Practical Wireless
PW
amateur radio & more!

icom IC-2725

...a very capable transceiver

March 2003
£2.85
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WATERS & STANTON

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WEB ORDERING
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YAESU NEW FT-897

£1099 C

A 100W HF rig plus 2m and 70cms (50W/20W) with provisions for running from internal optional Ni-MH pack at 20W output. Go anywhere and operate portable at realistic power levels. Put in car as self-powered radio for mobile use. Use as base station from 13.8V at full power. The possibilities and fun are endless. And 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 for 2003.

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 PDA & QSL CARDS

PDA-188 OREGON SCIENTIFC

This great PDA allows you to enter your daily schedule information. It has 3 telephone directories, it can also be used as a calculator, currency converter, built-in calendar and has a built-in clock. Data can be transferred to a PC via a serial link.

Comes with case, stylus, batteries, serial cable, CD-ROM and instructions.

**Display 192-206 characters *Touch sensitive screen *Memory 384KB *2xCR2032 Batts *73.7x114x11.5mm*86g*

£19.95 A

BLANK QSL CARDS

These cards are supplied in packets of 100.

£7.95 A

HF TRANSCEIVERS

ICOM

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

IC-756 PRO II	160-6m 100W 12V	£2495.95	C
IC-7400	160-2m 100W 12V	£1449.95	C
IC-706 IIG DSP	160m-70cm 100W 12V	£799.95	C
IC-718	160-10m 100W 12V	£599.95	C
SP-20	Speaker with filters	£164.95	B
SM-8	Base microphone	£129.95	B
SM-20	Base microphone	£144.95	B
PS-125	Icom 25A PSU	£295.95	C

YAESU

FT-1000 Field

FT-1000 mkV	160-10m 200W 230V	£2799.95	C
FT-1000 Field	160-10m 100W 230V	£2199.95	C
VL-1000 Quadra	HF-6m 1kW linear	£3799.00	D
FTV-1000	6m transverter List:~~£799~~	£499.95	C
MD-200A8X	Desk microphone	£249.95	B
MD-100A8X	Desk microphone	£110.00	B
FT-920AF	160-6m 100W 12V	£1099.95	C
FT-897 NEW	HF/6m/2m/70cm 100W	£1099.00	C
FT-847	160-70cm 100W 12V	£1199.95	C
FT-817	160-70cm 5W Batt.	£595.95	B
FT-840	160-10m 100W 12V	£499.95	B

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	£1449.00	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

VHF/UHF TRANSCEIVERS

ICOM

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

IC-910H	2m/70cm All modes tcvr	£1149.00	C
IC-910X	2m/70cm/23cm All modes tcvr	£1249.00	C
IC-2725E NEW	2m/70cm FM mobile	£309.00	C
OPC-1156	Separation cable 3.5m	£24.99	A
IC-207H	2m/70cm 50/35W mobile	£279.00	C
OPC-600	Separation cable 3.5m	£32.99	A
OPC-601	Separation cable 7m	£39.99	A
IC-2100	2m FM mobile 55W	£229.00	C

YAESU

FT-8900R
FM Quad band transceiver

FT-8900R NEW	29/50/144/430MHz mobile	£399.00	C
FT-7100	2m/70cm FM mobile	£329.00	C
YSK-7100	Separation lead kit	£39.99	A
FT-1500M	2m 50W mobile List:~~£179~~	£159.00	B

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

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
LC-152A	Leatherette carry case	£16.99	A
SP-13	Earphone	£5.87	A

YAESU

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

VX-7R NEW	6m/2m/70cm Handheld black/ silver	£329.00	B
VX-1R	2m/70cm+TV/AM audio	£149.00	B
VX-150	2m + NiCd & charger	£109.00	B
VX-110	2m + NiCd & charger	£99.00	B
ADMS-1E	Software for VX-1R	£44.95	B
CSC-88	Soft case for VX-7R	£11.95	A
CSC-71	Soft case for VX-1R	£11.95	A

KENWOOD

TH-D7E
Data communicator with built-in TNC

TH-D7E	2m/70cm with data	£319.00	B
TH-F7E	2m/70cm with wideband	£259.00	B
TH-G71E	2m/70cm FM Handie	£199.00	B
TH-22EE	2m+NiCd & EU charger	£139.00	B
SC-40 (D7/G71)	Soft case / strap	£15.95	A
SC-45 (G71)	Soft case	£19.95	A
SC-49 (D7)	Leather case / strap	£19.95	A

LINEAR AMPLIFIERS

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	£799.00	E
AL811 HXCE	160-10m 800W PEP	£989.00	E
AL800 XCE	160-10m 1250W PEP	£1995.00	E
AL1200 XCE	160-10m 1500W PEP	£2695.00	E
TOKYO HY-POWER HL-50B	HF+50MHz 50W amplifier	£265.95	B

POWER SUPPLIES

WATSON

W-25SM
25A Switch-mode power supply

W-25SM	25A 13.8V DC power supply	£79.95	C
W-25AM	25A 0-15V DC power supply	£89.95	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

WEST MOUNTAIN

RIGRUNNER 4012
Distribution board with 2m cable + connectors

RIGrunner 4005	13.8V DC 5-way	£59.95	B
RIGrunner 4008	13.8V DC 8-way	£89.95	B
RIGrunner 4012	13.8V DC 12-way	£109.95	B
C30/PK/12	12 spare connector pairs	£13.95	A

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PRICE MATCH

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

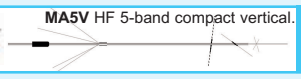
HF VERTICAL ANTENNAS

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

butternut

HF9V-X HF 9-band vertical

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

hy-gain

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

HF HORIZONTAL BEAMS + DIPOLES

RADIO WORKS

World famous Carolina Windoms used worldwide

Carolina Windoms 1kW (Inc WARC Bands)			
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-4-500	Line Isolator (small) 500W 1.8-30MHz	**£32.95**	B
REM-BAL1	Ladder line 1:1 balun 1.8-30MHz	**£49.95**	B
REM-BAL4	Ladder line 4:1 balun 1.8-30MHz	**£49.95**	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

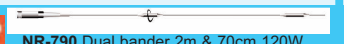
RM-80

RM-40S

Standard Resonator 400W			
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			
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

VHF/UHF MOBILE ANTENNAS

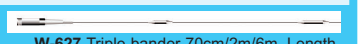
DIAMOND ANTENNA



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

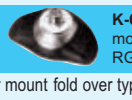


W-627 Triple bander 70cm/2m/6m. Length 1.6m, max pwr 120W with fold over base.

Watson Antennas (PL-259 base type)			
W-2LE	2m quarter wave 2.1dBi 0.45m	**£9.95**	A
W-285	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-260	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

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-08	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

VHF/UHF Dual Bander

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

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

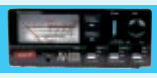
hy-gain

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

POWER METERS

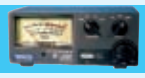
AVAIR



AV-600 VSWR/Pwr meter, reads RMS & PEP covers 1.8-525MHz in two ranges.

AV-20	X-needle VSWR/PWR 1.8-150MHz	**£39.95**	B
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

WATSON



W-220 VSWR/Pwr meter, reads RMS & PEP covers 1.6-200MHz max pwr 200W

W-220	VSWR/PWR 1.6-200MHz	**£49.95**	B
W-420	VSWR/PWR 118-530MHz	**£49.95**	B
W-620	VSWR/PWR 1.6-530MHz	**£89.95**	B

ANTENNA ANALYSERS

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
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Super Hunter	Frequency counter 10Hz-3GHz	**£149.95**	B
Hunter	Frequency counter 10MHz-3GHz	**£59.95**	B
FC-130	Frequency counter 1MHz-3GHz	**£79.95**	B

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WATSON

CS-600

Coax switches ideal for use in antenna systems for transceivers or receivers

CS-600	2-way coax switch 3x SO239	**£12.95**	A
CX201	2-way coax switch 3x SO239	**£18.95**	A
CX201N	2-way coax switch 3xN-socket	**£26.95**	A

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Thru power 1.5kW (max) Range DC-1500MHz Isolation 50dB 500-1500MHz

CX-310A	3-way coax switch 4x SO239	**£65.95**	B
CX-310N	3-way coax switch 4x N-socket	**£75.95**	B

MFJ

MFJ-1702C

Many models have centre earth position and static discharge protector.

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

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These switches are well engineered and sold in large quantities to the commercial market

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S-20N	2-way coax switch 1kW N-type	**£56.95**	B

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HP-200 Superb Communications Headphones at an amazingly low price

Base Microphones			
WM-308	Desk electret mic c/w ML-308	**£59.95**	B
ML-308	Spare mic lead for WM-308	**£8.95**	A
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FBI-9K	Over the ear, 2.5mm mono, biege	**£9.95**	A
WEP-300B	Over the ear, 3.5mm mono jk-plug	**£2.95**	A
WEP-400	Deluxe adjustable, 3.5mm mono	**£14.95**	A
17-0576	Earpiece 8 Ohms 3.5mm mono	**£0.95**	A
17-0575	Earpiece 8 Ohms 2.5mm mono	**£0.95**	A
Speaker Microphones			
QS-112(Y,K,I,M)	H/held spkr/mic (state which model)	**£16.95**	A
Headphones			
HP-100 *NEW*	8 Ohm comms H/phones	**£19.95**	A
HP-200	8 Ohm padded comms H/phones	**£22.95**	A
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30-9751	Pillow spkr 8 Ohms 3.5mm jk-plug	**£4.95**	A
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SP-160	Mobile comms ext. speaker	**£9.95**	A
SP-170F	Mobile comms ext. speaker+filter	**£12.95**	A
SP-2000	Sun visor fitting mobile spkr	**£19.95**	A

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HCL-5	Classic retro-look HC-5 desk mic	**£259.95**	B
HCL-4	Classic retro-look HC-4 desk mic	**£259.95**	B
HCLic	Classic retro-look IC desk mic	**£259.95**	B
Hand Microphones			
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GM-5	Goldline HC-5 hand mic	**£129.95**	B
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HST-706	Traveler single side headset for IC-706	**£89.95**	B
HST-IC	Traveler single side headset for ICOM	**£89.95**	B
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HSTA-706	Extra interface cable for HST-706	**£24.95**	B
HSTA-IC8	Extra interface cable for HST-IC	**£24.95**	B
Headphones & Boom Microphones			
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PRO-SET-PLUS-IC	Large H/phones with IC & HC-4	**£299.95**	B
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PRO-SET-5	Large H/phones with HC-5 element	**£129.95**	B
PRO-SET-IC	Large H/phones with ICOM element	**£149.95**	B

bhi

NES10-2 Kills noise, brings up signals. Dip switches offer variable settings. Includes 12V pwr lead.

NES10-2	DSP spkr with user adjustment	**£99.95**	B
NESCB	DSP spkr no user adjustment	**£79.95**	B
NEIM1031 *NEW*	Noise eliminating in-line module	**£29.95**	B

DATA & CODE

WEST MOUNTAIN

RIGblaster PSK31, MFSK, MT63, SSTV, RTTY, CW, packet/APRS

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
RB-CD	Standard RIGblaster program CD	**£9.95**	A

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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
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AUTO ATU'S

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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RT-11 *NEW*	Remote Auto ATU HF+6m 5-150W	**£239.95**	B

Also available in kit form. Choice of interface leads.

MFJ

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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-969 DELUXE VERSA TUNER II

**1.8-54MHz *300W PEP *T-match network *Internal 4:1 balun *Built-in dummy load *X-needle meter *3-way ant switch*
One of the most popular 300W models.

MFJ-969 160-6m all band 300W ATU **£199.95** C

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**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-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

MFJ-921 VHF DUAL BAND TUNER

**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-971 PORTABLE TUNER

**1.8-30MHz *300/30/6W *X-needle SWR/Pwr meter * Tunes wire, coax & balance line ants *SO-239 sockets*
Natural ATU for QRP/portable working.

MFJ-971 QRP Portable ATU **£99.95** B

MFJ-16010 ANTENNA TUNER

**1.8-30MHz *200W *Base or portable *SO-239 sockets *Simple tuning controls*
Great little tuner ideal for portable work especially for the FT-817.

MFJ-16010 Random Wire Tuner **£56.95** B

ARTIFICIAL GROUND

MFJ-931 ARTIFICIAL GROUND

**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

ACTIVE ANTENNA

MFJ-1022 ACTIVE ANTENNA LF/HF/VHF

**300kHz-200MHz *Handles strong signals *Reduces Intermod *Low noise *Includes telescopic whip *SO-239 *9V batt or 9-18VDC*
Easily plugs into your general coverage Rx.

MFJ-1022 Wideband Active Rx Antenna **£55.95** B

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MFJ- 267 DUMMY LOAD/WATT METER

**1.8-54MHz *300/3000W FWD *60/600W RFD *50 Ohms *3in X-needle meter VSWR/Pwr *Reads PEP or AV *SO-239 x2 sockets *9-12V*
Switch enables the dummy load to be by-passed

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

NOISE CANCELLER & SSB & CW AUDIO FILTER

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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

MORSE CODE READER

MFJ-461 MORSE CODE READER

**Stand alone unit *Built-in mic *32char high contrast LCD *Automatic speed tracking *Serial port *Built-in speaker *9V PP3 (not included)*
Simple PC program available (user supplies disk)

MFJ-461 Pocket size Morse code reader **£84.95** B

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**Locks onto local atomic standard *18 different world paths *5 HF DX bands *Mimics beacons' sequences - not a receiver *Ext 12V, PP3 back-up*
Use your receiver to listen to the appropriate band.

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The SL20 bar graph display soldering station normally sells at £69.33 and is available to readers of *PW* at only **£55.00** fully inclusive of VAT & delivery.

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Both soldering stations feature 24V 48W elements for rapid heating and have full electronic temperature control between 150C and 420C (SL20), 160C and 480C (SL30).

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PW

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Cover Subject

Although this striking front cover image looks like it was taken on a lunar landscape, it wasn't! We didn't take the IC-2725 to the moon, although its capabilities, versatility and portability probably mean it would have fared well. Instead we sent **Tex Swann G1TEX/M3NGS** off to Holes Bay in Poole, Dorset on a very cold but bright January day with the brief of "be creative and please come back with a front cover photo". We think you'll agree he did a good job!

Enjoy this issue and remember Amateur Radio is a hobby that builds friendships and is there for us all to enjoy.

Design: **Bob Kemp**
Photograph: **Tex Swann G1TEX/M3NGS**

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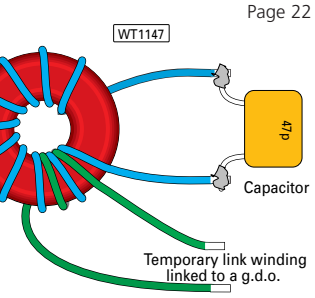

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rob mannion's keylines

Welcome to 'Keylines'! Each month Rob introduces topics of interest and comments on current news.

In common with many other keen visitors to the long established and popular Longleat Rally, I've been very saddened by the on-off status of the event over the past few month. The news that - the very last event planned to be held at Longleat in June 2003 has been definitely cancelled (see full story on the news pages in this issue) came after I had firmly marked it in my diary.

I'm not able to go into much detail on the reasons behind the final cancellation of the Longleat Rally - other than to say that conditions of the necessary event licence were made extremely difficult for the organisers, The Bristol RSGB Group, by the Longleat Estate Office. However, the the organisers have directly informed me that **some but by no means all** - of the problems regarding the future of the Longleat venue were directly due to the less than responsible behaviour of a very small minority of visitors to the rally, associated with overnight camping on the Estate before and after the rally itself.

Let's now hope that once a new venue for the rally has been found (I hope to support them in any way I can), the future conduct of all those attending will help guarantee its success and survival for another 45 years. Meanwhile the *PW* team look forward to bringing you full details of the 'New Longleat', although this will not now be until 2004. I hope to see you there!

Wrongly Credited

Unfortunately, I've unintentionally embarrassed my good friend **Robert van der Zaal PA9RZ** when I wrongly credited him as being the Editor of *Nieuwsbrief* - the journal of the **Benelux QRP Club**, whereas in fact he's the **Chairman** of the group (and to quote him...their "Delivery boy/representative when abroad"!). The mistake occurred in the Spotlight Results report published in the December 2002 *PW*.

The Benelux Club won the National Category, and the Bert's Bell Trophy, in the 2002 *PW* & Kenwood Club Spotlight Magazine Competition. The credit for Editorial excellence should have gone to **Wim Witt PA0WDW**, who is the Editor. My apologies Wim, and thank you for producing a truly excellent magazine.

Farewell To Friends

Sadly, at the moment it seems to be season for losing senior Radio Amateurs. Evidence of this is shown in the obituary to **Fred Ward G2CVV** in the news this month. However, although all friends are valued greatly, some slip away quietly, and I often don't hear the news for a while.

Recently though, I heard of the death of **Wally Gates G3ENB** on 3 December, thanks to his friend **Des Wood G3HKO** from Scarborough who kindly contacted me. Wally - a jolly, farmer look-alike character was well known to the loyal band of *PW* readers who travelled with us to the Dayton HamVention in the USA.

It's my pleasure to meet some really good people in my work and Wally G3ENB was one of them. Afflicted with perhaps the worst possible handicap for a Radio Amateur - a pronounced and intractable stammer - Wally ploughed on regardless! As Des G3HKO said...his stammer didn't stop him telling a good joke. It was worthwhile waiting for the end of the story...as it was usually excellent!

On one trip to the USA Wally had been fitted with an electronic white noise generator (working via special earpieces) which provided bursts of noise at the end of each word or phrase, successfully helping to block the neural pathways which caused the stammer. Typically, when we met at Gatwick he greeted me with..."Look Rob...I've gone bionic before you"! (a reference to my simple but reliable artificial arm). We all chuckled over the joke!

We'll miss him - he made us laugh and also made me realise any problems I think I've got are very insignificant. I last saw Wally at the Rochdale QRP Convention in October 2002 and, at 83, he was still as bright as the proverbial button. I'm proud to have known him.

Calling QC!

Reproduced by Courtesy of *Short Wave Magazine*. (see 'Star Letter' this issue).

It's with pleasure I'm able to reproduce the Worthington cartoon (mentioned in his Star letter this month by **Paul Tuton G0UBV**) featuring the legal personage calling "QC". And personally, knowing the high opinion they have of themselves, together with the magisterial authority they have over us mere mortals...I can easily imagine a special "CQ" being made available for their exclusive use! (Any comments to my cell at Dorchester Prison please!).

Rob G3XFD

practical wireless services

Just some of the services *Practical Wireless* offers to readers...

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Components For *PW* Projects

In general all components used in constructing *PW* projects are available from a variety of component suppliers. Where special, or difficult to obtain, components are specified, a supplier will be quoted in the article. The printed circuit boards for *PW* projects are available from the *PW* PCB Service, **Kanga Products, Sandford Works, Cobden Street, Long Eaton, Nottingham NG10 1BL. Tel: 0115 - 967 0918. Fax: 0870 - 056 8608.**

Photocopies & Back Issues

We have a selection of back issues, covering the past three years of *PW*. If you are looking for an article or review that you missed first time around, we can help. If we don't have the whole issue we can always supply a photocopy of the article. Back issues for *PW* are £2.85 each and photocopies are £2.85 per article.

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The E-mail address is **bookstore@pwpublishing.ltd.uk**

Technical Help

We regret that due to Editorial time scales, replies to technical queries cannot be given over the telephone. Any technical queries by E-mail are very unlikely to receive immediate attention either. So, if you require help with problems relating to topics covered by *PW*, then please write to the Editorial Offices, we will do our best to help and reply by mail.

amateur radio waves

Make your own 'waves' by writing into *PW* with your comments, ideas, opinions and general 'feedback'.

The Star Letter will receive a voucher worth £20 to spend on items from our Book or other services offered by *Practical Wireless*.

Worthington's Cartoons

● **Dear Sir**

I enjoyed the latest Topical Talk the February issue of *PW*. I took *Short Wave Magazine* monthly during 1966/67-ish when I was 16-17 years old. A pal of mine also did the same. I remember him howling and pointing out one particular cartoon: A bewigged and gowned Barrister sitting behind the microphone calling..."QC, QC QC...". Two other Worthington cartoons stuck in my mind: one pictured a Crocodile behind the microphone saying "....always use Man clips to tap the ATU here" (or some such) with a miniature person attached by teeth to a tap on the coil. And probably my favourite, "...work full break-in here..." showing operator with both hands clutching hefty switches and a foot treadle switch as well. Much like my set-up at the time! No doubt it would be lost on many folks today, who don't realise the microphone push-button is a fairly modern invention!

The magazines are long gone but I still have pretty clear images of the cartoons in my mind. Best wishes...and thank you Worthington...for amusing us over the years!

Paul Tuton G0UBV
Hull
East Yorkshire

Editor's comments: Thank you Paul, and yes....John GW3COI really has captured the changes in our hobby over the years. Thank you to the many other readers who E-mailed, wrote and chatted to me on the same subject, including those who've asked if a collection of the cartoons are to be published in book form. (This decision depends on demand of course, so readers...get writing if you're interested!). See Keylines for more cartoon memories.

Licensed At 17

● **Dear Sir**

Thanks for a great February 2003 issue. Two of the letters published struck a chord, the ones from **Duncan G7VQF** and the other from **Steve M5BXB/G7BXB**. I am 42 years old and got my Licence at the tender age of 17. I have no professional connection with radio or electronics and operate mainly h.f., mainly c.w. and sometimes QRP.

To add my 'two pennyworth' to both your correspondents:

Duncan, I agree with most of what you say, as I also see a large number of people getting carried along on the current nostalgia for 'the good old days'. After all, if Amateur Radio equipment of yester-year was so good, why did nearly everyone sell theirs off in the 1970s to get the modern offerings?

Also, Yes, let's stop the bickering that spoils this hobby for so many. The class A/B 'war', and the c.w. debate have both run their courses and had their day (or years). Once the need for a c.w. test is abolished, the heat goes out of both arguments, as Class A and B become equal and c.w. remains as a valid part of the hobby, along with all the other varied facets that makes Amateur Radio so fascinating.

Steve: Thanks for sharing your opinions, but consider the result of a reduction in power for everyone and an emphasis on good operating (e.g. asking if a frequency is in use) before you banish the QRPers from 7MHz. It isn't the QRP operators who cause all the QRM, instead it's those operators who, using excessive power, and not having the courtesy to ensure they're using a clear frequency before calling who do just that! If you operate QRP, you'll know all about this...and if you don't why not give it a try? A warning, however, it can be very addictive! Regards to everyone in the hobby.

Lawrence Stringer G4GZG
Ongar
Essex

Thanks Nunsfield House!

● **Dear Sir**

I have always been a keen follower of Amateur Radio but being a serving soldier in Germany it was difficult to attend any courses in the UK. However, a visit to the **Elvaston Castle Radio Rally** changed that and after a few telephone calls I was put in touch with **Frank Whitehead G4MLL** who assisted me greatly.

On 23rd December 2002 (during my leave) I passed my M3 first time. I would like to thank all the members of the **Nunsfield House Amateur Radio Group** for all their help and assistance, particularly Frank. My Father and I were very impressed, its not many clubs that have a bar on their doorstep!

Adrian Sims
7 Armd Bde HQ and Signal Sqn (207)
BFPO 30

A Year Of An M3

● **Dear Sir**

I am a carer for my disabled wife and spent many years listening to short wave radio. Due to being a carer I didn't have the time to do the full RAE. However, shortly after joining my local radio club the M3 course was mentioned, I decided to have a go at it and have made new friends.

A year has almost passed by since I became an M3 Licence holder. My exam was taken after I'd taken the course at the Newbury Club in February 2002. We all passed that weekend and the next day I sent off my pass slip with the appropriate paperwork, asking for the callsign M3DAB (my initials and I was extremely pleased have received the requested callsign).

As soon as my Licence arrived I got myself on the air via a repeater and had some interesting QSOs, with the other operators asking me about the M3 Licence, as it was very new then of course.

Most of my operating has been on v.h.f. but I have now constructed a vertical wire antenna for 7MHz, it's installed in my loft and works extremely well. My first contact using it...was with a Welsh station. Incidentally, all my antennas are installed in the loft because we have no garden.

I am also a volunteer for the Red Cross and when we are called out to incidents my co-ordinator now asks me to operate the radio system instead of driving. So, becoming an M3 has provided a new lease of life, and I'm now looking forward to taking the Intermediate Licence and then hopefully the Full Licence.

I send my best wishes to everyone in the hobby and also look forward to another year of operating and making more friends.

D. A. Bambrook M3DAB
Beckley
Oxford

Angry & Immature Letter?

● **Dear Sir**

I was rather surprised to read **Duncan Court's** angry and rather immature letter (February 2003 *PW*) in response to **Ray Howes** praise for a bit of nostalgia. Duncan's letter seemed to be mainly a criticism of anybody who does not wholeheartedly agree with him. I certainly agree with him that the hobby has to move forward...but it must not be allowed to forget its history, or the developments which have made today's equipment and modes of operation possible.

Duncan goes on to praise, and list, the diverse activities which Amateur Radio provides him with...but promptly condemns those activities such

as Morse Code, valve technology (including restoration of valved equipment) which give pleasure to other *PW* readers ...but which are of no interest to him personally! I'm not entirely surprised that, to quote his own words, other Amateurs look at him oddly!

Richard Walker
Uxbridge
Middlesex

Feeling Sorry For A G7

● **Dear Sir**

I feel sorry for the G7 reader (February 2003 *PW*) who seems to despise Valve & Vintage topics and wants us to play with all surface mount, menu-driven equipment. As I write, I've just finished operating a Restricted Service Licence (RSL) on medium waves. The transmitter ran for 28 days continuously without tripping, providing an extremely reliable broadcast service. Yes, you've guessed it - it used a 5B254M valve in the power amplifier stage!

With his much preferred new kit, I'm lucky to read the RSGB news without the rig and power supply fans going full blast and sounding like an open day at a rocket firing range! Recently I've been considered as some form of minor deity as a repaired a 20 year-old Trio rig-whilst working and advising the owner over the air on 144MHz...without ever seeing or touching the equipment.

Now that M3s have settled down into the hobby, they realise that the old a.m. Pye Cambridge brigade have their uses. (Such as having sheds full of odd, but useful connectors and such like!).

John Gomer G8UNZ
Colchester
Essex

Reciprocal Licences & CEPT

● **Dear Sir**

What is the true value of the CEPT and HARM certificates? An Amateur requiring a Reciprocal Licence produces a valid licence and a CEPT HARM certificate in any CEPT signatory country and is granted a Reciprocal Licence...valid for 1 year, renewable annually.

An amateur relocating to a foreign country, or returning home with a foreign call issued by a CEPT country can also apply for a Reciprocal Licence. What's the snag? - the Reciprocal Licence **cannot be used for further reciprocation**, for this a **Full Licence** is required. **This means that an Amateur in such circumstances must maintain their original licence if this is at all possible**. Some authorities, whilst prepared to maintain a Licence to an ex-patriate, will not issue a Licence to a foreign address.

The only way around the issue is for the Amateur to redo the examination in the new country of residence. This can hardly be considered fair, they already have a licence issued in terms of CEPT requirements. It's difficult enough to resettle in a new country, or home country after a long absence, without having to face the ever daunting RAE over again. Does this requirement not detract from the concept of harmonisation of licensing requirements?

I think it's incongruous that indefinite permission can be granted to operate on a renewable Reciprocal Licence, when Amateurs taking up permanent residence face restrictions! If a licence is issued in terms of CEPT, surely it makes sense to issue a similar licence in the new country of residence, after all a CEPT recognised examination has been passed? The HARM agreement as I see it, a was a major step in ensuring a common level of competency for the issuing of Amateur Radio Licences, achieving the same standard and recognition for Amateurs world-wide. The current legislation detracts from the value of this achievement.

Simon Poysden G1BND
Bracknell
Berkshire

Somerton Radio Station

● **Dear Sir**

The article by **Tim Walford G3PCJ** entitled Somerton Radio Station (*PW* February 2003) brought memories of recent events flooding back. **The Radio Officers Association** organised and ran a special event at Somerton in April 1999 the highlight of which was an International Maritime Radio Coast Station weekend and over 200 coast stations world wide took part. The event raised over 1000 for the RNLI and Mission to Seafarers. A year later, because of the success of the first event, the ROA were invited to organise the 'wake' for Portishead Radio.

The pile-up mentioned by Tim G3PCJ worked out at four QSOs being worked every minute for 13 hours and 3260 QSL cards were sent to those who worked the station. As it said on the card "Farewell GKL", it was a fitting and moving tribute to Portishead Radio.

The receivers and rhombic aerials at Somerton played a very important part and it's interesting to note that VK and ZL stations were worked throughout the day. The rhombic aerials were set to optimum for reception and stations using only 100W output were received 569 and 579. Of course the 40kW we were pumping out of the Rugby transmitter meant that we received 599 in return!

It has been a great pleasure to read the continuing series of articles about the old stations in *Practical Wireless*. In keeping the memory of these stations alive, and in recording what took place there not only do you give great pleasure to your readers but you are also ensuring that the history of the stations is not lost forever.

Thank you *PW* Team!

David Barlow G3PLE
Secretary Radio Officers Association Radio Society
Helston
Cornwall

Editor's comments: Thank you David...our pleasure! (as a *PW* author and member of the Club Spotlight Magazine Competition Judging Panel) I think David must have overheard the Editorial Team's discussions on this subject! Please see Topical Talk this issue for more on the same subject.

Battle Lines Drawn!

● **Dear Sir**

Every now and then, something changes in Amateur Radio, and battle lines are drawn faster than you can say "CQ"! Packet radio, the Novice scheme, Morse code, and lately the Foundation Licence have all been the excuse for an all-out war of words. And, I'm told that even s.s.b. was denounced as something akin to sacrilege when it was first introduced! So many cages seem to be so easily rattled that we can't hear the good stuff for the noise.

Is it so impossible to put Amateur Radio into some sort of perspective? **It's a hobby, for goodness sake - something to be played at and shared with others and enjoyed.** It's a pastime that's supposed to help take away the strains and stresses of everyday living, not create them. Why do so many become so paranoid, and/or want to turn it into a war-zone?

The final part of the letter from **Nigel Woolard G1FZS** in your January 2003 issue sums up what I mean. **What an appalling attitude**.

Doesn't Nigel realise that almost 50% of M3s were holders of a B Licence who have since taken a Morse assessment? Something he could do very easily to give him access to whatever he thinks he's missing out on. I suspect a fair proportion of the M3s have years of practical experience in the hobby, and I don't believe any of them were dragged in kicking and screaming, or are looking to "outrank" anyone.

Come on everybody, relax and 'chill out'. If the whingers were to put as much effort into being positive as they do towards being negative, I'm sure they'd be better off, and so would our great hobby. Life's too short for anything else, so enjoy it while you can, and if you survive until tomorrow, do the same again - just in case!

Keith Johnson G1PQW
Rotherham
South Yorkshire

Three Licence Grades

● **Dear Sir**

We are now in the situation where we have three grades of licence: Foundation, Intermediate and Full. While such a structure would have been fine had it been introduced in to 1970s or 1980s I feel it has come too late and is now one grade too many. I also note that many clubs have had difficulty in getting a Foundation course running and some are still unable to run one. A look at the RSGB Foundation courses web page shows that there are three Foundation courses in London (pop. 7.5 million).

