RSGB 2002 AGM Minutes & Half Year Accounts

www.rsgb.org

RadCom

OUT IN MARCH!

£3.95 Vol 79 No 3 ♦ March 2003 The Radio Society of Great Britain Members' Magazine

Elecraft K2
'Top of the Range' Transceiver Kit Reviewed

Raynet's 50th Anniversary

UK - US DXpedition to American Samoa

RSGB Jubilee Contest Results

WATERS & STANTON

FREEPHONE ORDER LINE:
08000 73 73 88

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

WEB ORDERING
www.wsplc.com

YAESU NEW FT-897

£1099 C

A 100W HF rig plus 2m and 70cms (50W/20W) from 13.8V external supply, with provision for running from internal optional FP-30V AC power supply or self powered portable using optional Ni-MH pack at 20W output. It is packed full of features including Large LCD display, 200 tagged memories, DSP, IF shift, IPO, Noise blanker, VOX, Collins filter, CTCSS, and DCS, ARTS, Spectrum Scope, compatible with FC-30 auto ATU and ATAS 120/100 antennas. And all this packed into a size of 7.87" x 3.15" x 10.3". The "must have" radio

YUPITERU MVT - 3300

The Yupiteru MVT-3300 Scanner.
- VHF Airband plus lots more including emergency services
- 66-88 / 108-170 / 300-470 / 806-1000MHz
- AM & FM
- 200 Memories
- 5 Tuning steps
- Fast Scan Speed
- Very Sensitive
- Requires 4xAA cells (not supplied)
- Includes Flexible Antenna Earpiece and carrystrap.

£129 B

NEW BHI NEIM1031

NOISE ELIMINATING IN-LINE MODULE

** Noise attn -20dB (typical)*
** Noise Attn levels 8*
** Audio output power 2.5W RMS max (8 Ohms)*
** Audio connections: Line level in/out (RCA Phono), Audio in/out 3.5mm mono jack*
** Line i/p impedance 10K*
** Line o/p impedance 100 Ohms*
** Line in sensitivity 300mV -2V RMS*
** Headphone socket 3.5mm mono jack*
** Headphone power 2.5W RMS max*
** Power 12-24V DC 500mA*
** Size 170 x 85 x 34mm * Weight 265g*

£129.95 B

Accessories included: Fused power lead, 3.5mm mono audio lead 1.2m and operating manual.

HF TRANSCEIVERS

ICOM

IC-756 PRO II. Flag ship of the ICOM range of transceivers.

IC-756 PRO II	160-6m 100W 12V	£2495.00	C
IC-7400	160-2m 100W 12V + free offer	£1449.00	C
IC-706 IIG DSP	160m-70cm 100W 12V	£799.00	C
IC-718	160-10m 100W 12V	£599.00	C
SP-20	Speaker with filters	£164.99	B
SM-8	Base microphone	£129.99	B
SM-20	Base microphone	£144.99	B
PS-125	Icom 25A PSU	£295.99	C

YAESU

FT-897. All New! All mode base/portable.

FT-1000 mkV	160-10m 200W 230V	£2799.00	E
FT-1000 Field	160-10m 100W 230V	£2199.00	E
FTV-1000	6m transverter List:~~£799~~	£499.00	B
MD-200A8X	Desk microphone	£254.95	B
MD-100A8X	Desk microphone	£116.95	B
FT-920AF	160-6m 100W 12V	£1099.95	C
FT-897 NEW	HF/6m/2m/70cm 100W	£1099.00	C
FP-30U NEW	Internal AC PSU for FT-897	£249.95	C
FC-30 NEW	External auto ATU for FT-897	£249.95	C
FT-847	160-70cm 100W 12V	£1199.00	C
FT-817	160-70cm 5W Batt.	£595.00	C
FT-840	160-10m 100W 12V	£499.00	C

KENWOOD

TS-2000X. Top of the range Kenwood transceiver.

TS-2000	160m-70cm<100W	£1695.00	C
TS-2000X	160m-23cm<100W	£1999.00	C
TS-B2000	Computer controlled	£1549.00	C
RC-2000	Remote head TS-2000	£199.95	B
ARCP-2000	TS-2000 software	£44.95	B
TS-870S DSP	160-10m 100W 12V	£1399.00	C
TS-570DGE	160-10m 100W 12V	£849.00	C
YK-88CN-1	270Hz CW filter	£61.95	B
YK-88SN-1	1.8kHz SSB filter	£61.95	B
TS-50S	160-10m 100W 12V	£629.00	C
PS-33	AC power supply 20.5A	£199.95	C
PS-52	AC power supply 22.5A	£229.95	C
PS-53	AC power supply 22.5A	£229.95	C
MC-60A	Desk microphone	£117.95	B
MC-80	Desk microphone	£72.95	B
MC-90	Desk microphone	£187.95	B

MFJ

**Adjustable Tx Pwr *Full QSK CW *Covers 50kHz segment *12-15V*

QRP-CUB CW TRANSCEIVERS
MFJ-9380 CUB

MFJ-9380W	80m CW 2.2W QRP Tcvr Assembled	£149.95	B
MFJ-9380K	80m CW 2.2WQRP Tcvr Kit	£99.95	B
MFJ-9340W	40m CW 2.2W QRP Tcvr Assembled	£149.95	B
MFJ-9340K	40m CW 2.2W QRP Tcvr Kit	£99.95	B
MFJ-9330W	30m CW 2W QRP Tcvr Assembled	£149.95	B
MFJ-9330K	30m CW 2W QRP Tcvr Kit	£99.95	B
MFJ-9320W	20m CW 2W QRP Tcvr Assembled	£149.95	B
MFJ-9320K	20m CW 2W QRP Tcvr Kit	£99.95	B
MFJ-9315W	15m CW 1W QRP Tcvr Assembled	£149.95	B
MFJ-9315K	15m CW 1W QRP Tcvr Kit	£99.95	B

SGC

*SG-2020. *1.8-30MHz *CW, USB, LSB *0-20W *11-18V*

SG-2020	HF Transceiver 0-20W	£699.95	C
SG-2020ADSP	HF Transceiver 0-20W with DSP	£899.95	C
PORTA-PAK	Portable HF Transceiver	£1349.95	C
SG-2000DSP	HF Transceiver 1.6-30MHz	£2295.95	C
SG-237	Smartuner 1.8-60MHz	£439.95	C
SG-237 Porta	Smartuner 1.8-60MHz needs whip	£649.95	C
Stealth Antenna	Kit with SG-237 + 80ft wire	£489.95	C
QMS-37	Mobile Smartuner needs whip	£659.95	C

LINEAR AMPLIFIERS

LINEAR AMP UK

DISCOVERY-70. High power 700W 70cm linear amplifier

CHALLENGERIII	HF linear amp 10-160m	£1795.00	D
RANGER-811H	HF linear amp 10-160m	£895.00	D
DISCOVERY-2	2m 400-1000W out	£1395.00	D
DISCOVERY-6	6m 50-54MHz 400-100W out	£1395.00	D
DISCOVERY-70 NEW	430-440MHz 700W out	£1495.00	D

AMERITRON

AL811 XCE. HF Linear Amplifier. All versions CE approved

AL811 XCE	160-10m 600W PEP 3x811A	£799.00	E
AL811 HXCE	160-10m 800W PEP 4x811A	£989.00	E
ALS500 MXCE	160-10m 500W PEP 12V mobile	£995.00	C
AL800 XCE	160-10m 1250W PEP 1x3CX800A7	£1995.00	E
AL800 HXCE	160-10m 1.5kW PEP 2x3CX800A7	£2795.00	E
AL80 BXCE	160-10m 1kW PEP 1x3-500Z	£1495.00	E
AL82 XCE	160-10m 1.5kW PEP 2x3-500Z	£2595.00	E
AL1200 XCE	160-10m 1.5kW PEP 1x3CX1200	£2695.00	E
AL1500 XCE	160-10m 1.5kW PEP 1x3CX1500	£2995.00	E
Accessories			
ARB-702I	Amp to radio interface for Icom	£48.95	B
ARB-702I2	Amp to radio interface for IC706	£45.95	B
ARB-702Y	Amp to radio interface for Yaesu	£45.95	B
ARB-702K	Amp to radio interface for Kenwood	£45.95	B
ATP-100	Tuning pulser for amplifiers	£59.95	B

SGC

SG-500. SmartPowerCube Microprocessor controlled HF linear amplifier.

SG-500 (52-96)	160-10m 500W PEP	£1629.95	C
PS-50 (53-05)	50/70A PSU for SG-500	£499.95	C

Tokyo Hy-Power

Turn your FT-817 into a base station by adding this linear amplifier.

HL-50B	HF+50MHz 50W amplifier	£265.95	B

YAESU

Quadra system consists of VL-1000 linear and VP-1000 S/M PSU.

VL-1000 Quadra	HF-6m 1kW linear	£3799.00	C
MR-1000	Mounting rack for Quadra	£327.95	C
CT-56	Connecting cable	£15.95	A

RECEIVERS

AOR

AR-8600 II. Wideband receiver for all round coverage of the bands.

AR-8600 II	100kHz-3GHz All mode	£679.00	C
AR-5000	10kHz-2.6GHz AM,FM,SSB,CW	£1449.00	B
AR-5000 +3	Enhanced version	£1595.00	C

FAIRHAVEN

RD-500VX. Database all mode receiver including TV sound, video & stereo FM.

RD-500VX	20kHz-1.75GHz All mode	£749.00	B

ICOM

IC-R75E. Matches the IC-718 transceiver also includes 6m.

IC-R75E	30kHz-60MHz AM,FM,SSB,CW	£599.00	C
IC-R8500	100kHz-2GHz AM,FM,SSB,CW	£1299.00	C
IC-PCR1000IS	0.1-1300MHz computer controller	£309.00	B
IC-PCR100IS	Computer controller 0.1-1300MHz	£199.00	B

JRC

NRD-545G. 100kHz to 30MHz DSP receiver 12-16V DC

NRD-545G	100kHz-30MHz DSP All mode	£1395.00	B

YAESU

VR-5000. Excellent all mode receiver with superb display.

VR-5000	100kHz-2.6GHz All mode	£599.00	B

HOT NEWS!

Picketts Lock moves to Stevenage!

(but not literally)

+ + + + + + and we'll be there on 31 May - 1 June + + + + + +

HEAD OFFICE • 22 MAIN RD, HOCKLEY • ESSEX • SS5 4QS
ENQUIRIES: 01702 206835/204965 FAX: 01702 205843
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DISCOUNT CUSTOMER SERVICE THE ONLY THING WE WON'T

VHF/UHF TRANSCEIVERS

ICOM

IC-2725E. ICOM's latest unique Dual Band FM transceiver.

IC-910X	2m/70/23cm All modes tcvr	£1249.00	C
IC-910H	2m/70cm All modes tcvr	£1149.00	C
UT-106	DSP unit	£84.99	B
UX-910	23cm unit for IC-910H	£349.00	B
PS-125	Mains PSU 25A 13.8V	£295.99	C
IC-2725E NEW	2m/70cm FM mobile	£309.00	C
CS-2725	Cloning software	£22.49	A
MB-84	Controller mounting bracket	£9.95	A
MB-85	Combination kit	£20.00	A
OPC-1132	DC power cable 3m	£24.99	A
OPC-1156	Separation cable 3.5m	£24.99	A
OPC-478	Cloning cable	£24.68	A
OPC-647	Mic extension cable 2.5m	£32.99	B
IC-207H	2m/70cm 50/35W mobile	£279.00	C
CS-207	Cloning software needs OPC-478	£22.49	A
OPC-589	Mic adaptor cable for 8-pin	£16.99	A
OPC-600	Separation cable 3.5m	£32.99	A
OPC-601	Separation cable 7m	£39.99	A
OPC-647	Mic extension cable 2.5m	£32.99	B
IC-2100H	2m FM mobile 55W	£229.00	C
CS-2100	Cloning software needs OPC-478	£22.49	A
OPC-478	Cloning cable	£24.68	A
OPC-589	Mic adaptor cable for 8-pin	£16.99	A
Common Accessories			
MB-17A	Quick release mount	£35.99	A
MB-65	Mounting base	£25.99	A
OPC-440	Mic extension cable 5m	£49.99	B
OPC-441	Speaker extension cable	£24.99	A
SP-10	Mobile speaker 5W 4 Ohms	£49.99	B

YAESU

FT-8900R. FM Quad band transceiver

FT-8900R NEW	29/50/144/430MHz mobile	£399.00	C
YSK-8900	Separation lead kit	£39.95	B
FT-7100	2m/70cm FM mobile	£329.00	C
ADMS-2G	Programming software	£44.95	A
MMB-36	Mobile bracket	£6.95	A
MMB-62	Mobile controller bracket	£29.95	A
YSK-7100	Separation lead kit	£39.95	B
Common Accessories			
CT-39A	Packet interface cable	£14.95	A
MMB-60	Quick release mobile bracket	£18.95	A
MEK-2	Mic lead extension kit	£29.95	A
MLS-100	High power ext speaker	£29.95	B
MH-48A6J	Hand mic with DTMF	£39.95	B
MH-42B6J8	Speaker/mic	£44.95	B
FT-1500M	2m 50W mobile List:~~£179~~	£159.00	B
ADMS-2F	Programming software	£44.95	A
MEK-2	Mic lead extension kit	£29.95	A
MF-1A3B	Boom mic needs SB-10/CT-69	£34.00	B
SB-10	PTT switch box for MF-1A3B	£29.95	A
CT-69	Mic adaptor 8-pin to modular	£13.95	A
YH-1	Headset/boom mic needs SB-10	£26.95	A
T9022815	Spare DC lead	£17.95	A

KENWOOD

TMD-700E. Dual band mobile & data communicator.

TMD-700E	2m/70cm FM mobile	£449.00	C
TM-V7E	2m/70cm FM mobile	£359.00	C
TM-G707E	2m/70cm FM mobile	£289.00	C
MC-58DM	DTMF hand mic illuminated	£44.95	B
MC-45DME	DTMF hand mic	£53.95	B
MJ-88	Mic plug adaptor	£22.95	A
MJ-89	Modular plug switch	£49.95	B
MB-201	Detachable mobile mount	£14.95	A
DFK-3C	Detachable front panel kit 3m	£34.95	B
DFK-4C	Detachable front panel kit 4m	£59.95	B
DFK-7C	Detachable front panel kit 7m	£89.95	B
PG-5A	Data cable	£11.95	A
PG-3B	DC line noise filter	£13.95	A
PG-3G	DC line noise filter	£27.95	A
PG-2N	DC cable	£9.95	A
PG-4X	Extended front panel kit	£61.95	B
VS-3	Voice synthesiser	£45.95	B

VHF/UHF HANDHELDS

ICOM

ICOM *IC-E90.* Handheld + Scanner 6m/2m/70cm 5W

IC-E90 NEW	6m/2m/70cm Handheld	£269.00	B
BC-06	UK mains PSU (BC139)	£21.15	A
BC-08	(Spare) charger	£23.50	A
BC-139	Desktop fast charger inc BC-06	£52.88	B
BP-216	Dry cell battery case 2xAA	£14.98	A
BP-217	Li-Ion battery pack 7.4V 1300mAh	£49.95	B
CS-T90A	Programming Windows software	£22.49	A
LC-152A	Leatherette carry case	£16.99	A
SP-13	Earphone	£5.87	A
IC-T3H	2m FM 5.5W Handheld	£129.00	B
BP-208	Dry cell battery case	£16.45	A
BP-209	Ni-Cad battery 1100mAh	£30.55	B
BP-210	Ni-MH battery 1650mAh	£34.99	B

YAESU

VX-7R. Handie Tri-band Submersible Black or Silver.

VX-7R NEW	6m/2m/70cm Handheld black/silver	£329.00	B
CSC-88	Soft case	£11.95	A
FBA-23	2xAA dry cell case	£22.95	A
FNB-80LI	Li-Ion battery 7.4V 1300mAh	£54.95	B
VX-1R	2m/70cm+TV/AM audio	£149.00	B
ADMS-1E	Software	£44.95	B
CSC-71	Soft case	£11.95	A
FBA-20	1xAA battery case	£19.95	A
FEP-10	Earphone	£4.95	A
VX-150	2m + Ni-Cd & charger	£109.00	B
VX-110	2m + Ni-Cd & charger	£99.00	B
FNB-64	Ni-Cd pack 7.2V 1100mAh	£29.95	A
FNB-V57	Ni-Cd pack 7.2V 1100mAh	£45.95	B
FBA-25	Dry cell case 6xAA	£17.95	A

KENWOOD

TH-D7E. Data communicator with built-in TNC

TH-D7E	2m/70cm with data	£319.00	B
PB-38	Ni-Cd pack 6V 650mAh	£29.95	B
PB-39	Ni-Cd pack 9.6V 600mAh	£32.95	B
BT-11	Dry cell case 4xAA	£12.95	A
SC-49	Real leather case	£19.95	A
SC-40 (+G71)	Soft case / strap	£15.95	A
TH-F7E	2m/70cm with wideband	£259.00	B
PB-42L	Lithium battery 7.5V 1550mAh	£59.95	B
BT-13	Dry cell case 4xAA	£18.95	A
SC-52	Real leather case	£19.95	A
TH-G71E	2m/70cm FM Handie	£199.00	B
SC-45	Soft case	£19.95	A
TH-22EE	2m+NiCd & EU charger	£139.00	B

PAIR WKX-1200 10mW HANDHELDS

Crystal controlled on 143.925MHz. Not legal in UK without crystal change. Complete with rubber duck antenna. Needs PP3 batt.

£15 A per pair

VHF/UHF MOBILE ANTENNAS

DIAMOND ANTENNA

NR-790. Dual bander 2m & 70cm 120W PL-259, 1.46m with spring fold over base

AZ-504	2m/70cm 0/2.15dB 0.39m	£34.95	B
M-285S	2m 3.4dB 1.33m (non fold down)	£15.95	B
NR-2C	2m 4.1dB 1.41m long 150W	£29.95	B
NR-22L	2m 6.5dB 2.46m long 100W	£39.95	B
CR-627	6m/2m/70cm 2.15/4.5 7dB 1.5m	£67.95	B
CR-1027	10m/2m/70cms 2.15/5/7dB 1.6m	£79.95	B
NR-2000M	2m/70cm/23cm 3/6.3/9.7dB 0.99m	£59.95	B
NR-770R	2m/70cm 3/5.5dB 0.98m	£29.95	B
NR-790	2m/70cm 4.5/7dB 1.46m	£59.95	B
SG-7500	2m/70cm 3.5/6dB 1.06m 150W	£49.95	B
SG-7900	2m/70cm 5/7.6dB 1.58m 150W	£69.95	B
TRY-2E	6m/2m/70cm 3.4/2.15dB 1.32m	£29.95	B

WATSON

W-627. Triple bander 70cm/2m/6m. Length 1.6m, max pwr 120W with fold over base.

Watson Antennas (PL-259 base type)			
W-2LE	2m quarter wave 2.1dBi 0.45m	£9.95	A
W-285S	2m 3.4dB 0.48m (fold over base)	£14.95	B
W-77LS	2m/70cm 0/2.5dB 0.42m	£14.95	B
W-770HB	2m/79cm 3/5.5dB 1.1m	£24.95	B
W-7900	2m/70cm 5.6/7.6dB	£32.95	B
W-627	6m/2m/70cm 2.15/4.8/7.2dB 1.6m	£34.95	B
WGM-270 NEW	2m/70cm On glass 3.7m coax 50W	£29.95	B
Watson Antennas (Magnetic base included)			
WSM-138	Adjust. 138-170MHz 0.55m max	£19.95	B
WSM-270	2m/70cm2 - 6dB 0.46m	£19.95	B
WSM-225	Airband receive VHF/UHF	£22.95	B

VHF/UHF MOBILE BASES

DIAMOND ANTENNA

K-600M. Deluxe boot mount SO-239, c/w 5m RG-58 & PL-259

AML	Gutter mount fold over type	£15.95	A
K-11	Universal gutter mount	£24.95	A
K-33	Adjustable hatch mount	£23.95	A
K-400	Adjustable boot mount heavy duty	£26.95	A
K-600M	Deluxe boot mount + cable	£49.95	B
K-702M	Mag mount 11.1cm di. 4m cable	£39.95	B
DPK-TR	Stainless steel boot mount (ECH)	£18.95	A
ECH	Cable assembly above units 4m	£10.95	B
SPM-35	11.1cm di. Mag mount 4m cable	£29.95	A

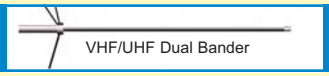
WATSON

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

W-3HM	Adjustable hatch mount	£14.95	A
WM-08B	8cm mag mount, 5m cable PL-259	£9.95	A
WM-14B	14cm hvy duty mag mount+cable	£12.95	A
WSM-88V	BNC mag mount plus 3m cable	£14.95	A
W-3CK	5m 5D-FB cable assembly+pigtail	£18.95	A
W-ECH	5m standard cable kit assembly	£12.95	A

VHF/UHF BASE STATION ANTENNAS

DIAMOND ANTENNA



CP-22E	2m 2x5/8th 6.5dB omni-directional	£44.95	C
F-22	2m 2x7/8th colinear 6.7dB 3.2m	£59.95	C
F-23	2m3x5/8th colinear 7.8dB 4.6m	£89.95	C
X-30	2m/70cm colinear 3/5.5db 1.3m	£49.95	C
X-50	2m/70cm colinear 4.5/7.2dB 1.7m	£54.95	C
X-50N	2m/70cm 4.5/7.2dB 1.7m 'N' type	£59.95	C
X-200	2m/70cm colinear 6/8dB 2.5m	£79.95	C
X-300	2m/70cm colinear 6.5/9dB 3.1m	£99.95	C
X-510N	2m/70cm 8.3/11.7dB 5.2m 'N' type	£124.95	C
X-700H	2m/70cm colinear 9.3/13dB 7.2m	£249.95	C
V-2000	6m/2m/70cm 2.15/6.2/8.4dB 2.5m	£89.95	C
X-5000	2m/70cm/23cm 4.5/8.3/11.7dB 1.8m	£134.95	C
X-7000	2m/70cm/23cm 8.3/11.7/13.7dB	£169.95	C
GH-62	6m 2x5/8th base vertical 6dB 6.3m	£99.95	C

WATSON

WMD-50. Mini discone 25-2200MHz Rx, 6/2m/70cm/23cmTx

WBV-70	4m half wave vertical 3.5dB 2m long	£39.95	C
W-30	2m/70cm colinear 3/6dB 1.15m long	£39.95	C
W-50	2m/70cm colinear 4.5/7.2dB 1.8m long	£49.95	C
W-300	2m/70cm colinear 6.5/9dB 3.1m long	£64.95	C
W-2000	6m/2m/70cm 2.15/6.2/8.4dBi 2.5m	£69.95	C
WBD-40	25-2000MHz discone Tx 6m/2m/70cm	£49.95	C
WMD-50	25-2200MHz discone Tx 6m/2m/23cm	£39.95	C

MASPRO UHF YAGI

High quality 70cm 15 element Yagi made in Japan and superbly engineered. Features folded dipole, balun transformer, waterproof box and SO-239.

435-WH15	70cm 15el. 16.6dB 2.19m	£41.95	B
MASPRO-259	Special PL-259 plug	£2.95	A

Phone for expert sales advice

WATERS & STANTON

PRICE MATCH

DISCOUNT CUSTOMER SERVICE THE ONLY THING WE WON'T

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

HF VERTICAL ANTENNAS

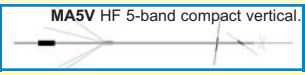
HUSTLER

6-BTV. HF 6-band vertical

6-BTV *NEW*	80-40-30-20-15-10m 1kW PEP	**£239.95**	C
5-BTV	80-40-20-15-10m 7.64m 1kW	**£209.95**	C
4-BTV	40-20-15-10m 6.52m 1kW PEP	**£169.95**	C

CUSHCRAFT

MA5V HF 5-band compact vertical.



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

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HF9V-X *NEW*	80-6m 7.9m 1kW PEP	**£365.00**	C
HF6V-X	80-40-30-20-15-10m 7.9m 2kW	**£315.00**	C
HF2V	80-40m 9.75m (160m opt) 1kW	**£230.00**	C

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DX-88. HF 8-band vertical

AV-640	40-6m 1.5kW, 300W 6m (PEP)	**£399.95**	C
AV-620	20-6m 1.5kW, 500W 6m (PEP)	**£299.95**	C
AV-14AVQ	40-20-15-10m 1.5kW PEP	**£179.95**	C
AV-12AVQ	20-15-10m 1.5kW PEP	**£139.95**	C
DX-88	80-10m 1.5kW, 250W 30m	**£395.95**	C

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We offer a wide choice of guaranteed spares for most Cushcraft antennas.

X-7	20-10m 7 el. Yagi 2kW	**£699.95**	D
X-740	40m add on kit for X-7	**£299.95**	C
A4-S	10-15 & 20m 4 el. Yagi 2kW	**£599.95**	D
A-744	7/10MHz add on kit for A4S	**£159.95**	C
A3-S	20-10m 3 el. Yagi 2kW	**£499.95**	D
A-743	7/10MHz add on kit for A3S	**£159.95**	C
A3-WS	12 & 17m 3 el. Yagi 2kW	**£399.95**	D
A-103	10 MHz add on kit for A3WS	**£159.95**	C
D-3	10-20m dipole element 2kW	**£249.95**	C
D-3W	12-17-30m dipole element	**£249.95**	C
D-4	10-40m dipole element 2kW	**£339.95**	C
D-40	40m dipole element 2kW	**£299.95**	C
TEN-3	10m 3 el. Yagi 2kW	**£219.95**	C
ASL-2010	13.5-32MHz 8 el. log periodic	**£799.95**	C

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CW-160	160-10m 76.8m long	**£139.95**	C
CWS-160	160-10m 40.5m long	**£134.95**	C
CW-80	80-10m 40.5m long	**£99.95**	C
CWS-80	80-10m 20.1m long	**£119.95**	C
CW-40	40-10m 20.1m long	**£94.95**	C
CW-20	20-10m 10.36m long	**£84.95**	C
CW-620	20-6m 9.7m (32ft) long	**£94.95**	C

Carolina Wire "Beams" (Inc WARC Bands)

CBS-160S	180-10m 30.5m (100ft) long	**£129.95**	C
CB-80	80-10m 30.5m (100ft) long	**£119.95**	C
CBS-80	80-10m 15.25m (50ft) long	**£119.95**	C
CB-40	40-10m 15.25m (50ft) long	**£115.95**	C

Other Antennas

G5RV PLUS	80-10m with balun 31m (102ft) long	**£64.95**	B

Baluns and Isolators

T-4	Line Isolator 1.8-30MHz 400W	**£37.95**	B
T-4-Plus	Line Isolator1.8 - 54MHz 400W	**£42.95**	B
T-4G	Line Isolator 1.8-30MHz + ground	**£42.95**	B
T-4G Plus	Line Isolator 1.8-30MHz + ground	**£45.95**	B
T-4500	Line Isolator (small) 500W 1.8-30MHz	**£32.95**	B
REM-BAL1	Ladder line 1:1 balun 1.8-30MHz	**£51.95**	B
REM-BAL4	Ladder line 4:1 balun 1.8-30MHz	**£52.95**	B
B1-2K Plus	1:1 current balun - for inverted V 's	**£28.95**	B
B4-2K	4:1 voltage balun loops/folded dipoles	**£42.95**	B
Y1.5K	1:1 current Yagi balun 1.8 - 30MHz	**£42.95**	B
Y1.5K Plus	1:1 current Yagi balun 1.8- 54MHz	**£42.95**	B

Sundries

KEVLAR	200ft 400lb strain guy line	**£22.95**	A
LADDER	450 Ohm ladder line - per metre	**£0.90**	A
LADDER-LOC	Dipole centre for ladder line	**£14.95**	A
RFF-213	Ferrite clamps for RG-213	**£5.95**	A
RFF-58	Ferrite clamps for RG-58	**£3.95**	A

HF MOBILE ANTENNAS

HUSTLER

Standard Resonator 400W (mast sections not included)

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

Super Resonator 1kW (mast sections not included)

RM-10-S	10m 250-400kHz	**£24.95**	C
RM-15-S	15m 150-200kHz	**£26.95**	C
RM-20-S	20m 100-150kHz	**£31.95**	C
RM-40-S	40m 50-80kHz	**£37.95**	C
RM-80-S	80m 50-60kHz	**£51.95**	C

Lower Mast Sections

MO-1	54" (FOLD @ 22")	**£33.95**	C
MO-2	54" (FOLD @ 27")	**£33.95**	C
MO-3	54" (NON FOLD)	**£26.95**	C
MO-4	27" (NON FOLD)	**£22.95**	C

Mobile Mount Accessories

SSM-1	Ball mnt stainless steel spring&stud	**£45.95**	B
SSM-2	Ball mount	**£28.95**	A
SSM-3	Stainless steel spring & stud	**£24.95**	A
HOT	Trunk lip mount	**£24.95**	A
RSS-2	Stainless steel resonator impact spring	**£10.95**	A
QD-2	Quick disconnect adaptor	**£19.95**	A
VP-1	Multi-band adaptor	**£7.95**	A

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***WHF* - Single HF banders, budget priced fibreglass helicals with standard 3/8in stud mount. Will fit all 3/8in mountings.**

WHF-160B	160m mobile whip	**£49.95**	B
WHF-80B	80m mobile whip	**£19.95**	B
WHF-40B	40m mobile whip	**£18.95**	B
WHF-30B	30m mobile whip	**£18.95**	B
WHF-20B	20m mobile whip	**£18.95**	B
WHF-17B	17m mobile whip	**£18.95**	B
WHF-15B	15m mobile whip	**£18.95**	B
WHF-12B	12m mobile whip	**£18.95**	B
WHF-11B	11m (CB) mobile whip	**£18.95**	B
WHF-10B	10m mobile whip	**£18.95**	B
WHF-6B	6m mobile whip	**£18.95**	B
WHF-4B	4m mobile whip	**£18.95**	B
WHF-2B	2m mobile whip	**£18.95**	B

HF PORTABLE ANTENNAS

WATSON

***ATX Walkabouts* - Multi & single telescopic whips. Covers 80m to 6m BNC. Ideal for FT817 and similar QRP radios.**

ATX-DHP	Walkabout 80-6m 200W	**£89.95**	B
ATX-DLP	Walkabout 80-6m 50W	**£69.95**	B
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AT-40	Single band 40m whip with BNC	**£24.95**	B
AT-30	Single band 30m whip with BNC	**£19.95**	B
AT-20	Single band 20m whip with BNC	**£19.95**	B
AT-17	Single band 17m whip with BNC	**£19.95**	B
AT-15	Single band 15m whip with BNC	**£19.95**	B
AT-12	Single band 12m whip with BNC	**£19.95**	B
AT-10	Single band 10m whip with BNC	**£19.95**	B

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***MFJ-989C* VERSA TUNER V**

**1.8-30MHz *3kW *6-way Antenna/ load switch *2 coax positions *Built-in 4:1 balun *X-needle meter *Peak & AV*
High power tuner.

MFJ-989C	3kW Roller Inductor ATU	**£379.95**	C

***MFJ-986* DIFFERENTIAL-T TUNER**

**1.8-30MHz *1.5kW *6-way Antenna/ load switch *2 coax positions *Built-in 4:1 balun *X-needle meter *Peak & AV*
Differential capacitor & Roller inductor.

MFJ-986	1.5kW Differential ATU	**£349.95**	C

***MFJ-949E* DELUXE VERSA TUNER II**

**1.8-30MHz *300W *3-way Antenna selector *Dummy Load socket *Internal balun *X-needle meter *Peak & AV*
Firm favourite with HF operators.

MFJ-949E	Antenna Tuner/Dummy Load 300W	**£159.95**	B
MFJ-948E	As 949E without Dummy Load	**£139.95**	B

***MFJ-962D* VERSA TUNER III**

**1.8-30MHz *1.5kW *6-way Antenna/ load switch *2 coax positions *Built-in 4:1 balun * X-needle meter *Peak & AV*
Ideal tuner for max UK legal power.

MFJ-962D	1.5kW Roller Inductor ATU	**£279.95**	C

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**144/220MHz *200W max *Power meter *Rear panel earth terminal*
This tuner helps you get perfect VSWR and offers some filtering as well.

MFJ-921	144 & 220MHz VHF ATU 200W	**£74.95**	B

***MFJ-906* 6 METRE TUNER**

**50-54MHz *100W FM *200W SSB *X-needle meter, 0-60W & 0-300W *By-pass position for tuner*
Help match your 6m rig to your antenna.

MFJ-906	6m ATU & VSWR/Pwr Meter	**£89.95**	B

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**1.8-30MHz *Ground current meter *Used where no earth ground is possible *Reduces TVI/RFI *Resonates random wire*
Places rig near to actual ground potential.

MFJ-931	Artificial Ground	**£94.95**	B

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**300kHz-200MHz *Handles strong signals *Reduces Intermod *Low noise *Includes telescopic whip *SO-239 *9V batt or 9-18VDC*
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MFJ- 267* DUMMY LOAD/WATT METER *NEW

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Switch enables the dummy load to be by-passed

MFJ-267	Dummy load & VSWR meter HF+6m	**£129.95**	B

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**1.8-30MHz *RF sensed/control switching *Thru Pwr handling for Tx *13.8V ext*
Eliminates locally received electrical noise.

MFJ-1025	QRM Eliminator (no active ant)	**£169.95**	B

***MFJ-722* CW/SSB/NOTCH FILTER**

**Plugs directly into Rx headphone socket *CW bandwidths 80,110,150 & 180Hz *SSB bandwidths 1.5,2 & 2.5kHz *Notch Filter *Requires 12V @ 300mA*

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Details of the Society's volunteer officers can be found in the RSGB Yearbook 2003

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HF CONVENTION 2003

THE ORGANISING COMMITTEE is close to finalising arrangements for this year's RSGB International HF and IOTA Convention. It will be at a new venue in the **Manchester** area and will take place over the weekend of **Friday 31 October to Sunday 2 November 2003**. The event will move back to its traditional date for the following year and onwards, for example 8 - 10 October in 2004. The event will cover all interests between LF and 50MHz and appeal to all classes of amateur licence holder and SWLs. Those interested in offering presentations, or with other suggestions for the programme should e-mail John Gould, G3WKL, at HFC2003.Chairman@rsgb.org.uk or write via RSGB HQ.

HELP THE PLANNING PANEL

DO YOU LIVE in Scotland and have you successfully appealed against a refusal by your local authority to grant planning permission on the grounds that the aerial would be detrimental to the local visual amenity? Because Scottish law is different from that in England and Wales, Len Paget, GM0ONX, the RSGB's sole planning panel member in Scotland, wishes to compile a database of legal precedents in Scotland for the use of other RSGB members. He would also appreciate information from any members in Scotland who successfully argued on appeal that their installation was 'de minimalist' and therefore did not require planning permission. Please contact GM0ONX QTHR or e-mail: len_paget@hotmail.com

RSGB NATIONAL CONSTRUCTION COMPETITION

YAESU UK Ltd has very kindly donated first prizes in both the adult and junior categories of the RSGB National Construction Contest (see 'RSGB Matters' February 2003). The winner of the adult section will receive a Yaesu FT-817 as well as a trophy and the winner in the under-16 category will win a Yaesu VR120D. Second place prizes are being supplied by bhi who are donating two NES-10 Noise Eliminating Speakers, as reviewed by Chris Lorek on page 38 of the December 2002 *RadCom*, complete with vehicle kits and mains power supplies.

Judging will be by David Bowman, G0MRF, and Robin Sykes, G3NFV, and will take place at the Epsom Radio and Electronics Fair on 22 June. Prizes will be presented by RSGB General Manager Peter Kirby, G0TWW, who will also open the rally.

RSGB National Construction Contest trophy and prizes.

RSGB AGM 2003

CARRYING ON with the current theme, the Board has again agreed to take this year's AGM on the road. The date of the AGM is **Saturday 6 December 2003**. The format for the day's events is now well established, with the formal AGM being held in the morning. The afternoon session will be an open forum followed by an amateur radio dinner in the evening.

Clubs and Societies who would like to bid for the AGM are in the first instance asked to write to the General Manager at RSGB HQ. Following receipt of the initial bid a full planning profile for the day will be forwarded to the bidding organisations. Basic requirements are a venue that can comfortably hold 200 delegates, have full audio visual arrangements in place, reasonably-priced hotel accommodation near to hand and good road and rail links.

Priority this year will be given to clubs in the Midlands area preferably in the Birmingham / Coventry conurbation. Initial bids should reach RSGB HQ no later than 31 March 2003.

AROS TALK

THE RSGB Amateur Radio Observation Service (AROS) coordinator, Barry Scarisbrick, G4ACK, is giving a talk on the work of AROS at the **Loughborough & DARC** on **Tuesday 11 March**. For further details please contact Chris, G1ETZ, tel: 01509 504319.

LICENSING ADVISORY COMMITTEE

AT ITS meeting on 25 January, the RSGB Board took the decision to stand down the Society's Licensing Advisory Committee with immediate effect.

WEBMASTER WANTED

THE RSGB Regional Manager for Region 11 - the South West and Channel Islands - Barry Scarisbrick, G4ACK, wishes to set up a 'Region 11 Website'. He is looking for a volunteer to act as webmaster to get the project under way. If you can help Barry, please contact him by e-mail to: barryg4ack@mbzonline.net

AN RSGB HIGH SPEED TELEGRAPHY TEAM?

THE RSGB HAS been invited to field a team at the IARU Regional High Speed Telegraphy World Championship. It is an 'off air' event for CW skill in both transmitting and receiving. The event is in May and we have to register by March. Full details are at http://hst2003.osto.by If you are interested in being part of a UK team please contact Fred Handscombe, G4BWP (QTHR), RSGB Director Spectrum and Radio Sport or e-mail: fredch@homeshack.freeserve.co.uk

RRM & DRRM VACANCIES

AT ITS MEETING on 25 January, the RSGB Board agreed to ask Paul Berkeley, M0CJX, to act as Regional Manager for Region 9 - London and the Thames Valley - on a co-opted basis until the elections at the end of the year. Ivan Rosevear, G3GKC, was also co-opted as Regional Manager for Region 10 - the South and South East.

There is still a vacancy as RSGB Regional Manager in Region 2 - Scotland East and the Highlands - and any RSGB member resident in the region who is interested in taking on this role is asked please to contact General Manager Peter Kirby, G0TWW, at RSGB headquarters.

There is also a vacancy for an RSGB Deputy Regional Manager in Region 5 to cover Gloucestershire and Warwickshire. Roy Clarke, M0RLY, the Regional Manager, is asking for volunteers to fill the post, please tel: 01952 820838 or e-mail m0rly@rsgb.org.uk if you can help.

YOUR FAVOURITE RADCOM ARTICLE

THE RSGB website carried a poll for members' favourite *RadCom* article of 2002 from a list of 20 nominations. A total of 725 votes were cast during January and the leading positions changed a number of times. Four features ended up well ahead of the others, but the winner was the article by Ed Chicken, G3BIK, called 'Take your PIC!' which appeared in the June issue. A last-minute flurry of voting resulted in just over 41% of the votes being cast for this article. In second place was 'Top Drive for the Lower Bands' by Tony Preedy, G3LNP, with 14% and in third place was the 'CDG 2000' transceiver series by Colin Horrabin, G3SBI; Dave Roberts, G8KBB, and George Fare, G3OGQ, with 12% of the vote. In fourth place was the feature by Les Hamilton, GM3ITN, called 'Invitation to the Falklands', which polled 10.5% of the votes.

CHANGE OF DATE FOR RSGB 6M CONTESTS

THERE HAS BEEN a decision at IARU level to move the 6m contest held on the first full weekend of June to the third weekend in June (presumably to stop the contest clashing with CW NFD). Unfortunately, the RSGB VHF Contest Committee was unaware of this change when the RSGB contest rules for 2003, as published in the January 2003 *RadCom*, were being set. Since such a big part of the 6m event is provided by European activity, the VHFCC has decided to move the RSGB 6m Trophy and the associated 6m Backpackers contest to the later date. The corrected dates and time for 2003 are therefore:

RSGB 6m Trophy: 1400UTC 21 June to 1400UTC on 22 June

RSGB 50MHz Backpackers: 1100 to 1500UTC on 22 June.

RSGB QSL BUREAU NEWS

THREE NEW RSGB QSL Bureau Sub Managers have been appointed. Eric Parkes, G1PEY, has given up as the Sub Manager for the Abbreviated Contest callsign series and R Bunce, M1EBN (QTHR), has now taken over. John Porter, G3YZR, has given up as Sub Manager for the G4TAA to TZZ series and Richard Cowles, M0CLZ (QTHR), has taken over.

Fred Roe, GM0ALS, has given up as Sub Manager for the MM0AAA to LZZ series although he remains as Sub Manager for the GM0AAA to LZZ series of callsign. Mike Clarke, GM6OFO, has taken over the MM0AAA to LZZ series. Mike's address is 9 Burghmuir Road, Perth PH1 1LS and his e-mail address is mike.gm6ofo@talk21.com Mike is already QSL Sub Manager for the M1BAA to BZZ series.

Eddie Murphy, G0VVT, the QSL Bureau sub-manager for the G6AAA - ZZZ series of callsigns, writes to say that he, like GI7FFF (see 'QSL Bureau News', *RadCom* February 2003, page 5), also takes QSL cards to rallies for distribution to amateurs there. He plans to take all the cards he holds with him to the Elvaston rally in June. Eddie is QTHR or can be contacted by e-mail: eddie@g0vvt.freeserve.co.uk

VHF AWARD NEWS

RSGB VHF AWARD Manager Tony Jarvis, G6TTL, writes: "I'm now seeing the results of last winter's superb openings on 50MHz - did I blink and miss this year's? Colin Fallaize, MU0FAL (GY), sent in a bumper bundle of cards, these being from 'Stateside' contacts, which resulted in three certificates and a fistful of stickers. Perhaps the most notable achievement was a 2-way Countries award for 50 Countries which was endorsed for CW contacts. Colin's 'mixed mode' tally now stands at 100 Countries and his 'squares' at 250.

"Geoff Crowley, MM5AHO (AB), also benefitted from last winter's openings and he submitted successful claims for 40 Countries (2-way) and 225 Squares.

"Last month, after adding a 144MHz Standard and Senior to his collection, Geoff Dover, G4AFJ (LE), has qualified for a Supreme Award.

"Taking advantage of the Sporadic E openings of last June, John Desmond, EI7GL, claims a 'Jubilee Award' with qualifying contacts on 50 and 70MHz, all of which were completed using CW.

"At the microwave end of the spectrum Frank Howe, G3FIJ (CO), gains a Microwave Distance Award at 1296MHz for a contact of 694km with HB9AMH/P between JO01KV and JO37OE."

Congratulations to all recipients. Details on all VHF, UHF and Microwave Awards can be obtained on receipt of an A4 or A5 SASE from the Awards Manager, Tony Jarvis, G6TTL (QTHR).

Summary of Award Recipients for January

Supreme Award: G4AFJ.

50MHz: 10 - 50 Countries (2-way) - CW: MU0FAL.

10 - 100 C (2-way): MU0FAL.

40 C: MM5AHO.

25 - 250 Squares: MU0FAL.

175 Squares: MM5AHO. 200S: MM5AHO. 225S: MM5AHO.

Microwave Distance: 1296MHz: G3FIJ.

Jubilee Award: EI7GL.

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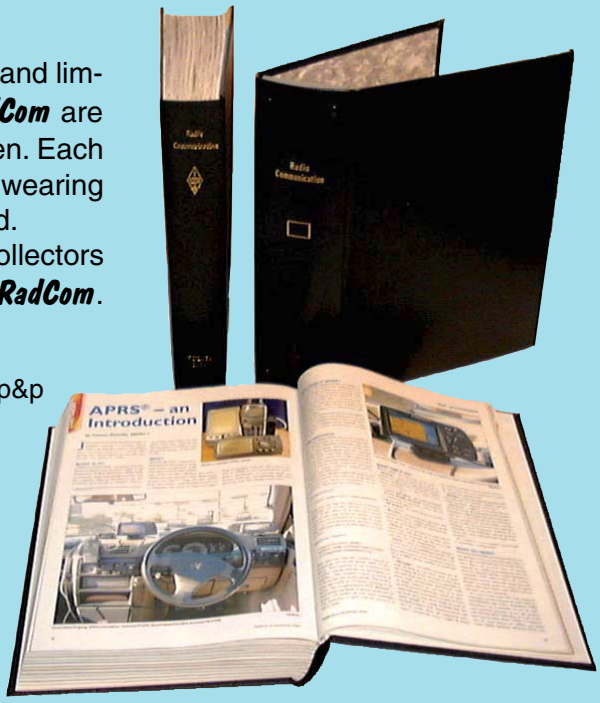

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TS-570DGE
HF 100W Base Transceiver

Still a favourite with many SSB and CW enthusiasts, the TS-570 is ideal for those who want a more basic approach to operating but still demand top deck performance. 100Watts, auto ATU, large clear display and DSP noise/bandwidth filtering to die for!

RRP: £999.00

ML&S: £849.00

ZERO DEPOSIT 36 x £30.87

TM-D700E
Dual Band Mobile/Base Transceiver

Probably the most complex rig ever to come out of Japan. But if you stick with it (as so many have) its features are amazing. For starters there is a built in packet TNC making it ideal for APRS and it will even put either a TS-870 or TS-570 on the correct frequency for DX cluster auto QSY! 50W on 2M, 35W on 70cm.

RRP: £519.95

ML&S: £449.00

ZERO DEPOSIT 36 x £16.32

TS-2000E/X
All band All mode Base Transceiver

The TS-2000 is a full function HF, 6M, 2M, 70cm and 23cm (with optional UT-20) DSP base station. Built in Auto ATU, it has on board 9k6 packet modem, full remote capabilities when used with the optional RC-2000 controller. The TS-2000 is, which ever way you look at it, the most advanced all band all mode operation transceiver available today.

RRP: £1699.99

ML&S: £1599.00

ZERO DEPOSIT 36 x £58.13

The remote controller RC-2000 is also available at £209.95

ML&S Package

- TS-2000E Transceiver
- UT-20 23cm 10w unit
- MC-60A Desk Microphone
- SP-23 Desk Speaker
- ARCP-2000 Control Software

RRP: £2301.79

ML&S: £2169.00

ZERO DEPOSIT 36 x £78.86

NEW! Kenwood UBZ-LJ8
FunKey446 Personal 2-Way Radio

Only £79.95 each

- Approx 3kM Range Licence Free
- No Line Rental or Call Charges
- Compact size, massive easy to read display
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- 10 Call Tones
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- Secret Mode (Scrambled Speech)
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- Built to the same exacting standards as the professional range of Kenwood Communication products.

ML&S Package

- FunKey446 Radio
- UPB-1 Battery
- UBC-4 Charger
- USC-3 Case

Only £139.99 each

TS-870S
Full DSP HF Transceiver

With most of the other Transceivers on the market offering every band (and many more features that may not be so important to you), Kenwood soldier on with their remarkable TS-870S. The very first to offer true IF DSP, The TS-870S is still a star performer and once bitten, you'll be smitten.

RRP: £1999.00

ML&S: £1399.00

ZERO DEPOSIT 3 6x £50.86

TH-F7E
Twin Band Handie & Wide Band All mode scanner

The only Twin Band Handie with a true wide band receiver offering all modes including SSB! Comes complete with 5W Li Battery, charger and 5 Watts output as standard.

RRP: £289.95

ML&S: £259.00

ZERO DEPOSIT 36 x £9.42

TH-D7E
Twin band Handie with built-in packet TNC

Still the only handie with built in TNC, (1200/9k6), the new mk2 version is compliant with AX.25 and KISS mode. The APRS (Automatic Packet/Position Reporting System) is rapidly gaining popularity for the transmission of positional data and messages. Don't forget 6W output on 2/70 too!

RRP: £359.95

ML&S: £319.00

ZERO DEPOSIT 36 x £11.60

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The BEST RADIO EQUIPMENT at the BEST PRICES at ML&S - *where else!*

FINANCE EXAMPLE
VX-7R AT **£329.00**
PAYMENT ILLUSTRATION: ZERO DEPOSIT:
36 payments of £11.96
TOTAL AMOUNT PAYABLE: £430.56 APR:19.9%.
ML&S is a licenced credit broker.
Finance offered subject to status. Full written details on request. E&OE

E&OE

Front Cover:

We take a close look at the very popular Elecraft K2 HF transceiver kit (see page 28).
Also, this month's lead feature is the joint UK-US DXpedition to American Samoa (see page 18).

Radio Communication

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RadCom This Month

March 2003

News and Reports

Reviews

Down To Earth - Amateur Radio From The Ground Up

Technical Features

Regulars

RadCom NEWS

● DON'T FORGET! National Science Week takes place 7 - 16 March. See *RadCom* February 2003 page 11 for details of what the RSGB can do to help your radio club put on a successful Science Week display.

Sine-Wave Generator

AFTER COMPLETION of the article on pp61-63, the author would like to bring the following source of weighting resistors to your attention. Rapid Electronics have introduced into their catalogue Trueohm 0.4W, 0.1%, metal film resistors, at 25p each. By spending under £4, a set of weight resistors could be built that should give excellent results without needing any measurements.

R4 is 22k0; R1 & R7 are 53k6 plus 3k9 equals 57k5; R2 & R6 are 30k1 plus 1k02 equals 31k12; R3 & R5 are 22k6 plus 1k21 equals 23k81.

	Rapid Electronics Order Code	No. off
22k0	63-1516	1
53k6	63-1600	2
3k9	63-1358	2
30k1	63-1546	2
1k02	63-1238	2
22k6	63-1520	2
1k21	63-1252	2

GB4WFC - World Friendship Challenge

Andy and Jonathan operating GB4WFC during the World Friendship Challenge.

THE FIRST 'World Friendship Challenge' took place on 14 / 15 September 2002. Jonathan, M5FUN, of the QRZ Amateur Radio Group of Sussex says it was a complete success, with many stations contacting special event station GB4WFC and commenting how grateful they were that the event was taking place. The World Friendship Challenge was the brainchild of the Sussex club and was intended as a follow-up to its November 2001 event expressing solidarity with America in the aftermath of September 11. The idea of the 'challenge' was to work as many stations as possible including GB4WFC within the 24 hours of the event. Certificates were awarded to many stations taking part.

The feedback during the event was tremendous, with many stations wishing the group good luck for the second World Friendship Challenge in 2003.

Unfortunately, due to a postal error many applications for the certificates are believed to have been lost; the group invites those wishing to receive one to send a copy of their log and details to: QRZ Amateur Radio Group of Sussex, c/o Herstmonceux Castle, Herstmonceux, East Sussex BN1 1RP; or e-mail: qrz@jandc.demon.co.uk

● THERE ARE PLANS by Swedish company Parabolic to start a monthly amateur TV magazine programme to be transmitted on satellite TV. A test transmission will be made via the Astra 1A satellite at 5° East on **9 March** between 0900 and 1000UTC. For further details contact Ben, SM6CKU, at sm6cku@parabolic.se

West London Rally

THERE'S A NEW rally on the scene! The West London Radio and Electronics Show will take place at the Exhibition Centre at **Kempton Park Race Course**, Sunbury on Thames, Middx, on **27 April**. The new show is being organised by RadioFairs, the group behind the popular June show at Epsom, who promise free entry for the under 16s, Morse testing with free entry for those taking part, free tables for charities and subsidised tables for clubs, 2m talk-in by the Whitton Radio Club, a bring & buy stand run by the Echelford Radio Society, an RSGB 'meet-and-greet' area and bars and restaurants. For further details see www.kemptonrally.co.uk

Captain Cook's *Endeavour*

THE REPLICA OF Captain Cook's ship *Endeavour* (see www.barkendeavour.com.au) is undergoing a major refit in Cardiff until 14 March. Members of the Barry Amateur Radio Society are operating special event station GB0CCE each weekend until mid-March. Operation will be mainly on the HF bands. Further details from Brian Brown, GW0PUP, tel: 02920 832253. Most of the *Endeavour* refit work is being done inside a large marquee on the wharf next to the ship. The display inside the marquee is open to the public seven days a week, from 10.00am to 3.00pm.

Terry's Fundraising

TERRY ROBINSON, G3WUX, wishes to thank all those who sponsored his entry in the 2002 *CQ* World Wide CW contest in support of the RNIB New College Costa Rica Experience. Terry raised over £800, a significant contribution to their fund-raising effort. The expedition to Costa Rica, which is sure to give blind students of the college an experience of a lifetime, will take place between 8 and 19 April. Terry was himself a former student at the college.

Lottery Funding for Telford's Foundation / Intermediate Courses

Celebrating a double New Year success:the lottery funding and the club's win in the 2002 VHF NFD 'Mix 'n' Match' section. From left to right: front row Tony, G0UYE; Bob, M0RJS (looking at VHF NFD results); Richard, M1RKH (holding the Lottery Certificate); Eric, M0KZB (TDARS Chairman). Remainder: Dave, G4EIX (vice-chairman); Mike, G4NKC; Jason, Matthews; Dylan 2E1IHM; Malcolm, 2E1DJM.

THE TELFORD and District Amateur Radio Society has received confirmation of receiving National Lottery funding to the tune of £2908 for its Foundation and Intermediate amateur radio licence training programmes. The funding will cover the purchase of resources, room hire expenses, equipment, tools and everything else needed to do the job properly. Currently, 16 would-be M3s are undergoing training at the home of Mike, G3JKX, at weekends. The club is already an examination centre and offers all levels of Morse assessment and test. It plans to re-start RAE courses shortly. Martyn Vincent, G3UKV, comments that the average weekly attendance at the Telford club is now around 30 regulars, including several school-age youngsters whom the club had found very hard to attract in recent years.

RadCom NEWS

IEE Lecture

THE IEE Surrey Branch is holding a free evening lecture on 12 March at 7.30pm entitled: 'Video Compression for Dummies'. It will be presented by Dr Stuart Butterfield of Philips Research Laboratory and the lecture will be held at Philips Research Labs, Cross Oak Lane, Redhill (details from Rob Heaton, heatonrb@hotmail.com). Please note that the IEE has a public lecture programme across the *whole* of the UK, details of which are on the IEE website at www.iee.org

Amateur Radio MBE

JIM HICKS, G4XRU, was awarded an MBE in the 2003 New Year Honours for his services to Sussex business and the community. Jim, a member of the Worthing and District Amateur Radio Club, is one of three radio amateurs who record *RadCom* each month for Sight Concern which is then distributed on tape to blind and partially-sighted amateurs.

Marconi Day

THE 15th International Marconi Day will take place on 26 April 2003. Details of the awards available, and other information, can be found at www.gb4imd.co.uk Organisations wishing to become participating stations are requested to e-mail details to: webmaster@gb4imd.co.uk as soon as possible.

Three Members of the Columbia Crew were Radio Amateurs

Radio Amateurs Killed in Space Shuttle Disaster

THREE OF THE seven astronauts who were killed when the space shuttle *Columbia* broke up shortly before landing on 1 February were radio amateurs. Mission Specialists Kalpana 'KC' Chawla, KD5ESI; David Brown, KC5ZTC; and Laurel Clark, KC5ZSU, were among the crew of mission STS-107 headed by Commander Rick Husband. The other members of the crew were the Pilot, William McCool; Mission Specialist Michael Anderson, and Payload Specialist Ilan Ramon, Israel's first man in space.

Amateur Radio Emergency Service (ARES) members in Texas assisted local emergency management officials and NASA in locating and cataloguing debris from the shuttle which fell over a wide area of Texas and Louisiana. Amateur radio has a long relationship with the human space flight programme through the Space Amateur Radio EXperiment (SAREX) and the Amateur Radio on the International Space Station (ARISS) programme. Built in 1981, *Columbia* was the oldest space shuttle in NASA's fleet and also the first to carry amateur radio as an official NASA payload. Retired astronaut Owen Garriott, W5LFL, was the first radio amateur to operate from space back in November 1983. Thousands heard W5LFL, and hundreds had direct QSOs with him. *Columbia* was refurbished in 1999 and was on its 28th mission.


Photo: NASA.

The seven STS-107 crew members. Front: mission commander Rick Husband; Kalpana 'KC' Chawla, KD5ESI; and pilot William McCool. Standing: David Brown, KC5ZTC; Laurel Clark, KC5ZSU; Michael Anderson and Israeli astronaut Ilan Ramon.

