.

Hans, WA1LWS, says he'll be heading back to **Vietnam** again. Look for 3W2LWS to be active between 13 July and 2 August.

A team of four German amateurs will operate from Angkor Wat in **Cambodia** from 16 to 19 July. They will then move to Sihanoukville where they will put in a much bigger effort until 3 August, with an emphasis on the low bands. The team will use all modes including RTTY and PSK. At the time of writing only one of the four callsigns is known - XU7ABR. QSL via DL4KQ, direct or via the bureau.

Romesh, 4S7RF, writes that a **4S7** DX net now meets every Sunday at 1600UTC on 14180kHz for one hour. Net control is Nihal, 4S7NS. All are welcome to join.

Ron, VK3IO, expects to be active as P29IO from **Papua New Guinea** until 22 August. QSL to his home call.

A large Canadian team will activate rare ***CQ* Zone 2** during July. The team will start on 21 July as VE2A and will be located approximately 350km north of the city of Chicoutimi. They will be active on 10, 15, 20, 40 and 80m CW and SSB until 24 July.

Mark, W4CK, plans to be on the air again as HR1/W4CK (**Honduras**). This will be a CW-only operation and is scheduled for 19 to 26 July.

Roger, G0SWC, writes that he will be working on East Falkland until mid-August, and expects to be active as **VP8DBR**. He will operate mainly SSB on 40 to 10m including the WARC bands. There will also be PSK, and he may get on the low bands if he can put up suitable antennas. He will post reports to the Guildford and District Radio Society web site.

CONTESTS

APART FROM the RSGB IOTA Contest, the main event for July is the **IARU HF World Championship** on 14 / 15 July (1200 - 1200UTC).

This contest encompasses both CW and SSB, and the contest exchange consists of RS(T) and ITU Zone (UK is in zone 27). Multipliers consist of zones worked, along with HQ stations of the various IARU radio societies (which, instead of sending zone, send their society designation).

Full rules appear on the ARRL web pages. UK results of last year's contest appear in the table above.

Next year (2002), as on three previous occasions, the World Radiosport Team Championship will be held simultaneously with the IARU HF World Championship. This time, WRTC competitors will be hosted in Finland.

IARU HF CHAMPIONSHIP 2000
Call, score, category
(A = single-op mixed-mode; B = single-op phone; C = single-op CW; D = multi-op)

G4IIY	279,456	A
GØMTN	211,050	A
G3UFY	82,960	A
G4BJM	54,693	A
GØDVJ	17,646	A
GØNWY	45,648	B
G3FNM	40,348	B
GWØAJI	32,120	B
GM4ELV	6,996	B
GØIVZ	1,757,700	C
G5G (GØLII)	1,216,950	C
G3MXJ	637,214	C
G4OGB	335,154	C
GW3NJW	305,688	C
GM3CFS	268,028	C
M4T (GØVQR)	223,244	C
G3YEC	124,267	C
G3MPB	74,880	C
G4FDC	5,814	C
M4R (G4AXX, G4KNO, G4EAG, MØDXR)	1,083,665	D
G3TXF	431,025	D
G4BWP (+ packet)	6,448	D

In the **ON Spring Contest**, CW Section, G4RCG was the leading 'foreign' entry (of 10) with 4213 points, G4OGB 4th with 2376 and G0MRH 8th with 576. In the SSB Section (four 'foreign' entries) G0AOZ was 1st with 7722 points and G0MRH 2nd with 1326.

In the **AGCW Happy New Year** contest there were just two UK entries. G4OGN was 24th of 82 entries in Class 2 (50W) with 5450 points, and G0WHO 18th of 32 entries in Class 3 (5W) with 672 points.

In the **CQ-M** 2000, UK scores were: G3LZQ SOMB-CW 190411, G4OGB SOMB-CW 136224, GW3KJN SOMB-CW 56158, G4IIY SOMB-CW 32495, G3VQO SOMB-CW 12986, GW3NJW SO-21-CW 17480, G0VQR SO-14-CW 22770, G6QQ 20304, G3FNM SOMB-QRP 8190, GM4HQF SOMB-QRP 6528.

AWARDS

MARC, ON4SS, writes that, on the occasion of the Cutty Sark Tall Ships Race, which will be in Antwerp early July, the OSA section of the UBA will activate the callsign **OS4OSA**. This event will take place from 1 to 12 July. OSA used to be the callsign of the coastal station of Antwerp, so the OS4OSA callsign is especially appropriate. A special QSL will be available for all contacts and SWL reports. QSL via ON7SS, direct or via the bureau.

OSA is actually the oldest amateur radio club in Belgium, founded in 1935. The OSA Award is available to those making contact with OSA club members, as follows: European (non-ON) stations need 15 points, made up from working club

The OSA Award - for details see above.

members (1 point on FM, 2 on SSB, 3 on CW), the club station ON4OSA (5, 6 and 7 points respectively) and the club station when operating under a special prefix (such as OS4, already mentioned) (10, 11 or 12 points, according to mode).

QSL cards are not required, but send a log extract, signed by two other amateurs or an official of your radio club, to the award manager, Rottier Koen, ON1CJE, J B Pittoorsstraat 48, B-2110 Wijnegem, Belgium. The award costs 250 Belgian francs, or $6. SWL applications are also welcome.

DESOTO CUP

THE ARRL has announced the first winner of the Desoto Cup, which goes to whoever has the highest number of confirmed band-entities in the DXCC programme (at this time all HF bands except 30m are included). Top scorer was **Bob, W4DR**, with 2383 credits. The highest scoring UK station (indeed, the only UK station in the top 25) was **Fred Handscombe, G4BWP**, at seventh place with 2068 entities. For a complete rules and listing check the web page.

QSL VIA KU9C

KU9C IS QSL manager for a large number of callsigns, as follows: 3E1DX 17 - 28 Nov 1996, 3E1DX 22 Nov 97 - 7 Dec 97, 4W/K7BV, 4W/N5KO, 4W/N6FF, 4W/W3UR, 8P2K, 8P6AD, 8P6AL, 8P6AM, 8P6AZ, 8P6BE, 8P6BU, 8P6CV, 8P6DA, 8P6DK, 8P6EU, 8P6QA, 8P6QY, 8P6RY, 8P6SH, 8P9GD, 9K2RR, 9K2RR/NLD, 9M6BH, 9M8X, AP2N, B1A CQWWSSB1998, BQ9P 1998 2000 2001, BS7H, BT2HC, BV9P, CO8DM, CO8JY, DU1KT, DX1S, E44DX, FM5DN, FM5DP, FM5FJ, FM5GU, FM5GU/I, H40AA, HC8/DL2BAY 1996, HC8/DL5XX 1996, HH2NH, KP2/N8NX, KP2/N9FD, NP2/K7BV, OD5PY, OH0/K7BV, OJ0/K7BV, SV9/K7BV, VY1/K7BV, PW0S 2001, T30A, T30AF, T30BC, T32BC, UN7LG, V26DX, VK9XM 7 Apr 96 - 10 Apr 96, VR2GO, VR96GO, VR97GO, VR98GO, W3HNK/FS5, W3HNK/PJ7, WP2Z, XX9AS, XX9AW, XX9JN, XX9SW, XX9TAR, XX9TMC, XX9TNX, XX9TOT, XX9TR 1995, XX9TSW, XX9TXD, XX9TZ 1994, XX9X Oct 1994 - March 1995, XX9X Oct 1998 *CQ* WW SSB, XZ1A 1995, XZ1X 1995, ZS1AFZ. Steve's address is: Steven Wheatley, KU9C, PO Box 5953, Parsippany, NJ 07054, USA.

OVERSEAS LICENSING

IF YOU ARE planning to holiday other than in one of the countries covered by the CEPT common licence, you might be interested in the web site run by OH2MCN, which brings together licensing information from around the world. See WWW at the end of this column.

TABLES

A WARM WELCOME this month to **Dez, ZC4DW**. It's good to have entry from outside the UK. Scores continue to rise partly, I imagine, due to the good propagation, but also to some extent due to the large number of DXpeditions which took place earlier in the year.

Joe, W1JR, wrote to the *OPDX Bulletin* as follows: "Just a note to tell you DX this year is doing well and possibly ahead of all years. Each year I try to see how many DXCC entities I can work. In a good year I can make about 280 - 290. Hence, on 1 January 2001 I started anew again. I guess I never learn! Yesterday (3 May) I worked XU7 for DXCC number 270, all in just over four months. This is the earliest in the year that I have ever worked 270 entities. I figure I have missed about 10 others. I do keep a normal sleep pattern and don't catch them all! The DX is there. You just have to listen and work them!"

Adrian, GI0NQC, not only sent in his update, but also a spreadsheet (Excel 97) he has developed which automatically checks for duplicates in the various tables and automatically compiles the 'mixed' table (and calculates totals). In addition, it produces alphabetical lists so that you can have a countries check-list to use to see if you need a particular country. He says "I thought this might be useful to other readers (especially if they have more entries than me!)". If you want a copy, I suggest you e-mail Adrian directly at gi0nqc@qsl.net He says he may also get round to making the spreadsheet available via his web page.

IOTA

THE IOTA Contest takes place over the weekend of 28/29 July, and a lot of contest operations have already been announced (many starting before and / or continuing after the contest). For convenience, I have listed them in the table. Other IOTA operations scheduled for July, but not encompassing the contest, include the following:

Mike, NA9Q, and his wife Arlyce, NB9Q, from **Rhodes (EU-001)** from 20 June to 3 July, 10 - 40m, all modes.

9A/S50IPA/P, 9A/S53IPA/P and 9A/S57AX/P from **Kolocep Island (EU-016),** 25 June to 7 July, 20, 15 and 10m, SSB and CW. QSL to S57AX via the S5 Bureau.

OH6AW/8 from **Hailuoto (EU-184)** 29 June to 5 July 5.