Running the new Intermediate course will provide an even greater challenge to clubs. At the end of this year

clubs will also have to do the new course for the Full licence. The pool of RAE tutors that we had back in the 1980s has now largely disappeared and they have not been replaced. There are no longer enough tutors to go round and I fear that only a few clubs will offer Intermediate courses and hardly any at all will offer courses for the Full licence.

The new Intermediate course contains a large element of practical electronic construction and to my mind it will produce a higher standard of Radio Amateur than the old RAE which didn't even require you to know which end of a soldering iron got hot! I suggest that we adopt a two tier Licence structure, Foundation and Full and that the new Intermediate course should be the only requirement for a Full Licence.

Trevor HawkinsM5AKA
Chelmsford
Essex

Tuning Up Over QSOs

● **Dear Sir**
I often hear people tuning up on top of another QSO, especially on the lower bands, and someone else telling the offending station to go and tune elsewhere. (Often this is said when the offending station is still transmitting...which is equally absurd as the offending party cannot possibly hear it when they are still transmitting).

Personally, I believe that a lot of this interference is unintentional and could be avoided if the Amateur causing the nuisance was aware of how most rigs work. What happens is that when the operator tunes to a quiet spot on lower sideband, and then tunes up , not realising that most rigs (when **Tune** is selected) actually tune up on upper sideband. So, if they would only first listen on upper sideband - or the c.w. position - I think a lot of these inadvertent carriers and the nuisance they cause could be avoided.

John Haliburton GM1AQO
Fife
Scotland

Frank Rayer G3OGR Books

● **Dear Sir**
Following the numerous requests for a list of books published by my late father, **Frank Rayer G3OGR**, I've prepared one for publication in *PW*. I hope it helps readers! All appear under his name except where indicated.

Repair of Domestic Electrical Appliances, Arco 1961.
Electricity in the Home, Arco 1962.
Electrical Hobbies, William Collins 1964.
Transistor Receivers and Amplifiers, Focal Press Ltd, 1965.
Amateur Radio, Arco, 1967.
Popular Electronics and Computers, Arco 1968.
Electronics and Computers, A. S. Barnes & Co, 1968.
The Pegasus book of Electrical Experiments, Dobson Books Ltd, 1968.
The Pegasus book of Radio Experiments, Dobson Books Ltd, 1968.
Roland Worcester (**pseudonym**), *Electronics*, Hamlyn, 1969.
Electronic Projects in Hobbies (Newnes), Butterworth & Co, 1979.
Electronic Game Projects (Newnes), Butterworth & Co, 1979.
Projects in Amateur Radio and Short Wave Listening (Newnes), Butterworth & Co, 1981.
Beginners Guide to Amateur Radio (Newnes), Butterworth & Co,
1982.

Next, here's the list of the electronics books published by Babani Ltd.
Two Transistor Electronic Projects, 1976.
How to build your own metal and treasure locators, 1976.
Handbook of IC Audio Preamplifier and Power amplifier construction, 1976.
50 FET Projects, 1977.
How to make Walkie Talkies, 1977.
50 Projects using Relays, SCRs and Triacs, 1977.
Electronic Projects for Beginners, 1978.
How to build your own solid state oscilloscope, 1979.
Electronic test equipment construction, 1980.
Radio Control for Beginners, 1980.
Counter Driver and Numeral Display Projects, 1980.
Digital IC Projects, 1981.
Electronic Timer Projects, 1981.
Audio Projects, 1981.
IC Projects for beginners, 1982.

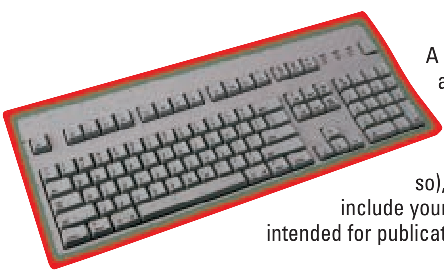
Finally, here's the list of science fiction books:
Tomorrow Sometimes Comes, Home & Van Thal, 1951. Republished by Icon 1962.
George Longdon (**pseudonym**), *Of those who came*, Museum Press Ltd 1954, in *Gateway to Tomorrow, a Science Fiction Anthology*, p84-99.
Cardinal of the Stars, Digit Books 1964.
The Iron and the Anger, Digit Books 1964.
I hope this is of interest to *PW* readers.

William Rayer
St. Peter Port
Guernsey
Channel Islands

Editor's comment: Thank you William...I'm sure the list will be very helpful. I wish we'd had room to publish it in the original article on G3OGR as much interest has been shown by readers from all over the world!

● Keep your letters coming to fill *PW*'s postbag

Letters Received Via E-mail



A great deal of correspondence intended for 'letters' now arrives via E-mail, and although there's no problem in general, many correspondents are forgetting to provide their postal address. I have to remind readers that although we will not publish a full postal address (unless we are asked to do so), we require it if the letter is to be considered. So, please include your full postal address and callsign with your E-Mail. All letters intended for publication must be clearly marked 'For Publication'. **Editor**

amateur radio rallies

Radio rallies are held throughout the UK. They're hard work to organise so visit one soon and support your clubs and organisations.

February 16
The Northern Cross Radio Rally
Contact: John G7JTH
Tel: (01924) 251822
E-mail: g7jth@wdrs.org.uk
Website: www.wdrs.org.uk
The Northern Cross Radio Rally is to be held at Thornes Park Athletics Stadium, Wakefield, West Yorkshire. The event is held in one large hall - just out of town on the Horbury Road. Easy access from M1 J39 & J40 - well signposted and with talk-in on 144 and 430MHz. Doors open at 1030 (1015 for disabled visitors and Bring & Buy). There will be the usual attractions plus Morse tests on demand.

February 16
The Cambridge & District ARC Rally
Website: www.cdarc.org.uk
The Cambridge & District Amateur Radio Club are holding their rally at Britten Arena, Wood Green Animal Shelter, King's Bush Farm, London Road, Godmanchetser at 1000hours. Entrance fee is £2, concessions £1.50. There is enough free parking for 2000 cars, there will also be two bars, a restaurant, animal shelter, water garden and lake. A great day out for all the family!

March 8
The Crystal Palace Spring Radio Fair
Contact: Bob
Tel: (01737) 552170
Website: http://www.members.aol.com/rfcburns
The Crystal Palace Radio and Electronics Club Spring Radio Fair at St. John's Hall, Sylvan Road, London SE19. Doors open at 1030 until 1330hours. Traders Tables £5 in advance. Admission £1 includes a free drink. Children under 16 free. Free local parking.

March 9
West Wales Amateur Radio & Computer Rally
Contact: Ray GW7AGG
Tel: (01686) 628788
FAX: (01686) 621880
E-mail: mwmg01@aber.ac.uk
The 9th West Wales Amateur Radio & Computer Rally will be held at Penparcau School, Aberystwyth (as part of National Science Week). Doors open 1000 until 1530 hours and admission is just £1. There will be good parking facilities with easy access for disabled visitors and traders for all stalls. See GB4FUN Amateur Radio on the Move, demonstrations on h.f., v.h.f., on the air, Amateur Radio and Computer Traders, Bring & Buy, Clubs and Special Interest Groups, including Motorcycle Display. Catering facilities. Talk-in on S22.

*** March 16**
The Norbreck Amateur Radio, Electronics & Computing Exhibition
Contact: Peter Denton G6CGF
Tel: 0151-630 5790
The Norbreck Amateur Radio, Electronics & Computing Exhibition, organised by the Northern Amateur Radio Societies Association (NARSA), is being held at the Norbreck Castle Exhibition Centre, Blackpool. Don't miss the largest single day exhibition in the country. Morse tests will be available on-demand.

March 16
Bournemouth Radio Society's Annual Sale
Contact: Olive & Frank G0GOX
Tel: (01202) 887721
The Bournemouth Radio Society's 15th Annual Sale is to be held at Kinson Community Association Centre, Pelhams Park, Millhams Road, Kinson, Bournemouth. Admission is just £1 and doors open 1000 till 1600. Talk-in from G1BRS on 144MHz S22, Amateur Radio, Computer Traders, Antenna Suppliers, Bring & Buy stall, also Specialist Groups and Clubs and there will be home-made refreshments.

*** Look out for a representative from PW Publishing Ltd at this rally. Go along to the stand for great deals on subscriptions to *Practical Wireless, Radio Active* and *Short Wave Magazine*, clearance books and a selection of back issues.**

If you're travelling a long distance to a rally, it could be worth 'phoning the contact number to check all is well, before setting off.

amateur radio news

A comprehensive look at what's new in our hobby this month.

New Construction Projects

Get Kitted Up

Walford Electronics have added two new construction projects to their Somerset Range of kits for Radio Amateurs. Check them out.....

The first of the new Somerset kits is the **Fivehead**, a single band 'phone superhet transceiver for any band from 1.8-14MHz inclusive. Designed for portable operation it's so compact that the main p.c.b. measures just 100mm square!

Using an i.f. of 6MHz the Fivehead can work on 9V upwards, producing 1.5W on a 13.8V supply. There are many optional extras available for the kit including a c.w. kit, a.g.c. meter, speech processor, digital readout and linear amplifier. Prices for the Fivehead start at **£79 plus £1 P&P.**

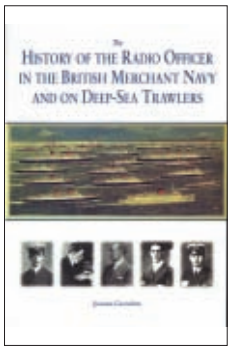
The optional linear amplifier is suitable for all the 1.5W transmitters (up to 14MHz) in the Somerset Range, including the Fivehead. It produces 10W on 13.8V but is said to perform even better with more volts! Priced at **£24 plus £1 P&P**.

The second kit (heading photograph) is an **Antenna Matching Unit** (AMU) suitable for up to 20W rigs. It includes a resistive matching bridge with a l.e.d. matching and output indicator. The matching section of the AMU uses the T-configuration and suits all normal antennas, balanced or unbalanced from 1.8-28MHz. The price of the AMU is **£32 plus £1 P&P.**

For more details on the Somerset range of kits point your browser at the Walford Electronics Website: **www.users.globalnet.co.uk/~walfor**

Walford Electronics
Bridge Farm
Long Sutton
Langport
Somerset
TA10 9NJ
Tel: (01458) 241224
FAX: (01458) 241186

Book Review



The History of the Radio Officer in the British Merchant Navy & On Deep-Sea Trawlers

Rob Mannion G3XFD has recently read a unique book written by Joanna Greenlaw which provides something which has been long overdue...an acknowledgement of the often incredibly difficult work undertaken by Radio Officers/Operators on Merchant ships and those rapidly disappearing trawlers. Read on....

Despite the heavy seas the reader encounters when trying to pass through the somewhat turgid, but necessary (as the advert says "It does what it says on the cover") title of this book...Joanna Greenlaw has in fact produced a fascinating insight into the now extinct Merchant Navy's Radio Officer's (RO) work, life and (so often it seems) death in active service, especially in the Second World War. Additionally, the book covers the less well publicised and most certainly very unglamorous work involved in providing radio communications on board deep-sea trawlers.

Profusely illustrated, the book for obvious reasons, is very much biased towards the Marconi Company and its work because the author worked for them. However, this does not detract in detail from the interesting and informative style adopted throughout the book.

In its 230 or so pages, literally the complete history of the Radio Officer, from the early days up to the introduction of Women Radio Officers working on British-flagged ships - with some fascinating postage-stamp sized biographies on the people behind the stories is given. If you're keen on the sea, radio and ships in general, this neatly produced softback book will entertain, amuse and above all provide the background to a service which is often overlooked.

Although, with the exception of a brief look at very early equipment, technical information and circuits aren't covered (after all this is a history book...not a technical treatise) I don't think *PW* readers will be disappointed. It was such an engrossing read that I could almost smell the all-pervading odour of fish that seemed to penetrate even the steel hulls of trawlers!

Forget the smartly-uniformed RO on a passenger liner, with the help of this book you'll get a real feeling for the difficult conditions faced by the RO behind the scenes, often struggling under difficult circumstances to keep the ship on the air. A good read, well illustrated and a fitting tribute to a truly bygone age. The wartime memories are at the same time both superb and truly chilling. A 'must for your bookshelf'.

Published by **Dinefwr Publishers** this book is priced at **£19.95 plus £3.50 P&P ISBN 1 904323 01 4**

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Make a Date

Yeovil QRP Convention

If you're a fan of QRP then make a date in your diary for this year's Yeovil QRP Convention.

The **Yeovil Amateur Radio Club's** 19th QRP Convention takes place on **8 June 2003** at the Digby Hall, Hound Street, Sherborne, Dorset. The doors will open from 1000hours and during the day visitors will have the chance to enjoy three lectures by notable speakers.

There will be a selection of traders attending, a Bring & Buy, Good in-house catering, Talk-in on S22 by **GB2LOW**, free car park.

Please note this is a revised date due the original date clashing with the Tiverton Rally.
Derek M0WOB. Tel: (01935)414452
E-mail: m0wob@tiscali.co.uk

Leaping Forward

Volume Numbers

Those pesky gremlins have been at it again! This time they have been playing with the Practical Wireless Volume numbers!

To clarify the situation and to help you all identify your issues please note that the **January - December 2002** issues make up **Volume 78** and **all** issues in **2003** will make up **Volume 79**. It appears that in the September '02 issue we inadvertently switched to Volume 79 and continued printing this until the December issue when we then changed to Volume 80 for the January 2003 issue.

The Editorial team would like to apologise for any confusion caused by this error and assure readers that the gremlins have now been banished to whence they came!

Rally Update

Longleat Rally - Off!

Following our announcement in the January 2003 issue of PW that the Longleat Rally had been given a reprieve and would be going ahead this year, we are sorry to report that this is now not the case.

The Bristol RSGB Group regret to announce that they have had no alternative but to finally cancel the 46th Longleat Rally, scheduled to take place on the 29 June 2003. **Martyn Phillips G3RFX**, Honorary Secretary. says: "It's such a pity. We had high hopes after Lord Bath's personal agreement to the Rally going ahead this year, albeit for the last time at Longleat, but since then we've been unable to reach agreement with his Estate Office on the terms and conditions.

"They duly presented us with a licence agreement containing several highly debatable liability clauses 'take it or leave it', which nobody in their right mind would have signed. Indeed it's almost as if these had been included with the express purpose of making it impossible for us to hold the Rally".

Meanwhile the Bristol RSGB Group are by no means giving up on the Rally front and are currently looking for an alternative venue for 2004 and beyond. A further announcement will be made in due course, when there will hopefully be better news. (See Keylines on Page 9 for Editorial comment).

Services Honoured

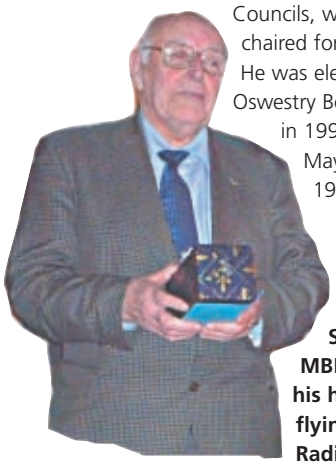
From G4LU to MBE

Stan Brown G4LU, long-time friend and author for PW has been presented with an MBE in recognition of his services to the community.

Stan G4LU who celebrated his 83rd Birthday on 1 January 2003 has lead a full and active life with an interest in Amateur Radio that dates back to his school days. His dedication, enthusiasm and helpful nature has now been duly recognised in his MBE award.

First licensed in June 1939, Stan worked at Rugby Radio Station (see Rugby Radio article in *PW* Jan 2002) until 1942 when he moved to Oswestry to work at the then newly opened Criggion Radio Station. In 1968 he moved back to Rugby working as Area Manager of Central Group of Transmitters which included Rugby, Criggion, Leafield, Ongar and Anthorn.

After his retirement, Stan resumed his Amateur activities mainly on v.h.f. and u.h.f. bands and was co-opted back onto his local Parish Council, representing them on the Oswestry Area Committee of Parish Councils, which he also chaired for several years. He was elected to Oswestry Borough Council in 1994, becoming Mayor in 1999/2000.



The *PW* team would like to congratulate Stan on his MBE and for all his hard work in flying the Amateur Radio 'flag'.

Advanced Notice

International Marconi Day

The Cornish Radio Amateur Club would like to remind readers of the date International Marconi Day 2003.

The 15th International Marconi Day (IMD) takes place on Saturday 26 April. This is a 24-hour Amateur Radio event held annually to celebrate the birth of Guglielmo Marconi on the 25 April 1874.

The IMD event is not a contest but an opportunity for Amateurs around the world to make point-to-point contact with historic Marconi sites using h.f. communication techniques similar to those used by Marconi, and to gain an attractive Award for achieving the requisite number of Marconi stations worked.

Full details of the awards available and other information, can be found at **www.gb4imd.co.uk** Organisations wishing to become participating stations in IMD are requested to E-mail details to **webmaster@gb4imd.co.uk** without delay.

RadioSport News

Communication & Computer Show

The date and venue of this year's spring communication and computer show has been announced.

The RadioSport Communication & Computer Show will take place on **Saturday 31 May** & **Sunday 1 June 2003** at the **Stevenage Leisure Centre, Lytton Way, Stevenage, Hertfordshire**. The show will be open from 1000-1700 hours on Saturday and 1000-1600 hours on Sunday (0945 each day for disabled visitors).

Show attractions will include: trade stands, special interest groups, Talk-in on 144 & 430MHz, Bring & Buy, lectures, catering and licensed bar. There will be plenty of parking close to the venue and for visitors travelling by train there is a mainline station approximately a minute's walk away from the Leisure Centre.

For more details contact RadioSport direct or check out their website.

RadioSport Ltd.,
Tel: (01923) 893929
Website: www.radiosport.co.uk

A Reminder

Sit-up & Take Note!

If you are currently studying for the Radio Amateurs Examination then you'll find this useful!

Are you trying your luck at the RAE with the help of the free RAE Course part work currently running in our stable mate magazine *Radio Active*? If so, don't forget to send off for your free copy of *How To Become a Radio Amateur* and *BR68 Amateur Radio Licence (A) or (B) Terms, Provisions and Limitations* booklets.

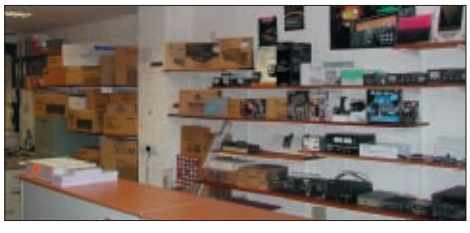
Copies are available by sending or e-mailing your name and address to **Donna Vincent G7TZB/M3TZB, PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW**.

Open Day

QSL Comms

With the rally and open day season looming, here's a date for your diary.....

Bristol based Amateur Radio dealer QSL Communications will be throwing their doors open on Sunday 13 April as they welcome radio enthusiasts to their third open day. Representatives from Kenwood, Icom and Yaesu will be attending the Open Day and visitors are assured of a warm welcome and plenty of bargains in the true spirit of Amateur Radio. So, why not go along and meet **Graham G4TJB** and **Jayne,** the faces behind QSL?



QSL Communications,
Unit 6 Worle Industrial Centre,
Coker Road,
Worle,
Weston-Super-Mare
BS22 6BX
Tel: (01934) 512757

Connecting Box & In-Line Module

Since launching their Noise Eliminating Speaker bhi have been very busy developing products to compliment this handy accessory. Read on to find out more....

The first new product from bhi is the **1042 Switch Box**, which allows the user to connect up to six pieces of equipment to a Noise Eliminating Speaker, In-line module or existing extension speaker.

Features of the 1042 include: three inputs - loaded at 8Ω, three un-loaded inputs (for low level signals) and is supplied with two 1.2m audio leads terminated with 3.5mm mono jack plugs.

The 1042 Switch Box costs **£29.95 plus £2.75 P&P**. Additional leads are available as well, these are the ALD-001 1.2m at £2.99 and the ALD-002 2.5m at £3.99.

The second new product from bhi is the **NEIM1031** Noise Eliminating In-line Module (pictured here), which is a versatile compact noise cancellation unit that removes unwanted background noise and interference from speech. incorporating the Digital Signal Processing Technology (DSP) and is fully adaptive to changes in noise levels.

The NEIM1031 has eight switchable noise cancellation levels allowing the user to optimise the unit to their own conditions. The unit has connections for high and low level audio signals, and is designed to be easily connected into the audio path of noisy signals where the intelligibility and clarity of the speech needs to be improved.

Other features include:

- Earphone/headphone socket
- Output volume control
- Input level control with l.e.d.
- Power on/off with l.e.d.
- Input selector switch
- 12 – 24V d.c. operation
- Noise cancellation On/off with l.e.d.

Supplied with a standard with a 1030-FPL fused power lead and a 3.5mm mono to 3.5mm mono audio lead, the NEIM1031 is powered by any 12 – 24V d.c. unregulated power supply and costs **£129.95 plus £6.95.** An optional mains power adapter or in-vehicle power adapter are available along with other optional extras. For more information contact bhi direct.

bhi, PO Box 136, Bexhill-on-Sea TN39 3WD.
Tel: (01293) 530147
E-mail: info@bhinstrumentation.co.uk Website: www.bhinstrumentation.co.uk

Scientriffic!

After the resounding success of last year's Science Festival, Wrexham Amateur Radio Society are making a return visit to this year's 'Scientriffic' event....

Members of Wrexham ARS (North Wales) will be running a special event station under the callsign **GB2WSF** from 1000 to 1700hours on Saturday 29 March 2003 as part of Scientriffic, which takes place at the end of the Wrexham Science Festival week (24 - 30th March). The station should take the form of h.f./v.h.f., data and ATV set-ups (at the time of going to press the ideas were still being worked on but everything should be finalised in the coming weeks).

The Wrexham club also intend to set-up more hands-on displays this year, including Morse stations, which proved very popular last year. There will also be the chance to see GB4FU, with the intention of running ATV between that and GB2SWF.

For up-dates, further information and a look at last year's event point your web browser at: **www.qsl.net/gb2wsf**

Fund Raiser

The famous scenes of Mini's travelling through the Italian mountains in the film The Italian Job have been recreated by G8PFE and G8FEZ with help from Icom UK Ltd.

In a bid to raise money for the National Children's Home **Nick Gerolemou G8PFE** and his co-driver, former Icom director **Fraser Stuart G8FEZ** retraced the route from the classic British film, *The Italian Job*, as they travelled in their Icom sponsored Mini Cooper from Dover, Kent to Imola, Italy. Nick and Fraser naturally took their Icom Amateur Radio equipment with them on the journey and made several contacts across Europe during their trip.

Nick said, "The highlights of the trip were travelling through the fantastic mountain scenery as well as driving around the roof top test track on the Fiat Building". In total Nick and Fraser raised over £1000 for the National Children's Home.

● Nick Gerolemou G8PFE and his Mini Cooper

Fred Ward G2CVV - A Little Man with Great Character!

Rob Mannion G3XFD expresses his personal memories of Fred Ward G2CVV, former President of the Radio Society of Great Britain with a giant character...despite being only five foot or so tall!

● Fred Ward G2CVV - you can almost imagine the witty comment about to come your way as Fred greets you in his garden. He was short in stature perhaps, but a giant in his outlook and nature!

Photo courtesy of G7GJI.

It was with very great sorrow indeed that I learned of the death of **Fred Ward G2CVV**, who had enlivened the Amateur Radio hobby in Derbyshire and indeed the UK for so many years. Additionally, Fred's death, at the age of 84, was a personal loss because I'd first met him when I was only three years old!

Fred delighted in telling the story - particularly whenever he had an audience on the *PW* stand at the Leicester Show (where he used to produce photos of a miniature G3XFD!) of the only occasions I was shorter than he was!

The meetings came about because Fred, working for the Post Office (Radio Interference Section) was often working closely with my late Grandfather at Derby Friargate Station. My grandparents lived at the old Stationmaster's House and Fred often had to liase closely with British Railways because of the problems associated with the Derby Corporation trolleybus route which passed under the famous Friargate bridge (still standing, now a protected monument although there's no railway anymore). I was fascinated by the sparking of the trolleybus pick-up brushes as they transferred from the normal wires, to guide rails under the bridge.

The sparking caused the Post Office trouble with radio and telephone interference and also created difficulties with the railway signal and telegraphs systems. It was an on-going problem, and over the years Fred, whenever he was working with BR to overcome the troubles, watched me grow up and overtake him in height on my all too rare visits to Derby on holiday.

When my grandparents retired to the Station house at Whatstandwell, not far from Matlock, it was Fred, together with Grandfather that introduced me to the Crich Tramway Museum high above the village. In those days, the mid-1950s, it was just a small collection of trams in an old quarry, with their first tram rescued from Southampton when that system closed. Nowadays it's a huge working museum and I can never visit it without thinking of my dear friend.

Of course, many Radio Amateurs will remember Fred as being the stalwart of the long established Derby Radio Rally, especially in the days when it was held at the old Rykneld School. He was like the proverbial busy Bee - exhausting himself rushing here and there organising a wonderful day out for everybody. It could be guaranteed that **Chris Tarran G8DXF**, the late **Richard Woodley G8CEH** and I always returned home to Hampshire loaded with Amateur Radio junk from the Derby Rally's famous annual sale!

The 'official' obituaries marking Fred's life will be full of his very many achievements. His wartime stories about signals intelligence work (remarkably he had served in the Army and Royal Air Force) were only talked about in detail in recent years, hopefully they'll not be lost.

However, to me Fred was a very great friend. Blighted by ill-health in later years, he was irrepressibly effervescent, despite the fact that he also had to cope with his much loved wife Joan's Alzheimer's Disease, which lead to her having to enter a nursing home some years ago.

Fred was a true Ambassador for our hobby - his earthy comments, in his delightful Derbyshire accent, have kept many enthusiasts on the right track. Full of advice, he would always help anyone. If you had Fred behind you - you could not fail to enjoy the hobby!

We'll all miss him terribly but are left with wonderful memories of a small man with a giant heart and character. I'll especially miss him arriving on the *PW* stand at Leicester - proudly showing his Visitor's Book which I had signed when visiting him at home when I was 12 years old. Cheerio Fred, what a privilege to have known you!

Fred Ward G2CVV, born 1919, died 4 January 2003. Entered Amateur Radio in 1932, became 2CVV in 1937, lifelong member of Derby Wireless Club. Callsign became G2CVV after the War. President (1971) of RSGB, and of Radio Amateur's Old Timer's Association. His funeral was held at St. Peter's Church, Littleover, Derby on Thursday 16 January with an estimated 400 mourners attending.

amateur radio clubs

Keep up-to-date with your local club's activities and meet new friends by joining in!

COUNTY DURHAM

Great Lumley AR & E Society
Contact: Nancy Bone, Secretary
Via Post: 217 Bensham Road, Gateshead NE8 1US
Tel: 0191-477 0036 (Home) or (07990) 760920 (Mobile)
E-mail: nancybone2001@yahoo.co.uk
Website: www.glares.fsnet.co.uk

The Great Lumley Amateur Radio And Electronics Society meet every Wednesday at the Community Centre, Front Street, Great Lumley, Chester le Street Co, Durham. Meetings are from 1930-2130 hours.
Forthcoming meetings include: **Feb 19:** Peter Russell will be talking about his trip to Venezuela; **26th:** Natter Night; **March 2** (Sunday): Spring Auction For Repeater Group 2003, Entrance £1, Tell your friends!; **5th:** Natter Night and **12th**: Annual General Meeting.

DORSET

Flight Refuelling ARS
Contact: Paul M0EYT/G7EYT
Website: www.frars.org.uk
The Flight Refuelling Amateur Radio Society meets every Wednesday and Sunday evening in the club house at 1930 for 2000. The Wednesday meetings begin with a short announcement of what has been happening with the club and any news. Sundays are a social night where people just come to chat. The club facilities are available every club night for members to use. Anyone who is interested in becoming a member is more than welcome on either of the club nights where they will receive a warm welcome. On **Feb 9: Peter G0SKN** will be talking about modern day air traffic control, and also showing a video of current ATC operations, **16th: John G6AZV** will be holding an open contest forum at FRARS to discuss the years contests with interested members and **23rd:** 70MHz cumulative at FRARS

MIDDLESEX

The Radio Society of Harrow
Contact: Jim G0AOT
Tel: (01895) 476933
E-mail: G0aot@blueyonder.co.uk
Meetings of the Radio Society of Harrow are held every Friday from 2000hours at The Harrow Arts Centre. Uxbridge Road. Hatch End. Middlesex. Why not go along to one of the following meetings?: **Feb 21: David G0CAG** demonstrates the uses of the visual basic Interface for the FT-747; **March 7:** Club dinner at The Vine Taverna. South Ruislip. 1930 for 2000hours; **21st:** Newcomers programme: Supervised v.h.f. operating session 144MHz station on the air to help newcomers with operating skills.

STAFFORD

St. Leonards Amateur Radio Society
Contact: Derek Southey G0EYX
Tel: 01785 604904
E-mail: g0eyx@connectfree.co.uk
Website: www.slars.org.uk

The St. Leonards Amateur Radio Society meet every Thursday at Alstom Protection & Control, St. Leonards Works, Stafford at 2000hours. The Club has recently acquired another building on the same site, giving them more space. Amongst other things, an education/training and construction area is planned. This will provide a strong technical base for the club's activities and should prove to be a lot of fun! Forthcoming Events include: **Feb 13**: Committee/Planning Meeting; **20th:** Shack Night, **27th:** Have you got a circuit for...? Bring in your circuits for members to photocopy and March 6: Talk by Flt. Lt. 'Charlie' Brown. This will be held in the Anson Room in the Sports & Social Club next door.

Keep those details coming in!

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2m	5ele (boom 63"/10.5dBd)	£49.95
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4m	3ele (boom 45"/8.5dBd)	£56.95
4m	5ele (boom 128"/11.5dBd)	£69.95
6m	3ele (boom 72"/8.5dBd)	£59.95
6m	5ele (boom 142"/11.5dBd)	£79.95
70cm	13ele (boom 76"/14.9dBd)	£46.95
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160-10M double length (200 foot). **£84.95** del £8.50

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Half size 51ft. (40-10m) £36.95

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STANDARD G5RV

Full size	102ft (now includes heavy duty 300Ω ribbon)	£28.95 P&P £6
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SO-239.....£5.99

300Ω HEAVY DUTY FEEDER

5m length.....£5.00 P&P £3.00

10m length.....£10.00 P&P £3.00

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1.1 Balun			£25.00 P&P £2
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40 mtrs	Traps	(a pair)	£25.00 P&P £4
80 mtrs	Traps	(a pair)	£25.00 P&P £4
10 mtrs	Traps	(a pair)	£25.00 P&P £4
15 mtrs	Traps	(a pair)	£25.00 P&P £4
20 mtrs	Traps	(a pair)	£25.00 P&P £4
5.35MHz	Traps		£25.00 (a pair)

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QT-100 GF 144/70, 3/6dB (1.1m) glassfibre	£39.95
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Enamelled (50m roll)	£12.95 P&P £5
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Flexweave (PVC coated 18 mtrs)	£18.95 P&P £5
Flexweave (PVC coated 50 mtrs)	£40.00 P&P £6
Special 200mtr roll PVC coated flexweave	£99.00 P&P £10
Copper plated earth rod (4ft)	£13.00 P&P £6
Copper plated earth rod (4ft) + earth wire	£18.99 P&P £6
15m pack of earth wire	£10.00 P&P £6

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A superb TDK 'snap fix' ferrite clamp for use in Radio/TV/Mains/PC/Phone etc.

