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Britain's Best Selling Amateur Radio Magazine

VHF DXer: The 5.4m dish antenna at the QTH of Howard Ling G4CCH

VHF DXer
David Butler G4ASR

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Intro to DXing
A beginner's guide by Mark Dumpleton 2E0NCG

Emerging Technology
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NEW ID-E880 *In Stock Now*

* *2m/70cm 50W Mobile*
* *D-Star +D-Star Repeat Mode*
* *Extensive GPS Compatability*
* *CTCSS & DTCS + Airband Receive*
* *1000+ Memories*
* *Detachable Head*

£499.95 D

NEW IC-E80D *Coming Soon Preorder Now*

* *2m/70cm Handheld*
* *D-Star +D-Star Repeat Mode*
* *Extensive GPS Compatability*
* *CTCSS & DTCS + Airband Receive*
* *1000+ Memories*

If the user downloads the free cloning software from Icom, various settings can be made from a PC and shared between IC-E80D & the matching ID-E880 mobile along with memories.

£369.95 C

HF Transceivers

IC-7600 **FREE USB keyboard!**

This HF-6m transceiver is the successor to the IC-756 series. It takes features from the flagship IC-7800 and the more recent IC-7700, putting them into a package that brings the price within reach of many more hams.

£3379 D

IC-7800	Deluxe HF / 50MHz All-Mode 200W Transceiver	£7999 D
IC-7700	1.8-54MHz 200W with built-in PSK-31 + keyboard	£5499 D
IC-7200	HF & 6m DSP 0.005-3335MHz wideband receive with USB port	£799 D
IC-718	160m-10m 100W transceiver that brings HF to those on a budget	£519 D

IC-7000 100W 1.8-440MHZ all-mode transceiver with 2.5" colour display. An incredibly small package with a quite amazing performance. **£1089 D**

DEALS: IC-7000 + Power Mite NF PSU £1139 D
IC-7000 + TFT-7000 screen £1179 D
IC-7000 Power Mite NF & TFT-7000 £1229 D

VHF Mobiles & Handhelds

IC-910H	2m / 70cm 100W Base station all modes + option for 23cm	£1249 D
IC-910HX	As above + 23cm module already fitted	£1449 D
IC-2200H	Rugged 2m 55W FM Mobile with digital option.	£199 D

IC-E90

6m / 2m / 70cm Handheld Transceiver. **£234 C**

IC-E92D £369 D
Dual band handheld with DSTAR

IC-E2820

2m/70cm 50/50W true dualband mobile. Optional DSTAR module. **£424 C**

IC-E2820+UT123 £579 C
This adds the UT-113 DSTAR module.

Receivers & Scanners

IC-R20

IC-R5	*LAST FEW* Handheld scanner 0.15 - 1310MHz	£159.95 C
IC-R6	*NEW* Handheld scanner 0.1 - 1309..995MHz	£172.95 C
IC-R20	Handheld scanner 0.15 - 3305MHz	£389.95 C
IC-R1500	PC scanner 1.01 - 300MHz	£449.95 C
IC-R8500	Base receiver 1.01MHz - 2GHz	£1379.95 D
IC-R9500	Base receiver 5kHz-3.3GHz	£9799.95 D

YAESU

Choice of the World's top DX'ers

NEW VX-8DE

* *Triple Bander*
* *Upgraded APRS features*
* *Rugged and Submersible*
* *Powerful Li-Ion battery*
* *Beacon Function*
* *Built-in altimeter*
* *GPS option unit*
* *Increased Memory*
* *CW Triainer!*

£399.95 C

The New VX-8DE has all the great features of the VX-8E but with expanded APRS capabilities. ***IN STOCK NOW!***

HF Transceivers

FT-2000

The classic HF & 6m 100W transceiver with PEP (performance upgrade) ready installed. Dual receive and fantastic filtering make this an impressive performer. And despite what you may read, we still have the largest, most up-to-date stock of Yaesu in the UK!