Following the disaster, NASA grounded its entire shuttle fleet. A space shuttle was scheduled to be launched in March to re-supply the International Space Station (ISS) and replace the crew on board. Expedition 6 crew - Commander Ken Bowersox, KD5JBP; Flight Engineer Nikolai Budarin, RV3FB, and NASA ISS Science Officer Don Pettit, KD5MDT - lifted off on 23 November on a four-month mission. The crew has enough supplies to remain on the ISS until at least June and can be re-supplied via Russian *Progress* rockets. They could return to earth aboard the *Soyuz* escape vehicle.

RSGB General Manager Peter Kirby, G0TWW, has, via the ARRL, sent a message of condolence on behalf of the RSGB and UK radio amateurs to the families and friends of the crew of *Columbia*.


Photo: Johnson Space Center ARC website

Dr Laurel Clark, KC5ZSU, operating the Johnson Space Center ARC club station, W5RRR, in Houston, Texas.

TA/M0SDX Soon?

Autographed QSL from M0SDX in his Spurs kit.

SERGEI REBROV, M0SDX, the Ukrainian international footballer who moved to Tottenham Hotspur in an £11m deal in 2000, has moved to Turkish side Fenerbahçe. On 28 January he signed an 18-month loan deal with the Turkish club, which has the right to buy him at the end of the loan period. Sergei, whose Ukrainian callsign is UT5UDX, is a keen HF contester and has been very active as M0SDX from his home in Chigwell in Essex and from other locations in the British Isles over the last two years. He is now in the process of obtaining a Turkish callsign.

RadCom Author Wins ARRL Award

CONGRATULATIONS to Ian Poole, G3YWX, who has won the ARRL 2002 Bill Orr, W6SAI, Technical Writing Award. Ian was chosen as the award's first recipient on the basis of his article 'Understanding Solar Indices', which appeared in the September 2002 issue of the ARRL magazine, *QST*. Ian has written numerous RSGB books and articles for *RadCom* over the years; his 'Guide to HF Operating' for newcomers to the HF bands starts this month on page 56.

Club & Regional NEWS

Region 1: Scotland West & Western Isles

PAISLEY (YMCA) ARC
5, Radio the old way.19, Propagation of HF signals. Jim, GM3UWX, 01505 862817.

WEST OF SCOTLAND ARS
7, Radio quiz, GM8MRW. A M Fraser, GM3AXX, 01560 482720.

Region 2: Scotland East & the Highlands

COCKENZIE & PORT SETON ARC
7, Normal club night. 21, 'Radios that came in from the cold: a collector's view of NATO and Warsaw Pact communications. Bob, GM4UYZ, 01875 811723.

LIVINGSTON DARS
9, Annual Junk Sale (1030-1500) at Crofthead Centre, Dedridge, Livingston (Morse tests and Assessments available on demand). Billy, MM0WKJ, 0131 4757242.

LOTHIANS RS
10, Musical valves, Toby Sigouin, MM0TSS. 24, Surplus equipment auction and junk sale. Peter, 0131 446 0155.

Region 3: North West

MANCHESTER WIRELESS SOCIETY
1, 2, Foundation Course weekend. 4, SSTV with MMSSTV, alternative software for the beginner. 11, On air, social. 18, Enrolment for April Foundation Course. 25, Pie & Peas evening. Kev, G0TOG, 0161 330 0914.

MID CHESHIRE ARS
5, Activity night. 12, Norbreck Rally display preparation. 19, HF on air. 26, VHF on air. Niall, G0VOK, 01606 871413.

ROSSENDALE ARS
12, 'Bob on Batteries'. Ken, G1RWK, 07899 084 331.

STOCKPORT RADIO SOCIETY
4, 'How ATUs Work', Bernard, G3SHF, & 'Practice Tuning ATUs and Valve PA Rigs' demo, Jim, G3KAF. 18, 'Awards', Jim, G3KAF & Bernard, G3SHF, & 'PCs & Radio Interference', Bernard, G3SHF. David, M1ANT, 0161 456 7832.

THORNTON CLEVELEYS ARS
3, ATV repeater group. 10, Final preparation for NARSA rally. 17, Guest speaker. 24, 'Mexico', G4BVW. 31, Tech Talk. Jack, G4BFH, jack@jduddington.fsnet.co.uk

WARRINGTON ARC
4, Preparation for Science Week. 11, Preparation for Norbreck Rally. John, G0RPG, 01925 762722.

Region 4: North East

DENBY DALE ARS
5, The 2nd mast at Emley Moor, Maurice, G3MMK. 19, Turks & Caicos, John, G4RCG. Tony, G4LLZ, 01484 318750.

GOOLE R & ELECTRONICS SOCIETY
14, Pub night. 21, Constructor's trophy. 28, Video TV night at Courtyard Centre. Richard, G0GLZ, 07867 862169.

GREAT LUMLEY AR & ES
2, Spring Auction for Repeater Group. 12, AGM. 16, Bus to Blackpool rally. Nancy, 0191 4770036, nancybone2001@yahoo.co.uk

GRIMSBY ARS
6, On air. 20, 2m RoPoCo contest. Brian, G4DXB, 01472 231383.

HALIFAX & DARS
18, The use of computers in amateur radio, Gerald Edinburgh, G3SDY. Tom, M0TKA, 01484 715079.

HORNSEA ARS
12, Antennas. 19, DVD video creation. Andy, G0VRM, 01430 801122.

HULL & DARS
7, The Driving Test, G0KWE. 14, Satellites or Lasers, G3PQY. Leigh, G0UBY, 01482 876985.

SHEFFIELD ARC
3, Club night. 10, National Science Week. 17, 'Microwaves', Peter Day, G3PHO. 24, HF radio. 31, Club night. Nick, G4FAL, 0114 255 2893.

Region 5: West Midlands

BROMSGROVE ARS
11, On air. 25, 'Boats Large & Small', Bob Brown. Angus, G8DEC, 01527 875573.

CHELTENHAM ARS
7, Pre-WWII domestic wireless sets, Pat Moore, G3IKR. Ivan, G4BGW, 01452 731 956, ivan@g4bgw.freeserve.co.uk

GLOUCESTER AR & ES
3, '/P Safety'. 10, National Science Week school demo. 17, Bring and Browse book evening. 24, 31, Workshop / on air. Tony, 01452 618930 office hours..

KIDDERMINSTER & DARS
18, On air, HF, VHF & Datamodes. New venue: the Chain Wire Club, Zortech Avenue, Kidderminster. Tony, G1OZB, 01299 400172.

MAXPAK PACKET RADIO CLUB
3, Pre AGM Meeting at Perton Centre, Perton, Wolverhampton. Miles, 01952 585447, www.maxpakgb.org.uk

MID-WARWICKSHIRE ARS
11, AGM and Video. 25, Talk: 'Potty Patents', Arthur Astrop. Bernard, M1AUK, 01926 420913.

SALOP ARS
6, Pancakes hot off the pan made by chairman's XYL. 13, Calibration night: bring your suspect kit for testing. 20, Amateur satellites, John Elliott, G3WFK. 27, 3D imaging, Tony Davies, M0AMP. John, G0GTN, 01743 249943.

SOLIHULL ARS
20, 'A Visit to VP8', Bob, G4LMF. Jim, G4VMO, jamesfharris@tiscali.co.uk

STRATFORD UPON AVON & DRS
10, Test equipment; get your rig checked, G3MXH. 24, Skittles evening & buffet. Geoff, G4OHJ, 01789 773286.

TELFORD & DARS
5, Open evening / on air. 12, Major construction competition. 19, Pre-AGM meeting. 26, AGM. Mike, G3JKX, 01952 299677.

Region 6: North Wales

NORTH WALES RS
5, 13, Foundation, Morse HF tuition, free meeting. 16, Norbreck Rally, Blackpool, transport arranged. 20, Foundation, Morse HF tuition, free meeting. 27, Early navigation; longitude, Ted, GW0DSJ. Ted, GW0DSJ, edward@eshipton.fsnet.co.uk

Region 7: South Wales

ABERYSTWYTH & DARS
9, Aberystwyth AR & Computer Rally with Motorcycle display, Penparcau School, Aberystwyth. 13, Digital Audio Broadcasts, Simon, GW0NVN. 27, Club net S21 (call on S20) with GW7OZP. Ray, GW7AGG.

Region 8: Northern Ireland

BANGOR & DARS
5, PIC chips, Ian, MI5AFL. Mike, GI4XSF, 028 4277 2383.

Region 9: London & Thames Valley

COULSDON ATS
10, My Favourite Things, Brian Cannon, G8DIU. Steve, G7SYO, 01737 354271.

CRAY VALLEY RS
6, Construction contest (TBC). Bob, BRS32525, 020 8265 7735 8pm & w/ends.

ECHELFORD ARS
13, Titanic demonstration. 27, Bring & buy. Robin, G3TDR, 01784 456513.

EDGWARE & DARS
13, Talk by Don, G0ACK. 27, Informal / on air. Hank, G0FAB, 020 8205 1023.

MAIDENHEAD & DARC
6, Disaster of R101 airship, David Foster, G3KQF. 18, AGM. John, G3TWG, 01628 525275.

NEWBURY & DARS
26, QRP, Ray Goff, G4FON. Richard, G3ZGC, 01635 46241.

RADIO SOCIETY OF HARROW
2, GB2DHH operating day. 7, Club dinner at The Vine Taverna, South Ruislip. 7 -16, National Science Week. 14, Informal. 19, Video, details TBA. 21, Newcomers'

Region	RSGB Regional Manager
1. Scotland West & Western Isles	Gordon Hunter, GM3ULP
2. Scotland East & the Highlands	Position vacant
3. North West	Kath Wilson, M1CNY/M3CNY
4. North East	Geoff Darby, G7GJU/M3GJU
5. West Midlands	Roy Clarke, G8AYD/M0RLY
6. North Wales	Liz Cabban, GW0ETU
7. South Wales	Position vacant
8. Northern Ireland	Jeff Smith, MI0AEX
9. London & Thames Valley	Paul Berkeley, M0CJX (acting)
10. South & South East	Ivan Rosevear, G3GKC (acting)
11. South West & Channel Islands	Barry Scarisbrick, G4ACK
12. East & East Anglia	Malcolm Salmon, G3XVV
13. East Midlands	Bryn Llewellyn, G4DEZ

RSGB Regional Managers as of 3 February 2003.

programme: supervised VHF operating session. 28, Informal. Jim, G0AOT, 01895 476 933 or 020 7278 6421.

READING & DARC

13, Annual junk sale. Pete, G8FRC, 0118 969 5697.

SILVERTHORN RADIO CLUB

7, Junk sale. 22, Quiz. 28, On air. David, G0KHC, 020 8504 2831.

SURREY RADIO CONTACT CLUB

3, Surplus Sale. Ray, G4FFY, 020 8644 7589.

SUTTON & CHEAM RS

20, GB50 special event station, Bob Treacher, BRS32525 & team. John, G0BWV, 020 8644 9945

VERULAM ARC

10, PSK31. Walter, G3PMF, 01923 262180.

WIMBLEDON & DARS

14, Surplus equipment sale. 28, Morse code practice. Jim, G4WYJ, 01737 356745.

Region 10: South & South East

ANDOVER RAC

4, VHF activity night. 12, Slow Morse class, Keith, G0HKC on 145.250MHz. 18, ARAC 'spring clean' junk sale. Terry, G8ALR, 01980 629346.

CRAWLEY RC

19, RSGB and new licensing structure, Ivan, G3GKC. 26, Construction evening. Derek, G3GRO, 01293 520424.

DORKING & DRS

11, Day visit to army REME workshops, Arborfield, nr Reading: enquiries: John Mathews, G3ENG, 0208 652 6604, john.mathews@btinternet.com John, G3AEZ, 01306 631236.

FAREHAM & DISTRICT ARS

5, On air. 12, 19, Club project build night. 26, Junk sale. Steve, G7HEP, 01329 663673.

FARNBOROUGH & DRS

12, RADAR, Alan Bowler. Norman, G0VYR, 01483 835320.

HASTINGS ELECTRONICS & RC

19, Visit to Herstmonceux Tracking Station. R C Gornall, G7DME, 01424 444466.

HORNDEAN & DARC

4, Social evening. 25, 'Hams across the sea', Tony, M0TRW. Stuart, G0FYX, 023 9247 2846.

ITCHEN VALLEY RADIO CLUB

2, Foundation Course Part 2. 14, AGM. 28, Tabletop sale. Sheila, G0VNI, 023 80813827 sheila.williams@ivarc.org.uk

SOUTHDOWN ARS

3, Talk and video: the RAF Lancaster Foundation. John, G3DQY, 01424 424319.

SWINDON & DARC

6, Ridgeway Repeater Group, Rob Loss, G4XUT. 20, Constructional Contest. Den, M0ACM, 01793 822705.

TROWBRIDGE & DARC

5, Bring and Buy Sale (Scout Hall Southwick). Ian, G0GRI, 01225 864698 evenings/weekends.

WORTHING & DARC

5, Operating procedures, G3NDJ. 12, Discussion on current topics. 19, Low-band DX, G0WZS. 26, Power plugs and sockets. Roy, G4GPX, 01903 753893.

Region 11: South West & Channel Islands

BLACKMORE VALE ARS

4, Valve day preparations. 9, Valve day: 1000 - 1630 Youth Club Hall, Coppice St, Shaftesbury, Dorset. 11, EMC, Ken Walters. 18, HF ops & CW class. 25, WAB. Tony, G0GFL, 01258 860 741.

BOURNEMOUTH RS

7, Sale planning, followed by 'My Other Hobby', 10 min max per speaker. 16, Annual Sale. 21, TBC. Chris, M5AGG, 01202 893126.

BRISTOL RSGB GROUP

31, Madagascar, Phil Whitchurch, G3SWH. Martyn, G3RFX, 0117 9736419.

CORNISH RADIO AMATEUR CLUB

6, Introduction to Digital TV (TBC). 10, Databases for family history (TBC). John G4LJY, 01872 863849.

GUERNSEY ARS

7, Homebrew constructors cup. Keith, GU6EFB, 01481 238693.

POLDHU ARC

11, Presentation by the RA. Keith, G0WYS, 01326 574441.

SOUTH BRISTOL ARC

5, Computer clinic. 12, Radio books buy / sell / exchange. 19, Club quiz. 26, On air. Len, G4RZY, 01275 834282.

TORBAY ARS

2, Buffet and cup presentation (ticket only). rally@tars.org.uk

YEOVIL ARC

6, Early HF domestic radio (Armstrong), G7/M3LNJ. 13, Constructor's contest adjudication. 20, The Intermediate Licence, G3ICO. 27, On air. Derek, M1WOB, 01935 414452.

Region 12: East & East Anglia

CHELMSFORD ARS

4, Practical Wireless, Rob Mannion, G3XFD. 6, Foundation Evening Course at Danbury. David, M0BQC, 01245 602838.

COLCHESTER RAC

13, Constructors' evening. 27, Amateur satellites, G3FIJ. Andy, M1MOD, 01206 735122..

EAST KENT RS

3, Annual junk sale. 17, 'Interesting Side of Taxi Driving', Nigel, M3EKR. Paul, G3VJF, 01227 365384, EKRS@paulnic.com, www.paulnic.com/ekrs

HARWICH AR INTEREST GROUP

12, Hosts Annual Inter-Club Quiz vs Colchester & Clacton radio clubs. Eugene, G4FTP, 01206 826633.

LEISTON ARC

4, Connections in astronomy, Paul, G4YRC. Paul, M3MIG & Diana, M3VDT, 01728 746044, m3mig@aol.com

LOUGHTON & EPPING FOREST ARS

7, Visit by RSGB Deputy Regional Manager. 21, VHF on air. Marc, G0TOC, 07803 023501.

NORFOLK ARC

5, Visit by Yaesu UK Ltd: all the latest equipment on display. 12, Informal / CW instruction. 19, 'Go on, ask me a question', weatherman Jim Bacon, G3YLA. 26, Informal / CW instruction. Reg Pond, G0VDO, 01603 429269.

Region 13: East Midlands

DERBY & DARS

4, Junk sale. 18, AGM. 25, DXpedition to Ascension and St Helena. Martin, G3SZJ, martin@martinshardlow.demon.co.uk

EAGLE RADIO GROUP

5, Surplus Equipment Sale. 11, WWII Mobile Museum of Living History, Colin, G3NRQ. G0SWS, 01507 478590.

LINCOLN SHORT-WAVE CLUB

5, On air. 7, Science Week presentation at City Library. 26, Ten Pin Bowling. John, G1TSL, 01522 793751.

LOUGHBOROUGH & DARC

4, Skittles at Beacon Pub, Loughborough.

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*.

11, AROS Co-ordinator Barry Scarisbrick, G4ACK. 18, Visit BBC Nottingham (TBC), members only. 25, On air. Chris, G1ETZ, 01509 504319.

NORTHAMPTON RC

6, UK 6 Metre Group + buffet, Peter Bowyer, G4MJS. 13, Construction evening: end-fed HF monopole. 20, On air. 27, UA9OSV amateur radio software programs, Phil, M0CTC. Phil, M0CTC, 01604 40687, northamptonradioclub@hotmail.com

RAF WADDINGTON ARC

13, Lincolnshire Hedgerows, Tom, G4OSB. Bob, G3VCA, 01522 528708.

SCUNTHORPE STEEL ARS

4, Basic website design, Pete, G3KNU. 11, Junk sale, auctioneer Tom, G4JRY. 18, Short Talks on any subject by members. 25, AGM. Alistair, M1ECF, 01427 872976.

SHEFFORD & DARS

6, Computer workshop, MS Word, Row, G0WII. 13, Stealth antenna discussion evening. 20, Solar eclipse of 4 Dec 02, Alan, G4LWA. 21, Annual dinner at White Swan, Shefford. 27, Construction winners talk on their project. Derek, G4JLP, 01462 851722.

SOUTH DERBYSHIRE & ASHBY WOULDS AMATEUR RADIO GROUP

23, Foundation Licence course, 2pm, Moira Replan Centre. Berys Walley, 01283 760 822.

SOUTH NORMANTON, ALFRETON & DISTRICT AMATEUR RADIO CLUB

3, Guest speaker TBA. 10, On air. 17, Junk sale. 22, SNADARC QRP Rally. 24, On air. 31, Test equipment, Mike Jeffs. Mike, M0RMJ, 01949 876523.

Local historian Pete Chambers with an old 19 Set during a recent talk to the Eagle Radio Group entitled 'Wartime Mablethorpe'.

CHANGING GEARS

THE GLENGORMLEY Electronics ARS, GN0XYZ, has moved premises. The club now meets every Monday evening between 8.00 and 10.00pm at the Knockagh Lodge, 236 Upper Road, Greenisland BT38 8RP. All are welcome. The committee can be contacted via the website: www.gn0xyz.com

COURSES GALORE

THE BLACKWOOD ARS, GW6GW, is running free Foundation, Intermediate, RAE and Morse courses during 2003.

FOUNDATION COURSES IN DUNDEE . . .

THE COMMITTEE OF the Dundee Amateur Radio Club is proud to announce the successful completion of the club's Foundation Licence course by four of its members. The four are shown in the photograph along with Course Instructors Tom Harrison and Bob Ganson.

Success by 13-year old Stuart Higgins brings two amateurs into the Higgins household and it is expected there will now be a competition between him and his dad, Martin, MM3AWM, for the use of the shack!

Holding their pass certificates are Graham Kennedy, Peter Deans, Stuart Higgins and James Wilson, along with Dundee Amateur Radio Club course instructors Tom Harrison and Bob

. . .LOUGHTON / EPPING FOREST

THE LOUGHTON AND Epping Forest ARS has recently completed its first Foundation Licence course with a 100% success rate and was planning to run a second course at the end of February. There may still be a chance to get on the course; if you are interested please contact Marc Litchman, G0TOC, as soon as possible; tel: 020-8502 1645 (evenings); mobile: 07803-023501; or e-mail: g0toc@hotmail.com

One of the successful candidates of the Loughton & Epping Forest ARS's Foundation Course: Dick Kendall (age 86) with Lead Instructor John Mulye, G0VEH.

. . .CANNOCK CHASE

DURING THE WEEKEND of 17 -19 January, the Cannock Chase ARS ran its first one-week-end-only Foundation Licence course at the society's meeting-place at St Mary's Community Centre Social Club in Cannock. Tutored by Jim Finch, G1NZQ, and Andrew Soltysik, G4KWQ, four pre-teenagers and one adult studied hard during the three evenings and one afternoon to complete the course successfully and sit the examination. At present a waiting list for the next course is being filled. The lone adult is an Assistant District Commissioner of Scouts and he has proposed that another course be run at a nearby Scout headquarters for a class with around 20 candidates.

Back row, left to right: Jake Soltysik, Ian Booth, Paul Booth. Front row left to right: Christopher Booth, Nadine Soltysik.

The club is situated in the middle of an area bounded by other amateur radio clubs, all of which are at some distance, and so fills a gap in coverage. There is easy access from major roads in all directions; good parking facilities; waiting area for parents; and a bar. Further information can be obtained from Arnold Matthews, G3FZW, or Andrew Soltisik, G4KWQ, both QTHR.

. . . AND HARROW

FOUR YEARS AGO Don Lamb, G0ACK, started to run Novice Licence training courses at the Radio Society of Harrow. Since the middle of 2002 he has concentrated instead on Foundation Licence preparation, taking advantage of the recent great upswell in interest. For convenience, the courses take place at his home, in the shack. The room is organised so that theory and practice can easily be combined. The atmosphere is more relaxed and a real benefit is the tea brought in by Don's wife, Ronnie, half way through the evening. Harrow club members assist by standing by on the air to provide 'real life' contact opportunities for the students.

Left to right: Don, G0ACK, guides students Dave, Tony and Steve through ways to resonate an antenna with a signal source and VSWR meter.

The Foundation Course is held over a period of six evenings with the written examination held on a seventh evening at the Harrow Arts Centre. The Radio Society of Harrow is a recognised exam centre and club officials conduct the examination.

For information about the Radio Society of Harrow contact Chris, G4AUF, tel: 01895 621310, or Linda, G7RJL, tel: 0208 386 8586. For details of forthcoming Foundation courses contact Don, G0ACK, tel: 0208 845 9575.

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

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

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

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SPECIAL £499.00

EDX2

Auto Tuner

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

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

£289.00

HFM-1

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

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

£59.95

ALINCO DR-605E *Dual Band Mobile*

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

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

£299.95

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Ideal for:
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Gives clear two way communications up to 2 miles range
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- 8 channels at 446 MHz
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- 500 mW output

Large selection of accessories available including:

- Headset with Vox £39.95
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DJ-SR1

Single Unit £79.95

DR135E

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

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- CTCSS + DCS enc/dec fitted
- 40 memory channels + 1 call channel
- Alphanumeric display
- DCS, Tone burst and DTMF
- 13.8V DC direct input facility with battery charge feature
- THEFT ALARM!
  Emits a tone when disconnected from power
- S Meter with easy to read display
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- Call cloning facility
- Comp. programmable 3rd party software
- Experimental insect repellent feature!
  Can the DJ-193 actually repel mosquitoes?
  Activate the special tone and decide for yourself!

£139.95

DJ-596 NEW Dual Bander

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

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

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

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

£199.95

DJ 195E

2 mtr Handheld with Keypad

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

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

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DJV5E

Compact Dual Bander

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

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

£225.95

DJ-S40 CQ

UHF Pager Sized Handheld

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

- Up to 1 W output (with 13.8V supply)
- Large illuminated display
- Loud clear speaker horn system
- 100 memories+1 call channel
- Multi Scan functions
- 38 CTCSS tones for selective calling
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- Cable Cloning
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- Stereo FM (with headphones)
- Attenuator
- SMA Antenna
- Battery saver cct
- Size: 56w x 102h x 23d mm
- Weight: 14.5g (without batteries)
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Hanging Loose in American

by Nigel Peacock, G4KIU*

NINE AIR FLIGHTS. Luggage delays. Dead rigs. Smoking amplifiers. Welcome to the 'Hang Loose' DXpedition, 2002.

Turning the clock back several months to early 2002, an invitation was received from Larry Gandy, AH8LG, for a team to travel to American Samoa. A quick check showed that KH8 was surprisingly high up the 'wanted' lists in Europe, especially on the low bands and on CW. The invitation was accepted and planning started.

Larry's invitation was for two or three individuals to travel to Tutuila Island (IOTA OC-045), stay at his home and activate the AH8LG station. However, in the traditional spirit of amateur radio and DXpeditions in particular, the initial members of the team looked for additional opportunities. Enquiries showed that the American Samoan island of Ofu (OC-077) hadn't been activated seriously as an IOTA destination for many years. An idea was born to activate both islands for several days each.

The initial invitation had been issued to Roger, DL5RBW; Markus, DL9RCF; and Thomas, DJ6OI. A meeting with Glyn, GW0ANA, and Doug, G0WMW, at Friedrichshafen extended the group to five. At around that time, Dave, AH6HY, from Hawaii visited Ofu, operating for several days. Dave was asked if he would share his experiences with the team. It took him no more that a heartbeat to ask if he could join the DXpedition. With six members, the team was complete.

Glyn and Doug were experienced DXpedition members, having arranged and run the highly successful dual-location show to ZD7K (St Helena) and ZD8K (Ascension) in 2001. Support was welcomed from a number of sponsors, including Kenwood, the RSGB, CDXC and BARTG in the UK, plus a number of others from around the globe. Nigel, G4KIU, was asked to create a website. Pilots in the form of John, G3WGV, and Fumio, JE4CIL, were appointed.

The existing station at AH8LG meant that no equipment would need to be taken to Tutuila. Pretty much turn up and operate. But why make things easy? The decision was taken to operate from the two islands at the same time. Each location would see three operators, with a swap of personnel at the halfway stage.

Samoa Air, our transport to Ofu.

The logistics of bringing together people and equipment from three countries and two continents is formidable. This is especially true when no one member of the team had met everyone. All of the equipment would need to be transported as personal baggage and be moved by commercial aircraft halfway around the world.

The wires making up the Internet were kept warm as e-mails made their way from country to country. After much deliberation, an equipment list was completed. The two UK team members would carry one transceiver, loaned by RSGB / IOTA, together with a linear amplifier and spare valves, an ATU, a Cushcraft R7000 antenna plus coax, headsets, three laptops and all of the associated power supplies and cable. From Germany, one transceiver, one laptop and an experimental vertical dipole loaned by Titanex, plus cable, ladderline, test equipment and tools were due to travel. Dave would transport his transceiver from Hawaii. The first time all of the equipment would be together would be on arrival in American Samoa.

Travel arrangements were made from Europe by team logistics manager, Doug, G0WMW. The German team members were to travel to London, meeting the UK crew on the plane to San Francisco. The next stop would be Hawaii. Trans-Atlantic travel allows 70 pounds weight per person in two cases. One carry-on bag is also allowed, along with a personal computer. On the leg from Hawaii to American Samoa, the weight limit is considerably less. The team was fortunate that Dave, AH6HY, works for Hawaiian Airlines and negotiated an unlimited weight restriction. Hawaiian became one of the early sponsors.

With less than six weeks to go, Doug was forced to withdraw from the trip for personal reasons. Following some frantic telephone calls, the team webmaster Nigel, G4KIU, replaced Doug.

SKIING IN THE PACIFIC?

IN LATE October 2002, the day arrived for the team to leave the European autumn and head for the South Pacific. The UK-based equipment had been packed into three suitcases, a large tin trunk and four personal carry-on bags. A ski-bag contained the R7000, causing some amusement at the United Airlines check-in desk. How many people go skiing on Pacific islands? The tin trunk containing the linear, laptops, power supplies and cable proved too large to fit on the scales at Heathrow airport, which was just as well, as it was seriously overweight. The ski-bag also escaped the weighing machine and both were whisked away to the aircraft, while those travelling went to waste some time in the departure lounge. Meanwhile, Roger's and Markus's


The Asaga Inn, home of K8O on Ofu Island.

*18 Rectory Field, Hartfield, East Sussex TN7 4JE.

Samoa - The Story of K8T and K8O

The beach in front of the hotel, with Olosega Island in the background.

flight from Munich was running late. The London to San Francisco flight was filling up and, at the last moment, Roger and Markus appeared. An uneventful flight brought five Europeans to Hawaii, where the team spent two nights. Dave had already travelled on to American Samoa and would meet the rest of the team on their arrival on Ofu.

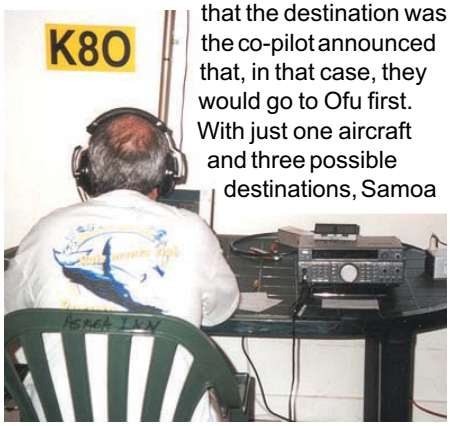
Hawaii is famed for being a relaxed place, where the phrase 'hang loose' is in regular use, giving the team a name - the 'Hang Loose DXpedition'. On arrival two days later at Pago Pago International Airport, American Samoa, the team was met by Larry, AH8LG, and his wife Uti, KS6FO. After explaining the ski-bag and other equipment to customs, a 20-minute drive brought everyone to Larry's home. The time was now almost 1.00am. Despite the hour, within 60 minutes of arrival, a laptop with logging software was unpacked and K8T took to the air from Larry's station.

At 7.00am the same day, Thomas and Nigel were due to fly to Ofu. Arriving back at Pago Pago airport at 5.45am, our intrepid travellers were greeted with the news that the Samoa Air flight would, in fact, leave at 6.00am. It was too late to join the flight and the next flight was the following day - which was full. Following an exchange of opinion about the time change with the airline, telephone numbers were exchanged and Thomas and Nigel returned to Tutuila base and some well-earned sleep.

Strange things happen in far away places and at around 9.40am the telephone rang at Larry's QTH. "Samoa Air calling . . . could Mr Thomas and Mr Nigel arrive at Pago Pago airport for a flight to Ofu at 10.00am?" A second flight had been scheduled, but Samoa Air was told that Thomas and Nigel were both asleep. Their luggage and all of the equipment was in the house, which was a 20-minute drive from the airport. They couldn't be there until about 10.30am. "No problem", said the Samoa Air lady, "we will fly the plane at 10.30am . . . or whenever they arrive".

The CW station at K8O.

Two rather tired Europeans were woken up, had their bags and all of the equipment loaded back into the car and were driven, rather quickly, to the airport. Two people checking in a tin trunk weighing 104 pounds, plus two suitcases, a Titanex vertical, several carry on bags and the now famous ski-bag caused some consternation at the Samoa Air check-in desk. However, after agreeing that the heavy items could be sent as cargo, for an additional payment, Thomas and Nigel were escorted to the waiting 18-seat aircraft, to discover they were the only passengers. The co-pilot greeted the bemused travellers and, after the safety checks, asked whether we were going to Ofu or Tau. Samoa Air flies a circular route between Tutuila, Tau and Ofu. Being told that the destination was Ofu, the co-pilot announced that, in that case, they would go to Ofu first. With just one aircraft and three possible destinations, Samoa Air can do pretty much what it wants, when it wants, as evidenced by this story.



Glyn, GW0ANA, on the SSB station at K8O.

Arrival on Ofu 20 minutes later, a pick-up truck was waiting to drive the team to the Asaga Inn, home for the next few days. The owners of the six-room Asaga Inn proved to be wonderful hosts and would happily welcome future DXpeditions. Dave, who had arrived on Ofu several days earlier, had planned the antenna positions, cable runs and equipment requirement and the team set about building the two stations. Testing the FT-900 rig, it was discovered that the receiver was completely dead. No sound of any sort, even when tapping a screwdriver on the antenna socket. Dave's spare rig was pressed into service and run barefoot into the R7000. Meanwhile, Thomas had connected his rig to the amplifier and produced some rather colourful smoke from the linear. Due to the lack of suitable test equipment, the linear was removed and both stations launched K8O using just 100 watts. The first QSO was with K8T, who was surprised to hear K8O quite so soon.

The pile-ups on both CW and SSB were huge, someone commenting that you would

Titanex vertical dipole and IOTA flag outside the Asaga Inn.

almost think the operation was in North Korea. Several days into the operation, Dave, AH6HY, was running SSB on 15m and picked out "Foxtrot November" from the pile-up - going on to work Ed, P5/4L4FN, *in* North Korea! It is so easy when the rare ones call you.

Back on Tutuila, the rest of the team were busy working the K8T call on SSB, RTTY, PSK along with some SSTV. Time was also spent building a 160 and 80m antenna for Larry, to enable him to run on the low bands in the future. Conditions on 160 and 80m were difficult due to high levels of noise. Despite these challenges, a number of contacts were made back to Europe.

Dave, AH6HY, on the SSB station at K8O, Ofu Island.

SWAP OVER

AT THE HALF-WAY point, K8T closed for two days while the teams met together on Ofu. A spare linear from Larry was brought across and the original repaired, enabling K8O to run two high-power stations. Dave remained on the smaller island with Roger, Markus and Glyn, with Thomas and Nigel returning to Tutuila.

Operations continued from both stations, with attempts on 6m from K8T. Only four stations were worked on the 'magic band' and we were disappointed not to hear any other activity.

Eventually, the time came for K8O to close and return the four operators, equipment and luggage to Tutuila. The operators arrived - but none of the equipment or luggage. With just one scheduled flight each day and a backlog of freight, Samoa Air was unable to give us specific news on when everything might arrive. Fortunately, the team left Ofu two days before the planned return home. One day after the team arrived in Tutuila, half of the luggage arrived and some of the equipment. The balance, including the ski-bag, came on the second day, just five hours before the Hawaiian Air DC-10 was scheduled to take us all back to Honolulu. Rather too close for comfort!

Tutuila, American Samoa, with the Rainmaker Hotel in the foreground.

K8T closed just 20 minutes before the whole team said farewell to hosts Larry and Uti, and left for the airport.

All DXpedition members have their own favourite story to tell. Here is mine. During a quiet spell on 10m SSB towards the end of the K8T operation, I was called by a school station in the USA. The school has its own ham club and has been chasing IOTA for some time. They recently gained the first IOTA-100-Award for a school club. For several days, the club has been searching for K8O or K8T, to give them new islands. Unfortunately, the best openings to their area were either late at night, or during school lessons. Taking an unusual view of the importance of amateur radio and geography, the teacher moved the rig into the classroom during the day. It was a pleasure to spend about 10 minutes chatting to the class, while the remaining pile-up stood by patiently.

Other highlights on the bands for team members were several contacts with M3 stations in the UK and receiving some good quality SSTV pictures from Europe.

The two stations made a total of 27,834 contacts. QSL cards should be ready by now and all direct requests will be answered in order of arrival. For K8T: via GW0ANA. For K8O: via AH6HY. We are aware that the K8 QSL bureau won't retain or forward cards, so it essential that all bureau cards are clearly marked for the respective QSL manager. A direct card would be safest.

Nine air flights later, the team would like to thank all of the sponsors, Larry and Uti Gandy on Tutuila, and the Asaga Inn on Ofu. Our special thanks, however, go to those of you who were kind enough call in and give us all the thrill of the pile-up. Hang Loose! ♦

The K8O / K8T team on Tutuila.

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K8T / K8O DXpedition: www.ukdxers.co.uk
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RSGB Jubilee Contest - June 2002

by Steve Knowles, G3UFY*

THAT SUPPORT FOR this event from the rarer areas of the Commonwealth was somewhat lacking, despite a concentrated publicity campaign, is incontrovertible. That the event coincided with probably the worst spell of propagation conditions for years is undeniable. That participation was eroded by the World Cup football matches held over the same weekend is highly likely. Yet, despite all this, support far exceeded expectations.

More than 550 logs were received. Of these, 96 were from the UK and 52 from the remainder of the Commonwealth. In all, 51 countries and 24 Commonwealth Call Areas, in every continent of the world including Antarctica, are represented in the list of entrants and many others appear regularly in the logs. It was a great pleasure to receive entries from three holders of Foundation Licences who were prepared to have a go and mix it with the crowd. It was an equal disappointment to discover during checking that there were Intermediate class licensees on and active during the contest but who did not submit entries.

Thanks to Paul O'Kane, EI5DI, for making his *SDJ* logging software freely available to all. Comments accompanying logs showed how much it was appreciated. Thanks also to Ray Goff, G4FON, for his excellent *LogMangler* format-conversion software which proved invaluable during checking. Nearly 80% of the logs were received by e-mail, and thanks are due to Richard Everitt, G4ZFE, for his assistance in processing and distributing the raw files.

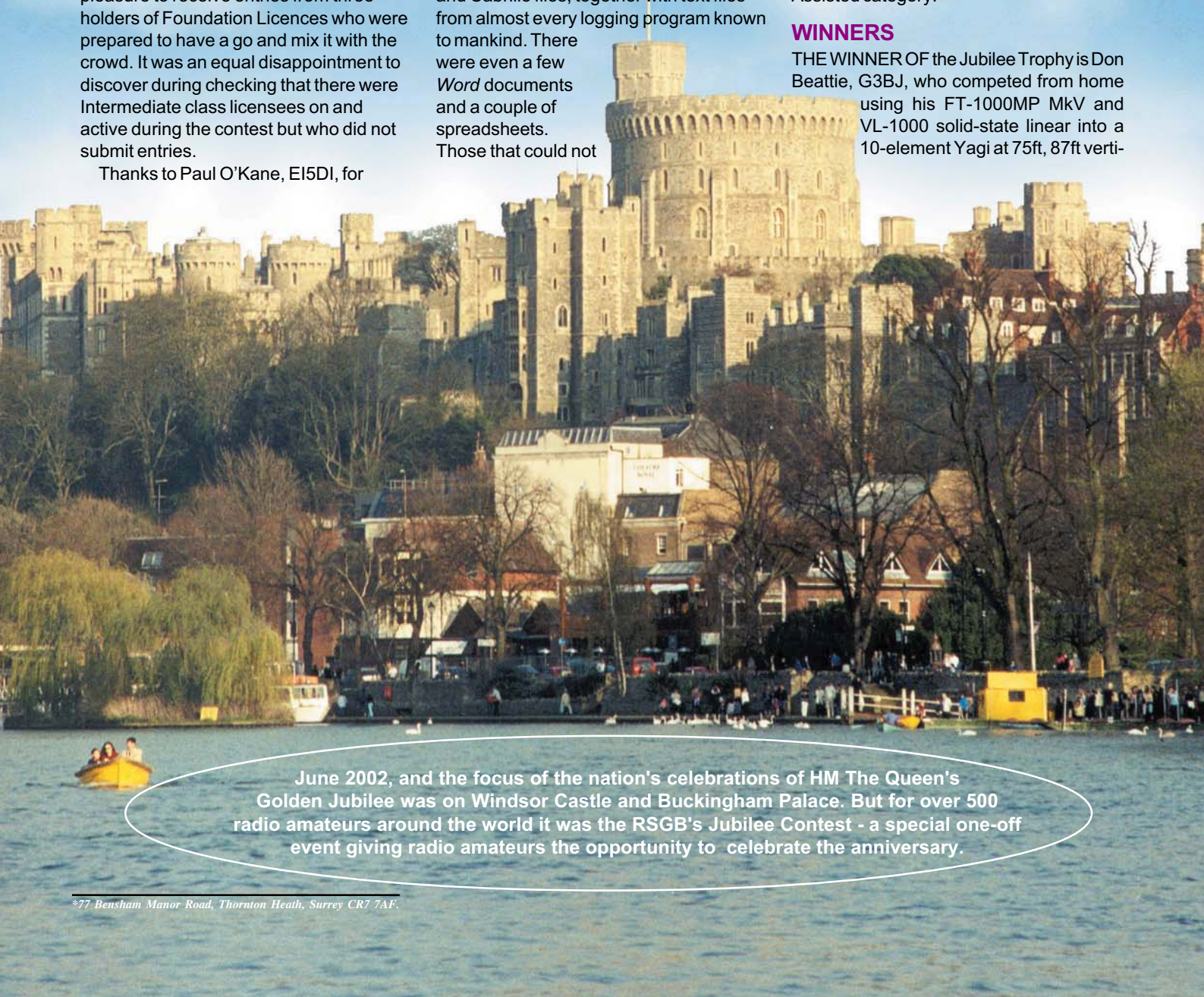
Nearly 200 logs were *SDJ*-produced and required minimal additional work before adjudication. Of the rest, 121 were submitted on paper and had to be typed into the computer for checking - with some of them containing over 500 QSOs, this was the most onerous task and it took several weeks to complete. The remainder was a glorious mixture of ADIF, BIN and Cabrillo files, together with text files from almost every logging program known to mankind. There were even a few *Word* documents and a couple of spreadsheets. Those that could not be 'mangled' were converted to RSGB standard using a column editor.

Every log was checked for arithmetic errors and to ensure that multipliers and points had been claimed correctly. A surprising number of errors was found at this stage. A few were due to a problem in an early version of *SDJ* that wrongly computed the total score, but most were due to incorrect identification of Commonwealth Call Areas. Many entrants will find their final score substantially *greater* than the figure they first claimed.

The only major problem encountered was that hundreds (literally) of entrants did not specify whether their log was Unassisted or Assisted. There were so many involved that it was impracticable to return them for correction and the decision was made to include all such entries in the Assisted category.

WINNERS

THE WINNER OF the Jubilee Trophy is Don Beattie, G3BJ, who competed from home using his FT-1000MP MkV and VL-1000 solid-state linear into a 10-element Yagi at 75ft, 87ft verti-



June 2002, and the focus of the nation's celebrations of HM The Queen's Golden Jubilee was on Windsor Castle and Buckingham Palace. But for over 500 radio amateurs around the world it was the RSGB's Jubilee Contest - a special one-off event giving radio amateurs the opportunity to celebrate the anniversary.

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Who says radio amateurs are all old buffers?! Contesters, at least, seem to be getting younger all the time, as witnessed by these competitors in the Jubilee Contest: L to r: Robert, M0TTT (op at MQ5ZAP); Steve, GW0GEI; Justin, G4TSH (GQ4TSH); Jonathan, G0DVJ; Lee, G0MTN; and Dave, G4BUO.

SOAPBOX

5B4AGX: Enjoyed the contest despite condx and lack of multipliers. Perhaps a phone BERU is worth a regular event.
9H4JB: I worked for 18 hours straight, 20 min calling and 20 min scanning for other calls.
CQ1CV: If you repeat this contest in the future, you can bet the USA will be filing for Commonwealth membership.
G3VCQ: First ever contest. Great fun, might just have to do another!
G4IRN: Roll on the next Jubilee!
GM4SID: I thoroughly enjoyed this contest and hope it will become an annual event.
G0AJH: Nice to have another SSB contest - please make it permanent.
G0DVJ: 'GQ' prefix made it busy. Good fun!
G0ORH: Great to be able to work non-Commonwealth stations during the event. Can we have this format for BERU *please*?
G3PSM: Pretty appalling conditions with 10m only opening slightly in the evening. Noticeable lack of Commonwealth stations.
G3TXF: It felt as if two separate contests were running in parallel: one was a work-the-world free-for-all, like WPX CW, and the other was a poorly supported version of BERU.
G4IIY: I prefer it to the Commonwealth contest.
G4TSH: Once is enough!
G6YB: Overall a fantastic event, well worth running again in some form.
JF2SKV: I enjoyed the contest and QSOs with excellent operators. Thanks!
M3AEU: My first ever HF operation from home - I think I've got the bug!
P3F: A thoroughly enjoyable event despite an S9+ noise level on Sunday from an arcing 11kV insulator only 200m from the shack.
P43JB: Poor conditions, nice contest.
PA3BFH: Difficult to get G stations on higher bands.
SM7BJW: Had much fun working this contest but had hoped to hear more stations outside UK.
VE7JKZ: It's a pity the propagation was so poor. I don't expect to be around for the next one!
VK2AYD: The cockatoos ate the feed wire on my beam so had to put up temp dipoles! We also had our annual Queen's Birthday Field Day on the Sunday so lost lots of operating time.
VK2EL: Worst band conditions for years in this part of the world. Not the fault of the organisers!
VK5GN/M: Sorry not able to get on from home. I was visiting the Coonawarra Wine Region to stock up my cellar!
VK8AV: Enjoyed the Contest! I was surprised at the number of non-Commonwealth stations participating!
ZB2/G3SQX: Hard to work EU stations (wrong side of Rock). Not too many other Commonwealth stations, unfortunately.

cal and dipoles. Don operated mixed modes to amass the seventh-best overall score, 'pipping' the SSB-only entry from GS2MP, operated by Chris Tran, GM3WOJ, by the narrowest of margins. Both logs were superbly accurate and had to be rechecked - in the end it all came down to three extra multipliers.

The overall points leader was the Bristol Contest Group station, GQ6YB, operated by G3XSV, G3TKF, G0WKW, G4FKA, G7ORR, M0AXF / EI3JE, G0HFX and M0XXX. They left little to chance, as their equipment line-up demonstrates: 2 x FT-1000, TL-922 and triband beams at 110ft, 70ft and 40ft with 80m delta loop apex at 90ft, 80m dipole at 60ft, 40m delta loop apex at 60ft and 40m dipole at 50ft.

The overall runner-up and leading single-operator entry was John Sluymer, VE3EJ, operating as XM3EJ. Despite making substantially fewer QSOs than some stations placed below him, he managed to find more multipliers than anyone else. Unfortunately, John did not include details of his station.

The last 'podium' position was filled by Vladimir Krylov, 9H1ZA, whose station comprised an IC-756 with a 400W amplifier, a log periodic for the HF bands, a vertical on 40m and a dipole on 80m. Vladimir's log was also particularly accurate and was the leading CW-only entry.

The highest-placed Unassisted entry and ranked fifth overall was P3F, operated by Bob Henderson, 5B4AGN. Bob used an FT-1000MP MkV Field and amplifier at 400W with an impressive array of antennas: a Force 12 C31XR at 25m, a Cushcraft XM240 at 27m and an 80m dipole at 20m above ground.

The battle for the honours in the Rest of the World section resolved itself into a two-horse race, with the leaders so far ahead of the field as to be in no danger of being caught. At the finish it was LY9A, the Kaunus University club station operated by LY3BA, by the shortest of short heads from LY4AA, also from

RSGB Jubilee Contest, June 2002 - Full Results

Commonwealth Single-Op Unassisted CW

Pos	Callsign	QSOs	Multipliers	Points
1+c	GQ4ZVJ	1180	64	377600
2c	G3LET	1121	61	341905
3c	GQ0ORH	1188	52	308880
4#c	GW3NJW	1117	50	279250
5	GM4SID	822	44	180840
6#c	VK4EMM	636	54	171720
7	GQ4WJS	1088	31	168640
8	GQ3GLL	620	34	105400
9#	ZB2/G3SQX	594	32	95040
10	GW4MVA	605	27	81675
11	GM3CFS	486	32	77760
12	G3RFH	514	29	74530
13	G3KKP	428	29	62060
14	G3WPH	489	22	53790
15	GQ4OGB	644	13	41860
16	M0AJT	584	13	37960
17	G3MPB	377	20	37700
18	G4BUO	340	20	34000
19	GQ2HLU	219	25	27375
20#	ZL2CD	188	29	27260
21	GQ3PSM	372	13	24180
22	G3IAF	87	49	21315
23	XM3IAY	168	25	21000
24	G0UKX	181	23	20815
25#	VE1AYY	314	13	20410
26	VK4TT	182	18	16380
27#	ZL1BYZ	163	19	15485
28	GQ4FDC	129	16	10320
29	G0VQR	337	6	10110
30	VK6AJ	55	23	6325
31	GQ3VQO	224	5	5600
32	G3UFY	91	12	5460
33	GQ3GMM	181	6	5430
34	VK2YN	79	10	3950
35	G3WRR	49	7	1715
36	VK5HO	10	8	400

Commonwealth Single-Op Unassisted SSB

1+c	GS2MP	1332	62	412920
2	GW0GEI	1045	47	245575
3	XM3KZ	978	42	205380
4	GQ4BLE	682	39	132990
5	G0NAR	683	28	95620
6	G3XPO	519	24	62280
7	GQ0AJH	427	12	25620
8	MQ5BFL	314	12	18840
9	GQ0NTL	348	10	17400
10	5B4AFB	142	20	14200
11	VE3PYG	154	15	11550
12	VE7AVV	94	17	7990
13	MQ0CNP	103	12	6180
14	M0BAO/P	102	5	2550
15	GW0RYT	124	4	2480
16	MQ0RNR	48	6	1440
17#	M3TXJ	42	6	1260
18#	MQ3ERZ	51	4	1020
19	VK5GN/M	9	2	90

Commonwealth Single-Op Unassisted Mixed

1+c	P3F	1880	66	620400
2*+c	G3BJ	1307	65	424775
3	G4IUF	413	23	47495
4	ZC40DW	536	13	34840
5	M5FUN	392	10	19600
6	GQ0DVJ	173	7	6055
7	G0MTN	138	8	5520
8	GQ4EDR	57	7	1995

Commonwealth Single-Op Assisted CW

1+c	9H1ZA	1827	73	666855
2+c	GQ3TXF	1316	62	407960
3c	GQ4RCG	1186	52	308360
4	G3SXW	977	39	190515
5	G3PJT	803	41	164615
6	G3LIK	739	37	136715
7#	VE2AYU	690	29	100050
8	G4IRN	509	24	61080
9	G4EBK	563	20	56300
10	GQ3LHJ	462	21	48510
11#	9J2BO	348	27	46980
12	GQ5LP	420	22	46200
13	VE3KP	405	18	36450
14#	VK8AV	159	38	30210
15	VE2AEJ	168	35	29400
16	G4BJM	354	15	26550
17	GQ0RDO	256	16	20480
18	ZL2AZ	119	34	20230
19#	VU2UR	108	29	15660
20	VK4XY	110	24	13200
21	G3HZL	224	11	12320
22	VO1GO	138	17	11730
23	VE7NI	116	17	9860
24	G3ZDD	195	10	9750
25	G3KKQ	180	10	9000
26	GQ3ZRJ	211	8	8440
27	XM3DZ	143	11	7865
28	VK2EL	54	27	7290
29	GQ3IHR	239	6	7170
30	VE9DX	71	12	4260
31	GQ5MY	29	20	2900
32	VA3XRZ	24	6	720
33	VE3IGJ	18	6	540
34	VK2DID	13	4	260

Commonwealth Single-Op Assisted SSB

1+	5B4AGX	559	21	58695
2	9H4JB	495	16	39600
3	G3VCQ	434	18	39060
4#	ZC40BS	350	21	36750
5	GQ3YBY	391	18	35190
6	9H1DE	371	12	22260
7	GQ2BKZ	199	22	21890
8#	VO1BC	271	14	18970
9	M5RIC	379	10	18950
10	GQ4AES	214	8	8560
11	GQ4MAR	105	11	5775
12	GQ3SAD/P	110	9	4950
13	M0RCM	87	10	4350
14	XM3YQY	111	6	3330
15	VA3SWG	158	4	3160
16	XM9WGS	85	7	2975
17	G8OO	125	4	2500
18	9M2RPN	60	6	1800
19	9V1RH	30	7	1050
20	MQ0CAR	29	5	725
21#	MQ3AEU	23	2	230

Commonwealth Single-Op Assisted Mixed

1+c	XM3EJ	1676	90	754200
2	GQ0WRS	573	23	65895
3	GQ4IIY	607	21	63735
4	XM2AWR	398	26	51740
5	GB5SI	453	17	38505
6	VE3MQW	222	34	37740
7	G4PIQ/P	281	21	29505
8#	VE7JKZ	147	38	27930
9	GQ4DDX	230	21	24150
10	GQ4TSH	221	19	20995
11	VO1TA	370	8	14800
12	GQ4KHM	115	22	12650
13	VE7VF	101	22	11110
14	VK2AYD	67	21	7035
15	VE5SF	98	10	4900
16	VE7NS	69	10	3450
17	GQ4DYC	61	10	3050

Commonwealth Multi-Operator SSB

1+	GQ3CSA	1244	44	273680
2	GQ3SRT	721	21	75705
3	GQ0IVR	230	11	12650
4	G0CWC	103	6	3090

Commonwealth Multi-Operator Mixed

1+c	GQ6YB	2088	81	845640
2+c	MQ5ZAP	2044	61	623420
3+c	G3TBK/P	1633	58	473570
4	G4FAL	950	32	152000
5	GM4GRC/P	85	8	3400

Rest of the World Single-Op Unassisted CW

1+c	UR6QA	331	66	109230
2#	OK1HX	316	49	77420
3c	OK1RR	291	53	77115
4	YO6EX	211	36	37980
5	OM8ON	177	41	36285
6#	HS0/G3NOM	156	43	33540
7	UX1IL	141	32	22560
8	OH2BLI	150	29	21750
9	DL2ANM	164	24	19680
10	DL4CF	140	28	19600
11	RA0BA	153	24	18360
12	UT0FT	148	23	17020
13	RW3VZ	131	25	16375
14	OM7VF	137	23	15755
15	DL2ZAV	141	22	15510
16	SP2HMT	150	20	15000
17	K2SX	113	25	14125
18	DL4JYT	161	17	13685
19	DL1LAW	140	19	13300
20	RN6AI	121	21	12705
21	DL1DQW	101	21	10605
22	RA3TT	100	20	10000
23	JI1HFJ	62	31	9610
24	DL3KWR	112	17	9520
25	OK2EC	99	18	8910
26	RA4HW	88	19	8360
27	SP4AVG	84	19	7980
28	OZ1BMA	93	17	7905
29	OM6CU	91	17	7735
30	SM6KRI	80	14	5600
31	4X1VF	68	13	4420
32	LY2BBF	68	12	4080
33	DL3HSC	58	14	4060
34	DL3KWF	68	11	3740
35	VR2BG	40	18	3600
36	ND4AA	46	14	3220
37	DL2HUM	63	10	3150
38	YO5DAS	62	9	2790
39	D2CR	50	11	2750
40	HA5AZC	51	6	1530
41	SP3AZO	31	9	1395
42	R1ANC	28	9	1260
43	YV7QP	59	4	1180
44	WA2VQV	33	7	1155

Just part of the antenna farm of John, VE3EJ, in Ontario, who operated as XM3EJ to take first place in the Commonwealth Single-Operator Assisted Mixed Mode section with 1676 QSOs.