Shikotan Island (AS-062),

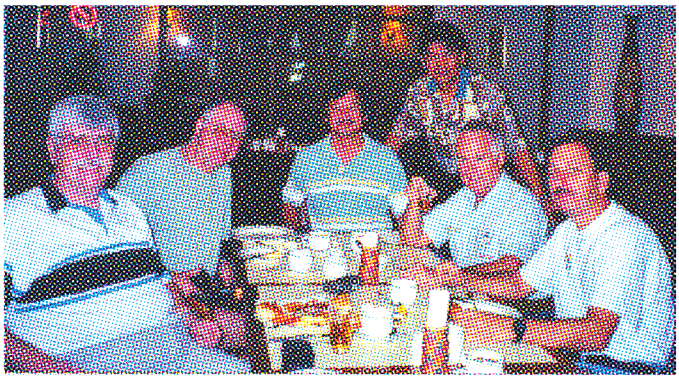
COUNTRIES WORKED, 2001

CALL	CW	SSB	RTTY	MIX
G4DUW	101	205	0	241
M0BIB				231
M0CTQ				231
G4OBK	181	95	58	226
G0NXX	216	0	0	216
M0BZQ				204
G3SXW	196	0	0	196
G3IGW	191	0	0	191
G0VHI	0	190	0	190
G3YVH	126	67	1	161
G0TSM	107	101	14	161
MU0FAL	124	125	0	153
M0LLW	0	149	0	149
G3JFS	82	77	91	142
G0CAS				142
MM0BQI	31	97	89	130
ZC4DW	96	65	78	119
GM4ELV				107
G3TXF	105	0	0	105
M0CAL	0	102	0	102
GM4FAM				102
G3MDH	0	90	0	90
M0CNP				84
G4FVK	17	73	0	75
M5AEF	15	66	0	68
GW4SKA	0	0	66	66
GM4OBK	50	9	0	58
G4YWY/M	0	54	0	54
G4MUW	0	51	0	51
GI0NQC	0	15	41	49
G3WP	46	0	0	46
G4DDL	32	31	15	46
M0ASJ				21

RSGB IOTA CONTEST OPERATIONS, 2001

Ref	Callsign	Dates	By	QSL via
EU-015	J49R	23 Jul - 6 Aug	I2WIJ	I2WIJ
EU-016	9A8R	-	OM8A Ctst team	OM7JG
EU-026	JW5E	28 / 29 Jul	ON7PC, ON6QR	LA5NM
EU-030	OZ/DJ7RJ	-	-	DJ7RJ
EU-038	PA/F5PAC	28 / 29 Jul	F5PAC	
EU-038	PA6TEX	28 / 29 Jul	NOK section of UBA	ON4ALW
EU-042	DL4FCH/P	-	-	DL4FCH (B)
EU-042	DL5CW/P	-	-	DL5CW (B)
EU-052	SV8CS	-	-	SV8CS (D)
EU-057	DL0KWH	-	-	DL0KWH
EU-068	TM1ON	25 - 30 Jul	Minkies Boys	ON4ON
EU-070	F/IK1TTD/P	28 / 29 Jul	IK1TTD	IK1TTD (D)
EU-072	SV8/DL8MCA	-	DL8MCA	DL8MCA
EU-092	MM0BQI/P			
EU-114	GU8D	-	G3SJJ etc	G3LZQ
EU-116	GD6IA			
EU-123	MM8Y	-	-	M0ARK
EU-127	DL5XL/P	28 / 29 Jul	DL5XL	DL5XL
EU-128	DF4XX/P	-	-	DF4XX
EU-132	SO0MX	-	DL2MX	DL2MX
EU-136	9A6AA	-	-	bureau
EU-145	CS5C	28 / 29 Jul	CT3FN, CT1EPV, CT1AGF	
EU-170	9A4A	-	-	bureau
EU-171	OZ2ZB			
EU-177	SM5/G0GRC/P	22 - 29 Jul	Grantham ARC	G0RCI
EU-184	OH6AW/8	-	-	OH6AD
NA-015	CO8LY	-	-	EA7ADH
NA-032	?	-	KB9LIE, NN9K, K9OT	
NA-038	XM2CWI	26 Jul to 1 Aug	West Island ARC (Canada)	
NA-046	K1VSJ	now till 3 Sep	K1VSJ	
NA-067	WB8YJF			
NA-076	KF9YL	-	-	bureau
NA-127	VE1JS	-	-	direct
SA-006	PJ2Y	19 - 31 Jul	Bristol Contest Group	G3SWH
SA-036	P43E	-	-	P43E

(B) = bureau, (D) = direct



Left to right: Bob Schenck, N2OO / 9M6OO; Phil Whitchurch, G3SWH; Jani Kusmulyana, YB0US / 9M6US; Alfons Undan, 9M6MU; Phil Weaver, 9M6CT; William Beyer, N2WB, at Hillview Gardens Resort (9M6AAC) in Sabah.

Moneron Island (AS-149) and **AS-025** by RA0FF, RA0FU and possibly RA0FW during July and August. They have requested the callsign **RI0F.**

KF8UN/KL7 from Sitka City Island, Alaska (NA-041) from 7 to 10 July, 40 and 20m only.

San Lorenzo Island (SA-052) by OA4AHW, OA4DKC and OA4DJW, 29 June to 1 July, possible special 4T prefix. QSL via OA4DJW.

GS0UTT/P by the Dengie Hundred ARS from **Skye (EU-008)**. They plan to be on the air from 21 to 27 July. There will be six or seven stations operational with most of the activity on SSB but *RadCom's* propagation guru G4FKH will ensure there is also CW activity. QSLs go to G0UTT.

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 to be included in the **September** issue by **21 July.** ♦

WWW.

ARRL Most Wanted Countries:
http://www.arrl.org/awards/dxcc/countries.html.
Bristol Contest Group:
http://ourworld.compuserve.com/homepages/g3xsv/bcg.htm
Desoto Cup:
http://www.arrl.org/awards/dxcc/listings/challenge.html
IARU Contest rules:
http://www.arrl.org/contests/announcements/rules-iaru.html
IOTA Contest operations:
http://www.iota-post.com and http://cpcug.org/user/wfeidt/Misc/iota2001.html

DL5XL:	http://www.dl5xl.de/
German Lighthouse award:	http://www.lighthouse-award.de
GI0NQC:	www.angelfire.com/ca/ADornfordSmith
Guildford & Dist Radio Society:	http://www.gdrs.net
I2WIJ:	http://www.qsl.net/i2wij/
Minkies Boys:	http://www.qsl.net/on6ck
OH2MCN Licensing Info:	http://www.qsl.net/oh2mcn/license.htm
VE2A:	http://www.ve2dsb.com/ve2a/
XU expedition:	http://www.DL4KQ.de/

HF F-Layer **Propagation Predictions** for **July 2001**

	3.5MHz	7.0MHz	10.1MHz	14.0MHz	18.1MHz	21.0MHz	24.9MHz
Time	0000111112220	0000111112220	0000111112220	0000111112220	0000111112220	0000111112220	0000111112220
(UTC)	2468024680220	2468024680220	2468024680220	2468024680220	2468024680220	2468024680220	2468024680220
*** Europe							
Moscow	6.....588	662....136..	99653333 9.99	79998889 9999	37888878 9974	1567776787 42	.2444346751.
*** Asia							
Yakutsk	.....	.....	.1.....6764	8888246899 99	7669999988 88	6458888877 77	4..777776565
Tokyo	.....	.....	.....11..	.....144..	.....112331.	.....112221.	.....111..
Singapore	.....15.	7991	39997	389998	2689987	4689976	.....457884.
Hyderabad	.....	.....	122	1.....1333	13442	123321	.....1..
Tel Aviv	9.....999	99.....9999	9997.6899999	8899999999 99	7677888899 89	7.6688878887	....766.7776
*** Oceania							
Wellington	.....	.....	.....	.....	.....	.....	.....
Perth	.....88.	9999	79989	4....1679929	741.476465.9	6655774....9	466777.....7
Sydney	.....8..	.....199..	.....49999.	6899992	42.377789896	555677678797	566774....86
Honolulu	.....	.....	.....	..777.....	....6.....	.....	.....
W. Samoa	.....	.....	.....	...7.....	....6.....	.....	.....
*** Africa							
Mauritius	8.....378	9.....8999	9.....9999	65.....89999	.7....699996	.6....79998.	.....7898..
Johannesburg	99.....599	99.....9999	87.....9999	.....8998.	..8..7998..	..8877899...	..8888899...
Ibadan	5.....55	88.....998	992.....7999	99985.689999	7799889999 98	4.8888899987	..776677886.
Nairobi	5.....33	9.....888	99.....8999	997....89999	7996778999 98	4897999999 98	.7889999993
Canary Isles	81.....588	3.2.....872	5.5.....3516	99962..496..	8799999999	6589999999 98	3.7887889975
*** S. America							
Buenos Aires	88.....	999.....69	9991.....99	9994.....799	999.42..3999	878.45446999	735..6657888
Rio de Janeiro	22.....1	88.....68	996.....389	986.....789	76.....788	777	.....6..
Lima	77.....	998.....39	9995.....89	9999.....99	9888.....599	8578.5..4688	4..6.5..5787
Caracas	.....	661.....5	888.....78	9998.....689	97887...7889	7..887777899	.....87.
*** N. America							
Guatemala	.....	551.....	776.....6	766.....7	5.....6	.....	.....
New Orleans	.....	98.....1	999.....8	9997 55...589	877..8777899	7.5..7888898	.....6.6776
Washington	5.....	98.....6	9831.....69	99983...3598	9887898799 99	877.79668999	7....8..7888
Quebec	7.....	87.....18	997.....179	8668766689 99	4.4565558987	...354336764	.....564.
Anchorage	.....	.....	.76.....	9998877699 88	88877.889997	877...78888.	.....788.
Vancouver	.....	.6.....	598.....2	8998676567 89	8776..679988	766....57877	7766
San Francisco	.....	396.....	8996.....	9998 65...68	8887..677788	767....77778	66

Key: Each number in the table represents the expected *circuit reliability*, eg '1' represents reliability between 1 and 19% of days, '2' between 20 and 29% of days etc. No signal is expected when a '.' is shown. **Black** is shown when the signal strength is expected to be low to very low; **blue** when it is expected to be fair and **red** when the signal is expected to be strong.

The RSGB Propagation Studies Committee provides propagation predictions on the Internet at www.g4fkh.demon.co.uk The page is updated monthly. The provisional mean sunspot number for May 2001 issued by the Sunspot Data Centre, Brussels, was 97.3. The maximum daily sunspot number was 134 on 23 May and the minimum was 55 on 8 May. The predicted smoothed sunspot numbers for July, August and September 2001 are respectively: (SIDC classical method – Waldmeier's standard) 94, 92, 91 (combined method) 119, 121, 123.