£2079 D

FT-2000D	200 Watt version of FT-2000 with built-in PSU.	£2649.95 D
FT-950	100W HF - 6m transceiver with DSP & Auto ATU	£1099.95 D
FT-450AT	100W HF - 6m with automatic ATU & latest updates	£679.95 D
FT-450	100W HF - 6m transceiver - great value.	£589.95 D
FT-DX9000contest	200W HF - 6m "formula one" contest machine	£3995 D
FT-DX9000D	Deluxe fully loaded base station	£7695 D
FT- DX9000MP	Amazing 400W "legal limit" radio	£7995 D
FT-857D	HF to 2m mobile. portable or base - up to 100W	£574.95 D
FT-817BHIDSP	Fitted with DSP module exclusive to W&S	£549.95 D

bhi RadioMate

New Updated Software Version!

W&S are pleased to endorse this accessory for Yaesu mobile & portable HF radios. Quick & easy band changes, modulation selection, memory function, intelligent direct freq. input. **PLUS** Swap VFO A/B, VFO A=B, Split VFO mode, Tune function. All this for a realistic price!.

£89.95 C

FT-817ND

A great radio, whatever your interest is. With 2.5 Watts from battery or 5 Watts from ext. 12V, it slips into a brief case or rucksack with ease. Many operators have DX tales to tell with this mighty midget. Offers SSB, CW & FM.

+ FREE CSC-83 Case! **£439 D**

VHF Mobiles & Handhelds

FTM-10SE	50/40W 2m/70cms stereo FM	£269 D
FT-8800E	Dualband Mobile 50W / 30W	£289 D
FT-8900R	10/6/2m & 70cm Mobile	£334 D
VX-3E	2m / 70cm Handheld Wideband receive	£139 D
VX-7R	Waterproof dualband handy (silver / black)	£259 C
VX-6E	2m/70cms handy, 5W Wideband Receive	£199 C
FT-60E	2m/70cms, 5W handy Wideband Receive	£142 C

VX-3E

New Mobiles In Stock Now!

FT-1900E **NEW**

55W 2m Mobile. 3 Watts of pristine audio, large LCD & 200 memories.

£129.95 D

FT-2900E **NEW**

75W 2m Mobile. No cooling fan needed! Large easy-to-read LCD.

£139.95 D

FT-7900E **NEW**

50/45W 2m/70cm Mobile. 1000 Memories supplied with DTMF Mic.

£249.95 D

Carriage Charges: A=£3, B=£4, C=£6.95, D=£10, E=£12

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NEW AIRNAV RADARBOX-3D

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Full Package £489.95 C

Current owners can upgrade to 3D with RadarBox-UG for just £109.95 C

RadarBox-Pro Basic Package - No 3D £399.95 C

FlexRadio Systems

NEW

FLEX-1500 £549 C

Coming Soon Preorder Now

- 160m - 6m Transceiver 5W Output
- SSB CW FM AM
- Variable Selectivity to 25Hz
- Digital Display
- Superb DSP Noise Cancelling
- Panoramic Display
- Graphic IF Shift
- Variable Transmit Audio Bandwidth
- RF Processing
- Amazing Dynamic Front-End
- Industry Standard Performance
- USB Plug & Play
- Compact Low Current Design
- Great Companion For Laptop
- QRP Dxers Dream Radio

Receiver or Transceiver?

The new Flex-1500 is the exciting news from "Flex" in the USA. Designed as a QRP transceiver / driver transceiver, yet the price is so low that customers are buying it for the receiver section alone. This radio is hot and whether you want a transceiver or receiver this is an unbeatable deal.

FAST SAME DAY DESPATCH SERVICE!
Orders must be received before 3pm.