45	UA3MDX	26	7	910
46	JH2AHZ	25	3	375
47	UN8FM	5	5	125

Rest of the World Single-Op Unassisted SSB

1+	YZ7AA	192	24	23040
2	PA1HAR	125	21	13125
3	N4MM	114	17	9690
4	SQ7BCG	92	13	5980
5	UA3LHL	78	15	5850
6	IZ4DJZ	68	11	3740
7	IK5WGK	56	10	2800
8	LY3CY	61	9	2745
9	YO7LBX	49	8	1960
10	OZ1ACB	45	8	1800
11	SP4SHD	53	6	1590
12	UN7OP	43	7	1505
13	SP6DHD	42	7	1470
14	PA3GZC	35	8	1400
15	UA9ORQ	59	4	1180
16	CT1AVR	38	6	1140
17	N3GXY	23	4	460
18	OK1VHV	19	4	380
19	LY3BY	14	3	210
20	SM6FJY	16	2	160
21	PA0LRK	10	3	150
22	EA3FHP	21	1	105
23	WP4LNY	6	3	90

Rest of World Single-Op Unassisted Mixed

1+c	LY9A	656	68	223040
2+	OM4JD	396	43	85140
3#	TI5/N0KE	200	41	41000
4	OK2HZ	198	39	38610
5	LY2XW	221	30	33150
6	HG9M	241	26	31330
7	UA1ANA	228	23	26220
8#	EI7CC	141	34	23970
9	W4SAA	138	34	23460
10	UU2JA	155	30	23250
11	RK9CWW	170	26	22100
12	OM3MB	161	24	19320
13	OM3PQ	158	24	18960
14	EI4CF	104	35	18200
15#	ES6PZ	146	24	17520
16	SP6BAA	159	21	16695
17	SM5IMO	166	18	14940
18	3Z0AJC	96	24	11520
19	LY2BW	138	16	11040
20	K8XF	97	22	10670
21	SP7BCA	112	19	10640
22	OK1KZ	124	16	9920
23	PA0JNH	87	19	8265
24	K3ZO	108	14	7560
25=	DL7UXG	88	14	6160
25=	RW3PN	77	16	6160
27	RA1OK	99	11	5445
28	T93Y	45	18	4050
29	YO7VS	103	7	3605
30	LY1CM	79	9	3555
31	UA9AX	66	8	2640
32=	EW6DX	67	6	2010
32=	I2WIJ	67	6	2010
34	IK4NPC	49	4	980
35	EA2CR	13	4	260
36	JA7DOT	24	2	240

Rest of the World Single-Op Assisted CW

1+c	UT4FJ	285	65	92625
2#c	YU1OJ	303	55	83325
3#c	N4BP	314	50	78500
4#	RA3XO	287	48	68880
5	UR5HAC	272	44	59840
6	OK1DRQ	277	43	59555
7	OK2BGK	290	41	59450
8#	OH2FS	209	43	44935
9#	DK3KD	221	40	44200
10#	HA1ZZ	245	36	44100
11#	YO3ND	225	39	43875
12	OK2SG	206	39	40170
13	OK1AYY	211	37	39035
14	SP4JWR	196	38	37240
15#	EA4BWR	211	35	36925
16	YU1EQ	188	39	36660
17	UX7MY	198	37	36630
18#	LZ4UU	178	40	35600
19	N4AF	178	38	33820
20	DL6KVA	166	38	31540
21	SP6LV	207	30	31050
22	SP1AEN	188	31	29140
23	RA3AF	164	31	25420
24	DJ5AA	158	31	24490
25#	PA3BFH	131	33	21615
26	OM4DN	179	24	21480
27#	4K9C	134	29	19430
280	SP5WA	124	29	17980
29	UZ8M	169	20	16900
30	OK1FCA	180	18	16200
31	UR7QC	134	24	16080
32	SM6CRM	138	23	15870
33#	HB9ARF	148	21	15540
34	HA8EN	127	24	15240
35	YO4ASG	123	24	14760
36	UA1ZZ	118	25	14750
37	SP9EMI	119	24	14280
38	RV9JR	136	20	13600
39	OK2PAE	142	19	13490
40	SP9NSV	109	22	11990
41	OK2BEM	114	21	11970
42	SP8BAB	125	18	11250
43	OK1AVY	95	23	10925
44	YU7LS	91	24	10920
45	RU4WE	110	19	10450
46	SM7EH	113	18	10170
47	LY2HN	99	20	9900
48	ON4XG	86	23	9890
49	LZ1PM	103	19	9785
50	OM7AT	114	17	9690
51	RA3ANL	99	19	9405

52	UN9LN	88	19	8360
53	OR6TJ	89	18	8010
54	P43JB	82	19	7790
55	RZ9IR	76	20	7600
56	DJ5GG	78	19	7410
57	9A2VJ	113	13	7345
58=	OK1ABF	76	19	7220
58=	UA9FGJ	76	19	7220
60	RW3XZ	80	17	6800
61	EA8BIE	85	15	6375
62	OK1AOU	79	16	6320
63	SP7CKP	70	18	6300
64	UA3DMO	88	14	6160
65	F5ICC	94	13	6110
66	EA4DRV	80	15	6000
67	SP5CGN	74	16	5920
68	UX1HW	130	9	5850
69	AB2E	63	17	5355
70	SP9MRQ	70	15	5250
71	DK8RE	80	12	4800
72	OK2BNC	72	13	4680
73	RW0IZ	53	17	4505
74	YO4GDP	49	18	4410
75	UA4NF	84	10	4200
76	HP1AC	51	15	3825
77	EA4EFJ	63	12	3780
78	IS0UWX	54	13	3510
79	W1TO	44	15	3300
80	UA3AKI	53	12	3180
81	UA9FM	52	12	3120
82	7S5Q	67	9	3015
83	RV6AB	39	15	2925
84	HB9IAL	56	10	2800
85	UX5EF	57	9	2565
86	YL2GTD	46	11	2530
87	YB0ECT	43	11	2365
88	YO6ADW	46	10	2300
89=	OM5NL	57	8	2280
89=	UA9OA	38	12	2280
91	UY5ZZ	50	9	2250
92	RW9QA/9	30	13	1950
93	YO4RLP	34	11	1870
94	UY5TE	30	11	1650
95	YT7WA	47	7	1645
96	UA4QK	46	7	1610
97	JA3AA	30	10	1500
98	SP4GFG	36	8	1440
99=	RA3XEV	36	7	1260
99=	UT8IM	42	6	1260
101	W1FJ	27	9	1215
102	ON5JD	30	6	900
103	ON4KVA	18	9	810
104	YO4CSL	35	4	700
105	ON4CKL	34	4	680
106	OR4ACA	27	4	540
107	UN7CN	21	5	525
108	YO4AAC	19	5	475
109=	PY4FQ	12	4	240
109=	UN8CC	16	3	240
111	EU6AA	9	3	135
112=	SP8FHJ	12	1	60
112=	UA9QFF/9	6	2	60
114	JA7ARW	3	3	45
115	JE2SOY	7	1	35
116	UA3LBE	3	1	15

Rest of the World Single-Op Assisted SSB

1+	YL/RZ3BY	421	34	71570
2	LY3BH	429	32	68640
3	UA6ADC	216	21	22680
4	N4UH	195	18	17550
5#	RA2FW	100	22	11000
6	UA9JDP	217	10	10850
7	DH5AO	127	11	6985
8	EW6AF	148	9	6660
9	SQ9HZM	96	13	6240
10	SP9HQC	89	12	5340
11	SQ2EAN	80	11	4400
12	SM7BJW	75	11	4125
13	SP5MXA	134	6	4020
14	YO7ARY	66	12	3960
15	DL9ZWG	70	11	3850
16	SP7FDV	69	9	3105
17	SP6IEQ	76	8	3040
18	SP4AAZ	54	11	2970
19	UR7UL	93	6	2790
20	9A2JH	69	8	2760
21	EV6C	53	10	2650
22	HF2KFV	66	8	2640
23	SP7GRV	52	10	2600
24=	PA3FGJ	48	10	2400
24=	SN0CUX	60	8	2400
26	UA9CUA	68	7	2380
27	YO6QT	77	6	2310
28	SQ6ILC	47	7	1645
29	EX8AA	80	4	1600
30	YO6KQQ	52	6	1560
31	YO3FLQ	34	9	1530
32	OZ1DYI/P	37	8	1480
33	EU6TT	59	5	1475
34	DH5MM	48	6	1440
35	PA0IJM	68	4	1360
36	SP7TEX	41	6	1230
37	SP4AQD	32	7	1120
38	F5RC	51	4	1020
39	SV1XV	32	6	960
40	OK2BRX	35	5	875
41	UT5MB	34	5	850
42	SP3GHK	32	5	800
43	DL3KDC	33	4	660
44=	EA7FRX	31	3	465
44=	SP8OOB	31	3	465
46	W4GAC	18	5	450
47	WB0YJT	24	3	360
48	US1MM	71	1	355
49	DL1DXF	29	2	290
50	4M3Y	19	3	285
51	RX3MM	28	2	280
52	ES5CX	24	2	240
53	N2LQQ	12	3	180
54	CE5GO	14	2	140
55=	JA2GHP	5	4	100
55=	OK2PMS	10	2	100
57	DH8WE	8	2	80
58	JR3CVJ	13	1	65
59	JG2REJ	12	1	60

Rest of the World Single-Op Assisted Mixed

1+c	LY4AA	565	76	214700
2+c	YL0A	502	63	158130
3	DL9GFB	204	37	37740
4	SP9W	220	33	36300
5	OK2EQ	222	27	29970
6#	UA9OS	152	35	26600
7	RN3ZZ	253	21	26565
8	YO2BEH	215	23	24725
9	DL5AWI	177	26	23010
10	OK1MDK	176	25	22000
11#	EU2MM	218	19	20710
12	YO7BGA	129	31	19995
13	DL5JRA	160	22	17600
14	UX0ZA	135	26	17550
15	SP9GFI	166	21	17430
16#	SM5D	147	22	16170
17	OK1VBA	145	21	15225
18	OM7CW	120	24	14400
19	EU6DX	149	19	14155
20	K4OGG	134	19	12730
21#	OS4CAS	110	22	12100
22	YZ1V	135	16	10800
23	W2UDT	116	18	10440
24#	9A2WJ	154	13	10010
25	LZ7H	111	18	9990
26	RA9DZ	110	17	9350
27	YO6MT	116	16	9280
28	DL3JPN	135	13	8775
29	US1PM	142	12	8520
30	OZ4RT	84	20	8400
31	N7YQ	65	25	8125
32	YO9AGI	88	18	7920
33	RA1WZ	98	16	7840
34	LY2OM	110	14	7700
35	DJ1OJ	118	13	7670
36	SQ9FMU	102	14	7140
37	K6III	62	23	7130
38	EV6Z	116	12	6960
39	EW6OO	103	13	6695
40	RU6CZ	74	16	5920
41	OK1DVK	68	17	5780
42	UR7IKU	100	10	5000
43	RW3QF	106	9	4770
44	RA6AR	67	14	4690
45	YO7VJ	70	13	4550
46	SQ1EID	75	12	4500
47	SP6IHE	88	10	4400
48	OK1KMG	97	9	4365
49	RV3LO	76	10	3800
50	PV8DX	92	7	3220
51=	LZ2FM	54	11	2970
51=	TA3BN	66	9	2970
53	DK7JQ	61	9	2745
54	OK1CZ	44	12	2640
55	N2PAQ	46	9	2070
56	SP3OL	37	11	2035
57	ES6CO	34	10	1700
58	JA3PYC	29	11	1595
59	YB2LSR	25	12	1500
60	RU9WB	40	7	1400
61	RW0AR	35	7	1225
62	YO2CJX	40	5	1000
63	JH5OXF	24	8	960
64	KL7FAP	20	9	900
65	UX8IX	25	7	875
66	LU6ETB	30	4	600
67	UU2JQ	23	3	345
68	DL7VRG	13	4	260
69	PA0FEI	4	2	40

Rest of the World Multi-Operator CW

1+	OK1KCF	114	14	7980

Rest of the World Multi-Operator SSB

1+c	CQ1CV	538	55	147950
2#	UN8LA	276	26	35880
3	YO3KYO	13	6	390

Rest of the World Multi-Operator Mixed

1+	SN5Z	320	40	64000
2+	SP9KRT	236	36	42480
3	RZ4NWW	204	24	24480
4	OL5DX	117	14	8190
5	JF2SKV	7	7	245
6	UX8IXX	8	2	80

SWL Reports

OM3-27707, UA3-155-28, UA3-255-75, UU-J-1.

Disallowed

SP2QG (no received serial numbers recorded); UN7EX (no band information).

Checklogs

9M2/G4ZFE, AE6AX, DK5ZX, DL1JFM, DL2VSF, EA1FB, G0WJN, G3RSD, G3WP, G4KNO, GQ3SB, KA3IXF, LA9AU, LY1FM, LZ1FJ, LZ1GU, OK1CJN, OK1WNB, OL4M, OZ0RS, PA3CNI, PY2DBU, RW1QD, RZ4FA, SM6BZE, SM6NJK, SM7/DL5CX, SP4GDC, SP6CES, SP6SYF, SP7BDS, SP7FGA, SP9CVY, SP9SOU, UA3AVR, UR5FFC, UR5ZIB, UT5JAJ, VE3ABX, YO2ADQ, YO9FYP, YU7DR, ZB2EO, ZL2TX.

* = Trophy winner, + = Plaque winner, # = Certificate winner, c = Call Areas Certificate. Note: there were no entries received in the Commonwealth Multi-Operator CW category.

The Red Arrows stage a fly-past by the Bristol Contest Group's, GQ6YB, antennas.

Kaunus. Leading the following pack was the Latvian Contest Club station YL0A, operated by YL2KA.

The RSGB HF Contests Committee extends its thanks to all those who participated in this event and helped to make our celebration of the Golden Jubilee of Her Majesty Queen Elizabeth II a success. ♦

Just so the old timers don't feel left out, here's a rogues' gallery of experienced UK contesters who took part in the Jubilee Contest: Roger, G3SXW; Lionel, G5LP (GQ5LP); Colin, G3PSM (GQ3PSM); Alan, G3XSV (op at GQ6YB); Don, G3BJ; and Derryck, G3LHJ (GQ3LHJ).

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ALINCO DJ-190	2M HANDHELD	99.00
ALINCO DJ-S11E	2M HANDHELD + CASE	59.00
ALINCO DJ-SR1	PMR 446 TRANSCEIVER	79.00
ICOM IC-2800	DUALBAND MOBILE	299.00
ICOM IC-T8E	6M/2M/70CM HANDI	225.00
KENWOOD TH-D7E V2.0	2M/70CH HANDI+SOFTWARE	229.00
STANDARD C-156A	2M HANDHELD	75.00
TRIO TR-7800	2M FM 25W TRANSCEIVER	149.95
YAESU FT290RII	2M MULTIMODE PORTABLE	249.00
YAESU FT40R	70CM HANDHELD	119.00
YAESU FT-90R	2M/70CM MOBILE TRANSCEIVER	285.00
YAESU FTL2014	VHF PMR TRANSCEIVER	75.00

SCANNERS/RECEIVERS

ALINCO DJX-2	HANDHELD SCANNER	125.00
AOR AR-8000MK2	HANDHELD SCANNER	289.00
BEARCAT UBC780XLT	TRUNK TRACKER SCANNER	275.00
ICOM IC-R5	HANDHELD SCANNER	129.00
AKD HF3 TARGET	HF RECEIVER	95.00
AKD TARGET HF3M	HF RECEIVER	99.00
AKD TARGET HF-3S	HF RECEIVER	119.00
GRUNDIG SATELLIT 800	MULTIBAND RECEIVER	399.00
JRC NRD345	HF RECEIVER	350.00
JRC NRD535	HF RECEIVER	459.00
LOWE HF225	+CASE,FM & K PAD HF RX+ACC	329.00
ROBERTS R881	SHORTWAVE RECEIVER	49.00
YAESU FRG-100	HF RECEIVER	299.00
YAESU FRG-9600	BASE SCANNING RECEIVER	299.00
YAESU VR-5000	WIDEBAND RECEIVER	499.00

HF EQUIPMENT

ALBRECHT AT485S	10M MULTIMODE TRANSCEIVER	129.00
ICOM IC-746	HF/6M/2M 100W TRANSCEIVER	899.00
KENWOOD TS-570DGE	100W HF TRANSCEIVER	699.00
KENWOOD TS-570DGE	100W DSP HF TRANSCEIVER	699.00
KENWOOD TS-680S	HF + 6M TRANSCEIVER	475.00
KENWOOD TS-690S	HF/6M 100W/10 TRANSCEIVER	595.00
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YAESU FT-990/DC	100W HF TX +FILTERS	799.00

ACCESSORIES

NISSEI 300GL	30AMP POWER SWUPPLY	99.00
ACTIVE CW FILTER	ACTIVE FILTER	25.00
ALINCO EME -12	HEADSET/MIC	25.00
AMDAT ADC-60	FREQUENCY STANDARD CLOCK	99.00
COMET CF-706	DUPLEXER 1.3-56/75-230MHZ	25.00
DAIWA PS-300	25-30AMP PSU	79.00
DATONG FL2	AUDIO FILTER	55.00
EURO-CB EF1000-7	0.4-1000 MHZ FRQ COUNTER	59.00
HITACHI KH-YG1	WORLDSPACE YAGI KIT	39.00
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KENWOOD YK88-S1	2.4KHZ SSB FILTER TS450/850	49.00
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TONO Q-550	DATA TERMINAL	99.00
WATSON WS-2090H	2M 5W-80W LINEAR AMP	89.00
YAESU FIF232C VAN	COMPUTER INTERFACE (FT736)	59.00
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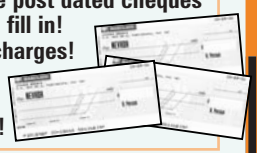

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Some Experiences with the

By Dave Sergeant G3YMC * and Bob Whelan, G3PJT **

THE ELECRAFT K2 transceiver first appeared about three years ago. It is now heard frequently on the amateur bands and is generally recognised as an excellent rig in its class. Elecraft is a small company based in California, and the K2 was designed by its founders, Wayne, N6KR, and Eric, WA6HHQ. The K2 is the big brother of the K1, which was reviewed in an earlier article in *RadCom* [1]. Like the K1, it is available only in kit form, but once built the performance matches or exceeds many of the factory-built amateur rigs. It is undoubtedly the attraction of building a rig of this standard by oneself which has made it so popular, and is convincing evidence that home brewing is far from dead.

FEATURES

THE BASIC K2 is a 10 - 80m CW rig, with further facilities available as add-on options. Current options available are:

- SSB adaptor KSB2
- 160m module K160RX
- Noise blanker KNB2
- Automatic ATU KAT2
- 2.9AH rechargeable battery KBT2
- Audio filter KAF2
- Computer interface KIO2
- 100W PA (KPA100) and ATU (KAT100)

Some of these options are discussed by G3PJT later in this article. An option for the 60m band is promised by Elecraft soon.

Since my interest was primarily CW and QRP I bought the 160m and ATU options only at this stage.

The K2 receiver is a single conversion superhet with an IF of 4.915MHz. Together with bandpass filters for each band and a diode ring receive mixer this approach results in excellent receiver performance - the third order intercept point is in excess of +20dBm and in various reviews the K2 has consistently outperformed most of the current Japanese transceivers. Comparative figures were given in a recent 'Technical Topics' [2] and place the K2 clearly at the top of the list. More detailed figures can be found on the Elecraft website.

A novel approach is a variable bandwidth 7-pole crystal filter where the bandwidth can be set by the user to his requirements. Each mode (CW, USB, LSB) has four switchable filter bandwidths which can each be adjusted from 100Hz to 2.5kHz.

The K2 has all the features expected of a modern HF transceiver - two VFOs for split frequency working, RIT / XIT, full QSK, internal memory keyer, switchable preamp and attenuator and a host of other features. Power may be adjusted from below 500mW to over 10W via a front panel knob. When the KAT2 ATU is fitted, direct reading of SWR is shown on the LCD display. Quite a few of the settings are via menus (easily accessed) but, unlike some other rigs, commonly-used functions such as keyer speed, IRT, tuning rate, and IF bandwidth are controlled via dedicated front panel controls.

The K2 receiver takes around 150 - 250mA on receive (depending on the options fitted) and is ideal for portable operation. Transmit current varies with power output and is about 2.5A for 10W. Supply voltage and current can be monitored on the LCD display.

As well as tuning via the main knob (in 10Hz steps), frequencies may be entered from the keypad or recalled from memory. Frequency, mode and other settings are stored on a per band basis.

BUILDING THE K2

HAVING PLACED the order via the Elecraft website I received confirmation by e-mail that my order had been received, including an estimated dispatch date. It arrived some 10 days later in a small, well-packed box. VAT and handling are payable to the postman on receipt but the kit is exempt from import duty - I was incorrectly charged this but managed to reclaim it from Customs & Excise by writing to the address on the label.

Elecraft describes the K2 as an "intermediate" kit and suggests that it is not for beginners. Because of its complexity and the large number of components to be fitted I would agree with this, but it has to be said that the kit has been successfully built by many newcomers. Having experience both professionally and as an amateur in similar exercises I perhaps found it easier than many. The average time to assemble the K2 is said to be 30 hours. It took me around three weeks to complete.

The 162-page manual gives very detailed step-by-step assembly instructions for all stages. It has a format similar to the Heathkit manuals of yesteryear, with each step having a check box to tick off when complete.

Construction is in three distinct stages, with specific go / no-go tests performed at the intermediate stages. The first stage is to assemble the control board (containing all the microprocessor control circuitry) and front panel board (backlit LCD display and switches). These were straightforward. The microprocessor chips are mounted in sockets, with the smaller ICs being soldered in place. All boards are fairly compact, so my binocular eyeglasses were very useful. The resistors were supplied bandoliered in the value and order they are to be inserted, a nice touch. However, the capacitors were all mixed up in one bag, and identifying some values needed care (I had to double check a few with my capacitance meter). Fitting of the LCD display needs to be done with care as it is somewhat fragile. Band switching and other functions in the K2 are done via latching relays and 17 of these were soldered to the RF board at this stage.

Having completed this stage I powered up from my 12 volt power supply with great hopes, only to find the ominous characters "ELE" on the display and with no response from any of the controls. After a search on the Elecraft website and a posting on their reflector I learned that this can be caused by one of the control lines being shorted to ground. It took some detective work before I found one of the pads on the front panel board was shorted because of a PCB manufacturing fault; apparently they have had occasional problems of this sort and I had been unlucky. A quick track cut with my scalpel and a wire link and all was OK. At this stage the operation of most of the front panel buttons were checked, together with setting the 4MHz reference oscillator and calibration of the LED S-meter, and all was found to be in order.

The second stage of assembly continues with the main RF board and requires the

* 8 Toll Gardens, Bullbrook, Bracknell RG12 9EX.
** 36 Green End, Comberton Cambridge CB3 7DY.

Elecraft K2 HF Transceiver

fitting of sufficient components to allow the K2 to receive on 40m. Care had to be taken to identify correctly the smaller components - especially the small capacitors. The first of the many toroidal inductors are also wound - the kit contains ring cores of various sizes and self fluxing wire to wind them with. I found this relatively straightforward, but a hot soldering iron is needed to remove the insulation and hence prevent poor soldered joints. For those who are frightened off by this, 'The Toroid Guy' can supply kits of pre-wound toroids (see Elecraft website).

When Stage Two was finally completed the alignment procedures in the manual were performed. The PLL, VCO and BFO were checked and the IF filter settings made. A frequency counter and voltmeter is designed into the microprocessor circuitry and these are used to align these circuits. The process is quite easy, even though adjustment of the filters and BFO is somewhat time-consuming. After peaking the bandpass filters, the K2 was now working as an excellent 40m receiver.

Since we had a meeting of our local club the following week, I broke off the assembly at this point as I wanted to show it working to our members. This obviously worked - we now have four K2 owners in the club!

Stage Three of the construction adds the rest of the components and effectively completes the transceiver with the filter components for the other bands and all the transmit parts. When I had finished this stage I had become quite adept at winding toroids! The transformers in the PA in particular need to be wound exactly as instructed otherwise full power will not be obtained on 10m. After quite a few hours work all was complete. Final alignment involves checking the transmit path and peaking the receiver bandpass filters.

In case of difficulties during construction, Elecraft offers an excellent support service via e-mail and there is also an e-mail reflector to discuss problems. I accidentally caught one of the front panel buttons with the soldering iron during assembly - a replacement was mailed promptly free of charge; the after-sales support from Elecraft is second to none.

ON THE AIR

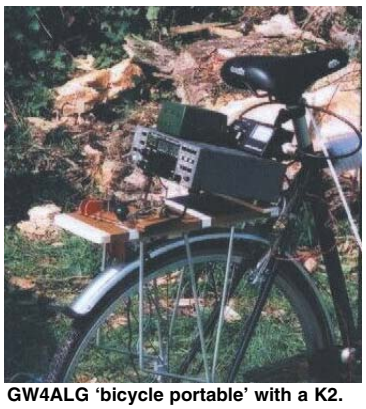
WITH THE K2 now fully built and tested all that remained was to try it on the air. A few minutes later I was having my very first QSOs - a couple of G stations on 40m. Wow, I was getting 599 reports with just 5W, and that was from a portable station on a hilltop in Cheshire running just 1W. What they all say about QRP is true!

Bracknell club members eagerly compared the K2 (at the right of the bench) against other rigs at a recent meeting.

The test of any amateur rig is how it performs on the air, and the K2 soon proved its worth. I did not really expect to work very much in the way of DX on the HF bands using QRP but soon I found that I was working JAs and other DX with relative ease. The DX bug bit again and I was seriously chasing countries like I used to do years ago. DXCC was reached within a couple of months and within six months I had worked 150 countries including ZL7C on the Chatham Islands. All these were worked with 5W into a 60ft-long wire. Any doubts of the capabilities of QRP were quickly dashed!

With my relatively low antenna I found that I preferred to use the preamplifier most of the time, and this did result in a few intermodulation products on 40m and 30m at night (which were completely absent with the preamplifier off). This is to be expected, but they caused no real problems and 40m was certainly very quiet at night compared with my old FT-101ZD. The CW filters are particularly good and very sharp. Working split with the two VFOs is also very easy and I soon learnt the knack of breaking pile-ups - apart from the very large ones I could usually get through eventually. Sometimes I surprised myself at how easily I could work the DX, and all were amazed when I said that I was only running 5W.

The K2 is an ideal rig for portable operation. It was used for the Bracknell club's entry in NFD in 2002 [3] and also in the Low Power contest. In both of these operations it worked flawlessly. Steve Rawlings, GW4ALG, has used his K2 'bicycle portable' and also for some Summits on the Air operations.



GW4ALG 'bicycle portable' with a K2.

The fact that the Bracknell club has no fewer than four satisfied K2 owners who have all built this kit with relatively few problems is testimony to its success.

Elecraft is constantly improving its products. Since the K2 appeared there have been quite a few modifications and I have incorporated several in mine. All K2s after serial number 3000 are to the new 'Issue B' standard and include many of these modifications, with a mod kit also available to update earlier ones.

To summarise, if you are looking for an HF rig that is at the top of its class in performance and you are prepared to build it yourself, the K2 fits the bill admirably. The 10W basic version will meet the needs of both QRP and Foundation / Intermediate class licensees. For those who want to run higher power, a 100W version is also available.

Dave Sergeant, G3YMC

FURTHER THOUGHTS

THE FOLLOWING observations are based on recent operating experience and contesting with the K2, both in the UK and as XT2DX from Burkina Faso in the *CQ* World Wide DX CW contest in November 2002.

There is no doubt that the K2 should be viewed as a serious radio with a top-notch performance comparable to the very best in class (see [4] and 'Technical Topics', *RadCom*, December 2002 page 62). In use on the multi-multi contest station at XT2DX on 10m there was little problem in hearing the weakest of stations and the dynamic range was easily good enough to handle the adjacent strong stations at the same time.

The K2 is ideal for DXpeditions, being light and small enough to qualify as carry-on baggage on aircraft as well as being complete in the sense that few, if any, peripherals are needed to complete an operational station.

Both the K2s at XT2DX, belonging to Lee, KY7M, and me, behaved almost identically, showing how robust the design must be. Further, to stand up to the rigours of 48-hour almost continuous contest operation shows that the engineering and standard of construction is second to none.

OPTIONS

100 watt amplifier. The KPA100 is a 100 watt amplifier which fits into the top of the K2 by replacing the existing top cover. The KPA100 automatically switches from QRP mode to 100W mode as the power level is increased. The amplifier is mismatch protected very effectively, so much so that it may not be possible to get 100W out at the band edges when using narrow band antennas if the SWR is above 2:1.

Like the basic K2, the KPA100 has electronic change-over with full silent QSK giving very acceptable full break-in CW.

In addition, the KPA100 module has an output to switch a higher-power linear. A feature of this is that the timing of the switching sequence can be set to avoid excessive relay wear and noise in mechanically-switched amplifiers (or indeed damage to transverters etc.)

SSB option. The SSB module, KSB2, seems to cause quite a bit of comment. The original filter design was rather narrow. This meant that to suit various voices and microphones the position of the carrier frequencies was quite critical. A series of modifications has been proposed to broaden the passband to alleviate this problem [5]. Elecraft now supplies tighter tolerance crystals. It is well worthwhile making sure that you build the wider passband at the time of main assembly of the KSB2, rather than have to change components later. The circuitry is very dense and de-soldering is not the easiest thing to do without damaging the PCB.

The narrow passband makes the selection of microphones important but I have found the Yaesu MH31 works well, as does a standard PC electret headset and boom (with an internal 10k bias resistor).

It is not possible to set the VOX level independently of the main microphone gain and neither is there provision for anti-VOX. Use of headphones is therefore necessary if VOX operation is envisaged.

Noise Blanker. The KNB2 noise blanker is very effective on automotive impulse interference, the best I have heard. It is ineffective on normal QRN.

160m and receive antennas. The 160m module, K160RX, also offers the facility to use a separate receive antenna on any band. As this information is stored as part of the operating configuration of the K2, you can just set it up for the bands where you use a separate receiver antenna, typically 160, 80 or 40m. However, you should probably use some sort of protection against excessive voltages on the receive antenna when transmitting. My main gripe with the use of the receive antenna feature is that to switch between the transmit antenna and the receive antenna requires no fewer than three button presses each way. Elecraft says that it is going to simplify this in the next software upgrade.

This separate antenna feature makes connection to transverters very straightforward, see [6] for details.

Computer control. The computer interface, KIO2, provides 4800 baud RS232 level control with a complete instruction set. If the K2 is not supported on your favourite program the Kenwood setting can access most of the features. I have used *Writelog* and *Logger* with my K2 and both work fine. In addition there is a K2 logging program for the *Palm M* series of PDAs [7]. This combination would make a very lightweight station.

Although the KIO2 has a standard DB9 connector, it has a number of other outputs, namely 12V, AUXBUS and a key line for an amplifier or transverter. This means that you must never connect a K2 directly to a PC or laptop; some sort of adaptor cable or interface must used.

It is also possible to use the RS232 lines to drive peripherals - for example I use a frequency to band number (BCD, compatible with Yaesu) decoder to drive my antenna switch or external bandpass filters.

By the way, if you plan to build the KPA100 you might not want a separate KI02 as the KPA100 has one built-in.

KEYING

THE K2 HAS a versatile internal memory keyer. There seems to be no clipping of the first dot after change over, a problem with many other radios. The designers have made a very neat provision for external keying from a logging PC. If a stereo Y adapter is used in the key jack, the paddle can be plugged into one side and the internal keyer works as normal. However, if the K2 detects that both dot and dash contacts closed simultaneously it concludes that an external keyer is in use. This means that a pair of diodes from each contact to a common point can be used to interface with the keyer in a PC. This makes for a very neat arrangement when using a contest logging program.

ALIGNMENT

MY PERSONAL VIEW is that you should be prepared to align your K2 two or three times over the first few months as you become to understand how the circuitry works and your personal preferences become clearer. If you start by aligning to the description in the manual this represents a good reference point. After about two months operating a fresh alignment should be done. In particular the settings of the CW bandwidths and the respective carrier frequencies are worth some detailed attention. Using *Spectrogram* it is possible to align the filter settings so that the wanted signal stays in the passband and consistent with the sidetone frequency so that accurate spotting can be done.

You may also find that you can set the 4MHz reference oscillator more accurately against WWV. Some of the crystals in the interpolation oscillators of some K2s have drifted and modifications have been proposed to reduce this problem. A rather elegant way of analysing drift is explained in [8]. It is probably only necessary to remove one of the pair of oscillator crystals rather than the full temperature compensation described in the article. This article is very typical of the high quality support you can expect when you join the K2 community.

There are many modifications, some official, some unofficial, posted on the website as owners seek to optimise performance. Many of these unofficial modifications and improvements have been included in the latest K2 versions. This ensures that you can keep your own K2 up to date in all respects.

Building the K2 has been a fun project and when the result is a top-flight HF transceiver like my own K2 the whole thing becomes something really special.

Bob Whelan, G3PJT

COST & AVAILABILITY

THE BASIC 10W CW-only K2 costs $599 (approx £375) plus P&P and can be ordered from the Elecraft website. The KPA100 K2/100 'internal integration kit' (100W) is $359 and the KSB2 SSB option is a further $89. See the Elecraft website for details of other options.

REFERENCES

[1] 'The Elecraft K1 Transceiver Kit', Richard Newstead, G3CWI, *RadCom* September 2001.
[2] 'Technical Topics', *RadCom* December 2002.
[3] 'RSGB National Field Day 2002', *RadCom* November 2002. ♦

WWW.

Elecraft homepage: www.elecraft.com
[4] www.elecraft.com/K2_perf.html
[5] http://home.pacbell.net/johngreb/modifications_to_KSB2.pdf
[6] http://www.elecraft.co./Apps/transverter_notes/Transverter_App
[7] www.qsl.net/k0pc/K2logger
[8] http://home.pacbell.net/johngreb/reducing_k2_frequency_drift.pdf

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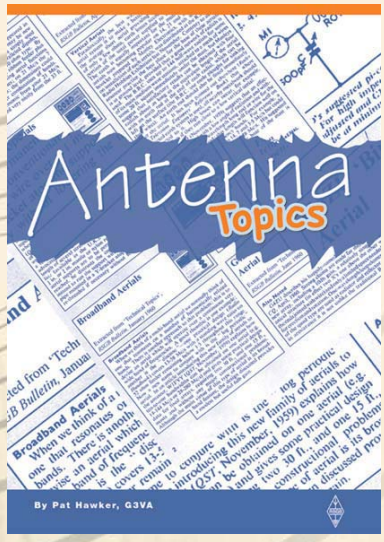

Antenna Topics by Pat Hawker, G3VA

If you are interested in antennas this book is a goldmine of information and ideas on the subject. Pat Hawker has been writing his "Technical Topics" column in Radcom since 1958 and has produced much excellent work in this time. This book is a chronological collection of cuttings of Pat's words over the years. Hundreds of areas and subjects are covered and many a good idea is included. Carefully indexed this book is not only a great reference work but also a history of over forty years of antenna design.

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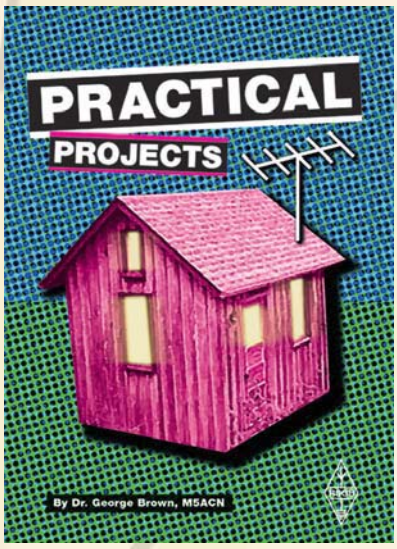

Packed with around fifty "weekend projects" Practical Projects is a book of simple construction projects for the radio amateur and those just interested in electronics. A wide variety of radio ideas are covered with everything from an 80m Transceiver, Antennas, ATUs and simple electronic keyers all included. Other simple electronic designs are such as dry battery testers, mobile microphones and various meters and monitors are also added. The book also contains a handy section on "now I've built it what shall I do with it?" questions answered. This book is excellent for those just looking for interesting ideas to construct and for the newcomers to the hobby looking to expand their knowledge.

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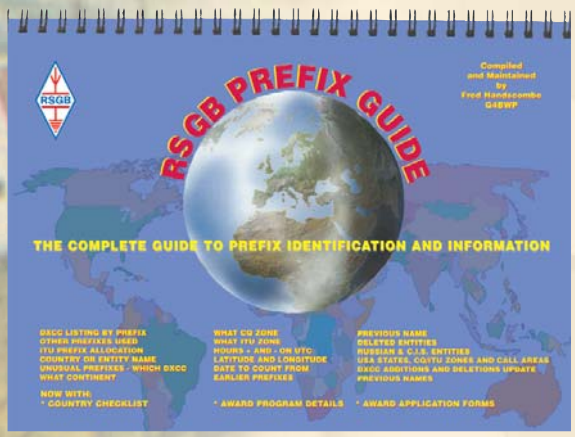

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SAVE OUR SOULS?

Gordon Adams, G3LEQ*, looks at the events of February 1953 that led to the creation of the Radio Amateurs' Emergency Network exactly 50 years ago.

OVER THE NIGHT of 31 January to 1 February 1953, the east coast of Great Britain and large areas of the Netherlands and Belgium suffered devastating storms and floods, with massive tides being whipped up to heights of 11 - 18ft above normal. Sea defences were broken down, the coastal regions of East Anglia were flooded and 307 people were drowned. I recall that the BBC's Third Programme medium-wave transmitter at Daventry, then operating on 647kHz, was used purely to relay distress communications and warnings. Needless to say, telephone lines and power cables were put out of action for quite a time, and, without two-way radio communications, many communities were cut off. People trapped on the upper floors of their homes were totally dependent on rescuers arriving in small boats who were constantly shouting out across the floodwaters, "Hello - is anybody there?" Lacking any form of radio links, these intrepid souls in their small boats had to collect a few people at a time and return to dry land before helicopter rescuers could be contacted.

Photo: David Hopcroft (Humber Radio)

Humber Radio, GKZ, on 1 February 1953 - almost cut off by the flood waters.

It is important to take note of the meteorological background to this tragic storm, because the same kind of sea surge could build up again. Initially, a vicious gale started to move across Great Britain on the evening of 31 January 1953. The weather forecasters predicted that the east coast sea defences were likely to be severely tested. An exceptionally high spring tide was due, and it was feared that the storm's very low atmospheric pressure and hurricane force winds would raise sea levels even further. This would result in enormous waves hitting the North Sea coast of England in particular, sweeping down during the night to the English Channel. The special BBC radio broadcasts advised people living along the threatened coastline to move themselves and their livestock to higher ground. Those who are familiar with the topography will know that from Bridlington Bay southwards to Dover, there is no high ground to speak of: the Lincolnshire Wolds, the Norfolk Edge and the Gog and Magog Hills were too far inland!

The storm tore across the North Sea in the early hours of 1 February and ravaged the English, Dutch and Belgian coasts. The most serious destruction occurred in the 'bottle neck' at the southern end of the North Sea, where the sea rose more than 18ft above normal! The total loss of life in the three countries was in excess of 2100 people and tens of thousands of animals. Over £5bn-worth of damage was done in England alone. Months after the event ruined homes and carcasses of animals were still to be seen.

In those days the army and air force were able to supply manpower in the shape of trained national servicemen. The military no longer has such a surplus of manpower, and Emergency Planning Officers need to take account of this should there be a repetition of such a natural event. Similar high tides have occurred over the last 300 years in 1703, 1717, 1736, 1825, 1856, 1870, 1879, 1881, 1897, 1907, 1928, 1938 and 1949. Yes, the River Thames barrier has now been built (1979) to protect the low-lying land around London; but what new protection can be, or has been, provided for the east coast?

The existence, and extent, of a 'jet stream' in the earth's upper atmosphere was not fully understood in 1953, but it is now known that hurricane-speed winds, of 150MPH and more, track around the earth at a height of between 26,000 and 30,000ft. Over the last 20 to 30 years, this jet stream has gradually moved further north, and is affecting our European weather coming in eastwards from the Atlantic.

After the 1953 sea surge, the Waverley Committee initiated an extensive programme of river and coastal defence improvements. These constructions had a design life of some 30 to 50 years, and they are being constantly reinforced in different places. However, there have been six lesser storms since 1953, and it is now being suggested that the effects of global warming may well intensify the risk to these precautions.

Then again, there have been other natural disasters within the UK in recent times. Storms in the Northern Temperate Zone do not reach the violent intensity of tropical cyclones, but people in the south-east of England can still see evidence of woodland carnage across the North Downs in Kent. It was here that a ferocious storm took the forecasters by surprise in October 1987. Falling trees even destroyed an electricity sub-station, thus taking out communications and blocking main roads in the Sevenoaks area. I made a video of the destruction and was later invited to show it at a meeting organised by the Cheshire Emergency Planning Officer in the county control bunker at Frodsham.

The lessons to be learned are obvious. In connection with the 1953 event, it was recorded in the March 1953 edition of the *RSGB Bulletin* (the earlier name for *RadCom*) by Arthur O Milne, G2MI, RSGB President Elect, "that high tribute should be paid to the magnificent work performed by the radio amateurs of the Netherlands, who organised a nation-wide emergency network, and toiled night and day for nearly two weeks" during the flood disaster.

THE FORMATION OF RAEN

TWO AND A HALF years prior to the east coast floods, the RSGB had offered to set up a radio communications network to meet any national disaster on land, at sea or in the air. The offer was declined because the General Post Office had advised the government that it was quite capable of handling any emer-

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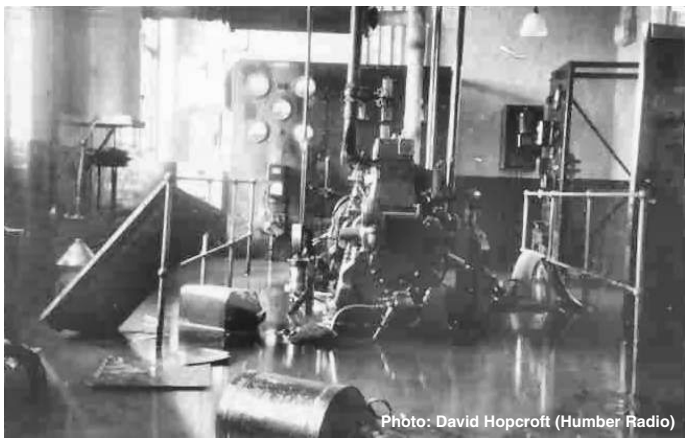


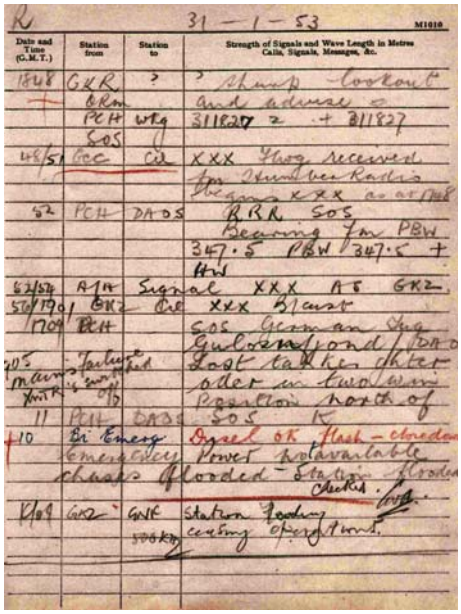
What a mess! The devastation caused by the floods inside the Humber Radio building is clear to see.

gency *without the help of radio amateurs*. Indeed, the RSGB received a communication from the Ministry of Transport which read: "The Minister much appreciates the interest shown by your Council, and your members, in the arrangements made for receiving distress messages from vessels at sea; and is grateful for their offer of co-operation. After discussion with the Postmaster General, however, he is satisfied that the normal listening watch maintained by the stations of the maritime service should be adequate in all ordinary cases - to ensure that any distress message is picked up and acted on. He feels that the occasions on which it would be necessary to call on the services of radio amateurs, or other members of the public would be so exceptional and, therefore, so few and far between, that it would be more satisfactory not to lay down any hard and fast procedure; but to make the necessary arrangements in the light of the requirements of each individual case."

As a corollary to the above ministerial statement, it is relevant to quote from the February 1953 *RSGB Bulletin:* "During the last few hours of January 1953, a disaster of immense magnitude struck the coasts of the British Isles. Post Office telephones, Government wireless stations and the utility services were put out of action for days on end. Radio amateurs in these stricken areas, ignoring the terms of their licence, but feeling sure that public opinion would support them, immediately placed their stations and their experience at the disposal of the authorities. In Lincolnshire, for example, when Humber radio station (callsign GKZ) was put out of action by the floods, local radio amateurs maintained a continuous watch on the shipping frequencies. Four times in a few hours Grimsby and Hull radio amateurs intercepted distress calls from ships at sea. Yet, only a few years previously, we were told that the Postmaster General was satisfied with the arrangements for reception of distress messages *in all ordinary cases*. What, may we ask, is an ordinary case?" The article continued: "We should be failing in our duty if we omitted to place on record, once again, our serious concern that no provision has yet been made by the Government to establish a nation-wide Amateur Radio Emergency Service." These words were written by John Clarricoats, OBE, G6CL, who was Secretary of the RSGB from 1930 until 1963.

In the following month's *RSGB Bulletin* (March 1953) John Clarricoats wrote: "Whatever the authorities may say, or think, an organised service, ready to click into place immediately, is a much better proposition than trying to improvise at the height of an emergency, when people are in peril of their lives. So that something can be got going without further delay, we ask all members who are keenly interested to register their names at Headquarters. Envelopes should be marked 'Emergency Service'. Let us show that we can set up an efficient, well trained and enthusiastic organisation, which will cost the country nothing whatever to equip or maintain."

The Seventh Annual Amateur Radio Exhibition took place on 25 November 1953 at The Royal Hotel, Woburn Place in London. It was at the luncheon, which followed the opening ceremony, that the then President of the RSGB, Leslie Cooper, G5LC, announced the formation of the Radio Amateurs' Emergency Network (RAEN) in the UK. He left the Post Office and Armed Services representatives in his audience in no doubt of the determination of radio amateurs to prepare themselves for any future emergency. He explained that the RSGB planned to use its regional structure across the UK to set up a radio network that might provide a back-up for emergency communicators in the event of a breakdown of the telephone services. He said that the RAEN would only provide such services in the event of failure or overloading of the telephone system. The Post Office soon pointed out that RAEN could represent a Russian ship's callsign, and the RSGB was encouraged to find a new spelling - namely 'Raynet', in order to avoid possible confusion (nobody seems to have suggested that the letters RSGB might have a similar connotation!) However, with the rapid decrease in the use of Maritime Wireless Telegraphy (ICW), it seems unlikely that the initials RAEN pose any kind of problem now.



Extract from the Humber Radio log of 31 January 1953, when forced to close down. Radio amateurs rose to the occasion and temporarily handled ship to shore traffic until an emergency replacement Coastal Station was put on the air.

FIFTY YEARS OF AGE

RAYNET IS THEREFORE 50 years old this year, and we propose to mark the occasion by holding a special conference later in the year. Radio communications facilities have changed much during this period, and last year the RSGB Board asked me to carry out a comprehensive 'Raynet Review'. This bulky document was presented to the Board on 27 April 2002. The Board's first action was to appoint Paul Gaskell, G4MWO, as National Co-ordinator of Radio Communications Voluntary Services. This title RCVS was chosen deliberately so that it would not conflict with those of existing Raynet bodies and 'The Network'. Paul will be writing more on the subject of Raynet for *RadCom* - dealing with its present slightly complicated structure, and how we see Raynet progressing in the 21st century.

One thing is for certain - if we do not offer new modes of communication to our 'user services' [for example, see *RadCom* June 2002 page 68 - *Ed*] we shall lose our credibility. Furthermore, it is my opinion that to survive, amateur radio must have an effective public service aspect. The frequency spectrum that we employ has never been more valuable, and we must justify our occupation of it.

● *The illustrations in this article are used with the permission of David Hopcroft, the last station manager at Humber Radio before it closed down. Thanks to Nevil Brinnen, G3VDV, for forwarding the illustrations.* ♦

Gordon Adams, G3LEQ, has been appointed by IARU Region 1 to become its Amateur Radio Emergency Services Co-ordinator for Europe, the Middle East and Africa.

RSGB 2002 AGM Held in South Wales

RSGB Annual Meeting

Saturday 7 December 2002
University of Wales, Swansea, Wales

THE FOLLOWING is a report of the 76th Annual General Meeting of the RSGB. The report is not the formal minutes of the meeting. The formal minutes of the AGM will be included in the Society's Annual Report which will be published in the November 2003 edition of *RadCom*.

Sixty-nine members gathered in Swansea on a typical December day for the Society's 76th Annual General Meeting at the Taliesin Arts Centre of the University of Wales. The day took on what is now the recognised format: the formal AGM in the morning session followed by the trophy presentations. After lunch there was an 'Open Forum' which was open to members and non-members and in the evening there was an amateur radio dinner.

Opening the meeting the Society President Bob Whelan, G3PJT, welcomed everyone and outlined the agenda for the meeting. The first item under discussion was the confirmation of the minutes of the 75th annual meeting held in Hamilton, Strathclyde, in December 2002. No questions were raised and the motion to accept the Boards recommendation to accept the minutes was proposed by Jeff Smith, MI0AEX, and seconded by Harry Bellfield, G3SBV. The motion was carried with one abstention.

Item two was the adoption of the Society's accounts for the financial year ending 30 June 2002. The President called on Peter Kirby, G0TWW, the Society's General Manager and Company Secretary, to read the Auditors' report. On completion the Society's Treasurer, Ken Ashcroft, G3MSW, highlighted the key areas of the accounts. Harry Bellfield, G3SBV, raised a number of questions on the accounts. These were addressed by the Treasurer. The President told the meeting that there was no formal requirement to adopt the accounts and moved on to item three on the agenda: the results of the recent Board and Regional Council elections. The President informed the meeting that this year all the standing candidates had been elected unopposed so no election actually took place. The President felt that this was rather disappointing. He welcomed the newcomers to the Board and Regional Council. A list of candidates was published in full in the January 2003 edition of *RadCom*.

The fourth item on the agenda was to call for volunteers to act as scrutineers for the 2003 Board and Regional Council elections. From the floor, two members present volunteered: Alan Betts, G0HIQ, and Ian Brothwell, G4EAN.

The last agenda item of the formal AGM was to vote on a resolution to appoint the auditors KPMG LLP and to authorise the Board to fix their remuneration. Acceptance of the resolution was proposed by the President and seconded by Don Beattie, G3BJ. The motion was carried with one abstention.

There were two more formal items before the break for lunch: the trophies and awards ceremony (details were published in the February 2003 *RadCom*) and the Presidential review.

In his review the President informed the meeting of the Board priorities that had been put in place at the start of the year. At the forefront of these priorities was to raise the public awareness and appreciation of amateur radio. This has been achieved by a number of high profile events in 2001/2, not least the Marconi centenary in December 2001 and the Queen's Jubilee celebrations in June 2002. Over 20,000 visitors passed through the Jubilee Special Event Station GB50 in the grounds of Windsor Castle and a visit by the Patron, His Royal Highness the Duke of Edinburgh, really made it a memorable 10 days. Credit must go to the Cray Valley and Burnham Beeches clubs for organising the event.

GB4FUN, the Society's demonstration vehicle, has also played a key role in the promotion of the hobby this year. It has made in the region of 50 showcase visits to schools, youth camps, science week and county shows and rallies right across the United Kingdom during the course of the year.

The National Space Centre in Leicester, which has on display an active amateur radio station, attracted some 370,000 visitors in its first full year of operation.

This exposure will benefit the hobby greatly but the real success of 2002 has been the introduction of the Foundation Licence. This has brought over 3000 newcomers into amateur radio in the last 12 months, over 700 of whom are under 21 years of age. This success has reversed a 10-year trend and if you add those Class B licence holders who have taken the Morse assessment and taken out an M3 call, the M3 licence holders exceed 6000 new HF operators. A success story indeed. On closing, the President told of a busy year ahead with the introduction of OFCOM, the World Radio Conference, and the continuing battle against the threat of PLT.

Following a very enjoyable buffet lunch, the 'open forum' took the form of a number of presentations and a question and answer session.

The Society took the opportunity to launch two major initiatives. The Radio Communications Foundation, and the new EMC help project 'EMC Aid'. This is an EMC advice and self-help project based on the Society's regional organisation. Briefings were given covering the IARU Region 1 conference that took place in November 2002 and the World Radio Conference, which takes place in Geneva in May 2003. Following a lively question and answer session the open forum closed at 4.30.

A very successful AGM day was rounded off with the amateur radio dinner. Around 40 guests gathered in the 'Café West' restaurant on the University site. The meal was based on the Welsh theme and was greatly enjoyed by all who attended.

The Society would like to thank the Swansea Amateur Radio Society and the South Glamorgan Raynet group for all their assistance in the arranging of the AGM and for their help over the AGM weekend, which ensured that everyone had a successful and enjoyable day.

RADIO SOCIETY OF GREAT BRITAIN

Unaudited Income & Expenditure Account
For the six months ended 31 December 2002

	Six months ended 31/12/02		*Six months ended 31/12/01*	
Gross Income	**£**	**£**	**£**	**£**
Subscriptions	433,995		429,961	
RadCom Advertising	84,130		89,230	
Basic Membership Income		**518,125**		**519,191**
Books and Products Sales	163,739		196,630	
Other Activities	86,637		70,736	
Total Gross Income		**768,501**		**786,557**
Contribution from Activities (ie Basic Membership Income less Direct Expenses)				
Expenses Charged direct against Basic membership Income				
RadCom Production	(208,714)		(226,336)	
Amateur Radio Costs	(46,052)		(38,478)	
Council & Committee Expenses	(20,996)		(24,490)	
QSL Bureau Running Costs	(16,659)		(16,022)	
IARU Payments	(9,756)	(302,177)	(9,339)	(314,665)
Surplus from Basic Membership Income		**215,948**		**204,526**
Contribution from Book and Product Sales and Other Activities				
Books and Products Contribution		43,951		46,170
Other Activities		31,571		18,398
Total Contribution before Overheads		**291,470**		**269,094**
Less Overheads (ie Cost of General Administration and HQ Operating Costs)				
Finance, Legal & Administration	(162,450)		(154,609)	
Office Stationery, Telephone etc	(67,567)		(61,773)	
Despatch Costs	(33,041)		(36,016)	
HQ property costs, rates, power etc	(23,387)	(286,445)	(22,677)	(275,075)
Net Contribution from Operations		**5,025**		**(5,981)**
Financial and Other Items		17,611		20,491
Non-recurring Items		(38,604)		(28,500)
Net Income/(Expenditure) for the half Year		**(15,968)**		**(13,990)**

Commentary on the Income & Expenditure Account for the six months ended 31 December 2002

The Society reports a deficit in the un-audited Income & Expenditure Account for the six months to 31 December 2002 of £15,968 after non-recurring items of £38,604. This compares with the prior year deficit of £13,990 after non-recurring items of £28,500.
The non-recurring costs in the half year to 31 December 2002 refer to refurbishment costs of the Headquarters building. Structural repairs and window replacements were the principal components of the work.
Subscription income showed a small increase compared with the prior half year due to the full year effect of last year's increase in subscription rates. Membership numbers were 24,644 at 31 December 2002 compared with 24,722 in the prior year, with new members of 1,190 compared with the prior year of 726. Some of this increase in new members can be attributed to the interest generated by the Foundation Licence. Advertising income again was under pressure, but actions are in hand which will hopefully reverse or halt this trend.
The reduction in book revenue was due to a change in the mix of products and margins, and produced a small reduction in contribution.
The success of the new licence access arrangements to HF produced additional revenue, but also generated additional costs.
During the half year savings were achieved on *RadCom* production. Further changes are afoot, which will allow the use of full colour in the journal, without increasing production costs.
Current indications are that the Society will break even at an operating level by the end of the financial year.

Signed: Dr R C Whelan, BSc, MSc, PhD, G3PJT, President *K Ashcroft, FCA, FCMA, G3MSW, Treasurer*

HF HF HF HF

DON FIELD, G3XTT
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e-mail: hf.radcom@rsgb.org.uk

I'M SPOILED for material this month, with the results of several major international contests from 2002 having arrived recently, along with an end-of-year round-up of the 2002 operating table, the quarterly all-time table prepared as always by Henry, G3GIQ, and the usual collection of operating news.

On the subject of contest results, there has been a marked trend in the last couple of years for results to appear more quickly than before. This is partly because new standards for electronic logging along with computerisation of the adjudication process has speeded up that side of things. It's also because, for many contests, I no longer have to wait for a printed copy of the results to appear, but can download them from the web, saving maybe several weeks in the process. So, for example, I already have the results of last year's IARU HF Championship and last year's WAE SSB results, though space has precluded their inclusion this month. Drop me a line if you can't wait.

The 9-band tables (below) are worth a short digression too. This table ran for 30 appearances as a six-band table, then expanded to include 12 and 17 metres, and finally 30 metres. It is now into its 75th appearance, a remarkable achievement of continuous support from a growing number of participants. For interest, I have reproduced the high scores from the first table, which appeared in September 1982 (below right). The totals look remarkably modest by current standards, reflecting a number of factors, not least that several of the entrants are still active but have almost two additional sunspot cycles under their belts! Of course, other factors have come into play. Many more expeditions, countries becoming active that had been off the air for years (Albania, China, Myanmar, etc), and the development of spotting networks, especially the *PacketCluster* system. However, while it is easily possible to work 1000 'band-countries' (as they are often referred to) in a year, the sort of scores which the leading participants have come only through many years of patient endeavour, keeping track of activity on the bands and being there at the right time. Given that most participants also have, or have had, both jobs and family commitments, this is the sort of game which can keep you occupied for a lifetime! Those of you who may have come to HF recently from VHF, perhaps by way of an M3 callsign, may well recognise the phenomenon. VHF operators tend to chase grid squares, but the HF equivalent is of course countries (or, to be more precise, 'DXCC entities', as the definition of a 'country' can be a tricky one to pin down).