On thin cable simply wind cable round clamp 1-to-2 times. Simple yet effective!

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RS-502 1.8-525MHz (200W) .....£79.95 P&P £5

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4 x 5' lengths of approx 2" extruded (16 gauge) heavy duty aluminium, swaged at one end to give a very heavy duty mast set.

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Pulley will hang freely and take most rope up to 6mm. (Wall bracket not supplied).

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Wall bracket, screws not supplied. Simply screw to outside wall and hang pulley on

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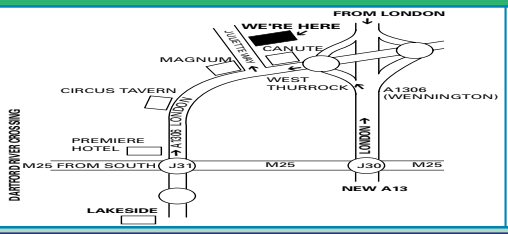

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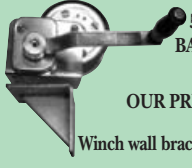

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Looking At...

ANTENNA LOADING

Part 2

Gordon King G4VFV continues with his look at antenna loading, building on the understanding gained last month of how the highest e.r.p. is achieved.

In Part 1 of Looking At... Antenna Loading in the January issue I provided an elementary understanding of how the antenna is loaded to the transmitter to provide maximum transfer of power, and hence obtaining the highest effective radiated power e.r.p. There's also another factor involved, however, and that is if the r.f. output circuit of the transmitter fails to be presented with a reasonably correct antenna match, such that the voltage standing wave ratio (VSWR) climbs above a design-defined tolerance, then the power amplifier (p.a.) protection circuit will detect the mismatch and automatically turn down the r.f. to prevent putting the solid state output device at risk.

As far as solid state rigs are concerned, there could be two causes of e.r.p. reduction; one resulting from the reduction in power transfer stemming from the mismatch proper, and the other from the power delivery itself being reduced. Owing to the fact that thermionic devices tend to overload more gracefully and are less vulnerable than their solid state equivalents, valve rigs, although possibly suffering mismatch loss, might retain their r.f. output potential.

It must also be kept in mind that most latter-day rigs are designed to yield their full r.f. output into 50Ω (or near) loads. This same load value also applies to most power output and VSWR meters. Hence if you attempt to use such a meter for measuring power or VSWR in a coupling differing much from 50Ω, then you should not expect to read the correct value!

Pi Network

In the (good old?) valve days the versatile pi-network was almost exclusively an adjustable part of the rig. When tuned correctly using a couple of controls and a p.a. anode current meter, the Pi-network would facilitate the transfer of the rig's full power to a relatively wide range of load values possibly without the need for a so-called antenna tuning unit (a.t.u). The circuit of an adjustable network of this kind in the anode circuit of a valve p.a. stage is shown in **Fig. 1**.

In Fig. 1 it's shown that the anode of the p.a. valve is fed from the h.t. line through the radio-frequency choke labelled RFC1. Included in this supply line, at the 'cold' end of the choke, would be a milliammeter to read the anode current of the p.a. valve.

The value of the tank or main tuning inductor L1 is adjustable either by the sliding contact (roller coaster) shown, or by a band switch of some sort. The initial tuning and loading of a transmitter using this kind of antenna coupling is best done at low power to avoid inadvertently exceeding the rating of the p.a. valve.

With the power switched to 'low' the required band is selected and then tuned by adjustments to L1 and C1. Resonance of the tank circuit is indicated by a significant and sharp reduction in anode current. The degree and sharpness of the reduction is an indication of the relative Q-factor of the tank circuit. The higher the Q, the sharper the dip will be (as explained in Part 1) and the better the suppression of unwanted harmonic energy.

The plan then is to adjust C2 as a means of loading the oscillatory energy into the antenna system. As the loading becomes effective so the anode current will rise out of the unloaded deep dip of resonance.

A meter connected to read output power would start to show a rise in the power fed to the antenna as the loading is increased. It is then generally necessary to repeat the adjustments, C1 for maximum dip and C2 for maximum loading, until the tuning and loading are optimised. One can then safely increase the transmitter power up to the maximum anode current capability of the p.a.valve.

Some of the hybrid rigs of a few years ago (before the advent of high-power h.f. and v.h.f. transistors) using thermionic valves for the p.a. and solid state devices for the other stages (the Yaesu FT-102, for instance, which

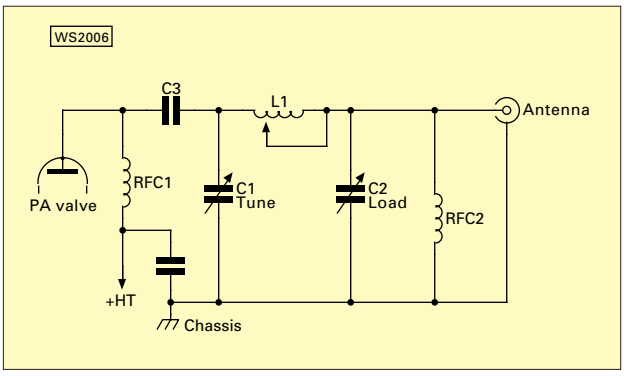


Fig. 1: Basic Pi-network coupling the r.f. from a valve p.a. stage to the antenna.

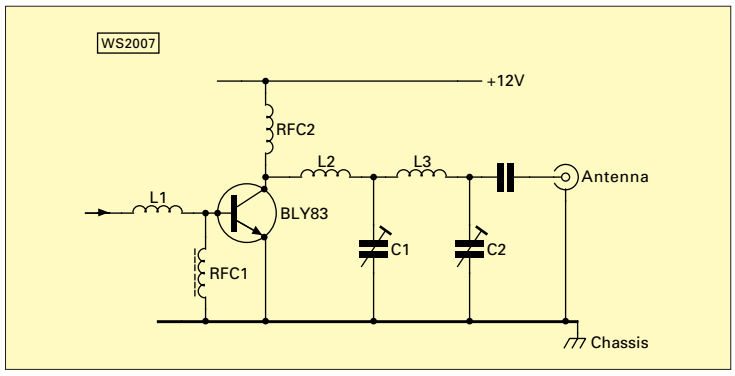


Fig. 2: A Pi-network coupling at the output of a transistor p.a. stage of a 144MHz transmitter section.

boasts three 6146Bs) incorporate a switched meter for monitoring various transmitter parameters, such as anode voltage, cathode current, power output, compression of the speech processor, etc.

These assist with the tuning-up process, but the transmit sections of rigs of this kind, like most of their counterparts with solid state p.a. stages, are designed essentially for antenna systems presenting a 50-75Ω non-reactive load. If the system presents a higher or lower impedance, an a.t.u. would be necessary to avoid putting the p.a.valves at risk.

Pi-Network for 144MHz

The p.a. stage relative to a 144MHz rig based on the Mullard BLY83 transistor and a Pi-network for antenna coupling is shown in **Fig. 2.** In this circuit the Q of the Pi-network, using inductors L2 and L3, is designed to provide a response over the entire 144MHz band without the need for variable tuning. In this case the coupling is optimised by the two trimmers TC1 and TC2. A p.a. stage of this kind would yield an r.f. output between about 7 to 12W depending on collector voltage.

A coupling using series inductance and parallel capacitance is essentially a low-pass filter. This means that by directing the r.f. output from the p.a. device to the antenna by way of an inductive Pi-network, higher-order harmonics generated by the oscillator and p.a. will be appreciably attenuated relative to the fundamental designed-for frequency of the network.

Enhanced Harmonic Rejection

The circuit in **Fig. 3** represents another form of the Pi-network, but this time with a couple of variable inductors, L1 and L2. There are still the two tuning capacitors, C1 and C2, but in this circuit the extra variable inductor L2 provides even more harmonic suppression - some extra 10 to 15dB for the second and more attenuation for higher harmonics. This is generally known as a pi-L circuit.

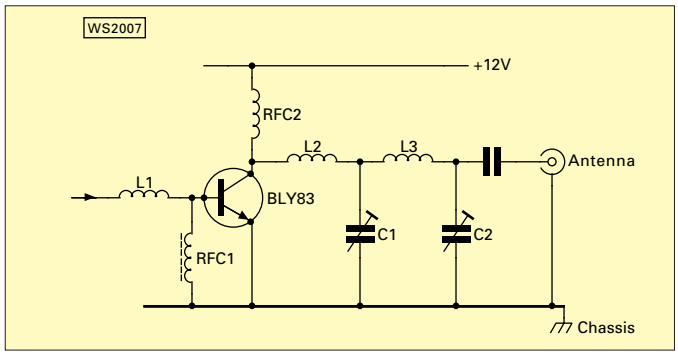


Fig. 3: The additional inductor in this circuit helps to tame the radiation of harmonics of the fundamental frequency. Pi-networks using two inductors are referred to as a Pi-L or a L-Pi network, depending on whether the extra inductor is after or before the main Pi-network.

Finally, the voltage ratings of the capacitors used in pi-networks should be capable of handling the power being coupled to the antenna. This applies especially to the output capacitor in valve p.a. circuits and whether the load is resistive or likely to be heavily reactive.

Air-spaced variable capacitors are commonly found in rigs using valve power amplifiers, and it isn't uncommon for the larger values required for the lower frequency bands to be obtained by switching suitably-rated fixed capacitors in parallel with the variable capacitors.

Well, once again, that just about takes care of things for this month. See you again for the next Looking At instalment in the May issue. *PW*

Radio Basics

The latest project to feature in Radio Basics - the Basic-4 receiver - although relatively simple to build, is more advanced than previously featured. This month Rob leads you into a necessary technique - winding toroidal inductors.

As I've been developing the Radio Basics (RB) Basic-4 receiver project ready to present it in *PW* for you - there's been a niggling doubt in my mind. In fact, the niggle has now grown to a real concern...just how can I assure not-so-experienced constructors that winding coils, especially toroidal inductors - is not really that difficult?

As the **Rev. George Dobbs G3RJV** has often mentioned in his column Carrying On The Practical Way (COTPW) - he's found that readers are always "Put off by having to wind coils, or toroids". It's a sad fact that many projects which have appeared in *PW* over the years, although of interest to our readers...have never been built by the reader because they're hesitant in winding their own coils or inductors.

In fact, I've been trying so hard to encourage RB readers to just 'have a go' at winding coils that I'd written this month's introduction to originally read as follows..."This month Rob leads you into a necessary technique - winding toroidal inductors. And he says....they don't bite"!

I didn't use the wording in the end as it was too long. However, the sentiment is still there...**you must, to get the best results, try winding your own coils and inductors, particularly those using toroids.** So, I'm concentrating this month on this aspect, preparing the way.

Why Toroids?

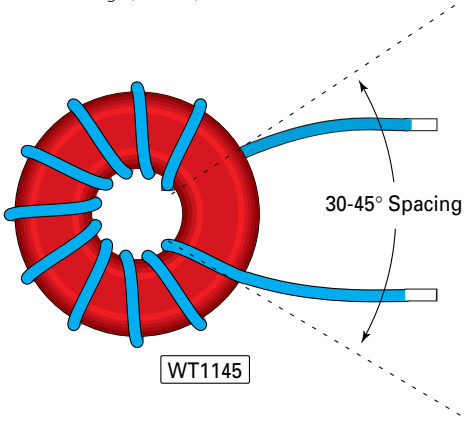
If you're not-so-experienced you may be wondering just why toroid inductors are recommended for the Basic-4 receiver. The reply is simple...they'll provide excellent results due to built-in screening because of the 'closed field'. This effect is especially important in the Basics-4 receiver because it will reduce the possibilities of break-through from unwanted stations.

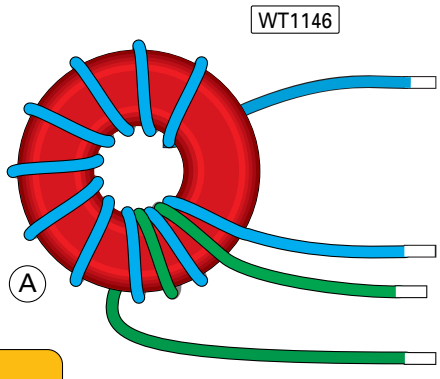
The term break-through refers to how an unwanted transmission/signal appears where you don't want it! For example, if you choose an intermediate frequency of 6MHz - and the circuit is not screened very well - you'll probably end up hearing a good selection of short wave broadcast stations transmitting on the 49M band. Using a toroidal inductor will reduce the interference, and placing the tuned circuits in a screened box (which can be made up from copper clad p.c.b. material) will reduce it even more.

Most kit projects you'll come across nowadays use toroidal cores and inductors and even though I found them to be challenging when I first used them for a project - over 30 years ago - I encourage readers to at least try! Even with my artificial right arm, I can mange to hold and wind them without too much difficulty. The biggest problem is not the windings...but seeing them clearly!

The trick is to hold the core

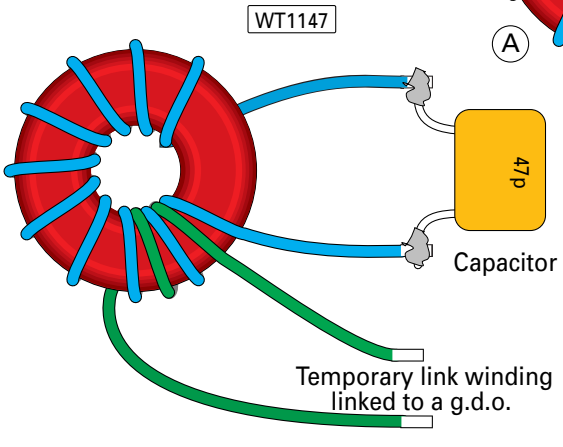
● Fig: 1: The diagram indicates how to achieve the important spacing on the main winding when winding a toroid inductor. It also shows the positioning of the wire endings (see text).

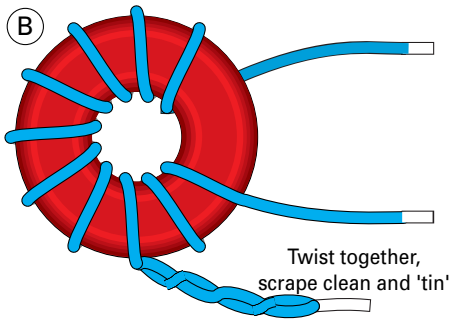




● Fig. 2: Combined diagram indicating (A) how a link winding is made on a toroidal inductor (note the different colour of the wires) with that in B, demonstrating how a tapping point is prepared on a toroidal core (see text).

● Fig. 3: Checking the resonate frequency of a completed toroid inductor is very straightforward indeed. A link winding transfers the dip meter's radio frequency energy (oscillations) into the otherwise closed-field inductor with the used of a link winding (see text).





under a large magnifying lens, and I've found the best type to use is the circular two stage lens which can hang from your collar using a cord. This type is very popular with ladies who enjoy embroidery...so you may be luckily enough to borrow one from the lady in your life!

Best Toroid Reading

In recent years the very best reading in *PW* on the subject of preparing, winding and using toroidal inductors was published in G3RJV's COTPW in July 1999. The article, clearly illustrated with diagrams prepared by *PW*'s **Tex Swann G1TEX** proved extremely useful to me and many others (**See information panel reference re-prints**).

The diagram, **Fig. 1**, was originally published in the COTPW article and indicates how to achieve the important spacing on the main winding. Additionally, the diagram shows the positioning of the wire endings.

The next, combined, diagrams were originally published as **Fig. 2a** and b in the July 1999 article. The diagram in **Fig. 2** a, indicates how a link winding is made (note the different colour of the wires) and that in **Fig. 2b**, demonstrates how a tapping point is prepared on a toroidal core.

THe final diagram **Fig. 3**: clearly explains something which has often foxed first timers when it comes to checking the resonant frequency of a completed toroid. Just how do you couple a toroid to a dip-meter...bearing in mind it's a 'closed field' inductor? Simple is the answer! Just look at the diagram, and you realise all you have to do is to prepare a simple link winding, connect a suitable value fixed capacitor (or variable type if you need to check the frequency coverage).

However, with the mention of resonance and frequency checking we've now come to the point (It can't be avoided) where you really do need the help of a dip meter. So, let's take a quick look at this incredibly simple but most useful instrument.

Constructor's Best Friend

In my opinion the dip meter is the radio constructor's best friend. It can save an enormous amount of time, enables resonant frequency and tuning ranges to be checked out - without the need for the inductor/ capacitors combinations having to be connected into the circuit. In other words, the inductors and the associated fixed/ variable capacitor combinations can be checked out beforehand... so you'll know they'll be on the frequency you require. Last but certainly not the least...with the use of link windings (as shown in Fig. 3) the inductors can also be checked in circuit. And speaking from experience, I can assure you that there's nothing more frustrating than having to disconnect and re-wire inductors and capacitors to ensure that frequency is 'spot on'. With the dip-meter you'll be spared that misery!

Although I don't intend to dwell on how the dip meter works in this article (see information panel) a very brief explanation on how it operates should help convey to the sceptics amongst RB readers that it's as simple as I claim! So, here goes: All that's required for a dip meter is a calibrated, variably tuning oscillator. The oscillator is arranged that its coil can be placed near, or very close to the inductor /capacitor combination (usually this is the most common technique) to be checked.

As the dip meter's oscillator tunes 'through' a circuit tuned to the same frequency - energy is absorbed by the other circuit. The absorption is indicated (usually and preferably) by a moving coil meter unit. It's a superbly simple instrument to use and I thoroughly recommend the dip-meter to you once again. (Please see reference panel for further reading).

Get Busy!

Finally, for this month I can pass on one last piece of advice: Get busy! There's no substitute for experience and once you've got some toroids to experiment with I strongly recommend you make a some of your own inductors.

And to help you, **Tables 1**, **2** and **3** (all reproduced from G3RJV's article) provide enough information to get you going! All you need to do, is choose a project to re-build using a toroid.

Enough projects have been presented in RB for you to select one to make again (you did build them the first time round didn't you?), but using toroid inductors rather than the paper cored coils I first recommended for simplicity. Have a go - good luck and hopefully you'll have gained enough experience to progress onwards with the Basic-4 receiver very soon!

PW

Identifying Amidon cores				
FT	-	37	-	43
'FT' = Ferrite core 'T' = Powdered iron		Core size code '37' = 0.37in '50' = 0.50in etc.		Core material (permeability) Ferrite cores are all black, Powdered Iron are colour coded as below
Common Core materials are:				
Mix -2 Coded Red Mix -6 Coded Yellow Mix -7 Coded White The coding is formed by painting one side of the toroidal core only. Ferrite cores are commonly Mix 43 or Mix 61.				

Table 1.

Inductance values (µH) given by a 10-turn coil							
Mix Type	Colour	T37	T44	T50	T68	T80	Range (MHz)
-2	Red	0.40	0.52	0.49	0.57	0.55	1-7
-6	Yellow	0.30	0.42	0.40	0.47	0.45	7-
-7	White	0.32	0.46	0.43	0.52	0.50	4-8
-10	Black	0.25	0.33	0.31	0.32	0.32	14-25
These inductance figures are based on an evenly wound single layer winding covering 75% of the core circumference. But the equations rarely gives a complete number of turns and the answer should be rounded up or down accordingly.							

Table 2.

Band (MHz)	Turns	Core type	Ctune (pF)
1.8	55t	T50-2	470
3.5	45	T50-2	200
7.0	36	T37-2	100
10.1	35	T37-6	68
14.0	30	T37-6	47
18.07	26	T37-6	39
21.0	24	T37-6	33
24.89	25	T37-6	22
28.0	24	T37.6	18

Table 3.

Information Panel

Reprints from G3RJV's article: For those readers who do not have access to the original magazine carrying G3RJV's COTPW article on preparing, winding, tuning and using toroidal inductors, the Editorial team have prepared photocopies of the article (July 1999 *PW* back issues are now unavailable) in return for a £1 coin. To receive the photocopies please write to: **Tex Swann G1TEX/M3NGS (Radio Basics Toroids)** at the editorial offices. Please ensure you enclose an A5 sized 1st class stamped self-addressed envelope (an A5 envelope is exactly half the size of this magazine) **smaller envelopes will not suffice!**

Dip Meters: A dip meter is an amazingly helpful item of equipment to have in the shack. You are strongly advised to equip yourself with one. For convenience they are available commercially from various sources, including a number of *PW* advertisers. But you can make one very easily for only a few hours work, for less than £5 if you have a suitable moving coil meter. For example, the 'Tinny Dipper' project featured in RB several years ago is absolutely deal and is aimed at the less experienced constructor. Photocopies of the complete dip meter project can be made (by arrangement with Tex Swann at *PW*. Please telephone or E-mail Tex in the first instance for further information and advice).

Radio Basics articles featuring the dip meter: This instrument has featured on many occasions in RB articles. For further reading see P16 March 2001.

Toroids: Various *PW* advertisers advertise toroid cores. Please see adverts from Sycom, Bowood Electronics, Electrovalue.

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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.

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- All modes, FM, LSB, USB, CW & AM
- 100 memory channels
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- Optional keyer

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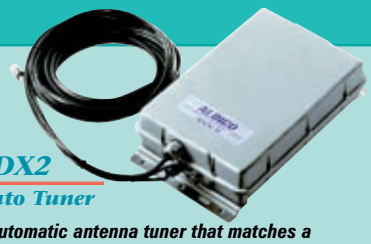

EDX2

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

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HFM-1

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

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

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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

DR620E Dual Band Mobile/Base Radio

- Wideband RX: 108-173.995MHz, 335-480MHz
- Receives Airband and Wide FM
- Dual Watch RX with V/U, V/V, U/U capability
- Dual Band TX: 2 Mtrs/70cm
- 200 Memory Channels
- CTCSS/DCS encode/decode
- Advanced 10F3 digital mode w/speech compression technology (EJ-47U req.)
- Four different tone bursts.
- EMS47 Mic (optional) allows remote control/direct VFO input
- Front Panel seperation (optional EDS9 kit)
- Programmable VFO and memory scan
- Direct GPS input for APRS mobile tracking (req. optional EJ-50U)
- Internal Duplexer
- Ignition key activated power on/off feature
- Power supply Voltage display
- TNC (optional EJ-50U) supports digipeat mode

£299.00

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

£235.95

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DJ 193E

GREAT VALUE 2 mtr Handheld

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

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DJ-596 NEW Dual Bander

A feature packed dual bander - yet simple to use, with the capability of Digital Voice operation (where permitted - using optional digital voice board).
A nickel metal-hydride (NiMH) battery is supplied as standard, for added power and convenience.
VHF/UHF TX/RX including cross-band split operation

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

£199.95

DJ 195E

2 mtr Handheld with Keypad

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

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

£159.95

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
- S-meter
- Cable Cloning
- External device control feature (outputs 3Vdc 5mA signal from an accessory port when squelch opens)
- Additional features, including anti-theft alarm and experimental mosquito repelling tone!
- Huge selection of accessories available

£99.95

DJ-X3

Ultra modern scanning receiver

with 8.33kHz for airband

- 100kHz - 1300MHz
- AM/FM/WFM
- 700 memory channels
- Steps: 5/6.5/8.33/10/12.5/ 15/20/25/ 30/50/100kHz
- Auto descrambler
- Bug detector
- Stereo FM (with headphones)
- Attenuator
- SMA Antenna
- Battery saver cct
- Size: 56w x 102h x 23d mm
- Weight: 14.5g (without batteries)
- Supplied c/w: 3 AA dry cell battery case carrying strap

Optional extras

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

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Roberts C9950
Dual Speed Cassette Recorder

The Roberts C9950 stereo cassette recorder is not just a stylish looking machine - it has many features G3XFD has not seen on a portable machine before, including a built in timer and dual speed operations.

What's this...a cassette recorder being reviewed in *Practical Wireless*? You may think it very strange...but Rob Mannion G3XFD has found many uses for the Roberts C9950 dual speed machine.

At first you might have though I'd gone even further round the bend in reviewing a cassette recorder in an Amateur Radio magazine! But no, I'm still as sane as I'll ever be - and once you've read about this unusual dual-speed machine and how useful I found it to be...you might just agree!

Regular readers will know that for many years I've had quite a large collection of audio tape recorders. They range from the older -but much loved Akai reel-to-reel machines, to my absolute favourite, a Swiss-made Revox semi-professional machine, right up to my Technics analogue-to-digital (A to D) digital to analogue (D to A) auto reverse double deck cassette machine. I use them for recording the broadcast radio dramas I so enjoy. I cannot listen to the radio plays broadcast on BBC Radio 4, Radio 3 and the new Radio 7, during the day - but with the help of time switches and auto-recording, I can get them on tape and enjoy them at any time of day.

I have an extensive collection of audio tapes onto which I place anything of interest and in recent years this has included monitoring the 28MHz band for beacon activity. To monitor the band when I'm away from home I've often left one of my older, machines recording at $^{15}/_{16}$ inches per second (which is half $1^{7}/_{8}$ inches per second) on the beacon frequency. On my return, to see what's been happening - anything up to six hours recording is possible - I fast rewind the tape back, monitoring it with the review facility. As soon as I hear something on the tape, the machine is stopped and then played back at normal speed.

As most of the large machines I've got are fitted with tape counters which measure revolutions of the capstan (rather than the spools) the counting provided is accurate throughout the tape....so it's very easy to work out the time something appears on the tape. To me, it's a facility which works in the same way as a re-usable chart recorder and provides much of interest to my otherwise keen and determined, but rather informal propagational studies.

Incidentally, cassette recorders usually abound in the Amateur Radio household - we seem to collect them don't we? I use them for many purposes, learning foreign languages, as an audio notebook along with the usual entertainment. However, I can assure you the subject of this review is no ordinary machine and has many surprising features...especially for a tape recorder that costs less than £100.

What's On Offer?

So, what's on offer with the Roberts C9950? Well, firstly you get a neat, easy-to-use portable mains/battery standard cassette recorder/player which provides adequate quality recording/playback the standard ($1^{7}/_{8}$ inches per second) speed. The machine is operated by comfortable piano-style plastic keys, and there's a three digit tape counter provided.

Incidentally, the digital tape counter proved to be the only awkward aspect of this machine as far as I was concerned. This is because although the digits are clearly marked on the counter, the viewing aperture is so narrow it has to be viewed from directly above. (The manufacturers only need to arrange a chamfered viewing angle to be provided, and it would be much easier to use).

Additionally, and perhaps most attractively, the recorder comes fitted with a built-in, decently-sized seven day electronic timer unit, driven by an accurate quartz-crystal clock. The timer allows six separate timed recordings to be made. Each timer can be set to record on a particular day of the week, everyday of the week or on Saturday/Sunday.

Usefully, if the timer is set to record on everyday of the week at the same time - only one of the timings will have been used up - so there's five left! If another timer is set to record, let's say, on Saturday/Sunday, four other possible selections are available.

Voice Activated Recording

The tape recorder comes fitted with a voice activated switch (VAS) to allow for automated recordings. In practice this is extremely simple to use and the triggering sensitivity (using the internal microphone) is controlled by a three position switch on the side of the recorder.

Out of interest I left the recorder switched to VAS, and placed it along side one of my transceivers - which was tuned to 28.200MHz, the International Beacon Project (IBP) frequency. When I returned home it was fascinating to see just how many beacons had appeared during the day.

The next stage of this exercise will be to use the external switching socket provided on the recorder to activate one of the (now quite cheap) clocks that announce the time using a synthesised voice. I'll then end up with an accurate time for when the beacon appeared, as the speaking clock's announcement will also appear on the tape (albeit in an annoying seemingly pseudo-American voice!).

Quarter Speed

The quarter speed ($^{15}/_{32}$ inch per second) recording/playback facility provided on the machine proved useful for audio note taking and for recording speech from the radio where quality, and the greatly increased background noise will not be a problem. Personally I think it's

View of front panel of the Roberts C9950, showing the l.c.d. timer display. Easy-to-use, this display indicating the time in 12 hour mode, and the timing selections up to seven days in advance. other controls visible are the main (domed) volume control, piano key style cassette controls, and time setting controls (see text).

The recorder with the recessible carrying handle extended. The whole machine, although only slighter smaller than an A4-sized book, is lightweight even when fitted with batteries, and is sturdily made.

Product

The Roberts C9950

Company

Roberts Radio

Contact

Nevada
Tel: 0239-231 3090

Pros and Cons

Pros I've bought one! In fact I treated myself to one for Christmas 2002 and it's already given me great pleasure indeed by recording all my favourites from BBC R7. Although it doesn't provide 'hi-fi' reproduction - it's perfectly acceptable to me and I'm very satisfied indeed

Cons Tape counter viewing angle difficult.

Price

£80 plus £10 P&P

Summary

Although it doesn't provide 'hi-fi' reproduction - it's perfectly acceptable to me and I'm very satisfied indeed. In use the C9950's recording at standards speed are perfectly adequate for recording speech, i.e. radio drama.

Supplier

Nevada,
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Fitzherbert Spur,
Farlington,
Portsmouth,
Hampshire
PO6 1TT.
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Fax: 0239 231 3091
E-mail: info@nevada.co.uk

also ideal for monitoring repeaters, beacons, etc.

Another obvious use for the quarter speed facility is for Morse practice, or for recording high speed c.w. and playing it back at a speed where you can comfortably read the Morse. I tried it out on the IBP beacons - they send their callsigns at 22w.p.m. - and replayed at a quarter of the speed. The idea works...but it takes a little getting used to, as the intervals between the Morse characters seem very odd at first. But at least you'll be able to identify the beacons...even if you don't have a beacon timer unit.

Recording & Transmitting

Many years of experience with tape recorders has taught me a great deal...and I've learned that attempting to record when operating an Amateur Radio transmitter or transceiver is fraught with difficulty! My advice is, if you want to record your outgoing speech that you do so by placing the tape recorder inside its own Faraday Cage and also thoroughly decouple the audio input leads, in addition to threading the screen/coaxial audio input cable through several ferrite rings!

In other words - taping as you transmit is problematical. Even my semi-professional Revox reel-to-reel (which has good screening and a bonded die-cast aluminium alloy chassis) input meters flail wildly as I'm on air using c.w., even when using low power. So, it's unfair to expect the Roberts C9950 to react any differently - and it doesn't fare any better of course.

However, by placing the recorder into a larger size standard 'tin-plate' biscuit tin with screened audio leads, thoroughly decoupled, it proved possible to record programmes from Radio 4 from Band II v.h.f. And to demonstrate just how susceptible audio equipment is to r.f. breakthrough - despite strenuous efforts to overcome the problem, it's not possible for me to use my main tuner's audio output when r.f. is present. Headphones have to be used, which indicates to me that, as the headphone drive is taken off at the preamplifier stage, the troublesome r.f. breakthrough is actually taking place at a later stage in the tuner's audio circuitry.

Reliable & Useful

In summing up what I think of the Roberts C9950 I should perhaps mention I've bought one! In fact I treated myself to one for Christmas 2002 and it's already given me great pleasure indeed by recording all my favourites from BBC R7. Although it doesn't provide 'hi-fi' reproduction - it's perfectly acceptable to me and I'm very satisfied indeed.