SWL

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I CERTAINLY surprised Andre, GM3VLB, when I featured one of the 5Z4KL QSL cards he sent me in the May column. The majority of readers might not have associated GM3VLB/P with 5Z4KL. Andre is now heavily into the Scottish islands (IOSA) programme [1] and has now activated 100 Scottish islands plus a further seven islands for IOTA in AF and NA. His TS-50S has also been to Antarctica with his son Niall, VP8NJS. The Russian Robinson Club has recognised his activity and he was the world-wide winner of its 2000 award.

Andre provided some further news in return for the mention in my column – that VP8NJS and he were making a very rapid 17-day round-the-world trip leaving Aberdeen for Sydney on 1 June. This was not a DXpedition in the true sense of the word, but Andre was expecting to be active on 28 to 3.5MHz. I feel sure that Andre will QSL all correct SWL reports for any SWL who heard him as 3D2LB from Beachcomber Island (OC-121), KH6/GM3VLB, W6/GM3VLB and VE3/GM3VLB.

OH2BN QSLs

WITH EFFECT FROM 15 May, any SWL (or licensed amateur, for that matter) who has not sent cards to OH2BN for E44DX, H40AA, 4W/N5KO and 4W/W3UR should now send them to KU9C. OH2BN answers all direct requests for 18 to 24 months from the time of the DXpedition and at the end of that period all remaining SWL reports (and QSOs) will be QSLd through the bureau network. Because extra QSL cards are not being printed, a 'combo late request QSL card' has been designed to confirm these late requests at KU9C.

In the case of TX0DX, all direct requests will continue to be handled by OH2BN up to September 2001. I know of many SWLs who have received their TX0DX cards, and I'm sure I speak for all British SWLs in thanking Jarmo for all the DXCC entities that he has confirmed for us. As at mid-May, all TX0DX direct requests have been answered.

FSK, PSK AND SSTV

I AM OFTEN asked how many SWLs do their DXing on these modes. I always answer "a much smaller percentage than those who use SSB!". As I cannot back this statement up with any hard facts, I would like to hear from you if you DX using these modes. Drop me an e-mail telling me about your equipment, the DX you have heard, and about your QSLing returns on these modes so that I can offer an insight into these modes in the column.

SWL QSLING

I HAVE SEEN and heard of some dubious SWL QSLing practices recently. These involve the alleged sending of SWL reports to stations that the SWL has clearly not heard, but has based on information that appeared on the *PacketCluster* system. In such circumstances, listeners are unlikely to receive a QSL card, and, more importantly, it harms the SWL movement and could mean that the DX station will decide that, as a result, will not reply to any SWL reports – and that spoils the game for the rest of us. Please, do *not* do it.

SWL WEB SITES

FOR ANYONE WHO is not aware, there is a very good e-QSL facility on the Internet [2]. The numbers of stations registered with the site seem is growing fast. You are able to design your own card for free from graphics which are provided and it costs nothing to exchange cards. For a small fee you can supply an electronic version of your own card. [See also the 'WWW' column on page 88 this month - *Ed.*]

We have had a few good auroras of late, and those 'up north' have actually seen the Northern Lights. I am advised that the Space Weather site [3] is a useful one to be aware of as it provides updates of the solar storm and provides images.

The logging program Wlog2000 is a new one on me, and I have not tried it, but it might be worth taking a look at their web site [4] to find out more. A Windows version - v1.3 - has recently been released. From the details I have, the log covers all bands, all modes, and seems to have many useful features. The website allows you to download the software free of charge. I'd be interested in comments about whether it is suitable as an SWL logging program.

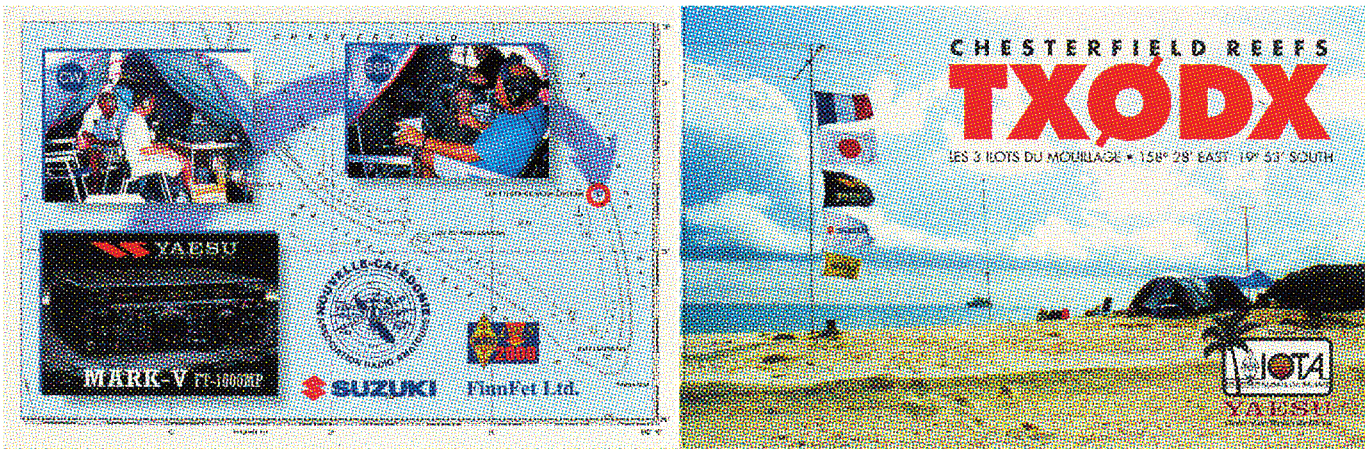
AROUND THE BANDS

REPORTS ARE RATHER thin on the ground this time. Perhaps that proves that the summer is upon us and the bands are not quite so good? Certainly, when I listened during May, I was not impressed by the state of the bands and the DX they were offering. The exception was, perhaps, the 3B6RF DXpedition. I have reports of SWLs hearing their signals on all the higher HF bands, but no-one seems to have heard them on 7 or 3.5MHz. Other DX noted included VP8SDX, J5X, FJ5DX, ZD8R and 5V7TD.

On 50MHz, Simon, RS177448, now uses a Kenwood R-5000 and a 50 to 28MHz converter into either a vertical or wire dipoles. He had caught several early Sporadic E openings, the best DX being a 4X4 and a /MM station off the coast of 7X2. No doubt there will be more Es news next month as the season gets into full swing. ♦

WWW.

[1] Andre, GM3VLB: www.iosa.co.uk
[2] e-QSLs: www.eqsl.cc/qslcard/register.cfm
[3] Solar storm, aurora, images: www.spaceweather.com
[4] Wlog2000 logging program: www.wlog2000.com



You have until September to get your QSL card request in to Jarmo, OH2BN, for the March 2000 TX0DX operation from the Chesterfield Islands.

ATV

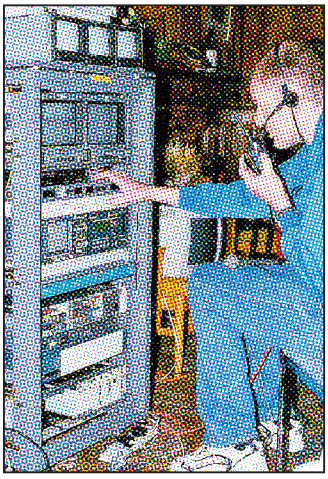
TREVOR BROWN, G8CJS
E-mail: chairman@batc.org.uk

THE ANNUAL BATC rally was held on 6 May. For the second year running, it took place at Bletchley Park, or 'Station X', as it is now better known. There were the usual ATV trade stands and a very well-supported car boot sale, but the highlight of the day was the lecture programme. Noel Matthews, G8GTZ, explained the various TV digital systems and provided a live demonstration of an OFDM system. Mike Cox, the BATC president, took everyone through 'The Story of Cox Electronics' from vision mixers to PAL coders. Paul Marshall, BATC secretary, presented the final lecture entitled 'Big Bertha, being the story of his renovation of the Southern TV mobile control room which is now virtually complete.

ATV has its professional amateurs: Tony Kempton, G1BYS, of British Telecom brought a satellite uplink truck; so did Ashley Booth, G3TQE, of ITN; last, but not least, Paul Andrews, G6MNJ, and Mike Hasting, G8ASI, of 3-Rivers Communication, brought along a terrestrial TV links truck. All these were pressed into operation.

The 3-Rivers truck provided signals for the traders to show off their 13cm receivers. The BT and ITN trucks uplinked the televised lectures on Intelsat 801, 328.5°E. and Intelsat 21.5°E. Renns Maas in Holland down-linked and relayed the proceedings onto the local repeater, PI6ALK; this repeater is also on satellite W2, 16°E. Many amateurs as far afield as the Middle East watch PI6AIK via this satellite.

Back at Bletchley we were also able to monitor the output of PI6ALK from the W2 satellite, and the live lectures arrived back without any discernable quality loss, but some four seconds later.



Tony Kempton, G1BYS, putting the final touches to the hardware used to televise the lectures.

The uplink and terrestrial links trucks in action.

FEATURED REPEATER

The Yorkshire ATV Repeater, GB3YT

THIS REPEATER started life as GB3ET and was situated at the top of the Emley Moor TV transmitter tower (some 1200ft above ground level). This TV tower has a small lift which transports people and equipment to the 'Turret Room' at the 1200ft level. The repeater was installed here in a 19in rack, along with an assortment of other ham radio repeaters and beacons. The receive aerial was an Alford slot located some 80ft above the Turret Room. The parabolic transmit aerial was located on the Turret Room roof, and the transmitter was a 1W off-the-shelf unit produced by the Worthing Video Repeater Group. A single-chip PA stage increased the power to some 15W. The receiver was a modified Pace satellite receiver kindly donated by Pace for this project.

The logic was home-brewed by me. In its earliest form it was a Z80 microprocessor and 8255 PIO chip running a small machine code program stored in EPROM. The video generator comprised two teletext chips and produced alternative screens stored in a separate EPROM. In beacon mode, the repeater switched between the two screens at regular intervals under control of the Z80 logic unit. As I got to grips with the design side of micros and writing machine code that did not crash, I set about designing a PCB for the logic design that could easily be constructed for other TV repeaters.