On a completely different subject, I have been reading with interest the correspondence (in 'The Last Word') over the past couple of months lamenting the demise of AM (Amplitude Modulation). My first two HF transmitters were AM, a Codar AT5 followed by a Heathkit DX100U, so perhaps I ought to be joining the bandwagon. But the simple fact is that AM was increasingly a nightmare on HF. As activity increased over the years the HF bands became a squealing cacophony of heterodyning carriers, such that the idea of listening to what one correspondent called "BBC quality audio" was laughable. Nostalgia is a wonderful thing, but we sometimes forget the reality. Mind you, the introduction of SSB, actively encouraged by the ARRL and other bodies as a way of

9 BAND TABLES No 45

MIXED MODE

CALL	1.8	3.5	7	10	14	18	21	24	28	TOTAL
G3KMA	254	301	327	321	334	329	335	322	332	2855
G4BWP	248	305	333	320	335	329	335	314	325	2844
G3XTT	233	279	316	284	333	314	332	298	312	2701
GW3JXN	185	258	296	285	328	319	320	297	304	2592
G3GIQ	152	246	303	264	333	318	333	306	328	2583
G4OBK	179	231	279	283	329	307	319	302	301	2530
G3SED	233	261	293	278	314	293	297	266	287	2522
G3TXF	137	237	298	291	329	295	324	281	304	2496
G3TBK	132	239	278	253	328	300	317	283	289	2419
G3SNN	166	231	283	219	333	281	323	275	305	2416
G3LAS	116	206	251	265	317	302	317	298	301	2373
G3YVH	132	166	260	283	325	313	312	278	284	2353
G3IFB	62	224	288	247	327	253	307	249	287	2244
GM3PPE	148	210	254	264	320	263	277	233	227	2196
G3AKU	111	168	239	252	299	265	275	265	275	2149
G4PTJ	47	186	235	195	323	275	320	266	302	2149
G3IGW	129	198	320	242	289	246	264	134	237	2059
G5LP	70	228	283	225	312	227	284	178	250	2057
G0JHC	1	61	200	264	276	302	314	296	309	2023
G0TSM	67	153	229	184	301	261	294	231	295	2015
G3VKW	48	169	233	130	327	226	324	246	308	2011
M0BEW	60	125	215	187	281	240	274	228	264	1874
G4XRX	8	77	172	154	294	233	300	205	262	1705
G4OWT	42	87	181	94	307	112	296	97	268	1484
G4NXG/M	25	58	139	0	292	220	289	194	254	1471
G4WFQ	2	70	140	104	188	121	180	101	151	1057
G4FVK	42	79	106	60	190	107	188	81	175	1028
MM0BQI	39	80	130	50	200	81	185	63	173	1001
M0CNP	10	67	119	9	208	73	163	51	126	826
AVERAGE	**106**	**179**	**241**	**207**	**299**	**248**	**290**	**229**	**270**	**2070**

CW ONLY

G3KMA	248	283	324	321	333	322	331	308	323	2793
G4BWP	227	234	304	319	303	307	311	283	266	2554
G3XTT	223	249	304	284	305	291	304	272	283	2515
G3TXF	137	233	296	291	324	293	319	280	293	2466
GW3JXN	181	227	282	285	314	305	308	275	276	2453
G4OBK	172	214	272	283	311	293	297	281	280	2403
G0NXX	175	238	282	293	300	292	278	268	269	2395
G3SED	232	244	287	278	286	262	259	220	226	2294
G3SXW	96	207	263	266	317	283	303	258	283	2276
G3YVH	131	163	255	283	316	300	297	263	268	2276
GM3POI	204	220	281	229	295	216	273	212	243	2173
G3LAS	116	145	229	265	278	280	286	260	264	2123
G5LP	70	224	283	225	301	226	273	178	243	2023
G4PTJ	45	136	204	195	263	249	286	242	257	1877
G0TSM	63	106	203	184	216	177	225	180	253	1607
G3VKW	41	106	181	128	236	172	271	186	204	1525
G4OWT	34	81	154	94	239	75	238	71	209	1195
G4WFQ	1	69	132	104	126	95	130	79	86	822
MM0BQI	26	56	93	50	114	39	112	30	114	634
AVERAGE	**127**	**181**	**244**	**230**	**272**	**236**	**268**	**218**	**244**	**2021**

Next deadline: 8 April 2003. Prepared by G3GIQ 9 January 2003 henry@topdx.com

6 BAND TABLE No 1

MIXED MODE

CALL	1.8	3.5	7	14	21	28	TOTAL
G3KMA	63	201	277	326	326	311	1504
G3GIQ	41	154	194	323	323	304	1339
G3MCS	25	172	193	313	312	300	1315
G3HTA	39	152	182	291	265	232	1161
G4FAM	38	135	196	246	244	233	1092
G3XTT	64	141	179	214	238	234	1070

Prepared by G3GIQ, 1982

G3USE operating the station of his brother-in-law, Don, 5B4AGQ (G4ABI) during a recent holiday operation from Cyprus.

reducing band congestion and those whistling heterodynes, was opposed as strongly and vociferously as any of the more recent developments in our hobby have been. It looks as though, even after another 30 years or so, that opposition hasn't entirely gone away!

DX NEWS

THE GERMAN ST0RY team which I mentioned last month hope to be active from 20 March. They will remain in **Sudan** until 2 April.

Confusion reigns regarding QSL management for YI1BGD (**Baghdad**). Steve, OM3JW, has some of the logs for YI9OM and YI1BGD and is handling QSLs. Those logs are available online, so at least you can check first. Other contacts should be confirmed via YI1DZ. Cliff, G0MMI, who used to be manager for operations by Rodger, G0TLC, from YI1BGD, has stepped aside as matters were getting rather too complicated and, in any case, during the present tensions G0TLC is no longer travelling to Iraq.

Sage, JH6RTO / M0RAA, will sign T88FS from **Palau** from 13 to 17 March. He will be active on 80 to 10m CW and SSB. QSL to JH6RTO.

I mentioned last month a forthcoming operation from **Ducie Island**. The callsign is expected to be VP6D, and operation will start around 8 / 9 March. Operators include DJ9ON, DK9KX, FO3BM, JA1SLS, JR2KDN, N6TQS, VP6DB, VP6AZ and VP6MW. QSL via JR2KDN.

A group of US amateurs will be on a humanitarian mission to **Haiti** this month, and expect to be active from 10 to 21 March signing HH4/homecall. They will have three stations, and will try to be active when their other activities permit. There is a website with further details.

IOTA ACTIVITY

JI5USJ AND JI5RPT will activate **Daito Island** (AS-047) during the first week of March. Activity will be on all bands. QSL via their home calls.

Tom, WA6WPG/P, will activate **Anacapa Island** (NA-144) 8 and 9 March, probably 40 - 10m, with 26 hours of operating starting at 2000.

XF2IH will be active from **Emmedio Island** (NA-NEW) with five operators 20 - 27 March, CW, SSB and some PSK31. QSL via XE1IH.

CONTESTS

THERE ARE SEVERAL international contests this month as the main contesting season draws towards its close. The UBA Spring Contest is on 9 March and 13 April (CW and SSB respectively), 0700 - 1100 on 80m. Exchange RS(T) and serial number. The BARTG HF RTTY Contest is from 0200 on 15th to 0200 on 17 March. Exchange RST plus serial number plus the time of the QSO. Then over the final weekend of the month there is the CQ WPX SSB contest, which runs for 48 hours. Exchange RS plus serial number. Last year's results appear in the table, as do the results of last year's CQ WW 160m contests. My apologies for the late appearance of these. Finally, of course, don't forget the Society's own Commonwealth Contest on 8/9 March.

Dick, G3URA, one of our table entrants as well as being a force behind BARTG (the British Amateur Radio Teledata Group) writes with a reminder of the BARTG Spring contest from 0200 on 15 March to 0200 on 17 March. Exchange RST + Serial number + time. Full rules are on the BARTG web page or, of course, I can provide a copy in exchange for an SASE. There has been a profusion of new RTTY contests in recent years as the mode has become more popular (see my earlier comments) but this BARTG event is one of the granddaddies of the mode and is always well supported.

I received quite a lot of information recently about the European Sprint contests, both by way of past results and future dates and times. These contests are increasingly popular with UK stations, with their interesting format and short length. I don't have space to reproduce everything, but the good news is that the events now have their own web page. Readers take me to task from time to time that I refer so frequently to web pages. I am well aware that by no means all of you have Internet access. However, somehow I always manage to fill my allocated space but, by giving Internet references, at least some of you (I suspect a large majority) can garner further information as required, information that would otherwise simply have gone to waste or been inaccessible.

TABLES

FINAL SCORES FOR 2002 appear in the table on page 38. G4PTJ's score of 282 countries worked is just short of the 285 which last year's leader achieved. This may reflect the beginning of the decline in sunspot numbers, but may also be due to fewer major DXpeditions in 2002 compared with 2001. Nevertheless, that's a lot of countries worked in one year. But, as I said at this time last year, it is some of the other numbers which are just as impressive; the totals worked on RTTY, mobile or QRP for example. And at least some of the entrants with scores of 250+ were running just 100 watts, so a linear is by no means a prerequisite. My thanks to all of you for your participation and the various comments which have accompanied your regular submissions. I have already received some excellent totals for January 2003, so it's clear that we are in for another year of serious but friendly competition. Just to give a flavour for how the year has started, the Chiltern DX Club runs a lowband competition during January, to compete for the Penallt Trophy. As I write this, with several days of the month still to go, the leading entrants have worked around 130 countries, despite the competition being confined

CQ WPX SSB Contest 2002

Single-op

Call	Band(s)	Score
G5W (G0WAT op)	A	2961395
M0WAA	A	1144637
GW4BLE	A	614196
M6Q	A	334084
G3UFY	A	104328
GW7X (GW3NJW op)	A	70620
GM0LYM	A	32034
*G3VAO	A	1508790
*G5X (M0BRK op)	A	1160934
*GM3BCL	A	472689
*G4GOY	A	311553
*G4NXG/M	A	269920
*G0/N9LYE	A	254840
*G3JJZ	A	207740
*GM0FGI	A	189222
*MU0FAL	A	183040
*M0DAL	A	117110
*GD4GWQ	A	84272
*GI0OUM	A	27832
GM7V (GM4YXI op)	28	4592265
GW0ANA	28	71455
*G0AEV	28	901152
*G0WMW	28	342828
*M7W (G4IIY op)	28	213655
*M4T (G0VQR op)	14	252414
*G4VGO	1.8	47684

Single-op Assisted

*G0MTN	A	160650

Multi-Single

M5ZAP	4327680
M8C	3830382
MW2Z	1664534
M4U	586873
G6UQ	208600

* denotes Low Power

2002 CQ WW DX 160m Contests

CW results

Call	Score
*G4VGO	309987
GM3POI	287475
G0CKP	175015
G0IVZ	161420
G3NKC	129030
G3UFY	115107
GW3JXN	97185
G3MXJ	89792
GW7X	72350
*M4T	47260
*GU4YOX	27168
G4OBK	22295
*G3ZRJ	15660
*G0MTN	14812
*MM0CCC	14208
*G3JJZ	6550
*G0/N9LYE	3876

Multi-op

M0ABC/P	363132
G3LZQ	114140
G4IIY	1440

SSB results

*G4VGO	76725
*G4WPD	27965
*G3VAO	24219
GW4BLE	8250
*GM0EGI	8154
*G0TMN	368
*G0HBC	14

Multi-op

G3UEG	163584
M0ABC	89811

* Low Power

COUNTRIES WORKED, 2002 (final results)

CALL	CW	SSB	DATA	MIXED
G4PTJ	252	263	0	282
M0AWX	0	267	0	267
G3TXF	266	11	0	266
G3YVH	230	212	0	264
G0NXX	258	0	0	258
G3SXW	253	0	0	253
G4WXZ	186	206	0	243
ZC4BS	186	221	84	239
G3JFS	199	179	149	233
G3LHJ	215	120	150	231
M5PLY	0	224	0	224
G4WFQ	198	100	112	223
GM0TGE	131	203	6	223
G3SED	192	140	3	222
G4IRN	217	0	0	217
M3RDX	0	211	102	217
G0GFQ	16	210	26	210
G4OBK	177	79	88	208
G0ARF	0	0	206	206
GU4YOX	149	162	0	205
ZC4DW	166	110	115	190
G4UCJ	187	0	47	187
MU0FAL	167	137	0	186
G3XTT	140	124	94	182
G4KIV	154	132	0	179
G4NXG/M	0	177	0	177
MM0BQI	133	106	124	173

CALL	CW	SSB	DATA	MIXED
G4DJX	172	0	0	172
M0CNP	8	172	46	172
ZC4VG	167	14	37	171
MW5VZW	81	150	0	168
G3YMC QRP	165	0	0	165
G4FVK	79	143	0	154
GU0SUP	0	0	152	152
M0BZK	37	142	68	151
G0LGJ/M	0	143	0	143
G4IDL	128	41	0	140
M5GUS	0	134	0	134
MU3DHI	55	129	0	129
G4YWY/M	0	128	0	128
GJ3XZE	122	0	0	122
G3WP	118	0	0	118
G3ING	114	0	0	114
M0BVE	110	0	0	110
M3FSI	38	105	0	105
GM4ELV QRP	72	69	0	93
M3CLY	0	92	0	92
GW4ALG QRP	86	0	0	86
M0CAL	3	85	0	85
G0URR	0	0	81	81
G4DDL	80	29	15	81
M5AEF QRP	52	68	0	77
G3URA	0	0	75	75
M3VAM	0	65	0	65
M5AFA QRP	0	0	39	39

to 160, 80 and 40 metres. Incidentally, I referred earlier on to collecting 'band countries'. In 2002 G3TXF, working only on CW, amassed some 1712 such counters, an astonishing achievement.

SIGN OF THE TIMES?

DUNCAN, G4ELJ, reports a 17m QSO with Tom, NN2X/A9, in Bahrein. However, it should be noted that there are no 17m privileges in Bahrein.

Tom was actually using an IP link to the USA, with his signal then being relayed from station W4MQ. So, of course, what Duncan actually 'worked' was a repeater in the US, albeit controlled remotely from Bahrein. Obviously developments such as these make for some interesting opportunities to communicate around the world, but can be a little confusing if, as in this case, one of the 'operators' was actually using little more than what, in the past, would have been referred to as a phone patch. More accurately, I suspect Tom should have been using the callsign W4MQ, as there was no amateur radio link at the Bahrein end.

DON MILLER, W9WNV / AE6IY

YET ANOTHER ITEM of news on Don Miller (see photo last month, and mentions in December and January columns). There is now a web page chronicling his extensive DXpedition career.

THANKS

SPECIAL THANKS GO to the authors of the following for information extracted: *OPDX Bulletin* (KB8NW), *The Daily DX* (W3UR) and *425 DX News* (I1JQJ). Please send items for the **May** issue by **22 March.** ♦

WWW.

AE6IY (ex-W9WNV):	www.qsl.at/common/miller2.html
Haiti expedition by US ops:	http://www.geocities.com/n2wb2003/
OM3JW online logs for YI9OM & YI1BGD:	www.qsl.net/om2dx/
VP6D:	www.qsl.net/wd4ngb/ducie.htm
EU Sprint contests:	www.qsl.net/eusprint

HF F-Layer **Propagation Predictions** for **March 2003**

	7.0MHz	10.1MHz	14.0MHz	18.1MHz	21.0MHz	24.9MHz	28.0MHz
Time	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220
(UTC)	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020
*** Europe							
Moscow	884...138888	2363335668865	..76777884..	..7999999521	..59999983..	...24664....	....2332....
*** Asia							
Yakutsk	1.....5652	4341125788888	1.7767764543	..27773.....	...575.....	...463.....	...252.....
Tokyo	.....2662.	.....15662.	....122342..	....431.....	....3.....	...25.....	....3.....
Singapore	13331	57531	.....37731.	.....27871..	.....4775...	...125772...	....2565....
Hyderabad	1123	3.....26666	167742	..3224789 52.	..3556898 2..	..3888997...	..2888996...
Tel Aviv	883....18888	9971..269889	5457667885 87	...766786.32	...356663...	...455663...	...334442...
*** Oceania							
Wellington	.....68...	...124689...	...577788...	...245434...	....332.2...	....43.....	.....
Perth	.....343.	.....4654.	.....15531.	.....26763..	.....4543...	...45753....	...4662....
Sydney	.....364..	.....1775..	.....15771..	....47887...	....56775...	...477763...	...46553....
Honolulu	..1.....	.13531.....	...452.1....	....2.....	.....	.....	.....
W. Samoa	..1.....	..252221....	...46773....	....466.....	....255.....	.....34.....	.....
*** Africa							
Mauritius	5.....2445	3.....15655	1.....46532	.....663..	.....65...	.....152...	.....23....
Johannesburg	99.....8999	89.....9999	562....39998	..21..169853	..1322479 62.	..3788899 6..	...7788883..
Ibadan	451.....1333	777.....6777	42841.137874	3289878899 53	2.7998999732	..799999973.	..6989898 5..
Nairobi	21.....1111	54.....2234	751....13467	3.51..146775	..6421367832	..3666777 4..	...7677772..
Canary Isles	7871....6887	8885...27788	7568545 68887	4239888989 63	2..8888994.	...6878885..	...3888872..
*** S. America							
Buenos Aires	888.....78	6662.....66	3125.....252	2..731..2762	...6532 3572.	...2454565..	....354563..
Rio de Janeiro	445.....34	545.....343	2111.....531	3..552126862	...3754 5783.	....765676..	....765674..
Lima	323.....2	2224.....22	...5.....1.	...7.311254.	...6.533 45..	.....64453..	.....5445...
Caracas	111.....12	2221.....32	1..3.....131	....31..131.	.....2222 4..	.....77775..	.....7777 3..
*** N. America							
Guatemala	21.....1	1..2.....1	...2.....	.....	.....	.....222...	.....111...
New Orleans	111.....1	2111.....2	...1.....2.	...2.766672.	.....3777 7..	.....2888 5..	.....7773..
Washington	555.....25	6646.....157	211111.12572	.....666773.	.....7777 82.	.....2777 3..	.....465...
Quebec	8771.....688	21.2.....653	...12112361.	...2887 8872.	.....5888 85..	.....4667 63..	....3556 52..
Anchorage	5761.....12	5.32.....22	.....23..	.....35..	.....2..	.....	.....
Vancouver	121.....	1.1.....	.....	.....466..	.....62..	.....42..	.....2...
San Francisco	111.....	1..1.....	.....	.....333..	.....33...	.....44...	.....2...

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 January 2003 issued by the Sunspot Data Centre, Brussels, was 79.5. The predicted smoothed sunspot numbers for March, April and May are respectively: (SIDC classical method – Waldmeier's standard) 86, 84, 81 (combined method) 73, 70, 67.

ROGER BALISTER, G3KMA
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NEW REFERENCES

AS-166	EP	Hormozgan Province group
OC-251/Pr	VK3	Victoria State West group
OC-253	V63	Hall Islands
OC-254	V63	Mortlock Islands
OC-255	VK4	Queensland State (Gulf of Carpentaria) North group
OC-256/Pr	P2	Kilinailau (Tulun) Islands

Pr = provisional

Yaesu, Principal Sponsor of the IOTA Programme

LAST TIME I mentioned the very successful EP6KI operation by Victor Rusinov, UT8LL, and a group of Iranian amateurs from Qeys (Kish) Island, AS-166, and noted that this was the first of the EP IOTAs to be activated. Little did we know that happiness would turn so quickly to sadness. A bare seven weeks after the operation Victor tragically died in a plane crash near Esfahan while on a business trip to Iran.

Victor travelled extensively round the world for his work, in recent years making regular visits to the UK. He visited me at Chobham every few months, most recently in November following his EP6KI operation. Over the years Victor was a keen supporter of the IOTA programme, in earlier days as UB5LGM and more recently as UT8LL. He helped his Ukrainian team-mates put on operations, in many cases first-time operations, from EU-119 (4K3MI), AS-005 (4K4D), AS-086 (4K4I), AS-039 (EZ0Z), AS-104 (4K4N) and the Black Sea island groups EU-179, 180 and 182 (EM5UIA).

During his visits to Chobham he was always discussing possibilities for "the next operation" with boyish enthusiasm although his frenetically busy business schedule was often to frustrate these plans. Even so he managed to find time to participate in the very successful D68C operation in 2001 from the Comoros. During this and his regular participation in the RSGB HF and IOTA Conventions at Windsor he developed a wide circle of friends in the UK to add to his many friends in the IOTA community and, of course, in his native Ukraine. He will be sadly missed. Our deep condolences go out to his family and dear ones.

Victor Rusinov, UT8LL, Silent Key.

ACTIVITY ON THE BANDS

JUST THE ONE new one to report this time, and by the DXpeditioner who has done more perhaps than anyone over the last 15 years to activate IOTA groups in the Solomons, Papua New Guinea and the Philippines. Bernhard, DL2GAC, devotes four months of each year to island-trekking in this part of the Western Pacific and setting up a modest portable station wherever he can. Given a remote IOTA group and available transport, he will take the trip on, well aware that it could be several weeks before he can get back. In the latter part of January, Bernhard found transport to Papua New Guinea's far-flung Tulun Islands (OC-256) where as P29VMS he managed to put in several days' activity. As the column was being written (late January) he was expected to move on with the boat to the Nuguria Islands, another new one for IOTA. QSLs to DL2GAC.

It's worth noting that Bernhard is the only amateur to have activated Anuta Island (OC-178) which he did as H44MS in 1993. Anuta and twin island Tikopia hit the headlines in January this year when a cyclone ripped through. Such was the remoteness of the island that it took a whole week before contact was reestablished with the islanders and it could be confirmed that contrary to first fears there was little if any loss of life. Nevertheless television showed devastation of the islands as complete.

Another new one coming. Enrique, XE1IH, and a group of Mexican amateurs plan to be active as XF2IH from Enmedio Island in the Veracruz State South group between 20 and 27 March. More information is on the Internet (see WWW. below).

INTERESTING TO KNOW

EVER wondered which is the most worked IOTA? Surely Great Britain (EU-005) or the main Japanese island, Honshu (AS-007)? No, according to the IOTA database of 2140 records, the Canary Islands (AF-004) beats all other groups by quite a margin with over 95% of members having it credited. The most worked IOTAs after EA8 are, in order, EA6 (EU-004), CT3 (AF-014), OH0 (EU-002), 9H (EU-023), 5B/ZC (AS-004), IS0 (EU-024), TK (EU-014), EI/GI (EU-115), and G/GM/GW (EU-005) with just over 90% of members with credits. Yes, marginally more people have Ireland credited than Great Britain.

Given the comparative resident amateur populations this is hard to believe since Great Britain must give out more contacts. Almost certainly the problem lies with QSL card design. How many UK mainland stations have a card that complies fully with the rules, by having the island name Great Britain printed on it? Omission of this can mean either non-submission of the card by the applicant (most likely) or rejection of it by the checkpoint. Next time you order some QSLs, factor into the design "IOTA: EU-005 Great Britain". Because of QSO volume contest stations particularly should bear this in mind. Maybe the answer is for QSL card printers to incorporate the IOTA designation as a standard block feature on cards for mainland stations. This small detail will ensure a lot more mainland UK cards will be submitted for IOTA credit and enable us to punch our weight better. ♦

WWW.

RSGB IOTA Programme:	http://www.rsgbiota.org
IOTA Manager's website:	http://www.eo19.dial.pipex.com/index.shtml
IOTA Contest rules:	http://www.rsgbhfcc.org
XE1IH (Enmedio Island):	http://www.qsl.net/xe1ih

RSGB IOTA Programme, PO Box 9, Potters Bar, Herts EN6 3RH; e-mail: iota.hq@rsgb.org.uk

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Complete with 25 mts of enamelled wire, insulator and choke Balun Matches any long wire to 50 Ohms. All mode no A.T.U. required. 2 'S' points greater than other Baluns.

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1 1/2" Diameter 2 metres long **£16.00**
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N TYPE for RG58 ..... **£2.50**
N TYPE for RG213 ..... **£2.50**
SO239 to BNC **£1.50**
PL259 to BNC **£2.00**
N TYPE to SO239 ..... **£3.00**
BNC to N Type **£2.50**
SMA to BNC **£3.95**
SMA to SO239 ..... **£3.95**
SMA to PL259 ..... **£3.95**
SMA to BNC (male) **£3.95**
SO239 chasis socket round **£1.00**
N-Type chasis socket round **£2.50**
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N-Type (double female) **£2.50**

BALUNS

MB-1 1:1 Balun 400 Watts Power **£24.95**
MB-4 4:1 Balun 400 Watts Power **£24.95**
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MB-1X 1:1 Balun 1000 Watts Power **£29.95**
MB-4X 4:1 Balun 1000 Watts Power **£29.95**
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MD-24: HF or VHF/UHF Internal Duplexer (1.3-225 MHz 500w) (350-540 MHz) SO239/PL259 fittings **£22.95**
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CS201-N same spec as CS201 'N-type' fitting **£28.95**

ANTENNA ROTATORS

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

MOUNTS

Turbo Magnetic Mount 7inches 4 mtrs coax/PL259 3/8 or SO239 ..... **£14.95**
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..... SO239 fitting **£14.95**
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..... 3/8 fitting **£9.95**
..... SO239 fitting **£12.95**
Hatch Back Mount 3/8 4 mtrs coax/PL259 ..... **£12.95**
Roof Stud Mount 4mtrs coax/PL259 3/8 or SO239 fitting **£12.95**

ANTENNA WIRE & RIBBON

Enamelled Copper Wire 16 gauge (50 mtrs). **£9.95**
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Equipment wire Multi Stranded (50mtrs) **£9.95**
Flexweave High Quality (50mtrs) **£27.95**
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300 Ohm Ladder Ribbon H/Duty USA imported (20 mtrs) **£15.00**
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(Other lengths available please phone for details)

TRAPS

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

HF BALCONY ANTENNA

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

HF DELTA LOOP

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

HF YAGI

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

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

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

40Mtr RADIAL KIT FOR ABOVE **£99.95**

VISA SWITCH MasterCard

HF VERTICALS

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

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

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

EVX5000 5 BAND VERTICAL FREQ: 10-15-20-40-80 Mtrs GAIN: 3.5dBd HEIGHT: 7.30m POWER 2000 Watts (wihtout radials) POWER 500 Watts (with optional radials) **£139.95**
OPTIONAL 10-15-20 Mtr radial kit **£34.95**
OPTIONAL 40 Mtr radial kit **£12.95**
OPTIONAL 80 Mtr radial kit **£14.95**

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

EVX8000 8 BAND VERTICAL FREQ: 10-12-15-17-20-30-40 Mtrs (80m optional) HEIGHT: 4.90m RADIAL LENGTH: 1.80m (included) POWER: 2000 Watts **£269.95**
80 Mtr radial kit for above **£79.00**
(All HF verticals require grounding if optional radials arenot purchased to obtain a good VSWR)

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(Hi Grade Heavy Duty Commercial Antennas)

(picture for reference only)

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

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

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TMAF - 2" to 11\4" Heavy Duty Fibreglass telescopic mast set, approx 20ft when erect 6ft collapsed **£99.95**

WINDOM WIRE DI-POLE

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

MISCELLANEOUS ITEMS

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

PATCH LEADS

Standard Leads
1 mtr RG58 PL259 to PL259 Lead **£3.95**
10mtr RG58 PL259 to PL259 Lead **£7.95**
30mtr RG58 PL259 to PL259 Lead **£14.95**
Military Specification Leads
1 mtr RG58 Mil Spec PL259 to PL259 Lead **£4.95**
10mtr RG58 Mil Spec PL259 to PL259 Lead **£10.95**
30mtr RG58 Mil Spec PL259 to PL259 Lead **£24.95**
1mtr RG213 Mil Spec PL259 to PL259 Lead **£4.95**
10mtr RG213 Mil Spec PL259 to PL259 Lead **£14.95**
30mtr RG213 Mil Spec PL259 to PL259 Lead **£29.95**
(All other leads and lengths available ie BNC to 'N' Type etc. Please phone for details)

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CONTEST

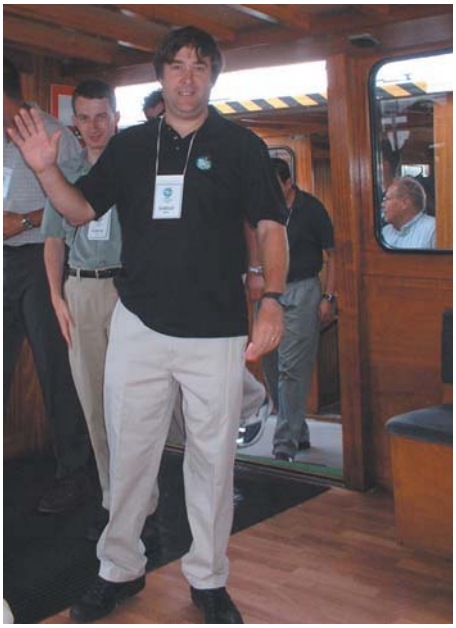
TIM KIRBY, G4VXE
I la Vansittart Road,
Windsor SL4 5BZ
E-mail:tim@g4vxe.com

A RECENT PRESS RELEASE from the RSGB VHF Contest Committee announced that Andy Cook, G4PIQ, is the new chairman of the committee, taking over from Martin Platt, G4XUM, who has decided to step down. I'd like to wish Andy the very best of luck with taking over the committee and to add thanks to Martin for all the very hard work that he has put in on the committee. Some other committee members: Dave Edwards, G7RAU; Ian Cornes, G4OUT, and Peter Bowyer, G4MJS, are also stepping down from the committee, so thanks to all of them for all their efforts over the years. Hopefully with a little more time at their disposal, they'll be able to get on the air a bit more often too. Of course, with the retirement of all these committee members, new members are being sought. As Andy says, "We're looking for keen, enthusiastic and active VHF contesters who are keen to increase participation in VHF contests. If accepted, you'd then be responsible for adjudicating a number of contests, and involved in the process of setting rules and dealing with issues as they arise.

"Most of the committee work is carried out by e-mail - so access to e-mail and some degree of computer literacy (for contest adjudication) is essential, but we do meet face-to-face around twice a year at present. At present, these meetings are held on weekday evenings in London, but there may be alternative options available if this posed a real problem for members.

"Applications to G4PIQ please [vhfcc.chairman@rsgb.org.uk], with a short summary of your contesting experience and what you can and want to bring to the job."

But it's not only VHF contesters who have the opportunity to contribute to this facet of the hobby. The RSGB HF Contests Committee currently has a number of vacancies for full and corresponding member positions. The committee is responsible for running all facets of the RSGB HF contests programme. As a 'working committee' members are expected to get involved in the processes of administration and adjudication of contests as well as defining future policy. The committee conducts business through e-mail, tele-conferencing and face to face meetings which are usually held several times a year in central London. If you are interested, please contact the HFCC chairman, Justin Snow, G4TSH, by e-mail to: hfcc.chairman@rsgb.org.uk



Two members of the RSGB's HF Contests Committee pictured here, on WRTC referee duty in Finland last July: Dave, G4BUO, and (behind) Lee, G0MTN.

If you are one of those people who holds strong opinions about how the contesting calendar should be shaped and would like to make a constructive contribution to the hobby, please consider responding to one of these opportunities. Some people are becoming well-known on the UK-Contest reflector for criticising at every turn, but never making a positive contribution to the organisation of contesting in this country. Don't let that apply to you!

CONTESTS THIS MONTH

NOT MUCH more space for discussion of the contests this month, but I should mention one of my favourite events, the Commonwealth Contest on 8 / 9 March. For HF CW contesters, this really is something different. The contests detractors say it's slow and boring, but for the tactician, it's fascinating. The challenge is to work the different areas of the Commonwealth on as many bands as you can. I often say that there are various key events that I like, because they are different to the CQWW model - which is a wonderful contest - but it would be a shame if they were all in the same mould. The Commonwealth Contest is one that really is different. Do try and come on and support the event: let's see a record number of G stations talking part.

For the phone contester, the prime event is *CQ* WPX on 29 / 30 March. This is always great fun: the tactics have to be 'run, run, run', particularly when the band is open to Europe, USA or Japan. Foundation and Intermediate licensees be aware, your prefixes are rare and you will be very popular in this event!

2nd SLOW SPEED CUMULATIVES, 2002

THERE WAS GOOD activity surrounding this series of contests. Tom, G0VQR, of the Reading & DARC created some friendly rivalry between Class B & Foundation Licence members who were using his shack during the five sessions. Thanks to Tom for his support of the contest and for encouraging activity in this way; I'm sure a few more clubs could do the same. There were four M3s and one 2E0 in the logs but only one M3 log was submitted. We hope to see more next time. The highest placed Foundation Licensee was Chris, M3PGM/P, operating at G0VQR. Chris's station used 10W from an FT-1000MP and a G5RV antenna. First placed Full Licensee was Mick Puttick, G3LIK, using 10W from an FT-1000MP and a W3DZZ antenna. The leading first time entrant was Andy Anderson, G0HUC. Congratulations to all certificate winners and we hope to see you all, and some new participants in the next series.

Derrick Webber, G3LHJ

2nd Slow Speed Cumulatives, 2002

Pos	Call	2 Sep	10 Sep	18 Sep	26 Sep	4 Oct	Total	Code
1*	M3PGM/P	460	-	440	540	-	1725	2C12
2*	G3LIK	210	205	230	CKL	-	645	2C23
3	G3YAJ	195	195	235	CKL	CKL	625	2C13
4	G2HLU	-	185	190	CKL	230	605	2C12
5	G3ZRJ	165	CKL	CKL	180	215	560	2C1?
6	G3VQO	165	CKL	190	-	185	540	2W1?
7	G3TTB	195	155	-	180	-	530	2W12
8	G3ZGC	175	-	150	-	165	490	2W15
9	G4BLI	-	CKL	145	140	180	465	2C13
10	G0VYR	-	135	170	-	125	430	2C13
11	G4BJM	220	50	145	-	CKL	415	2C1?
12	GW4LZP	120	CKL	115	170	-	405	2W11
13	G0FYX	105	CKL	115	130	CKL	350	2C11
13	G3CVA	-	-	120	130	100	350	2W18
13	G4XPE	-	65	-	160	125	350	2C11
14	G3ZDD	105	105	130	CKL	CKL	340	2C1?
15	M5ALG	CKL	100	100	110	-	310	2W1?
16*	G0HUC	-	CKL	90	110	105	305	2C1?
17	G4PTE	100	-	80	-	120	300	2G17
18	G0UHM	-	80	85	130	-	295	2???
19	M0EEE/P	-	120	-	-	165	285	2C12
20	G4KNO	-	-	-	75	95	170	2C12
21	G0WWD	-	15	65	-	-	80	2C12
22	G0VQR	-	-	-	30	45	75	2C12

CKL = checklog.
Other checklogs received with thanks from G0BON, G0DVJ.
*= Certificate of Merit.

CONTEST CALENDAR

HF Contests

Date	Time	Mode	Contest	Bands	Exchange
1-2 Mar	*0000-2359*	*SSB*	*ARRL SSB*	*1.8–28*	*RS + Output Power*
8–9 Mar	1000-1000	CW	RSGB Commonwealth	3.5–28	RST+SN
15-17 Mar	*0200-0200*	*RTTY*	*BARTG Spring RTTY*	*3.5–29*	*RST + SN+GMT Time*
24 Mar	1900-2030	CW	RSGB Slow Speed Cumulative1	3.5	RST + First Name
29-30 March	*0000-2359*	*SSB*	*CQ WPX SSB*	*1.8-28*	*RS+SN*

VHF Contests

Date	Time	Mode	Contest	Bands	Exchange
1–2 Mar	1400-1400	ALL	RSGB 144/432MHz	144/432	RST+SN+Locator
4 Mar	2000-2230	ALL	RSGB 144MHz Activity	144	RST+SN+Locator
11 Mar	2000-2230	ALL	RSGB 432MHz Activity	432	RST+SN+Locator
16 Mar	1000-1200	ALL	RSGB 70MHz Cumulative #5	70	RST+SN+Locator+QTH
25 Mar	2000-2230	ALL	RSGB 50MHz Activity	50	RST+SN+Locator

Microwave Contests

Date	Time	Mode	Contest	Bands	Exchange
18 Mar	2000-2230	ALL	RSGB 1.3–24GHz Activity	1.3–24G	RST+SN+Locator
30 March	0900-2100	ALL	RSGB 1.3/2.3/3.4GHz Open	1.2/2.3/3.4GHz	RST+SN+Locator

The full rules of RSGB HF, VHF/UHF and Microwave contests were published in the RSGB Contesting Guide in January 2003 *RadCom*. Brief rules for non-RSGB contests, which are listed in italics above, can often be found in the 'HF' and 'VHF/UHF' columns. The HF and VHF Contest Committees both have websites from which comprehensive details are available. These are www.rsgbhfcc.org and www.blacksheep.org/vhfcc RSGB Microwave Contest rules can be found on the Internet at: http://www.g3pho.free-online.co.uk/microwaves/calendar2002.html

144MHz LOW POWER, 2002

AFTER THE Foot and Mouth disease of 2001, things were back to normal in 2002, but conditions didn't want to co-operate. Bryn Llewellyn, G4DEZ, takes the single operator fixed section leaving last year's winner and runner up, Roger Piper, G3MEH, and Michael Wright, G0GCI, in second and third places.

With the revival of portable contesting, The A1 Contest Group, G4ZAP/P, easily won the All Others section, with the One Man and His Dog CG taking the second slot, and Tim Boon, M0AFC/P, pulled out a convincing lead over Dave Hewitt, GW8ZRE/P, in the single operator portable section.

Andy Cook, G4PIQ

144MHz Low Power, 2002

Single Operator Fixed Station

	Callsign	Loc	QSOs	Mult	Points	Pwr	Ant	Best DX	km
1*	G4DEZ	JO03AE	95	80	1889920	25	2 x 12Y	F0DSJ	616
2*	G3MEH	IO91QS	82	66	861432	25	2 x 10Y	F6KIM/P	595
3	G0GCI	JO01ED	51	50	316450	25	2 x 9Y	PD1ANQ	424
4*	PE1EWR	JO11SL	23	33	240867	25	10Y	M0AFC/P	493
5	GW0GEI	IO73TG	31	40	223160	25	4 x 9Y	G4IRC/P	396
6	G1KHX	IO81MI	35	38	177764	25	9Y	G4IRC/P	300
7	G3YJR	IO93FJ	18	24	48504	2.5	9Y	M5FUN	296
8	G0TPK	IO91RS	17	25	42600	25	9Y	M0AFC/P	281

Single Operator Portable Section

Pos	Callsign	Loc	QSOs	Mult	Points	Pwr	Ant	Best DX	km
1*	M0AFC/P	IO84SA	119	84	2213904	25	13Y	DL6KR/P	754
2*	GW8ZRE/P	IO83JA	90	72	1112832	25	7Y	ON4PS/P	612
3	G1ATZ/P	IO82KV	79	68	802128	25	5Y	ON4PS/P	602
4	GW8ASA/P	IO81FP	66	57	612066	25	7Y	PE1EWR	490
5	G8PNM/P	IO93FE	54	54	412938	15	9Y	F6IFR	435
6	M1TAP/P	IO82NM	36	43	187480	25	9Y	F6KPL	343
7	M0BAO/P	IO80LV	20	27	89316	25	17Y	G4SIV/P	338

All Others Section

Pos	Callsign	Loc	QSOs	Mult	Points	Pwr	Ant	Best DX	km
1*	G4ZAP/P	IO93EH	167	106	3215828	25	6 x 12Y + Collinear	DC0KK	733
2*	G8NWM/P	IO92TR	127	88	2229480	25	2 x 9Y	F9IE	656
3	G0VHF/P	JO01HW	116	87	2059986	25	2 x 9Y	EI5FK	629
4	G4SIV/P	JO03CE	85	72	1486944	25	6 x 12Y	F9IE	715
5	G4BRA/P	IO80ST	92	73	1335243	25	2 x 17Y	F6KIM/P	664
6	M5FUN	JO00DX	66	54	493074	25	12Y	GI4SNA	580
7	G4IRC/P	JO02OD	48	46	405720	25	17Y	DL3QQ	406
8	G0DLR	JO01EI	59	51	389232	25	10Y	GI4SNA	555

*Certificate Winner

HF CHAMPIONSHIP 2001

Pos	Call	IOTA	Common-wealth	21/28 CW	2nd 1.8	21/28 SSB	LF Cums	7MHz DX	RoPoCo 2	1st 1.8	RoPoCo 1	Total
1	GM3POI	1653	2948	-	1000	-	2000	2000	-	1000	836	11437
2	G4RCG	-	-	1078	759	1312	1989	1222	800	737	803	8700
3	GW3NJW	-	1828	981	601	-	1510	1108	857	497	852	8234
4	G3GLL	-	2103	391	729	-	1633	387	714	736	737	7430
5	G0IVZ	1266	3000	2000	-	-	-	-	-	-	868	7134
6	G2HLU	167	1762	247	566	-	1510	239	700	529	737	6457
7	G0CKP	-	1949	-	-	-	1710	-	842	794	918	6213
8	G4OGB	210	1084	-	646	-	1540	-	842	612	885	5819
9	G4BJM	1009	704	251	394	-	359	96	1000	883	1000	5696
10	G3IJG	58	1517	397	336	-	1277	271	714	292	737	5599
11	G3KNU	-	1400	222	519	-	1567	572	-	556	688	5524
12	G3LIK	-	1596	249	436	-	1108	153	728	399	754	5423
13	G3KKP	172	1428	85	-	121	1317	220	742	469	721	5275
14	G4IIY	-	1884	-	-	482	1361	-	800	-	426	4953
15	G2AFV	-	1326	161	-	-	1414	-	642	553	704	4800
16	G3YEC	224	-	297	600	201	1550	467	-	557	639	4535
17	G3LZQ	-	1795	-	-	-	1667	911	-	-	-	4373
18	G3VYI	-	1061	257	697	5	-	398	657	599	672	4346
19	G3TBK	-	2693	-	-	1371	-	-	-	-	-	4064
20	G4CZB	-	1919	162	-	-	-	204	871	595	295	4046
21	GW3WWN	-	1192	251	-	-	1004	137	800	-	655	4039
22	G3ZGC	-	1032	-	226	-	1344	76	342	623	377	4020
23	G3GMS	106	980	84	317	-	1101	156	400	394	295	3833
24	G4PIQ	-	-	1809	-	2000	-	-	-	-	-	3809
25	G0ORH	-	2199	-	-	-	-	946	-	656	-	3801
26	G3RSD	-	1095	-	-	-	1430	346	-	-	885	3756
27	G3TJE	180	-	-	-	-	1377	-	714	605	803	3679
28	G4BUO	299	2340	97	-	-	-	-	-	857	-	3593
29	G0JQN	-	-	-	622	-	1560	-	-	644	754	3580
30	G3HZL	53	992	-	-	-	1317	-	585	580	-	3527
31	GM4FAM	1216	2283	-	-	-	-	-	-	-	-	3499
32	GM4SID	-	-	556	467	-	1397	-	685	-	-	3105
33	G3SIJ	-	-	1884	837	373	-	-	-	-	-	3094
34	G3LET	-	2317	-	-	-	-	-	-	-	737	3054
35	G3LHJ	10	1533	-	298	-	-	-	542	-	622	3005
36	G4EBK	-	603	-	-	-	1344	225	-	115	704	2991
37	G3IZD	-	-	-	417	-	1570	-	871	-	-	2858
38	G2QT	-	1848	-	-	-	-	928	-	-	-	2776
39	GM3CFS	154	1601	599	-	-	-	268	-	-	-	2622
40	GW3SB	10	718	19	-	-	811	-	542	-	508	2608
41	G3YAJ	-	-	-	560	-	1444	-	-	550	-	5224
42	GU3SQX	-	1166	-	722	-	-	-	642	-	-	2530
43	G4CWH	-	-	-	537	-	1377	445	-	-	-	2359
44	G3WUX	-	-	-	-	-	-	-	900	495	934	2329
45	M0EEE	-	-	-	-	-	1574	-	-	613	-	2187
46	G3HEJ	-	1511	-	-	-	-	-	-	-	672	2183
47	GW0GEI	779	1404	-	-	-	-	-	-	-	-	2183
48	G3VQO	141	664	4	-	-	256	-	314	20	573	2154
49	G3JJZ	-	655	-	-	-	-	-	742	-	754	2151
50	G3KKQ	-	1244	-	-	-	-	-	885	-	-	2129
51	GM3UM	-	-	-	265	-	971	-	357	327	-	1920
52	G3ZDD	-	968	45	-	-	113	288	-	-	475	1889
53	G4CXT	-	-	-	731	-	-	428	-	625	-	1784
54	G0MTN	188	-	337	409	6	-	-	800	-	-	1740
55	G3WGV	-	-	958	773	-	-	-	-	-	-	1731
56	G3KZR	-	1568	144	-	-	-	-	-	-	-	1712
57	G4XPE	-	236	-	-	-	362	-	442	-	622	1662
58	G3UFY	-	726	452	-	-	-	196	-	281	-	1655
59	G3GMM	20	755	88	-	-	-	88	-	314	344	1609
60	G3NKS	-	-	151	-	-	1400	-	-	-	-	1551
61	G4EDG	-	-	616	-	-	-	-	842	-	-	1458
62	G3MPB	-	1269	-	-	-	-	183	-	-	-	1452
63	G0WHO	8	-	-	-	-	-	-	714	-	704	1426
64	G0RDO	-	615	-	-	-	-	101	428	-	229	1373
65	G3JKY	-	1328	-	-	-	-	5	-	-	-	1333
66	G3AWR	-	-	-	-	-	898	-	-	356	-	1254
67	G0DHZ	-	-	-	-	-	-	-	728	-	524	1252
68	G0IBN	-	-	-	-	-	209	-	528	-	508	1245
69	G4BLI	-	-	-	-	-	605	-	-	-	639	1244
70	G3HKO	-	707	38	-	-	-	-	-	-	475	1220
71	GW3KJN	61	976	-	-	-	-	182	-	-	-	1219
72	G4ELZ	-	-	544	-	-	-	-	671	-	-	1215
73	G3MA	-	-	-	-	-	-	-	557	-	655	1212
74	G3WPH	-	-	543	-	-	-	590	-	-	-	1133
75	GM0CLN	-	-	-	-	-	1064	67	-	-	-	1131
76	G4DDX	-	954	123	-	30	-	-	-	-	-	1107
77	G0UKX	124	906	-	-	-	-	-	-	-	-	1030
78	G4RLS	-	-	-	-	-	-	-	457	-	557	1014
79	G3PJT	63	-	892	-	-	-	-	-	-	-	955
80	G4TSH	120	-	122	-	-	-	-	-	-	672	914
81	G3SXW	490	-	-	-	-	-	-	-	315	-	805
82	G3TXF	-	-	-	-	-	-	125	514	-	-	639
83	G4ZME	17	549	48	-	-	-	-	-	-	-	614
84	G3PIV	103	-	-	-	392	-	-	-	-	-	495
85	MU0FAL	-	-	201	-	197	-	8	-	-	-	406
86	G4IUF	112	-	-	-	277	-	-	-	-	-	389
87	G3YHF	-	-	-	-	-	346	19	-	-	-	365
88	GM0FGI	163	-	-	-	157	-	-	-	-	-	320
89	G0MRH	28	252	-	-	-	-	-	-	-	-	280
90	GW0AJI	75	-	-	-	87	-	-	-	-	-	162
91	G3ZRJ	1	-	134	-	6	-	-	-	-	-	141
92	G4DDL	41	-	55	-	-	-	-	-	-	-	96
93	M5TEM	42	-	-	-	34	-	-	-	-	-	76
94	G6QQ	64	-	-	-	-	-	10	-	-	-	74

1st 50MHz BACKPACKERS, 2002

EIGHT COMPETITORS competed in the 1st 50MHz Backpackers contest of 2002. This contest is run alongside the IARU and RSGB 24-hour events and the QRM from the higher power stations made conditions difficult for most of the Backpacker stations. However, all entrants managed to work plenty of DX.

Congratulations to Peter Lowrie, GI7JYK, for winning the 3W Single Operator section, to Tim Boon, M0AFC, for winning the 10W Single Operator section and finally to the One Man and His Dog Contest Group, G8NWM/P, for winning the 10W Multi-operator section. All section winners and runners-up will receive certificates. There were no entries for the 3W Multi-operator section.

Ian Pawson, G0FCT

1st 50MHz Backpackers, 2002

10W Multi-operator

Pos	Group	Callsign	Locator	QSO	Score	Mult	Total	Best DX	km	Ant	Eqpt
1	One Man & His Dog	G8NWM/P	IO92TR	39	32834	39	1280526	IW9BDV	2008	5el	FT736R

10W Single Operator

Pos	Group	Callsign	Locator	QSO	Score	Mult	Total	Best DX	km	Ant	Eqpt
1		M0AFC/P	IO84SA	75	87041	57	4961337	LZ2CC	2310	5el	TS690S
2		GW8ZRE/P	IO83JA	70	66880	56	3745280	9H0O	2347	HB9CV	FT690
3		GQ4EDR/P	IO94RD	24	29320	29	850280	IZ8DWL	2126	HB9CV	IC706
4		M0BAO/P	IO80LV	16	13174	22	289828	OH5TB	2109	4el	IC706

3W Single Operator

Pos	Group	Callsign	Locator	QSO	Score	Mult	Total	Best DX	km	Ant	Eqpt
1		GI7JYK/P	IO74BS	45	64795	34	2203030	9A0DX	2096	3el	MFJ9406
2	West Kent ARS	G1WKS/P	JO01ED	29	28691	30	860730	LZ1KWT	2144	4el	FT817
3		GW0PZO/P	IO83JF	21	25731	24	617544	9A0DX	1860	3el	FT690

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SWL

RADIO conditions were not very good during the Christmas / New Year holiday, which was a great shame with so many listeners at home (including your scribe). The higher bands were very poor, with semi-interesting DX only audible between mid-day and sunset. Generally, the low bands had been poor, too. Again unfortunate, as I had suggested taking a listen during the holiday period. However, DX was available to those who persevered. David Whitaker, BRS25429, considered 27 December as the best day on the low bands. He heard YB0AR, EP3SMH, DU9AXJ, 9K2HS and VQ9DT on 7MHz SSB, while 3.5MHz provided KB2FB/DU7 and EX8NP. 7MHz was also good at around 2200UTC on several days when South and Central American DX was in great abundance. Several forays to 7MHz at 0000UTC provided some east coast VEs and Ws. Other 7MHz highlights from were VA7CW and VE7SV at 1611UTC (their sunrise) on 31 December and VO1KC logged at 2012UTC (his sunset) on 5 January. Meanwhile, Simon, RS177448, had been logging countries on the low bands for the CDXC Low Band Challenge. As of 13 January he had heard 76 DXCC entities. Best DX had been H44MS on 9 January, but he had also heard 9V1RH, A45WD and A71EM. On 3.5MHz, I only heard west coast Ws at our sunset on one day, and I heard no JAs at our sunrise (but some had been worked). All in all, a very disappointing listening period.

SWL CARDS

SEVERAL LICENSED colleagues have echoed the comments in a recent column about the sparsity of SWL reports from British listeners. Comments were received not only from active British DXpeditioners and HF DXers but from an amateur who is only active on VHF. As the column has aired comments from an HF perspective, the VHF perspective is interesting, too. An amateur licensed for 10 years wrote to say that in those 10 years he had only received one listener report, and that was from a Dutch SWL reporting on a 144MHz QSO. This amateur is reasonably active on 50, 144 and 432MHz and expressed surprise that he had only ever received one SWL report.

I do not want to suggest that listeners flood the QSL bureau (or send cards direct) with 'worthless' reports, eg sending a report to a G station who is obviously being heard at 59 in the USA and telling him that he was 53 at your QTH. However, it is a slight concern that British SWLs might not be QSLing as freely as used to be the case. It might, of course, be that you have all heeded advice and are only sending worthwhile reports in certain circumstances. It would be good to know what your 'QSLing policy' is. I will feature a few of the more interesting replies in the column.

SWLING in EA8

DAVID WHITAKER, BRS25249, took a winter break to the Canary Islands in December. He took his portable receiver with him for listening on the HF bands. Best catch was CE0 on 10m. David has broken down his DX totals by band. They were:
28MHz: 94 DXCC; 24MHz: 38; 21MHz: 91; 18MHz: 39; 14MHz: 75: 7MHz: 21: 3.5MHz: 5; Total DXCC Entities: 141.

GB ACTIVITY

I HAVE REMARKED before about the huge number of GB stations to be found on 7MHz and of the listeners who spend their time on the band logging all the GB stations they hear so that they can share in the special activity by sending off for a special QSL card. Two points here. The article on how to handle a special event station pile-up that was featured in January's *RadCom* ['Down to Earth', January 2003, pages 64 / 65 - *Ed*] received a mixed reception amongst listeners. On the one hand, several thought that operating to a list made it easier for the SWL to log the callsigns of the stations being worked, but on the other hand it was commented on that taking a 'last two' list did not help the SWL who, to get a QSL card, has to log full callsigns of the stations being worked. Any other views? [G4SSH specifically said that special event operators should ask for full callsigns only - *not* the 'last two' letters - see page 65 of January issue - *Ed*.]

The organiser of GB2SOB asked for his thanks to be passed on to all those SWLs - over 40 - who had sent SWL reports having heard the GB2SOB signals. This one was quite a novel special event. It seems that the callsign used by the Central Lancs Amateur Radio Club from Hoghton Tower near Preston was to commemorate the 385 years since King James I came to the tower in 1617 and was fed a loin of beef which he enjoyed so much that he knighted it - hence 'sirloin of beef'.

WEB INFO

NIGEL, G5NB, is webmaster for the Great Yarmouth Radio Club - see www.qsl.net/g3yrc The site holds a great deal of information that would be useful to listeners and licensed amateurs alike. It includes full information about 2600 prefixes and includes band plan details, details about commercial radio stations that broadcast online for the UK, Canada, USA, Australia and New Zealand. IOTA is also covered, too, as is DX news and propagation data. The latest addition to the site is a Flash-built moon phase indicator where the visitor can put in the date and the phase of the moon is displayed.

John, 4F3/GM4DKO, wrote a while ago from the Philippines to advise listeners of *ACLog* by N3FJP. It is a shareware program, and although not an SWL logging program, John considered that it would have features that could be used to form an SWL logging program. It is a flexible, straightforward *Windows* program. The order of the columns and column widths can be changed, and the data input boxes can be moved, removed, added or tabbed in any order. Four other input boxes can be re-named and used, for example, for 'station worked' or 'station heard'. Some award tracking is also provided - useful if you are chasing DXLCA, the RSGB's version of DXCC specifically for listeners. The program can also be used for IOTA. Further details of *ACLog* can be found at www.n3fjp.com ♦

VHF/UHF

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LAST YEAR didn't end in a blaze of glory although there was some winter Sporadic E (Es) on 50MHz. There were a few weak auroras and the Christmas Cumulative contest created some activity. The Geminids, Ursids and Quadrantids meteor showers hardly got a mention.

QUALITY

WHEN I FIRST began operating on 144MHz some 40 years ago, the main modes were AM and CW. Many of us used converted PMR equipment and worked wonders with such gear and the modest amount of commercial equipment that gradually became available.

Although SSB had been in use on the HF bands since the late 1940s it was not until a quarter century later that the mode took off on 2m. This was due in large part to the arrival of the Belcom Liner 2 transceiver. Unfortunately the transmitted signal from this nominal 10W rig was often of mediocre quality and when used to drive a not-very-linear amplifier the results could be rather antisocial. Nevertheless, the more technically competent operators managed to modify the Liner 2 to produce an acceptable signal, especially when the output was limited to about 4W.

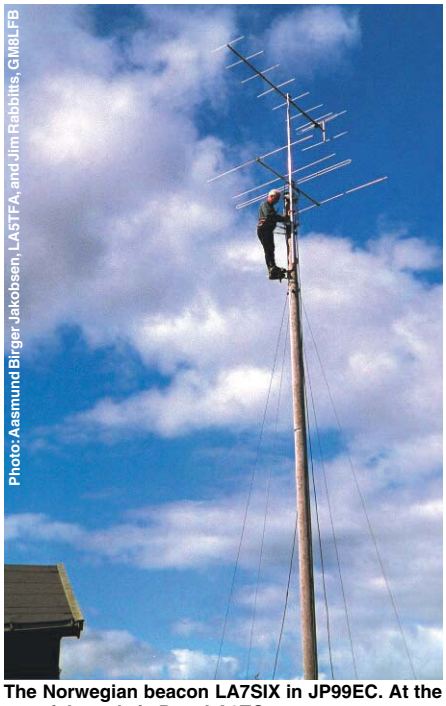
Not all the problems were due to poor transmissions though. In many cases receiving systems were not very good at coping with strong signals. For a clean transmission linear amplification is essential and the same applies to reception. Many complaints about splatter and spurious signals were unwarranted and often proved to be caused by the unnecessary use of a noise blanker in the receiver.