In use the C9950's recording at standards speed are perfectly adequate for recording speech, i.e. radio drama, etc. The quarter speed facility is ideal for applications where quality of reproduction is not important i.e. audio note taking, recording telephone messages, etc. And if you can persuade anyone to record your favourite books using this facility...it'll do that very adequately too. **My thanks go to Nevada for the loan of the review recorder.**

PW

Manufacturer's Specifications

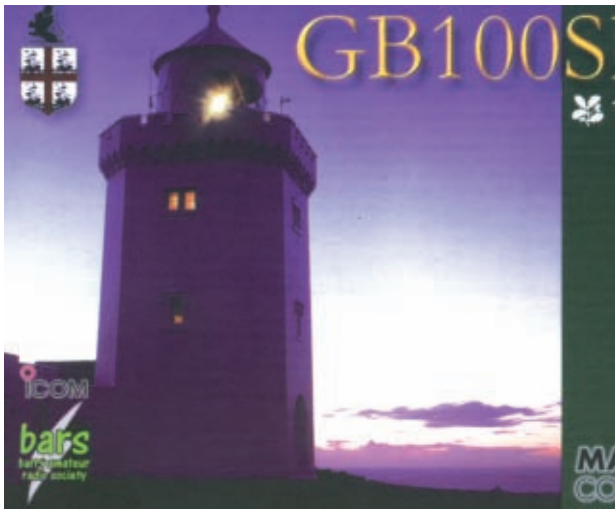
Note: No frequency responses or wow and flutter characteristics are provided in the specifications (See text of review for further comments).

Power requirements:	230C a.c. mains (via supplied adapter) 6V d.c. four LR14 (C) cells or external source.
Circuitry:	Six i.c.s, 28 transistors, 27 diodes, 1 f.e.t, 1 l.e.d.
Audio output power:	320mW
Loudspeaker:	75mm diameter.
Facility sockets	
Headphone:	3.5mm stereo.
Microphone (external):	3.5mm stereo (input sensitivity 0.5mV).
Line input socket:	3.5mm stereo (input sensitivity 200mV).
Line output socket:	3.5mm stereo (**No levels quoted***).
Timer activate socket:	3.5mm (**No details supplied****).

*** Maximum output (using a 800Hz single tone - c.w. side tone - on line output socket was measured by G3XFD as 500mV).**

**** No quoted switching current/voltage levels provided in specifications. No problems encountered when socket was used to switch other portable equipment using 6V d.c. via batteries or via 6V d.c. source obtained from unregulated d.c. adapter unit.**

Ship-to-Shore Centenary Adventure



Glyn Jones GW0ANA tells the tale of Barry Amateur Radio Society's radio experience of a lifetime as they re-enacted Marconi's first commercial ship-to-shore radio transmission.

Glyn dressed as a Trinity House Elder (see text).

The *East Goodwin* Lightship.

Richard GW4BVJ and Glyn GWOANA on board the *East Goodwin* Lightship.

It all started with a telephone call in January 1998 from **Steve Judd**, Countryside Manager of The National Trust at Dover, inviting our club down to South Foreland in Kent. Steve said he wanted to have an exhibition at the lighthouse commemorating Marconi's first ship-to-shore achievement. So, under the guidance of **Richard Mortimore GW4BVJ** our team leader and station manager we set about planning our event.

We agreed that we would help out in anyway we could. After discussion it was decided we would go on-air from 19-24th December and would attempt to transmit a 'spark gap' transmission from the South Foreland lighthouse, situated on the white cliffs of Dover, near St Margaret's Bay, Kent, to the *East Goodwin* Lightship out at sea. The *East Goodwin* lightship lays at anchor, 20km (12 miles) out in the English Channel guarding the notorious Goodwin Sands, known locally as the 'Great Ship Swallower'.

A site meeting at Dover was arranged for early May 1998 and Richard GW4BVJ**, Jim GW3PYX** and I went along to carry out a very concise and detailed survey. At the meeting we agreed that the event should be split into two locations, one at South Foreland and the other on the *East Goodwin* Lightship. It was decided that Richard GW4BVJ would be manager for South Foreland and I would manage the East Goodwin site.

Then it was down to the task of applying for the special event callsigns, having all agreed that we'd like **GB100SF** for South Foreland Lighthouse and **GB100EGL** for East Goodwin Lightship. So, with the help of the RSGB and Radiocommunications Agency and letters of support from The National Trust and Trinity House, we were eventually granted both callsigns.

The next job was to source the extra equipment needed for the event. Although BARS had a reasonable amount of equipment, we soon realised that we would need extra radios and antennas and looked to sponsors for help.

Icom UK Ltd., came to our assistance and very kindly loaned us two IC-746 h.f. transceivers. Our next problem was antennas, we had a Cushcraft A30s for h.f., a Butternut vertical for 3.5 and 7MHz plus two G5RVs and a 'Top Band' Doublet but we were short of an h.f. beam.

Ron GW3YDX of Vine Antenna Products, very kindly helped us out with the loan of a Force 12 Triband. This Trapless antenna at 10m (30ft) was used for c.w. only and it was very impressive.

During the summer months we carried out the final preparations. Antennas were cleaned and maintained and the logging computers checked. **Robert MW1COE** made up hundreds of feet of coaxial cable using our detailed plans and we sorted out rotator cables rewiring and building longer runs. **Philip MW1DHF** set about altering the rotator-fixing plates for the two 10m aluminium pole masts we were building.

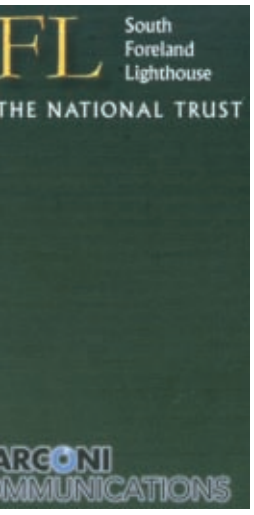
With all the preparation, coupled with lots of letter writing the summer passed into autumn and then winter.Very soon though our great adventure was upon us.

Rigging The Lighthouse

Bright and early on 16 December Richard GW4BVJ, **Phil MW1DHF** and **Robert MW1COE** set off for Dover. After a six-hour drive, the team arrived and began 'rigging' the lighthouse with runs of coaxial cable and rotator control lines.

The following morning the crew was met by a 'working party' from Dover Radio Club who helped out with the vast amount of work needed to put GB100SFL on air. The party consisted of **Ian G3ROO, Fred G4GAN, Chris G0VUT, Reg G0LGW** and **Jim M1BKI** who also supplied some extra thick wooden stakes to beat the storm force gales that were threatening our antennas. (I would also like to thank **Roger Collinson**, Chairman of Dover Club for arranging the support, a great show of mutual co-operation between clubs).

Later that day the second part of BARS crew arrived, myself and my wife **Margaret**, **Brian GW0PUP** and wife **Pat**. Once we'd unloaded we assisted in getting the stations rigged,



while the ladies put the chicken soup on the hob. (Thanks girls it was wonderful!)

By nightfall the station was complete. GB100SFL was QRV on the h.f. s.s.b. 3-element Cushcraft A30S at 10m atop of a 122km (400-foot) cliff looking across water. The Force 12 for h.f. c.w. at 30 feet and the Butternut on a copper ground mat for l.f. 3.5/7MHz.

The Top Band doublet at (30m) 100ft was centre hung from the lighthouse and the **G5RV** at 30m. The u.h.f. and v.h.f. antenna farm was fixed on the lighthouse gallery rail at 100ft and this consisted of 4-element Quad on 144MHz s.s.b. and a Collinear for vertical f.m. We also put up a 50MHz antenna**.**

The Big Day!

Saturday 19 December was our 'big day', when we were to recreate Marconi's historic radio signal made in December 1898 from South Foreland Lighthouse to the *East Goodwin* Lightship. The main station was at South Foreland, (GB100SFL) and the other GB100EGL out in the Channel on board the *East Goodwin* Lightship.

At South Foreland, Brian GW0PUP and Pat together with Ian G3ROO and Margaret entered into the spirit of the occasion dressing up in Victorian costume. By 1100 hours the crowds had gathered to witness the event alng with television camera crews and photographers from the local media.

We were honoured by a visit from the then RSGB President**, Hillary Clayton-Smith G4JKS** who participated fully in the event and passed a greeting message to the *Goodwin* Lightship. At Noon Ian Keyser G3ROO his Morse key, at the ready proceeded to send out a series of V,V,Vs, which was picked up by the lightship.

Richard GW4BVJ replied likewise with VVVs and then Ian G3ROO sent "compliments of the season to you all", Richard replied with "Three cheers for Mr Marconi".

Then it was time for the second part of our re-enactment, which was in commemoration of the first Marine distress radio signal which was sent out by the *East Goodwin* Lightship, after she had been rammed in fog by the SS *Mathews"* in April 1899.

Richard reached for the key and sent the historic message "CQD CQD de GB100EGL we have been rammed by the SS *Mathews* please advise the authorities". Ian at once responded with "GB100EGL de GB100SFL services have been informed and standing by".

At that moment a feeling of admiration and nostalgia overwhelmed the two of us on the lightship, we had done it... despite the bad winter weather! Marconi had been remembered and we had honoured the part radio had played in saving lives during the past 100 years.

Yes, we felt good, it had been a great team effort all round and there were still three days left to work the world, QRZ!

Steady Stream

The South Foreland Lighthouse had a steady stream of visitors throughout the four day event, including lots of interested children, who judging from their questions, I think we must have encouraged a few 'Hams of the future'.

As Napoleon once said *"an army marches on its stomach"*. And I can confirm our small band lived very well, with fine meals supplied by Pat and Margaret, CO0K/p & CO0K/M. With their efforts the team worked and worked to give as many people GB100SFL as possible.

Brian GW0PUP gave his all and lost his voice totally after three days of virtually none stop s.s.b. operating. **Phil King MW1DHF** and **Robert Alford MW1COE** didn't want to leave the lighthouse and miss their early morning fix of r.f. So, they slept on a hard concrete floor. (Some people will do anything for that early morning DX!).

Richard GW4BVJ, who just loves Morse, is so addicted to the rhythm of da di, da dit, da da dida that he stayed up on the last night for a full 24 hours just hammering his key. It was a magnificent effort for the Morse enthusiasts around the world as he gave 2,045 of them GB100SFL a QSO in A1A the mode that Marconi used 100 years ago. It would have been more but we dismantled the station around him, he was still sending "CQ de GB100SFL" in his head for days afterwards!

Thanks

I would like to thank the team for a great effort - nearly 5,000 QSOs were made over the four days of which over 2,000 were made in Morse. We covered all the bands from 1.8 to 144MHz and used c.w., s.s.b., f.m., RTTY and AMTOR and it was all done in memory of a great man Marconi who once said when asked to describe this period of his life: "La calma della mia vita ebbe allora fine" (at that time the calm of my life ended). PW

The Historical Bit

Marconi & George Kemp came to Dover on 16 December 1898 to carry out their Wireless Communication tests. They had to convince the Masters & Elders of Trinity House that "Marconi's invention would work across the ocean and be more reliable and less expensive then submarine cables". So, on 24 December 1898, George Kemp, Marconi's assistant set out for the East Goodwin lightship in an open rowing boat loaded down with Marconi's spark gap radio equipment.

Once aboard George started his trials, and these were successful from the start. Soon George was in contact with South Foreland Lighthouse. He recorded in his diary for the 24 December 1898 "Marconi called me up from South Foreland by sending V, V, V, in code, which sounded on my bell. We continued at a good speed until 9pm and ending by sending "Compliments of the Season to all". George Kemp sent back "Three Cheers for Mr Marconi". Thus ended a successful experiment.

George celebrated the event with a cheese sandwich and a couple of bottles of local beer. As it was now dark George waited until daybreak to leave the lightship and enjoy a celebratory Christmas Day dinner with Marconi, but that was not to be.

By morning the weather had turned rough and the boatman was unable to collect George, who got increasingly seasick. He had to endure 10 days of misery and quarter rations from the crew before he was finally rescued.

Icom IC-2725E

IC-2725E ready for mounting with main control panel attached (see text).

Neill Taylor G4HLX takes a look at the Icom IC-2725E dual-band f.m. mobile transceiver. It turns out the transceiver is versatile, proving useful both in the car and shack.

The latest dual-band v.h.f./u.h.f. mobile transceiver from Icom is the IC-2725E. At first sight it appears to be rather similar to other dual-band rigs that have been on the market in recent years. So, in what way is this one different - what makes it stand out from the others? I was interested to find out, giving the IC-2725E a good trial at home in the shack and also out on the road mobile.

I found that while the transceiver offers no outstanding new features, it does provide all the facilities that you need for v.h.f. and u.h.f. f.m. mobile operation, and is easy to use once you have configured it for your preferences. It provides 50W output on 144MHz and 35W on 430MHz (switchable to 5W or 15W on each band), and seems to have a good receiver, so in terms of performance it's certainly ups the requirements of n.b.f.m. simplex or repeater operation.

Removable Front Panel

The removable front panel or control head is attached to the main unit by a bracket that can be adjusted to different angles so that when mounted in a vehicle a convenient viewing angle can be set. The head is connected to the main unit by a 200mm cable that's easily unplugged at either end if required. An optional 3.5m cable is available (OPC-1155) which allows the main unit to be mounted under a seat or in the boot, so the control head alone can be sited on the dashboard or wherever a suitable space can be found.

Other optional brackets are available for mounting the control head. This arrangement has become almost essential in modern vehicles where it can be so hard to find space to tidily install our essential Amateur Radio gear!

A nice feature of the IC-2725E is that the microphone can be plugged into either the main unit or the control head. So, if you have the main unit mounted in the boot - right under the antenna maybe, with a short feeder run - you don't need a long microphone cable running all the way back to your operating position.

The IC-2725E control head, where basic functions are easy to control, shown detached (see text).

Main Display

The main l.c.d. display on the control head shows exactly what you would expect - the operating frequencies on the two bands, signal strength/power output bar graph, and all the usual status information (e.g. repeater shift, memory numbers, etc.). Either amber or green back-lighting can be selected.

There's also a completely separate tuning dial, volume control and squelch control for each band, as well as buttons to select memory or v.f.o. mode and to control scanning. So the main functions of each band can be controlled completely independently, and there is one button for each, at the top, that selects it as the band for transmitting when the microphone push-to-talk (p.t.t.) is pressed. (I found that this made it easy to do the basic operations needed, and when mobile it is essential to have straightforward control of these things, without the need for multiple button presses).

The other buttons on the control head select repeater shift, CTCSS tone facilities (for repeater access) and power output level (low/mid/high), for the currently selected **Main** band. Finally there's the **On/Off** button and a **Set** button providing access to the menu system for setting a wide range of parameters.

All the buttons on the control head have an alternative function if you hold them for one second instead of a momentary press. These give access to all the memory programming facilities, which are extensive, and various scanning modes.

Quite a few button presses are needed to perform some of the actions, and it would be hard to remember how to do things that are done infrequently. So, a much better alternative is to use the keys on the HM-133 microphone, which is supplied as standard.

Microphone Keys

As well as the p.t.t., the microphone has 25 keys, resembling somewhat the keys

The microphone with its comprehensive keypad, which facilitates the setting up of the rig and programming the memories (see text).

on a hand-held transceiver. All the settings of the rig can be made here (even the volume and squelch can be turned up and down), and I found this much more straightforward and intuitive than using the front panel buttons for the programming of memories and other settings. It's even possible to key in a frequency directly using the numeric keypad.

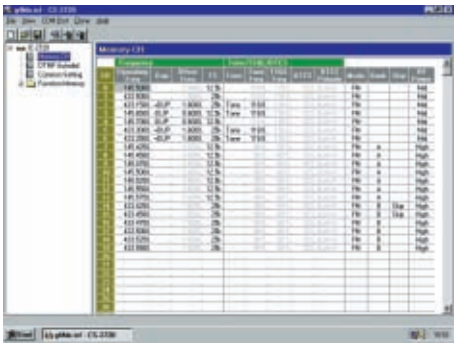
There are a staggering 200 memory channels available on the IC-2725E, each storing not only the frequency but also repeater offset, CTCSS tone frequency and other settings. I can't imagine how anyone could want to store 200 different channels within the ranges 144-146 and 430-440MHz, so I have to regard the memory size as effectively unlimited!

There are also two **Call** channels that can be recalled rapidly, which I set to the f.m. calling frequencies on each band. Although it might be natural to regard the band on the left of the display as 144MHz and the band on the right as 430MHz, in fact all memory channels are available on both displays. So you can, for example, listen to two frequencies within the same band simultaneously if desired, and easily select either for transmitting.

To help manage so many memories, you can, if you wish, organise them into banks, labelled A - J. So, for instance, I put some popular 145MHz simplex frequencies into bank A, and 433MHz simplex frequencies into bank B. Then I could set the left-display band to use bank A and the right-display band to use bank B. Another way of using this facility would be to set up repeater channels for different geographic areas that you visit into different banks.

Of course, you'd set the appropriate CTCSS access tones, too. Then, for example, I might have bank C for visits to the Midlands and bank D for visits to the south coast, and so on.

Inside view of main chassis, showing the large ferrite feed-through bead filters on the d.c. power supply input.



The optional CS-2720 cloning software, making the management of all the memory functions much more straightforward.

Cloning Software

Well, even using the keypad on the microphone, setting up all the memories could be quite a chore. And that's where the optional CS-2720 cloning software becomes really valuable.

The software can be installed on a PC running Windows (98 or later), and communicates with the IC-2725E transceiver using the optional OPC-478 cable which connects from the rig's loudspeaker socket to the PC's RS232 serial port (an alternative version for USB ports is also available). It then shows all the memory settings on the screen - as well as every other setting in the rig - and I found that it is really simple to set-up the memory contents, assignment to memory banks, etc., etc.

Having got everything set the way you like it, the you can save it to disk as well as loading it back into the transceiver. So, of course you can then have several different set-ups stored in your PC in different files, for easy retrieval and loading back into the IC-2725E.

I was, for example, thinking, that if I travelled abroad often with the rig in the car, I might have different set-ups stored for different countries, and load one into the rig before departing. When the 'French settings' are selected, for instance, I might have the repeaters in Provence in memory bank C and those of the Paris region in bank D.

Scanning Capabilities

The scanning capabilities of the IC-2725E are everything that you would expect. Five sets of programmable band limits are available for defining the range of frequencies to be checked, for example I set one to 433.000 - 433.375MHz, which covers the u.h.f. repeaters channels when scanned with 25kHz steps.

Alternatively you can scan memories, either the whole lot or one of the memory banks A - J. Different scans can be running on left and right bands, allowing some pretty comprehensive scouring of the possible activity. There's also a **Priority Watch** scan, which checks the current v.f.o. frequency every 5 seconds (set to the calling channel maybe, or your local Raynet channel) while other memories are scanned.

There are many other features that I don't have space to discuss fully. These include a data connector for 1200 or 9600bps packet operation, a.m. receive capability, and the **F1** and **F2** buttons on the microphone which can store almost all the settings of the rig.

There are eight options for the tuning steps on each band, from 5 to 50kHz - of course I chose 12.5kHz on 144MHz and 25kHz on 430MHz. Also, on the left-display band only, the transmit deviation and receive intermediate frequency (i.f.) bandwidth can be set to values suitable for either 12.5 or 25kHz channel spacing. On the right-display band only the wider setting is available.

The DTMF tones can be sent from the microphone keypad directly. Alternatively they can be programmed into one of 14 DTMF memories, up to 24 digits each.

Actual Performance?

So, with all these capabilities for choosing the operating parameters on the IC-2725E, how does the rig actually perform? Well, at home in the shack, connected to my dual-band collinear antenna, I was very satisfied with the performance.

On 430MHz, in flat conditions, I could access no less than 12 repeaters, equal to any other rig I've tried. I was particularly pleased by the receiver blocking characteristics - I found that listening to my local repeater I could easily hear myself through the repeater while transmitting on a hand-held in the shack, with no apparent desense on the IC-2725E receiver. (Not bad - other rigs with which I've tried this, in the same conditions, have been blocked badly by the enormous local signal).

But it was when working

mobile that the transceiver needed to be put through its paces. Since I was installing it in my car only temporarily, I did not detach the control head from its bracket on the front of the main unit. Despite this, the swivelling bracket was useful to give me clear vision of the display.

For the mobile tests I used a dual-band antenna that's mounted permanently on my car. I then ran the IC-2725E at its full rated power output.

Received Audio

An important aspect of a mobile rig performance is the received audio. The audio output (rated at 2.4W in the specifications) was certainly enough, even using the small built-in loudspeaker in the main unit.

However, this unit is likely to be mounted out of the way, so a separate loudspeaker will probably be used in most mobile installations. I tried the optional SP-10 mobile speaker, which had a very good full sounding audio response. It was very comfortable to listen to even with a high level of background road noise.

The transmit audio quality was also good, according to those who gave me reports, with several favourable comments being given. This was using the standard HM-133 microphone supplied, although personally I don't like using a hand-held microphone while driving (and this may become legally outlawed soon, anyhow), preferring a hands-free arrangement.

Also, I found a couple of times that I accidentally pressed one of the many keys on the microphone, with unpredictable consequences! But it should be straightforward to use different microphones, especially since a socket is readily accessible on the side of the control head.

Easy To Use

Overall, after spending some time getting things set up, I found the IC-2725E easy-to-use in the mobile environment. The controls give easy access to the basic functions that are needed while on the road, while the more complex settings can be done easily using the microphone keypad or through the optional CS-2720 cloning software (although, of course, I'd have to either remove the rig from the vehicle, or take a laptop into the car, to do this).

I also found that the transceiver is equally at home as an f.m. rig for use in the shack at home. It has a performance that is at least as good as any other v.h.f./u.h.f. f.m. transceiver that I've tried. It's a very capable transceiver, with good performance in both the mobile environment and in the shack. With its many features, after setting up the configuration to suit your preferences, it is also easy-to-use.

PW

Manufacturer's Specifications

General

Frequency Coverage (Europe):	144-146, 430-440MHz
Type of emission:	f.m., a.m. (a.m. receive only)
Number of memory channels:	212 (inc. 10 scan edges and two calls)
Frequency resolution:	5, 10, 12.5, 15, 20, 25, 30, 50kHz.
Operating temp. range:	-10°c to +60°C
Freq. stability:	±10 ppm (-10°C to =°60C).
Power supply:	13.8V d.c. ±15%.
Current drain @ 13.8V d.c. (approx.):	Transmit 12A (50W) Receive (standby) 1.2A
Antenna connection:	SO-239
Dimensions (Main unit):	140 x 40 x 187mm (W, H, D).
Remote control head:	140 x 50 x 24.5mm (W, H, D).
Weight:	Main unit 1.25kg
Remote control head:	150g.

Transmitter

Modulation system:	Variable reactance
Output power:	(v.h.f) 50, 15, 5W (approx.). (u.h.f.) 35, 15, 5W (approx.).
Max. freq. deviation:	±5kHz (wide) ±2.5kHz (narrow: left band only).
Spurious emissions:	< than -60dB
Microphone connector:	8-pin modular (600Ω).

Receiver

Receiver design:	Double conversion superhet.
Intermediate frequencies:	
(Left band)	1st: 38.85MHz, 2nd. 450kHz.
(Right band):	1st 46.05MHz, 2nd. 455kHz.
Sensitivity: (f.m. at 12dB SINAD a.m. at dB 10dB S/N):	144MHz band < 0.18µV/0.45µV typical. 430MHz < 0.18µV
Selectivity (Typical)	
Wide:	>12kHz/6dB < 20kHz/60dB.
Narrow:	> 6kHz/6dB < 20kHz/60dB
Spurious & Image rejection:	>60dB
Audio output power:	>2.4W @ 10%THD (13.8V d.c.) into 8Ω

Product

Icom IC-2725E

Company

Icom (UK) Ltd.

Contact

Tel: (01227) 741741

Pros and Cons

Pros *.....I also found that the transceiver is equally at home as an f.m. rig for use in the shack at home. It has a performance that is at least as good as any other v.h.f./u.h.f. f.m. transceiver that I've tried.....With its many features, after setting up the configuration to suit your preferences, it is also easy-to-use*

Cons *....a couple of times that I accidentally pressed one of the many keys on the microphone, with unpredictable consequences! But it should be straightforward to use different microphones, especially since a socket is readily accessible on the side of the control head.*

Price

£399.95

Summary

A very capable transceiver, with good performance in both the mobile environment and in the shack. With its many features, after setting up the configuration to suit your preferences, it is also easy-to-use.

Supplier

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E-mail: info@icomuk.co.uk

Rear view of the transceiver, showing centrally-placed antenna socket.

The loudspeaker unit, available as an optional item for use with the transceiver.

Antenna Antics

Fig. 1: The mast on the 'folded' position, that allows work to be carried out on an antenna single handed.

Steve Mahony VK5AIM relates a tale of replacing his storm damaged antennas, where everything didn't go exactly to plan! He found a solution, but the answer and the problem itself may still be a mystery!

I'm one of the fortunate Australian (VK) Amateurs who has the land, space and property that allows me to erect a 10m high tower, topped with a full-sized 3-element 14MHz beam. But that brings its own problems.

When I was installing my tower, I was able to make the 10m tower into a foldable, tiltable version. The tower was originally a two part unit, being split at the middle (5m point) for easy transport.

I decided that with the system change I planned to incorporate into it, my tower would allow easy access to various antennas. It would make experiments much easier, now and in the future. After all, we do not become more agile with age!

Before starting the job, I had a pair of triangular plates made up, matching the pitch of the three legs of the tower at the join. These plates were hinged along one edge. A framework spine was also made and attached to the top section, opposite the hinge. (The basic idea is shown in the photograph, **Fig. 1**.)

Small Winch

I also attached a small winch and associated steel cable mounted at a convenient height on the bottom section. It was now a one man job to lower the top half down until the top end touched the ground.

The rotator was then mounted on the top section's hinge plate, which now doubles as a bearing plate. I then had a length of 50mm diameter aluminium tube going up from the rotator to a simple thrust bearing in the top plate of the mast.

The thrust bearing consisted simply of an aluminium ring bolted to the tube, together with two nylon rings acting as bearings. The hole in the top plate just providing clearance for the tube. The illustration **Fig. 2** shows the arrangement.

The antenna, a 14MHz 3-element mono-band beam, was mounted just above the bearing. My dual-band 21/28MHz 3/4-element beam mounted above the 14MHz antenna, right at the top of the aluminium tube.

The whole set-up worked well, enabling contacts anywhere in the world depending on band, conditions and time, with 100W p.e.p. Unfortunately though, in my area of South Australia (VK5) we have times with very strong 'gully winds'. (This is because we are at the foot of hills on the Adelaide plains.)

Violent Winds

It was one of these violent gully winds that made the beams elements look like 'Boomerangs'! Fortunately the tower and other v.h.f./u.h.f. antennas were all okay so, I decided to make a claim on my insurance for the damaged antennas.

The insurance assessor came out to look at the situation, though not really knowing what he was looking at! I showed him some photos of the original antennas along with pictures in Amateur Radio magazines, plus the equipment in the shack, and he accepted it was a wind damage claim.

The assessor took a photocopy of an advertisement in the Australian Amateur Radio magazine for replacement antennas, about A$300 for the 14MHz antenna and A$250 for the 21/28MHz dual-band and said he'd be in touch. I received a telephone call some days later saying the claim had been approved and to expect a large package in a few weeks time.

The antennas are all made in Australia by a chap in VK3 (Victoria). The big, and **I mean big**, package arrived some three weeks later. On the following weekend the package was undone and checked out - all was complete, including instructions for assembly and adjustments.

I arranged for several local Amateurs to come around and assist with the antenna erection on one of the following weekends,

weather permitting. On the appointed first day, and with plenty of advice from all, the elements of the dual-band antenna were assembled to the various lengths according to the instructions. As all the radiating elements were Gamma matched, this presented no difficulty.

Fully Assembled

The next day the dual-band antenna was fully assembled and attached to the extension pole. As there had been an antenna in place previously, it was only necessary to attach the coaxial cables and we were ready to go.

With the reflector element supported on some wooden blocks just above the grass, and the beam pointing straight up we proceeded to check the v.s.w.r. With someone in the shack keying up the transmitter on low power, and yours truly adjusting the Gamma Match, we soon had both bands down to minimum v.s.w.r., just lifting the needle, on 21.2 and 28.5MHz.

With the tower cranked-up to the vertical position and locked, the v.s.w.r. was just as good, and we could hear good signals all around. This called for a celebration and my wife kindly supplied coffee, tea and biscuits all round.

With comments of "when do you expect to have your DXCC?", we packed up all the tools and called it a day, arranging to install the 14MHz antenna another day. Little expecting the trouble and mystery we would encounter!

After waiting for suitable weather (and the availability of the helpers), we all gathered to finish the job. With the mast lowered down we began to assemble the 14MHz antenna, only to discover that the thing was too big, when assembled, to manhandle it into my backyard. (Oh dear!)

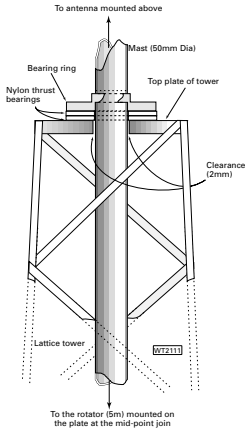
Got In The Way

We found that things like rotary clotheslines, shrubs and other garden items got in the way of the elements. So, we decided to mount the boom on the mast first, then assemble the elements afterwards, starting with the driven element.

The director element was then assembled and mounted, before the mast was raised and the beam rotated 180° and lowered again, this gave us access to the other end of the boom, **Fig. 3**. The reflector was mounted and allowed to rest on the wooden blocks in a similar fashion to the 21/28MHz beam.

The coaxial cable was connected up and we were ready to adjust its v.s.w.r., as we had done with the dual-band antenna. Following the same procedure as before, in no time we had the v.s.w.r. down to below 1.5:1 (just lifting the needle). With comments like "we've got this down to a fine art" the mast was winched up and locked in place.

Full power was applied to the system, and to our amazement the s.w.r. went **off scale**. What had gone wrong? The mast was lowered and the Gamma match inspected and checked for tightness - but all appeared okay!



● Fig. 2: The original arrangement at the head of the mast, before the earthing strap was fitted.

The transmitter was set to low power and the v.s.w.r. checked, the reflector was resting on the wooden blocks. Lo and behold the s.w.r. reading was again 1.4:1. So, full power of 100W was applied and the v.s.w.r. remained at 1.4:1. What was going on?

Have A Break

We decided to have a break, tea, biscuits and a think about the problem. Then once again, the system was raised and tried. It was still reading high v.s.w.r.! Someone suggested that we keep the r.f. going into the antenna as it was lowered again, which we did.

As soon as the mast was about 5° of off vertical, the v.s.w.r. dropped back to the lower value that we'd achieved in setting it up! We were all amazed and puzzled, but as it was getting late, we locked the mast in position and tidied up. Frustratedly, listening with the antenna during the week, excellent signals could be heard all round.

● Fig. 3: Perched on top of a set of steps, Steve makes adjustments. The sheer size of the antenna can be seen in this shot.

Many discussions were held by the helpers on local v.h.f. during the following evenings. On a suitable weekend, we gathered to try and resolve the mystery. Someone suggested that we check the d.c. resistance between the pole from the rotator to the steel tower.

With hose clamps, and long lengths of heavy gauge wire making good connections, we were ready to try it out. Using a digital multi-meter (d.m.m.) in resistance mode, a low resistance was indicated between the two points. Just what the reading was, I cannot remember, but it was only about 5Ω or so.