KENWOOD

HF Transceivers

TS-2000E

The TS-2000E is the classic all-band, all-mode base station covering HF - 70cms at up to 100 Watts. Includes dual channel receivers and DX-cluster monitor with built-in TNC. £1489 D

TS-2000X +23cm £1749 D

TS-480HX Ideal for mobile, portable or base station. Gives a massive 200W on HF and 100W on 6m. £849 D

TS-480SAT This model gives 100 Watts on all bands up to 6m, but adds a built-in automatic ATU. £749 D

Handhelds

TH-F7E	2m/70cm 5W (2-pin Kenwood) SMA +FREE Clip Mic	£229.95 D
TH-K2E	2m 5W 4-Key Keypad (2-pin Ken) SMA +FREE Headset	£159.95 D
TH-K2ET	2m 5W 16-Key Keypad (2-pin Ken) SMA +FREE Headset	£165.95 D
TH-K4E	70cm 5W (2-pin Kenwood) SMA +FREE Headset	£159.95 D

VHF Mobiles

TM-V71E

2m/70cm Dualband Mobile Transceiver. Features;- Wideband Receive, Built-In Echolink, Simultaneous 2 Frequency Receive, Removeable Control Head, CTCSS Encode / Decode, 1000+ Memories, Supplied with DTMF Mic. £289 D

TM-271E	2m FM 60W mobile. CTCSS, 200 Memories, DTMF Mic	£165.95 D
TM-D710E	2m/70cms 50/50W mobile. APRS +EchoLink. DTMF Mic	£429.95 D

Watson
Wireless Weather Stations

NEW **W-2001**

Internet Wireless Weather Station

- 5-day Forecast
- Date & Time
- World Weather
- Backlit LCD
- Wireless Link
- PC Dongle
- Outdoor Sensor

The W-2001 gives a 5-day forecast for anywhere in the world! The clear LCD screen is wireless linked to your PC via a dongle. Just press the LCD screen panel command & it will interrogate your PC, display & store the results on the wireless linked weather display panel. Just £49.95 C

W-8681 Wireless Weather St.

- LCD Touchscreen
- Atomic date/time
- In/out Temp, Wind, Rain, Humidity gauges
- USB connect
- PC Software Disc

£79.95 C

W-8682 £69.95 C
As W-8681 without touchscreen or USB

W-8683 £24.95 A
Compact Weather St with Remote Sensor

W-8684 £10.95 A
Digital Clock + Remote Sensor for temp

W-8684 £7.95 A
Bedside Alarm Clock with In/Out temp

Butternut
Vertical Antennas

These antennas are extremely efficient and use no traps. The large, air-spaced coils are the secret, and resonant adjtments can be made at ground level.

HF-2V 80, 40m DX vertical. 9.75m, Easy erect. £289.95 D
HF-6V 80,40,30,20,15,10m self support 7.9m £389.95 D
HF-9V As HF-6V but adds 17,12 & 6m. 7.9m £449.95 D

Watson
Cross Needle Meters

NEW

These are high quality, accurate VSWR meters with large, clear display featuring cross-needle movements.

WCN-200 £69.95 C
* 1.8 - 160MHz * 0 - 30 / 300 / 3000W * 600W max above 30MHz * 2x SO-239

WCN-400 £69.95 C
* 140 - 525MHz * 0 - 30 / 300 / 600W * 2x SO-239

WCN-600 £89.95 C
* 1.8 - 525MHz * 0 - 30 / 300 / 3000W * 600W max above 30MHz * 2x SO-239

Watson
Power Supplies

Power-Mite-NF

Compact Cont. 22 Amp Switch Mode PSU variable voltage & noise offset. £69.95 C

Power-Max-25-NF

Slightly larger than the Power-Mite and ideal companion for any 100W radio. £89.95 C

Power-Max-45-NF

38 Amp cont, 45 Amp Peak, Switch Mode PSU with variable voltage, V/A meters, & noise offset. £119.95 C

Power-Max-65-NF

65 Amp Low Noise PSU. Patented Noise Control that permits you to move any noise away from the operating frequency. £209.95 D

W-3A	3A Analogue fixed 13.8V	£24.95 C
W-5A	5A Analogue fixed 13.8V	£29.95 C
W-10AM	10A Analogue variable	£59.95 D
W-10SM	10A Switched fixed	£49.95 D
W-25AM	25A Variable PSU	£89.95 C

Carriage Charges: A=£3, B=£4, C=£6.95, D=£10, E=£12

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Bencher
Morse Key Paddles

Morse Paddles Of Distinction
A range of high quality keys from the USA.