As SSB grew in popularity, linear transverters came on the market enabling HF transceivers to be used to generate SSB and other mode signals: most transverted from the 28MHz band. Again some transmissions left a lot to be desired often because the transverter was being overdriven. Finally, dedicated all-mode VHF and UHF transceivers appeared and now the majority of operators probably use them.

The transmit and receive performance of present day equipment is of a high standard but even so it has to be set up properly especially if additional amplification is used. Many operators, especially those who compete in contests and who seek to work long distances, have built their own valve amplifiers using ceramic tetrodes in the 4CX-series. Such classics as the W1SL design for 2m and the K2RIW for 70cm are described in *The VHF/UHF DX Book* [1].

The design of a suitable power supply for such amplifiers needs careful consideration, in particular the screen grid supply which must be able to both supply and sink current and needs to be very stiff. This topic is well covered in [1]. There is also a wealth of information on all these topics on Ian White's, G3SEK, super website - see the list - which includes updates to [1].

When initially setting up a system, it is preferable to do it with a dummy load and an oscilloscope, monitoring the signal on a separate receiver. Only when you are reasonably satisfied should you connect it to the antenna. Here the help of a local colleague who can be relied upon to give an honest appraisal of your transmission is invaluable. In this respect the Apparatus section (4) of our licence is relevant. Clause 4(4) states, "The Licensee shall conduct tests from time to time to ensure that the requirements of clause 4 are met." This section is really concerned with quality, which is where we came in.



The Norwegian beacon LA7SIX in JP99EC. At the top of the pole is Dag, LA3TQ.

THE ANNUAL TABLE

IN THE HOPE that there will be a few more entries in an Annual Table, I have decided to run it again this year. Its first appearance will be in the May issue for which the deadline is 18 March. There will have been a number of RSGB contests and activity periods by then - see page 54 in the January *RadCom*. The rules remain the same but if you would like a copy either e-mail me or send an SASE for a copy by 'snail mail'.

AWARD NEWS

ROB HANNAN, G4RQJ (IO84), sent details of the Summits On The Air (SOTA) programme. A lot of the activity is on 2m FM using vertical polarisation. There is no need for exchanging any numbers and QSLs are not required. The activator, the operator on the hill, needs four QSOs to make the summit count for points. There are awards for chasers and SWLs as well as the activators. There is activity most weekends and details are on the reflector. For further information visit the SOTA website - see the list.

ANTENNA WOES

ANDY COOK'S, G4PIQ (JO01), antennas suffered storm damage during last year's October gales. Most of the system had been up since 1991 and when he finally took it down in January he "started measuring stuff". The four Westflex 103 coax tails on the 2m Yagis had been very carefully cut and matched with the aid of a spectrum analyser and tracking generator. Three were found to be spot-on regarding loss but the fourth was way out, almost certainly due to a nick in the jacket. When he checked the electrical lengths he was "a bit horrified" to discover there was 10 electrical degrees difference between the three good tails while the bad one was 80^0 out. A perfectly good-looking female-to-female N-type adapter measured almost 2dB loss. His old home-made four-way power splitter was so corroded that it was beyond repair so he was seeking advice on good quality manufactured air-line power splitters for 2m and 70cm.

The moral of this tale is that regular inspection and maintenance of the entire antenna system is essential if you are looking for high performance. The sort of losses Andy found could mean that an old four-Yagi array might perform worse than

MOONBOUNCE

THE DECEMBER ISSUE of *The 432 and Above EME Newsletter* carries the sad news of the death of Tay Howard, W6HD, a leading EME operator, who was killed in an air crash on 13 November when the engine of his private plane failed during a routine take-off.

Editor Al Katz, K2UYH, comments that conditions in the 2002 ARRL EME Contest will be remembered for some of the best of times and some of the worst of times. Propagation on 70cm was reported by many participants to have been some of the worst ever experienced. Even so, Paul Chominski, WA6PY, managed to work Jan Bruinier, DL9KR, using only a dipole antenna. Al writes, "This contact proves that EME is not limited to stations having big antennas. It is also a tribute to DL9KR's operating and technical ability." Not all the 70cm totals were in when he edited the December issue. High scorers were DL9KR with 77x32, DJ5NV 71x31 and VK3UM 58x30. On 23cm, HB9BBD managed 63x29, OZ6OL 56x27, F2TU 51x26 and HB9Q 50x24.

Peter Blair, G3LTF (IO91), had better luck with the weather in the second leg of the contest on 23/24 November although the rain tested the waterproofing. He reports activity up but conditions variable with periods when 23cm exhibited as much as 2dB absorption. 32 contacts were completed in this leg bringing his total for the two to 48x23. On 70cm polarisation changed between very well defined and spread over the two days. He completed 39 contacts with 22 multipliers. New initials - stations worked for the first time - were OK2BDQ, OK1DIG and KJ7F, bringing his total to 362.

Dave Dibley, G4RGK (IO91), missed out on the October leg of the contest due to the storms but the November weekend was better even though activity was much lower on 70cm than in previous years with very few North American stations worked. 27 stations were contacted, six called with no reply - CWNR - and five others heard.

Conditions in the 21/22 December sked weekend were better than those in the second leg of the contest but fading was still a problem on 70cm. Although signals were louder Faraday rotation resulted in stations with fixed polarisation missing QSOs. The January *Newsletter* includes a useful piece on JT44 operation which ends, "JT44 EME operation is not that different from a regular EME schedule except that everything is done in 30 second intervals." See the list for website details.

Howard Ling, G4CCH (IO93), missed the December activity weekend but gave his 23cm station a final run at the end of the year by working DF4PV 56/56 and IK2MMB* 559/559 with the dish pointing through a leylandii tree. Sergio is now running 1kW from a TH327 PA and Howard is also working hard on his.

The next good weekend for EME is 15/16 March which is the first leg of the *DUBUS*/REF contest - see page 41 in the January *RadCom* for more details. London latitude stations will have 27.6 hours of Moon time in three passes. The declination varies from +22.72° at the start to +13.86° at the end. The 144/432MHz sky temperature ranges from 203/15K to 226/17K and the signal degradation varies from -0.84dB to -0.42dB referred to perigee.

a new two-Yagi installation. Although coaxial cable and connectors may look to be in good condition, after a few years they can introduce significant losses. See the comments on Antennas in the January 'VHF/UHF' column.

GEOMAGNETIC AND SOLAR ACTIVITY

THE MIDDLE LATITUDE A-index at Fredericksburg was in the quiet category for 21 of the 29 days up to 14 January. The highest value was 22 on 27 December and the K-index only reached 5 in two of the 232 3-hour periods.

Solar activity is slowly declining and, in the 30 days up to 14 January, there were nine days when the SESC sunspot number was below 100. The minimum count was 44 on 30 December the maximum reaching 261 on the 18th. 30 new regions were recorded, the same as last month, but their areas in millionths of the Sun's visible disc were only 77% of those recorded in the previous period. The 10.7cm solar flux averaged 157.6 per day with a maximum value of 213 units on 17 December and a minimum of 114 on the 30th.

BAND REPORTS

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), (YO) etc refers to the postcode area and (IN89), for example, is the Maidenhead grid.

50MHz

In his December report Ted Collins, G4UPS (IO81), writes that in December 2001 he made 193 QSOs and heard about another 200 stations, especially from across the Atlantic. Last December he had just 45 contacts and only heard 30 stations he did not work, so considers it to have been a bleak month.

The first winter Es occurred on 9 December from about 1100 when Ted contacted SM6CRM* (JO78), SP9EVP* (JO90) and OZ5AGJ* (JO56). This was a selective opening and it faded by 1200. IT9s were heard working DLs around 1730 on the 10th. In the afternoon of the 11th there were openings to DL, OK, SP, S5, 4N and 9A till 1820.

On the 19th from 1347 VE1YX* was copied working stations all over Europe and Ted also heard NW5E*, K3KYR* and the VO1ZA beacon. The Ws were working into Italy next day and he heard W3EP* calling CQ at 1419. During heavy rain on the 29th he heard ON4ANT* on scatter mode, K1MIA* and at 1956 9A5FM* working a GW. A Z3 was copied in IO70. From 1800 on the 31st there was a brief opening to Lithuania when he contacted LY2BAW* (KO25).

On 28 December Ken Punshon, G4APJ (IO83), worked OK1FRG and SQ8GHQ. Next day he contacted GI6ATZ and heard GM4ODA/P (IO66) on the Isle of Mull. Bryn Llewellyn, G4DEZ (JO03), worked SV3KH (KM07) at 1857 on 29 December in a one-minute Es opening for a new grid.

From 1015 on the 29th Jim Rabbitts, GM8LFB (IO88) worked HB9s SOF, DPO, RG and QQ (all in JN47), 9RDE (JN37) then DL2AIN (JN49) who was running just 5W. The band opened again around 1430 producing QSOs with F8BON (IN96) and EH1DDU (IN73). Clive O'Hennessy, GM4VVX (IO78), managed to work a French station in the Christmas Cumulatives on the 29th for his first QSO with a non-British station since last October. But all things considered, this was a very disappointing period on 6m compared with last year as you'll see if you look at the March 2002 'VHF/UHF' column.

70MHz

Robin Caine, G4IWS (IO91), wrote on behalf of the Reading and District ARC reporting that for several years there has been a net led by G4AWY at 2130 local time on Tuesdays on 70.425MHz. The participants have a variety of rigs and he uses a military TRA967. Since 9 January the band has really livened up now that the club has acquired and distributed a number of Ascom SE550s, re-programmed synthesised trunk sets.

Robin was QRV on 70.450MHz FM during a recent contest but didn't work anyone, concluding that contesters don't monitor this FM channel. So he suggests a voluntary 'FM half hour' at the end of contests to get more people involved. Sounds like a good idea. Derek, G8TOK (JO01), reports that SP6ASD heard the GB3MCB beacon at 1724 on 11 December but is unaware of any cross-band QSOs.

Graham Wright, G4FUJ (IO81), runs 4m FM in one of his vehicles from a Simico synthesised transceiver with 12.5kHz channel spacing. He says that there are a lot of Tait T199 ex-

ANNUAL VHF/UHF TABLE
JAN TO DEC 2002 - FINAL PLACINGS

	50MHz		70MHz		144MHz		430MHz		1.3GHz		
Call	Dist	Ctr	Dist	Ctr	Dist	Ctr	Dist	Ctr	Dist	Ctr	Total Points
G4DEZ	81	79	32	7	104	28	45	14	22	7	419
G3FIJ	44	27	24	6	55	9	29	3	6	1	204
G4APJ	15	10	-	-	54	7	44	5	-	-	135
G3YDY	-	1	-	-	40	14	23	7	-	-	85
G6TTL	15	43	-	-	-	-	10	5	-	-	73
G7CLY	5	15	-	-	31	8	5	3	-	-	67
G8RWG	-	-	-	-	16	12	-	-	-	-	28

The District Codes were the 124 listed on page 52 in the January 2002 *RadCom*. Up to 6 different GI stations and up to 3 different GM stations in each Scottish district were counted. Countries were the current DXCC ones plus IT9. The deadline for the first 2003 entries is 18 March.

Forestry Commission sets on the market and most have been fairly easy to get down to 70MHz. From home he uses a TR-2000 2m multimode driving a Spectrum transverter.

144MHz

G4APJ missed GM4ODA/P on 6m but did work him on 2m on 29 December for a new grid. He monitored during the Quadrantids meteor shower "but didn't notice anything much." G4DEZ's ODX on 29 December in the Christmas Cumulatives was LX2DX (JN59) at 868km.

Bob Harrison, G8HGN (JO01), was QRV in the Leonids shower on 19 November and bagged six new grids. Reflections were good with stations from all over Europe heard. ODX was OH1XT (KP01) at 1687km. In the RSGB 144MHz AFS contest on 1 December he completed 157 QSOs with stations in 33 grids and nine countries for a points total of 33,871. ODX was DL9NEF (JN59) at 789km.

GM4VVX was QRV on 14 December in the Geminids shower. His two skeds with S5s didn't happen due to their antennas being covered in thick snow and he didn't hear a single signal on the random SSB frequency. Auroras occurred on the 19th and 22nd to 25th. The one on the 23rd 1840-2300 was unusual since all the G beacons were T9 and no continental ones were heard with an A tone, so he thinks the aurora may have been far south. Little activity so far north in the Christmas Cumulatives but on 3 January he worked into IO95 for a new grid in an aurora.

David Dodds, GM4WLL, was out portable from IO85NR on 12 January running just 10W but the only station worked was GM6CMQ just over 30km away! Nevertheless he enjoys getting out in the fresh air even in snow with the temperature only 6º!

430MHz AND UP

Ian McCabe, G0FYD (IO83), is now QRV on 23cm with a TS-2000 and transverter running 18W to a 55-ele Yagi. He also operates on 70cm using the same transceiver with 50W to a 23-ele Yagi. On 27 December G4APJ worked G4RRA (EX) on 70cm. Next day Ken contacted another four stations on the band in spite of getting on late for the Christmas Cumulatives.

FINALE

PAUL Guilbert, GU0DXX (IN89), is QRV again from Guernsey on 6m, 2m and 70cm after an 18-month absence. Special thanks to Dr Steve Reed, G0AEV, for copies of the October and November issues of *The Six and Ten Reports* and to Neil Clarke, G0CAS, for the November and December editions of *SunMag* - both have websites, see the list. Also to Gene Zimmerman, W3ZZ, for the March copy of *The World above 50MHz (QST)* and to the *DUBUS* organisation for issue 4/2002 of the magazine - see the list for their website details.

The deadline for copy to reach me for May is **18 March** and for June it's **Monday 14 April**. The telephone answering and fax machine is on 020 8763 9457 and my CompuServe ID is g3fpk

FURTHER READING

[1] *The VHF/UHF DX Book*, edited by Ian White, G3SEK, Ch 8, 10 and 11, RSGB Publications. Available from RSGB Shop. ♦

WWW.

Ian White, G3SEK	http://www.ifwtech.co.uk/g3sek
SOTA information	http://www.sota.org
432 & Above EME N/L	http://www.nitehawk.com/rasmit/em70cm.html
G0CAS (*SunMag*)	http://www.g0cas.demon.co.uk/main.htm
Six & Ten Report	http://homepages.force9.net/explore/6and10/
DUBUS	http://www.dubus.org

The GB4FUN Supporters' Honour Roll

GB4FUN 'Big Hitters'

E F Taylor, G3SQX
Norfolk Amateur Radio Club, G4ARN
P Ayre, G4TFF

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

P Fletcher, 2E1ECM
G Farina, 3A2MF
R Cramet, F8CB
Rev R Bellamy, G0BIQ
C R Cook, G0GMC
I L Carter, G0GRI
R E Harwood, G0HRT
N F Coathup, G0HZZ
E R Sadler, G0MVK
Open University ARC, G0OUR
A Jeffs, G0RJM
T J Barclay, G0TBD
V Worton, G0XYS
S Ellis, G3JNY
A Mills, G3KDO
K J Holmes, G3KEH
L H Parsons, G3OSJ
D A R Poulter, G3WHK
G M A Barber, G3WQT
G G Bulleyment, G3XIV
Mid Cheshire ARS, G3ZTT
A Levy, G4DEE
M Bryan, G4DTB
P J Forshaw, G4HSS
B G Davey, G4ITG
B P Lewis, G4SJH
F R Rhodes, G4WNF
A Everitt, G7LTH
G M Fisher, G7PHZ
P C Funnell, G8AFI
AG Hobbs, G8GOJ / M3GOJ
J A Donnithorne, G8MKX
L M Overton, G8MRZ
P A Hocking, G8ZDS
S J Brown, GD4ELI
A G Robson, GM8YIK
G A Hellen, M0BXP
R Leckie, M0LEC
Dr E H N Oakley, M1BWR
W H Jackson, M1FAD
D J Stalley, M3AJF
G Clark, M3GMC
R D Ross, MI3RDR
W Jordan, MI3WJO
J M Brown, MM0JMB
M L Heron, MW1KDP
F H Hart, MW3BOC
J J Schallenberg, PA3AUB
L F Clift, RS174485
I M Storrie, RS176996
D Hope, RS181538
A W Williams, RS93666
D V Debbage, RS94986
J C Risso, ZB2HW

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

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IC-R3

ML&S SPECIAL LOW PRICE £329 ZERO DEPOSIT! 36 x £11.96

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With 32 bit DSP and 100W on HF/50MHz and 144MHz plus a built in ATU this radio offers performance at a value for money price.

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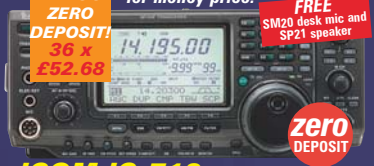

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The Icom Flagship is proving to be very popular with the SSB Audio fanatics on 20 metres.It is also a very popular CW radio with some of our CW only customers. Equally at home with newcomers as well as experienced operators! The 756 Pro 2 (or IC-756 MK3) offers Dual receive, multicolour TFT display,100W HF & 6m and built in ATU. This radio requires a good quality 25 amp 13.8v PSU. The features of this radio can not be given full justice in a few lines so call for a brochure.

PC Programmable Requires PC-R10 at £39.95

NEW!

Yet another winner from Yaesu. The all new FT-8900 offers 2m, 6m, 70cms and 10m. 50 Watts output (35 Watts UHF). Full duplex between bands. The features are endless! Call for a brochure today!
Before you ask who makes a quad band mobile whip for it? Maldol do of course.

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

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ML&S £449 ZERO DEPOSIT! 36 x £16.32

If you are not fussed about FM and want an HF radio that performs well with minimal controls then the IC-718 could be the radio for you. With DSP and Keypad frequecy entry this is a popular choice with people who just want to connect up go!

ICOM R-75

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ML&S £289 ZERO DEPOSIT! 36 x £10.51

Simple Twin Band VHF/UHF Mobile with large easy to read display. With the addition of the VS-3 Voice synthesiser this is an excellent radio for blind operators!

KENWOOD TS-2000E

ALSO AVAILABLE: 23cm version CALL FOR DEAL!

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

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

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

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Built in ATU

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48 x £73.94

YAESU QUADRA VL1000

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This state of the art 1000W HF & 6m amplifier is in a class of its own. Couple it to any 100W HF or 6m radio and within seconds the ATU has tuned and you are ready to crack the pile ups *(in fact you will probably create a few of your own)*. Just because Yaesu make the amp you do not need a Yaesu to drive it. *(Not cheap but then the best never is!)*

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36 x £138.12

YAESU FT-847

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This radio has established itself as a very popular Shack in a box! All bands 160m to 70cms *(including 4 metres)*. With DSP and options for Collins filters this radio is a serious DX machine with full Satellite capability

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ZERO DEPOSIT!
36 x £43.59

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A dual band hand held with built in Scanner. Full VHF/ UHF Dual band coverage plus 100kHz to 1300MHz scanner built in. SSB receive on all frequencies up to 470 MHz. Built in ferrite antenna for short wave.

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KENWOOD THD7E

An excellent 6 Watt Dual band VHF/UHF hand held with built in TNC. Ideal for APRS or DX cluster watching.

ML&S £319 ZERO DEPOSIT! 36 x £11.60

KENWOOD TM-D700E

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Dual band VHF/UHF mobile with built in TNC! Ideal for Packet or APRS. The latest version can connect to the TS-870 and TS-570 for DX cluster auto QSY.
(FREE X band repeat for Raynet operators on request)

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36 x £16.32

KENWOOD TS-570DGE

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This is one of our most popular HF radios. Offering an excellent blend of simplified operation with state of the art performance. An ideal 1st radio as well as an excellent portable DX station! Built in ATU

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36 x £30.87

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FREE 23cm Module!

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UX-910 price £349

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The replacement for the popular IC-746 has 100 Watts HF, 6m and 2 metres all mode operation,
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36 x £52.68

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zero DEPOSIT

Why did they not just call it the Mk3? Call it what you like this is one of the best mobile radios available with HF ,6m, 2m & 70cms plus DSP. All mode operation and DSP

ML&S £789
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36 x £28.69

Yaesu FT-857 NEW!

Blending a mixture of technologies developed on the FT-897 & the FT-1000mkV Transceivers, the FT-857 is the worldís smallest HF/VHF/UHF Multimode Transceiver.

- High Performance compact mobile
- 160-6m (100W) 2m (50W) 70cm (20W)
- Uses the RX performance of the FT-1000mkV & FT-897
- Full DSP
- 32 colour display with Spectrum scope
- Built-in keyer
- 200 memories with Alpha
- Remote head option
- Available soon!
- Price: £799.00

KENWOOD TS-50S

zero DEPOSIT

If you do not want DSP or built in ATU but want a straight forward no nonsence 100 Watt HF radio look no further! The TS-50 is at home in the shack or in a mobile installation. 160m-10m all mode ML&S price £629

ML&S £629
ZERO DEPOSIT!
36 x £22.87

KENWOOD TS-870S

zero DEPOSIT

The original DSP radio Still a popular choice among serious HF operators. Covering 160m to 10 metres all modes.
Built in ATU
ML&S Price £1399.00

ML&S £1399
ZERO DEPOSIT!
36 x £50.86

ICOM PCR-1000

zero DEPOSIT

Computer controlled receiver 100kHz-1300MHz

ML&S £309
ZERO DEPOSIT!
36 x £11.23

ICOM IC-R8500

zero DEPOSIT

Covering 100kHz-2000MHz

ML&S £1299
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36 x £47.23

ICOM IC-R2E

This little handy scanner is very simple to operate and is very popular among our commercial customers

LAST FEW AVAILABLE
£139

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ML&S provide the facility for Morse tests ON DEMAND on the morning of the last Saturday of every month *(except December)*. We offer the **5 WORD per MINUTE MORSE TEST** and the **Foundation Morse Assessment**. This is a unique opportunity to take your morse test in a relaxed environment. *Any questions call* ***CHRIS TAYLOR*** *on* **0208 566 1120** *or email:* **morse@hamradio.co.uk**

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NEWSFLASH
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Demonstrations by KENWOOD UK

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zero DEPOSIT

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NEW!

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36 x £11.96

Do those engineers at Yaesu ever sleep? The best 3 band radio we have ever seen is here and user reports are excellent. The first fully water-proof hand held has all the features the famous VX-5R had but has the addition of a second receiver. 2, 70 & 6 at 5 Watts from a Lithium Ion Battery This radio will last you for years. Call for a brochure!

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FREE NiCads & Charger

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

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ORDER WITH A NEW FT-1000MPMkV AND BUY FOR ONLY £549!

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The Yaesu masterpiece! This little radio offers 160m to 70cms For less than £600 you can have a take away shack !

Package 1
FT-817,Nicads,Charger,DC lead,Microphone,Shoulder strap & AA cell tray.
Only £595.00

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As package 1 but with Miracle whip,Case,PSU and a choice of Palm Mini Paddle or DTMF Microphone!
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Package 1 plus 50 watt Tokyo Hi power amp, LDG Z11 ATU,SP-817 Speaker Plus Samlex SEC-1223 PSU.
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LDG-Z11 ATU	£209.00
Miracle whip antenna (MkII)	£129.95
SP-817 Spealer	£19.95
MP-817 Palm Mini paddle	£49.95
ATX Walkabout antenna	£69.95
CSC-83 protective case	£19.95
MH-36E8J DTMF Microphone	£51.00
YF-122S Collins SSB Filter	£99.00
YF-122C Collins 500Hz CW filter	£99.00

YAESU FT-920AFC

zero DEPOSIT

Offering 100 watts HF and 6metres this radio is a delight to operate. Fitted with FM,6kHz AM filter and 500hz CW filter plus simple to operate DSP this is an excellent base radio. (Requires 25a 13.8v PSU). Built in ATU

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Following on from the FT-100 the D offers 500Hz CW filter CTCSS Decode and bigger speaker for that extra punch. 160m-70cms all mode with wide band receive (100kHz to 999MHz) An absolute bargain at £849!

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The new desktop scanner from Yaesu all bands and all mode with a host of features.

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HOT NEWS! New Ham Radio Event for 2003!

27th April 2003

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Taking place at the Kempton Park Race Course, Sunbury-on-Thames, Middlesex

Managing the very successful Epsom Rally, 'Radio Fairs' announce a new London Show in April

- All major manufacturers, Yaesu Kenwood & Icom
- RSGB, PW & RAIBC plus many more club stands
- Just off of Junction 1 of the M3
- Main traders and the 'small hard to find retailers' will be there
- Bars and hot food available thoughout the day
- Free entry for under 16yrs
- Normal entry £3.50 and £3.00 after 12.30pm
- Morse testing with free entry for those taking part
- Exceptionally good parking facilities on site
- Bars and restaurants
- Free tables for charities and subsidised tables for clubs
- 2 metre talk-in managed by the Whitton Radio club
- Bring & Buy operated by Echelford Radio Society
- Seating and picnic area outside

MALDOL ANTENNAS

We have just received our new delivery from Maldol. Call today for a catalogue of the range.

NEW!

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At last the New Multiband Yaesu has arrived. 160m-70cms all mode with DSP. Designed by the same team that gave us the amazing FT-817 - you know it will be good.
Options available are:-
Internal PSU, Internal batteries, Matching bolt on ATU, Collins CW filter, Collins SSB Filter,DTMF Microphone.
Order yours today for only £1099!

ML&S £989
ZERO DEPOSIT!
36 x £35.96

zero DEPOSIT

FT-1000 Mark V Field

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ZERO DEPOSIT!
36 x £79.95

Following on from the sucess of the amazing FT-1000MP the new FT-1000MP Mk V Field gives 100 watts plus all the features of The FT-1000 MP MkV ! This is the only HF radio available with a built in PSU! Built in ATU

- *High Efficiency Cooling system*
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- *High Speed Automatic Antenna Tuning System*
- *Dual Receive With Independent AGC Systems*
- *Enhanced Digital Signal Processing*
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- *Industry-Leading RF Front End Design*
- *3 RF Preamp Modes+ IPO (Direct Mixer Feed)*
- *Outstanding IF Filter Chain*
- *Full Breaking CW and Electronic Keyer*
- *Multifunction Display with Improved Contrast*
- *Enhanced Shuttle Jog Tuning Dial*
- *Direct Keypad Frequency Entry*
- *Twin Stacked VFO Registers*
- *Easy Digital Mode Interfacing*
- *And MORE.....*

LOOK! New Miracle Antenna Mk2 has arrived!

MIRACLE WHIP MkII

This antenna has been designed with the FT-817 in mind and is a 55 inch whip with a tuning box at the base. The performance is staggering and it will work with any radio from 3.5-460MHz (25W max). It even works without a counter poise. Call for full details!

ML&S £129.95 IN STOCK!

LIMITED TIME OFFER!

Brand New Tokyo HiPower HL-50B Amps only £229.95!

- 50W on 160m-6m
- Only 5W drive
- Ideal FT-817
- Small & Compact

RRP: £299.95
ML&S price: £229.95.

Icom IC-E90E

The new 3 band hand held from Icom is long over due and well worth the wait. The buttons have a very positive feel and audio is good on both TX and RX. With lithium Ion Battery giving 5 watts on 2,70 & 6 "Another winner from the Icom stable" ML&S price £269.
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FT-1500M

50 watt 2m FM mobile with DTMF mike and CTCSS making it ideal for internet linking (See www.g7wfm.co.uk <http://www.g7wfm.co.uk> for details on internet linking)
ML&S price still only £159.00 ZERO DEPOSIT, 36 x £5.78

Icom IC-2725E

When I first saw the IC-2725 I thought it was just another dual band radio! When I connected it to an ariel I soon discovered it was the Dual Band Radio. The first radio I have seen to be able to monitor 2 Airband signals at the same time. Pagers do not seem to bother it at all. The remote head puts all the controls where you want them. The mike can completely operate the radio (including frequency entry and DTMF). If you want a serious dual band radio with excellent scanning facilities then the IC-2725 is ideal. ML&S price £349.ZERO DEPOSIT, 36 x £12.69

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JEREMY BOOT, G4NJH
E-mail: jp.boot@ntlworld.com

HAVE YOU EVER wondered what nanoteslas, X-ray flux levels, solar activity and geomagnetic activity are exactly, but never dared to ask? I read these things every week on GB2RS from G0CAS's excellent and highly technical reports but, if I am honest, more than a doubt remains in my mind about exactly what is what. I dare say I am not alone.

You are invited at the end of each GB2RS bulletin to follow the Saturday propagation update from the Keele University site and, if you do, you will have more of the same. So try the site of Neil Clarke, G0CAS. You can see him and his connections to Radio Caroline and some background - how he got interested in radio and especially propagation, and all sorts of up-to-date charts of solar wind data, auroral activity and so on.

SUN MAG AND THE RSGB PSC

NEVERTHELESS the site is not for the beginner. I followed some of the links, in particular to *Sun Mag* - "A monthly magazine with solar-related articles, [and] previous month's solar, geomagnetic and ionospheric data". There is also *Sun Mag Explained* - a non-technical easy-to-read 80-page A4 booklet. Great. Unfortunately, you need to send Neil an e-mail about subscription etc and not get it online. A pity, but 80 pages is a lot and there is much to take in on this topic.

For a really good explanation of all the terms - which, in practice, is really a whole series of useful links - go to the page of the Propagation Studies Committee of the RSGB. I enjoyed the links that went to NOAA with details of space weather (including the real-time solar wind data). The images are stunning. So are links to NASA - a favourite site and packed with information, and not only for propagation aficionados.

AURORA

I VISITED M0LLW's aurora site, where the aurora graphics and visual impact were impressive. Auroras are part of the propagation scene, in case you'd forgotten, causing great excitement amongst followers. For more on auroras, see the University of Alaska Geophysical Institute pages and the excellent IPS Australia site for auroral alerts with a wealth of detail and imagery. The well-known Scottish aurora is depicted on the musicscotland.com page.

BGS

BE SURE TO VISIT the site of the British Geological Survey too. We read that "Geomagnetism is part of the Earthquake and Forensic Seismology and Geomagnetism (EFSG) Programme, operating within the Environment and Hazards Directorate of BGS. The main function of the geomagnetism part of the programme is to monitor the earth's magnetic field in the UK. This work involves the continuous operation of three observatories and regular occupation of repeat stations in the UK. Additionally, contributions are made to the international effort of global monitoring of the magnetic field by the operation of three observatories overseas." More stunning images and maps. But, although this site is essentially scientific, it has much to interest the casual visitor.

PREDICTION SOFTWARE

I SHOULD SAY that I am not reviewing or using any software but you will find links to plenty of it on the 'Propagation Studies' links. I often wonder whether anyone compares horoscopes in newspapers with the day as it actually turned out later. Did that "particularly good day to avoid Gemini" or "a good day to take serious decisions" prove to be right? Likewise, then, did the HF do its stuff and was that solar emission a disaster or a boon? Try predicting it yourself and do your own analysis. From the list I visited Earth View (Fourmilab pages) for sight of the Grey Line, *PropView* and *W6ELProp* (Windows compatible), as well as propagation forecast pages including the G4FKH pages using the familiar format (VE5ZX / G0TZX) we see in *RadCom* each month. See also the KN4LF medium-wave propagation predictions.

VERY LOW - VERY HIGH

I ALSO came across some information on the Alan Melia, G3NYK, pages on 136kHz. They include a 'waterfall view' of the band (if running). The new LF bands have been a fresh insight into propagation at those frequencies and another good example of amateurs taking the lead. Alan's pages include a pdf version of the Time and Frequency User Club. See also the pages of Mike Dennison, G3XDV, on LF matters and operators. There are some good links here on allied subjects.

At the opposite end of the spectrum see the 'World Above 1000MHz' pages by G3PHO which I have reviewed elsewhere at one time or another. I hope I am right in saying that the sun and its other effects play lesser parts in this area of operations; weather and other factors come in to play. At any rate, all you could wish to know about such exotica is here to read. ♦

The page of Neil Clarke, G0CAS, the GB2RS propagation correspondent.

WWW.

GB2RS propagation update	www.keele.ac.uk/depts/por/update.htm
Neil Clarke, G0CAS	www.g0cas.demon.co.uk/main.htm
M0LLW aurora	www.qsl.net/m0llw/fave%20sites.html
RSGB Propagation Studies Committee	www.keele.ac.uk/depts/por/psc.htm
NOAA	http://sec.noaa.gov/
Scottish aurora	www.aurora.musicscotland.com/
British Geological Survey	www.geomag.bgs.ac.uk/
Fourmilab (Earth View)	www.fourmilab.ch/cgi-bin/uncgi/Earth/action?opt=-p
PropView	www.qsl.net/propview/
W6EL	www.qsl.net/w6elprop/
G4FKH pages	http://members.aol.com/g4fkhgwyn/
KN4LF	www.kn4lf.com/kn4lf6.htm
Alan Melia, G3NYK	www.alan.melia.btinternet.co.uk/
Mike Dennison, G3XDV, LF	www.lf.thersgb.net/links.htm
University of Alaska	www.pfrr.alaska.edu/~pfrr/AURORA/INDEX.HTM (case-sensitive)
IPS Australia	www.ips.gov.au/Main.php?CatID=2

JOHN HEATH, G7HIA
Chestnuts, Desford Lane, Kirkby Mallory, Leicester LE9 7QF.
E-mail: g7hia@amsat.org

SPACE

LAUNCHED FROM Plesetsk in Russia, and originally named Mozhayets, RS-20 is a small navigation and science satellite. It carries a CW beacon transmitter operating on 145.818MHz and 435.319MHz. The telemetry decoding equations can be found on the ARRL website and were supplied by Alexander Zaitzev, RW3DZ. If you need the decoding table, please send me an SASE and I will print one off for you. Robert, G8ATE has been copying the 2m beacon regularly but, so far, I have not seen any reports of the 70cm beacon. Ground controllers would like to receive reception reports and telemetry files by e-mail to plis@kaluga.ru

The payload for this 64kg satellite was developed by students of the Mozhaisky military academy in St Petersburg. It includes a GPS receiver, particle detector and an RS-20 beacon. The satellite is in a near-circular polar orbit with a period of about 99 minutes. Launched by the same rocket was Alsat-1A, a 90kg Earth observation satellite built by Surrey Satellite Technology Ltd for Algeria. This is the first satellite of an International Disaster Monitoring Constellation, which will provide imaging to support disaster relief agencies. A cubical design with 600mm sides and a gravity gradient boom for orientation, it carries a 32-metre resolution, three-band imaging system, and a momentum wheel for improved stability during imaging. SSTL has considerable design and in-orbit experience with this type of spacecraft.

SAFIR-M

THIS IS the designation for the telemetry beacon on board RUBIN-2, a small privately-owned satellite flown as a technology demonstrator. The owners are the German Fuchs Group and Carlo Gavazzi, an Italian company with a wide range of electronics activity.

The Safir-M payload transmits on 145.825MHz sending AX25 Packet at 9K6 baud. The data stream is hexadecimal. Andy Thomas, G0SFJ, has been successful in capturing the telemetry using a Kenwood TM-D700E with packet settings TRACE ON and PACLEN 255. Several modern radios have data ports that are set up for 9K6. For receive-only an expensive 9K6 TNC is not essential. The audio from the 9K6 port on the radio can be fed into a PC soundcard for processing. Robert, G8ATE, has been using this method with AGW packet engine software and achieving good results.

Small satellites can get an affordable ride into space with the large launch vehicles which can handle multiple satellites. RUBIN-2 was launched together with Unisat-2 (Italy), Saudisat-1C (Saudi Arabia), and Latinsat-A and -B (Argentina). The launch took place from the Russian Cosmodrome at Baikonur using a one-time intercontinental ballistic missile, the R-36M, designated 'Dnepr' for civilian use.

You can find out a lot more about the Russian Space programme, history, background, technical specifications for launch vehicles, some great pictures, and much more on an excellent website - see WWW.

Satellites mounted in their launch configuration (see 'Safir-M').

WWW.

Gavazzi space and satellite division	www.cgspace.it
Space history of the former USSR	www.russianspaceweb.com
AGW packet engine	www.raag.org/sv2agw/
SAFIR-M homepage	http://amend.gmxhome.de
SAFIR-M operational	http://hft.fh-pforzheim.de/ao49/
Sound card packet (KC2RLM)	www.qsl.net/soundcardpacket/

LUNAR 'CONSPIRACY'

IF YOU READ this column last time you will recall that I am trying to track down reception reports of signals from the lunar surface to counteract the conspiracy theory that the Apollo program was a giant hoax. The first lead came from Peter McPherson, G3TEL, who worked at the Rutherford Appleton Laboratories in Oxfordshire during the 1980s. Peter recalled that the S-band signals from the Apollo Lunar Surface Experimental Payload, ALSEP, had been discussed as a possible signal source for antenna calibration. A visit to the NASA History website and a search for ALSEP added some more to the story.

My first reception confirmation came from Charlie Suckling, G3WDG, who told me that the ALSEP signals from the Moon were not difficult to copy and that he received them regularly using a 4ft dish. As Charlie pointed out, this is not evidence of a manned landing - the ALSEP equipment could have been remotely landed from an orbiting vehicle. Nevertheless, I had my first reliable report of signals from the Moon.

John Wright, G3VPW (ex-VP8KF), made contact to let me know that S-band equipment, originally built for the Apollo programme, is still in use at RAL. There are selection buttons for LM (Lunar Module) and CSM (Command and Service Module). Good circumstantial evidence in my view. Building equipment with false panel legends seems like pushing conspiracy a bit far to me. If anyone else has more information, I would be delighted to receive it. I wonder if there is any remote chance of a recording of suit communications from the guys on the lunar surface?

DATA MODES IN SPACE

ALREADY MENTIONED is the AGW packet engine written by George Rossopoulos, SV2AGW. You can download this from the site listed in WWW. If you are thinking about giving it a try, Ralph Milnes, KC2RLM, has a very good website with comprehensive setup help, cable hookup tips, diagrams, and so forth.

FINALLY

I AM ALWAYS pleased to hear from readers by post or e-mail with interesting items for the page, or requests for topics that you would like me to cover. ♦

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Down To Earth

Newcomers' News

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

DAVID PRATT, G4DMP, has posted the City & Guilds examiners' reports for the last ever Novice Radio Amateur Exam (NRAE) and the most recent Radio Amateur Exam (RAE) on the Internet (see WWW. below).

David's reports are always an invaluable source of information about the types of question that crop up in the exams and, in particular, those that candidates seem to have difficulty with. This time round, all but two of the NRAE candidates passed and over 76% of those sitting the RAE will now be holding a pass slip, or even a new licence.

The NRAE report recognises the hard work by all concerned with the Novice exam since its introduction in June 1991. It also points out that in future Intermediate Licence exams will be provided by the Radiocommunications Agency (RA) [see January *RadCom* page 5]. We all hope that the two candidates who were not successful will try the new style exam or, if they have not already done so, try for a Foundation Licence first.

COMPLETE RADIO FAMILY

FOLLOWING A weekend Foundation course run by the Bredhurst Receiving and Transmitting Society (BRATS) in December, Michaela Reay became the fifth radio amateur in her family and is now operating as M3MKR. Her licence arrived on Christmas Eve and her first contact (QSO) was with another young lady, M3GEM.

Nine-year old Michaela joins twin sister Victoria, M3VLR; older sister Rebecca (12), M3JSA; dad Brian, G8OSN; and mum Linda, G6MXR, in a fight for the radio at the Reay household.

The three Reay youngsters all studied using the BRATS training resource, which was co-written by dad and Charles Darley, G4VSZ. The resource is freely available from the BRATS website or I understand it can be supplied on CD-ROM. Training material provided there covers the Foundation and Full Licences, with Intermediate information currently being added.

Michaela, M3MKR, takes control of the Reay shack (see 'Complete Radio Family').

NUMBERS KEEP GROWING

NO SOONER were we reading about the presentation to Andrew Finch, M3FMA, the 5000th Foundation Licence holder, than an RA press release announced that the 6000th licence had been issued! Let's hope a good number decide to progress to the Intermediate Licence and beyond.

Trevor Hawkins, M5AKA, of the Chelmsford club sent me a recording of young Andrew being interviewed on BBC Radio Essex. When asked how he became interested in amateur radio Andrew said, "I did my Scout Communication badge and went on from there". He went on to explain, "The most exciting thing about amateur radio is speaking to someone on the other side of the world."

Let's hope Andrew's interview encourages other youngsters to try the hobby too.

OPERATING PRACTICES

I HAVE RECEIVED one very emotionally charged letter from an irate reader criticising some of the Foundation Licence holders in his part of the country. However, he asked me not to publish the content, so I won't. What I can say is that many of the 'crimes' he reports can be heard being committed by 'those who should know better' on a daily basis and are not the preserve of the newcomers.

One fine soul who is trying to help reduce the frequency of newly-licensed operators 'putting their foot in it' is Alan Ralph, G8XLH. He has prepared a 'Good Operating' guide for his students. I think Alan recognises that we all need help at first and with a little friendly advice some of those early innocent errors can soon be smoothed over.

If any other new starters or instructors would like a copy, or have any suggestions to add, Alan is listed in the *RSGB Yearbook* (QTHR) or he can be contacted via G8XLH@aol.com

It may also be worth reminding readers that *persistent* licence infringements should be reported to the authorities, *not* challenged on air.

HISTORICAL LINK

GEOFF CHANCE, M1BUI, suggested that a mention of International Marconi Day would not go amiss in this column. Newcomers might like to take part in the event, which is to commemorate the birth of Gugliemo Marconi, the radio pioneer.

Run by the Cornish Radio Amateur Club on Saturday 26 April, the event is not a contest but awards can be earned. For example, any amateur contacting 15 of the participating stations will qualify for a 'mixed mode' award and there are separate classes of award for Morse code and digital mode only contacts.

Full details of the day can be found on the International Marconi Day website, or you could try contacting the Cornish ARC through Cheryll Hammett, 2E1ADQ, tel: 01726 882758.

KIT NEWS

KANGA PRODUCTS, producers of some very popular radio kits, is up for sale and, for the time being, the kits are not available. Best wishes go to John Fletcher, G4EDX, its current proprietor, and I will let readers know when the company starts trading again.

In the meantime Tim Walford, G3PCJ, has introduced more kits to his Somerset range, including a low power (QRP) antenna matching unit and a 10-watt linear amplifier to give his QRP transmitters a bit of a lift.

Another new one is the *Fivehead* transceiver, which is a flexible kit that can be expanded to suit individual needs. The basic kit is a 14MHz SSB rig with superheterodyne receiver but with additional boards you can add CW, digital readout, speech processor and more. Full details are on his website or Tim can be contacted on 01458 241224. ♦

WWW.

NRAE/RAE examiners' reports:	www.kippax.demon.co.uk/c-and-g
BRATS:	www.amradioinfo.co.uk
International Marconi Day:	www.gb4imd.co.uk
Walford Electronics:	www.users.globalnet.co.uk/~walfor

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

Down To Earth

Guide to HF Operating - Part 1: Getting Set Up

by Ian Poole, G3YWX *

With the incredible increase in HF activity since January 2002, thanks to the introduction of the Foundation Licence, we have been asked for a 'beginners' guide' to the HF bands and HF operation, suitable for newly-licensed M3 stations and other absolute newcomers to HF. Ian Poole, G3YWX, first looks at basic HF equipment and antennas and gives a brief guide to the characteristics of each of the HF bands.

THERE IS A tremendous amount of activity, interest and excitement for those who operate on the HF bands. It's possible to contact stations from all parts of the world, participate in contests, contact DXpeditions, and do so much more on these bands. With the enormous success of the Foundation Licence there are many new people participating in these activities. The Foundation Licence gives excellent access to the amateur bands. Operation is allowed on all UK amateur bands between 135.7kHz and 440MHz, except for the 10m band (28.0 - 29.7MHz). The power limit for Foundation Licensees is 10 watts delivered to the antenna, while for Intermediate Licensees it is 50 watts and for Full Licensees 400 watts.

To make the most of these bands there are some choices that have to be made. Decisions about the equipment, antennas, and possibly which bands to focus on for antennas. By having a good knowledge of the bands more enjoyment can be gained, and more effective use can be made of the time available. People soon build up preferences for particular bands and find they can contact more of the stations they want.

CHOOSE YOUR EQUIPMENT

THE CHOICE OF equipment is important as most of us are on a limited budget and want to spend it wisely. Fortunately there is a wide variety of equipment available at prices that represent excellent value. New equipment has a number of advantages - including a manufacturer's guarantee, but to cut the cost it is possible to buy second-hand equipment. Beware, though, because some private sales may not always represent good value.

* 5 Meadway, Staines, Middx TW18 2PW.

Jonathan, M5FUN, has 'fun' operating on HF with this simple station: a 100-watt transceiver powered from a 13.8 volt mains power supply.

It is also worth noting that people with a Foundation Licence are only able to use transmitting equipment that conforms to EC standards, or it must be a commercially-available kit that can only operate inside the amateur bands. Any commercially-made amateur radio transceiver made in the last 20 years or so should conform to this standard. It is also worth noting that kits must also have a means of measuring power output, or be designed so that they cannot produce power levels over the legal limit. Commercially-manufactured equipment that is capable of running more than the legal power limit *is* permissible, but it must be operated within the power limitations of the licence.

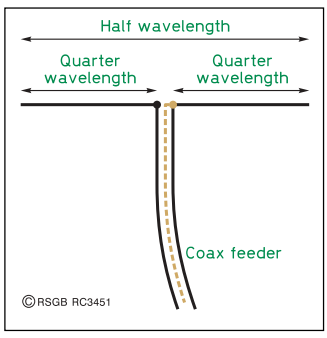

Fig 1: The basic half-wave dipole.

CHOOSE YOUR ANTENNA

AS ANYONE WHO has held a transmitting licence will know, the antenna is crucial to the operation of the station. A poor antenna will limit the performance of the station regardless of the quality of the equipment, but a good antenna will make the most of the station, allowing all the equipment to perform at its best.

Having said this, antennas are usually a compromise. Very few people are able to install a large Yagi on a tall tower at the top of a hill. Most people settle for wire antennas and these can be very successful. They can certainly be the cheapest! Often the most reliable antennas are dipoles (see **Fig 1**). These are basically single-band anternnas, but to give a multiband capability several dipoles can be fed from the same feeder. Alternatively, multiband trap dipoles can be made or bought. Long wires (or more correctly 'end-fed wires') are not ideal because they need to be fed against a good earth and because they radiate along the whole length of the wire their use can often lead to high levels of radiation in and around the shack. This can lead to RF getting into the mains wiring, which can result in interference problems.

Vertical antennas are worth considering - see **Fig 2**. Having a

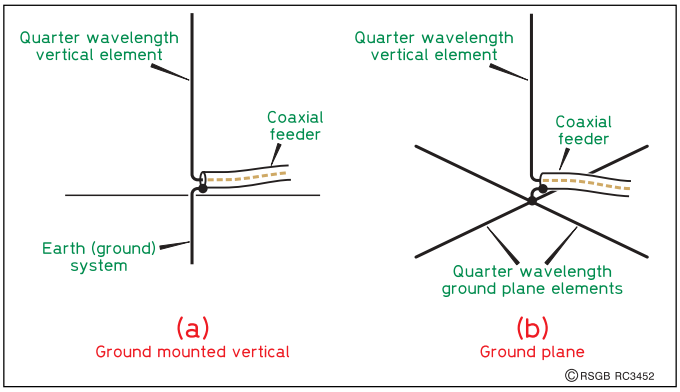

Fig 2: Simple vertical antennas (a) using a direct connection to earth, and (b) using four quarter-wave long 'ground plane' wires or rods.

A large HF antenna array.

low angle of radiation they are good for DX. Most of these antennas need either a set of radials or a good ground connection. If a ground connection is to be used it is necessary to ensure that it is very effective. Plenty of metal surface area and also as many buried radials as possible will help ensure that the antenna works effectively. However, in areas where soil conductivity is poor results can be disappointing. An alternative is to raise the antenna well above the ground and use a set of radials or a ground plane. As the name suggests these simulate the ground. Several types of vertical antenna are manufactured, and many of them are able to operate on multiple bands. Often if they need radials for their operation, radial kits are available. These usually have coils included in them, making them shorter than the quarter-wavelength radials normally required.

It is not possible to cover the full subject of antennas in a few short paragraphs. However, far more information can be gained from RSGB publications such as *Backyard Antennas* [3].

A BEGINNER'S HF VOCABULARY

angle of radiation Angle from the horizontal of most of the radiation of a transmitted signal. The lower the angle (eg 5 - 10º) the greater the signal at the horizon and therefore the better for long-distance communication. The higher the angle (eg 80º, nearly vertically upwards) the worse for long-distance communication (but better for short-distance signals).

beam antenna Antenna consisting of more than one element that provides both directivity and gain.

CW Continuous Wave, usually meaning Morse Code.

director Element of beam antenna placed in front of the dipole; typically a few per cent shorter than the dipole.

DX Any station or signal that is rare or otherwise unusual, either because of distance (eg New Zealand) or because of 'rarity value' (eg Libya, which is only as far away as Malta, but which only has a very small number of amateur stations.) It is also dependent on the band in question: Malta would not be considered DX on 20m, but would be on 2m.

DXCC DX Century Club, an award issued by the American Radio Relay League for confirmed (QSLd) contacts with a minimum of 100 entities or countries.

DXer Amateur who enjoys making contacts with DX stations.

DXpedition Radio operation specifically for the enjoyment of making contacts from a 'rare' or unusual location.

element Single length of wire or rod making up part of an antenna; a dipole is therefore a single-element antenna, a Yagi may be a 2-element, 3-element or more antenna.

end-fed wire More correct name for a long-wire antenna.

fed, feeder 'Feeder' is the cable connecting the station to the antenna.

HF Strictly 3 - 30MHz (100 - 10 metres), but usually taken also to include the 160 metre amateur band.

IOTA Islands On The Air, an award issued by the RSGB for confirmed (QSLd) contacts with a minimum of 100 island groups.

. . . More next month!

THE UK HF AMATEUR BANDS

160 metres, 'Topband' (UK Allocation 1810 - 2000kHz): Although not strictly speaking an HF band because it falls below 3MHz, 'topband' is usually considered with the 'true' HF bands. During the day signals may be heard over distances of 50 miles or more dependent upon the transmitter powers and antennas used. At night distances increase and it is possible to hear stations several hundreds of miles away and on occasions trans-Atlantic or even trans-global contacts can be made. The band suffers from the disadvantage that it is only allocated on a secondary basis to amateurs and there can be interference from other users.

80 metres (UK Allocation 3500 - 3800kHz): Like 'topband' this one is also shared with other services and can be noisy, especially at night. During the day the distances that can be reached are greater than those on topband but are usually limited to a few hundred miles. At night stations from further afield can be heard and distances of over 1000 miles are common. Greater distances can be achieved by those with good antennas. The band comes into its own during the years of the sunspot minimum, but it can perform well at any time.

40 metres (UK Allocation 7000 - 7100kHz): The 40 metre band is a particularly useful band providing an interesting mix of short haul contacts by day and world-wide communications at night. It is a favourite band for many during the low part of the sunspot cycle, being capable of long haul contacts during the hours of darkness.

30 metres (UK allocation 10100 - 10150kHz): This band was released for amateur use after the World Administrative Radio Conference held in 1979 ('WARC 79') and is therefore known as one of the 'WARC bands'. It is still not very widely used, but is capable of giving good results. It is very similar in character to the 40 metre band, being only slightly higher in frequency. Due to the band being only 50kHz wide, only narrow-mode bands such as CW (Morse code) are recommended for use on 30 metres.

20 metres (UK Allocation 14000 - 14350kHz): This is the main long haul band for radio amateurs, reliably giving the possibility of long distance contacts during all phases of the sunspot cycle. During the day stations up to about 2000 - 3000 miles can be heard when conditions are good, and there are virtually always stations up to 1500 miles to be heard. The band often closes at night during the winter and during the sunspot minimum. During the summer and at the sunspot maximum it remains open most of the night and stations from many parts of the world may be heard.

17 metres (UK Allocation 18068 - 18168kHz): Like the 30 metre band this band is not as widely used as some of the others. It is very much a half-way house between 15 and 20 metres and although rather narrow it is still well worth investigating when conditions look promising. It can offer some excellent opportunities for contacting DX stations. Although beam antennas are available for the band, most stations still use dipoles as those with beams tend to use them on the more traditional DX bands of 10, 15 and 20 metres, thereby limiting the number of strong stations on 17 metres. However, more beam antennas are appearing with the result that more people are using the band.

15 metres (UK allocation 21000 - 21450kHz): This band is another popular band but it is more variable than 20 metres, being affected more by the state of the sunspot cycle and on some days it may not open at all. During the peak of the sunspot cycle it is open during the day and well into the night when it will support propagation over many thousands of miles.

12 metres (UK allocation 24890 - 24990kHz): This band is greatly affected by the position in the sunspot cycle, and has many similarities with 10 metres, although it may just support propagation when 10 metres cannot. However, it will follow very much the same pattern as the slightly higher frequency band. Like 17 metres, this band is quite narrow, but worth investigating when conditions mean the band could be open. Also there are few stations using beam antennas and this makes it a good hunting ground.

10 metres (UK allocation 28000 - 29700kHz): This is the highest frequency band in the short wave (HF) portion of the spectrum, but is not available to holders of the Foundation Licence. It is greatly affected by the state of the sun, and during the years of the sunspot minimum it may not normally support long distance communications. However, when conditions are favourable, it can produce some very impressive results, even for those using low powers and with modest antennas.

More details can be found in *Amateur Radio Explained* [1], or for a fuller and easy to understand explanation of radio propagation, refer to the RSGB publication *Your Guide to Propagation* [2] or visit my website (see WWW. below).

Find out more about how to make the best of your station and operating on the HF bands by reading the RSGB publication HF Amateur Radio by Ian Poole, G3YWX.

CHOOSE YOUR BAND

ONE OF THE secrets of successful operating is knowing where to look and when. Band conditions are always changing, not only over the course of a day, but from day to day, and as a result of the changing seasons. On top of this the day to day state of the sun has a major effect. Experienced operators know how to tell when conditions are likely to be good. Not only is propagation an issue, but also some of the bands are more popular than others. Whilst this means that there are more stations to contact, it also means there is more interference and more competition. By knowing which bands to use, the most efficient use can be made of the station and the time available, especially if power is limited as in the case of the Foundation Licence. This is where the operator's skill can help make up for not having a high-power station with a large antenna on the top of a hill.

SUMMARY

THIS IS NATURALLY very much a whistle-stop tour of getting started on the HF bands. For anyone wanting to read more about this, *HF Amateur Radio* [4] published by the RSGB is a good buy. Next month there will be part two of this article and this will look at actually operating on the bands.

FURTHER READING

[1] *Amateur Radio Explained*, Ian Poole, G3YWX.
[2] *Your Guide to Propagation*, Ian Poole, G3YWX.
[3] *Backyard Antennas*, Peter Dodd, G3LDO.
[4] *HF Amateur Radio*, Ian Poole, G3YWX.

All four RSGB publications are available from the RSGB Shop - see www.rsgb.org/shop or tel: 0870 904 7373. ♦

WWW.

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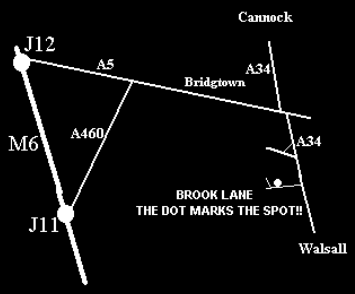

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A Low-Distortion Sine-Wave Generator

*The conclusion of a two-part design by David M Jones, BSc (Eng), G4FQR **

THIS SECTION about calculating the weight resistors is for the curious – skip to 'Weight Resistor Setup' for essential practical stuff!

The shape of wave produced is determined by the proportions of seven resistors, R1 - R7. The proportions are easily found using a pocket calculator, as follows. We are calculating the values of the resistors needed to form the staircase shown in Fig 2 last month. The steps run from the first crest of the wave down to the first trough, correctly described as the first half of a cosine cycle.

Referring to **Table 2,** divide the 180° of the half cycle into eight equal steps (of 22.5°). Write the mid-step angles into column 1, ie 11.25°, 33.75°, 56.25°, etc. For these angles, write the cosines in column 2. Calculate the differences between the successive values of column 2 and write them into column 3. In staircase terms, the second column corresponds to the level of the 'tread' and the third column to the height of the 'riser'.