Resistance Increased

The mast was raised again while we watched the d.m.m. reading as the mast went up. And lo and behold, as the mast went past the last few degrees, the resistance increased! So, lowering the mast again, we set about inspecting the thrust bearing.

There was only 2mm clearance between the aluminium and the hole in the top of the plate. However, with someone taking the weight of the mast, there was clearance all the way round the aluminium mast. The resistance reading on the d.m.m. immediately changed. So, was this the problem?

Perhaps an earthing strap was needed. To make one, a section of braid was immediately removed from a length of RG-8 coaxial cable and it was threaded through a piece of black plastic sleeving. Solder lugs were then attached to each end, and finally one end was attached to the aluminium mast at the bearing ring.

Taking a complete turn around the mast, the free end of the earthing strap was attached to the bearing plate with a threaded bolt screwed into place. The resistance between the two points was shown as low, and remained so as the mast reached the vertical position.

The measurement leads were removed and full 100W of r.f. was applied. Aloha! The v.s.w.r. was steady at 1.5:1. The antenna was rotated the full 360° and the v.s.w.r. remained the same.

Question Asked

The question was then asked ... how was this change in d.c. resistance affecting the v.s.w.r.? It was agreed that when the mast was vertical that the aluminium mast was not touching the edges of the clearance hole in the top plate at the bearing, possibly assisted by the nylon thrust washers. When the mast was not vertical, its own weight caused the pole to bend, allowing it to contact the hole edge.

Out of interest, we measured the distance from the base of the rotator to the thrust bearing. The length of the pole and rotator was close to λ/4 at 14MHz! So, I will leave it to you, the readers to judge ... just what was happening! *PW*

the PW IBP monitoring receiver

Oliver Tillett G3TPJ asks "Are you keen on the h.f. bands and want to know what DX conditions are like now by monitoring the IBP frequencies?" If the answer is "Yes" - Oliver's monitor receiver design even displays the location and callsign allocated to each IBP time slot!

The prototype *PW* IBP Monitoring receiver as built by its designer Oliver G3TPJ. This dedicated unit covers all five of the International Beacon Project frequencies on which the beacons operate, providing the operator with a means of evaluating band conditions within three minutes for each band (see text).

The project I'm about to describe is that of a working IBP clock and monitoring receiver. My prototype is shown in the heading photograph.

However, before we get too involved with the technicalities of building, take a look at the block diagram in **Fig. 1**. This shows the lay-out and approach I've adopted for the receiver (for further details see under 'The Receiver' heading. Next, take a look at **Fig. 2**, which shows you the design used for the all important clock timing and display facilities (for more information see under 'Timer Counter' circuit'.

Next, I'll give you a short technical description of each of the various units which make the completed project. As most of you contemplating building the project will be very familiar with the r.f. stages, I'll deal with the seemingly unusual and difficult stages first...**aiming to**

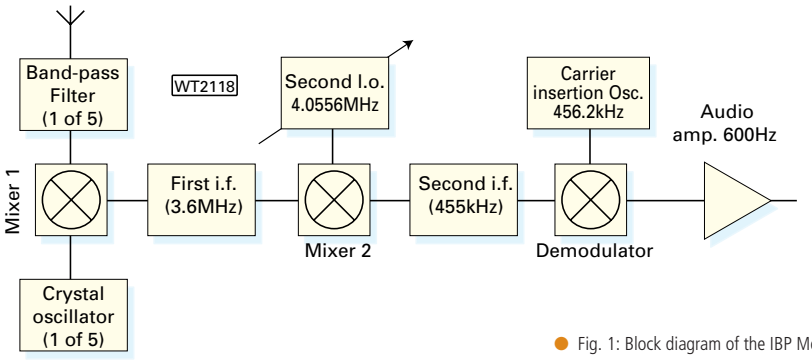


Fig. 1: Block diagram of the IBP Monitoring receiver (See text).

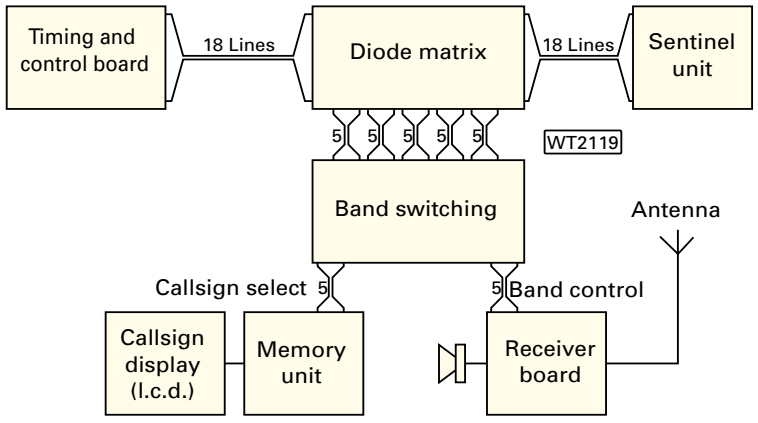


Fig. 2: Block diagram of the electronic timer unit, band switching. Sentinel unit, and callsign display unit. (See text).

an oscillator/divider. This starts from the crystal frequency of 4.194304MHz, and produces after division, at pin 14 of the i.c. a 1Hz signal.

One or other of the 1Hz signals is selected via S1 and passed into the gating circuit of IC7a, one of four AND gates in the i.c. The other input to this gate is either a logic '1' as shown, allowing the 1Hz signals through, or a logic '0', which inhibits the signals. This logic level is selected with the **Hold** switch S2.

On leaving the **Hold** gate, the 1Hz signal passes into a 'divide by 10' circuit, formed by IC8, another 7490 divider chip which is arranged in its symmetrical division form. This 0.1Hz (one cycle per ten seconds) clock then passes into a 'one-of-eighteen' decoder, formed from the three divide by ten c.m.o.s. i.c.s IC9, 10 and 11 and two gates from IC7. The fourth gate from IC7 is unused and the input and

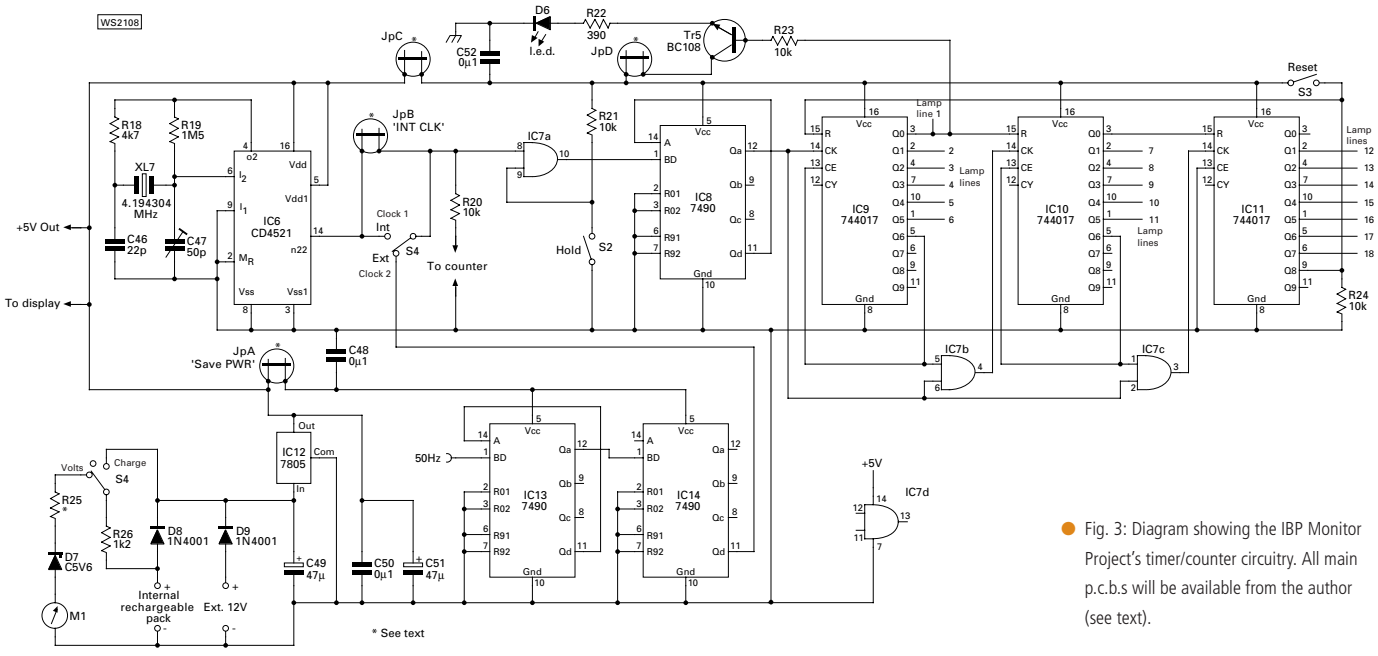


Fig. 3: Diagram showing the IBP Monitor Project's timer/counter circuitry. All main p.c.b.s will be available from the author (see text).

convince you that they're not that difficult!

Timer Counter Circuit

I'll start first with the timer counter circuit shown in **Fig. 3**. This consists of a small power regulator and internal PP3-sized rechargeable battery charger. Diodes D8 and 9 act to allow either the battery or an external 12V source to power the unit.

If using an external supply, then the battery is effectively cut off. Switch S4 and the resistor R26 allow the battery to be charged at about 2mA. Resistor R25 and Zener diode D7 form a 'suppressed zero' voltmeter, reading between 5.6 and 10V to show the battery terminal voltage. The regulator i.c., IC12 is a three-pin 5V device supplying the unit.

The divider chain formed by the IC13 and 14, both 7490s, is arranged to divide the incoming 50Hz clock by 50. The output is then a 1Hz signal that may be selected by 'INT/EXT' switch S1.

The other input at 1Hz comes from IC6 arranged as

The one-of-eighteen decoder produces a series of positive going pulses, sequentially on **Lamp Lines** 1 to 18, every three minutes. So, every ten seconds one, and only one, of the Lamp Lines goes high, all others remaining low for the period. These Lamp Lines are the basic timing and

continued on page 42

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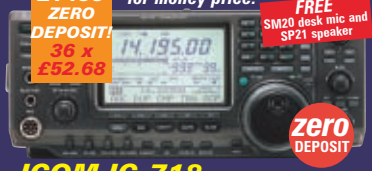

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The Icom Flagship is proving to be very popular with the SSB Audio fanatics on 20 metres.It is also a very popular CW radio with some of our CW only customers. Equally at home with newcomers as well as experienced operators! The 756 Pro 2 (or IC-756 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.

ICOM IC-R10

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

ML&S £279 ZERO DEPOSIT 36 x £10.14

The latest scanner from Icom offering audio and Visual scanning facilities. Listening to your local repeater or watching Crossroads it does the lot.

ICOM IC-718

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

ML&S £599 ZERO DEPOSIT! 36 x £21.78

KENWOOD TM-G707

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 TH-F7E

ML&S £259 ZERO DEPOSIT! 36 x £9.42

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.

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

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-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!

ML&S £1695 STD UNIT
ZERO DEPOSIT!
36 x £61.93

KENWOOD B2000

zero DEPOSIT

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

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

ML&S £1599
ZERO DEPOSIT!
36 x £69.42

YAESU FT-1000MP MK5

zero DEPOSIT

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

ML&S £2499
ZERO DEPOSIT!
48 x £73.94

YAESU QUADRA VL1000

zero DEPOSIT

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!)*

ML&S £3799
ZERO DEPOSIT!
36 x £138.12

YAESU FT-847

zero DEPOSIT

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

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

KENWOOD TM-D700E

zero DEPOSIT

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)

ML&S £449
ZERO DEPOSIT!
36 x £16.32

KENWOOD TS-570DGE

zero DEPOSIT

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

ML&S £849
ZERO DEPOSIT!
36 x £30.87

ICOM IC-910H

free 23cm Module

zero DEPOSIT

FREE 23cm Module!

The Only VHF/UHF base station Still in production. With full all mode dual receive. 100 watts VHF & 75 watts UHF. You can add the UX-910 to give 10 Watts of vb23cms.
UX-910 price £349

ML&S £1349 STD UNIT
ZERO DEPOSIT!
36 x £49.05

NEW ICOM IC-7400

zero DEPOSIT

FREE desk mic & speaker!

The replacement for the popular IC-746 has 100 Watts HF, 6m and 2 metres all mode operation,
Built in ATU for HF and 6m. Full IF DSP. Fast becoming a hot seller!

ML&S £1449
ZERO DEPOSIT!
36 x £52.68

ICOM IC-706 MK2G

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
ZERO DEPOSIT!
36 x £28.69

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

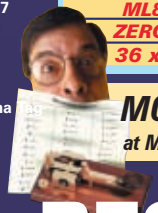
Covering 100kHz-2000MHz

ML&S £1299
ZERO DEPOSIT!
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



MORSE TESTS

at Martin Lynch & Sons

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
Sat 22nd February
KENWOOD DAY
Featuring the TS-2000
Demonstrations
by KENWOOD UK

C U @ Blackpool Rally 14th March!

YAESU FT-8900

zero DEPOSIT

ML&S £399
ZERO DEPOSIT!
36 x £14.51

YAESU VR-500

ML&S £199

YAESU VR-120D

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

ML&S £159

NEW!

YAESU VX-7R

ML&S £329
ZERO DEPOSIT!
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!

HOT NEWS!
New Ham Radio Event for 2003!

27th April 2003

West London Radio & Electronics Show

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.

YAESU FTV-1000

The Yaesu 200 Watt transverter will work with The FT-1000MP, FT-1000MP MkV, FT-1000MP Field. Covering the entire 6 metre band giving you 200 Watts of clean RF!

FP-29 *(required for FT-1000MP and FT-1000MP MkV Field)* £349

RRP £799
ORDER WITH A NEW FT-1000MPMkV AND BUY FOR ONLY £549!

YAESU FT-840 FM

zero DEPOSIT

now with FM!

This is an excellent starter radio is sadly discontinued so we are offering the TS-50S from Kenwood at £629 or we have a few used units available.

CALL FOR AVAILABILITY

YAESU FT-817

choose a package to suit you

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

Package 2
As package 1 but with Miracle whip,Case,PSU and a choice of Palm Mini Paddle or DTMF Microphone!
Only £799

Package 3
Package 1 plus 50 watt Tokyo Hi power amp, LDG Z11 ATU,SP-817 Speaker Plus Samlex SEC-1223 PSU.
All for £1199

FT-817 Accessories

HL-50B 50 watt amp	£229.00
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

ML&S £1099
ZERO DEPOSIT!
36 x £39.96

YAESU FT-100D

zero DEPOSIT

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!

ML&S £799
ZERO DEPOSIT!
36 x £29.05

YAESU VX-1R

zero DEPOSIT

Still the smallest handheld around with built in scanner offering up to 1 Watt on 2 & 70 and Lithium ion battery that last for ages this is the ultimate pocket radio at only £159!

ML&S £159
ZERO DEPOSIT!
36 x £5.78

YAESU FT-7100

zero DEPOSIT

For the same price most other manufacturers offer a twin band Yaesu offer a full blown Dual band mobile. With CTCSS, switchable deviation, dual receive, Built in Duplexer plus remote head *(requires YSK-7100 at £39)*

ML&S £329
ZERO DEPOSIT!
36 x £11.96

YAESU VR-5000

zero DEPOSIT

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

ML&S £599
ZERO DEPOSIT!
36 x £21.78

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

NEW!

YAESU FT-897

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

ML&S £2199
ZERO DEPOSIT!
36 x £79.95

FT-1000 Mark V Field

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*
- *Conservative 100 Watt Low Distortion Final Amplifier Design*
- *High Speed Automatic Antenna Tuning System*
- *Dual Receive With Independent AGC Systems*
- *Enhanced Digital Signal Processing*
- *Selectable SSB Pattern Contour Filters*
- *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.
ZERO DEPOSIT, 24 x £13.48

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

BEST PRICES at ML&S - *where else!*

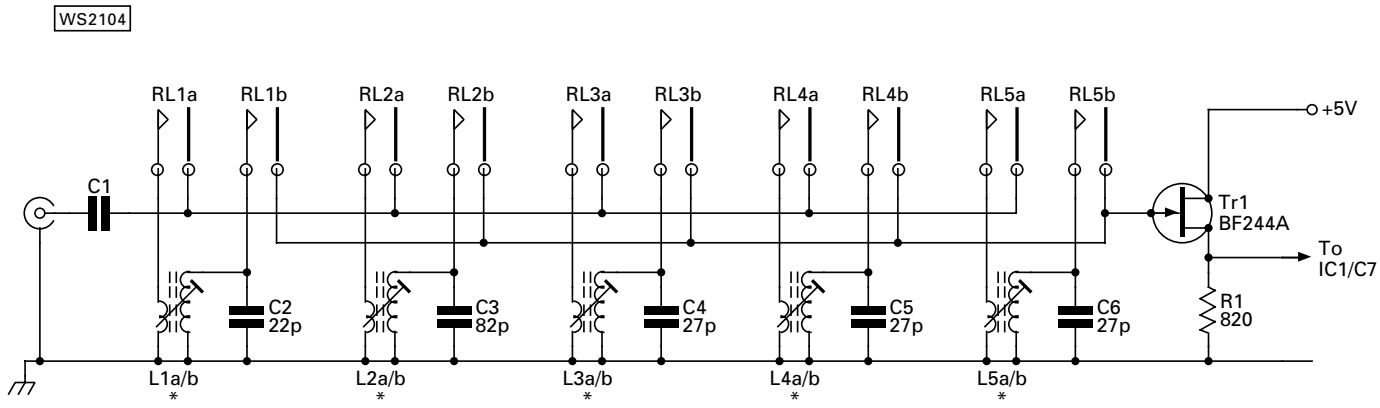


Fig. 4: The circuitry of the input band-pass filtering used on the G3TPJ prototype (see text)

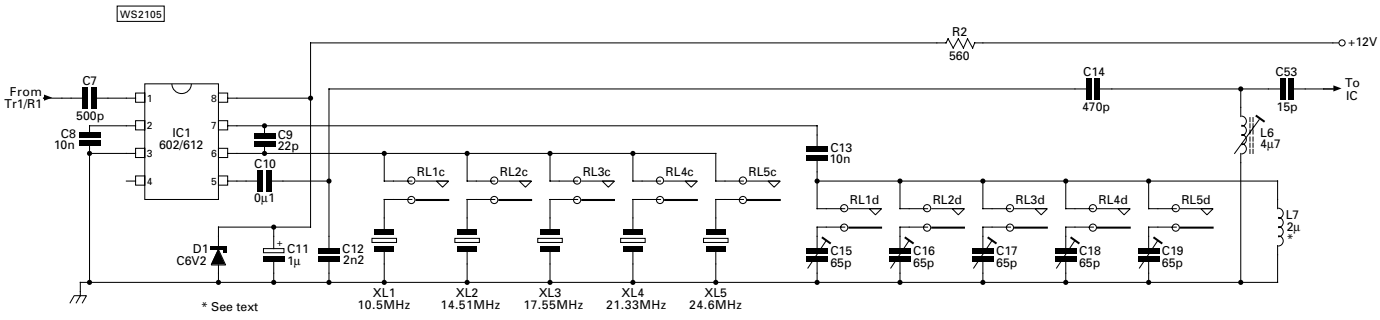


Fig. 5 Circuitry of the 1st mixer and crystal oscillator on the Monitor receiver.

controlling signals for the display.

Transistor Switch

The transistor switch Tr5, is fed from Lamp Line one, that marks the start of the timing sequence, lighting l.e.d. D6. It may be disabled by opening the jumper JpD to reduce the power taken by the unit in operation. If you use an hyper-bright l.e.d. in this position, then it will still light very weakly when JpD is removed.

Jumpers JpA and JpC allow further reductions in power requirement at times. Removing JpA, if the external clock facility is not being used, will reduce power in this case. And if the clock is required to remain running, but with reduced power, then removing JpC will reduce power drain again.

Before describing the rest of the clock decoding, I'll now turn to the circuit of the Beacon Receiver itself.

The Receiver

The Beacon Monitoring receiver is a dual conversion design, using two 602/612 mixer i.c.s (IC1 and 2). These are followed by a direct conversion (d.c.) final i.f. stage in IC4, before a stage of audio amplification in IC5 which then feeds a small loudspeaker or headphones.

Now, let's take a look at some of the receiver circuits, starting, for obvious reasons, at the front end! The circuit in **Fig. 4**, shows the input band-pass filtering. Next, the circuit in **Fig. 5**, shows the 1st mixer and crystal oscillator. The second mixer/local oscillator circuitry is shown in Fig. **6**. And as you can see...I've adopted a straightforward approach - avoiding some of the pitfalls which appears in some designs! The carrier insertion oscillator / demodulator and audio amplifier circuitry is shown in **Fig. 7**.

The front-end of this receiver, Fig. 4, has a separate pass-band tuned input consisting of inductors L1 to L5 coupled with capacitors C2 to C6. One of the selected band-pass filters is fed to the gate of Tr1 to give some voltage gain to the whole input stage, as well as reducing the loading of the IC1 mixer stage on the tuned circuits, increasing their effectiveness.

The first mixer stage, Fig. 5, is a crystal controlled mixer where individual crystals XL1 to XL5 are switched to the oscillator stage of IC1. To achieve a degree of oscillator tuning, separate tuning capacitors, C15 - C19, along with a parallel inductor L7, are also selected according to the band received. The first i.f. of 3.6MHz, is fed via C53 to the input of the second mixer stage of IC2.

The oscillator section of IC2 (Fig. 6) is used only as a buffer stage, is fed itself from the oscillator buffer stage of Tr2, which buffers the second local oscillator (l.o.) of Tr3. The oscillator may be tuned over a small range with a variable voltage from R10 fed to the varicap D3. The output from the second mixer pin 4 of IC2 is passed through a 455kHz band-pass filter FL1 before going to the final direct conversion to audio in IC4.

The second i.f. of 455kHz is directly converted to audio in the mixer stage of IC4, Fig.7, which in a similar fashion to IC2, has an external oscillator, Tr4, running at 455kHz. The frequency of this oscillator is controlled by XL6, trimmed to frequency by C42. This time the output is taken in balanced form from pins 4 and 5 of IC4, to the audio amplifier IC5, which is arranged to have a slightly higher audio gain.

These stages, as described, are all you need for a simple IBP beacon clock-receiver. Control of the receiver is carried out by using a suitable switch to control the various relays that select the correct band-pass filters and crystals.

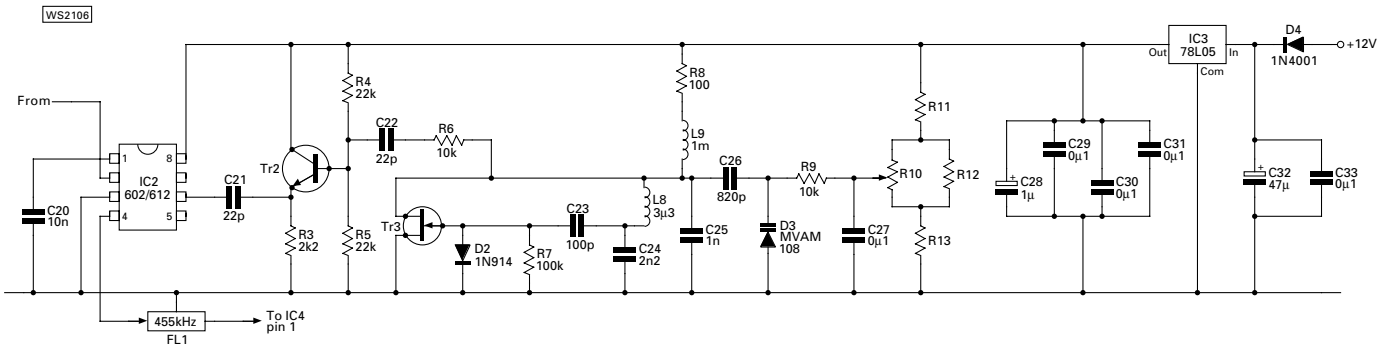


Fig. 6: Carrier insertion and demodulator circuitry for the receiver (see text).

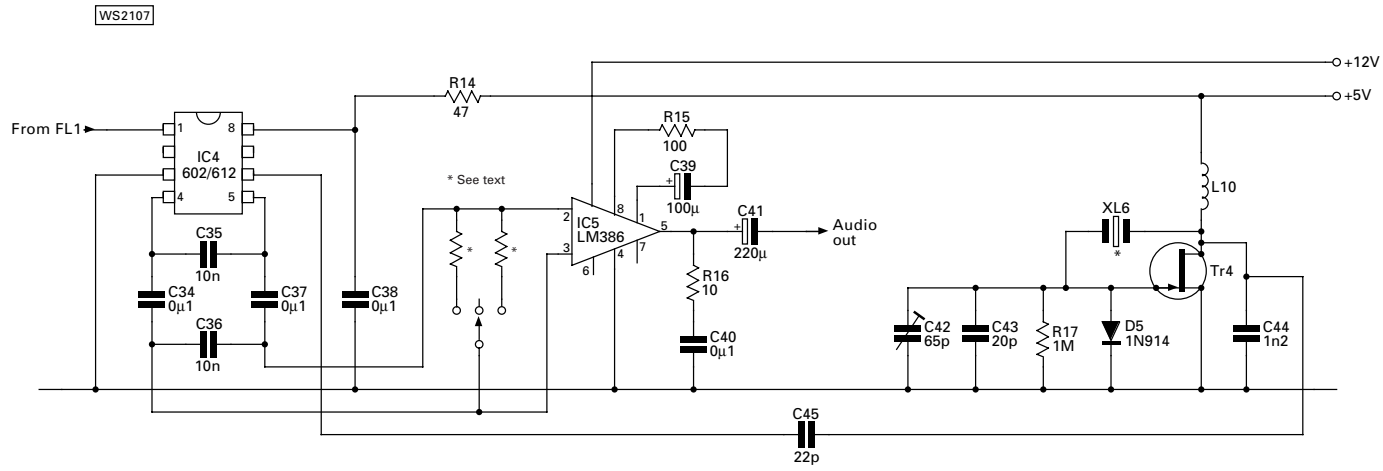


Fig. 7. The carrier insertion oscillator/demodulator and audio amplifier circuitry.

The Lamp lines illuminating a list of the stations, by band, that should be transmitting at that time.

Boldly Forward!

Despite the fact I've just said "These stages are all you need"...I decided to take it further. I ended up using signals from the band-switch and the Lamp Lines themselves to drive a suitable l.c.d display showing the actual beacon station's callsign on an l.c.d. textual display...adding a helpful feature.

To add the extra facility I had to create a suitable binary coded decimal number (b.c.d.) for each time slot. This is the function of the diode matrix, which is to be described in the next issue.

Well, that's enough for you to digest this month! Next time I'll be describing the rest of the system and the constructional stages as well as providing a shopping list and guide. Cheerio until then! *PW*

The IBP System & The G3TPJ Receiver

As there's been much confusion in trade advertising regarding the International Beacon Project (IBP) system, and what the various monitoring techniques achieve, I've prepared a short summary outlining the IBP system itself, followed by an explanation outlining what you'll be able to do with the *PW* Beacon Monitoring receiver, designed by G3TPJ.

The IBP system: The IBP system literally revolves around 18 dedicated h.f. beacons, equipped with Kenwood TS-50 transceivers (working as transmitters only) situated around the world (For this simplified explanation I'm only looking at one band - 14.1MHz, although the system also works on 18, 21, 24 and 28MHz. The 18 beacon sequence (There are 18 ten second slots within the three minute cycle) starts at **4U1UN** in New York when that beacon transmits its callsign at 22w.p.m. and then provides four c.w. dashes at 100, 10 , 1W and 100mW (all this is achieved within 10 seconds.) The beacon then goes silent (on that band) and the next time slot is taken up by the next westwards transmitter which all follow in sequence. So, by listening to the IBP frequency on 14.1MHz for three minutes - the more beacons you hear as they transmit in turn from around the globe, the better the conditions are! **The problems come if you can't read Morse at 22w.p.m. or you don't have access to an accurate timer. That's where the *PW* IBP Monitoring receiver comes in!**

The Monitoring receiver: This project - the ultimate in the series of designs aimed at helping the h.f. user evaluate conditions - takes over where the others leave off. The preceding simpler systems which featured in Radio Basics, and the l.e.d. timer unit designed by **Phil Cadman G4JCP**, all required to be used with separate receivers.

However, the G3TPJ deigned unit incorporates its own receiver, which together with the built-in beacon timer, provides a dedicated monitoring system. Additionally, and perhaps the most important feature - is the l.c.d. type display which identifies which beacon in the 18 transmitter network is due on. **Note:** All prospective users should be aware that the G3TPJ design **does not indicate - via the l.c.d. display - that a particular beacon is being received**. Instead, the display will actually indicate **which beacon is due to be transmitting at that particular time in the three minute cycle**. Whether or not that beacon will be heard will be entirely dependent on the propagational conditions, and that of course is what the entire exercise is all about!

So, when listening on 14.1MHz, and you see from the l.c.d. display that the Japanese beacon JA2IGY should be heard -and you hear all four power dashes (the last is sent at 100mW) - the time is ripe for working the JA stations! Good luck, get building...and work that DX! **Editor.**

Tom Kelly EI2AJ, along with other keen QRP operators appreciates that the Index QRP Plus transceiver, although no longer made, has a world-wide reputation for performance and quality. Determined to keep his rig on the air...Tom started to search for specialised replacement parts.

Index QRP Plus

The Index Laboratories QRP Plus transceiver - nicknamed the 'Rig on a leg' by PW Editorial staff proved to be an extremely popular choice for QRP enthusiasts. In his article Tom Kelly EI2AJ describes his efforts to get his Index back on the air.

Contact Details
You can write to Stan Yarema at:
3457 12th Avenue West, Seattle, WA 98119 USA.

For some years I've been the happy and satisfied owner of an Index QRP Plus, which was the choice of Radio Amateurs the world over, especially those keen on using low power.

I run a c.w. QRP station and have been doing so for the past 41 years, and have thoroughly enjoyed this aspect of the hobby. My first rig was in fact one of the famous B2 'Spy Sets' crystal controlled c.w. only transmitter-receivers used extensively by resistance groups in occupied Europe during the Second World War.

When I purchased the little Index I was amazed by its performance. In a review in October 1995, **G3SJX** said "that it provided the best overall performance of any QRP rig at that time and that its flexible audio filtering was not matched by rigs costing £4000 at the top end of the scale".

Using 5W QRP c.w. to a G5RV antenna, and 28MHz HB9CV I've successfully worked world-wide. Many QRO stations have expressed disbelief when told that my output power was only 5W.

I grew very fond of my little 'Rig On A Leg' ...which I found out was the *PW* editorial staff's nickname for it due to the distinctive 'peg-leg' look! ***Editorial note:*** *This nickname was a spontaneous reaction from* ***Donna Vincent G7TZB/M3TZB*** *when she first saw the transceiver when unwrapping it when it arrived at the office for review. The name stuck!* ***Editor***.

Audio Problems

Alas, my much loved dig 'died' some three years ago and unfortunately in a way I can only blame myself! I'd been experimenting with PSK31 and some spikes had damaged the Index's audio board which is used for both transmitting an receiving.

There now follows an approximate - but filtered for publication in *PW* - translation from the vernacular Irish which equated to... "A plague on PSK"! I then spent the rest of the day literally kicking myself and saying at the same time: "If I had kept to my c.w. mode all would have been well".