The final project was called 'Teletron' and the BATC had PCBs made which were used on a number of other repeaters. The published design was soon to be modified by another BATC member, and the chip count went up considerably from the original four. The final version still used a Z80, 8255 and a Teletext pattern generator chipset. This new design incorporated a watchdog timer that monitors the logic and resets it in the event of a crash. This was a big step forward and reduced the number of trips up the TV tower to reset it.

This new logic had an I^2C bus communication with the Teletext chip set that enabled the video screens to be written from a remote terminal and downloaded over the repeater audio channel at 1200 baud, providing useful information in the form of a caption news service. The final feature to be added to the GB3ET logic was a second video input that was intended for a 3cm input. The logic looked between the two inputs for TV syncs; if they were detected, the appropriate video and sound inputs were connected to the transmitter and the time-out screen denoted a 24cm or 3cm input. This was the last rebuild of the GB3ET logic; the 3cm receiver was never fitted.

GB3ET on the Emley Moor TV tower closed down early in 1999 because of the increase of the NTL site rental. The equipment was taken over by Northern Heights ARS Repeater Group which runs the GB3WY 70cm voice repeater and, on 4 June 2000, the ATV repeater came back on the air from the GB3WY site at Queensbury near Bradford with a shiny new callsign of GB3YT.

Much of the original GB3ET equipment is still in use, but the antennas and filters are all new. Two Alford slot antennas give good coverage over much of Yorkshire and the use of LDF5-50 coax with a low-noise masthead pre-amp gives excellent receive performance.

There are plans to add more facilities to the repeater. As a first step, new logic is under development which will give an on-screen display of received signal strength, transmit power, temperatures etc, as well as the usual pages of news and information. Other improvements planned for the next few months include a PC-based video slideshow generator and the addition of Teletext to the transmitted signal.

In the longer term, the group plans to create a linked cluster of two or perhaps three ATV repeaters on the same site. The first job is to add a 3cm repeater and that application is currently under consideration by the RMC.

There is a lot of technical information about GB3YT and news of further developments on the group's website, or you could tune in on the activity night (Tuesday) or e-mail any reception reports to the address given below. ♦

LATEST CLEARED ATV REPEATERS

ATV repeater groups are looking forward to the release of the long-awaited revised repeater specifications from the RA, as these are expected to clarify the regulations which apply to our thirty-plus FM ATV repeaters in the UK.

WWW.

GB3YT	www.gb3yt.org.uk
GB3YT e-mail	g3tqa@qsl.net
Worthing Video Repeater Group	www.videorepeater.co.uk
G8GTZ (Noel Matthews)	www.qsl.net/g8gtz
PI6ALK	www.pi6alk.nl

RSGB

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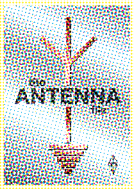

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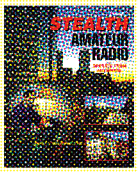

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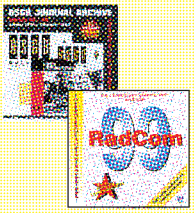

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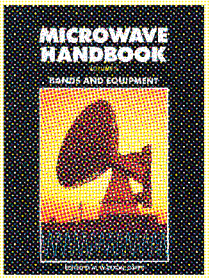

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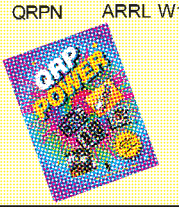

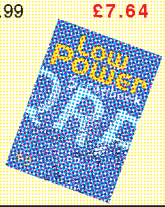

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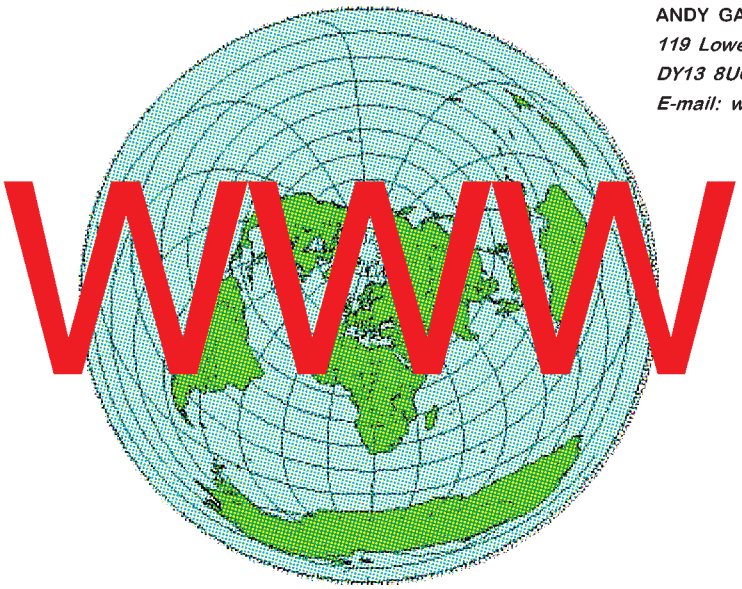


ANDY GAYNE, G7KPF
119 Lower Lickhill Road, Stourport-on-Severn, DY13 8UQ.
E-mail: www.radcom@rsgb.org.uk

THE COMMONEST exchange between licensed amateurs, beyond the actual QSO, is that of swapping QSL cards to confirm the contact. With the Internet taking an increasingly prominent role in domestic data exchanges, such as e-mail and home banking, it was inevitable that amateur radio would eventually follow the same pattern, and so the electronic QSL card was born.

A potential for chaos and forgery immediately springs to mind, but Robert Clutson, G0WHO, has recently recommended eQSL (1) as one organisation that is treating the subject very seriously. Robert was informed of the eQSL service by K1ON, and subsequently received his first electronic QSL card from K1ON via eQSL's secure database. Developed by David L Morris, N5UP, eQSL is a company with a mission "to provide basic electronic QSL card exchange services to all amateurs and SWLs around the world free of charge".

Users first of all have to register with the site, submitting a scanned image of their licence which is then scrutinised by the site owners to confirm validity, though importantly this scan is not made available to others via the web site. Once validity is approved, users can then generate and upload a QSL card image that is used as the basis of the eQSL. From then on it is a case of uploading log book details either individually or in bulk using the 'ADIF' format. On-air contacts can then download a fully detailed eQSL card, electronically constructed using the card image, log entry, and personal profile information.

The most obvious concern to users will be the acceptance of eQSL cards for awards and contests. Whilst the FAQs (frequently asked questions) on the site indicate this is still a grey area requiring clarification, there is a white paper presented by Dave Morris that offers compelling reasons why eQSLs should be readily accepted. Certainly the security systems put in place, including verifying that users are indeed licensed amateurs, would appear to offer as good traceability, if not better, than that available for traditional QSL cards. This system may not be everyone's cup of tea; however, electronic QSLs are likely to increase significantly in popularity over the next few years. Even if you decide not to use them, at least you will know what people mean when they ask you to "eQSL".

SURFACE MOUNT

AN EVER-INCREASING problem faced by the home constructor is the availability of electronic components, especially up-to-date integrated circuits. Many of the more recent complex devices released by the semiconductor manufacturers have been moving away from the traditional 'dual-in-line' package in favour of surface mount technology, making such devices unusable for the home constructor. Or so you would have thought.

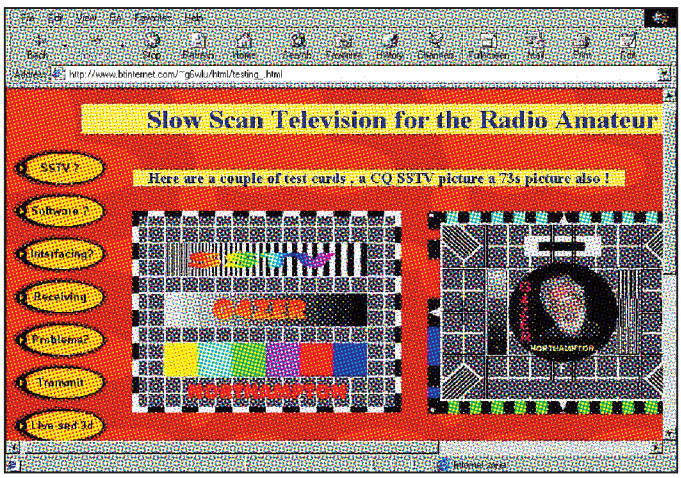
One person that has refused to be beaten by the onward march of technology is Harvey Twyman, who has created a web site (2) giving detailed instructions on how to work with surface mount components. Drawing on his experience as a Student Project Advisor in the Electronics Department of the University of Kent, Harvey has devised and perfected a series of techniques, using simple tools and equipment, that will allow anyone to construct prototype boards using surface mount devices. The methods are described via a comprehensive collection of pages, covering topics such as working practices, soldering rules, handling SMTs, and FAQs.

A 'course summary' page presents the entire contents of the site as one long web page, which is ideal for off-line reading. In common with the rest of the site, the summary has been designed to be viewed at a screen resolution of 1024 x 768, so those using lower resolutions may find it easier to read if printed as a hard copy. Fortunately, Harvey gives instructions on how best to print the page, as well as providing the option to receive the 'techniques course' as a series of e-mails, perfect for those who prefer to be drip-fed information about a new subject. Overall, the site tackles an unusual subject in a clear and concise manner, and should give anyone the confidence to attempt surface mount assembly in their home construction projects. I know I will be having a go in the very near future!

SLOW-SCAN TV

ANYONE WHO HAS thought about experimenting with SSTV might like to take a look at the web site of Doug Whittaker, G4ZER (3). The site has been conceived as a way to help and encourage people to try SSTV as a new mode, covering many of the topics that are known to give newcomers cause for concern, such as software, interfacing, typical problems and sample pictures. This site is not overloaded with information, but instead provides just enough to whet your appetite and get you going in the right direction. Doug tells me this is his first attempt at designing a web site, in which case I offer my congratulations on a job well done.

An error in the May *RadCom* resulted in an incorrect 'Electrical Engineering Links Page' URL The correct URL is given this time (4); apologies for the mistake. ♦



G4ZER presents a beginners' guide to SSTV.