* 56 Grebe Cres, Horsham RH13 6ED.
E-mail: davidg4fqr@aol.com

Step midpoint (°)	Step midpoint cosine	Decrement of midpoint cosine	Inverse Decrement	Multiple of 2.5629
11.25	+0.9808	-	-	-
33.75	+0.8315	0.1493	6.6972	2.6131
56.25	+0.5556	0.2759	3.6245	1.4142
78.75	+0.1951	0.3605	2.7741	1.0824
101.25	-0.1951	0.3902	2.5629	1.0000
123.75	-0.5556	0.3605	2.7741	1.0824
146.25	-0.8315	0.2759	3.6245	1.4142
168.75	-0.9808	0.1493	6.6972	2.6131

Table 2: Calculation of weight resistor multipliers.

In circuit terms the riser heights are variations in output voltage seen at R8 / R9 and these are inversely proportional to the weight resistors that have 5V switched on to them by the shift register outputs. Accordingly we calculate the reciprocals of column 3 and write them in column 4. To finish, divide the column 4 values by their lowest value (2.5629) and write the results in column 5. This column now contains the proportions of the set of weight resistors R1 - R7.

WEIGHT RESISTOR SETUP

REQUIRED IS A SET of seven resistors, the values of which are in the exact proportions given in the fifth column of Table 2, where R4 corresponds to 1.0000.

Horowitz and Hill use the phrase "perfect resistors", but the very costly, 0.1% tolerance, E96 series parts which they show in [5] miss the target values by up to 1%. On the other hand, their close tolerances ensure excellent symmetry around the central R4, which is a prime aim. We can do very well, using the method described below, at negligible cost. Perfect enough for this home-brewer! For the Mk6.1 generator, I chose a nominal 22kΩ, 1%, ¼W, metal-film resistor for R4. It measured 21.902kΩ so my target set became the values shown in **Table 3**.

Your targets will depend on the measured value of your R4. Remember you are not aiming to reproduce *my* particular resistor values just given, but you are trying to make them in the exact proportions labelled as 'multiple' in Tables 2 and 3. (R4 need not be 22kΩ, but that conforms with [5].)

For simplicity, stability and economy, I used (and would recommend) the following tip from Peter Rhodes, G3XJP. The idea in a general case is to string in series three resistors of about say, 90%, 9%, and 1% of the target. The **Fig 4** layout allows for this. It's easier than it sounds and, following the process to be described next, you will quickly get something like the excellent weight resistor reports for the Mk6.1 and Mk7.1 generators shown in **Tables 4 and 5**.

CONSTRUCTION

A MINIMUM-AREA layout for the basic circuit is given in Fig 4. Any construction method could be used, but an etched printed circuit board is recommended. With parts and materials in hand, the construction is easily completed in a day. Delay installing IC1 and IC2 until the testing stage.

In soldering tests on the specified 1% ¼W metal film resistors, I found a hint that there was a slight shift in resistance on the first heating/cooling cycle but no change on subsequent cycles. I therefore recommend the following as a precautionary approach when aiming for the best possible weight resistors. Solder R4 and the 'a' parts into the PCB and measure them all after cooling. Then calculate the

Weight resistor	R1	R2	R3	R4	R5	R6	R7
Multiple	2.6131	1.4142	1.0824	1.0000	1.0824	1.4142	2.6131
Target (kΩ)	57.232	30.974	23.707	21.902	23.707	30.974	57.232

Table 3: Target set based on R4 having the nominal value 22kΩ. See text.

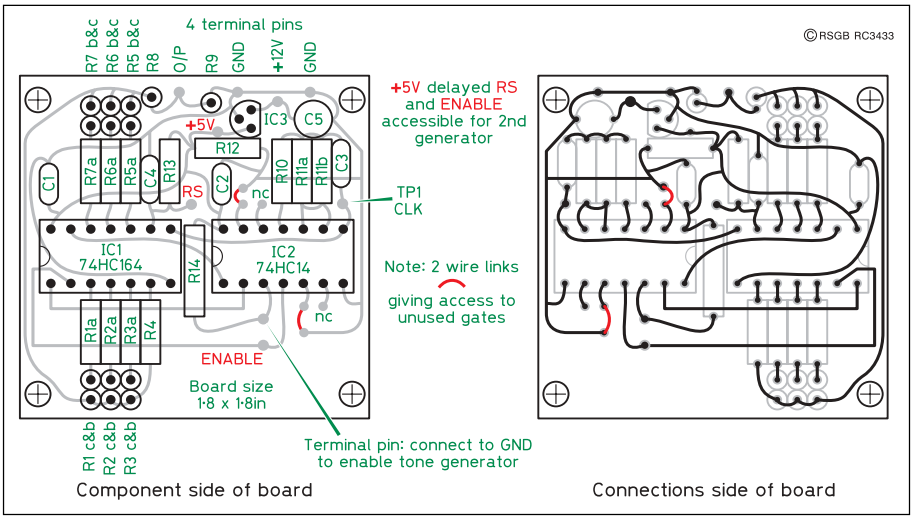

Fig 4: Layout for the basic generator. To save board space, two of the possible three resistors in a weight resistor string are installed vertically. Connections may be copper tracks on an etched single-sided PCB, or 'ugly' wiring on perforated board. On a PCB, drill all holes 0.7 or 0.8mm initially, then enlarge the terminal pin holes to 1mm and the mounting holes to 3.2mm.

target values from R4, and what b + c needs to be for R1, R2, R3, R5, R6, and R7. Select the 'b' parts (near to but probably less than the just-calculated b + c) and solder them in. After cooling measure a + b. Select the 'c' parts to make up any shortfall from the target total, and solder them in. After cooling, measure the complete weight resistor strings and congratulate yourself on how close they are to the targets.

TESTING

CHECK THAT all the socket pins show the expected resistance to each other and that there are no shorts. The most likely faults are solder bridges across adjacent tracks, and desoldering braid will be found useful for clearing them. Apply a 12V supply and check that 5V appears where expected. Remove the supply and insert IC1 and IC2, observing reasonable antistatic precautions. Connect an oscilloscope via a 10x probe to the output terminal pin. Reconnect the 12V supply. After a delay of about half a second a staircase wave should appear on the scope. Check that the wave is exactly symmetrical as in Fig 2 (last month) and the level is 1½V p-p. The period will be about 2.4ms (420Hz) for the C3-R11 values in Fig 3.

A frequency counter may behave inconsistently through triggering on the sharp edges of the staircase but should register the 6.72kHz clock, available at TP1, correctly.

Current taken from the supply depends on clocking frequency. Measured values from a 12V supply are 5.4mA when R11 is 60kΩ and f_{fund} is 700Hz, increasing to 5.8mA when R11 is 10kΩ and f_{fund} is 2800Hz.

The basic generator output impedance is very high so the staircase will be seen best when a 10x scope probe is the only load. When satisfied that the staircase is correct, it is interesting to determine the harmonic noise levels using a PC soundcard and spectrum analysis software (see WWW).

Connect a 33µF capacitor and a 10kΩ resistor in series to the output terminal of the generator and then a short screened lead to the line input of the PC soundcard. This arrangement provided a suitable level signal in my case to the nominally-600Ω input of the soundcard. Pay careful attention to the recording volume control adjustment to avoid overloading the soundcard and producing false results for harmonic levels! I used a battery supply for the generator when connecting it to the PC, to avoid any possible mains ground loop problems.

FREQUENCY CONTROL OPTIONS

THE OUTPUT frequency depends solely on the clocking frequency, which can be fixed or variable. When a generator with a multi-turn 1MΩ Trimpot inserted in the R11b position was tested, the output frequency could be varied from 500Hz to 14.5kHz.

For early RC clocks, I used 4069 hex inverter gates or 555 timers with equal success. Later I settled on the 4093 and 74HC14. Both of these are Schmitt input devices, the precise triggering of which should contribute to a better-defined clock pulse and so minimise noise in the resultant sine-wave. These two-inverter clock generators behave reliably, with excellent frequency stability when using R and C for timing. There seemed to be no advantage in using the higher parts-count 555 option. Crystal-timed two-inverter clocks were disappointing, working only with occasional crystals in the simplest published circuit form I tried. Slightly more elaborate circuits and some component cut-and-try should overcome the problem. Even better would be a transistor crystal oscillator followed by a Schmitt input gate to square up the pulse.

External clocks can be used instead of IC2. I tried using a 74HC4060 oscillator / divider with a 18.432MHz crystal; clock frequencies of 288, 576, and 1152kHz were supplied for sine-wave outputs of 18, 36, and 72kHz.

In another test a 2336kHz crystal clock gave a 146kHz sine-wave.

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Weight Resistor	Target (kΩ)	String part (a) nominal (kΩ)	String part (b) nominal (kΩ)	String part (c) nominal (kΩ)	Measured (a)+(b)+(c) (kΩ)
R1	57.232	56	1.5	0.033	57.227
R2	30.974	27	3.9	0.120	30.981
R3	23.707	22	1.5	0.270	23.708
R4	21.902	22	none	none	21.902
R5	23.707	22	1.8	0.022	23.708
R6	30.974	27	3.9	0.120	30.979
R7	57.232	56	1.5	0.022	57.220

Table 4: Weight resistor report for the Mk6.1 generator.

Weight Resistor	Target (kΩ)	String part (a) nominal (kΩ)	String part (b) nominal (kΩ)	String part (c) nominal (kΩ)	Measured (a)+(b)+(c) (kΩ)
R1	57.384	56	1.2	None	57.375
R2	31.056	27	3.9	0.220	31.062
R3	23.769	22	1.8	0.039	23.769
R4	21.960	22	none	None	21.960
R5	23.769	22	1.8	None	23.767
R6	31.056	27	3.9	0.120	31.058
R7	57.384	56	1.2	0.100	57.374

Table 5: Weight resistor report for the Mk7.1 generator.

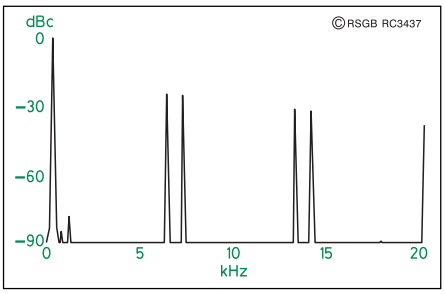


Fig 5: The spectrum of the Mk7.1 generator, with a fundamental of 430Hz. The second harmonic at -85dBc and the third at -79dBc are the only visible components apart from the aliases.

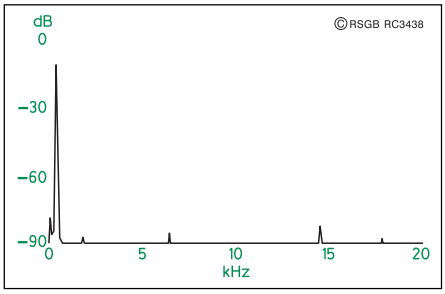


Fig 6: The spectrum (Fig 5) of the Mk7.1 generator output after passing through the low-pass filter of Fig 7 to remove aliases. The 430Hz fundamental at -11dB and the 6450Hz 15th harmonic alias at -86dB are the only signals originating from the generator. The other items in the spectrogram are PC soundcard artefacts which become visible when running at high gain, as required in this case to compensate for the loss through the filter.

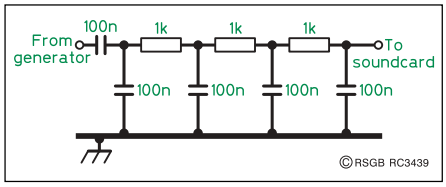


Fig 7: The filter used to remove the high-order harmonics (aliases) from the Mk7.1 generator output to give the spectrum in Fig 6. About 20mV p-p is delivered into the 600Ω soundcard input, and 40mV into 47kΩ (mic input of the 'Third Method' transceiver).

octaves! I used a standard 2.4576MHz 'baud-frequency' generation crystal with a 74HC4060 oscillator-divider chip and a 10-way single-pole selector switch. Output sine-waves on 18.75, 37.5, 150, 300, 600, 1200, 2400, 4800, 9600, 19,200, and 153,600Hz were delivered. The cheaper 4.9152MHz standard crystal would be similarly useful. Another standard crystal is 4.194304MHz, which could lead to 256Hz, the elder physicists' middle C.

COMPONENTS LIST

Resistors

R1 to R7, and R11 are ¼W, 1%, metal film. Remainder are ¼W, 5%, carbon film.

R1a, R7a	56k
R2a, R6a	27k
R3a, R4, R5a	22k

Remaining parts of weight resistor strings are selected as described in the text.

R8, R9, R14	33k
R10	1M
R11a	100k
R11b	optional, see text
R12	2k2
R13	470k

Capacitors 16V rating

C1, C2	100n ceramic
C3	470p np0 ceramic
C4	1µ electrolytic / tantalum
C5	33µ electrolytic

Semiconductors

IC1	74HC164 eight-stage serial-in parallel-out shift register
IC2	74HC14 hex Schmitt inverter
IC3	78L05 three-terminal 5V regulator

Miscellaneous

1.8in	square piece of single-sided PCB material
2 off	14-pin DIL sockets
5 off	terminal pins

Suppliers

Only common components are required which are stocked by the usual suppliers. It is an advantage to have on hand a good selection of values for building the weight resistors. The resistor kits sold by Rapid Electronics can be useful for this.

APPLICATIONS

WITH A 700Hz generator connected into the microphone socket, and transmitting into a dummy load, the 'Third Method' transceiver was trimmed until only one frequency could be heard on the station's monitor receiver. This proved that the tone generator, transmitter, and the monitoring receiver were working correctly.

A 1200Hz generator was added for two-tone testing, and it was clear that a very useful piece of test gear could readily be developed. Note that 700 and 1200Hz, not being harmonically related, are suitable frequencies for identifying intermodulation products in a transmitter output.

The generator, as described, could be included in more elaborate test / measurement projects. It can be anticipated that, for many applications, the basic high output-impedance generator will feed a unity gain stable op-amp-follower amplifier to provide low output impedance. Low-pass filtering could easily be incorporated to deal with the high level 15th and higher harmonics.

A simple passive low-pass filter may be all that is required for many applications.

Figs 5 and **6** show the output spectrum of the Mk7.1 design before and after it has been 'cleaned' by the low-pass filter of **Fig 7**. Keying, via the B input of IC1 in the manner shown is, of course, chirpless, but extra measures would be needed to shape character elements for CW transmission.

A swept-frequency generator could be made if a voltage-controlled oscillator, such as in the 4046 phase-locked loop IC, were used for the clock.

CONCLUSION

A DESIGN has been described of a novel sine-wave generator that can be reproduced by home constructors easily and inexpensively. Provided sufficient care is taken over the matching of the seven weight resistors to their target values, outstandingly low distortion can be confidently expected. A more casual approach, using only the instruments in every amateur workshop, still produces results that compare favourably with previous designs.

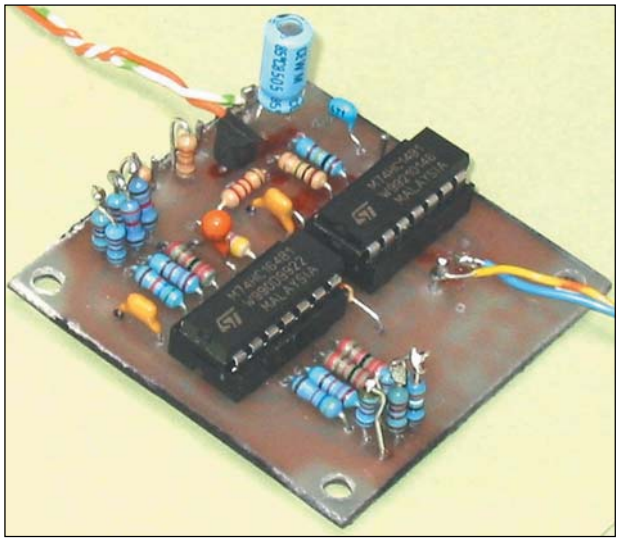
ACKNOWLEDGEMENTS

MANY THANKS to Peter, G3XJP, for his encouragement throughout, and to John, G4HGT, and Mike, M0BLP, for their helpful suggestions at the review stage. ♦

WWW.

Spectrum analysis software
www.visualizationsoftware.com/gram.html

The current version is V6.6, shareware, costing $25, fully functioning. You can freely download a Version 6 that runs for 10 minutes, before requiring restarting. This time restriction is not a serious problem. I've noticed that behaviour does not seem correct when the log frequency scale option is chosen so the spectrograms reproduced in this article were made with linear frequency scales. Earlier I made much use of the Version 5 program, which was freeware and fully functional, but seems to be no longer on the web.



The completed sine-wave generator board.

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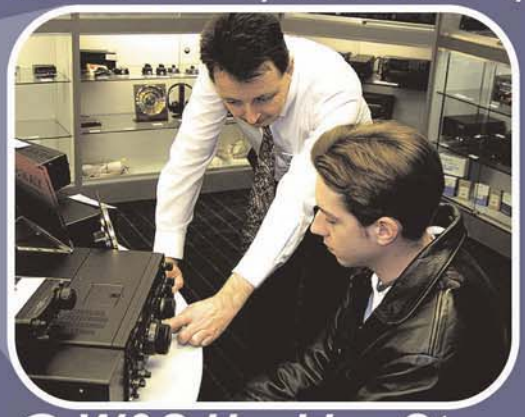

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*Part eight of the regular series by Peter Rhodes, BSc, G3XJP **

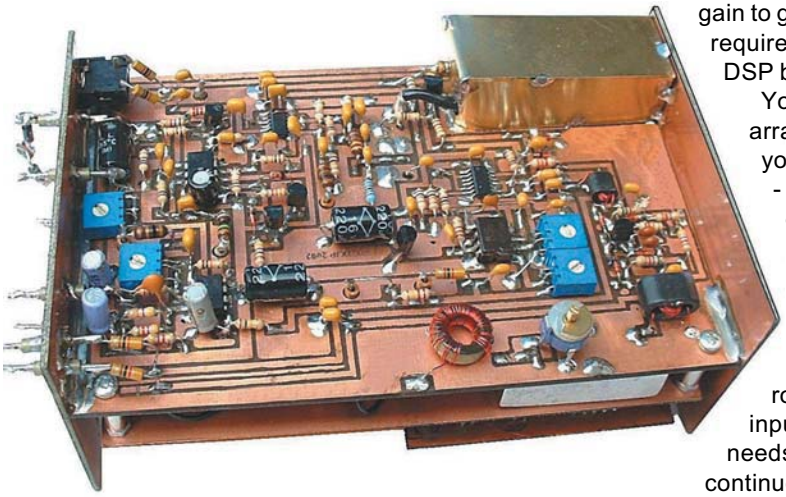
THIS MONTH COVERS the IF board circuitry; next month the construction detail. As you can see from the photograph, this board is nothing like as 'tight' as the DSP board but, by contrast, there are many more components.

IF BOARD OVERVIEW

THE BLOCK DIAGRAM was covered in Part 1. The board has a bi-directional IF port - which is then translated to / from 15kHz where the DSP takes over both on transmit and receive.

The IF frequency can be at any HF frequency of your choosing, typically in the range 5 to 12MHz. The determinant is the availability of the crystal filter, FL1.

Pic 'N' Mix allows you to change the IF frequency injection offset in a matter of seconds, so there are no issues there.



CIRCUIT DESCRIPTION

REFERRING TO **Fig 11**, the 50Ω IF is matched to FL1 by L1 / VC3. This is a standard L-match and should be modified - applying the text-book L-match equations - for your filter's frequency and impedance. VC3 is adjusted for maximum output in the first place, but thereafter for minimum pass-band ripple. The turns ratio of T1 also needs to be established for your filter impedance. The values given assume a 10.7MHz filter with 2200Ω impedance.

TR1 is the ubiquitous bi-directional J310 IF amplifier. It offers modest and quiet gain, a stable load and much convenience.

IC3 and IC4 provide fast (and silent) T / R signal switching - with high isolation and only a few ohms on-resistance. Resistive divider networks are used throughout to bias the signal paths to mid-rail.

ON RECEIVE

IC3 routes the signal to IC2, the AD603 IF amplifier. This is a quiet device with good AGC characteristics. As used here, it has a gain range from 0-40dB - with a linear in dB response to a linear DC control voltage (an *increase* in control voltage produces an *increase* in gain). It is not the most inexpensive device available, but if you have been brought up on IF amplifiers that emulate snakes, you will appreciate the difference.

This 40dB AGC range is combined with a further 45dB in DSP to give some 85dB in total - more than plenty by most standards.

The process for setting RV1 and RV2 follows later. The two AGC control signals ('wide' and 'narrow') are generated on the DSP board and summed at the junction of R38 and RFC3. The 'wide' AGC voltage is generated by detection over the full FL1 bandwidth - and is there only for emergency gain back-off in the presence of a very strong signal outside the DSP filter bandwidth. Normally the 'narrow' control voltage dominates - and it is also routed via a buffer, IC7b, to drive the S-meter. This latter is shown as a 1mA movement - but later I will be offering a bar-graph alternative - in which case RV3 sets the zero point and RV4 is not fitted at all.

The output from IC2 is routed via IC3 to the SBL-1 mixer, IC5. You may ultimately wish to fit a stronger device here - depending on the width of your roofing filter and your operational needs. The mixer injection port is fed from a basic crystal oscillator - and this could also be 'beefed up' if required.

C38 and R1 terminate the sum (HF) mixer product - whereas RFC12, C39 and C51 pass the wanted 15kHz difference component.

TR3 is a low-noise, modest-gain amplifier which feeds IC6b. This latter has modest gain at low frequencies with the response rolled off rapidly by heavy negative feedback provided by C59.

ON TRANSMIT

IC7a provides modest shaping of the microphone audio and significant gain to get the level up to that required by the CODEC on the DSP board.

You should alter the input arrangements of IC7a to suit your microphone impedance - and C45 in particular for a good mid-range audio response with your voice. Some tailoring options may later be added in DSP as well.

The output of IC7a is routed unconditionally to one input of the DSP - since it needs to monitor the mic input continuously for VOX purposes.

The transmit signal next appears as a 15kHz SSB or CW signal from DSP - which is routed via IC4 to the buffer, IC6a. This, in turn, drives the complementary pair, TR4 and TR6, which are there to deliver power into the low-impedance load presented by the SBL-1.

On transmit, the AD603 is out of circuit and IC3 routes the signal directly to the J310, TR1 - and from there to the filter, FL1 - and thence out to your transmit IF strip.

T / R SWITCHING CONTROL

The J310 is switched by the 12V Rx and 12V Tx lines, the inactive one being taken to near ground. All other T / R switching is managed by IC3 and IC4. Their switching voltages are derived from the 12VRx line only, with TR12 acting as a simple inverter. This approach is designed to prevent you from being on transmit and receive at the same time - in the event of loss of either the 12V Tx or 12V Rx supplies. ♦

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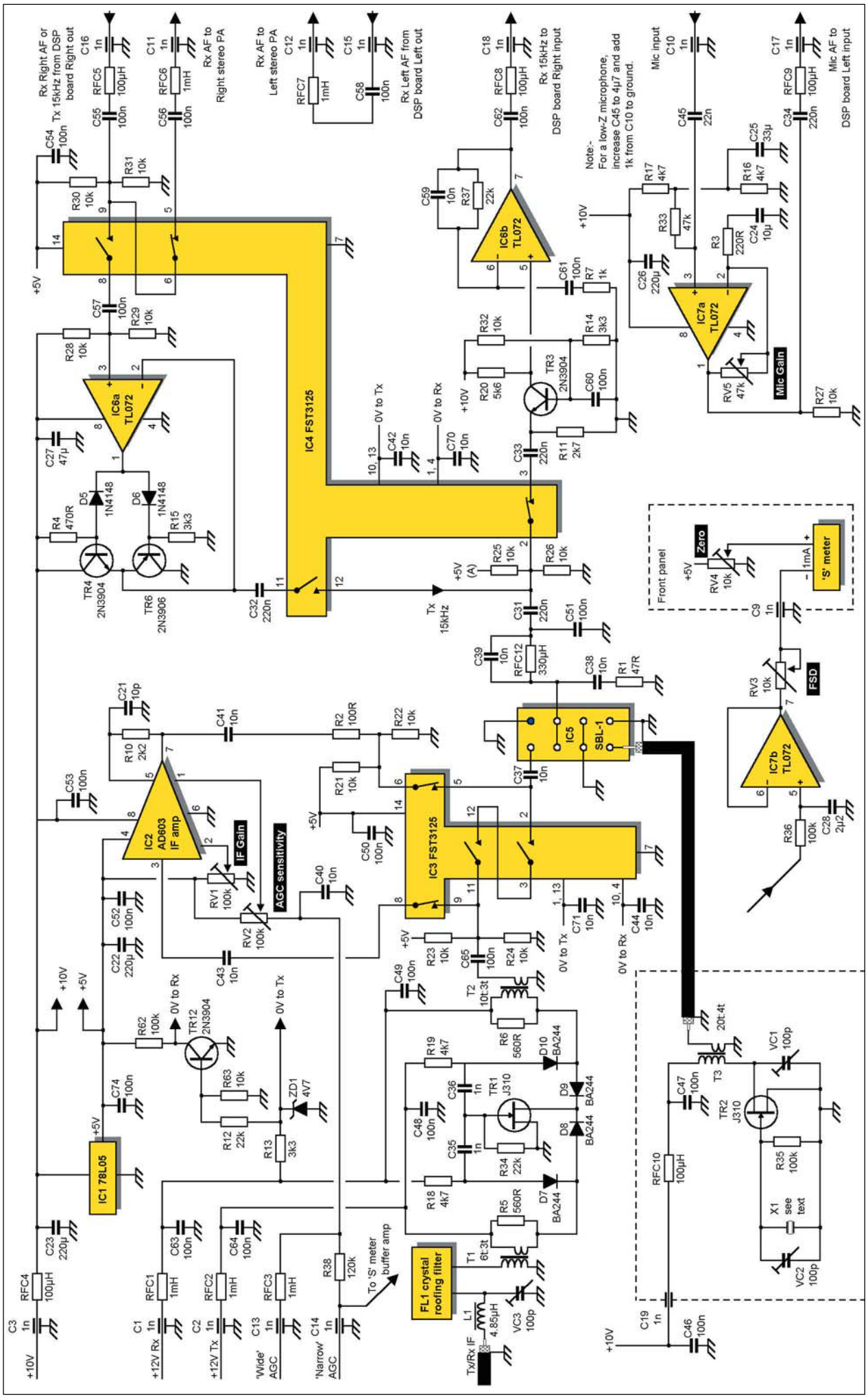

Fig 11: IF board circuit diagram. Takes an HF IF feed from a typical bi-directional mixer and post-mix amplifier, and translates it to / from 15kHz. This board mounts back-to-back with the DSP board. All components are mounted on the track side except for the crystal filter, FL1, and the SBL-1. The roofing filter is your choice and X1 must correspond. The switches in the receive path are shown as closed for illustration purposes only.

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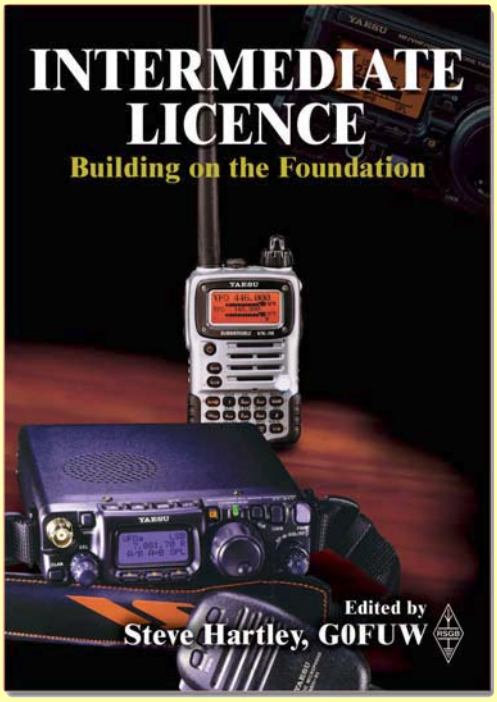

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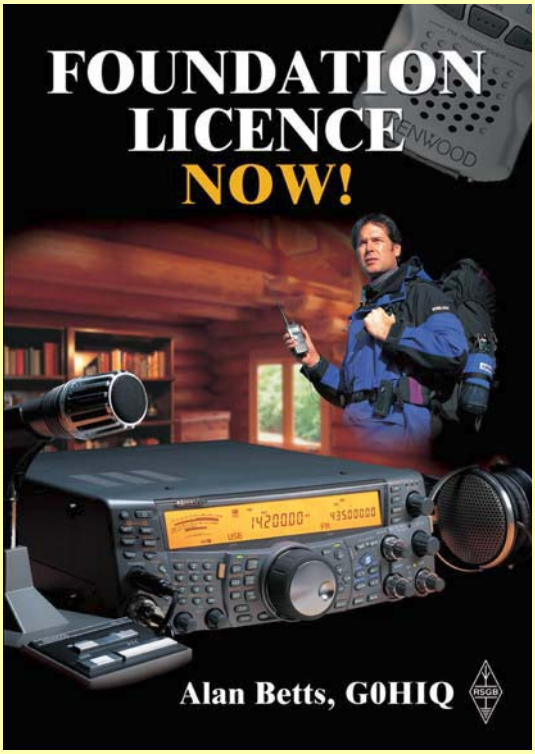

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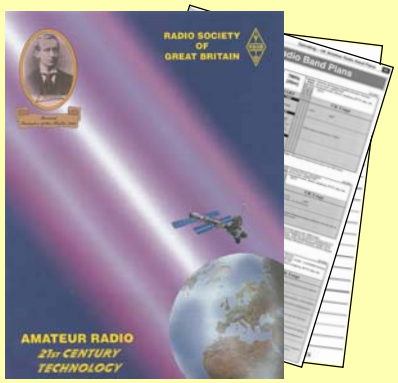

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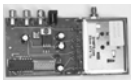

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PHASE NOISE & THE DUAL-TANK OSCILLATOR

THE USE OF TWO gang-tuned LC resonant circuits in a low-noise VHF oscillator for a synthesised HF receiver was first described by Colin Horrabin, G3SBI, in 'TT' (July 1994) including details of a prototype stripline design, and a similar approach was used by John Thorpe for the AOR AR7030 receiver. This form of low-noise oscillator was revisited in 'TT' April 2002, pp62-65 which stressed the importance of reducing close-in phase noise in high-performance receivers, particularly those with synthesisers.

In subsequent issues, Mike Hall, G3USC, and John Crabtree, KC0GGH, questioned the theoretical basis for the lower noise achieved by the double-tank approach, although both stressed the importance of reducing oscillator noise in order to minimise reciprocal mixing.

G3SBI and G3USC have now drawn my attention to an article 'Higher Order Loops Improve Phase Noise of Feedback Oscillators', by Tibor Hajder, a private contractor at the Communication Authority in Budapest (*Applied Microwave & Wireless,* October 2002, pp24-31). An introductory editorial note stated: "Occasionally, a paper is published that is so timeless and important, it is referenced for years. This is such a paper."

In his introduction, the Hungarian engineer states: "The harmful effects of phase noise from the transmitter's exciter stage and the receiver's local oscillators were first discovered when moving target indication (MTI) was developed during WWII. Since the end of WWII, much research has been directed towards improving the phase noise of oscillators. Cellular systems, especially the base stations, FM transmitting and receiving techniques, the telemetric transceivers of geostationary and orbiting satellites and measuring equipment for angular modulation, all [should] contain very low phase-noise oscillators."

The article notes the work of W A Edson and the important model developed by D B Leeson, W6NL, later refined by G Sauvage. Hajder states: "This article was inspired by the result of Sauvage's derivation, substituting higher-order low-pass filter transfer functions for simple resistance-capacitance (RC) low-pass filter transfer functions. In the past few years, excellent low phase-noise oscillators have been built and published using higher order filters in their feedback loop."

Tibor Hajder's article is highly mathematical and I readily admit that it is way beyond my (and I suspect that of many non-professional 'TT' readers) understanding. However, it is clear that it confirms, as G3SBI noted in 'TT' in 1994, that significantly improved noise characteristics can be achieved by using third-order rather than second-order low-pass filters in the feedback loop Third-order filters can be considered as the double-tank approach. Normalised curves for second and third order low-pass loop filter oscillators are shown in **Fig 1(a)** and **1(b),** On both diagrams the original Leeson model with a single resonator in the feedback loop is shown. Even without understanding the mathematical basis of these diagrams, it is evident that the phase noise of the third-order (double-tank) oscillators / filters is significantly reduced. For the experts, this paper provides the required justification for the practical, double-tank approach pioneered in 1994 by Colin Horrabin and for the AR7030 by John Thorpe.

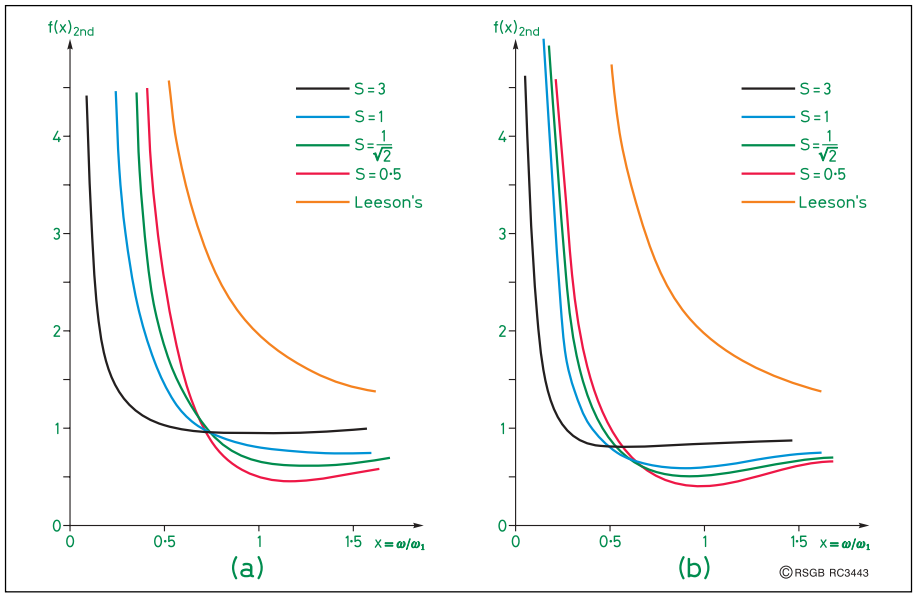


Fig 1: (a) Normalised responses of second-order low-pass filters. (b) Normalised responses of third-order low-pass filters. (Source: Tibor Hajder, *AM&W*)

Michael 0'Beirne, G8MOB, reminds us that, in practice, one requirement for low phase noise is reasonable power output from the VFO. He writes: "A classic example is the old Marconi TF144H signal generator, where the oscillator valve is a beefy 5763/QV03-12 with an anode dissipation of 12W. The output is link-coupled from the tank coil to the attenuator without any buffering, yet is capable of providing 2V EMF or 1V PD into 50Ω. When the phase response was measured some 12 years ago by a Territorial Army colleague using the latest Hewlett-Packard instrument, he was surprised to find it was the lowest he had measured.

"Since then, I have met a professional engineer who still uses two TF144Hs for critical intermodulation measurements at close signal spacings, specifically because of the generator's very low phase noise… Let no one say that those old, massive, dinosaurs have ceased to be useful. Many of the transistorised signal generators in the early 1980s were useless for IM measurements, although I would make an exception for the HP8640B which is in a league of its own. Its VFO ran from 256 to 512MHz, employing a unique, very low-noise transistorised cavity oscillator, the massive tuned cavity providing an exceptionally-high Q, another requirement for low phase noise. Coverage of lower frequencies was obtained by successively dividing the VFO output down by a factor of two per range and filtering the output with complicated switched low-pass filters."

FLEXIBLE 'Z-MATCH' AND PA0FRI'S 'S-MATCH' ATUs

IN SPITE OF the inclusion in some modern transceivers of an automatic antenna tuner (capable of adjusting to a limited range of impedance only), the home-built ATU or ASMU (antenna system matching unit) remains one of the most popular home-building projects. This is particularly true for those requiring multiband or broadband antennas with resonant balanced twin-wire feeders.

Z-match antenna tuners have been in vogue for many years, although care is needed to limit RF power losses on the lower frequencies (often denoted by heating of the inductor). Phil Satas, AD5X, in 'A Compact 100W Z-Match Antenna Tuner' (*QST*, January 2003, pp28 - 30), provides details of a 100W version that uses toroid inductors, is sufficiently compact to be readily used for portable operation, and is claimed to "match just about anything on the HF bands using only two controls".

Fig 2 shows the basic Z-match unit, although AD5X also provides details of his SWR meter using high-intensity optical LED devices, rather than meters: **Fig 3**. He also shows how a bar-graph indicator could be incorporated, though this requires a power source.

While AD5X's Z-match tuner can cope with balanced feeders, Frits Geerligs, PA0FRI, is convinced that it is better to use a symmetrical and universal ATU rather than force an asymmetric tuning system to provide a truly balanced output. He calls his design the S-match. Its development is shown in **Fig 4**, together with practical designs for under and over 400W using one or two toroidal transformers.

He writes: "My previous tuner design was the Freematch, but this has been superseded by a symmetrical system that really works for balanced outputs. The efficiency is a little less than with a system using two capacitors and roller inductor, but, in practice, the difference is minimal. Because the 'transformer' is part of the tuning system, a ferrite toroid is not suitable for high-power and the windings should provide high-voltage insulation."

He adds the following notes: "With some antenna systems, a better match can be obtained when the antenna is connected as shown by the dotted line in the diagram. Input and output circuits are isolated, so the system is also suited for single-wire antennas. A T-match unit can easily be converted to an S-match by removing the second capacitor or by-passing the first capacitor. The free hole in the front of a converted unit can be used for a switch for paralleling capacitors to the tuning capacitor to provide additional capacitance. If a roller-coaster inductor is not available, an extra capacitor in the input will reduce the VSWR."

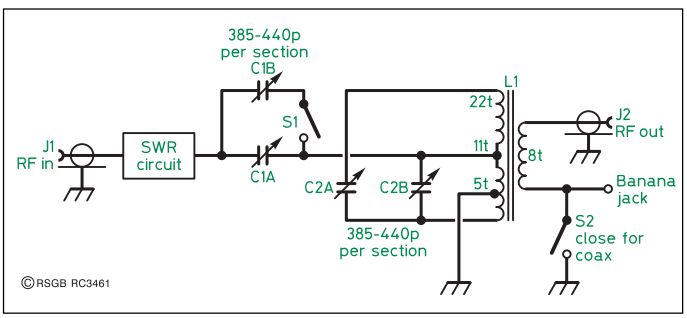


Fig 2: AD5X's compact 100W Z-match antenna tuner. L1 on Amidon T157-6 toroid. Balanced feeders are terminated in banana plugs that are inserted into the centre of the coax socket and the adjacent banana socket, with S2 open.

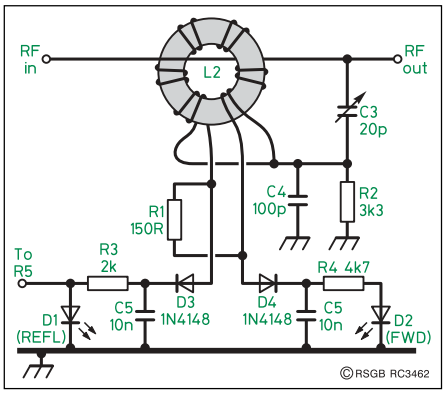


Fig 3: Optical VSWR meter using two high-intensity LEDs (D1 red, D2 green); resistors 0.25W; L2 ,10 bifilar turns SWG26 enamelled wire on Amidon FT37-43 toroid core. Adjust the Z-match tuner for minimum brightness of the 'REFL' LED. When this occurs, the VSWR will be something less than 1.5:1. If the brightness of the 'FWD' LED (D2) is too bright, increase the value of the current-limiting resistor in the 'FWD' circuit. If desired, you can eliminate D2 and use only the 'REFL' LED (D1).

VALVE GEAR: NOSTALGIA OR RELEVANT?

AS WE HEAD towards the centennial of the Fleming diode (1904) that introduced thermionics into the then youthful world of wireless, there is an evident reluctance among many old-time amateurs to bid farewell to valve technology, even for small-signal applications. I must confess to being among that number, with continued use of such 'boat-anchor' equipment as a KW2000A, a 1950s Labgear LG300 with its classic 813 power output, as well as such 1940s receivers as the RCA AR88, Marconi CR150 and Hammarlund HQ129x, and even a model based on the 1930s Tobe tuner kit receivers. Not by any means all capable of the standard of performance of current 'black boxes' and often relegated to undemanding tasks such as monitoring the German (DARC) DK0WCY beacon. But I find that there seems something specially attractive about handling them – moreover, I recently even managed to find a fairly elusive fault on the AR88, despite it being too heavy for me to lift! I know that if I changed to black-boxes I would never be able to retain my claim of never having to send equipment for professional repair.

Last year, I mentioned that Ted Edwards, G8HLJ, had been expending much effort in completing the construction of more than one G2DAF HF amateur-bands receiver, a classic design by the late G R B Thornley, G2DAF. Several 'Marks' of this advanced double-

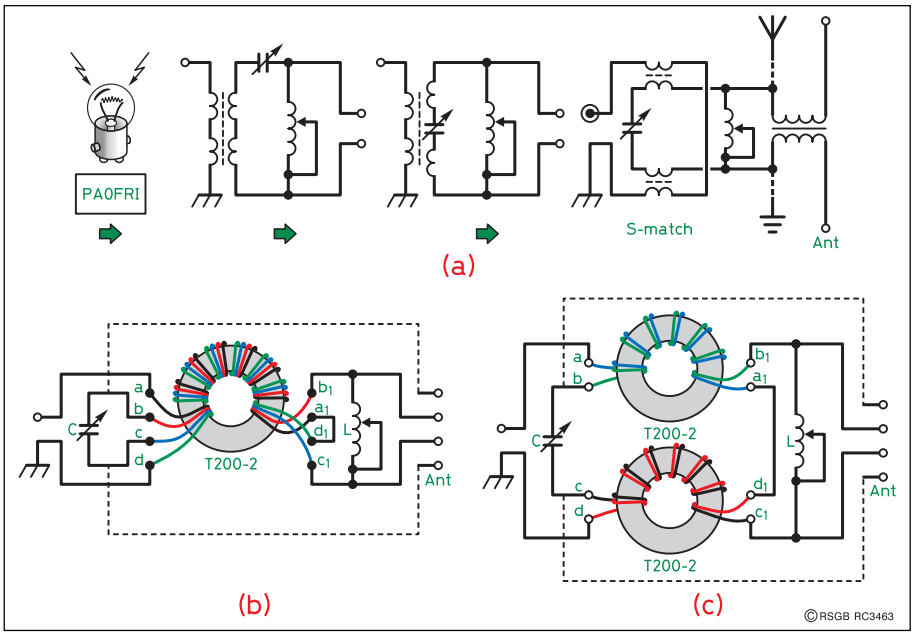


Fig 4: (a) Development of PA0FRI's S-match symmetrical and universal ATU. (b) Single-toroid version. Use T200-2 toroid for powers less than 400W or T200A-2 for powers over 400W. T200-2: 2 x 8 bifilar turns with Teflon-covered wire. T200A-2: 2 x 6 bifilar turns with Teflon-covered wire. (c) Two T200-2 toroids for powers over 400W. Each toroid 11 bifilar turns with Teflon-covered wire. For both (b) and (c), if any imbalance occurs, interchange connections to a and d (and / or b and d). For 10-160m: L roller inductor greater than 20µH; C greater than 200pF; minimum capacitance C less than 15pF; inductance a - a' + d' - d about 3µH. For 10-30m a - a' + d' - d, less than 3µH. For 30-160m a - a' + d' - d, greater than 3µH.

Two excellent examples of the classic G2DAF HF receiver. Top, the receiver built many years ago by the late GM3AVA in consultation with G2DAF and now acquired by G8HLJ. Underneath is G8HLJ's recently-completed model using similar screened wiring techniques.

conversion, (variable 1st IF) design were described in the 1960s and 1970s in this journal, also in an RSGB booklet and in the 5th edition of *Radio Communication Handbook.* It was built by over 1000 amateurs and capable, when carefully constructed, of a performance equivalent to virtually all of the best factory-built models of that era (and indeed of most current solid-state receivers). In other words it was the 'CDG2000' of the valve era!

G8HLJ found it difficult to locate some of the components he required, despite appeals through the 'Wanted' column and an appeal in 'TT'. One result of the note in 'TT' was that he acquired the G2DAF receiver of my wartime colleague and long-time friend Watson ("Bill") Peat, GM3AVA, who became silent key in May 2001 (see 'TT' June 2001). GM3AVA had gone black box years ago; not, I suspect, on account of the G2DAF receiver performance, but for the convenience of transceiver operation).

G8HLJ writes: "You may recall my writing to tell you I have the G2DAF receiver built by the late Watson Peat and used his construction technique to build my own version. From what his friend Widdy Giarvan told me, Watson and G2DAF were good friends and spent time together when G2DAF visited him at his home in Stirling. So G2DAF could have made suggestions about the building of Watson's receiver with its extensive use of screened cable. My receiver now works fine, and includes 10m of screened cable! But there are no 'birdies' or instability, so could that be the secret?

"The photograph shows Watson's receiver (grey-painted front panel) sitting on top of mine. The only thing I did to his receiver (even after all those years) was to replace the 'S' meter. It worked first time I switched it on. I am now building the second and third versions of this design with the components I have been able to collect through my adverts in *RadCom.* I am still looking for a Collins mechanical filter (who isn't?) at 455kHz (2.1kHz b/w) and USB / LSB crystals.

"I'm also thinking about other valve receiver designs of the same era. At present I can think of a design by G3BDQ, but cannot find any information about it. [Generally, one feels that the next 'classic' constructional design was the 'hybrid' (valve / solid-state) design by Peter Martin, G3PDM, with the G2DAF remaining the 'classic' all-valve design for home construction - *G3VA.*] Finally, I wonder if anyone knows of a small company or equivalent who could wind the coils for the 'front-end' of the final version of the G2DAF receiver? Arthritis prevents me doing this myself."

Despite such evidence of the continued attraction of valve technology, it came as a surprise to find an unusual number of items related to 'tube' equipment in the January 2003 issue of *QST.* One amateur reports spending four years building a replica of the Heathkit HW100 SSB transmitter (half the time seeking out the original components). There is a feature article by Joel Thurtell, K8PSV, 'Harold Collins and His Wonderful 75A-1', subtitled 'How the author came to own a memory-laden radio' (the 75A-4 with improved dynamic range is still rated an extremely good receiver). Another by Gil McElroy, VE3PKD, 'Amateur Radio and the Rise of SSB', is an account (based firmly in the valve era) of the revolution in amateur radio created by the introduction of SSB. It shows how, in the 1950s, this came to the notice of General Curtis LeMay, W6EZV, then Commander of the US Strategic Air Command (SAC). In 1956 he undertook two flights (Okinawa and Greenland) along with Art Collins, W0CXX, and Leo Meyerson, W0GFQ (World Radio Labs), in which SSB far outperformed the conventional AM systems then in use. The result was that in 1957, SAC formally adopted SSB for the then new B-52 long-range bombers.

Even in the constructional pages, Steve Johnston, WD8DAS, describes 'The Two Tube Tuna Tin Transmitter (T5)', (pp39-41) in which "the tuna tin emerges once again as a classic two-tube transmitter. This easy-to-build, diminutive blowtorch can pump out 8W with a comforting glow that that transistors can't match." This compact crystal-controlled 6C4 - 5763 rig uses a

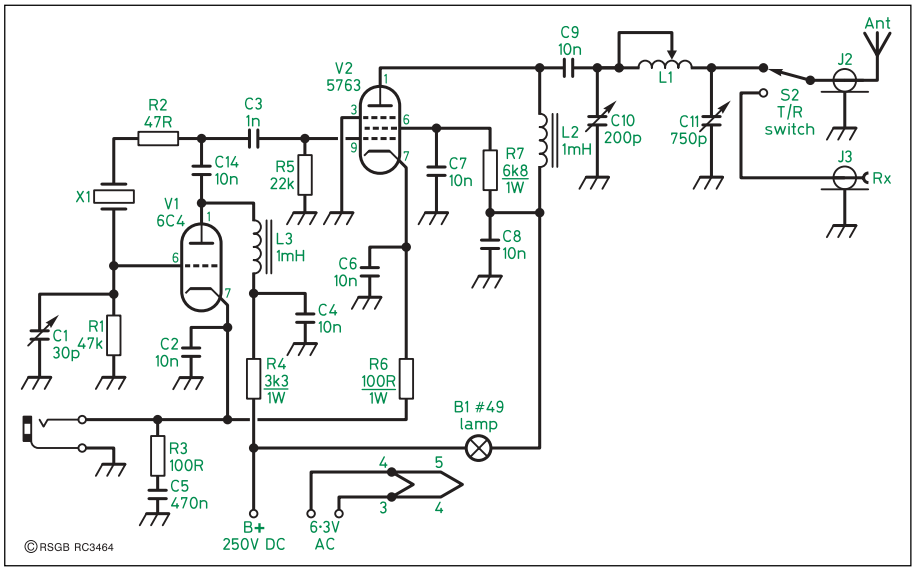


Fig 5: Circuit diagram of the T5 two-tube 7MHz transmitter built in a tuna tin. C10, 200pF air variable capacitor; C11, 750pF compression trimmer. All other capacitors are ceramic disc type, 500V minimum working voltage. L1 on 1in diameter former, 32 turns SWG20 wire, 16 tpi (tapped or roller-coaster). L2, L3, 1mH RF chokes. Heater pins V1: 3-4, V2: 4-5. Resistors 0.25W unless otherwise specified.

π-network output, and would probably be even easier to build in a more conventional 'enclosure': **Fig 5.**

Although fed with only 250V HT, a list of safety hints on "tube safety habits" is given, stressing that "even the medium voltages used to power this rig can be lethal" (true enough, but likely to provoke old-timers to smile). The T5 PSU (**Fig 6)** intended for American 120VAC mains, uses two of the readily-available 12.6V transformers 'back-to-back', to provide an isolated 120VAC output and then a voltage doubler rectifier to 'up' this to 250VDC. With 230 / 12.6V UK transformers, there would be no requirement for voltage-doubling unless you wanted more RF output!

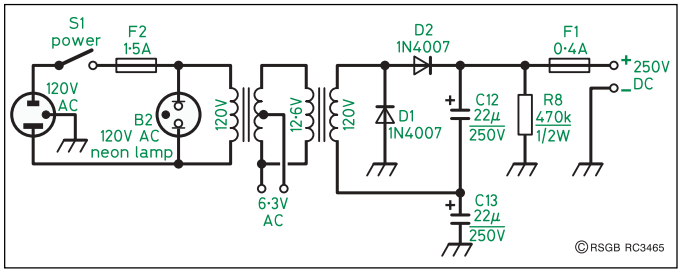


Fig 6: Example of a junk-box voltage-doubler PSU (American) suitable for the T5 transmitter as intended for American 120V 60Hz AC mains. Transformers shown use 12.6V CT, 3A windings, but 6.3V transformers can also be used. B2 must have internal current limiting resistor (do not use NE 2). Always fit R8 as safety measure.

GROTE REBER, W9GFZ, & THE BIRTH OF RADIO ASTRONOMY

THE PASSING last December at the age of 90 years of Grote Reber, one-time W9GFZ, a keen, skilled and enthusiastic DXer and prolific contributor to the amateur radio journals in the 1930s, should not pass unnoticed by the present generation of newcomers to our hobby.

For Grote Reber, although not the first to identify radio emissions from outer space, was the first to build a steerable radio telescope for the specific purpose of studying extra-terrestrial 'noise' and plotting its source. It comes to few scientists let alone amateur radio enthusiasts to found an entirely new science. He truly deserves the title of 'father of radio astronomy', in opening a new window on the stars.

The first to identify radio emissions as coming from extra-terrestrial sources was Karl Jansky of the Bell Telephone Laboratories. He announced his discovery on 4 May, 1933. His discovery made next day's front page of the *New York Times.* But BTL could see little practical value in his work, and his research project, nominally concerned with 'atmospherics', was allowed to lapse. To his bitter disappointment, the hapless Jansky was put on other work.

Nothing more happened for several years, although the youthful Grote Reber, a graduate engineer working for a Chicago domestic-radio firm with a keen interest in both ham radio and amateur astronomy, determined to attempt to identify the source of these noise-like emissions. In the late 1930s, in the back garden of his home in Wheaton, Illinois, he built what is universally acknowledged to be the world's first steerable radio telescope, and set about studying and plotting the arrival of noise, first with little success on 3.3GHz, then again with little result on 900MHz. Success came when, on a sensitive receiver tuned to 160MHz, he identified emissions coming from the Milky Way, confirming Jansky's discovery.

His radio-telescope was no makeshift affair - building it cost him the equivalent of six months' salary. It comprised a 31.4ft parabolic dish reflector, made of sheet metal with incoming signals focused on the receiver 20ft above the dish, and connected to a chart recorder. For several years, he diligently plotted the extra-terrestrial noise as an amateur, publishing his results in astronomy journals and, in 1944, produced the first detailed contour radio map of the sky, showing that, while the strongest signals came from the Milky Way, there were other detectable sources in Cygnus and Cassiopeia. In 1944, he became the first to detect signals from the Andromeda galaxy and also confirmed previous reports. These included a project initiated by Denis Heightman, G6DH, who, in 1937, had reported in this journal (then called *T & R Bulletin)* hearing at times an unexplained 'hiss' on 28MHz. In conjunction with other RSGB members, it was soon noted that the hiss seemed to be connected with solar activity and were the result of emissions from the sun.

Later. Grote Reber 'turned professional' as a full-time radio-astronomer, becoming Director of the US National Radio Astronomy Observatory, West Virginia, to which still later he donated and supervised the re-erection of his original 31ft radiotelescope located alongside a replica of Jansky's antenna on which cosmic noise was first heard.

At NRAO, Reber sought unsuccessfully for funds to build a 220ft-diameter radio telescope. He moved to Hawaii to establish an observatory there. Later still he settled in Tasmania investigating cosmic signals at MF.

Meanwhile, in the UK, J S Hey of the Army Operational Research Group at TRE (Malvern), the wartime radar research establishment, often credited with being the 'father of British radio astronomy', was investigating the cause of what appeared to be severe enemy jamming of VHF radar that occurred on 27/28 February 1943. Hey, who may well have known of the G6DH 'hiss' phenomena, had the feeling that the radar interference was caused by solar radiation. The Royal Greenwich Observatory confirmed that the 'jamming' had occurred during the period of a large and exceptionally-active sunspot. Hey's report linking the 'jamming' with the sun was at first received with scepticism, but eventually accepted. His report would not have been available to Grote Reber in 1944 when his dish similarly located the source of the emissions

In 1943-44, Hey proposed modifying army radars to predict the anticipated V2 rockets in flight with the intention of directing a dense anti-aircraft barrage. During tests, sensitive sky-pointing radar showed up, for the first time, the effects of meteor trails, and also pinpointed the first discrete galactic source in Cygnus. It was this work that led in the immediate post-war period to the setting-up of three academic teams specifically devoted to radio astronomy, led by former TRE scientists: (Sir) Martin Ryle, G3CY, at Cambridge; (Sir) Bernard Lovell at Manchester (Jodrell Bank); and J L Pawsley in Australia (CSIRO). Hey continued working at Defford, near Malvern for the renamed Radar Research Establishment.

I recall going on a press visit to Defford in 1961 to see Hey's new twin mobile radio-telescopes each with a steerable 82ft-diameter parabolic reflector. The telescopes could be used independently or combined to form an interferometer of extremely high angular discrimination with the reflectors made up of 1464 triangular flat sections. Mounted on railtracks, the two 250-ton dishes were connected by some five miles of special coaxial cable having an outer conductor of solid aluminium tube filled with dry pressurised air, designed to minimise phase changes due to temperature and humidity variations. By then, the large Jodrell Bank 250ft-diameter dish had come into use, Martin Ryle had devised the breakthrough technique of 'aperture synthesis' and the important hydrogen line at 1421MHz had been found.

A useful series of articles on the post-war developments in radio astronomy appeared in a special issue of *Proc IRE,* (Vol 48, No 1, 1958) though the list of eminent contributors to this special issue

did not include Grote Reber, whose painstaking work as W9GFZ laid the foundation of an entirely new branch of physics and has come to be recognised as one of the major scientific developments of the 20th century. With his passing, we have lost a true icon of whom amateur radio can be proud indeed!