With some difficulty, due to the stacked board design of the Index and the transceiver's tiny surface mounted components, I managed to isolate the fault to some microprocessors in the audio filtering stage. Without extension leads it was not possible to further my investigation. Additionally, as the microprocessor part numbers were not available in any of my reference books, I decided that a new audio board or service would have to be sought.

Index Laboratories, who designed, manufactured and marketed the QRP Plus had sold out to the SGC, company, who are also based in the USA. They decided not to continue the Index Range.

I tried several well known suppliers including Waters & Stanton who told me that there was no source of parts. I was then pointed towards a UK servicing company to agreed to service the rig. I sent it off in October 2000

Revived

and received it back in February 2001 with a note stating that repair was not possible.

Icom IC-706 Mk I

In the interim I had purchased an Icom IC-706 MkI which I used in the QRP c.w. mode. While enjoying being back on the air with the '706 I continued in my search for Index parts and finally, after exhaustive inquiries (including asking our friends on *PW* for help), many telephone calls and E-mails I heard of an American Amateur who had some Index Plus parts.

The Amateur who I'd eventually tracked down was **Stan Yarema K7SY**. I E-mailed him and, yes...he did have parts for the Index and had an audio board that he would forward to me, but firstly suggested some further checks that would isolate the fault. The tests were made and the board did indeed prove to be faulty.

Stan immediately forwarded an audio board to my home in Blanchardstown, Dublin in Ireland before he had ever receiving payment (US$20 plus $4 postage) from me. The board was sent on the 8 September 2001 and due to he grounding of Aircraft in the USA following the tragic events, following the Islamic Terrorist attacks on 11 September, they did not arrive until the 19 October.

Worked First Time!

I fitted the replacement board, and experienced some difficulty as it was the second board down in the stacked p.c.b. arrangement adopted on the Index Plus...but it worked first time! The rig was immediately put to work on the bands and during the following hour on 28MHz, using only 4W to the HB9CV antenna, I worked. several PY (Brazil)) and LU (Argentina) and UA0 (Russian) stations.

You can probably imagine just how grateful I felt towards Stan - especially as he'd sent the replacement before receiving any money from me. Incidentally, Stan told me that he had constructed some Index Plus transceivers from spares, and having sold a number still, had some for sale.

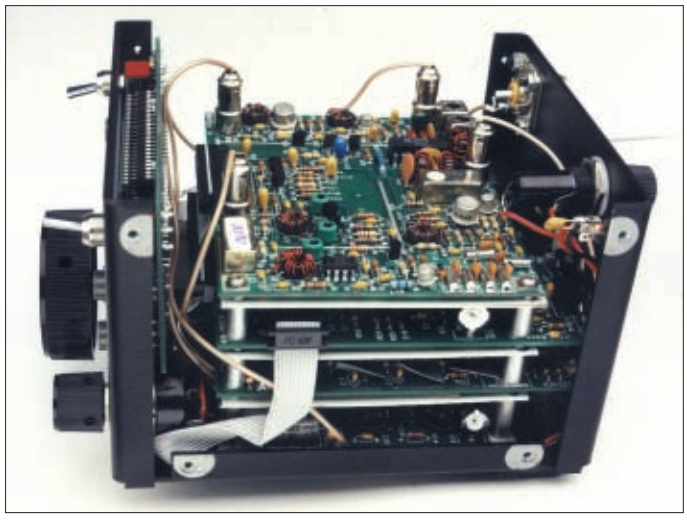
A member of my local Amateur Radio Club ordered an Index from Stan. The cost was (then - please check for current prices and availability)) US$290 for the original configuration or $330 with back lighting for the liquid crystal display (l.c.d.) display and S-meter. Delivery is six to 10 days by air and shipping to Ireland is $25. (See information panel for addresses).

Kind & Considerate

Stan was a nice person to deal with, was kind considerate, and helpful with his service information. So...all's well that ends well and EI2AJ QRP is back in c.w. operation again with the much loved Index while the Icom IC-706 is now used on c.w. mode on 50 and 144MHz.

With a great deal of effort I managed to achieve my goal - with some help from friends...and especially Stan over in the USA. In these depressing times its nice to have a happy ending isn't it? *PW*

● Pride of place again! Tom EI2AJ's Index Plus transceiver back in action again at his QTH in Blanchardstown, Dublin 15 in Ireland.



● An inside view of the Index QRP Plus transceiver showing the multi-decked, layered, printed circuit board design of the transceiver. It was one of these boards which proved to have developed a fault (see text).

Practical Wireless Review

The *PW* review of the Index Laboratories QRP Plus transceiver was published in the February 1995 issue of the magazine (Photocopies of the review are available from the PW Book Store). The author was **John Goodall G0SKR**. a very keen c.w. operator who enjoyed using the rig on QRP s.s.b. too! John commented "After using this rig extensively I think that the Index QRP Plus is a very useful and versatile piece of equipment". He wasn't at all keen to return it and - as it weighed about the same as two bags of sugar...saying it was just as likely that's what would be returned in the box...while he kept the rig! **Editor**.

Manufacturer's Brief Specifications

Receiver	
Type:	Single conversion superhet
Intermediate frequency:	50MHz
Filters:	6-pole crystal ladder at i.f., s.c.a.f. digital filters at audio frequencies.
General coverage:	Continuous 1.8 to 29.7MHz (Lower sideband only below 10MHz, u.s.b. only above 10MHz).
Amateur Bands only:	1.8 to 29.7MHz
Transmitter	
Modes:	A1 (c.w.), A3J (s.s.b.).
Power output:	Variable from 0 to 5W
Microphone:	Electret type
General	
Speaker:	8Ω 90mm diameter internal unit
Dimensions:	140 x 110 x 180mm
Weight:	2kg

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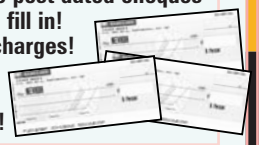

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Antenna Workshop

UP THE LADDER

Professional television and radio antenna engineer Allan Wightman has been busy recently. He's helped to sort out some problems on the *PW* Editor's new terrestrial digital TV system...much to G3XFD's relief!

Hello to you all. It's nice to be back in *PW* again, I've been so busy in the last year that it was only when **Rob Mannion G3XFD** the Editor of *PW* called me for help that I remembered we'd not had time to chat for a very long time. In fact, the reason why Rob called me was because he'd been suffering from some difficulties with Terrestrial Digital Television.

The problems encountered by G3XFD are likely to be suffered by other terrestrial digital television (TDTV) users and both Rob and I thought it would be a good idea to discuss them in a Ham radio context. Incidentally, both Rob and I would like to hear from *PW* readers regarding their own problems with TDTV. Any letters on the subject will be read, by both G3XFD and myself. Hopefully there may be some interesting correspondence appearing in *PW*'s letters pages in future.

Digital Hype

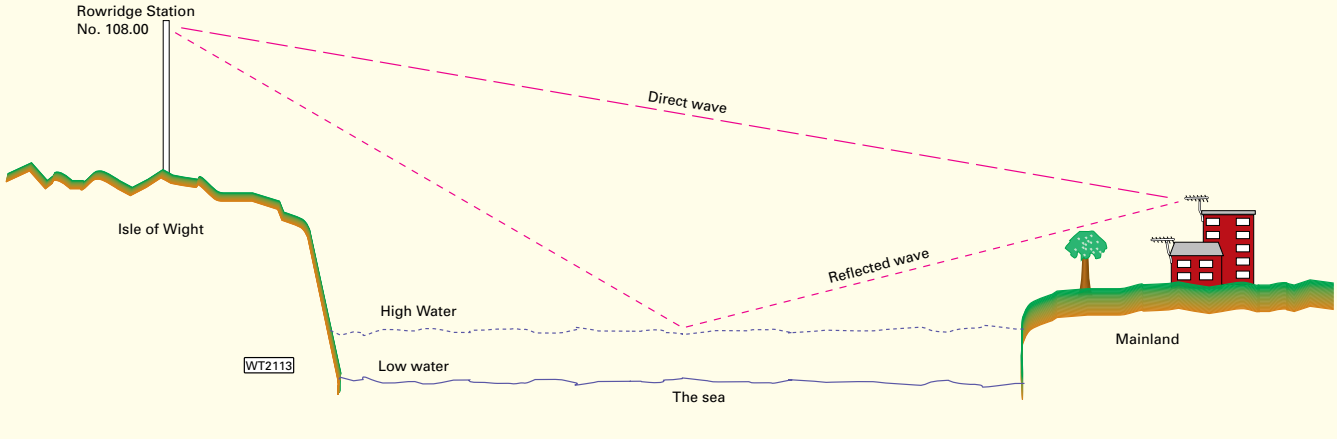
Before venturing any further, I think it's worthwhile saying that there's a great deal of hype being broadcast - literally! - regarding DTTV (and its satellite transmitted competitor) and its supposed immunity from interference. This is nonsense, as anyone connected with radio communications knows - all transmitted signals can suffer from interference of some form or another! So, I think it's worthwhile looking back to some of the difficulties encountered in my working in TV and radio antenna engineering during the last 35 years or so, culminating in the supposedly 'bombproof' digital systems in use today

During the many years I have worked in television and radio antenna engineering many problems have come my way. When I first came into the trade the old Band I and III v.h.f. 405 line system was still the mainstay of the service in this country, although that of course closed in 1985 following a long run-down to its final abandonment.

The company I then worked for had learned to cope with the need for different antenna systems for Band I and III, together with the problems associated with the BBC and ITV stations not (then) being co-sited. Then u.h.f. TV arrived - bringing more difficulties which were eventually overcome to a great extent - including those associated with the PAL colour system and broadcast teletext.

I found myself 'up the ladder' installing Band IV and V antennas in the late 1960s and increasingly so in the 1970s. The peak seemed to be in the mid-1980s, but after that the effects of better u.h.f. tuners, improved receivers and the growth of the joint BBC/IBA (the old Independent Broadcasting Authority) meant that most viewers either didn't bother with a

Fig. 1: The direct signal and that reflected from the sea can cause particularly effective signal cancellation at the receiving antenna. The effect, which also occurs with reflections from the ground, can cause reception problems to both the analogue service and the new terrestrial digital television (TDTV) service on the u.h.f. Band IV and V. (See text).



professionally installed u.h.f. antenna, or were able to install it themselves.

There were a few problems though, and on u.h.f. there was - and still is -a persistent difficulty which manifests itself in the form of delayed images. To most of us this is better known as 'ghosting'.

Although ghosting could be evident on v.h.f., it was much more of a nuisance on u.h.f. In some areas of the United Kingdom ghosting can be a real problem. Those of you who live in Scotland, especially on the rugged West Coast will know just what I mean!

The otherwise beautiful Scottish mountains often reflect signals so effectively that it's sometime possible to see six or more delayed images on a TV screen. It can be a nightmare for the engineer to overcome, but with care, careful choice (where possible!) of incoming feed signals and good narrow beam-width antennas (I always favoured the Antiference XG range for these problems when working in Scotland or other ghost afflicted areas) ghosting can be minimised, and sometimes completely eliminated **as far as the viewer is concerned**. But although the human viewer could be satisfied...a teletext decoder might not be able to cope with the ghosting!

Pseudo Digital?

Although it's not strictly considered to be a digital system (because it's transmitted within the analogue television channel) the teletext system can be considered to be a pseudo-digital as it uses analogue pulses, to provide a binary encoding system for the teletext service, inserted on the 'spare lines' which occur between each successive scanned picture field. (The system was developed onwards from the Insertion Test Signal (ITS) used by the broadcasters to monitor the quality of their transmissions).

In fact, looking back, it's obvious that the 'close in ghosting' problems - reducing the amplitude of the pseudo-digital pulse and their disruption of decoded teletext signals, provided an inkling of what was to come for antenna/TV linking engineers in the then yet-to-come digital TV age.

The 'digital' part of the teletext transmission relies on a clearly defined binary 1 and 0s to be 'seen' by the TV receiver's decoder. However, due to the close-in ghosts, signal cancellation could, as already mentioned, reduce the effective amplitude of the teletext signals so much that the decoder could not effectively decide whether it was receiving a binary 1 or 0 - because the amplitude of the received pulse could be half way between the two levels representing 1 or 0. The result? A corrupted teletext service - despite the broadcasters' original claims that teletext would remain usable even with an otherwise poor quality received picture. But to be honest, although they were generally proved correct in this respect...the close-in ghosting problem soon proved to be a nuisance in service conditions!

During the 1970s a useful, amusingly-named device was made available for broadcasting engineers which enabled the service parameters of the teletext system to be measured. Often referred to as the 'Winking Eye' it measured the 'eye height' of the received teletext signal. In effect the shape of the 'eye' was made up from the signal itself and shown (on an oscilloscope type of display) providing the engineers with a very practical method of evaluating the quality of the teletext service.

For the antenna engineer working in the field though, care still had to be taken to ensure that all channels had been checked for picture and sound quality - plus the teletext. Getting all services to a reasonable standard could be very difficult at times, entailing a great deal of height versus gain testing (Usually a slow drop test, with measurements being taken as the antenna was lowered slowly) together with the selection of the best feed signal and associated antenna. But now, we have modern problems which in many respects, are similar. That's why Rob Mannion called me in for help on his TDTV system.

Reflected Signals

Reflected and delayed images are often associated with mountains, tower cranes and those awful British Gas storage gasometers which have an annoying habit of changing height, dependent on the amount of gas being stored. However, as **Fig. 1** demonstrates, water - particularly the sea - also acts as an extremely effective reflecting medium. In fact, so much so that an effect known as Tidal Fading often occurs.

I've actually described tidal fading before in *PW*, but now that TDTV is with us, it's worth mentioning again, especially as it has caused the Editor so much trouble! It all started when Rob bought a set-top TDTV unit as the main regional transmitter on the Isle of Wight, provided good decodable signals at his home on the eastern outskirts of Bournemouth.

Everything installed easily, and the set-top unit worked exceptionally well. Rob had bought it mainly to receive the newly introduced digital-only BBC7 radio service as he's a great fan of such programmes as *Dad's Army* and *The Navy Lark*, etc., which are all now being broadcast on the service.

All the available terrestrial digital channels from Rowridge, a Band IV station, were received, with only a very occasional break-up of the received signal. He was delighted with the service.

Unfortunately though, recently the broadcasters effectively increased the radiated power of the digital service from Rowridge...and Rob's reception trouble began! Despite the 'no interference' claims, different channels would become unusable on different occasions. The times varied but they appeared to coincide with the *PW* Editor going on the air with his Ham radio equipment. Annoyed because he hadn't been on the air, he called me in for advice, and together we tackled the problems, quickly...confirming it was nothing to do with his Ham radio station.

Antenna Location

From his home on the eastern side of Bournemouth the Editor has an almost clear line-of-sight view to the Rowridge transmitter at roof top level. The TV antenna could also 'see' the western arm of the Solent with the result that the reflected wave (see Fig. 1) was strong enough to cause cancellation at difference frequencies within the Band IV transmitter's transmission channel groupage - Group A - within the band.

In this case it was an easy problem to overcome. With myself up the ladder the TV antenna was lowered gradually, with Rob checking the various channels on his system inside the house as I did so. Once the antenna had reached a point where the reflected wave (from the sea) was obscured by a rooftop, and thus attenuated, all channels were resolvable. And apart from the occasional problems in extremely heavy rain - and exceptionally high tides! - the Mannion family are once again receiving a reliable TDTV service.

Patterning On Screen

Before I left for my next job, Rob showed me another problem. It was clearly evident on his TV screen, which he'd tuned to the Band IV u.h.f. to check we'd not inadvertently caused problems there. And it looked just as if he was causing radio frequency interference from his Ham radio equipment. Fortunately, he was alert to the source of the interference - which I think Hams refer to as TVI - as coming from within the television, video recorder and set-top adapter system.

When Rob had first come across the typical r.f. patterning on his TV, he was puzzled. However, realising of course he had no transmitter switched on, and knew it had to come from the set-top box, his video recorder or the television. By a quick process of elimination he discovered that the patterning disappeared when the power to the TDTV 'box', connected to the TV via the SCART socket, was switched off. **So, a good rule is: when not using TDTV, switch off the box!**

Despite my explanation to the Editor's family...I don't think they were convinced that the G3XFD Ham radio station wasn't the culprit! But both the Editor and I finished the day satisfied in ourselves that there was no TVI at all. The main problem had been tidal and the other was cured by a little local switching! Cheerio until next time I'm 'up the ladder'.

PW

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Carrying On The Practical Way

This month the Rev. George Dobbs G3RJV is dreaming of Amateur Radio holidays in North Wales...and the antenna tuning system he's made for holiday use. George also discusses the success he's had with various types of Z-match antenna tuning units.

"Human beings, are almost unique in having the ability to learn from the experience of others, are also remarkable for their apparent disinclination to do so".

Douglas Adams

In the March 2002 column, I described how I was gathering together a station to install in my holiday lodge in Wales and experimenting with a single coil Z-Match a.t.u. The Z-Match has been a favourite of mine for many years and I'm devoting this edition of Carrying On The Practical Way (COTPW) this month to this device.

At the main station - my home in Rochdale - the house is centrally set with roughly the same amount of garden space at the front and the back. It's an Edwardian three-storey building and I have a short pole at the apex of the gable end. This allows me a high central point for mounting an antenna.

For many years, I have used an inverted Vee doublet; two equal lengths of wire, high at the centre but coming down to only about 3 metres or so above the ground at each end. I can commend the inverted Vee approach...and it's surprising how much extra length can be gained in the angle.

The two legs of the antenna are connected via open-wire feeder to a Z-Match tuner. This gives me a reasonable all-band capability and the antenna is so low profile in that most people would not even notice it was there.

At the wooden lodge, set in the Dovey Valley in Wales, I naturally wanted to install an Amateur Radio station! The lodge is located alongside a small wood, which offers plenty of trees for the erection of wire antennas.

If you hear GW3RJV working on the h.f. bands...it'll probably be George on holiday in his little Welsh lodge using the Z-match a.t.u. he built especially for the purpose (see text).

Being in a National Park it seemed fitting to hide the wires within the wood, although it might take some experimentation with lengths of wire to settle on the best arrangement for the situation. What I needed was a versatile antenna tuning unit (a.t.u.) to match a variety of 'bits of wire' to a transceiver. Naturally I thought I would build myself a "Welsh Z-Match".

Single Coil Z-Match

For some time I'd been reading articles on single-coil Z-Match antenna tuners. Like most examples of the Z-Match tuner, those I had built in the past used three or even four plug-in coils to match the whole range of h.f. bands.

Incidentally, a whole series of single coil Z-Match tuner designs have come out of the USA including work by **W6JJZ**, **N5FC**, **W6ZH**, **WB3GCK** and others. I also turned to designs in *Sprat* (the journal of the G QRP Club) by **G3PDL**, based on the work of **ZL3QQ** and the circuit from **G3WQW**.

So, I had plenty of ideas for my a.t.u. and "the ability to learn from the experience of others", as Douglas Adams (famous for *The Hitchhiker's Guide to the Galaxy* science fiction adventure) puts it in the quotation above.

The Z-Match has several advantages. It presents a parallel resonant circuit to the signal thus reducing harmonic radiation and at the same time offering a little more input filtering to the receiver. It should have a higher *Q* than many other tuners and is therefore less lossy. The Z-Match has a balanced output and will match twin feeders without the intervention of a balun transformer, which can waste precious output power.

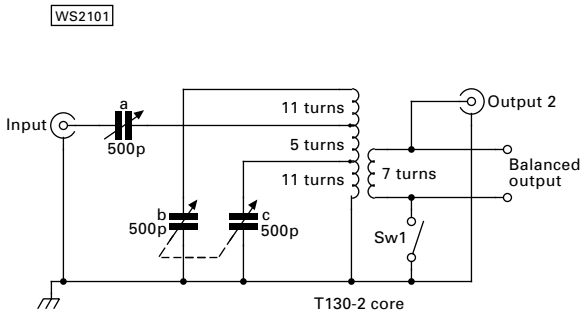


Fig. 1: The circuit of the single coil Z-Match tuner described by G3RJV. The coil is wound on a T130-2 core and the controls are a single 500pF variable capacitor and a twin gang 500pF variable capacitor (see text).

Difficult To Tune

On the downside, the Z-Match can be a difficult beast to tune. For example...I've found that a reduction drive on the controls is usually necessary to avoid missing the critical resonance points.

Sometimes the Z-match will produce more than one resonant setting. It is always worth searching for other settings, which might be better than the first you have found. Most of all, it is definitely worth noting the resonant settings for each band once they have been found...so that they be used again without having to go through the whole tuning procedure.

The diagram, **Fig. 1**, shows the circuit of the single coil Z-Match tuner. The coil is wound on a T130-2 core and the controls are a single 500pF variable capacitor and a twin gang 500pF variable capacitor.

Both of the tuning capacitors are from my variable capacitor box. Anyone who has been an Amateur Radio constructor for any period of time should have gathered a collection of variable capacitors. **If you haven't...then my advice is to start now!** These days good air-spaced variable capacitors are expensive items. So every time I see any for sale at radio events, at a reasonable price, I buy them.

Low Power Option

I've seen similar circuits using polyvaricon variable capacitors, and these are possibilities for the Z-Match with two reservations. The spacing of the plates is such that only powers in the order of 5W can be used with the a.t.u. and the maximum value of capacitance, usually in the order of 250pF, will reduce the tuning range of the Z-Match. Some polyvaricons are also difficult to use because they have very short control shafts.

In the circuit, Fig. 1, the twin-gang capacitor (b and c) together with the coil provides the resonant circuit and the single gang capacitor (a) provides transmitter loading. The balanced output comes from a 7-turn link wound over the grounded end of the main coil.

If the tuner is to be used to feed coaxial cable or a non-balanced output, a switch is provided to ground one side of the link winding. One output (Output 2) is taken from the other side of the link winding.

The most complex part of the construction is the winding of the coil. There are a total of 27 turns on the T130-2 core. The main coil has three sections, one of of 11 turns, then five turns, then another 11 turns.

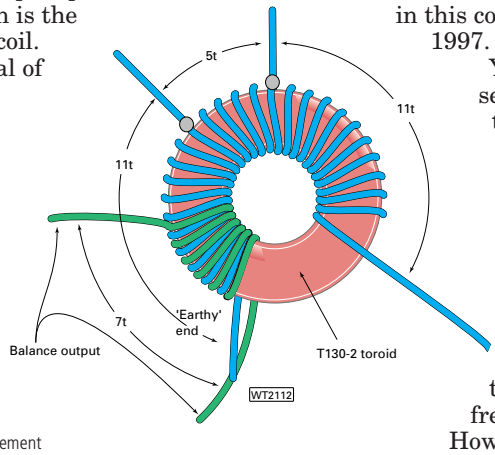


Fig. 2: Diagram showing the arrangement of the windings, including the output link on the toroid. If suitable wire is available with different coloured pvc coverings, it can be helpful so you can wind the various sections and the link winding in different colours (see text for winding details).

I used single core pvc covered wire of the type often used to make interconnections on circuit boards. My guess is that the wire is about 22s.w.g. but this is not critical. **The aim is to make the whole winding occupy about three-quarters of the core.**

Winding The Toroid

Now we come to the toroid winding! Begin by winding the first 11 turns, then remove a little of the *pvc* sleeve at the 11th turn. Remember that each time the wire passes through the toroidal core counts as one turn. Twist this bared end to the bared end of another piece of similar wire and solder them together. (This makes the 'tapping-point' between the first and second sections of the coil).

Next, add on a further 5 turns and then make another tapping point. Adding the final 11 turns completes the coil. Melting a little bee's wax over the completed coil will help to keep the windings in place.

The link winding of 7 turns is wound over the 11 turn section that's to be grounded. The diagram, **Fig. 2**, shows the arrangement of the windings, including the output link. If suitable wire is available with different coloured *pvc* coverings, it can be helpful so you can wind the various sections and the link winding in different colours.

The heading photograph shows my completed Z-Match. Although the twin-gang capacitor is mounted directly on the case, **note that the single gang capacitor is completed isolated from ground**. I made a simple bracket using bare (devoid of copper) printed circuit board (p.c.b.) material.

I added a **Stockton Bi-Directional Wattmeter** inside the case. The circuit for this appeared in this column in February 1997.

You'll perhaps also see that there are also two extra holes on the front panel. These were added to take two switches. I speculated about adding extra fixed capacitance to capacitor **a** and **b** if this was required to tune the lower frequency bands. However, so far I've successfully used the Z-Match down to 3.5MHz without need to add the extra capacitance.

Tune & Try

Using the Z-Match is carried out by the tune & try method in conjunction with an s.w.r. bridge. Incidentally...the slow motion drives on the two capacitors **really are needed**, as the resonant points can be very sharp.

The two controls may be operated side by side as trial adjustments are made until a match is found. It's worth spending some time to get the adjustment right and to note the settings for future use. I've found it to be a very useful antenna tuner...let me know how you get on using your own version. Cheerio for now. *PW*

Regener-Ant

David Allen describes an active medium wave antenna that works well! It could also perhaps be the basis of a short wave antenna.

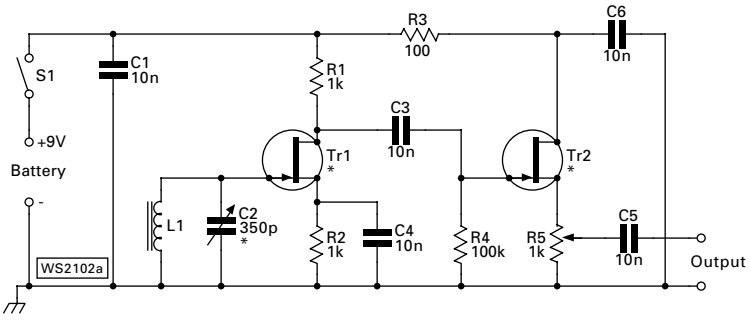


Fig. 1: The circuit of the basic amplified tuned circuit.

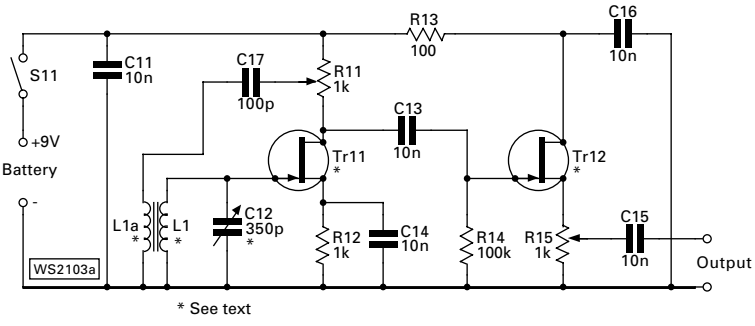


Fig. 2: Additional components and a change of resistor type allows an improved circuit to be made. (See text for details).

Although this circuit as described is for an active, tuneable, medium wave ferrite rod antenna, the technique is useable for almost any h.f. band. The circuit shown in **Fig. 1**, is one I've used on a regular basis in conjunction with a 1950(ish) vintage quality 'Murphy' wireless. I'll be describing a simple feedback modification to give an increase in performance later. Because of this there are two component references, depending on which circuit you are looking at.

I devised a mechanism to enable the rod antenna to be rotated to enable a good 'null' of unwanted signals often present on the medium waveband (m.w.). With careful orientation, I can achieve a near perfect 'null' for the brutal transmission at 693kHz, emanating from Droitwich in Worcestershire. (A signal that is 'storm force 10' here at my location in Cheltenham!).

The ferrite rod used for the antenna is 200mm in length with a diameter of approximately 9mm. It, along with a ready-made tuning coil, was removed from a scrap transistor radio. If a ready-made coil is unavailable, 50 close-wound turns of 0.45mm (26s.w.g.) enamelled copper wire on thin cardboard on the ferrite rod should work well with a 365pF variable capacitor for C2/12.

Altered Slightly

When using other value tuning capacitors, then the number of turns for L1 will have to be altered slightly for the correct band coverage. As the ferrite rod and coil combination has less pick-up, than the 'standard' one metre square loop, an amplifier is incorporated in the design of the complete antenna.

The amplifier design is a two-stage affair using two field effect transistors (f.e.t.s). The first f.e.t. (Tr1/11) provides some voltage gain and the second one (Tr2/12) provides buffering and matching, thus minimising loading of the first stage.

The tuned circuit, comprising L1 and C2/C12, feeds the gate of Tr1/11, operating in common source mode, resistor R1/11 forms Tr1's load. The signal is then coupled via C3/13 to the gate of Tr2, which is connected as source follower.

The amplified and buffered signal is applied across variable resistor, R5/15, a smaller portion being fed, via C5/15, to the receiver. This control is a 'real' r.f. gain control to provide a suitable signal level to suit the receiver. All the components for the basic amplifier, including R5/15, are mounted on a piece of stripboard using solder pins for off-board connections.

Good Decoupling

Capacitors C1/11 and C6/16 along with resistor R3/13 provide good high frequency power supply decoupling for the complete antenna amplifier board. The power supply requirement is modest, and it's provided by a PP3 alkaline battery, mounted on the base of the enclosure.

Current consumption for the amplifier was measured at less than 3mA so, the battery should last a fair while. As mentioned before, I also developed a regenerative system that improves the sensitivity and selectivity of the basic antenna. So, that's the basic antenna. let's look at the next stage of development.

For those of you who may not have come across the regenerative technique before, let me describe the mechanism: If a controlled portion of the amplified signal present across the source load of Tr1 is returned, to the input, **in phase with the incoming signal**, the circuit may be held just on the brink of oscillation.

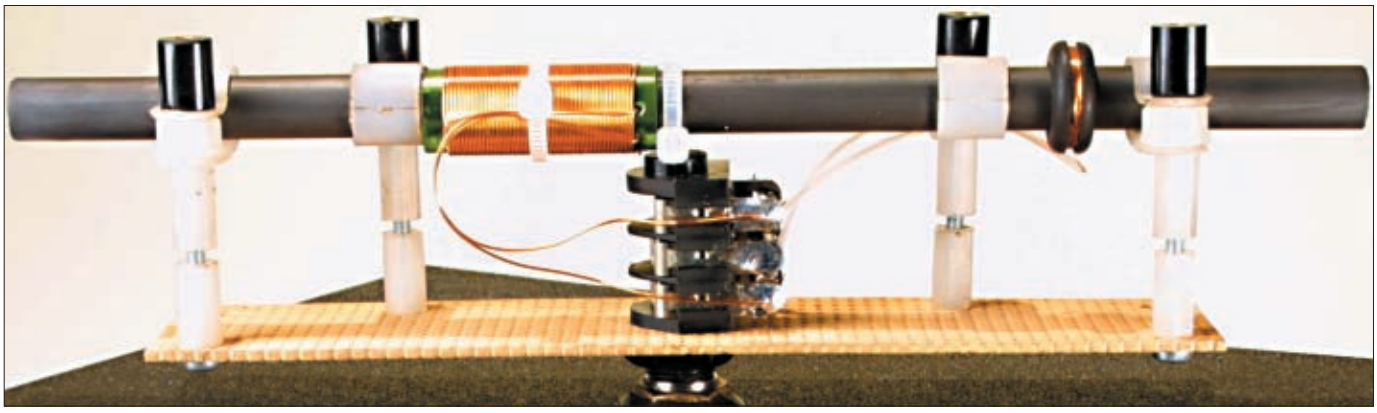
Now a number of things will occur:

1) The output/gain of the amplifier at the chosen frequency will rise due to the increased *Q* of the input tuned circuit.
2) The bandwidth of the selected frequency will also reduce.