WWW.

(1) eQSL Electronic QSL Cards http://eQSL.cc
(2) Surface Mount Assembly www.twyman.org.uk/PCB-Techniques/PCB-Assembly-Techniques
(3) Slow-Scan Television www.qsl.net/g4zer
(4) EE Links Page www.mindspring.com/~brucec/links3.htm

QRP QRP QRP QRP QRP

REV GEORGE DOBBS, G3RJV
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Rochdale OL11 3HE.
E-mail: g3rjv@gqrp.com

G QRP CLUB MINI-CONVENTION, 2001

AS USUAL, the G QRP Club will be holding its Mini-Convention in Rochdale. The date this year is Saturday, 13 October, and the venue is St Aidan's Church Hall, Manchester Road, Rochdale. The event begins at 10am with an admission charge of £1. As in previous years, the event is an 'old style' radio rally with component, junk and kit vendors. No expensive new equipment will be on sale and there will be a notable absence of computer equipment. The convention will also include a full programme of lectures throughout the day plus the traditional 'Pie and Peas' lunch. Details can be had by sending me a stamped-addressed envelope to the address above or by sending an e-mail request.

RECENTLY I USED this column to comment on some of the results obtained by ordinary operators using low power and modest station set-ups. I had more feedback from readers than I have ever had in past. Some even told me that they had been encouraged to turn down the power of their own station and try low power operating. I get quite a lot of reports of QRP operation so, without being too overtly evangelical, I thought I would devote most of this column to some more results of QRP operating.

PEDESTRIAN MOBILE RECORD

DEMETRE, SV1UY, a G QRP club member ,e-mailed me with news of a new world record for two-way pedestrian amateur radio contacts. Demetre writes: "Amateur radio got another boost on 28 February 2001 with the successful direct pedestrian-to-pedestrian communication over 17,549km (22,593km via the long path) of land and sea via shortwave radio. In what is believed to be the longest distance Morse code and voice contact without satellites between two pedestrian amateur radio operators, Max, ZL1BK, of Auckland New Zealand and Demetre, SV1UY, of Athens Greece, utilised miniature portable low-power single-sideband/CW transceivers with small (half-sized) portable antennas.

"I was really thrilled when I heard Max's signals and that made me remember how kind our sun can be to us. We have recently passed the peak of solar cycle 23 after all."

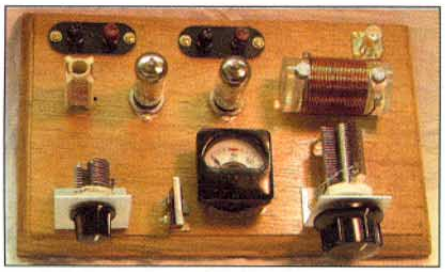
This event sparks even more new enthusiasm for amateur radio and the spirit of friendship it brings. When she broke the record of 10,000km Bonnie Crystal, moderator of the HF-pack Group commented: "World records are meant to be broken".

Max was hiking in a park near his home while Demetre was hiking on Mount Ymittos when contact was established at 0625 UTC using Morse and at 0645 UTC using SSB, on Wednesday 28 February 2001, after sunrise in Greece and before dusk in New Zealand.

"Our signals travelled through the night following the long path, using a technique called chordal-hop propagation, without returning to earth before they reached their destination. Greece and New Zealand are nearly antipodean and this chordal-hop mode helped our QRP-power radios to communicate."

In this new and growing radio sport called 'HF-Packing', ham operators use hand-carried battery-powered radios to communicate with each other across thousands of miles while hiking, cycling, or camping. The transceivers used for these contacts transmitted on a frequency of 14.348MHz using Morse and 14.280MHz using SSB, with 5W power output, hand-held whip and dipole antennas. SV1UY used a vertical 2m high centre-loaded whip and ZL1BK used a hand-held 5m long centre-loaded dipole. Both operators are members of a worldwide mailing list group of backpack radio enthusiasts called 'HF-pack', which keeps a database of so-called PM (Pedestrian Mobile) long distance records.

Bonnie Crystal, KQ6XA, said about the world-record-breaking contacts: "It has just been verified and listed in the HF-Pack Hall of Fame that Demetre, SV1UY/PM of Athens, Greece, and Max, ZL1BK/PM of Auckland, New Zealand, established a new distance record of 17,549km for pedestrian-to-pedestrian contact on 14MHz via Morse at 0625 UTC and via SSB at 0645 UTC on 28 February 2001. Both operators complied with all guidelines of the 5W Pedestrian Mobile Category 2 of the HF-Pack Hall of Fame, exchanged signal reports and provided QSLs. In addition, the operators have repeated their contacts on other days since then. These QSOs are now the longest distance record for all categories in the HF-Pack Hall of Fame." A complete listing of the HF-pack Hall of Fame can be found at http://groups.yahoo.com/group/hfpack/database [This is a 'group' listing, and you must join the group to access it - *Ed.*]



Truly 'wire-less': The DL33 transmitter made by Johnny, SM7UCZ, and featured in the spring 2001 issue of *SPRAT*, the journal of the G QRP Club.

QRP SSB WITH A KIT

IN APRIL AND MAY of this year, the Sun was very active, giving days of very good DX on the higher bands, but with other days of total HF fade-out. Sheldon Hands, GW8ELR, of Hands Electronics, who now also holds the call MW0ELR, used his kit-built RDX-109 and a loop antenna to good effect to make some QRP SSB contacts. 18MHz yielded ZP6VT (59/59), CO8FD (57/55), HC1AJQ (58/55) and a nice ragchew with OH2MCN. 21MHz was also very productive with K5ZD (59/56), PY5EG (59/59), LU4FXI (59/59) and JA7BEW (59/59).

Although he describes DXing with QRP SSB on 7MHz as "like watching paint dry", Sheldon managed a contact with PY2NY (59/44). The RDX-109 is a transceiver from the range of kits sold by Hands Electronics.

MODEST POWER AND MODEST ANTENNA

AN INTERESTING report comes from Roy Walker, G0TAK, on his results using a very modest antenna with QRP. Roy used the MFJ-1621 Portable Antenna, which is simply a 54in telescopic whip mounted on a case with an internal tuning unit.

"It was a nice day, so I shipped the rig into the garden room and had a play. The resulting QSOs were nothing startling, but the equipment is a battery-powered QRP-Plus transceiver at 5W output, with an MFJ-1621 portable vertical on the window sill inside the room." His QSOs are shown in the box below.

Using the QRP-Plus at 5W into a G5IJ antenna, Roy had a series of two-way QRP QSOs with Vlad, RX3MS, who was also using 5W: 1320 UTC, 24.909MHz (559/339); 1638 UTC, 18.077MHz (559/559).

Roy and Vlad then attempted other bands as follows: 14.060MHz (549/559); 7.040MHz (559/559); 3.540MHz (569/559).

As Roy has shown clearly, two-way QRP contacts are perfectly feasible even when using a modest antenna. ♦

FURTHER READING
***Low Power Scrapbook*, RSGB**
***G QRP Club Circuit Handbook*, RSGB**

G0TAK's list of stations worked QRP
1106 UTC, 10.116MHz, John, GW0MYY/QRP
1143 UTC, 10.109MHz, Palo, G/OM2NW/P, London
1453 UTC, 18.070MHz, Ralph, K0IR, Minnesota
1515 UTC, 18.076MHz, Dzidek, SP9AQY
1532 UTC, 21.037MHz, Jiri, OK2PKY.

LF

DAVE PICK, G3YXM
178 Alcester Road South,
Kings Heath,
Birmingham B14 6DE.
E-mail: lf.radcom@rsgb.org.uk

RECENTLY, Steve Rawlings, GW4ALG, was invited by the Trowbridge Club to give a talk on either laser communications or LF. Of course, there was no contest! After two weeks of work, he had prepared a 60-minute presentation complete with OHP viewfoils, presentation notes, an audio tape of 136kHz signals, scale models of LF antennas, static displays of LF equipment, a live demonstration of a remote-controlled variometer, some sample QSL cards, and a PC for viewing his Internet web-site material!

The talk *136kHz DXing from a Small Back Garden* went down very well. Many present at the meeting said that it was the best talk that they had ever had. Let's hope that Steve's enthusiasm and effort has started some more amateurs on the path down to LF!

WIMBORNE LF FORUM

ON 20 MAY the first LF forum outside of the Windsor HF Convention was held at the clubhouse of the Flight Refuelling Amateur Radio Society in Wimborne, Dorset.

There were fourteen attendees, mostly well-known LF operators, plus a few interested newcomers.

Morning activities included a car boot sale of Litz wire, variometers etc. The afternoon session started with M0BMU describing the latest data mode, WOLF, and how to keep its transmit bandwidth down. This was followed by G4JNT showing off his innovative 600W transmitter, and describing the various stages in its development. The final half hour was given over to a discussion. Two topics were raised: how to make the most of the 73kHz band before it is taken away, and how to encourage others to try 136kHz.

It was felt that there should be a concerted effort to cross the Atlantic on 73kHz, although there may be up to 10dB more losses to overcome. To this end, stations in the US and Canada would be asked to monitor the HBG time signal on 75.0kHz to get experience with this part of the spectrum, and to report on propagation variations.

Suggestions to encourage LF newcomers were:

- Run a contest, or series of cumulative contests, perhaps as part of the RSGB's LF Cumulatives, and a receiving category should be included.
- Encourage cross-band activity between 136kHz and 3.5 or 7MHz. This could be helped by a *RadCom* article on LF receiving techniques, followed by a cross-band contest which could be entered either as an LF or MF station.
- Informal CW beacons, perhaps using the trans-Atlantic slot below 136kHz, during daylight hours.

Thanks to G3XDV for the report.

GRIMETON AGAIN

THE HISTORIC Alexanderson alternator at Grimeton in Sweden will be run up again on Sunday 1 July. If all goes well, transmissions will be on 17.2kHz CW at 08.30, 08.45, 12.30 and 12.45 UTC. The amateur station SA6Q will be on air from the site between transmissions on various HF frequencies and 136kHz. I have no details of the setup for the 136kHz station yet, but if it includes the big masts the signal should be strong!