MORE ON BINOCULAR MAGNIFIERS & USEFUL AIDS

THE NOTES ON the Donegan OptiVisor Model DA5 hands-free binocular magnifier ('TT' April 2002, p61 with a comment by G3RUH on its UK availability, July p64) continues to attract correspondence. 'Alistair', writing from Thornhill, Stirling FK8 3PL, comments: "There is a more robust, more versatile and cheaper model available from Modern Originals, PO Box 5050, Annesley, Nottingham NG15 0DJ (tel: 0870 600 6001). Specification: a moulded plastic visor with four magnifications of 1.8, 2.3, 3.7 and 4.8 with a small magnifier which can be fitted on either side of the front of the visor. It has also two small battery-operated spotlight pods, one on each side which can be switched on independently, using twin AAA batteries for each pod. This visor swings upwards out of the way when not required and can be used with spectacles. The head band is adjustable with a Velcro secure fitting. Catalogue Number 74586. Cost £19.50 plus £2.99 p&p, total cost £22.49. Can be returned (with original packing) within 15 days if not completely satisfied."

I am not sure from the letter whether 'Alistair' has actually purchased or tried out this magnifier or even whether it is truly binocular, since the specification suggests that the lens is fitted to either side. I recall that when I originally reported my use of the DA5 (a gift from an American amateur) in 'TT' February 1983, p134, about a dozen readers confirmed ('TT' May 1983, p428) that similar magnifiers and a wide range of other useful aids when working on miniature components were available from British firms specialising in tools for watch-repairers, jewellers and model makers. The very low price models apparently used plastic lenses rather than the "good quality glass lenses ground and polished to full ophthalmic standards" of the DA5.

The cheapest reported in 1983 was only £2.65 (plus 50p postage) from Bargain Buys of Barnet, with the UK price for the DA5 then "over £30". I can report only that I have always found the DA5 most satisfactory.

The May 1983 item also included a note from Paul Cort Wright, G3SEM (who was responsible for the BBC's "Secret Listeners" BBC TV programme broadcast on BBC2 in 1979). He wrote: "Headband binoculars are available from H S Walsh & Sons Ltd, 243 Beckenham Road, Beckenham, Kent BR3 4TS, telephone [2002] 020 8778 7061, with London showrooms [2002] 44 Hatton Gardens, EC1, telephone 020 7242 3711. This firm supplies a wide range of optical aids and other tools for jewellers, silversmiths and horologists…"

G3SEM sent along some pages from the firm's 1983 catalogue showing a number of eyeglasses, loupes for fixing to spectacles, an illuminated magnifier on spring-loaded balanced arms with clamp-on base, hand and stand magnifiers as well as trimmer keys for the repair of quartz watches, jewellers' clamps, etc.

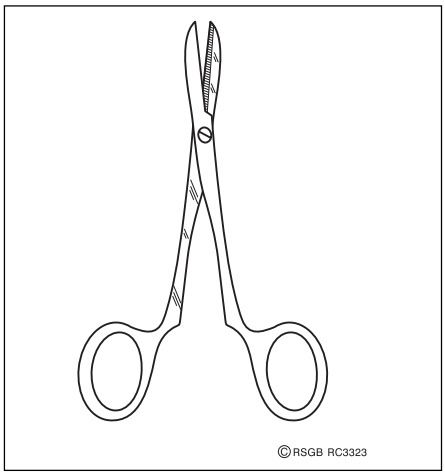


Fig 7: Typical design of Spencer Wells dental forceps useful for holding nuts and small components etc in awkward places. Usually available from dental suppliers in 5, 6 and 7in sizes.

In 'TT' April 1975, Steve Gilbert, G3OAG, confirmed the value of Spenser Wells dental forceps mentioned earlier in 'TT'. He wrote: "Of course they are the greatest gadgets for putting nuts and screws in awkward corners, being virtually lockable pliers (**Fig 7**)." In 1975, he put the price at about £2, but presumably a good deal more in 2002. In the same issue, G8ADP provided information on dental drills and burrs. He wrote: "The varieties of dental drill are almost endless in the various configurations available, let alone the sizes for each and the material of construction, e.g. diamond, tungsten, carbide and steel. However, the cheapest and probably most commonly used are steel, but these are certainly not indestructible. The most useful for drilling printed-circuit boards are round or rose head burrs... Another variety (of many) which is very useful for cutting oval holes or long slits in PCB, are burrs having cylindrical cutting surfaces. These are called 'flat fissure' or 'square cone". G8ADP added: "When searching for temperature-dependent faults without commercial aerosol 'freezers', I find ethyl chloride serves the purpose very well if used sparingly (go easy since this was once used for general anaesthetics!)"

HERE & THERE

I HAD INTENDED this month to refer again to the controversy surrounding the efficiency of small transmitting loop antennas and comment also on some other loop designs, but personal circumstances have intervened with the result that this and some other items will have to be postponed. Suffice to say that the efficiency claims made by G3LHZ (December 'TT') are not accepted by the 'antenna establishment', though this does not mean that compact loops such as the AMA series marketed by DK5CZ are not capable of satisfactory performance for those with restricted space.

THE JANUARY 'TT' item on the controversy surrounding the possible health effects of mobile (cellular) phones and their multitude of fixed transmitting towers emphasised the IEE Policy Advisory Group's view that while the EMF issue deserves careful attention "there is still no convincing biological evidence to suggest that exposure to the fields commonly encountered in the environment would cause any significant adverse health effects in humans". This view is echoed in letters in *IEEE Spectrum* (December 2002, pp30/31) written by members of the IEEE's International Committee on Electromagnetic Safety and former or current members of COMAR (IEEE Committee on Man and Radiation).

Both letters were replies to an article 'Cellphones, Radars, and Health', in the August issue by Raymond S Kasevich, who argued that the ANSI standards for electromagnetic radiation do not adequately address current realities and claimed "We have more than enough experimental evidence to question the validity of formulating standards that take only thermal effects into account". The committee members refute much of the 'experimental evidence' quoted by Kasevich claiming "The only confirmed mechanism for biological effects and potential hazards of exposure to RF and microwave energy is heating". Eleanor Adair *et al* note that recent Finnish papers reporting *in vitro* effects at athermal levels are preliminary and that the Finn himself states: "Because our studies were done *in vitro*, it is not possible to draw any health-related conclusions from these findings". This interim conclusion would appear to apply equally to the even more recent work in Italy mentioned in the January 'TT'. ♦

BOOK CHOICE

HF Amateur Radio

Using the HF or short wave bands it is possible to hear and contactstations from all over the world. Acting as a reference for the more experienced operator or a primer for the newcomer, HF Amateur Radio is a valuable volume for anyone interested in operating on the HF bands and wanting to make the most of them. The book contains chapters covering all the essential elements. The chapter on propagation not only provides the theory to give an understanding of what happens in the ionosphere, but it also helps interprets the figures showing how to use the bands to their best. Chapters on the receivers and transmitters are also packed full of useful information describing not only how they work and enabling the best use to be made of them. The chapters also explain the specifications seen on the sales sheets and in the reviews. The chapter on antennas shows how to make the most of the antenna system, providing many useful ideas so that people with gardens large and small can find something they can use.

There are also chapters about the bands themselves detailing facts such as bandplans, and there is a chapter on operating techniques, giving not only the basics but also hints and tips on how to work the DX against all the competition. Then there is a chapter on setting up a station. This gives plenty of practical advice on how to build and organise the station so that operating is not only pleasurable but also makes the best use of the equipment. This paperback book is ideal for anyone interested in amateur radio operation on the short wave of HF bands. It was a most enjoyable and informative read.

240x175mm - 128 pages

Members price £11.89

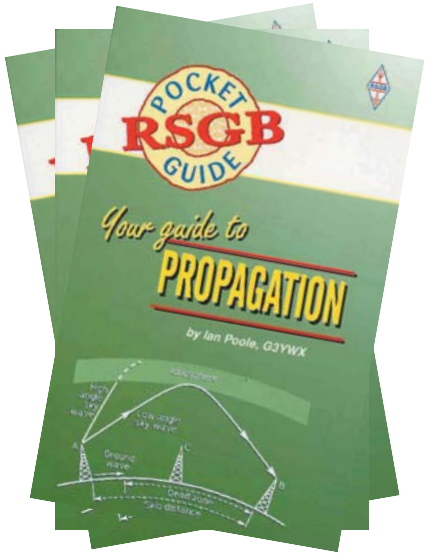
VHF / UHF Antennas

If you have ever wanted a book that tells you how antennas work, explaining the theory clearly and easily as well as providing a good number of varied and interesting VHF / UHF antenna projects to construct, then this is the book for you. In his easy to understand style, Ian Poole walks you through the basic concepts of antennas and feeders to give you a good understanding of the basics. He then uses the chapters to focus on a variety of different types of antenna, from the simple dipole and a number of its derivatives including the halo and crossed dipole to other antennas including various forms of vertical, the Yagi, quad, and log periodic. In each chapter the basics of the type of antenna are included and this is followed by a number of designs that can be built. With many so many different designs there is sure to be something for almost everyone. Another advantage is that the VHF and UHF bands mean that antennas are a manageable size. This makes their construction much easier than those for lower frequency bands. With the popularity of FM, there are plenty of vertical antenna designs, ranging from those that are very easy to construct, to those that might take a little longer but will be within the grasp of most people. This book was not only a pleasure to read but it also is now a valuable reference for the bookshelf.

240x174mm - 128 pages

Members price £11.89

**(All prices + p&p £1.50 for 1 item
£2.95 for 2 or more)**



Your Guide to Propagation

This compact volume packs in all that most radio amateurs would ever need to know about propagation. In Ian Poole's usual easy to read yet informative style he expertly covers the topic of propagation, leading you through all the important facts. Even seasoned DXers have commented on the usefulness of the book saying that it has explained many of the concepts in a way that has enabled them to more fully understand what is happening. It starts by looking at the atmosphere and which areas affect radio waves, then it addresses what happens on the HF bands, looking at how the ionosphere is affected by radiation from the sun, both in terms of changes with the time of day, season, and the 11 year sunspot cycle. It also looks at the effects of flares and ionospheric storms. However the book does not only focus on the HF bands. It also addresses the way signals propagate at higher frequencies in detail. In addition to this it looks at some of the more unusual forms of propagation including sporadic E, transequatorial propagation, meteor scatter, moonbounce and much more. This book is an ideal purchase for anyone who needs to know about propagation. It is not cluttered with excess technical jargon, but enables the reader to understand what is happening, and consequently better equips them for using the prevailing propagation conditions to their best. This is an excellent book that can be thoroughly recommended.

177x111mm - 88 pages

Members price £8.49

All these books can be purchased from the RSGB shop on www.rsgb.org/shop or tel: 0870 904 7373

WHATEVER NEXT

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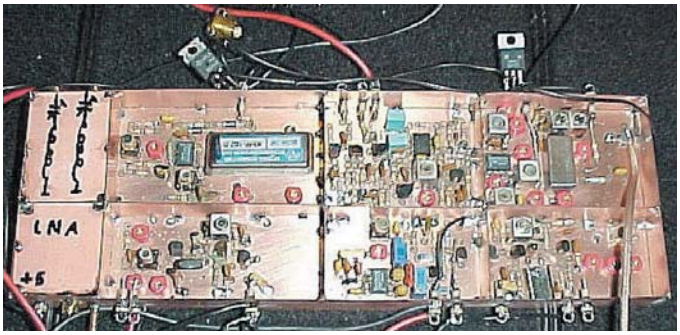
SUBSEQUENT TO the October 2002 *RadCom* item on carrying amateur radio payloads into the upper reaches of the atmosphere by balloon, plus the problems we have in the UK in getting permission to do so, Heikki Lahtivirta, OH2LH, e-mailed to say "I read the story about US hams' balloon project and problems you have there in UK for flying balloons. We have here in Finland quite long history of flying balloons." It seems that Finnish radio amateurs have been releasing balloons since the early 1970s. Apparently there was a long pause in this activity, but it has now recommenced. As Heikki puts it, "Now we have new project called 'Super Ilmari'. All previous balloons have carried the name Ilmari. We have a quite ambitious payload selection."

The Super Ilmari project looks interesting indeed. It is run by the Artjarvi Telecommunications Society, a society based around amateur radio, but whose members also declare other scientific and leisure interests. The main electronic part of the payload is outlined in **Fig 1** and the 2m-70cm linear transponder which is to be carried by Super Ilmari can be seen in the photo below, left. Additionally, the balloon will carry GPS and an APRS beacon to aid recovery, an 80m beacon, plus cameras and an ATV transmitter on 23cm. The physical layout of Super Ilmari is outlined in **Fig 2**.

Much of the website associated with this project is in Finnish only, but as recently as mid-January the project was proceeding. OH2LH has confirmed that the launch is anticipated to take place in summer or autumn this year and that they plan to involve children in the project by arranging for the launch to take place during school term time.

The balloon itself is a commercial high-altitude model, made by meteorological balloon manufacturers Kaymont. It is designed to shred completely when it bursts, so no sizeable debris falls from the sky or obstructs the parachute that returns the payload to earth.



The 2m to 70cm linear transponder carried by Super Ilmari.

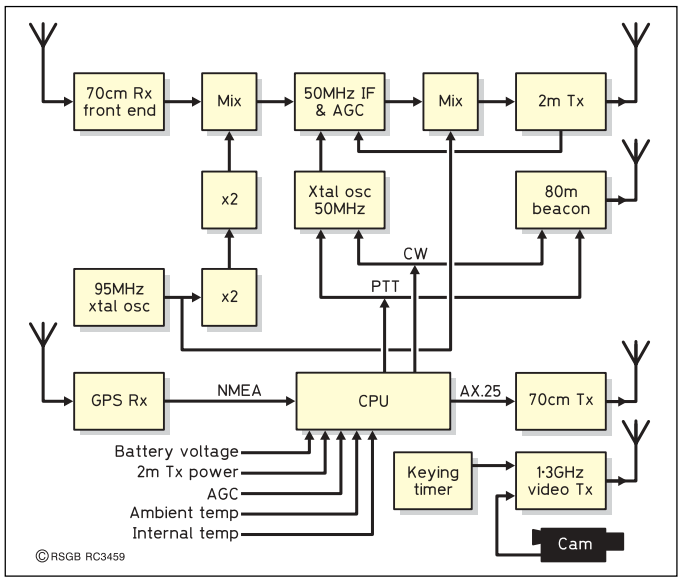


Fig 1: Block diagram of the electronics carried by the Ilmari balloon.

PIXIE DUST

IN APRIL 2002, I introduced the IBM Microdrive, the one-inch 1GB true (as opposed to virtual) disc drive in a Compact Flash card. Since then it has established itself as the medium to use if you need to store a lot of pictures in your digital camera. However, as we all know, the number of Megapixels captured by the pickup chips in digital cameras is increasing, so file sizes are as well. It was only a matter

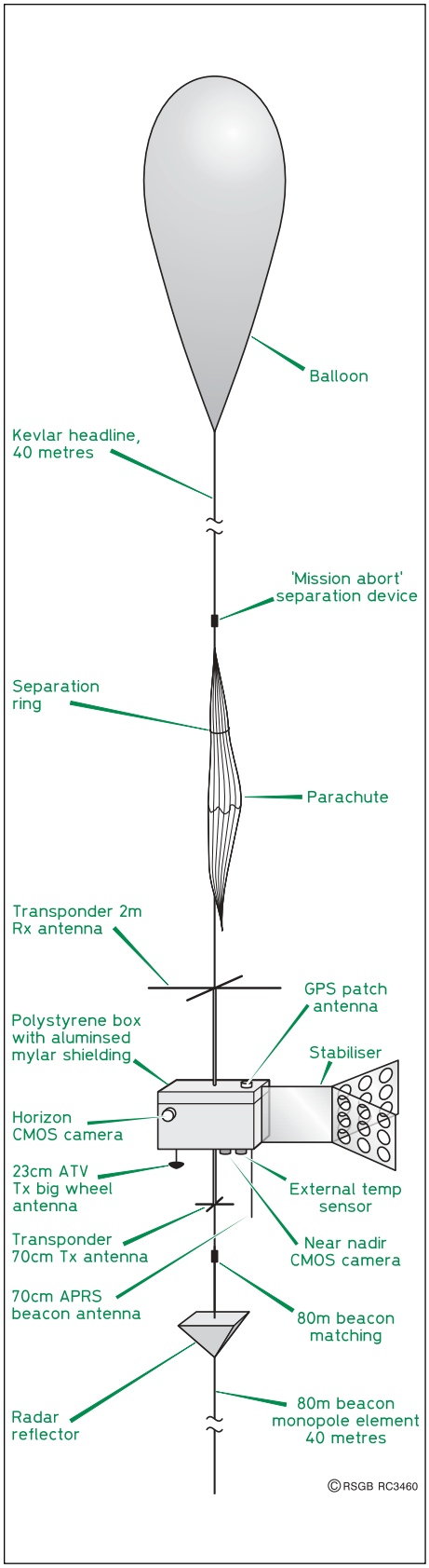


Fig 2: Overview of the physical layout of the Ilmari balloon.

of time before a larger capacity Microdrive was developed, and now it has been. But first, some business news.

In early January, IBM Storage Technology merged with Hitachi Storage, forming a new company called Hitachi Global Storage Technologies (HGST), one of its business goals being the development of the 4GB Microdrive.

The storage density of the 4GB Microdrive is made possible by using a new five-layer version of Hitachi's patented 'Pixie Dust' media technology. This is achieved by taking a three-atom-thick layer of the element ruthenium (a precious metal similar to platinum) and sandwiching it between three magnetic layers. Technically referred to as 'antiferromagnetically-coupled media', the ruthenium/magnetic layers enable data recording at ultra-high densities while maintaining data integrity. Other significant technical achievements include a data transfer rate increase that represents a 50% improvement from the previous generation Microdrive. Hitachi engineers estimate that the new data transfer rates are faster than all competitive solid-state data storage products available today.

The new drive will use ultra-miniaturized components, including a new read-write head that is half the size of its predecessor and results in a 40% decrease in the height at which the head travels above the disk platter. According to the HGST Press Release, "This feature is analogous to a Boeing 747 airplane flying one millimetre above the surface of the earth. The Microdrive's new head technology, called the 'femto slider head', opens up a next generation of head slider technology. The new technology is so small that it is equivalent in size to a grain of table salt."

Hitachi engineers have also drastically increased the tracks per inch to accommodate more than 60 billion bits of data per square inch. This density of storage required mechanical tolerances and accuracies to be significantly tighter in order to maintain the Microdrive's data integrity and reliability, HP and Eastman-Kodak being among the leading companies that are currently evaluating it.

The 4GB Microdrive is expected to be available by autumn this year, and it leads me to wonder whether we will see disk storage being offered in the next generation of amateur radio equipment. Yaesu's FT-920 transceiver already offers a few seconds of voice recording in semiconductor memory, but wouldn't it be nice if that could be increased to incorporate several pre-recorded messages for transmitting (such as would be used in a contest). It would be nicer still if transceiver configurations for several operators could be incorporated, in which case the voice store could also change to a different bank of messages when operators change shifts.

'QRO' MICROWAVE

NEC CORPORATION has developed a nitride semiconductor power transistor capable of 2.3W output in the 30GHz sub-millimetre band. The Japanese company claims this is a major advance in performance over the highest output power of 0.72W previously available from single chips using the same materials. This work is part of a five-year project which began last year, partially funded by Japan's Ministry of Trade and Industry. NEC hopes to commercialise the technology within three to five years, and is working to raise the output power and develop mass production techniques for the devices.

The initial transistor is targeted at creating small, high-output power amplifiers for use in next-generation broadband wireless networks. NEC say that deploying this power transistor obviates the need for a power divider/combiner that leads to larger chip sizes and increased power loss. The intention is that designers should be able to create a transmitter PA more than 80% smaller than previous implementations, but with a two- to three-fold increase in power. Apparently, the new device can cover the 22GHz, 26GHz and 38GHz bands, which are allocated to subscriber wireless access, so in due course we might also see them being used in advanced amateur equipment for 24GHz. They have a power gain cut-off frequency of 120GHz.

To make the transistors, NEC employed 0.25µm ultrafine gate electrodes using electron beam lithography and heterojunctions of gallium nitride and aluminium gallium nitride.

NEAR-FIELD FEEDBACK

FURTHER TO THE December 2002 item on Near-Field Communications (NFC), a Senior Engineer working in the RFID industry wrote to offer some comments:

1. 13.56MHz ±7kHz is a harmonised frequency band throughout the EC region, designated for ISM uses and has been in use for RFID (and other short-range devices) for over five years. This band is also designated for the same use in most major countries, although power limits do vary.
2. RFID devices are designed to use the magnetic field coupling to induce power into the transponder and reply by 'load modulating' the transmit field by partially shorting their own antenna coil. This results in a very small receive signal 'sitting' on top of the transmitted (powering) signal. A very clean and low-noise transmit signal is required to do this, otherwise the receive signal is lost in the transmitter noise.
3. The transmit antennas are optimised to generate the maximum magnetic field, the electric field being very small (typically 60dB below the magnetic field).

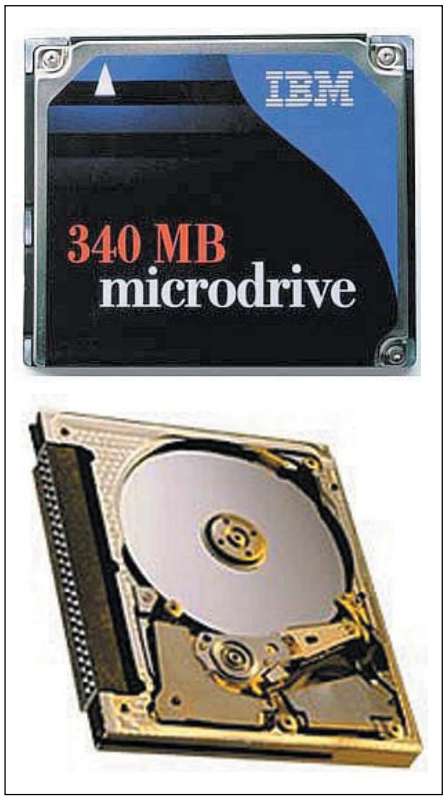
The net result is that, when properly designed, two RFID readers can operate simultaneously within 300mm of each other without interference. With respect to interference generated by these devices, obviously they must meet the requirements of the RTT&E Directive, otherwise they cannot be sold in the EC (and must meet the appropriate regulations in other countries). An example quoted by the individual concerned is that he has difficulty in picking up the signal from an RFID unit on his FT-1000MP MkV, even when using a good antenna. As he puts it, "Not a very scientific evaluation, but very practical!" ♦

WWW.

Super Ilmari project www.viestikallio.fi/ilmari/index.php?LANG=en

Hitachi Microdrive www.hgst.com/about/news/20030106-5.html

'QRO' microwave transistor www.siliconstrategies.com/story/OEG20021217S0017



The 340MB version of the IBM Microdrive, the hard disk with the 1in platter that is about to increase in capacity from 1GB to 4GB. In future, look for Hitachi's name on it.

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.

Is there some aspect of amateur radio that you have never really understood? Do you have an interesting technical problem? E-mail or write to 'In Practice' to find out the answers. Here's the place to pass on your own practical ideas to other readers!

in practice

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TAKE A CHAIR...

Q *DO YOU HAVE any recommendations for operator seating, especially for long sessions?*

A IT DEPENDS what kind of operating you want to do... and how much discomfort you're prepared to tolerate. You can get away with almost anything for a short time, but it needs more planning if you're settling in for the long term. There are two aspects to this:

- Furniture - the relationship between your operating desk, your chair, and you.
- Station layout - arranging the equipment in the most convenient way.

I'll concentrate mostly on the furniture, but there is some obvious overlap with station layout, particularly the positioning of the main controls of your transceiver, the microphone, the key - and also the computer keyboard and screen if you use those intensively. A lot is known about the ergonomics of furniture in the office and industrial workplace, and much of this information can be translated into the radio shack.

Everything starts with your chair. Its job is to position you in the most comfortable way, relative to the things you need to reach. Tables and benches have fixed heights, but people come in all shapes and sizes, so *something* has to be adjustable - and it's better to adjust the chair than yourself! The height of the table or desk, relative to the chair seat, is surprisingly critical. Wander around your home with a measuring tape, and notice that even the small difference in height between a writing desk and a dining table produces a large difference in your posture. A standard height for a writing desk or table is 720mm (28.5in) and this is usually pretty good for amateur radio operating too. A dining table is normally a little higher and produces a more upright posture that's good for eating. However, a wide range of desk or table heights can be made comfortable for all purposes, provided that you can adjust the height of your chair.

Fig 1 shows what happens when the height of the desk relative to the chair seat is wrong (Figs 1(a) and 1(c)) and when it's just right for you (Fig 1(b)). The features that are right about Fig 1(b) are the comfortable upright posture with full back support, and the forearms at just the right height to be supported by the desktop when you're tuning the radio, writing in the log or operating a paddle keyer. If the seat is too low (Fig 1(a)), you can't reach forward comfortably to the radio, and your back will soon ache from trying to make yourself taller all the time. If the seat is too high (Fig 1(b)), then either you get no support for either your arms or your back, or you get backache from sitting hunched down. Obviously the human body *can* function in the postures of Figs 1(a) and 1(c), but when you're concentrating intensively on operating the radio for hours on end, the muscle tensions freeze into place... and then you try to stand up.

Comfortable, fully adjustable office chairs are now available for as little as £50 new [1], or even less second-hand. The traditional low-backed typist's chairs are even cheaper, but they don't measure up to modern standards. Go for an 'operator' chair with a back support extending at least up to your shoulder-blades, slightly curved to provide some sideways support as well. The back support of a good operator chair will be adjustable in height, depth (from front edge of seat) and angle. Backward/forward tilt of the whole chair (seat and back together) is nice, but not so important; it can also lead to bad positions. The seat cushion needs to be only semi-soft, like a good car or airline seat that you can sit in comfortably for many hours. A very soft cushion is bad for most people, because it lets the pelvis tilt sideways and puts a kink in your lower spine. Armrests are not essential, and if used they should support your forearms only *very lightly* in the horizontal position of Fig 1(b).

Any changes to the height of the chair will have obvious implications for your legs and feet. If you have short legs, use a footrest to avoid cutting off circulation in the backs of your thighs (Fig 1(c)). If you have long legs, make sure there's plenty of room under the desk to stretch them out comfortably.

Returning to the equipment on the desktop, the famous DXers' motto is to 'listen, listen, listen' - which usually means 'tune, tune, tune' - so you can spend a lot of time with your hand on the VFO. The most comfortable height for that control is probably with your forearm almost flat along the table, as shown in Fig 1(b). Most transceivers have adjustable front feet, but the available heights may still not be exactly right for long-term use, so you may be able to get some

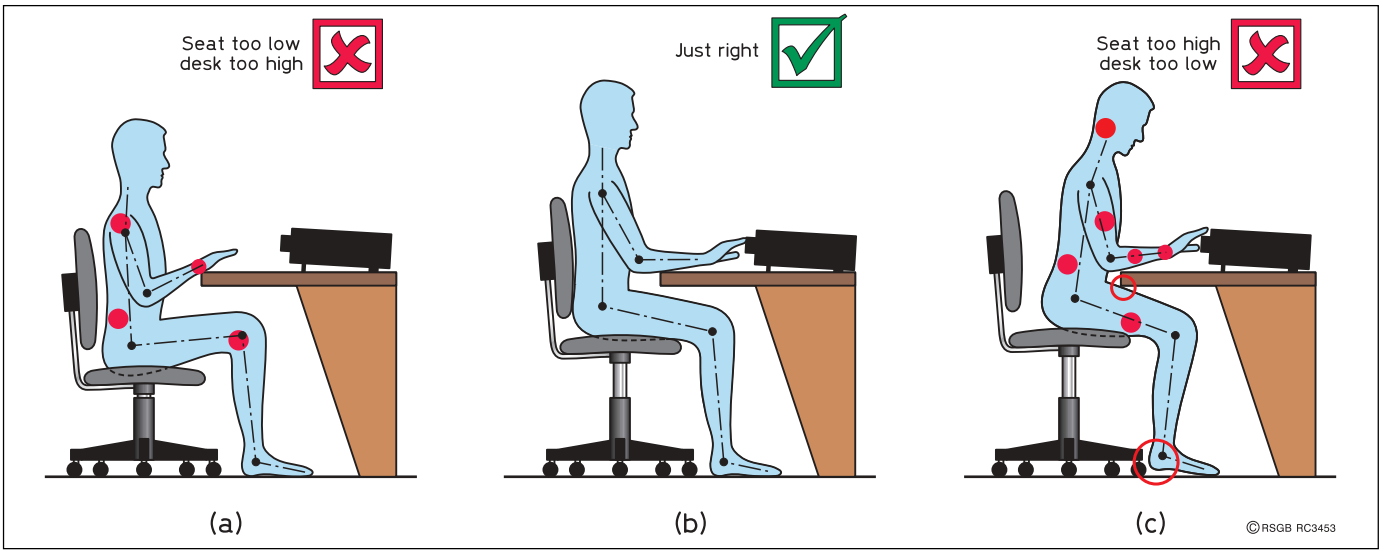

Fig 1: The correct difference in height between the seat and the operating desk depends on individual body dimensions. The red spots show where it may hurt if you get it wrong!

Kitchen drawer runners make a strong pull-out support for a keyboard below the desktop.

help from one of the soft gel-pack wrist rests sold for keyboarding. Some operators like to have the VFO knob much higher up, so they can rest their elbow on the desktop; that doesn't suit me, but it's fine if it is still comfortable for *you* after many hours. Avoid layouts that require you to hold your whole arm steady in mid-air while delicately tuning - your neck, arm and wrist muscles will soon tell you why!

Just when you thought you'd made everything nice and comfortable... they invented the computer. A PC is an essential part of many modern stations, for log-keeping and/or for operating in one of the 'keyboard' modes. Unfortunately the computer has its own set of requirements for seating and furniture - and they are *different* from those for operating! How you tackle this problem depends on how much you use the computer while operating. If you only need to use the computer occasionally, you can afford to put the keyboard and screen in some compromise location, maybe to the side where you can reach it by swivelling the chair. But if you're a contester or a dedicated keyboarder, the keyboard and screen are as important as the transceiver.

Go back to Fig 1, and think about a comfortable height for the keyboard. Ideally it should be just below your forearms when horizontal - and in Fig 1(b) that would be *below* the height of the operating desk [2]. You often see pictures of the keyboard sitting on the operating desk, but that is really too high, and forces you into the sit-up-and-beg posture of Fig 1(a). Many operators get along with the keyboard on the operating desk, and operate for hours on end without too much discomfort, but only if the seat is at the *exact* compromise height. Some people do not find such a compromise possible at all. It is much better to lower the keyboard so that the key-tops are about level with the desktop. The photograph above shows how this can be done using a few pieces of wood and a pair of strong metal kitchen drawer runners. If you have a writing desk with a drawer above the leg-space, how about removing the front of the drawer and putting the keyboard in there? The difficulty with pull-out shelves and drawers is that they move you further away from the equipment on the desk, so the ideal solution would be a 'well' sunk into the front of the desktop. (If ever I get my shack into a permanent state, that's what I will do... If ever...)

Laptop PCs pose additional problems. Unlike the keyboard of an office PC, which is raked higher at the back to make the top row easier to reach, the horizontal keyboard of a laptop makes you reach further for the top row. Older laptops are quite thick, raising the keyboard higher off the desk; newer ones are thinner, but the keyboard has now moved right to the back - you can't win! If you haven't the space to plug in a better keyboard, at least try raising the back of the laptop to give it some rake. The photograph above right shows one solution that involves tilting the entire laptop steeply off the edge of the desk. This wouldn't be right for intensive office use, but the extra tilt compensates quite well for the incorrect height, and it's vastly more comfortable than using the laptop flat on the desk. A thick wooden wedge raises the back of the laptop, and friction pads (from a discarded mouse mat) and a bit of bent metal prevent the whole thing from falling off. The photograph also shows how the radio is pulled forward so that everything falls comfortably to hand: radio to the left, computer and screen directly in front, keyer to the right. I only do this when using the computer and radio together intensively; for more relaxed operating, everything is pushed further back - but still with the laptop tilted. This tilt wedge could be a very useful accessory for Field Days, where the operating position is usually *exactly* wrong for everybody!

Having found somewhere reasonable to put the keyboard, that brings us to the location of the screen. The recommendation for typists and keyboard operators is straight ahead, with the top of the screen at eye level because your normal comfortable sitting position is looking slightly downward. Since we also have to look down at the radio, the screen should preferably be a bit lower than the standard 'typist' height. If you're using a laptop, the screen will automatically be in about the right position. If you're using a separate monitor, avoid perching it up on a high shelf, or away to one side - it makes your neck ache, even to *think* of the number of head movements involved!

Tilting a laptop PC off the front of a table, to make the keyboard more comfortable. Note the compact layout of radio, laptop and keyer, all within easy reach.

The problem, of course, is that the screen and keyboard now take up the prime front-and-centre space that used to be devoted to the radio. But maybe that's not a bad thing, because the easiest places to reach with your hands are actually a little way out to the left and right of centre. The 'In Practice' home page has a link to K8ND's fascinating photo gallery of station layouts for single-operator, two-radio (SO2R) HF contesting. SO2R brings all these layout problems to a focus, because it involves using essentially two separate stations *at the same time*. One station calls CQ and works all comers, while in the spare time (?) the second station prowls the other bands, tuning to find multipliers and other opportunities to increase the score. Almost always, the keyboard and screen are front-and-centre, with the two radios easily reachable on either side. This isn't the place to go into details but, with the information given above, you can easily judge which setups would feel comfortable for you to use intensively for anything up to 48 hours, and which ones would cause you acute pain!

The most important thing is to remember that different station furniture and layouts will suit different people. It all has to fit around *you*, so no single setup will be right for everybody. On the other hand, some features are definitely *bad* for everybody, so take care. And remember that your best friend is a comfortable adjustable chair... go on, you deserve it!

NOTES

[1] In my home office, I spend my working days in an Office World high-backed adjustable chair that cost about £50. Outside working hours, it spins around to become the radio operating chair. If it wasn't both comfortable and correct for both applications, I'd be in big trouble!

[2] Optimum keyboard height is also close to optimum for a straight Morse key, because once again you need to have your forearm and the back of your hand in a straight horizontal line; but in this case the whole forearm is involved so you need *not* use an armrest. ♦

Please remember that I can answer questions through this column only, so they need to be on topics of general interest.

Antennas

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IN THE December 2002 'Antennas' column I said that I found the recommended way of fixing PL-259 connectors to coaxial cable difficult and less than reliable. This is because you can never be sure if enough heat has been used to make the solder run through the holes to make a good, dry joint free, connection to the braid without 'cooking' the coax insulation.

The problem was further brought home when I tried to locate the fault on one of the VHF antenna feeders at GB2CPM. The symptom was an open feeder and the fault was eventually found to be at the shack end. All the connectors in the line are N-type with clamp nuts and pressure sleeves; with the exception of the one in the shack, which used a solder type connection.

The connector and a short length of feeder were cropped off and a new plug fitted. The old plug was disassembled, as shown in the photograph, to find out what had gone wrong. The cable had been made up perfectly with 1/4in (6mm) of braiding neatly trimmed and tinned. The prepared end had been screwed into the plug and the centre and braid soldered in the appropriate manner. In all probability the cable would have passed an initial continuity test; however, although the centre pin was soldered correctly the braid was not. Over a period of time a layer of corrosion had caused the braid / plug connection to become open circuit.

OTHER SOLUTIONS

I HAVE RECEIVED further comments on this subject. Wyn Mainwaring, GW8AWT, says he has never soldered the outer braid of any type of coax plug that he has ever used in the light of work done at around 1000MHz by EMI research in 1949. He advises that the braid needs to be clean and corrosion / tarnish free. The strands are gently combed out with something that is both sharp yet smooth, such as the test probe of an Avo. These strands are then stroked back along the outer of the PVC skin. The end is made up so that there is 1/8in (3mm) length of inner insulating material clear of the braid and that the bared inner conductor is plenty long enough to poke well clear of the PL-259 when the coax is fitted. The coax is screwed into the PL-259 plug until the shoulder of inner conductor has become visible and the folded back braid has just come into view. Excess inner conductor is cropped and soldered to the PL-259 plug centre connector. The braid can then be cropped and grease or Vaseline worked into the solder holes and outer connection to make a water resistant joint.

Richard Brown, GW8JVM, gives similar advice, adding that the method also works with Pope H100 type cable where copper foil is used in the place of braid.

Walter Blanchard, G3JKV, notes "I agree with your piece on PL-259s. I gave up trying to solder through the holes years ago and did what you do. I found if you fold RG-213-type braid back on itself - *not* over the black PVC covering - it is thick enough to provide a good grip for the plug's internal screw thread. Also, you can screw the plug on right up to the end of the covering if you strip the right amount. If I think I might be taking the plug off again before long I don't solder the braid - just the inner - and that seems to do very well as long as it doesn't get wet. Soldering the outer braid can be a little tricky - some plugs don't take solder easily, and it has to be thin so the loose screwed attachment can slide back over it.

"Incidentally, there are PL-259s around that have a gold finish and are advertised as 'gold'. It's actually only a very thin plating and strips away easily from the muckite metal underneath so although it solders easily first time round the plating eventually gets pulled off by the solder and the connection is lost. Silver-plated PL-259s are far better if you can find them."

I find that whether you fold the coax braid back over the black PVC covering or not may depend on the coax type and diameter and the PL-259 connector.

Brian Armstrong, G3EDD, says, "I felt I had to comment on your section on coax cable and UHF series connectors. Perhaps I should explain that although long since retired, I worked in the Engineering Department at Pye Telecom in Cambridge all my working life, and one of my responsibilities for many years was the approval of VHF / UHF aerials and the coaxial components that went with them. Firstly, UHF (PL-259) series connectors should never be used outside a protected environment, and those that are used should be with pressure sleeve clamp, which is much easier to terminate. We always used N series for all external applications, again with pressure sleeve clamp.

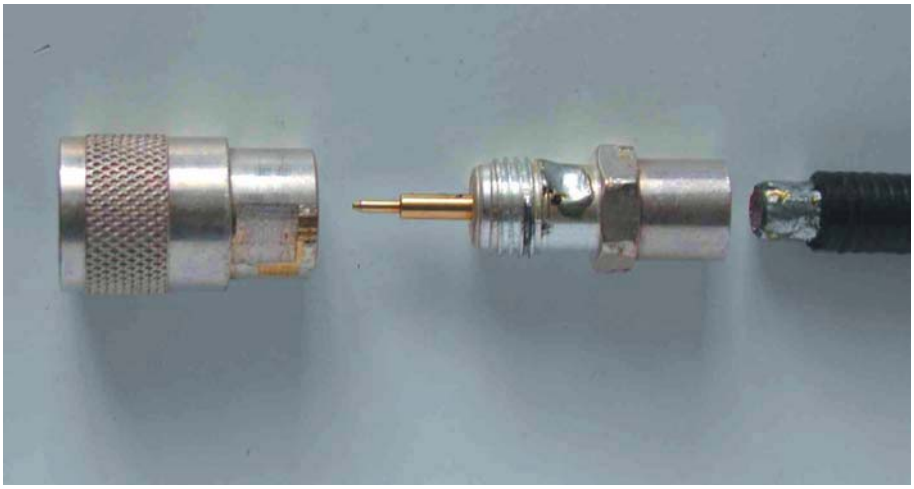
"I think that the UHF series is awful [echoed by Richard Brown, GW8JVM, above] but then they are cheap and everywhere. One of my ex-engineers, now retired, who is licensed, always changes the PL-259 series connectors on any equipment he buys for N or BNC series, a bit of a drastic step maybe and one that I have done myself but not on a regular basis."

PL-259 AVERSION

I FIND THE aversion to the PL-259 rather difficult to understand. I have used them for years and have been unable to detect any deterioration in performance at HF when compared with other types. I agree that at VHF and UHF it could be a different matter. It would be interesting to know if any research had been done to determine how much of an impedance 'bump' these plugs cause, and whether it is important.

Much of the early home brew equipment (and some commercial) used cheap domestic TV coax connectors. Eric Knowles, G2XK, used to put out the best signal from Europe on 28MHz in the early 1960s using such connectors together with television 75Ω coax.

The worst coaxial connector that I have ever come across is the old Pye clip-on type. In the RAF they were used on the coaxial connectors between units in airborne radar installations and were the cause of most equipment failures. ♦



N-type connector, using soldered outer braid arrangement, stripped down to determine why it had failed. The cable had been made up perfectly with 1/4in (6mm) of braiding neatly trimmed and tinned but the solder through the holes to the braid had not taken. The inner conductor, which was soldered correctly, is not shown.

QRP QRP QRP QRP QRP

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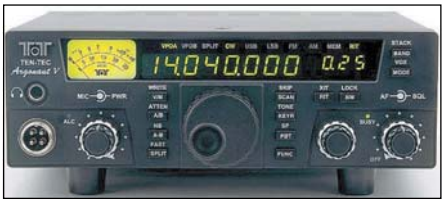
THE TEN-TEC company has been around in the world of commercial QRP equipment since the end of the 1960s. Many QRP operators worldwide began their low-power operating with Ten-Tec equipment, very often using equipment from the 'Argonaut' series of transceivers. So it was with great interest that I noted a new QRP transceiver from Ten-Tec, the Argonaut V, introduced in the summer of 2002. I have yet to try one, but the specifications look interesting. It is certainly not an FT-817 clone, being quite large (2.75 x 8.5 x 9.7in), it can draw up to 11A of current in some transmit modes, but it does offer a large range of facilities and options. At the moment, the best I can offer is a selection of the features of the new Argonaut.

These include:

- transmit on all nine HF ham bands, 10 - 160 metres;
- 20W output power, all modes, SSB, CW and FM; front-panel-adjustable from 1 - 20W;
- AM operation at 5W carrier power (20W PEP);
- full QSK operation in CW mode and built-in CW keyer;
- receiver coverage of 0.5 - 30 MHz continuous; user-selectable tuning rates of 10Hz or 1kHz;
- 35 built-in IF-DSP receive filters. (Filters are 200Hz to 1000Hz in 50Hz steps, 1000 to 2800Hz in 100Hz steps; 4kHz and 6kHz in AM; an additional 15kHz filter is provided for FM operation; shape factors all 1.5:1 or better.



The TenTec Argonaut V.

The Argonaut V is a software-defined radio. All functions and features of the rig are stored in flash ROM. Updates of the software may be downloaded from the Ten-Tec website. On paper, the Argonaut V looks impressive and I wait to try one in the flesh. More details can be accessed at the Ten-Tec website.

www.

Ten-Tec www.tentec.com
World QRP Top List www.qsl.net/rv3gm

QRP PORTABLE ON THE QE2

I INVITED READERS of this column to share their QRP portable experiences with other readers. One of the first to contact me was Paul Cort-Wright, G3SEM, with an interesting account of his portable operation aboard the QE2. Paul writes, "Having just read your QRP column in this months *RadCom* you and your readers may be interested in my recent /MM operation from the QE2.

"In October my wife and I were lucky enough to go on an 18-day cruise on the QE2. Having been given permission to operate by the Master, Captain Paul Wright (same surname but no relation!) on a previous trip, he was happy to give a written permit to operate all bands / modes provided, of course, there was no disturbance to the ship's radio systems or to other passengers.

"The radio system was no problem, as there appears to be no HF operation on board nowadays, keeping other passengers happy though, forced me on to CW not my best forte. My station consisted of a FT-817 with RF speech compression added at the microphone (DF4ZS). The aerial was a 22ft top doublet, fed with 16ft of 300Ω feeder This was used with a Z11 automatic ATU modified with a switchable internal 4:1 ferrite rod balun.

"The doublet was supported in an inverted-V fashion by an 8ft collapsible fishing rod. The rod was attached to the ships rail some 120ft above sea level. Some experiments were also made with a 16ft length of wire, wound around the fibreglass fishing rod. This proved difficult to match because of a poor earth connection, due to the energetic ship's crew continually painting the rails!

"A Toshiba 'Libretto' computer was used for logging and the odd PSK contact. The station was completed with a Garmin GPS receiver to give position information and height details. It was also used to feed a Kenwood TH-7 on APRS on the Hudson River whilst going in and out of New York harbour. All this fitted into an 18in by 12in camera case carried on board as hand luggage. I had absolutely no security problems with the correct paperwork!

"Some 120 stations in 20 countries were worked, mainly on SSB. Operation was limited to the odd hour or so on occasional days, to keep the XYL happy! Without a doubt, the doublet at 120ft over salt water worked fantastically well. The best DX contact was Sri Lanka from mid-Atlantic on SSB. The main problems were physical. Temperatures were falling to around freezing point off the coast of Newfoundland and, when the weather was warmer, other passengers rather restricted operations!

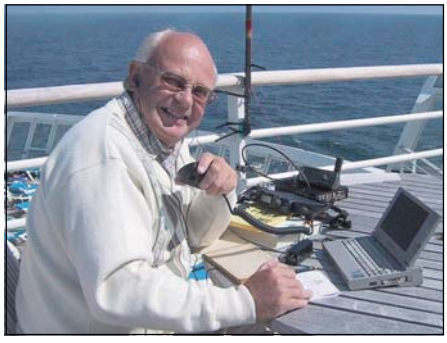
"An attempt was made to provide an entry in this years WAEDCC SSB contest and, although some 50 European stations were worked, some confusion arose because I was a G3 outside Europe! When will those computers ever learn!

"It was all great fun, and highly successful, the biggest problem being holding everything down at 28knots - a bit like operating on a car roof as you speed along at some 30mph. I will be QSLing 100% and look forward to more /MM contacts somewhere in the world."

THE RU-QRP CLUB 'WORLD QRP TOP LIST'

OLEG BORODIN, RV3GM, chairman of the Russian RU QRP Club, tells me that the club has begun to maintain a 'World QRP Top List' in the form of a web page table of results. The results are a simple tabulation of worked / confirmed QRP DXCC (separated as CW, SSB and digital) and worked / confirmed two-way QRP DXCC (separated as CW, SSB and digital).

The table may be found on its web page, where QRP operators are invited to submit their own results. The list, which is updated every two weeks, is compiled by QRP-List Manager Vyacheslav Lukin, RW3AA (rw3aa@bk.ru). I was pleased to see George Burt, GM3OXX, on the list with a CW-only entry at 265 / 262.



Paul Cort-Wright, G3SEM, operating aboard the QE2.

RSGB

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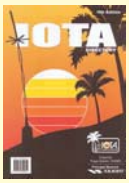

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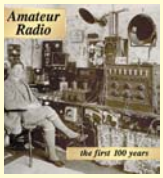

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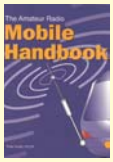

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MICROWAVE

SIMON LEWIS, GM4PLM
Creoch Farm, Ochiltree, Ayrshire KA18 2QH.
E-mail: uwave.radcom@rsgb.org.uk

ON 12th JANUARY 2003 at 2050UTC, W2SZ / 4, in FM07FM worked WA1ZMS / 4 in EM96WX over a distance of 79.6km for a new World and North American record on this band. Weather at the time of the contact on the EM96 end was -1.5°C, dewpoint -18.3°C, humidity 26%, with a calculated atmospheric loss of 0.193dB/km. WA4RTS was the CW op at W2SZ / 4 and was being helped at the time by W4WWQ and KA4YNO. WA1ZMS / 4 was operator of his own station and roving in EM96. The signal margin was about 2dB on the ZMS end and about 6dB on the SZ end. One station has a better receive mixer than the other.

For W2SZ / 4, this contact is also the 5th grid needed for the ARRL VUCC award for the 145GHz band. This claim should be the very first VUCC for that band, and it took two years of hard work to make it happen. This column has carried previous pictures and news of their work on this band during previous record-breaking attempts.

NEW UK MICROWAVE REFLECTOR

IN SEPTEMBER 2002, I started a new microwave reflector for UK microwavers on the Yahoo Groups website. This reflector is designed to encourage and promote discussion and debate on all UK microwave topics. The reflector is open to anyone interested in microwaves and that means *any* amateur band above 1GHz and *any* mode, it is not just for narrow-band discussions, so please come along and join in if your interests lie in the microwave spectrum. So far the site has been very useful, with a variety of interesting discussions and debate taking place, and it is certainly a place where there is plenty of assistance available. Please feel free to come along, have a look and take part. You can view the site at: http://groups.yahoo.com/group/ukmicrowaves/ You can join on-line using the webpage or by sending an e-mail to ukmicrowaves-subscribe@yahoogroups.com

BEACON NEWS

MARTIN VINCENT, G3UKV, e-mails news of a new 3.4GHz beacon. "As planned, we got the 3400.910MHz beacon operational at the weekend, albeit on QRP at present to a single antenna, with 120° beamwidth. The callsign is GB3ZME, and the locator IO82SQ40, in Telford, Shropshire. The site is 198m above sea level, the output is 200mW (pending an increase to about 15W in the New Year). The antenna is an Ionica 3.4GHz slot with 14dB gain. The single unit (with 120° beamwidth, centred eastwards) is to be increased to three units to give omnidirectional output in the near future, if no problems are encountered. The height is approximately 10m above ground level. The beacon became operational at 1130UTC on 15 December 2002."

UK MICROWAVE CONTEST TROPHIES

THE RSGB HOLDS a number of regular contests throughout the year in a number of formats. These are designed to promote activity on the bands and encourage equipment development. They are also very good fun and a chance to get out and enjoy the countryside! Of course, there is some nice silverware to be won by the lead stations. The 10GHz Trophy is a fine example of what can be achieved and this is awarded annually to the leading RSGB member in the '10GHz Trophy' contest. The contest is presently held on the Saturday afternoon and evening of the May RSGB '432 and Up' 24-hour contest, usually the first weekend of the month.

The G3KEU Memorial Trophy.

Presently administered by the RSGB VHF Contest Committee, the '10GHz Trophy' contest was primarily aimed at contest groups rather than the solo operator. In 2001, an experiment was tried whereby the trophy was awarded to the leading RSGB member in the '10GHz Cumulatives' but the format reverted to a one-off contest event in the following year. However, this year (2003), the contest reverts to the single-day format.

The 'G3KEU Memorial Trophy' is a new trophy for 2003 onwards. It was generously donated by Richard Bown, G8JVM, in memory of Tim Leighfield, G3KEU, who passed away in May 2002. The trophy will be awarded to the leading RSGB member in the new '5.7GHz Cumulative' contest. Who will be the first to have his or her callsign inscribed on this nice trophy?

NEW MICROWAVE ITEMS FROM DOWN EAST MICROWAVE

OUR FRIENDS at Down East Microwave have been busy again and have produced a compact 144MHz transverter designed to complement the excellent HF transceiver kit, the Elecraft K2. For those unfamiliar with the K2, it's a multimode high-performance transceiver designed to be built at home by the average amateur. It's an excellent kit and, having built the first one in the UK, I can thoroughly recommend it as an IF for microwave work as it carries all the functions of a high performance transceiver such as excellent sensitivity, great dynamic range, built-in variable crystal filters, CW keyer etc. Now DEM has complemented that by designing a high-performance 144MHz transverter that fits inside the K2 case and designed specifically for driving microwave transverters. This now means the K2 can act as the perfect 144MHz multimode. A worthy combination.

Down East is also producing a new 2W 10GHz PA using a Toshiba GaAsFET device. The 32PA linear provides a nominal 2W out for 10mW drive using a 13.8V supply. The unit is supplied as a complete kit and priced at $275 which makes it an attractively-priced unit for 2W output. ♦

WWW.
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Elecraft K2 transceiver www.elecraft.com

DAVE PICK, G3YXM
178 Alcester Road South,
Kings Heath,
Birmingham B14 6DE.
E-mail: lf.radcom@rsgb.org.uk

THE TRANS-ATLANTIC season is well underway and, so far, has been quite successful. Firstly, 73kHz. Laurie, G3AQC, and Peter, G3LDO, have been making the most of the last winter season on 73kHz. Laurie's signal has been received by W1TAG and W4DEX on a couple of occasions with very good copy. Peter's signal was equally good from his Decca transmitter powered by a stack of car batteries! These transmissions used *very* slow CW (or DFCW - 60-second dots), so we're not likely to get a normal-speed CW signal across on 73kHz.

On 136kHz there is still the hope of CW making it across. In recent tests, signals have been quite good with many slow CW signals being copied. Jim, M0BMU, put out some *Jason*-mode transmissions and was received by W1TAG in Holden, Massachusetts. This is the first instance of *Jason* signals crossing the pond. The advantage of this mode is that the receive station can be left running on the designated frequency whilst the operator makes tea, goes out to the pictures etc. He then returns some time later to see if anything sensible has appeared on the screen. The disadvantage is that only one signal can be decoded at one time in the *Jason* window; however, if you have a fast PC with an AC97-compliant sound card, you can run multiple-*Jason* windows and watch several frequencies at once.

A new LF listening station has been set up by Laurence, KL1X, in Anchorage, Alaska. He can hear Radio 4 (198kHz) on some nights so there is a path, but the polar region can cause difficulties. We await his results with interest.

Z6QH

THE BOYS WERE BACK at Quartz Hill after Christmas, and this time their 137kHz signals reached Ontario, where VE7SL and VE2IQ copied them. Many European stations were listening but, unfortunately, nothing came through over here.

RU6LA

ED RETURNED to the portable location near Machta, KN97LN, where he and the RU6LWZ group have access to a large tower. The signal was very good around Europe on the two occasions they visited the site. During their November visit, the first CW contacts took place between European Russia and Germany and Denmark, the Czech Republic and Finland, plus the first QRSS contacts with Holland, France and Sweden.

G3AQC was hoping to make a 73 / 136kHz cross-band contact with Ed but, although Ed copied some signals, no contact took place.

EA1PX

JOSÉ HAS BEEN BUSY recently. He has been receiving good signals from many stations around Europe at his La Coruña location. In addition to his listener reports, he has made contacts with DF6NM and F6CWA, these being the first Spanish LF contacts with Germany and France. He had previously worked into Portugal and England.

YU7AR

TEO IS ANOTHER busy listener who found his way into the record books by being the first YU station to work the Slovak Republic (OM2TW). He has also been copying many of the contacts on the band and regularly sends reports to G stations. He had a perfect copy of M0BMU's *Jason* transmission and even dabbles in 73kHz, recently receiving one of G3AQC's *Jason* tests on 71.8kHz.

MORE LISTENER REPORTS

MEANWHILE, near Oslo, Steinar Ånesland has been receiving G3LDO and G3AQC on 73kHz as well as many 136kHz stations. He uses a Palomar Engineers VLF converter and the down-lead of his HF aerial.

While on the subject of listener reports, it is always interesting to find out what people are hearing. The other day I put out a quick call to test the tuning and, later that afternoon, received an e-mail from someone who had been tuning up a receiving aerial. He was amazed to hear a signal on 136kHz, and I was amazed that anyone was listening! Keep those reports coming.

ARGO GETS A REVAMP

I2PHD'S POPULAR spectral analysis program, used for so many record-breaking contacts, has recently been modified. Some users had reported that *Argo* crashed after an hour or so; this has now been fixed, as has a problem with the capture mode. Alberto has also added the date to the capture window, to make it easier when sorting through all those *Argo* grabs. The latest version is Build 132 (see WWW.).

ARGENTINA ON 136kHz

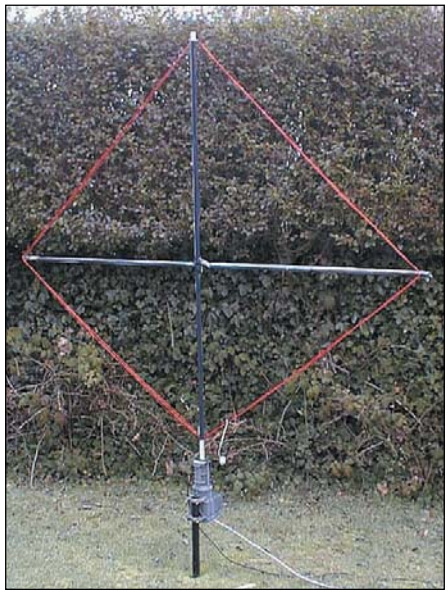
LW2ETU PUT OUT the first amateur 136kHz transmission in Argentina on Christmas Day. He was copied by LU8EDR and on 3 January by LU8EDR and LU8DYK.

DX? WHAT DX?

IT ALL SOUNDS a bit DX-orientated this time I'm afraid. That doesn't mean there's nobody having short-range chats on CW these days, just that these aren't very newsworthy! If you do have any interesting news please let me know.