Reduced Bandwidth

The reduced bandwidth is often gained at the cost of a reduction in the received higher audio frequencies. But this reduction in bandwidth can go a long way to alleviate splatter from adjacent or off-channel transmissions.

The bandwidth reduction will depend on how close the



gain stage is to oscillation (high feedback - narrow band). With careful adjustment of the feedback variable resistor (R11) the bandwidth can become very narrow indeed.

With my prototype antenna the above effects are quite noticeable and enable me to listen to *Radio 10FM* (from Holland) on 675kHz during the day with a good level of signal without the irritating 'band splash' that's caused by a local transmitter (*Radio5 Live*), a potent 150kW signal on 693kHz .

Additional Components

The additional or changed components, to apply the feedback/regeneration network in the amplifier may be seen in **Fig. 2**, which you can compare with Fig. 1. Firstly replace the load resistor R1 with a 1kΩ linear variable resistor – R11.

Next, connect one end of a 100pF capacitor (C17) to R11's wiper and anchor the other end of the capacitor, using a solder tag and self-tapping screw, to the base of the suggested enclosure for eventual connection to the feedback coil (L1a).

The feedback coil couples some of the signal, from the output of the first stage, back to its input. It's very easy to wind, just take one rubber grommet with an inside diameter of approximately 9mm. Then wind 20 turns of thin enamelled copper wire in the groove of the grommet leaving about 100mm or so, for termination purposes.

Finally, apply a spot of glue to hold the winding in place. This new coil is placed on the ferrite rod a little way away from the 'hot'/non-earthy end of the main tuned winding and is ultimately connected to C17 and earth as shown.

If you wish to make the rotation modification, find a piece of rigid, thin insulated board about 155mm x 35mm and then drill a suitable hole – centrally in the board – to accept the threaded portion of a 6.35mm, 'open chassis' stereo jack socket (not shown in the diagrams).

Attach the socket using the nut and washer provided as shown in the photograph **Fig. 3**. With the socket and rod attached connect the wires from the windings to the socket as follows.

1) The 'hot' end of L1 goes to the tip connection of the socket.
2) One wire of L1a attaches to the ring connection of the socket.
3) The other ends of L1 and L1a connect to the sleeve ring connection of the socket.

Complete Modification

To complete the rotation modification, a stereo jack plug are mounted centrally in the lid of the enclosure (Maplin ABS plastic box BZ76) using epoxy resin adhesive. First drill a suitable hole, before mounting the jack plug, ensuring the tip, ring and sleeve of the plug are pointing 'heavenwards'.

When the glue is thoroughly set, connect the plug as follows (taking care not to get the leads muddled up) and keeping them short as possible wire them as follows:

1) Tip connection to C1/12 (signal side).
2) Ring connection to C17 (if fitted).
3) Sleeve connection to earthy side of C2/12

The general layout of my prototype are shown in the photograph of **Fig. 4** and **Fig. 5**, but you could use whatever layout is easiest with the proviso that leads are kept as short as possible. The output connector/s for the amplifier can be mounted on the rear panel of the enclosure at a comfortable distance from the input of the amplifier.

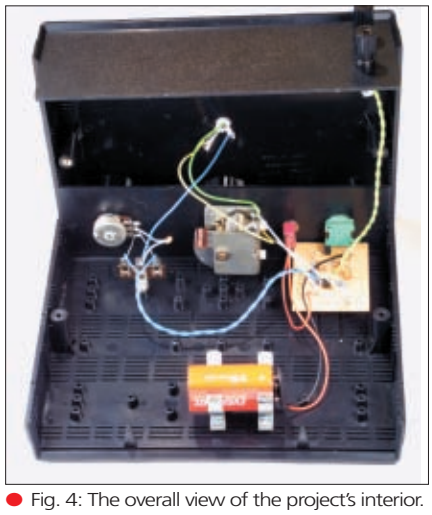
The output from the completed project should be taken to your receiver using a suitable length of screened lead. I've found that, even audio grade lead will work well, as the output from the amplifier is at low impedance. So, the capacity of the lead will not affect performance to any noticeable degree.

● Fig. 3: A close-up of the modification allowing continuous rotation of the coil assembly. See text for details.

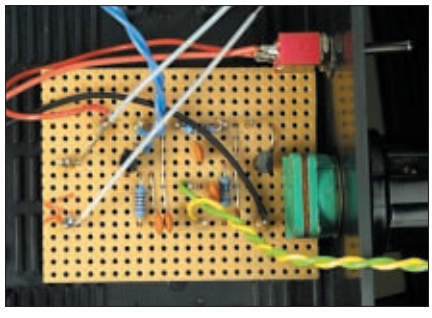
Minimum Feedback

With the receiver and antenna switched on set R5/15 to about half-way and R11 (if used) to minimum feedback (slider nearest supply line). Next tune your receiver to the desired frequency and rotate C2/12 until the signal reaches a peak. When this is done adjust R11 for best results, which is usually when signals rise dramatically in level.

As feedback is increased using R11, the bandwidth will decrease, and you may need a slight adjustment of the tuning capacitor C2/12. But don't forget to experiment with the antenna rotating mechanism for optimum results. When using the antenna, ensure that the feedback control is not advanced too far as you will end up with an oscillator, which is not quite what's desired!



● Fig. 4: The overall view of the project's interior.



● Fig. 5: For low frequencies, stripboard is adequate for construction.

If you do not find any positive changes in signal level with rotation of R11, it's worth checking that the variable resistor is connected correctly. It's also worth checking that the coil (L1a) is wired correctly, and if necessary simply reverse its connections.

If the completed antenna doesn't work at all it is a good idea to ensure that the voltages for each stage are correct. The voltages shown in **Table 1**, were taken with a fresh PP3 battery fitted and the negative end of the meter connected to earth.

Table 1

	Tr1/11	Tr2/12
Source	2.03V	1.0V
Drain	0V	0V
Gate	6.79V	9.07V

So, there you have it, a simple amplified receiving antenna that could be adapted for many uses. But remember, whilst using the antenna, take care to keep it away from a working computer or fluorescent lights unless you like listening to a lot of electrical noise!

PW

Valve&Vintage

It's Phil Cadman G4JCP behind the counter in the vintage wireless shop this month. And when he's finished listening to the Goon show on BBC R7...there's news of a power supply kit suitable for valved portables!

Hello folks! Welcome to my first highly esteemed Valve and Vintage column of 2003. I hope you all had an enjoyable Christmas, free from colds, flu and 'monkeys on the knees*'. The Goon-type introduction is entirely the fault of the new BBC digital radio service - BBC7 - which opened on the 15 December! The service carries drama, children's programmes and, which is why a certain 'Neddie' Cadman is mentioning it here, various classic BBC Radio comedy shows.

The BBC7 service is available via satellite, Freeview, and (in glorious mono) via DAB. So, tune in. Feed the output of your new-fangled digital receiver or set-top box into a medium (or long) wave modulator (like the one featured in the September 1997 Valve and Vintage column), and listen to all your old comedy favourites on a genuine valved radio. Wonderful!

For non Goon show addicts...saying 'Thin' is a cure for monkeys on the knees! (Editorial note:** mark in diary to visit G4JCP in hospital when next in Dudley!).*

Battery Eliminators

High-tension batteries for valved radio sets are (with rare exceptions) no longer available. This isn't a problem with table-top sets as they can use battery eliminators powered from the mains. However, portable sets are somewhat more of a challenge.

One solution is to build an inverter and power the set from rechargeable or alkaline batteries. This is the solution adopted by the **Kit Radio Company** of Westerham in Kent. But uniquely, their completed KRC-A-2 kit, **Fig. 1**, looks like an Ever Ready B126 h.t. battery when it's assembled in the box.

I was fortunate enough to get hold of a kit to try out. The kit consists of two circuit boards, **Fig. 2**. One carries the electronics, the other a DIN connector and holders for six AAA cells. The assembled boards fit snugly into a card case which outwardly looks identical to the B126 h.t. battery as 've mentioned.

The kit comes complete with all components, a comprehensive instruction manual and even a set of AAA cells! You only need to supply are solder, and glue for the card case.

At first glance, the circuit boards look like conventional printed circuit boards, but they are in fact pieces of Veroboard with a printed overlay, **Fig. 3**. Although unconventional, the approach works well, providing some care is taken in assembly.

No Difficulties

I carefully followed the supplied instructions and had no difficulty completing the kit. The instructions are detailed to the point where even a beginner could successfully assemble the kit, providing they could solder competently.

The inverter itself is self-excited and uses, working 'backwards' of course, a standard mains transformer to 'step up' the developed voltage. The circuit also includes one novel feature; when the (h.t.) load is removed, the battery 'goes to sleep'. In this condition, the current drawn from the AAA cells is reduced to a milli-amp or so, making it unnecessary to disconnect the cells unless the battery is not needed for long periods.

Old h.t. battery sockets are no longer made, and so the kit uses a 3-pin DIN socket. Two pins are used for the 90V positive connection and for the common 0V connection, while the third pin is wired to the positive side of the six AAA cells. It's therefore possible to run the inverter from an external 9V supply (providing the internal cells are removed).

With a fresh set of AAA cells, the inverter supplies a shade under 90V. The maximum current available is about 9mA, dependent to a degree on the state of the batteries. Efficiency is not exactly wonderful, varying (with load) between 30 and 50%, but that's to be expected given this type of inverter.

Minor Problems

In use, there are only two minor problems. The first is the rather short life of the AAA cells. Alkaline types intended for high-drain applications are essential to get a reasonable life.

The other (potential) problem is interference. **Richard Youard**, my friend from North London, has tried a KRC-A-2 in several of his valved portable sets. He's found there's usually no obtrusive interference on medium wave, but reception on long wave is somewhat impaired by a whine from the inverter. **However, I must say this kind of problem is by no means peculiar to the KRC-A-2**. By the way, thanks for telling me of your findings, Richard!

Tony Westbrook, of the Kit Radio Company, has been experimenting with a laminated card case which incorporates a metallic screen (the flat, ready-to-assemble case in shown in **Fig. 4**. He's found this can significantly reduce any interference. The new case should be available by the time you read this.

If you want your valved portable to look authentic, or even if you just want to get it going again, then the KRC-A-2 will do the job. It's immensely satisfying to see a valved portable set running from a 'genuine' h.t. battery. And even if you only need a 90V supply for bench use, I'd still recommend the kit on novelty value alone!

I'd like to thank Tony Westbrook for supplying the kit, and for keeping me informed regarding progress on the new case. The KRC-A-2 is currently priced at **£29.99 (+P&P)**, and is available from: **Kit Radio Company. Unit 11, Marlborough Court, Westerham, Kent TN16 1EU. Tel: (01959) 563023**.

The EF50 Valve

Last time I was in the 'shop' I mentioned a mains-powered, two-valve radio that used EF50 valves.

Many years ago, **Fred Herod** mentioned he'd built one of these sets to a *PW* design but couldn't remember the issue in which it had been published. Well, now can I sincerely thank everyone who wrote to me about this.

There's little doubt that Fred's set was the one described by **R. Berry** in the August 1955 issue of *PW*. Curiously, the same circuit, albeit with minor differences, was also published in *Wireless World*. **Dennis Lisney G3MNO** came across the *WW* circuit and kindly sent me a copy. But, once again, neither of us knows the issue of WW the circuit was published.

Both circuits look like standard detector/amplifier (0-V-1) receivers. However, the way in which the two stages are coupled is quite unusual, being very similar to the method found in the Mullard 3-3 audio amplifier. Indeed, did one design 'borrow' from the other? Just when was the circuit of the Mullard 3-3 first published, I wonder.

There is (at least) one earlier *Wireless World* EF50 design. **S. W. Amos** had a design for a Midget A.C. Mains Receiver published in the March 1949 issue. That also used two EF50s, but in a conventional 0-V-1 arrangement. My thanks go to **Alan Emerson** from up in Lancashire for finding this circuit.

From what I've learned, the EF50 designs were very popular and many sets were built. Not least because of the low cost yet high-performance of the EF50.

Originally made for television receivers, the story behind the valve is worthy of an entire article. But you can read about the EF50's specific contribution to the success of Radar in the Second World War in the book *Radio Man* - The remarkable rise and fall of C. O. Stanley (of Pye) by Mark Frankland (See book review page 13, October 2002 *PW*).

In his letter, Dennis Lisney also answered my question about the possibility of using the EF80 in place of the EF50. He used EF91s, which have similar characteristics to the EF80, and obtained perfectly good results. So next time, I'll be featuring the *PW* version of the set, with suggestions about using other ex-television valves.

Volume Control

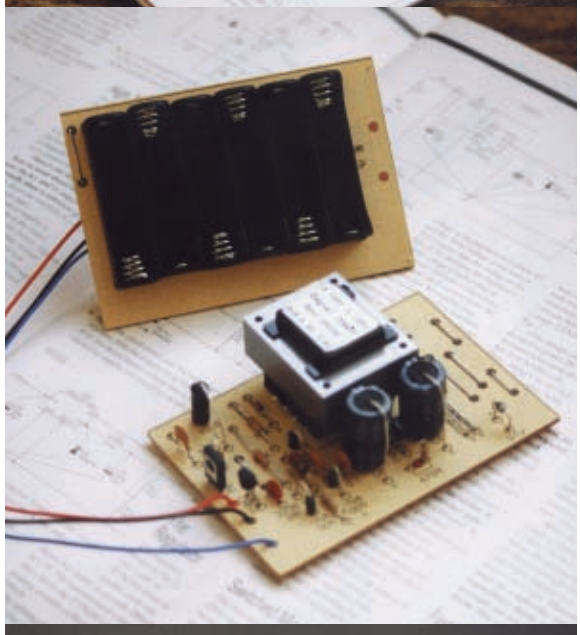
While I received several letters about the EF50 receiver, I received but a solitary E-mail about the backward volume control. (A backward volume control is so-called because the input is fed to the slider and the output is taken from the top of the track.) Can I take it, therefore, that nobody actually knows when or why the backward volume connection was first used?

Coincidentally, **David King** from across the border in Argyll, Scotland, sent me a copy of a three-valve t.r.f. set designed by **Jack Hum G5UM**. Published in the August 1946 issue of *Short Wave Magazine*, it used three EF50s and had a backward volume control. This surprised me; I thought this peculiar practice didn't begin until the mid 1950s. Yet here it was, almost ten years earlier.

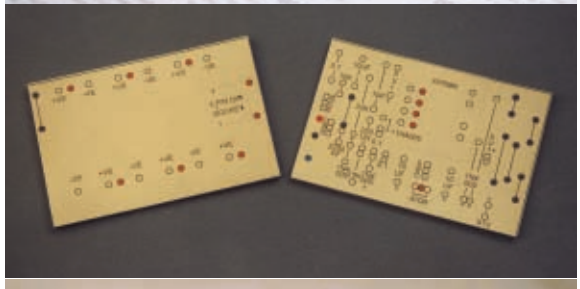
Neddie Seagoon says it's time for me to leave the stage (*He really is a Goon Show fan isn't he readers? **Editor***). So, until next time, then, please send your comments and letters to me, either via the *PW* offices, via E-mail to **phil@valveandvintage.co.uk** or direct to: **21 Scotts Green Close, Scotts Green, Dudley, West Midlands DY1 2DX**.

PW

● Fig. 1: The completed KRC-A-2 kit, looks like an Ever Ready B126 h.t. battery when it's assembled in the box (see text).



● Fig. 2: The kit consists of two circuit boards. One carries the electronics, the other a DIN connector and holders for six AAA cells (see text).



● Fig. 3: At first glance, the circuit boards look like conventional printed circuit boards. But they are in fact pieces of Veroboard with a printed overlay (see text).

● Fig. 4: The power supply is built into the card case. Tony Westbrook, of the Kit Radio Company, has been experimenting with a laminated card case which incorporates a metallic screen (the flat, ready-to-assemble case in shown in here (see text).

RADIO

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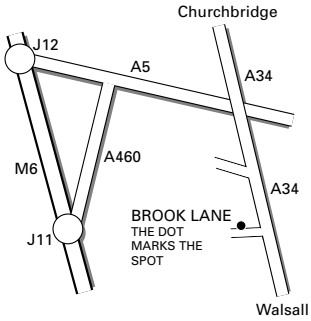

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have been sold / updated, please ring

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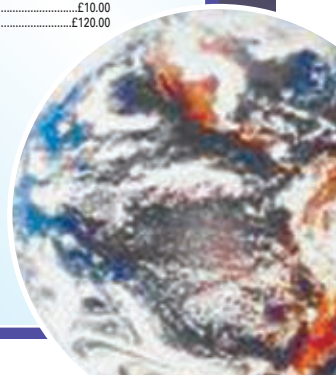

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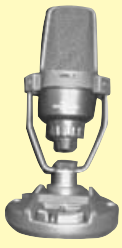

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REPORTS & INFORMATION BY THE LAST SATURDAY OF EACH MONTH.

Propagation on the v.h.f. and u.h.f. bands during December was pretty unexceptional with very little activity being reported. The low sunspot count accounted for a significant reduction in ionospheric F2-layer openings on the 50MHz band.

On the other hand sporadic-E (Sp-E) propagation at 50MHz was far more prevalent than has been recorded in recent years. On the 144MHz and higher bands the low pressure and generally bad weather was definitely not the best recipe for the production of enhanced tropospheric refraction or ducting.

THE 50MHz BAND

What a difference a year makes. In December 2001 the 50MHz band was open to central and North America on every day of the month. By contrast 2002 saw F2 openings occurring on only six days in the period between December 18-23.

Conversely there were ten days with Sp-E openings whereas only one occurred in the previous year 2001. Auroral openings were relatively scarce, being reported on December 14, 19, 20, 23, 27 and 29 and only one trans-equatorial opening to Africa was noted right at the beginning of the month.

Steve Bunting M0BPQ (Kent IO91) noticed a distinct change in trans-equatorial propagation in recent months. During November he made c.w. and s.s.b. contacts with the stations of C56R (Gambia), XT2WP (Burkina Faso), 3XY7C (Republic of Guinea), 6W4RK (Senegal) and 9L1AB (Sierre Leone). In December, despite running 100W to a 5-element Yagi at 25M above ground, absolutely nothing!

All the F2-layer openings to North America which were recorded between December 18-23 occurred in the time frame 1315-1415UTC. Contacts by operators located in England and Wales were made with stations in the W1, W2, W3, VE1 and VO1 call areas.

An interesting opening took place on December 21 with stations in southern England and Wales making c.w. and s.s.b. contacts with the stations of HK4BKB (Colombia), HP1RCP, HP2CWB (Panama), TI2NA and TI5KD (Costa Rica). On the following day a few stations in south-east England reported contacts with HC2FG (Ecuador) during a five minute opening around 1250UTC. The last report of the month came from the station of MW1MFY (IO81) who reported hearing the HC8GR beacon (Galapagos Islands) peaking 599 at 1415UTC on December 23.

Sporadic-E openings were noted on ten days and although nothing remarkable was worked all provided some light relief to the generally poor conditions exhibited during December. These events also gave an opportunity for many operators to contact DX stations as most took place during the early evening.

The E-layer openings enabled contacts to be easily made with stations between 1000-2000km distant from the UK. Among the stations worked were those of EH6XQ (Balearic Islands), EH9IB (Ceuta), ES1CW (Estonia), LY2BAW (Lithuania), SV1DH (Greece), T99C (Bosnia-Hercegovina), UR7TO (Ukraine) and Z32ZM (Macedonia).

Jim Rabbitts GM8LF (Wick I088) reports catching a localised Sp-E opening to Switzerland on December 29. His s.s.b. contacts included the stations of HB9DPO, HB9QQ, HB9RDE, HB9RG and HB9SOF. A little later in the day Jim also worked the stations of DL2IAN (Germany), EH1DDU (Spain) and F8BON (France).

METEOR SHOWER

I have received a few more reports regarding the Leonid meteor shower that peaked on November 19. **Andy Swiffin GM8OEG** (Dundee IO86) mentions that "in a fit of madness" he got up in the middle of the night to attempt some scatter contacts via the Leonid meteor shower. Listening first on the 144MHz band around 0300UTC he heard the stations of DF1BN (Germany), EA1DDU (Spain), F1DUZ, F4ARU, F4AZF (France), OK1VP (Czech Republic) and TK5EP (Corsica).

Andy found that conditions were much better on the 50MHz band with many continuous signals being heard. Contacts on that band included the stations of DK2PH (JO41), F1TDF (IN88), F6GEX (IN97) and G8BCG/P (IO70).

Reg Woolley G8VHI (Warwickshire IO92) mentions that the shower was not as good as predictions made out. Even so he still managed to contact 14 s.s.b. stations on the 144MHz band. Running a Yaesu FT-847 transceiver, 200W and a pair of 14-element Yagis he contacted the stations of DL1MAJ (Germany), EA3DXU, EA5EZP (Spain), EA6/DL6SAQ (Balearic Islands), F5VHX (France), HA5KDQ (Hungary), IW0GPN, I8MPO (Italy), LA8KV (Norway), OM3RM, OM3TZZ (Slovakia), SM1A (Sweden), TK5EP (Corsica) and 9A3PA (Croatia). Stations heard but not worked included CT1DYX (Portugal), EW1RZ (Belarus), LY3ED (Lithuania), OH6HFX (Finland), RW1AW, RX1AS (Russia), SP2JXN (Poland) and YL2KA (Latvia).

The station of **Mau IK2YXK** (Italy JN45) reports making a total of 31 s.s.b. contacts on the 144MHz band. Among the stations worked were EI2CA/P (IO43), EI2TAA (IO41), EI3GE (IO63), EI5FK (IO51), G0NFA (IO91), G4ASR (IO81), G4HGI (IO83), G7RAU (IO90), GI6ATZ (IO74) and GW4VEQ (IO73). He also heard G3LTF (IO91), G4SWX (JO02) and GM4JJJ.

Stanko S55AW (Slovenia JN75) spent most of his time beaming east because of severe QRM problems. Towards the end of the shower the interference had disappeared and he was then able to make s.s.b. contacts in other directions which included the stations of EI2CA/P, G7RAU, GM1XOI (IO85), GM4VVX (IO78) and GW8JLY (IO81).

DAVID BUTLER G4ASR HAS YOUR DX REPORTS AND DETAILS OF NEW BAND PLAN ALLOCATIONS FOLLOWING THE RECENT IARU CONFERENCE IN SAN MARINO

INTERNATIONAL CONFERENCE

During November 2002 the Region 1 International Amateur Radio Union (IARU) held a week long conference in San Marino. Region 1 of the IARU covers Europe, Africa, the Middle-East and parts of Asia and most national societies within this large area send delegates to the conference.

The Radio Society of Great Britain (RSGB) sent a team of eight members which included **Mike Dixon G3PFR** (RSGB Microwave Manager), **Graham Shirville G3VZV** (Amateur television and satellite expert) and myself G4ASR (RSGB VHF Manager). The conference comprised of a number of individual specialist committees which made recommendations

based on papers submitted by national societies.

Along with G3PFR and G3VZV, I was a member of the IARU v.h.f., u.h.f. and microwaves committee. Papers cover a variety of subjects such as band planning, operating procedures, contest rules and adjudication, beacon co-ordination and so on. Many papers relating to these subjects were discussed with some being rejected and others being agreed for adoption by all national societies.

A number of papers were presented by societies regarding frequency allocations for new communication modes such as FSK441 (used for meteor scatter) and JT44 (used for weak-signal applications such as troposcatter or moonbounce). Proposals were also made regarding PSK31 but before any of these modes could be considered it was necessary to take a completely fresh look at the way band planning is carried out on the v.h.f., u.h.f. and microwave bands. The reason for this is that these new techniques are designed as weak-signal narrow bandwidth modes and are therefore more appropriately located within the c.w. and s.s.b. sub-sections of the v.h.f. bands.

A sub-committee comprising of representatives from Austria (OVSV), Germany (DARC), Netherlands (VERON) and Norway (NRRL) and chaired by myself discussed the RSGB proposal to redefine the principles of band planning in the v.h.f., u.h.f. and microwave bands. Previously these band plans were shown as two columns.

The left hand column showed the IARU Region 1 band plan with frequency segment and mode, for example 144.150 - 144.400 s.s.b. The right hand column contained specific meeting/calling frequencies, such as 145.500MHz f.m. calling frequency. This has now changed and future v.h.f., u.h.f. and microwave band plans will consist of three columns, Bandwidth, Mode and Usage.

The Bandwidth determines the maximum spectral width (-6dB points) of all emissions allowed in a segment. The Mode indicates the modulation method, e.g. c.w., f.m., s.s.b. A new mode designation has been introduced for Machine Generated Modulation (m.g.m.). This is for transmission systems where computer processing is an essential component of transmitting and receiving such as FSK441 or PSK31.

The Usage column indicates the specific meeting/calling frequencies. It is important to note that the usage section of the band plans have **not** been changed. So, you'll still find packet radio, repeaters, beacons, satellites, c.w., f.m. and s.s.b. in the same places.

What the preparatory work accomplished was to provide a method of accommodating existing and future m.g.m. modes easily into existing band plans. One point that I should mention here is that although most operators regard band plans as a gentleman's agreement (which of course they are) it is important to recognise that some national authorities will only allow operation of certain modes if it is written as an authorised IARU band plan.

MACHINE GENERATED MODULATION

The specific calling frequencies and centre of activity for various machine generated modulation techniques are shown in the table, **Fig.1**. On the 50MHz band the centre of PSK31 activity is on 50.250MHz with JT44 on 50.255MHz.

50MHz Band	
50.250MHz	PSK31 centre of activity
50.255MHz	JT44 centre of activity
50.270MHz	FSK441 calling frequency
144MHz Band	
144.138MHz	PSK31 centre of activity
144.150MHz	JT44 centre of activity
144.370MHz	FSK441 calling frequency
430MHz Band	
432.088MHz	PSK31 centre of activity
432.370MHz	FSK441 calling frequency

● Fig. 1: IARU Region 1 - Machine Generated Modulation modes allocations

A sub-band 50.260-50.280MHz has been nominated for FSK441 with a calling frequency on 50.270MHz. As considerably more m.g.m. activity is carried out on the 144MHz band two new sub-bands have been introduced, a 30kHz wide band centred between the present c.w./s.s.b. allocation and a 40kHz wide band immediately below the beacon sub-band.

The 30kHz wide band 144.135-144.165 is split into two further segments. The lower half 144.135-144.150MHz is for modes with a maximum bandwidth of 500Hz. The upper half 144.150-144.165MHz is for modes with a maximum bandwidth of 2700Hz.

The 40kHz wide band 144.360-144.399MHz is in reality 39kHz wide, as it includes a 1kHz guard band to provide protection for the beacon band. This sub-band may be used for modes with a maximum bandwidth of 2700Hz.

On the 144MHz band the centre of PSK31 activity is on 144.138MHz with JT44 on 144.150MHz. A sub-band 144.360-144.399MHz is nominated for FSK441 with a calling frequency on 144.370MHz.

It's important to note that these m.g.m. allocations are not exclusive and share the traditional weak-signal narrowband segments of the v.h.f bands alongside c.w. and s.s.b. To relieve congestion of the calling frequency it was agreed that users of FSK441 (designed for weak-signal meteor scatter communication) should indicate the frequency they intend to carry out the contact by adding the three digits of the nominated frequency. For example CQ363 indicates that the station will listen on 144.363MHz for a subsequent contact.

THE 70MHz BAND

The RSGB 70MHz band will now formally feature in the IARU Region 1 band plan. It's interesting to note that 13 DXCC countries (all UK prefixes + EI, S5, ZB, ZC, ZS and 5B) have authorisation to use the band and that several more countries are now very interested in the possibility of an allocation at 70MHz. An RSGB proposal to extend the beacon sub-band by 20kHz to cover the segment 70.000-70.050MHz was unanimously agreed. The frequency 70.050MHz has been assigned for a multi-band time sharing beacon project being proposed by the RSGB Propagation Studies Committee.

THE 430MHz BAND

National allocations on this band vary enormously throughout IARU Region 1. Some countries have a 10MHz wide allocation, others only a 6MHz wide band.

The status of allocations also varies. Some countries have Primary status, some Secondary and a number have specific restrictions within the band. All have the problem of sharing their allocation with the Industrial, Scientific, Medical (ISM) usage between 433.050-434.790MHz. (In these areas you'll find short-range devices such as car alarms, key fob access, radio headphones etc.) A unified band plan for IARU Region 1 is therefore difficult.

However, to assist those countries with a 6MHz wide allocation (the UK has 10MHz, Secondary with restrictions) it was agreed to significantly reduce the beacon sub-band allocation and move it lower in frequency to the upper limit of the current s.s.b. section. This move aligns itself with the 144MHz band plan where the beacon band is situated between the narrowband modes section and the wider bandwidth All Modes section. The beacon sub-band currently allocated 432.800 - 432.990MHz will eventually move to 432.400 - 432.490MHz with an effective start date of 1 January 2004.

DEADLINES

That's it again for another month. Please forward any news, views, comments or photographs to the address and by the date given at the top of the column.

Thanks for your letters and good luck with the DX. See you again next month.

73 David G4ASR

HF HIGHLIGHTS

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REPORTS, INFORMATION AND PHOTOGRAPHS TO ME PLEASE BY THE 15TH OF EACH MONTH.

I have had several enquiries from readers who want to know how to send and receive QSL cards. By far the best way is to join the Radio Society of Great Britain (RSGB) and use their QSL service. You send your outgoing cards to the bureau where the cards are sorted into countries and despatched in bulk to the appropriate overseas bureau.

Cards for stations within the UK are sorted into callsign groups and distributed to volunteer sub-managers. They then sort the cards and put them in envelopes that have been sent to them and kept on file. Once the envelope is full it is posted back to the Amateur concerned.

You don't need to be a member of the RSGB to receive your cards but you do need to supply your appropriate sub-manager with self-addressed stamped envelopes (s.a.s.e.s) of a suitable size. Various other groups also have their own QSL service like FISTS CW Group and the RNARS, which distribute cards amongst their members world-wide. For further information take a look at the *RSGB Yearbook 2003* Edition available from the PW Book Store or if you have Internet access look at **www.rsgb.org**

CROATIAN AWARD

The 10th anniversary of the allocation of the 9A prefix to Croatia was celebrated in 2002. To commemorate this, the Croatian Amateur Radio Association is sponsoring a special award called 10 Years of 9A Award, which will be issued to anyone who has made contact with 9A stations between 5 July and 31 December. Shortwave listeners are also being encouraged to apply. A station can only be worked once and counts for 1 point.

On h.f., Europeans will need 10 points and DX 5, on v.h.f. Europeans need 10 points and DX 3 and on 50MHz Europeans 5 points and DX 3. All modes on all bands are accepted but not those made via relays or cross-mode/cross-band.

Contest QSOs are allowed and there are mode and QRP endorsements, QSLs are not required and you only need to send a certified log extract listing the callsign, date, time and mode together with a fee of 5 or $US5. The award must be requested before 31 March 2003 and applications should be sent to: **10 Years of 9A Award Manager, Denis Vincek 9A3Z, Josipa Karla Tuskana 8, HR - 49218 Pregrada, Croatia**. For further information contact Denis via E-mail at: **9a3z@hamradio.hr**

THE USA ON 7MHz

If you are looking to work the USA on 7MHz then **John Warren NT5C**, one of the more successful 7MHz s.s.b. US Dxers has some advice for you.