TRENDS IN LF PROPAGATION

HERE IN EUROPE, amateurs have been making contacts on LF for a couple of years, so trends in propagation have only been noted over a yearly cycle, not the solar cycle. We are currently just coming off the peak in activity of sunspot cycle 23, predicted to reach a minimum around 2006. It is interesting to speculate what effect low solar activity will have upon LF DX working.

The seminal *Radio Engineer's Handbook* by Terman (1943) notes a 'close correlation' between received trans-Atlantic signal strengths and sunspot numbers in the 1920s and 1930s, but doesn't comment on signal-to-noise ratio. Taking signal strength alone, this would seem to indicate that we have seen the best DX opportunities over the last couple of years, but what about atmospheric noise? A difference in noise level of just a couple of dBs will make all the difference to an LF DX QSO. Terman's graphs show a difference of about 3dB between the best and worst years, so the effect could easily be masked by a difference in noise-level.

On the other side of the coin, Decca engineers reported the most sky-wave interference with their LF navigation systems during sunspot minima. This may, however, relate only to comparatively short-skip effects. The other, albeit subjective, piece of evidence comes from ZL where they have been having LF contacts since the last sunspot minimum in the mid 90s. Bob Vernall, ZL2CA, is of the opinion that "LF DX is statistically better around a sunspot minimum, late at night, in winter".

I urge as many of you as possible to take some repeatable readings of noise-level and signal-strengths so that comparisons can be made.

Brian, CT1DRP, has had trans-Atlantic success using this superb coil wound with aluminium wire.

I'll leave the final word on this to Alan Melia, G3NYK, who has done a lot of LF propagation study over the last two years. He writes: "I suspect that the 'quiet' sun conditions of a solar minimum will not be as good as conditions when a geomagnetic disturbance is just decaying away.

"Fortunately, the sun continues to produce some geomagnetic events even in quiet years. Quieter periods around the 11-year maximum may well turn out to be the best times for extreme DX on LF." ♦

ROGER BALISTER, G3KMA
La Quinta, Mimbridge, Chobham, Surrey, GU24 8AR.
E-mail: iota.hq@rsgb.org.uk

THERE ARE now 1000 IOTAs! The milestone was reached on 15 April with the issue of AF-090/Pr to 5R8GT operating from Sainte Marie Island off Madagascar. The IOTA Honour Roll published on page 26 shows a number of the leading stations with scores above 950. To reach that level is perhaps one of the biggest performance challenges in HF DXing today, particularly for those who do not have a capability or interest in multiband or low-band DXing.

MOST WANTED IOTAS

A NEW LIST of 'most wanted' IOTA groups is available on the RSGB IOTA web pages. Intending DXpeditioners may check there to see the degree of rarity of their chosen IOTA. A quick comparison of this list with the 'most wanted' DXCC entities list shows almost total lack of overlap. In fact, hardly any of the island DXCC entities in the top 50 most wanted list feature in the top 250 most wanted IOTA groups - most fall in the 250 - 500 category or lower still.

ACTIVITY ON THE BANDS

LAST MONTH I reported on the unplanned IOTA operation from Sagar Island in the Ganges Delta and mentioned this could provide the stimulus required to encourage more activity from other currently unnumbered or seldom activated IOTA groups in India. Sure enough, in early May a team of 12 VU operators from the Manipal and Mangalore Amateur Radio Clubs in Karnataka State put on a big operation from St Mary's Isles, AS-096. This group was firmly in the rare category as the last operation was long ago in 1992. Generally the tempo of new activity has not slackened. My own log shows contacts with, in chronological order, HR6SI (NA-035), TE8AA (NA-116), UE1RCV/1 (EU-188), 3V8DJ (AF-083), HK3JJH/5 (SA-017), OX3LG (NA-220), YE8XM/P (OC-221, OC-246, OC-224), E29AL (AS-101), J28CDX (AF-059), FO0CLA (OC-152), 5R8GT (AF-090), RI0B (AS-156), V73E (OC-087), RU0B (AS-057), TA0/IT9YRE (AS-154), 3W7D (AS-157), VU2PAI (AS-096) and HR4/TI5KD (NA-060). This is just a sample of what has been active during the period under review.

RSGB HF & IOTA CONVENTION

THIS YEAR'S RSGB HF and IOTA Convention will be held over the period 12, 13 and 14 October at Old Windsor, Berkshire. An interesting programme to suit all HF tastes is under preparation. The IOTA stream will include two thought-provoking presentations, one celebrating reaching the milestone of the 1000th IOTA reference number and the other taking a forward look at IOTA in the 21st Century. Check page 30 for full Convention details and, for those wanting a package, book early as the DX Dinner fills up quickly [and you get a discount for booking early! - *Ed.*]

RSGB IOTA Programme, PO Box 9, Potters Bar, Herts EN6 3RH

NEW REFERENCES

AF-090/Pr	5R	Madagascar's Coastal Islands East*
AS-154	TA	Black Sea Coast East group
AS-155	BV	Taiwan's Coastal Islands*
AS-156/Pr	R0B	Ushakova Island
AS-157/Pr	3W	South China Sea Coast Centre group
EU-188/Pr	R1P	Pechorskoye Sea Coast West group*
NA-220/Pr	OX	Greenland's Coastal Islands South*
OC-245	YB5-6	Sumatra's Coastal Islands North*
OC-246	YB8	Leti and Sermata Islands

Pr = provisional * see explanation in May *RadCom*

The portable IOTA station on Mursala Island, OC-245. Note the solar panels on the left and small generator on the right.

IOTA CONTEST 2001

A REMINDER that the RSGB IOTA Contest takes place from 1200UTC Saturday 28 July to 1200UTC Sunday 29 July 2001. As this contest now attracts more than 1000 participants, it is quite possible to work the 100 different IOTAs required to qualify for the basic award during the 24 hours. Stations on mainland Britain should include EU-005 with the signal report and serial number exchange. Those on mainland Ireland should give EU-115. Full details were published on page 24 of the April 2001 *RadCom* and are on the Internet (see below).

A CAUTIONARY TALE

ALONGSIDE IS a message we had hoped never to have had to send. It is a tragedy, but it happened.

Any portable activity, like so many other things, has risks. We do ask those who engage in any form of DXpeditioning to take care. In particular, if you are going to areas of the world where there are well-known risks to health, do take all recommended medication and other precautions. As most island operations involve a sea crossing, establish whether the boat is up to it and pay particular attention to weather and sea conditions. ♦

TRAGEDY OUT OF SUCCESS

READERS MAY remember the activity in March by YB6LYS/P, YC6JKV/P, YC6LAY/P and YC6PLG/P from Mursala Island in IOTA's new Sumatra Coastal Islands North group, OC-245. All the members fell seriously ill on their way back to the mainland with dengue haemorrhagic fever and malaria and were hospitalised. It is with deep regret that we have to report that one of the team, Indra Dewi Indri Astuti, died. Girlfriend of Agus, YC6JKV, Indra Dewi was a much-valued and respected member of the Mursala team. Although a non-amateur, she contributed to its success, helping in many ways as cook and on general support duties. Our thoughts and condolences go out to her family and to Agus, and to the whole team on their tragic loss.

WWW.

RSGB IOTA Programme:	www.rsgbiota.org
IOTA Manager's web site:	www.eo19.dial.pipex.com/index.shtml
IOTA Contest rules:	www.g4tsh.demon.co.uk/HFCC/index.htm

Regular Feature

MICROWAVE

SIMON LEWIS, GM4PLM
Creoch Farm, Ochiltree, Ayrshire KA18 2QH.
E-mail: uwave.radcom@rsgb.org.uk

LITTLE PORTABLE activity is possible at the moment, but not all is doom and gloom. I for one am making the most of it and concentrating my efforts in rebuilding some of my equipment and getting myself ready should an opportunity to operate appear before the winter arrives again.

TRANSPONDER OPERATION ON AO-40

CHARLIE Suckling, G3WDG, writes to inform me of his first experiences on AMSAT AO-40. He writes; "Having been involved with telemetry collection from the S-Band beacon on AO-40 for some months, it was a real treat for us when the command team announced that they planned to switch on the transponders for experimental use from 5 May for 10 days. The days prior to this were spent adding elevation to antennas, digging out transverters and retuning to 1269MHz. With a 45W brick available for 435MHz and an 18W one for 1269MHz, all was tested on tropo with G3RUH.

"On the morning of the 5th, the beacon was coming in well on the 10ft dish and telemetry was logged as usual. When both 70cm and 23cm uplinks were enabled, we were busy trying to find which worked better. We found our signals almost immediately but, unfortunately for Europe, the squint angle for the satellite (ie the amount the antennas are off-boresight) was not as favourable as for North America, so we did not get such a good signal on the downlink as the US stations did. For our station, it turned out that the 1269MHz uplink worked better, and we started looking for someone who could hear our downlink signals.

"The first QSO was at 0917 UTC with I8CVS. G4KGC then worked W1BFN just as the satellite was setting. Slightly disappointed with the level of our signals, and one M57762 brick failed due to overheating. We were nevertheless delighted to have been able to use the bird for the first time! The remainder of the day was spent preparing for the next orbit, which had a much better squint angle. Uncertain as to whether the loop Yagi was working properly on 1269MHz, we put up a spare 1.5m dish with disc and dipole feed, We also fitted a decent heatsink and blower to our prototype WDG019 2 x M57762 brick amplifier which, when run conservatively, produces 30W at 1269MHz. We did not want to blow up any more of these expensive modules!

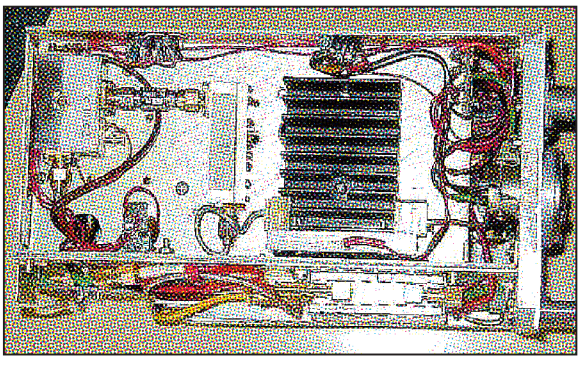
"The next orbit started for us at about 0630 UTC on the 6th. We checked out the system, and found that the new uplink equipment produced a much stronger signal (or was it just the better squint angle?). Transmit power was reduced to 1W producing a perfectly readable signal. Encouraged by this, we tried the transverter barefoot. Its 5mW signal was just detectable in the noise. We then worked a handful of stations (mostly on SSB). Later in the evening, QSOs with JA1BLC, JA5LG, OK2AQK, 7N1JVW, VK6ZKO and a near-one-hour-long ragchew with I8CVS were completed. It appears that AO-40 is working extremely well, and all our thanks are due to the fantastic efforts of the AO-40 management team and ground controllers in bringing this satellite on-line in a relatively short time."