One thing that has fascinated me recently is the performance I have been getting with a receiving loop. I built this to null-out some local noises, which it does, but the interesting bit is how it receives 'sky-wave' signals at night. Sometimes switching from the transmit aerial (80m end-fed) to the loop gives an amazing improvement when it is rotated to the optimum position. At another time it may be inferior. Quite why this happens I can't explain, but it certainly can be useful.

The loop, which is a diamond shape, 2m corner-to-corner, is mounted on a small rotator and is wound with five turns of wire connected directly to the coax. In the shack is an M0BMU 'Lazy Loop' pre-amplifier from the July 2002 column (see the box). ♦



My rotatable version of the 'Lazy Loop'.

WWW.

Argo	www.weaksignals.com
Lazy Loop	www.wireless.org.uk/lazy.htm

ONE OF THE nice things about writing an ATV column is the selection of 'toys' that turns up on your desk. Last month it was the Blackbox Camera Company's handheld character generator. This time it is an electronic colour test card generator. The unit belongs to John Hudson, G3RFL, and again it is a small populated PCB. It is marketed as a ready-built and tested unit. It uses state-of-the-art Field Programmed Logic Arrays. The PAL coder is the Analog Devices chip, which is surface-mounted on the underside of the board. The 16 different test patterns are pre-programmed into the on-board EPROM and can be stepped through with a single push-button. It comes customised with your own callsign and QTH details. The power requirements are a single rail 12 to 14V supply (it has its own on-board regulator) John is marketing these units for £70; if you are interested, visit his website.

ATV AND THE INTERNET

ATV AND THE INTERNET seem to be the topics of the moment; as the Internet bandwidth increases with more and more broadband connections appearing every day, and more and more research and development work going into television bandwidth reduction, one wonders how long the traditional antenna will survive.

The ATV web-streaming offerings fall into two camps - those requiring *Windows Media Player* and those requiring *RealOne Player* software. The *Windows Media Player* has the advantage that it's part of Windows and no additional software is required to view these offerings. The Slovene ATV Association (ATVS) has numerous clips that can be downloaded and viewed in *Windows Media Player*. They are all of a size that can be accommodated by a 56K connection. The Dutch ATV site PI6ALK, probably better known for its ATV satellite transmissions, also has clips that can be downloaded and played in this way.

The BATC and American sites seem to favour the *RealOne Player* system. The BATC service provider is in America and we do not have a choice over the system unless we move service providers. The software does have to be downloaded from the *RealOne* site, but it's free; you may be approached and asked to upgrade to a better package at a cost, but this is unnecessary to view the ATV offerings on most of these sites. The K6KMN Mount Wilson repeater site will web-stream live coverage of Shuttle Missions, and many other offerings to you. The BATC site has been using its streaming to show you some of the clips from its 1970 ATV meeting (CAT 70). There are also plans afoot to implement a topical news bulletin using this same web-streaming technology.

WWW.

BATC	www.batc.org.uk
John Hudson, G3RFL	www.g3rfl.ukhome.net
Dutch ATV	www.pi6alk.nl
Slovene ATV Association	http://lea.hamradio.si/~s51kq/ATVS.HTM (Case sensitive)
Marc Chamley, F3YX	http://f3yx.free.fr
Mount Wilson, K6KMN	www.pasadena.net/atn
Free basic *RealOne Player*	www.real.com
Ian Abel, G3ZHI	www.qsl.net/g3zhi/ukirlp.htm
DATV	www.datv-agaf.de

DIGITAL ATV - LATEST

BERGISCHEN Universität Wuppertal has now completed a design for a DATV transmitter. Prototypes have been built and tested and it is now going to produce 100 units that will be for sale. The cost will be 745 Euros, provided it can get 100 orders. The exciter comes with pre-programmed 2Mbit/s GMSK, 5Mbit/s GMSK and 5Mbit/s QPSK according to DVB-S. The output frequency of the exciter is 434MHz. A 70cm GMSK receiver is still under development, but a 70cm / 23cm converter has been developed so that DATV can be transmitted on 23cm in QPSK. This enables reception of the signal on 23cm via a digital satellite set-top box as demonstrated during Ham-Radio 2002. DB0KO in Cologne has been running a DATV output for some time now using this system.

ATV MOBILE THE F3YX WAY

ONE PLACE the traditional ATV antenna is surviving is with Marc Chamley, F3YX, perhaps the most well-known French ATV enthusiast, who now runs the ATV equivalent of GB4FUN - a fully-equipped ATV station built into a camper van. Last summer he took it down to that ATV hotspot, the south of France, and made many contacts. Marc's ATV is his own design and his website has copies of many of the published constructional articles he has written. ♦

The mobile ATV station of Marc, F3YX. **(Courtesy of F3YX)**

Members' Advertisements

RSGB Members wishing to place an advertisement in this section should use the official form printed in *RadCom* each month. No acknowledgment will be sent. Ads not clearly worded, or which do not comply with these conditions will be returned. If an ad is cancelled no refund will be due. An advertisement longer than 60 words will be charged pro rata. Trade or business ads, even from members, will not be accepted. Traders who wish to use this facility must send a signed declaration that the items for sale are part of, or intended for, their own personal amateur station. The RSGB reserves the right to refuse ads, and accepts no responsibility for errors or omissions, or for the quality of goods for sale or exchange. Each advertisement must be accompanied by the correct remittance, as a credit card payment, cheque or postal order made payable to the Radio Society of Great Britain. Please note that because this is a subsidised service to members, no correspondence can be entered into. Licensed members are asked to use their callsigns and QTHR, provided their addresses in the current edition of the RSGB Yearbook are correct. RS members will have to provide their names and addresses or telephone numbers. Please include your town and phone number in the free boxes provided to assist readers. Advertisements will be placed in the first available edition of *RadCom*. Please do not send members' advertisements to Jan Forde in the Advertising Sales Department.

The closing date for copy is the first day of the month prior to publication, eg the deadline for the March issue is 1 February.

Warning: *Members are advised to ensure that the equipment they intend to purchase is not subject to a current hire purchase agreement. The 'purchase' of goods legally owned by a finance company could result in the 'purchaser' losing both the goods and the cash paid.*

Members' Ads also appear on the Members Only website: www.rsgb.org/membersonly/membersads

FOR SALE

2 x ICOM 775DSP, one new in box, the other in daily use, including filters plus external speaker SP-20, £1800 each. Compare prices to new Mk5. Also recent addition Butternut vertical 10, 12, 15, 17, 20, 40 and 80m as new, £250 or very nearest offer. Trev, G2KF, 07974 892 179

2M h/held rcvr, AR-22 & charger, £50. HFV1 80m vertical, £50. Diamond 2m/70cm mobile ant, £10. Adonis 3-way desk mic, £10. HF low pass Tx filter, £5. Multi-section HF whip in carrying tube, £10. Two alum scaffold poles, make 24ft mast, £10. Revo dock cradle & serial lead. No PSU, £5. G3XOI, 01273 594 570 (Shoreham by Sea).
E-mail: alangordon@iee.org

2M linear amplifier all-mode 1 - 8W input 35W out, brand new, £40 ono. Also telephone answering machine microprocessor-controlled, £6. M3ACU, QTHR, 01255 436 118 (Clacton on Sea).

A collection of military radios. PRC6/6 47-55MHz. FM classic banana h/held c/w Xtals, antenna, £50. Yugoslavian RT20 SSB manpack 25-55MHz 5/20W, c/w PSU/charger, antenna, handset, carry harness & Morse key, £150. SEM 35 FM 25-52MHz c/w handset, £110. G6YSO. Further info: 07870 617 171 (Portsmouth).
E-mail: info@hsra.co.uk

ALINCO DJ-G5 VHF-UHF h/held tcvr. Nicads, charger, spkr mic, case, battery case, and earpiece, vgc, £175. Alinco DJ-X10 Nicad charger, battery case, little used, vgc, £185. 01223 565 060 (Cambridge).
E-mail: john.lander@ntlworld.com

AMERITRON AL811 linear amp, all bands inc 10m, unused, still in original carton, as new, £400 ono. G0IET, 01780 754 401 (Stamford).
E-mail: mick@g0iet.freeserve.co.uk

CLASSIC radios. Two Collins KWM-2 and one KWM-2A tx/rx. One 516F-2 PSU, one PM-2 (clip-on) PSU. Also Collins 180L-2 ATU and standard radio ST18C HF Tx. Two army C12 tx/rx with cables and ancillaries (one less ATU). Prefer sell as one lot, buyers must inspect/collect. Offers to Hugh, G4TMO, 01985 248 194 or 07703 258 301 (Sailsbury).
E-mail: hugh.kemp@btinternet.com

COMPLETE working station, IC-706 HF/VHF tcvr. Rx coverage 300kHz to 200MHz, Tx coverage all bands including WARC bands plus 50MHz + 144MHz, modes SSB, CW, AM, FM, WFM, RTTY, base or mobile. Accessories h/brew ATU plus Yaesu SWR/pwr meter, AC power supply DPS 300 GL o/p DC 2 - 15V, max 1 - 30A. Offers for the lot only, £550 ovno. 01202 666 299 (Poole).

EDDYSTONE 1061 rack mounted Panadaptor. 100kHz and 1.4MHz inputs. BW 50Hz to 500Hz. EHT fault, but cosmetically perfect, offers? G3OYX, 01453 832 744 (Stroud).

FREE to a good home, heavy duty post-mounted 60ft tele/tilt Westower complete in fair cond. G4CKG, QTHR, 0115 938 4965 (Nottingham).

FULL line up Trio 100W TS-830S HF tcvr with matching ATU and speaker, MC-50 mic, all leads with 100W dummy load, many extras, mint cond, £450. G4ZQL, 01706 655 287 (Rochdale).
E-mail: n.higgins4@ntlworld.com

G4AML Silent key. Two-section radio antenna tower, ~45ft, £200. Six-element HF beam, £30. Rotator, £120. All in good/exc cond, but can't verify rotator. Tower still erect, help in removing will be considered as payment, or can be brought down. 07816 564 699.

GARMIN Street Pilot Atlantic, Metro guide CD, map source, spare data cartridge, cables – car/computer, mint, £300 + carr. Prefer local buyer. G3PTN, QTHR, 0113 265 4644 (Leeds).

HALBAR 2m 6-ele cubical quad, £30. 2 x 48-ele 70cm beams with coax, £25 ea. 70cm vertical colinear vgc, £30. Philips 2m vertical fibreglass, £25. 2m 5-ele beam, £15. All ono. Peter, G4UDW, QTHR, 01303 873 704 (Romney Marsh).
E-mail: soundreaction@madasafish.com

HENRY power amp, EIMAC 3CX1000 valve, £175. TS-940SAT with auto tuner and voice frequency speakout, £600. TS-940S, £500. FT-221R, £150. FT-200 with FP-200, £100. Drake 2kW linear, £400. TS-850 with auto tuner and voice frequency speakout, £600. Prefer purchasers inspect goods. Ben, 01398 361 215 (Nr Taunton).

IC-756PROII, pristine cond, Icom's top of the range tcvr. Superb filtering and performance, less than one year old, boxes and man, £1800. IC-706 MkIIG, with separation cable, box and man, exc cond, £600. Tennadyne T10 14MHz-30MHz log periodic antenna, 3 months old, exc cond, £450. All reluctant sale due to increased work commitments. 01778 440 079 (South Lincs).
E-mail: david@g4dhf.freeserve.co.uk

ICOM 706 MkIIG, £650, buy better, buy new at £849 (28/3/02). Keyed 10 times at most. Second radio use only. M3TMP, Mick, 01782 876 700 (Hanley).

ICOM 706 MkIIG, purchased March 2002, cost £899, sell for £650 ovno. M3TMP, 01782 876 760 (Stoke on Trent).

ICOM 726S 10W 160-6m good cond, CW filter, mobile mount, HM12 mic, £325. MFJ-1026 noise canceller vgc, £100. Steve, G4MPK, 01424 893 386 (Bexhill-on-Sea).
E-mail: stephen.foster27@btopenworld.com

ICOM 756 HF/50MHz all-band tcvr, including Icom SP-21 external speaker. Lowe EP925 AC/DC power supply, all for £750. SG-231 HF-VHF Smart Tuner, £150. All in mint cond. Carriage and insurance extra. GM4FVS, QTHR, 01358 723 358 (Aberdeenshire).
E-mail: w.cusiter@btopenworld.com

ICOM 756PROII, mint condition, £1800. Palstar AT-1500 CV ATU, mint, £280. Heil classic with HC5 insert and standard, £180. Andy, 07870 234 580 or 01706 645 553 (eve).

ICOM AH3 smartuner, £225. Icom AH2A smartuner, unused, £225. Icom AT150 auto ATU, £135. Yaesu FT-790R multimode, extras, £140. MFJ-259B HF/VHF analyser unused, £170. Tokyo 144/100W amplifier, £100. Mosley TA33 jnr 10-15-20 beam, £120. Kenwood TS-950SD, DSP, auto ATU etc, boxed as new, £1050. 01953 884 305 or 07970 214 039 (Watton).

ICOM IC-706 MkII DSP, £475. Matching AT-180 auto ATU, £225. Matching Smart Tuner unused, £235. All boxed. Yaesu FT-757GX, all-mode, electronic keyer, £250. Kenwood LF-30A LPF, £25. TS-950 technical man, £20. Icom AT-150 auto ATU, £130. Kenwood filters YK88CI, £45. YG455CNI, £50, YG455CI, £50. Tokyo HL110V 144MHz amp 120W out, £100. MFJ-259B analyser, unused, £170. Pro-Am whips 10-15-17-12-20-80m, £75 the lot. 01953 884 305 or 07970 214 039 (Norfolk).

ICOM IC-7400 tcvr, new, not used, £980. MFJ super Hi-Q loop antenna, new, not used, £200. Buyer collects or pays carriage. Mick, G8AWV, 01252 870 861 (Yateley).
E-mail: map12@btinternet.com

INDEX QRP Plus, £250. FT-757GXII, FC-757AT, FP-757HD, vgc, £375. Collect or plus postage. Alan, M0BFU, 01253 731 558 (Lytham & St Annes).

KENWOOD TR-9000 2m SSB/CW/FM mobile tcvr, £120. Icom IC-551 50MHz SSB/CW/AM base station tcvr, £150. MFJ-1278 multimode data controller, £50. Mast, 26ft military grade pump-up, 8 sections weighs 21lb, £50. Carriage extra. 01243 861 578 (Bognor Regis).
E-mail: g3ijs@arrl.net

KENWOOD TS-440, box, man, no ATU, one owner, non-smoker, vgc, £325. 024 7646 2035 (Coventry).

LAKE DTR3-5 5W 80m CW tcvr kit with all the bits, £75. Yaesu SP-6 external speaker, exc accessory, £60. Yaesu FL-2010 10W linear amp (matches FT-290 MkI), £40. PAKRATT 232 multimode TNC, £35. ZX-GP3 vertical HF ant 20/15/10, £30. Miller rx ant, no tuner needed, £30. Welz SP15M SWR/pwr meter HF-150MHz, £25. Most boxed with mans and in exc cond. Rod, G0FBY, 01926 856 093 (Kenilworth).
E-mail: g0fby@thersgb.net

PROPERTY of G3MGF, who has Altzheimers. FT-101ZD, £140. Loads of bits, test equipment, SSTV. Phone or e-mail for list. M3ULY, 01453 832 725 (Stroud).
E-mail: chrisharmer@v21mail.co.uk

QTH near Taunton in Blackdown Hills AonB, 4 bed det 450 yr-old cottage, great character, double glazing, double garage, 40ft tower and beams. Full shack in 3rd bedroom, much gear if required, owner moving to Spain, so bargain, £350,000 F STC. G4HMG, QTHR, 01823 680 913 or 07879 447 331 (Taunton).
E-mail: john@g4hmg.freeserve.co.uk

SAILOR marine equipment T128, 76D, N210, N178, £50 together. Marconi Radar drive unit incorporating travelling-wave tube, £20. G0VIS, 01787 461 059 (Braintree).

SHACK clearance Heathkit HW101 with CW filter, HP23 PSU, SB600 spkr, man and spares, £150. R209 W/D rcvr 12V h/brew PSU, man, £50. IBM 558X computer, colour monitor, H/Packard printer, mouse , keyboard and floppy discs, £50. Buyer collects. G3MA, QTHR, 01452 539 519 (Gloucester).

SILENT key sale (G4CTO). FT-101 (early model) c/w Shure mic, BNOS 160W 2m linear amp. Collins R391/URR rcvr PacComm TNC-220. Tradipier TE-15 dip meter. Heath HM102 VSWR meter. 2m h/held (Kenwood TH-205E). Trio TR-9130 all-mode (2m). Autek antenna analyser (to 35MHz). AVO model 8. Datong multimode filter, model FL3. Gap antenna (40 - 10m). Ten-Tec Argosy II c/w PSU, mic. All open to offers, please phone for further details from G3ZYL, 01566 782 463 (Launceston).
E-mail: gordonbowhay@macace.co.uk

TIMEWAVE DSP-599ZX, as new, boxed with man, £200, including postage. VE7MM/G4EZG, QTHR.
E-mail: macgregor@clanmacgregor.net

TRIO TS-130S 100W HF SSB 80-10m, WARC, £250. Welz ATU, £40. SWR meter, £10. Datong FL3 audio filter, £40. Ten-Tec Triton II inc 160m tvtr and PSU (rx deaf), £50 or all for £350. Buyer collects or pays postage. 01626 888 886 (Dawlish).
E-mail: g4kpp@hotmail.com

VALVES! Several thousand, all types. Some new and boxed, £50 the lot. Eddystone 730/4 rcvr, 0.5 to 28MHz in 5 bands, gwo, immaculate case, man and cct, £90. G3NRU, QTHR, 01227 730 558 (Canterbury).

YAESU 1000-MP tcvr as new. Sale on behalf of silent key, £1300. 01743 341 167 (Shrewsbury).

YAESU FT-1000MP MkV with matching PSU, £1750. Yaesu SP-8 ext speaker, £80. Kenwood ATU AT-230, £120. All the above are boxed with all paperwork and are in mint cond. Heil HC5 mic, £35. 40ft military pump up mast with ground mount, £145. Job lot, £1950 ovno. Buyer to inspect and collect. 01900 810 382 or 07890 53900 (Cumbria).

YAESU FT-1000MPAC 100W in-built auto ATU, original boxes packaging, mic, man etc, 1998 model as new, sell for £1100 or P/X. WHY? HF tcvr + cash. GW4RLP, QTHR, 01286 675 264 (Caernarfon).

YAESU FT-817, only 3 months old c/w nicads, charger, whips, leather carry case and cigarette lighter DC lead, still in box, £475. 07836 584 460 (Paignton).

YAESU FT-847 tcvr, vgc, MD-100ABX mic, Lowe EP925 PSU c/w mans, boxed, £850. Buyer collects. G6MHU, QTHR, 01722 502 877 (Salisbury).

YAESU FT-847, boxed with man, £900. Sec s/mode 23A PSU, £50. Yaesu MD-1 desk mic, £30. 2m Butterfly aerial, £10. Triplexer, £35. G3LIV Isoterm interface, inc software, £60. AMD K6/2-400 computer, full multimedia, £180 or £1200 the lot. 01788 331 804 (Rugby).
E-mail: m0asd1@ntlworld.com

YUPITERU MVT-900EU multiband rcvr 0.53-2039MHz, FM, WFM, NAM, AM, LSB, USB, CW. 1000-memory, wall charger, Nicads, antenna , carry case, man, box, mint, £225 ovno. Kenwood YK-885N narrow SSB filter, solder type, mint, £30. G3ZTZ, QTHR, 01276 507 785 (Camberley).
E-mail: pete.howell@ntlworld.com

CONGRATULATIONS

50 YEARS 60 YEARS

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

50 years		*60 years*	
G3JVL	Mr M H Walters	RS6181	Mr R P Hope

WANTED

AMPLIFIER – HF. Alpha, Commander or QRO, must be in exc cond and working order, will consider mint Kenwood 922. 0161 860 6586 (Manchester).
E-mail: stepien@attglobal.net

ANY Racal or Watkins-Johnson rcvrs, parts and accessories wanted. Especially looking for a backlit RA1792, also a WJ-8888 (quad-8) and a HF multicoupler, prefer all in good working order, but anything considered. Can buy outright or have a quantity of Racal RA17 rcvrs for disposal if interested. G8WKA, QTHR, 01252 795 234 (Surrey).
E-mail: richardreich@aol.com

AR88 bandswitch wafers, original electronics 2.5mH RF chokes, Collins mech filter 455kHz IF 2.4kHz b/w plus sideband xtals, FT-241 surplus xtals centred around 460kHz. Any suitable components to complete the construction of the G2DAF rcvr. VC20 VHF module for the Trio R5000 rcvr. Ted, G8HLJ, QTHR, 0151 632 0614 (Hoylake, Wirral).

AR88 rcvr wanted. I am looking to buy a very fine example in excellent cosmetic condition for my own use. I am happy to pay top price and collect. A good home is waiting. G3YFG, QTHR, 01254 822 222 (Lancashire).
E-mail: g3yfg@btconnect.com

BC312 WWII rec. BC191 Tx and any associated equipment. Also literature and photos. G0LJS, QTHR, 01380 859 088 (Devizes).
E-mail: h.j.sims@bath.ac.uk

BUG keys, especially Vibroplex Lightning bug wanted for my small collection, by young CW-only operator. Danny, M0GMT, 01903 209 316 (Worthing).
E-mail: m0gmt@postmaster.co.uk

CAN anyone help in restoring my G3TSO 140W rig to its former glory by providing two MRF454 output transistors for the 140W PA, also a CA1723CT or MC1723G voltage bias regulator? All costs met in full. GM3AHR, 01333 350 580 (Bonny Bank).
E-mail: almarytom@talk21.com

EARLY valve and crystal wireless wanted, especially interested in early Marconi items. Also looking for good top end valve comms rcvr and early valve test equipment. G4ERU, 01202 510 400 (Bournemouth).

FT-847, IC-746 FT-920 or similar all-band all-mode tcvr up to £600, any cond, working. M0JWE. 0161 775 8444 (Irlam).

HELP regarding VHF folded dipoles' fabrication, no local sources. Small quantities for antenna experiments. Any UK source appreciated. Also info for Marconi 2022E generator, keyboard working, output dead. Des Walsh, EI5CD, 17 Owenabue Rise, Carrigaline, Eire, 00353 879 360 052 (Cork).
JRC optional boards for JST-135 tcvr. Particularly looking for CMF-78, ECSS unit, CMH-741, RS-232C interface, CCL-212, tone squelch unit. Would consider faulty rig at fair price if fitted with any of these boards. WHY? G3VYE, not QTHR, 024 7640 4460 (Coventry).
E-mail: g3vye@onetel.net.uk
MAINS transformer for Telequipment Serviscope type 51. GM3EWC, QTHR, 01224 310 179 (Aberdeen).
PYE dashmount W15 FM VHF Westminster multichannel, any band, working or not can have boards missing. Also want Pye Pocketfone rcvr PF9R working around 454-462MHz . Cash or exchange /PX from my Pye collection. John Cook, 01206 842 435 (Colchester).
E-mail: johnbryancook@hotmail.com
RACAL TA944C HF linear, dead or alive. Good quality solid-state HF signal generator. John, 01963 240 319 (Somerset).
SEM or similar HF no-transmit, tune indicator wanted. To sell, Comet duplexer. 01455 449 602 (Hickley).
SILENT key clearout or just not needed, I collect QSL cards for their historic interest and a research project, especially from periods before 1970. Can collect or arrange collection. 0113 269 3892 (Leeds).
E-mail: g4uzn@qsl.net
TWO boards missing form my Mimco Apollo rcvr, identities available. Have new Apollo wired cabinet, could exchange. Would consider purchase of Apollo in gwo. Also need service mans for Creed 9W Morse keyboard perforator and for GNT Morse transmitter 115M. G0VIS, 01787 461 059 (Braintree).
YAESU FT-101E accessories. FV-101 VFO, YC-601 digital readout unit, FTV-250 2m tvtr. All to match FT-101E please. GW0OUV, 01443 412 695 anytime (Mid-Glam).
YAESU FT-902DM, Yaesu FT-101ZD MkIII + FM, Kenwood TS-830S, must be in mint or exc cond. G0JNJ, 01625 429 737 (Macclesfield).
YAESU or similar ATU to match FT-901DM, must be in good cond. Also 50MHz band module for FT-726R. 01206 854 217 (Colchester).
E-mail: thomasharrison@supanet.com

Rallies & Events

2 MARCH 2003

18th RAINHAM RADIO RALLY - Rainham School for Girls, Derwent Way, Rainham, Kent. Exit M2 jn 4, on to A278, follow RRR arrows. OT 9.30/10am, £2, under-14s free. TI on S22, TS, SIG, C. Jean, G1DLL, 01634 360 895 or secretary@the-brats.net

8 MARCH 2003

CRYSTAL PALACE R & EC Spring Radio Fair - St John's Hall, Sylvan Road, SE19. OT 10.30am, £1 (includes one free drink), under 16s free. C, CP free, tools. Bob, G3OOU, 01737 552 170. [www.members.aol.com/rfcburns]
LAGAN VALLEY ARS Annual Rally & Hamfest - Conference Centre, Lagan Valley Hospital, Hillsborough Road, Lisburn. OT 12 noon. TI on S22. Martin, MI3TIN, 07986 171 256 or martinsailor@hotmail.com

9 MARCH 2003

9th WEST WALES Amateur Radio & Computer Rally - Penparcau School, Aberystwyth, as part of National Science Week. OT 10am, £1. CP, DF, TS, GB4FUN, B&B, SIG, motorcycle display, C, TI on S22. Ray, GW7AGG, 01686 628 778, fax 01686 621 880, mwmg01@aber.ac.uk
BLACKMORE VALE ARS Valve Day - Youth Club Hall, Coppice Street, Shaftesbury, Dorset. OT 10am, entry free. LEC, demonstrations, displays, test gear, TS, C, Internet resource hobby groups, BYLARA, BVARS and YARC. Tony, 01258 860 741.
LIVINGSTON & DARS Junk Sale - Crofthead Centre, Dedridge, Livingston. OT 10.30am, £3, £2.50 children and OAP (inc free tea/coffee/juice and filled roll). TS, B&B, C, MT, MA, TI on S22, WIN. Billy, MM0WKJ, 0131 475 7242, b.jenkins@indigovision.com [http://livingstonars.users.btopenworld.com/]
WYTHALL RC Radio & Computer Rally - Wythall Park, Silver Street, Wythall, on A435, 2 miles jn 3, M42. OT 10am, £1.50. TS, LB, C, B&B, free park-&-ride, TI on S22. Martin, G8VXX, 0121 474 2077 (OH), or enquiries@wrcrally.co.uk [www.wrcrally.co.uk]

16 MARCH 2003

BOURNEMOUTH RS 15th Annual Sale - Kinson Community Association Centre, Pelhams Park, Millhams Road, Kinson. OT 10am, £1. TI on S22, TS, B&B, SIG, C. Olive & Frank, G0GOX, 01202 887 721.
NORBRECK Amateur Radio, Electronics & Computing Exhibition - Norbreck Castle Exhibition Centre, Blackpool. TS, B&B, CP free, DF. TI on S22. MT. Peter, G6CGF, 0151 630 5790.

22 MARCH 2003

SOUTH NORMANTON & DARC and G QRP CLUB Junction 28 Mini-Convention - Village Hall Community Centre, South Normanton, 5 minutes from jn 28 of M1 and A38. OT 10am, £1. TS, SIG, LEC, B&B. Duncan, G4DFV, 01623 465 443 or pentode@ntlworld.com

29 MARCH 2003

WREXHAM ARS Special Event Station GB2WSF - part of Wrexham Science Festival's 'Scientriffic' event. 10am - 5pm. HF/VHFD/data/ATV, GB4FUN. [www.qsl.net/gb2wsf]

30 MARCH 2003

TIVERTON (Mid Devon) Radio Rally - Pannier Market, Tiverton. OT 10am, £1. TS, B&B, C, CP free, TS, B&B. 07815 439 432 or club@g4tsw.freeserve.co.uk [www.g4tsw.freeserve.co.uk]

6 APRIL 2003

LOUGH ERNE ARC 22nd Enniskillen Amateur Radio Show - Killyhevlin Hotel. OT 12 noon, £3 inc raffle ticket. CP, B&B (no fee), TS, LB, C, WIN. Herbie, GI6JPO, 028 6638 7761, h.graham@bigfoot.com
RIPON & DARS 46th Northern Mobile Rally - Sports Hall, Harrogate Ladies' College. OT 10.30am, £2.50. Gerald, G0UFI, 01765 640 695 or webmaster@harrogaterally.co.uk. [www.harrogaterally.co.uk]

13 APRIL 2003

CAMBRIDGESHIRE REPEATER GROUP Annual Rally - Bottisham Village College, Bottisham, 6 miles east of Cambridge. Access via A14 and A1303. OT 10.30am, £1.50. TS, B&B, CBS, CP, C, TI on S22. Paul, G0LUC, 01462 683 574, g0luc@btinternet.com [www.gb3pi.org.uk]

25 - 27 APRIL 2003

SCANDINAVIAN HAMVENTION 2003 - Gothenburg, Sweden. Exhibition, TS, FM, B&B, ham dinner, ladies' programme, AGM of Swedish Radio Association. [www.scandiham.com]

26 APRIL 2003

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

27 APRIL 2003

ALDRIDGE & BARR BEACON ARC 4th Annual Radio & Electrical Sale - Aldridge Community Centre, Anchor Meadow, Middlemore Lane, Aldridge. OT 10.30am, CP, C. Doug, G4LQY, 01543 571 269.
ANDOVER RAC Radio & Computer Spring Boot Sale - Village Hall, Wildhern, 5km N of Andover. OT 10am. TI on S22, CP, TS, CBS, MA, C, DF. Terry, G8ALR, 01980 629 346 or aracnews@ntlworld.com
WEST LONDON RADIO & ELECTRONICS RALLY - Kempton Park racecourse, Sunbury-on-Thames, Middx. £3.50 (£3 after midday),

SILENT KEYS

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

G0BNS	Mr F C George	01/01/03
G0JVZ	Mr A E Capewell	02/01/03
G0KTZ	Mr P G Pearce	10/01/03
G0MTO	Mr D Walton	13/12/02
G0RWX	Mr J Butcher	
G0TIB	Mrs L J Everitt	14/06/02
G0YEF	Mr W Mister	16/10/02
G3BJD	Mr J I Colebrook	05/01/03
G3ETY	Mr G Lang	
G3FRN	Mr G N Myatt	25/01/03
G3FVC	Mr E Palmer	26/12/02
G3JLB	Mr L W Belger	06/12/02
G3JON	Mr J Bell	08/01/03
G3KEU	Mr T Leighfield	
G3KSK	Mr J Philips	13/01/03
G3OJE	Mr M Bass	06/01/03
G4KWR	Mr E Soltysik	24/12/02
G4RBE	Mr J W Harvey	03/09/02
G5TB	Mr T J Brown	09/02
G6IMM	Mr P Woolley	18/01/03
GM3GJB	Mr W Macfarlan	01/01/03
GW4IGQ	Mr G R Taylor	09/01/03
M0CVV	Mr G Rowntree	15/01/03
M3RJS	Mr R J S Spooner	01/12/02
M5EET	Mr T Foxcroft	16/12/02
RS18994	Mr H T Mason	30/10/02
RS170853	Mr J C C Scott	

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

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KEY

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

under 16s free. RSGB, TS, MT (plus free entry), CP for 2000, DF, C, LB, Ti on 2m, B&B, external seating & picnic areas. Paul, M0CJX, 01737 279 108, m0cjx@lineone.net

4 MAY 2003

SOUTH YORKSHIRE REPEATER GROUP Spring Great Northern Hamfest - Metrodome Leisure Complex, Queen's Road, Barnsley. Less than 2 miles from jn 37 M1. Five minutes' walk from train and bus station (follow the brown 'Metrodome' signs from all directions). OT 10am, £2.50. DF, TS, SIG, B&B. Ernie, G4LUE, 01226 716 339 or 07787 546 515.

5 MAY 2003

DARTMOOR RC Dartmoor Radio Rally - Pannier Market, Tavistock, Devon. OT 10.15/10.30am. TS, B&B, C, CP within five minutes' walk, DF, TI on S22, picnics - bring family. Ron, G7LLG, 01822 852 586.
MID-CHESHIRE ARS Rally - Civic Hall, Winsford. OT 10.30/11am. C, CP. David, G4XUV, 01606 77787.

16 - 18 MAY 2003

52nd DAYTON HAMVENTION - Dayton, Ohio, USA. [www.hamvention.org]

18 MAY 2003

MIDLAND ARS Drayton Manor Radio & Computer Rally - Drayton Manor Park, Fazeley, Tamworth, Staffs, on A4091 near jn 9 & 10 of M42. OT 10am. TS in 3 marquees, FM, SIG, CBS, clubs. Norman, G8BHE, 0121 422 9787 or 07730 132 726. [http://midamradio.members.beeb.net]

31 MAY / 1 JUNE 2003

LONDON COMMUNICATION & COMPUTER SHOW - *** **New venue** *** - Stevenage Leisure Centre, Lytton Way, Stevenage. One minute's walk from mainline station. OT 9.45/10am. TS, B&B, TI (2m & 70cm), CP close by, SIG, MT, MA, LEC, LB, C, DF. RadioSport 01923 893 929. [www.radiosport.co.uk]

1 JUNE 2003

SPALDING & DARS Annual Rally - New venue - Ray, M0CTM, 01775 711 953, or John, G4NBR, 07946 302 815. [www.sdars. org.uk]
WEST MANCHESTER RC 7th Red Rose QRP Festival - Les, G4HZJ, 01942 870 634, g4hzj1@ntlworld.com

8 JUNE 2003

NUNSFIELD HOUSE ARG 34th Elvaston Castle National Radio Rally - Les, G4CWD, 01332 559 965 or secretary@elvastonrally.co.uk
YEOVIL & DARC 19th QRP Convention - Derek, M0WOB, 01935 414 452, m0wob@tiscali.co.uk

15 JUNE 2003

NEWBURY & DARS Amateur Radio Boot Sale - [www.nadars.org.uk]

22 JUNE 2003

EPSOM RADIO & ELECTRONICS FAIR - Paul, M0CJX, m0cjx@lineone.net [www.epsomrally.co.uk]

29 JUNE 2003

BRISTOL RSGB GROUP 46th Longleat Rally - *** **CANCELLED** ***.

12 JULY 2003

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

20 JULY 2003

LINCOLN SWC Hamfest - New venue - John, G8VGF, 01522 525 760.
McMICHAEL RALLY & BOOT SALE

27 JULY 2003

COLCHESTER RA Amateur Radio Rally & Computer Fair - Gary, 01621 818 620 or James, 01255 242 748. E-mail cra2003@garycavie.com or cra2003@mcginty.net
RUGBY ATS Rally - *** **CANCELLED** *** Tony, G0OLS, thumph3426@aol.com

8 AUGUST 2003

COCKENZIE & PORT SETON ARC 10th Annual Radio Junk Night - Bob, GM4UYZ, 01875 811 723 or bob.gm4uyz@btinternet.com

10 AUGUST 2003

FLIGHT REFUELLING ARS Hamfest - Mike, M0MJS, 01202 883 479 or hamfest@frars.org.uk

24 AUGUST 2003

TORBAY ARS Communications Fair - Anna, anna.cok@btinternet.com

25 AUGUST 2003

HUNTINGDONSHIRE ARS Annual Bank Holiday Monday Rally - Peter, M5ABN, 01480 457 347, or peteherbert@aol.com

31 AUGUST 2003

TELFORD & DARS 2003 Telford Rally - mstreet@g3jkx.freeserve.co.uk

26 OCTOBER 2003

GALASHIELS & DARS Annual Rally - Jim, GM7LUN, 01896 850 245.

27 OCTOBER 2003

WEST LONDON RADIO & ELECTRONICS RALLY - Paul, M0CJX, 01737 279 108, m0cjx@lineone.net

2 NOVEMBER 2003

SOUTH YORKSHIRE REPEATER GROUP 13th Great Northern Hamfest - Ernie, G4LUE, 01226 716 339 or 07787 546 515.

GB calls

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.

Will organisers of special event stations please ensure that they lodge plenty of envelopes with their sub-manager?

1 Mar GB0HGC: Hopeless Guiders Camp. Llandinam, Powys. LH (GW3FXI)
4 Mar GB6DB: Dam Buster. Moston, Manchester. LH2 (G0TOG)
7 Mar GB4AOS: Advancement of Science. Dinas Powis. TLHV27 (GW4XKE)
GB5BDS: Bishop David Shepherd. Southport. 2P (G7LFC)
8 Mar GB4NSW: National Science Week. Swadlincote, Derbyshire. LH2 (G4CRT)
10 Mar GB2LOW: Low Power Operation. Sherbourne Dorset. (G3CQR)
14 Mar GB4YOU: Youlbury Scout & Guide Radio. Oxford. (G0REL)
GB4YOU: Youlbury Scout & Guide Radio. Oxford. (G0RJX)
22 Mar GB0LOW: Low Power Operation. Alfreton, Derbyshire. LH27 (G0OKD)

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Readers are also reminded that the use of radio transmission and reception equipment (including scanning) is subject to licencing and the erection of external aerials may be subject to local authority planning regulations.

Helplines FOR MEMBERS

● Dick, GM3AKM, is looking for a circuit diagram for the **BNOS Power Unit model 12/30E**, and would be most grateful if someone could provide a photocopy. Postage will gladly be refunded. GM3AKM, tel: 0131 315 4814 or e-mail: gm3akm@blueyonder.co.uk

● Stan, G4DPV, is seeking ICs type **MC1495L** and **MC1595**. Should anyone have surplus amounts of these, he would pay any costs and postage. G4DPV, QTHR. Tel:01782 544 566 or e-mail: stan@madmart.demon.co.uk

● B J Mitchell, G3HJK, needs the SVC input circuitry for the **Advance Signal Generator model P1** (100kHz - 100MHz AM/CW). Photocopy expenses reimbursed by return, and any help would be appreciated. G3HJK, QTHR.

● John, GM0WRR, requires information on or a circuit diagram of the **KW1000 linear amplifier**. GM0WRR, QTHR. E-mail: johngm0wrr@ntlworld.com

● Alan, G0AXA, needs a supplier of **'waterslide' transfers** for labelling homebrewed amateur radio equipment. Alternatively, is anyone willing to sell any spare sheets of these? Alan has finally exhausted his own ancient stock and needs some more to finish a couple of projects. G0AXA, QTHR. Tel: 020 8644 0126 or e-mail: alanhargrave@thersgb.net

● Tom, GM3DIE, is looking for a circuit diagram for a **Transipack test cage power supply type 306/15**. GM3DIE, QTHR. Tel: 0131 669 1416.

● Snowy, G0HZE, has a **Yaesu FT-227RB** which counts down in 25kHz / 50kHz steps but will not count up. The method of channel changing is via interrupter disc and the photocells appear to be working. Any advice or help would be greatly appreciated. Reasonable expenses will, of course, be defrayed. G0HZE, QTHR. Tel: 01733 342 439 or e-mail: snowy.howell@btinternet.com

● David, G4CWB, is searching for a copy of an out-of-print ARRL book entitled ***Solid State Design for the Radio Amateur***, by Wes Hayward and Doug DeMaw. G4CWB, QTHR. Tel: 01423 504 373 or e-mail: G4CWB@qsl.net.

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CLASSIFIED continued

BUSINESS CARD SECTION

the last WORD

Antenna Topics

What a brilliant idea! *Antenna Topics*, reviewed in the January *RadCom*, turned up as a Christmas present from my XYL. Apart from being a fitting tribute to Pat Hawker's diligence in producing 'Technical Topics' since 1958, it brings together the results of the efforts to produce the 'best' antenna for a given situation, by many of the world's most successful experimenters. It will occupy my reading for a long time and I would recommend it to anyone trying to turn a length of wire into an efficient radiator. Congratulations to all concerned in its production.

Peter Ball, G3HQT

Why QRT?

I am one of the 'silent keys' referred to by G4OWY ('The Last Word' January 2003). My explanation isn't very deep. Quite simply there are not enough hours in one's lifetime to enjoy all the fascinating activities or hobbies available to us. Initially, radio was an obsession during which time I built all my own gear, entered contests and operated at every opportunity. Now I try to fit in listening to classical music, oil painting, model railways / steam rallies / airshows, travel / sightseeing and digital photography. These are in addition to running my own (60 hours per week) business, gardening, DIY house maintenance, socialising with a wide circle of friends and large family, neighbourhood watch co-ordinating and watching the occasional TV programme. Amateur radio, I'm afraid, has had more than its share, but I keep the licence going 'just in case'.

Chris Cory, T Eng, G3MEV

Time to Rethink GB Prefix?

Your callsign is supposed to tell others where you are. As G3TXF I am in England. As GM3TXF I would be in Scotland. Simple enough: two different prefixes indicating two different countries (or 'entities' in DXCC-speak). So why do we continue to use the ever-confusing GB prefix for special calls throughout the seven separate DXCC countries [G, GD, GI, GJ, GM, GU, GW] that make up the UK? DXers well know the irritation of working, say, a 'KL7' (prefix for Alaska) station only to find that he's in fact somewhere on the East Coast of the USA. Similarly, anyone working a GB station cannot immediately identify the DXCC country from the call. The use of GB-prefixed special calls by DXpeditioners, island operators or other special activities from any one of the seven DXCC countries is both illogical and unnecessarily confusing. Yes, keep GB as a special prefix for, say, England, but use other special prefixes for the other 'countries' in the UK. We're lucky to be one of the few places in the world to have three complete prefix-allocations (2, G and M). This gives plenty of scope in terms of available prefixes. It seems daft to continue using GB, when a non-confusing 'special prefix' could so easily be made available for each of our seven different DXCC countries.

Nigel Cawthorne, G3TXF

PLT Warning

Hilary Claytonsmith's article (*RadCom* February 2003) gives a warning of the horrors of PLT, but there's an aspect that I don't think she has covered. A few years ago I asked a friend who was a yachtsman and a radio amateur, to listen in the 1.6 - 1.8MHz part of the spectrum when he was in the middle of the North Sea. He reported hearing, at night, blobs of unintelligible random noise spaced every 10kHz. I predicted that he would hear them and I knew that they were from cordless phones on shore. Individually these would be quite inaudible a hundred miles offshore, but if you add up the effect of millions of them received via the skywave, the noise is enough to pollute a wide area.

This shows that even if legislation were introduced to control the free-field radiated emission from a single PLT injection test site, to keep the noise level low enough locally, the sum total of all such emissions from hundreds of thousands of PLT injection sites over a wide area could collectively raise the skywave noise level beyond acceptable limits.

Control over individual emission levels is insufficient. We actually need to control the total amount of RF noise power leaking up into the sky, summed up over the whole country. Take a guess at the upward leakage power per PLT node per kHz, then multiply by the total number of PLT nodes, and the result is quite frightening.

Peter Martinez, G3PLX

[Hilary Claytonsmith comments: Peter is right to raise this. Radio users are well aware of cumulative effects (mathematical modelling has been done) but persuading the Commission is another matter.]

Lynch Says 'Buyer Beware'

It isn't often I formally write to the RSGB but after reading letters recently printed from Derek, G0OEW, and Trev, G2KF, I thought I should throw my two-penny worth in. Almost on a weekly basis we receive calls from upset fellow radio amateurs complaining of either non-arrival or non working goods ordered from private sellers via the Internet or advertised in the 'small ads'.

The situation has got remarkably worse over the last two years and I can only stress extreme caution must be taken before parting with any money / goods. There are many people out there who are dishonest and will knowingly take your money with no intention of sending you any goods whatsoever. Don't think that because they are licensed (and even listed in a callbook) that they are trustworthy.

Only recently we supplied an IC-7400 to a reasonably well-known radio amateur (with whom we have done business before) who paid by cheque. After it bounced, he almost single-handedly rewrote the book of excuses of why we still hadn't received payment some four months later. He finally paid, but spoilt the trust we have for others when paying by cheque over the amount of a banker's guarantee card. In the interim he even had the cheek to write how excellent the rig was, together with our services, on the Internet Newsgroups!

As a 'safe' alternative, we still offer our trusted 'sale or return' service, offering sellers of equipment the opportunity of getting the item professionally valued, collected and sold on to the third party at no risk to the seller. Because we are able to offer finance, trade-in and warranty, we are usually able to achieve a higher amount for the customer than that of a direct private sale. The Internet may well have opened up a wonderful medium for inter-dealings world-wide but it has also unearthed a can of worms where people regularly get ripped off. Please tread very carefully.

Martin Lynch, G4HKS, for ML&S Martin Lynch & Sons

[When buying from the Members' Ads it is always recommended to try the equipment before buying if at all possible, or to ask a third party to test it on your behalf. Payment should preferably be by cash at the same time as the equipment is exchanged, or if by cheque you are recommended to wait until the cheque has cleared before releasing the equipment - *Ed.*]

Planning Problems Solved

Recently I came a bit unstuck when the local authority wrote to me after after having a complaint from a neighbour. The antenna in question is a Cushcraft 3-ele tribander mounted on a pump-up mast at 3m (down) and approx 8m (up) and is only raised when in use (Sunday afternoons). The letter stated that I had 30 days to apply for planning permission before enforcement action was taken. I rang the RSGB for the planning permission booklet which was free (as I'm a member) and also contacted Victor Bear, GW3RME, who before retirement was the chief architect for the local authority. He

gave me a huge amount of information and suggested I ring the planners. They stated quite categorically that any erection over 3m in height needed planning permission. At this I pointed out that under town and country planning law there are automatic permissions which should be granted in my case. I was told that this was not the case and I would have to apply for planning permission. I then asked to speak to someone who knew about planning and after some argument was put on to the chief planning officer. I explained that my mast, when raised, is below the ridge of my house, is not in front of any wall fronting a public highway and is more than 2m from the boundary of my property. At this he very nearly apologised but did say I could leave the mast as it was, and at my request he confirmed this in writing.

Without the information supplied to me by the RSGB and by my friend GW3RME I would have had the stress and cost of applying for planning permission which I didn't need. I advise any reader who has problems with planners to contact the RSGB and get as much information as possible. Question the planners why you need permission and get them to be specific, you may be OK.

Leigh Routledge, MW0KIK

Incentive to Upgrade

The letter from Joe, GJ0NYG, in the January *RadCom* implies that there is little incentive for a Foundation Licensee to upgrade. On the contrary, they are only too keen to upgrade, but the problem is that there are very few amateurs who are willing to run Intermediate classes to teach them. The first year of the Foundation licence has highlighted the difficulties that many clubs have in getting any volunteers to run Foundation classes. The RSGB website shows that London with a population of 7.5 million has just three courses. We have lost most of the pool of RAE teachers we had back in the 1980s and they have not been replaced. I have serious doubts whether the majority of clubs will be capable of teaching to the old RAE level in addition to running courses for Foundation and Intermediate.

We should perhaps consider if we really need three grades of license. The new Intermediate course teaches far more about practical amateur radio than the old RAE ever did and this should be all that is required for a Full licence. If we set the Full licence requirements too high for local clubs to teach, future generations of amateurs will be stuck at 50 watts output.

Trevor Hawkins, M5AKA

New Calls for All?

I cannot believe that the letter from GM6MEN in the January issue is meant to be taken seriously. I hereby indicate my very strong disapproval of the idea. Like any other amateur who has been active on the bands for more than a short time, my callsign and possibly my first name are well known to many other amateurs, as theirs are to me. Offhand, I cannot think of more than a dozen whose surname I know, and most of those are friends for reasons other than amateur radio. In other words, an amateur is a callsign and a 'handle': does GM6MEN really expect me to start again from scratch, wasting most of my time trying to connect new callsigns with known personalities? How would he like it if he were told that as from some date in 2003 he must be called, say, Sandy Macdonald instead of the name with which he signs his letter?

No, sir. When the roll is called up yonder, I want still to be

Yours faithfully, G3EFS (Bill)

. . . Change our callsigns indeed, never! I would assume that he must be the only person who would be willing to do this, I certainly hope he is. As for his suggestion of being 'snubbed' and insulted by some amateurs for having a class 'B' callsign I can safely say that I have never experienced this. There will always be a small minority of nasty people who will deride others, it is best not to get a complex and just get on with it!

Also Joe Bette-Bennet, GJ0NYG, seems to think that Foundation Licence holders have been 'given' their callsigns. Well, I wish that I had been given the same opportunity as them in the mid 1960s. I would have enjoyed this wonderful hobby for 20 extra years if I had.

'Upward and onward' is a good motto!

Stan Wilde, G1YGJ (and proud of it!)

. . . Whilst I understand the reason for Paul's suggestion, I really can't go along with it! When on the air I do not discriminate between 'A' and 'B' or any other class of licence, since we all have our particular strengths and weaknesses. I would object most strongly to any attempt to change my callsign, which I have held for 43 years and is as personal to me as my actual name. Sorry Paul – no way, unlike you I'm not prepared to give up my cherished callsign!

Mike Dixon, G3PFR

. . . Change all callsigns? After waiting years to get my personalised vehicle registration? No thank you!

Ian Swan, G3MNS

[*RadCom* received a very large postbag on this subject, but with not one letter agreeing with the view put forward by Paul Thompson, GM6MEN - *Ed*.]

Letters published in 'The Last Word' do not necessarily reflect RSGB policy. It is a condition of publication that all letters may be edited for grammar, length and / or clarity.

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MFJ-1702C	2-way coax switch + ground	£28.95	A
MFJ-1702CN	2-way coax switch N-type	£36.95	B
MFJ-1704	4-way coax switch SO-239	£69.95	B
MFJ-1704N	4-way coax switch N-type	£79.95	B
MFJ-1701	6-way coax switch SO-239	£52.95	B

REVEX — *S20* — These switches are well engineered and sold in large quantities to the commercial market

S20	2-way coax switch 1kW SO-239	£32.95	B
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ROTATORS

CREATE — All require 7-core control cable. *MC-2* Optional lower mast clamps (if needed)

RC5-1	Medium duty rotator	£349.95	C
RC5-3	Medium duty rotator with presets	£449.95	C
RC-5A-3	Heavy duty with variable presets	£649.95	C
MC-2	Optional lower mast clamps	£59.95	B

hy-gain — *AR-40X.* Designed for light VHF/UHF antennas, c/w mast clamps Control cable not provided.

AR-40X	Lightweight with mast clamps 5-core	£299.95	C
CD-45IIX	Light-med rotator 8-core cable	£425.95	C
HAM-IVX	Medium duty rotator 8-core cable	£599.95	C
T2XX	Tailtwister med-hvy 8-core cable	£699.95	C
MS-LD	Lower mast clamps for CD-45IIX	£35.95	B
MS-HD	Lower mast clamps for HAM-IVX/T2XX	£89.95	B

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AVAIR — *AV-600.* VSWR/Pwr meter, reads RMS & PEP covers 1.8-525MHz in two ranges.

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AV-40	X-needle VSWR/PWR 140-525MHz	£39.95	B
AV-200	VSWR/PWR 1.8-200MHz	£49.95	B
AV-400	VSWR/PWR 140-525MHz	£49.95	B
AV-600	VSWR/PWR 1.8-525MHz	£69.95	B

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W-420	VSWR/PWR 118-530MHz	£49.95	B
W-620	VSWR/PWR 1.6-530MHz	£89.95	B

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MFJ — *MFJ-269.* Analyser also frequency counter, resistance meter and RF generator.

MFJ-269	HF/VHF/UHF digital analyser	£349.95	B
MFJ-259B	HF/VHF digital analyser	£269.95	B
MFJ-39C	Carry case for MFJ-269	£26.95	A
MFJ-29C	Soft case for MFJ-259B	£29.95	A

KURANISHI — *BR-200.* Antenna analyser 1.8-170MHz with digital and analogue dislays.

BR-200	HF/VHF digital analyser	£329.95	B
BR-400	VHF/UHF digital analyser	£399.95	C

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WATSON — All frequency counters supplied with internal NiCad's, charger and antenna.

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FC-130	Frequency counter 1MHz-3GHz	£79.95	B

OPTOELECTRONICS — *Xplorer.* 2002 Version also with reaction tune & 500 memories

Xplorer	Freq. cnter / CTCSS/DTMF decode	£849.95	B
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Scout	Freq. finder 10MHz-1.4GHz	£379.95	B
Mini-Scout	Freq. finder (no memories)	£199.95	B
Micro-Counter	Micro freq. counter 10MHz-1.2GHz	£119.95	B
Cub	Mini counter 1-2.8GHz	£134.95	B
N-100	FM notch filter 88-108MHz	£99.95	B
TA-100S	Telescopic whip BNC	£14.95	A
DB-32	VHF/UHF mini rubber duck BNC	£29.95	A
RD-27	Helical antenna 26-150MHz BNC	£33.95	A
RD-50	Helical antenna 50-54MHz BNC	£23.95	A
RD-150	Helical antenna 144-165MHz BNC	£21.95	A
RD-440	Helical antenna 440-480MHz BNC	£21.95	A
RD-800	Helical antenna 500-1000MHz BNC	£34.95	A
TMC-100	Antenna for Micro-counter	£9.95	A
CC-30	Leatherette case for any cntr	£14.95	A
CC-40	Hard leather case for Scout&Cub	£14.95	A

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RIGblaster Plus	Data interface 8-pin, software & cables	£139.95	B
RIGblaster M8	Data interface 8-pin, software & cables	£109.95	B
Rigblaster RJ	Data interface RJ45, software & cables	£109.95	B
RIGblaster nomic8P	Data interface 8-pin, software & cables	£62.95	B
RIGblaster nomicRJ	Data interface RJ, software & cables	£62.95	B
M-4 Adaptor	Adapts nomic units to 4-pin output	£12.95	A
M-FT100 Adaptor	Adapts all units to FT100 input	£17.95	A
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WATSON — *W-GMP* — All Morse keys made of brass and on wooden bases. Spring tension & gaps adjustable.

W-GMP	Small brass Morse key on base	£29.95	A
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W-GMC	Standard Extra Morse key on base	£34.95	B
W-GMV	Deluxe brass Morse key on base	£39.95	B
W-CRI	Paddle key brass on base	£46.95	B

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KSKA	Standard brass straight Morse key	£62.50	B
KSPA	Single paddle brass Morse key	£65.50	B
KTPA	Twin paddle brass Morse key	£76.50	B
EK-4M	Electronic keyer with 4 mems	£73.50	B
KMOA	Morse practice oscillator	£19.50	A
KMT	Morse tutor battery operated	£49.99	B

Most products are also available in kit form.

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LDG — *RT-11.* Low cost water resistant remote Auto ATU. Built-in Icom & Alinco interconnectivity.

AT-11MP Asm	Desktop Auto ATU HF 5-150W	£269.95	B
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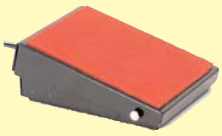

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W-40SM	40A 13.8V DC SM pwr supply	£149.95	C
W-20SM	22A 13.8V DC SM pwr supply	£69.95	B
SEC-1223	23A 13.8V DC SM pwr supply	£99.95	B
W-5A	5A 13.8V DC pwr supply	£29.95	B
W-30AM	30A 0-15V DC pwr supply	£119.95	C

DIAMOND ANTENNA — *GZV-4000.* 40A Switch-mode variable power supply

GZV-4000	40A 5-15V DC S/M PSU	£159.95	C
GZV-2500	25A 5-15V DC S/M PSU	£119.95	C
GSV-3000	30A 1-15V DC PSU	£149.95	C

LOWE — Switch-mode 40A 3-15V DC PSU with analogue meters.

SPS-8400	40A 3-15V DC S/M PSU	£99.95	C

WEST MOUNTAIN — *RIGRUNNER 4012* Distribution board with 2m cable + connectors

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RIGrunner 4008	13.8V DC 8-way	£89.95	B
RIGrunner 4012	13.8V DC 12-way	£109.95	B
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PC-120	20A 8-15V DC pwr supply	£179.95	C
PT-135	35A 13.5V DC pwr supply	£169.95	C
SP-135	35A 13.5V DC SM pwr supply	£149.95	C
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17-0576	Earpiece 8 Ohms 3.5mm mono	**£0.95**	A
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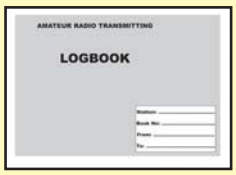

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