John says: "Below 7.1MHz most multiples of 5KHz, for example 7050, 7055, 7065 etc are 'owned' by nets and ragchewers in Central and South America and Canada. The odds are much better for DX stations to work the US if they can get between those 5KHz multiples. Good frequencies to try are 7.047, 7.052 and 7.057MHz which are above most of the c.w. operators and below those that favour RTTY."

As many of you will know, the full allocation of 7-7.3MHz is not available to most Amateurs in Region 1 (That's us!), as we are restricted to operating between 7 and 7.1MHz.

CARL MASON GW0VSW HAS NEWS OF A CROATIAN AWARD, YOUR REPORTS AND ADVICE ON QSLING

SOUTH SHETLAND ISLANDS

Lee DS4CNB is operating as either HL0KSJ or D88S while working at the South Korean research base King Sejong on King George Island, IOTA AN-010. He will be there until November 30 this year and QSLs should go direct to his home call at **Kwangsan POB 111, Kwangsan-gu, Kwangju 506-050, South Korea.**

QSL INFORMATION

There has been plenty to work on the h.f. bands recently and this all means the lists of QSL information keeps growing. Here are just a few routes to keep you going starting with A45WD via YO9HP, HC4T via EA7FTR, YB0ECT via K5ZE, WJ7R/C6A via N7NU, W2C via W2AGN, XU7ACE via ES1FB. Those of you who still need cards for YU1KW, YU1CV, YU8DX can get them from Ace Jeremov DJ0LZ who also handles the cards for Z32FD and UT1QK direct via **POB 14, D-82378 Peissenburg, Germany**.

YOUR REPORTS

On to your reports now starting with **John Thexton G3URE** who has been experimenting with a new Maldol antenna for 7MHz. He mounted this on a small tripod in his living room with several short radials which helped give a low s.w.r. John made several contacts within the UK running just 5W from a FT-817 and using a LDG Z11 auto-tuner. Switching to an outdoor dipole cut for the band John then worked GM3MQO in Ayr (Scotland), MW0JHE in Chepstow (Wales) and LA0HK (Norway) with received reports varying from 5/5 to 5/9 plus around 1400UTC.

All c.w. man **Ted Trowell G2HKU** on the Isle of Sheppy in Kent found most bands "Patchy and at times almost dead. I have noticed a rough c.w. signal which spreads right across the h.f. bands at times and does not send characters as we know them. The signal strength is around S3 here and I wonder if any readers have also heard this or know what it is"? Teds log includes A61AJ (United Arab Emirates) and ZA1B (Albania) at 2100UTC using a Tec Omni V with 70W and G5RV antenna.

Meanwhile **Mike Baker G3SUK**, Stowmarket used his IC-746 and 80W s.s.b. to a Carolina Windom to work HB9KNV (Switzerland) 1622, GU4EON (Guernsey) 1626 and DK1KF (Federal Republic of Germany) 1633UTC.

THE 14 & 18MHz BANDS

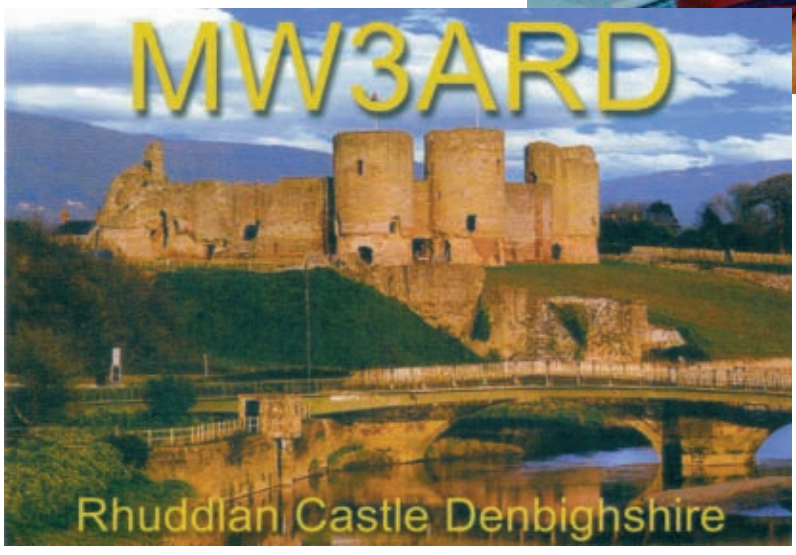
A change to 14MHz for Ted G2HKU found XT2DX (Burkina Faso) 1500, J3A (Grenada) 1600 and later at 2000UTC A45WD (Oman), 5X1CW (Uganda) and ZF2NT (Cayman Islands). Mike G3SUK had a brief spell here finding just one s.s.b. station AM9CE (Ceuta & Melilla) at 1604UTC.

Martyn Medcalf M3VAM, Chelmsford was pleased to work S51CK (Slovenia) 1640UTC on 14MHz using s.s.b. with an FT-817 and Miricle Whip sitting on his desk in the shack. A switch to an IC-746 with a SGC-237 tuner and 8.2 metres of wire found HG0WGC (Hungary), RA6JZ (European Russia), OM3RM (Slovak Republic), SQ6BOH (Poland), EA2AJB (Spain), EW8AM (Belarus) and SV1DPI (Greece) between 1350 and 1715UTC.

Also on this band was new reporter **David Pickard M3ECM** who has been playing with PSK31 lately using a TS-120S which uses a

ALC mod to give power levels from milliwatts to full output. An MFJ-941 tuner helps tame a doublet antenna with a 15metre (50ft) top that works well on most bands. Contacts this month include SM0BOG Sweden) 1409, TK5NJ 1618 (Corsica), US0DA (Ukraine) 1620, W1QMT (USA) in Arlington, Massachusetts 1635, SP9QZV/9 (Poland) and UR3UW 1715UTC.

On 18MHz now and welcome to the second of our new reporters, **Clint Oliver M3GMM** who lives on the Isle of Wight not too far from the Needles Lighthouse. Clint uses an IC-756PRO and B1 studio condenser microphone with a 2-element beam on his favourite band and this month worked EA6AEI (Balearic Islands) on Menorca 1345, DL6JFT (Federal republic of Germany) 1309, T77C (San Marino) 1620 and VP5/N5KW (Turks & Caicos Islands) at 2021UTC with 10W s.s.b.



● Paul Bridle MW3ARD's log shows that 21MHz was the band for him this month (see text).

THE 21 & 24MHz BANDS

PSK31 was the chosen mode for **Robin Trebilcock GW3ZCF** in Bishopston near Swansea who operated on 21MHz with 50W and an IC-756 Pro to a 40m horizontal loop to work 3XY7C (Republic of Guinea) 1008, FR5AB (Reunion Island) 1220 and W6OTO in San Diego, California at 1630UTC.

Another huge log from **Paul Bridle MW3ARD** who lives In Rhuddlan, Denbighshire shows that 21MHz was the band for him. Stations worked using a FT-847, FC-20 auto tuner and home-made dipole include, W9AAZ/HI9 (Dominican Republic) 1056, 6K2CFI (South Korea) 1104, AP2IA (Pakistan) 1148, VP5/W5AO (Turks & Caicos Islands) 1208, VE3ODC (Canada) 1420, JW0HU (Svalbard) 1442, YB1AQV (Indonesia) 1535, A61AJ (United Arab Emirates) 1602, KP2A (Virgin Islands) 1845, VP2MCV (Montserrat) 1924 and EY7AD (Tajikistan) at 2248UTC.

Also on this band was **Roy Walker G0TAK**, Kendal, Cumbria who used RTTY for a change during a late afternoon session. Countries worked included YL7A (Latvia), RW9C (European Russia), OH2AG (Finland), UZ5U (Ukraine), EU1MM (Belarus), VE1OP (Canada), 4X6UU (Israel), CN8LI (Morocco), and CT4NH (Portugal). A switch to PSK31 found EA2KJ (Spain), SP1NQV (Poland) and OK1AYF (Czech Republic, The equipment was a TS-570DG and 3.5MHz long wire loop.

The 24MHz band was favoured by **Gary Macleod MM3SCO** in Tongue, Sutherland who has been working a good deal of s.s.b. DX. running a TS-50, MFJ-948 tuner and converted CB antenna. Gary worked C56R (The Gambia) 0905, SU9BN (Egypt) 1006, JY4NE (Jordan) 1246, OM0CS (Slovak Republic) 1258, 9Y4/DL2RVS (Trinidad & Tabago) 1315, 3V8BB (Tunisia) 1406, 9L1AB (Sierra Leone) 1628 and CY0MM (Sable Island) at 1746UTC.

In Grays, Essex **Len Stockwell M1DPE/M3AFD** had problems loading his antenna on 7MHz so switched to 24MHz and worked EZ8AQ (Turkmenistan), AP2JZB (Pakistan), KP4SQ (Puerto Rico), Z35G (Macedonia), 4J6ZZ (Azerbaijan), 7X2DG (Algeria) and ER1RR (Moldovia) between 1037 and 1351UTC. The rig was an IC-706MK1 and a G5RV at 7m.

THE 28MHz BAND

Operating mobile once again this month was **Mark Taylor G0LGJ** in Dereham who used a FT-100 at 100W and a Pro-AM mono band antenna to work YI90M (Iraq) 1132, C56R (The Gambia)1252, FS/KM3T (Saint Martin) and OD5NH (Lebanon) 1544, SU9BN (Egypt) 1412, CY0MM (Sable Island) 1342, A61AS United Arab Emirates) 1210, LP7H (Argentina) 1515and ZD8Z (Ascension Island) at 1600UTC. Robin GW3ZCF also managed to operate on 28MHz with PSK31 logging ZP6GBA (Paraguay) at 1033, 3B8IK (Mauritius) 1249, KD7GCO (U.S.A.) in South Layton, Utah 1617, LU7JMD (Argentina) 1707 and CX5ABM (Uruguay) at 1738UTC.

On to the log of **Paul Burgess M0CCQ**, Ellesmere, Cheshire who has been very happy with his share of the DX on this band. Various stations were worked between 1015 and 1630UTC including XY1M (Myanamar), 9L1AB (Sierra Leone), PJ7/VA3RA (Saint Maarten), 5H3PK (Tanzania), 6J1DHW (Mexico), CB1C (Chile), YS1EJ (El Salvador), C53LY (The Gambia), A71EM (Qatar), BD8TG (China), 3C2MV (Equatorial Guinea) and ZD7VC (St Helena). The equipment used was an FT-920 with 300W to a 5-element Yagi which is 8 metres high.

Finally to **Owen Williams G0PHY** in Biggleswade who used 100W and a dipole for s.s.b. contacts with XT2TI (Burkina Faso) at 1517 and 7P8ZZ (Lesotho) at 1539UTC.

SIGNING OFF

Another month has flown by and once again our reporters all agree that the bands have generally been in bad shape. The higher bands have had their fair share of surprises with some good DX being worked by several readers including those with very modest stations.

Once again I have been plagued with computer problems as the hard drive on my main machine decided to play up! I did manage to salvage some information and back-up a few files before it went completely. I am sorry if I have missed anyone out or have not replied to an E-mail. Hopefully this situation will be resolved by the time the next column is put together. Thanks to the *425 DX News* edited by **Mauro I1JQJ** for the DX information.

73, Carl GW0VSW

DATA BURST

ROGER G3LDI TAKES A LOOK AT PACKET TONES, BROADBAND & DIGITAL MODES

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When was the last time you adjusted your packet tones? I bet you have left that TNC running for months, possibly even years without looking at it. Well, if you are suffering from retries, more than you think you should, maybe it is time you looked at the TNC!

Adjusting the tones is a simple procedure and can make all the difference. After all they are subject to drift and over a large period of time they might be way out. At any rate it's worth checking.

Have a look in your TNC handbook and the procedure should be shown there. It usually states that 1700Hz is the ideal centre frequency, but continued experimentation has shown that in fact 1685Hz is best. If you are experiencing problems with retries and having difficulty with connects, chances are that your TNC is not generating compatible Mark and Space tones.

The following is a rough guide to calibration of a TNC 2 or clone or MFJ-1270/1274 models:

1 Remove the top cover. If you have a h.f./v.h.f. button, make sure it is in the v.h.f. position.
2 Have a small watchmakers screwdriver small enough to adjust the trim-pots
3 Boot-up the computer and enter command mode on the TNC
4 Try to listen on another transceiver and pick a clean frequency with low power
5 Enter the following command: CALSET 438 OR (N=525,000/1200 + 1) which in either case will equate to 438 or thereabouts. This is your MARK tone CALSET number or 1200Hz tone.
6 Remove the jumper from JMP 8 and place on JMP 9 Pins 1 and 6.
7 Type CALIBRA or CAL. Hit the letter 'K' and then the space key to get the lower of the two tones.
Note: You may want to remove the jumper from JMP 5 to use on JMP 4 to override the watchdog timer circuit.
8 Adjust R 78 until you hear a change in pitch of the transmitted tone, AND both the CON and STA led's light up and stay lit, or at least alternate back and forth the same rate. Ideally, they should both stay lit simultaneously.
9 Hit the 'K' again, and then 'Q' (to quit calibration) and then go back to CMD: mode.
10 Give the TNC the command: CALSET 239 OR (N=525,000 / 2200 + 1), which equals a CALSET number of 239.
11 Repeat step 7. Repeat step 8, but adjust R-77. Repeat step 9.
12 NEXT - Remove the jumper from JMP 9 (Pins 1 and 6) and place the jumper on Pins 2 and 5. – the centre two pins of JMP9.
13 Go to CMD: mode and type CALSET 157 or (N= 262,000 / 1685 + 1) which would equate to a CALSET number of 157. This is your demodulator/or centre frequency of 1685Hz.
14 Repeat step 7, this time adjusting R-79 for the best condition of the CON and STA LEDs (both lit at the same time).
15 Replace JMP 8 (from JMP 9) and replace JMP 5 (from JMP 4).

Once you have done all this, you will have successfully calibrated the TNC's tones. Most TNC Handbooks have a section on doing this, so if you have a different TNC, just look up the procedure in the manual. It is a well worth the time spent. One other thing that you can check is the deviation. Follow the instructions in the manual, making sure that for the 12.5kHz packet channel on 144MHz you have no more than about 2.5kHz of deviation.

RADIAL MAGAZINE

Peter Hunter G0GSZ, recently paid me a visit and brought along the latest magazine of the Radio Amateur Invalid and Blind Club, called *RADIAL*. Peter has taken over the editorship of the magazine once again and would like to know if any of the members of RAIBC are still active on packet.

Peter has a distribution list on GB7LDI, but thinks it is out of date. So, if you are still active, please let Peter know, with details of your call and Home BBS. He is keen to maintain a list for packet despite the fact that a lot of members have E-mail addresses. Peter is shown in **Fig. 1**.

BROADBAND

Broadband is not a disease that attacks the middle-aged, but the promised holy grail of high speed Internet connection!. Rates from .5 to 2Mbits and even up to 4Mbits are being predicted within the next three years. Looking at the WLAN cards, with speeds well over 10Mbits, we could still compete very well even with the ISDN Internet. Obviously we will need lots of intermediary nodes, which would drop the overall speed down somewhat, but it would be great to have an Amateur Radio network of this ilk to boast about.

There are several ways of delivering a service, including cable, satellite and line of sight microwaves. The most common method is using telephone lines with Asymmetric Digital Subscriber Line (ADSL) technology, albeit with the similar problem that the WLAN network would suffer from, namely speed reduction due to traffic congestion, slow sites and so on.

Although ADSL has been available for some time now, there has been a noticeable increase in take-up this last year. Competition will drive the price down, which is currently around £30 per month, this being an amount that a business can probably justify. For the individual though, £30 is still quite a large amount to pay. It depends, of course, how much you use the Internet.

Personally, I use it only in the evenings and weekends. Even then I make a list of what I have to do, and go and do it. I see no sense in sitting there connected for hours, aimlessly surfing, filling BT's coffers! The 24/7 package of £13 per month is somewhat better, but would not cover broadband, and even that is still too much for me.

Satellite is available for those with deep pockets. Britsh Telecom recently announced a satellite package, but the installation fees are £1299 ex VAT for business customers and £899 ex VAT for single user packages. I cannot see anyone - except maybe a lottery winner - justifying that!

However, the early users of systems such as this usually pay for the development costs, and

● Fig.1. Peter Hunter G0GSZ.

prices are bound to drop over a period. In fact the Government has just initiated a discussion process relating to regional licences for microwave delivery of broadband services, with further developments in the offing. I shall wait and see!

DIGITAL MODES

I was recently lent a copy of the book *Digital Modes For All Occasions*, written by **Murray Greenman ZL1BPU**. Murray is a professional Electronics Engineer, working in the r.f. Identification field. He is very active on data modes and has been for the 35 years he has been licensed. He also writes a regular column in the NZART magazine *Break-in*.

The book has over 200 pages and 17 chapters with 7 appendices. It covers all data modes, and gives enough information on each to enable the reader to understand the basic principles.

The basics of serial data transmission are there and also a very useful chapter on getting started. There is also a chapter on Hellschreiber, a mode that is not very commonly used, with one on lesser known modes such as STANAG, PC-ALE, 4285 and a few more that I have not come across myself.

Digital Modes For All Occasions would be a very nice addition to the library of any Amateur, and a very useful reference book. This book is available now from the PW Book Store for £16.95 plus P&P.

Talking of books, I had a very nice one many years ago called *The RTTY Handbook*. As I remember, it had a green cover, an apt choice of colour, as all Teleprinters had green keys, hence the expression. I lent it out and it was never returned, and of course with the passing years I regret that. So, if you have a copy of that book, hang on to it, there is a lot of history in there!

PACKET RADIO RIP

Packet radio RIP - sounds sad doesn't it! It also sounds familiar, the same old tune. Trying to keep an interest in the radio aspect of data, rather than E-mail, Telnet and all landline commercial offerings I found this extract (shown below) from **Charles N5PVL**. Published in the AAPRA Newsletter, here I am extracting the main points from a lengthy article.

Charles echoes my feelings entirely, and hopefully yours too? Take heed and plug in your TNC again! See: **www.aapra.org.au** (**Fig. 2**).

The packet radio network is endangered, and as a user I feel a responsibility to make an effort on its behalf. Recent relaxations in the qualifications needed in able to obtain an Amateur Radio licence have brought in many new Amateurs who are not impressed with what they see in packet. Rather than experiencing a sense of pride in being a part of the only r.f. based global digital network, designed built and maintained by Amateurs, they look at packet and compare it to the landline networks they are familiar with. In that light, no r.f. based network will ever look good, and the packet network is no exception. Add the fact that effective packet radio usage requires a bit steeper learning curve than the landline systems do, and it becomes easy to see where these new Amateurs develop a set of false assumptions about packet radio's needs, goals and purpose.

● Fig.2.

*You have to see packet radio as a **radio** application in order to appreciate its elegance and rapid growth. In that light, you can see the global Amateur Radio digital network as the hobby's most successful and important international achievement. It's a shame to see it being demolished.*

*Considered as a **radio** application, the present network should be a point of pride for **all** Amateurs. It truly embodies the spirit of Amateur Radio, and its intended goals. Using the phone does not.*

While Amateurs have traditionally regarded the limitations of r.f. as a challenge to be faced and overcome, some of the newer Amateurs see the limitations of r.f. as a drawback to be by-passed if possible, using whatever means are most expedient. This fundamental difference in how they approach a challenge has set them apart from the tradition of Amateur Radio, and points out one of the dangers of lessening the qualifications needed to obtain a licence.

It is only recently that any group of Amateurs have suggested using landlines in preference to radio to pass traffic, with some suggesting it as a "big step forward" for the hobby. It's cheaper to use the telephone. So what, no challenge there, just a compromise of those that have set up r.f. links, forcing them to close down, or join in and then we have a downward spiral. What price do we pay for this "progress"?

- *Loss of reputation*
- *Loss of Independence*
- *Loss of Pride*
- *Loss of our own world-wide digital network and very likely the loss of spectrum too.*

Charles goes on to say just what I have been saying for a long time. It's up to us, nobody else, **you** and **me**. Use **radio** to pass your traffic, ok it might take a day or so longer; so what, Amateur traffic is not that urgent. At least you would help to support a network that has taken years to build and you might just save it and some frequencies as well.

To place this in context, the full article by Charles appeared in the AAPRA **Digital News**. The Australian Communications Agency (ACA) has notified the Wireless Institute of Australia (WIA) that they are likely to lose 420 to 430MHz in the near future. Not only that but they might also lose 50 to 52MHz.

So, support the Network, **do not** support the use of the Internet. **Use It Or Lose It!** Yes, a hackneyed cliché but so very true!

That's all for now, I'll be back in the June issue to bring you more Packet, RTTY and associated news. Next month I'm handing the column onto **Robin Trebilcock GW3ZCF** who will be concentrating on PSK31, followed by **Tex Swann G1TEX** looking at software, news, programs and interfacing. So until June, keeping those Data Bursts coming!

Roger G3LDI

TUNE-IN

TOM WALTERS
P.O. BOX 4440
WALTON
ESSEX
CO14 8BX
E-mail: tom.walters@aib.org.uk

TOM WALTERS ROUNDS UP ALL THE LATEST NEWS FROM THE BROADCAST BANDS

The **BBC World Service** reached its 70th anniversary recently and it seems that these days you're still very much alive and kicking at 70. The BBC is audible on short wave just about everywhere, even to some extent in North America.

The f.m. relays are still being started in major cities world-wide, a.m. (medium and long wave) is still used, the BBC is up on some satellite radios, and of course, the service can be heard in all parts via the Internet. **www.bbc.co.uk/worldservice/index.shtml** gets you all the information you need to tune in. (A tip, though - click on 'Launch console for audio and text', don't try to go straight to the programme you want).

The site brings you programme audio both 'on demand' (pre-recorded) or live, together with a really huge array of programme text material. The BBC is still far and away the biggest and probably the most popular international broadcaster. **Long may it continue**.

The **XM satellite radio service**, with digital programming for the Americas, some of it international (including BBC World Service), has announced that it will get 450m $US worth of new financing. Like the hopeful 'dot com' companies of a few years ago, the whole thing is a hugely expensive speculation, that may or may not break even before the financial plug gets pulled. Over half the funding comes from General Motors, which is putting XM radio into many of its cars. Meanwhile, the 'punters' are just not signing up in the expected numbers.

Perhaps the new portable XM satellite receiver, the SKYFi audio system, will help. With its own 'boom box', listeners can now get out of their cars and take XM anywhere they want, to hear XM's 101 programmes.

For a taste of XMs weird and wonderful programming see **www.xmradio.com** Satellite radio will probably be successful in the long run, but it's a hard and expensive road.

It's not cheap for established international stations either. **Radio Ukraine International** seems to have had trouble paying the electricity bill! As a result they had only one short wave site operating, in Kharkov, but they seem to have paid up now, or come to some new arrangement. Transmissions are currently from Kharkov, Kiev and Mykolaev. Languages are: German, English, Romanian and Ukrainian, with the English schedule being: 0100-0200 on 5.905, 9.610, 9.810; 0400-0500 on 6.020, 7.285, 9.810 and at 1200-1300 on 11.825, 11.840, 13.590MHz Mykolaev operates on the very high power of 1000kW at 0000-0500 on 9.810MHz to North America. The former evening service to Western Europe in English seems to have been dropped.

VATICAN RADIO

A while back **Vatican Radio** was being accused of giving people living round the Santa Maria di Galeria transmitter site near Rome leukaemia by using high transmitter power. There was talk of Radio Vatican being taken to court by the Italian authorities, unless they changed their ways, while the Vatican said that they had never knowingly harmed anyone. Well, it's all been settled.

The Italian government took some readings, and found that the locals' fears were justified – radiation did top the permitted maximum. Now the Vatican has reduced transmitter power, and emissions are agreed to be within safe limits. Vatican Radio cut back the power on some frequencies from Santa Maria, and moved some transmissions to other sites. Vatican's current English schedule is: 0140-0200 on 7.335, 9.865; 0250-0310 on 7.305 9.605; 0300-0330 on 9.660MHz; 0500-0530 on 9.660, 11.625, 15.570; 0600-0620 on 1.530, 4.005, 5.890, 7.250; 0630-0700 on 11.625, 13.765, 15.570: 0730-0745 on 11.740 (Mon-Sat) 15.595; 0730-0745 on 585 (Mon-Sat) 1.530, 4.005, 5.890, 6.185, 7.250, 9.645; 1000-1100 on 585 (Mon, Tue, Thu-Sat), 5.890, 1130-1200 on 15.595 (Fri), 17.515; 1530-1600 on 9.865, 13.765, 15.235; 1715-1730: 585, 1.530, 4.005, 5890, 7.250, 9.645, 15.595: 1730-1800 on 1.260, 13.765, 15.570; 2000-2030 on 7.365, 9.660, 11.625; 2050-2110 on 585, 1.530, 4.005, 5.890 and 7.250MHz.

There's been more chopping and changing at the **Voice of America**. They're introducing local programming in some areas of the world, fronted by popular figures, with a mainly musical content, plus some news, politics and economics thrown in, as they think that this is the way to reach younger people. As noted in this column, the scheme started with **Radio Sawa** for the Middle East, and was extended recently with **Radio Farda** for Iran, operated jointly by VOA and **Radio Free Europe/Radio Liberty**..

The **VOA Direct Connection (VOA DC)**, is a "fast-paced programme for Indonesia tomorrow", fronted by well-known DJs. As 60% of Indonesia's population is under 30, perhaps this is a good idea.

More than 80 satellite affiliates will be rebroadcasting the programme and there will be some short wave transmission. Diehards say that the idea will flop, because US propaganda will still come crashing out of people's radios. But it does seem worth trying to break the mould, and early surveys on Radio Sawa look quite good.

Take a look at **www.ibb.gov/radiosawa/index.html** and **www.radiofarda.com** Apparently there's no site for VOA DC yet.

But it's far too soon to get the idea accepted in China. The US international broadcasting authorities are complaining that their country's news is not getting through – it's being jammed.

Almost all **VOA** (Cantonese, Mandarin and Tibetan) and **Radio Free Asia** (Cantonese, Mandarin, Tibetan and Uighur) short wave transmissions come to a grisly and noisy end, it seems. Unfair, say the Americans – who don't jam Chinese transmissions, which even go out on local affiliated stations. The Broadcasting Board of Governors said: "The United States, now engaged in a global war on terrorism, cannot afford to have 18% of the world's population misinformed about our country". Tough talk, but probably an uphill struggle!

Bye for now.

Tom

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Free to good home. Large collection of mags, mainly RSGB, *Radcom* and *Short Wave Mag*, going back to 1969s. House move forces disposal, must collect.Richard, Cornwall. Tel: (01503) 250741.

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Eddystone 770R MkII circuit diagram original or photocopy, all expenses paid. Chris G7GJZ. Tel: (01278) 786621.

Info on National NCX-A p.s.u. inc. circuit diagram also transmformer 250V input 110V output handle up to 500W note not auto transformer. Ross, Cornwall. Tel: (01726) 891320.

Information or circuit diagram please on Nova-Tech Aviator II receiver to re-align the v.h.f. airband to the correct dial position relative to the cursor, costs fully refunded. Tel: Barry on (01773) 718222.

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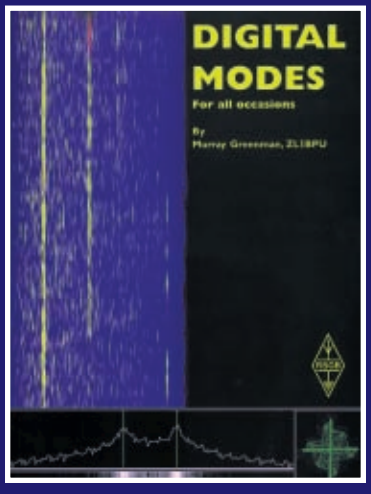

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LISTENING

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topical talk *Radio Heritage.*

When he arrived back from his recent trip to the Chester & District Radio Society (Tuesday 14 January) our Editor had obviously thoroughly enjoyed the visit and on his travels he obtained some souvenirs from BT International's soon-to-close Criggion l.f. transmitter!

The *PW* 'Club Visit' to Chester was also attended by members of the **Wrexham Club**, from just over the border in North Wales. From what he said, it was very obvious that our Editor had met a lot of old *PW* friends that evening.

When in the area Rob usually stays in a Travelodge at Wrexham, but this time he used the Oswestry Travelodge, some way south. By the time he'd got back to the Oswestry (Shropshire) Travlelodge it was near midnight.

A working breakfast followed next morning with locally based *PW* Author **Stan Brown G4LU** (See news item this issue, reference New Year's Honours List). Having worked there, Stan wrote the article on Rugby Radio - see *PW* January 2003 - and is also very well versed on nearby Criggion Radio Station, which is just inside Wales. (See Craggy Criggion - Wartime Wizardry, *PW* September 2001).

Criggion Closing

During their meeting Stan reminded the Editor that Criggion is due to close in late March 2003. So, realising it may be his last chance to see the station in working order, in its magnificent setting, Rob took a last look on the way south.

Rob was truly impressed at the huge towers, the kilometre or so long antennas and the majestic setting of Criggion. On his return to the office our Editor had difficulty in conveying the spell-binding effect of standing underneath what seemed a huge 'net' of antenna wires, suspended at approximately 170 metres above his head. The wind noise was incredible, as there was a gale blowing on Wednesday 15 January!

The station outbuildings are being emptied ready for the closure on 31 March. Friendly staff donated recovered ceramic antenna spreader/insulators (due for scrapping) as a memento of this magnificent l.f. transmitter. It was unique in Britain, as one antenna support is attached on the side of a nearby small mountain!

Unconfirmed reports state that the station's masts will be demolished over the Easter weekend by the use of explosives. The land, part of the flood plain of the ever present River Severn - always a threat! - will then be sold, having been compulsorily purchased during the Second World War.

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Disappearing Heritage

So, as **David G3PLE** appreciates (see letters this month) *PW* is doing its best to mark the passing of the once common l.f./m.f., and h.f. radio communication stations in the UK. You may not be able to visit them yourself, but we'll do our best to ensure they don't disappear unrecorded. After all...they are part of our radio heritage.

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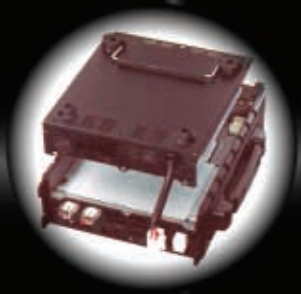
FT-897

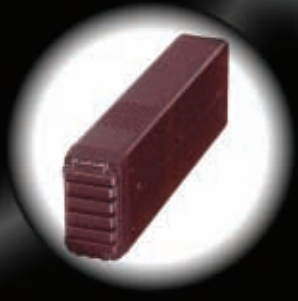
Multi-Band:	HF/6m/2m/70cm
All Mode:	CW/SSB/AM/FMN/FMW/PACKET/DIGITAL
Ultra Compact size:	7.87" x 3.15" x 10.3" W.H.D.
High Power Output:	HF/6m 100W, 2m 50W, 70cms 20W w/AC or 13.8VDC or 20W, (10W on 70cms) w/optional Ni-MH Battery

Optional Accessories include

FNB-78 Internal
Ni-MH Battery Pack



FP-30 Internal
AC Power Supply



FC-30 External
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