MICROWAVE ROUND TABLE

SOME 44 microwavers signed in at the annual microwave 'round table' meeting held at the Rutherford Appleton Laboratory (RAL) this year. Although the attendance was a little lower than in previous years, the event was very successful. The meeting was preceded by a dinner held on the Saturday night, organised by Geoff, G3NAQ. Those attending had a great time. Unfortunately, an RSGB show was also scheduled for the same weekend and a few folk chose that instead of the gathering of microwavers at RAL!

A good selection of surplus parts and gear was available, but what would have been snapped up immediately just five years ago now seems to be relegated to 'junk' status! G3PHO's 10GHz TWT, complete with power supply, did not sell and was reluctantly brought back home. The main talk by Dave Stockton, GM4ZNX, a chief design engineer with Agilent gave a fascinating insight into noise figure measurement. Test sessions, with the emphasis on measurements using some of the latest equipment, followed. After lunch, presentation of the G3BNL Trophy was made by Julian Gannaway, Chairman of the RSGB Microwave Committee, to the Wessex Millimetre-Wave Group, for work in equipment construction and operation at 76GHz. Talks and demonstrations of an amateur light-wave communication yagi antenna were also presented.

Thanks to Peter, G3PHO, for that report.



G3PYB's 0.5W 24GHz transverter.

23cm AURORAL QSO

AN E-MAIL from Carl, SM3AKW, brought news of a very interesting QSO, which rewrites the books on auroral propagation. "On 11 April 2001, I finally managed to complete an auroral QSO on 1296MHz after 20 years of trying. My partner in the QSO was SM5QA, who has participated for the past one-and-a-half years in numerous tries. It is likely to be a world first. I have been heard by several stations in the past, but none has been heard by me until 1 April, when I heard SM5QA (I left the EME contest on 432MHz/2.3GHz), but the signals went straight out and we did not make it.

"On 11 April, at 1650 UTC on 1296.200 MHz CW, reports of 33A were passed both ways. We had signals in and out for some 15 minutes. We observed a 5kHz positive Doppler with broad signals, but when it peaked it sounded much like it does on the lower bands. Both of us were running 500W output and antennas 4x27 loops and 2.3 m dish.

"The distance between us is 358 km north-south. I had to tilt 8° and he was on the horizontal. Our locators are JP92AO and JO89WJ."

EISCH ELECTRONIC'S NEW CATALOGUE

MY GOOD FRIEND Ulli at Eisch-Kafka Electronic was kind enough to send through a new catalogue recently. Eisch-Kafka Electronic stocks a wide range of equipment and parts for VHF through to microwaves, and not just for narrow-band modes. A copy of its catalogue is available from the web site (see below). ♦

WWW.
Eisch-Kafka Electronic
www.eisch-electronic.com

DENNIS KITCHEN, G0FCL
'Hazelbeech', 13 Lenwood Park, Northam, Bideford, Devon EX39 3PD.
E-mail: space.radcom@rsgb.org.uk

SPACE

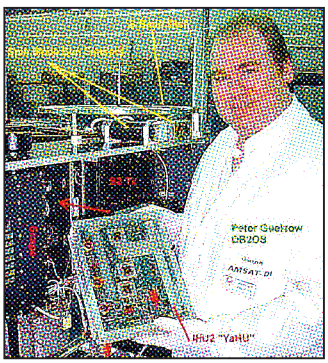
ONCE AGAIN, things have been happening with a vengeance, the first example of space tourism, a partial release of Oscar 40 which is very exciting indeed, and a real piece of telecommanding in re-establishing contact with 29-year old Pioneer 10, after a silence of some eight months. The spacecraft is at a distance of seven billion miles and, naturally, signals are somewhat weak. It must be a tremendous piece of signal processing with a pretty slow data rate.

SPACE TOURISM

SPACE TOURIST Dennis Tito, the American businessman, landed safely back on earth after an eight-day trip out to the International Space Station 'Alpha'. He was deposited in the Kazakhstan desert some six minutes ahead of schedule by a Soyuz TM-31 carrying him and his two Russian colleagues. He had apparently enjoyed every minute of his adventure.

NOT SO INTERNATIONAL?

SO ENDED a rather contentious trip which NASA felt would end in disaster and did all it could to stop it actually happening. Interestingly enough, it may yet reap the whirlwind because of the announcement by Vladimir Senkevitch, President of the Russian Academy of Cosmonautics. "Russia may place its own new space station into orbit in three years' time. It is necessary to take our own station into orbit to carry out tasks which are impossible in the framework of international co-operation on the ISS," he is quoted as saying in a recently-published interview. MIR, recently consigned to a fiery end, certainly was a great Russian flagship of space. There must be a lot of pressure to replace it to maintain an independent Russian presence in space, particularly in view of other political initiatives currently being discussed.



Peter Gülzow, DB2OS, holding the Phase 3-D IHU-2 module during integration at Orlando.

OSCAR 40

THE NEWS of our good old Phase 3-D has been steadily getting better as more units are being checked out. The spacecraft orientation is being changed slowly to facilitate additional testing as the squint angle of the antenna system improves. Transponder operations started on Saturday 5 May. The U and L1 uplinks, (the receivers are OK), were very successfully matrixed with the S-2 downlink. Good reports abound. After a very good week of operation, the 10GHz X-band system was tested. Regrettably, this was unsuccessful. The IHU-1 telemetry indicated that commands were being correctly received, but not acted upon, the net conclusion being that there was no power to the module. Rather a blow, but testing continues. What was very interesting was the switching in of Leila, the 'alligator' deterrent.

Several very strong signals appeared within the passband. They were several dB above the level of the middle beacon. The U-band receiver was already notching in some 16dB of automatic gain control. Many were the mutterings on the band, but the offenders didn't (or wouldn't) listen. Leila was switched in after being set for scan/jam/notch mode. It worked like a charm. The threshold was set to the approximate level of the General Beacon which meant that any stronger signal would cause a police siren sound to be heard to give the offending station chance to reduce power, otherwise the notch will do its best. The other users of the passband loved it, judging from initial reports, so it will, in all probability, be left in circuit.

USING AO-40

AO-40 users are reminded that they must avoid ±5kHz round the Middle Beacon. If the beacon cannot be copied due to interference from users in the passband, transponder operation may be stopped.

It might be appropriate to pass on a little operating information which is offered for AO-40, but is correct for almost any satellite operation. It is from the pen of Bruce Paige, KK5DO. He puts it much better than I can! "The transponders are inverting, which means that you normally transmit on LSB and receive on USB. Firstly, find the beacon on your downlink – if you can't, give up now. Calculate the uplink frequency for the beacon but *don't* transmit. Set your uplink to the calculated frequency. Lock your VFOs for reverse tracking. Tune up the band looking out for any QSOs, tune past them. Unlock the VFOs and start transmitting, typically something like "Testing, testing, testing, (your own callsign)" or, if you have the skills of course, Morse is fine. While calling, tune the receive VFO slowly up and down. You should find your own signal within seconds. Lock the two VFOs in reverse tracking once you find yourself.

"Now tune until you find someone with whom you wish to have a QSO. Once on the other person's frequency, unlock the VFOs. Adjust *only* the downlink frequency whilst making the contact. That's all there is to it, as they say!"

MORE ON THE ISS

THE ISS HAS ALSO been pretty busy of late, and not all school contacts either. Schools are, of course, very important indeed, especially as they provide the enthusiasts of tomorrow, but I guess that we all like a bite of the cherry. Both packet and voice contacts have been made using the callsigns and frequencies detailed in the last edition of 'Space'. Just in case you were one of the lucky ones, the following QSL information is available. A self-addressed envelope is required, although the actual card has not yet been finalised. More details are available (see the URL below); you will also find information on the packet operation with ISS.

If you fancy discussions with people with like minds or, indeed, want to learn more about satellites in particular, don't forget the AMSAT-UK Colloquium at the University of Surrey at Guildford at the end of July. The conference runs from Friday 27 July until Sunday 29 July and does include a beginners' stream. More details from Jim Heck, G3WGM, Honorary Secretary of AMSAT-UK. ♦

WWW.

International Space Station
http://ariss.gsfc.nasa.gov

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Experience the thrill of short wave listening on this regenerative receiver that has amazing sensitivity. Brand new solid state design. Just a short length of wire will bring good signals in. Covers all the major short wave general and ham bands. Simple to build and operate.

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The most advanced antenna analysers

MFJ-259 £249.95 carr. £6.00
MFJ-269 £329.95

Connect it to your antenna and get all the information you need to optimise it for best performance including resonance, VSWR and impedance. Totally portable (using AA cells), you can work right up by the antenna. The MFJ-259 is the basic design covering 1.8 - 170MHz. The MFJ-269 has extended coverage up to 470MHz and gives an extremely wide range of measurements, even indicating where a break is in a coax cable.

MFJ-989C ATU OUR PRICE £349.95

3kW 1.8 - 30MHz "T" Match carr. £7.50

This standard "T" match design has a roller coaster coil for critical adjustment and a 4:1 balun to match balanced line. No matter what your antenna, this will give you a perfect match. Ideal for coax, end fed wires and open wire feeder. Features PEP or RMS power measurement (200 or 2kW max), VSWR, antenna switch, bypass, built-in dummy load (time restricted) 12v dial illumination etc. Size 270 x 375 x 115mm.

MFJ-986 ATU OUR PRICE £319.95

3kW Differential 1.8 - 30MHz carr. £7.50

This differential tuning design does away with one control, making it quick to adjust with just the roller coaster and the tune control. Rugged enough to cope with any amateur radio linear, it can be used with coax, end fed wire or balance line. You get PEP/RMS/VSWR metering, antenna switching, bypass etc. One of our most popular models, it measures 278 x 375 x 115mm.

MFJ-962D ATU OUR PRICE £259.95

1.8 - 30MHz 1.5kW "T" Match carr. £7.50

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the last Word

Duty on Imported Equipment

A couple of months ago I imported from the USA a K2 transceiver in kit form. I paid VAT at 17.5% and Customs (Import) Duty. You can't get away without paying VAT, but I have recently established that such equipment is exempt from Import Duty. The Customs & Excise tariff lists the items that are exempt and the relevant heading reads as follows: "Transmission Apparatus for Radio-Telephony, Radio-Telegraphy, Radio-Broadcasting or Television, whether or not incorporating Reception Apparatus or Sound Recording or Reproducing Apparatus; Television Cameras; Still Image Video Cameras and other Video Camera Recorders".

This heading covers items that are many and varied but it is the first two mentioned that are relevant where amateur radio transceivers are concerned. Each item mentioned has, what is called a 'commodity code' and that relating to transceivers is 8525209900.

My helpful contact with the Customs & Excise told me that consignments arrive in this country with very obscure descriptions on the Customs forms. He said that if there was any doubt about an item duty would be charged. There must be many amateurs who have paid import duty unnecessarily. I have been advised that when gear is ordered from abroad, the supplier should be asked properly, and fully, to describe it on the customs forms, eg "Transceiver apparatus for radio-telegraphy". It is also essential for the supplier to include on the custom forms the Commodity Code No 8525209900.

The suppliers of my K2 included the Commodity Code on the forms but described the consignment as a "Hobby kit of Electronic Parts for Amateur Radio". Clearly this description did not meet the requirements of Customs & Excise who slapped on import duty. I am now negotiating with them for reimbursement of the sum involved.

Another point worth mentioning is that when the US suppliers sent my K2 kit they included the optional SSB kit that I did not order. At their request I returned the SSB kit by air mail but I am still trying to get a refund of the VAT and Customs Duty that I paid on it. Fortunately I have proof of posting but Customs & Excise have advised me that it would have been easier to process my claim if I had approached their local office before exporting the unwanted item. I am still waiting, optimistically I might add, to get my money back.

Pete Windle, G8VG

'Go For It!'

May I, through your columns, thank all of the fellow amateurs who kindly responded by letter, card and e-mail to my request in Steve Hartley's 'Newcomers' News' in the April edition of *RadCom* for an explanation of the code 'QSLL' sometimes sent during a CW QSO. Steve has forwarded all the replies to me and I really appreciate the time and effort taken by all the correspondents. 'QSLL' means basically that "I will send a QSL card upon the receipt of yours".

May I also record here my grateful thanks to NRAE course instructors Steve Hartley, G0FUW, and Mike Coombs, G3VTO, who helped my Millennium retirement project come to fruition last year when I gained my Novice ticket and which has since brought immense pleasure and hundreds of CW contacts throughout the world during the first year of being on the air.

Great encouragement also came from George Davis, G3ICO, of the Yeovil club, where I took my 12WPM Morse test at the QRP Convention in April.

To anyone contemplating joining an amateur radio examination course - go for it!

Great magazine.

Brian G Davis, 2E0BGD

Simple Home-Brew is Still Fun

I found the article in April's *RadCom* by Dick Biddulph, M0CGN, describing the simple Morse key, interesting. I often wonder why some amateurs spend x number of pounds on a device which is after all basically only a single pole make and break switch? The first home-made key I used I made from an old paper stapler. It was a bit of a rough and ready affair, but it got me started on learning the code. Needless to say, I have now graduated to a proper factory-made one, but I am still all for these 'home-brewed' gadgets. I still have a home-made signal injector costing only a few pennies made a few years ago.

Sorting through my junk box recently I found the simple TRF radio and a 70cm antenna made for the Novice course. It was great fun pruning bits off the rods to get the SWR down.

I read somewhere that during WWII some of our prisoners of war made simple radios to get the BBC news broadcasts using old rusty razor blades as a crude detector - what they used for a transducer I can't imagine. Perhaps some ex-serviceman might come back on that? . . .

Bill Ashley, 2E1GYN

Unenlightened

How delightful to learn from Colin Bird's, G0SDA, letter in 'The Last Word' of the enlightened attitude of the NHS hospital authorities in allowing their patient to carry on his amateur radio activities while in hospital, even to the extent of having two aerials fitted up for his use.

Compare this to the attitude of the London Borough of Hounslow, of which I am a tenant in sheltered accommodation. Through my local radio club I appealed to the local authority for permission to install an invisible transmitting antenna and was flatly refused.

P Morris, G3ISZ

10m Thank You

As Project Manager to the Northampton 10 metre repeater group, I would like to convey my thanks to all the RMC staff that were involved in the vetting and guidance of the UK's first 10 metre repeater, GB3CJ, these being mainly: Carlos Eavis, G0AKI; Bill Mahoney, G3TZM; Alan Marwood, G8SSL, and Colin Dalziel, GM8LBC, with whom I had direct contact.

I had been told that this may turn out to be a very long-winded challenge and that it may fall on stony ground, but the help and support shown by the above committee has been outstanding. With their help we were finally given the clearance and Notice of Variation to build and install the above repeater.

The main reason for this letter is that we are often so quick to condemn and so slow to show our appreciation.

A big 'Thank You, Gentlemen', for all your help.

Dave Meakins, G4SCJ

Calling London Radio College Students

In 1994 I wrote to *RadCom* requesting ex-students of the 'London Radio College', 43 Grove Park Road, Chiswick, London W4 during 1942 to contact me. This request, published in April 1995, brought one instant reply from David Walker, G3BLS. Together we have been investigating the background to the college; who owned it, directors, possible involvement with SOE and other government agencies during WWII.

We know from letters and phone calls from a Mr R C Allen that a course was also being run besides ours from the RAF Radio School No 7, based at the Science Museum, Kensington. The course was for high speed telegraphists. In addition, there were numbers of Polish students who were supposed to be training as Radio Officers for the Free Polish Merchant Navy. Or were they?

The Radio Officers Association, of which David and I are members, is helping by publishing some of our stories to date. Perhaps there might still be RSGB members out there who have some important missing information? The site of the 'London Radio College' is now owned by the RAF Association.

Peter C Bond, G3BEG

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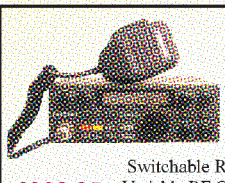

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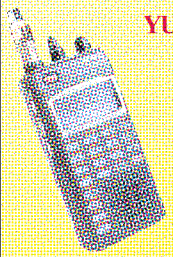

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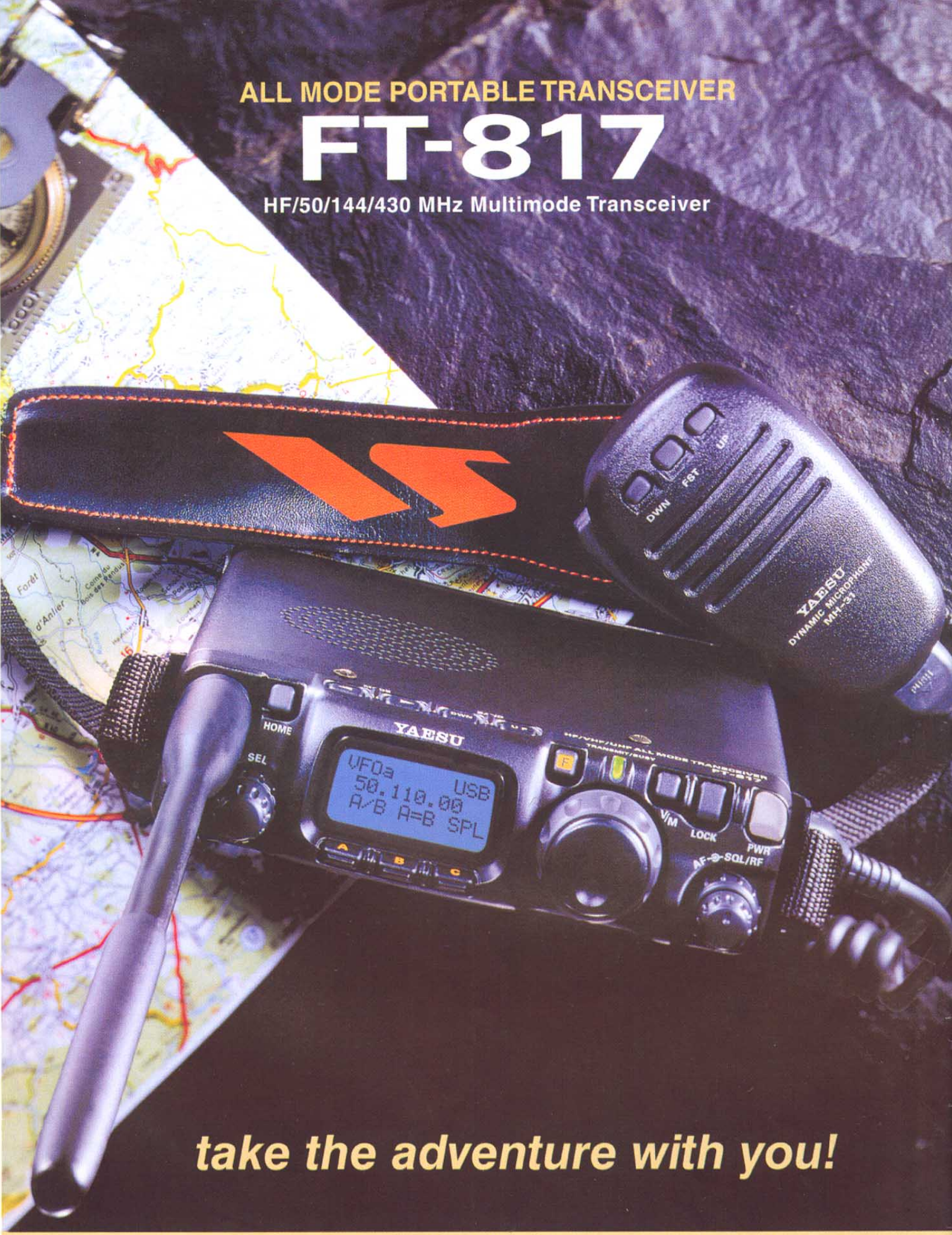

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