Hex-Paddle	Iambic paddle	£199.95 C
BY-1	Twin paddle, black base	£119.95 C
BY-2	Twin pad, chrome base	£139.95 C
BY-3	Twin paddle, gold base	£299.95 C
BY-4	Twin pad, gold parts	£189.95 C
ST-1	Single pad, black base	£119.95 C
ST-2B	Single pad, chrome b	£144.95 C
RJ-1	Straight key, black base	£109.95 C
RJ-2	Strght key, chrome base	£129.95 C

Watson
Walk-About Antennas

Base loaded telescopic whips that plug into your FT-817 and give you total HF portability

AT-10	10m single band whip	£19.95 A
AT-12	12m single band whip	£19.95 A
AT-15	15m single band whip	£19.95 A
AT-17	17m single band whip	£19.95 A
AT-20	20m single band whip	£19.95 A
AT-30	30m single band whip	£19.95 A
AT-40	40m single band whip	£21.95 A
AT-80	80m single band whip	£21.95 C

SGC
Auto ATU

SG-211
Was £219.95
Now £199.95 C

SG-211 "Stowaway" auto antenna tuner back in stock & better price, not weather-proofed. HF + 6m Up to60W. Powered by internal battery.

Heil Sound
Audio Equipment

Pro-set-4 & 5

The standard headset with a choice of NC-4 or 5 inserts. Requires AD-1 patch lead.
£114.95 C

For Icom transceivers, choose the **Pro-Set-IC** with "Icom" Element £129.95 C

Pro-set-Plus

With the Pro-set Plus you have the benefit of dual NC-4 / NC-5 mic capsules that can be selected. Requires AD-1 patch lead.
£189.95 C

Pro-Set-PLUS-IC Icom Element £194.95 C

AD-1 Connector Leads One to suit any ham rig, tell us your radio. £16.95 A

GM-4 & 5

These "Gold Lime" mics contain the NC-4 or NC-5 capsule. Can be handheld or mounted on a stand (clip supplied). Requires CC-1 cable kit for rig.
£119.95 C

CC-1 Cable Kits One to match every ham rig, tell us the radio you need it for. £29.95 A

MFJ
Radio Accessories

MFJ-998
W&S £649.95 C

• 1.5kW SSB & CW • Digital & Analogue x-needle VSWR • 1.8 - 30MHz • 20,000 memories • Radio interfaces optional • Built-in antenna selector • Field upgrade-able firmware • Auto bypass protection

MFJ-925	Compact auto tuner	£169.95 D
MFJ-927	200W remote auto atu	£249.95 D
MFJ-928	Basic auto atu	£199.95 D
MFJ-931	Artificial ground	£112.95 C
MFJ-932	Mini loop tuner	£139.95 C
MFJ-934	Artificial ground + ATU	£199.95 C
MFJ-935B	Portable loop system	£199.95 C
MFJ-945E	Mobile atu 300W	£129.95 C

MFJ-929 **AUTO TUNER 1.8-30MHz 200W**

LCD readout, 20,000 memories, long wire & coax, radio interface.
W&S £209.95 C

MFJ-991B	Auto atu 150W	£209.95 D
MFJ-993B	Auto atu 300W	£249.95 D
MFJ-994B	Auto atu 600W	£339.95 D
MFJ-962D	1.5kW ATU	£289.95 D
MFJ-969	160m - 6m 300W	£209.95 D
MFJ-971	Portable atu	£118.95 C
MFJ-974B	Balanced ATU 3.5-30MHz	£189.95 D
MFJ-986	3kW differential tuner	£349.95 D

MFJ-112B
World map clock.
Was £32.95 Now £22.95 A

MFJ-1260	Mic control 1 in/2 out	£99.95 C
MFJ-1263	Mic control 2in/2 out	£109.95 C
MFJ-1275	Sound card adaptor	£109.95C
MFJ-1625	Window Ant + Tuner	£199.95 D
MFJ-16B01	Dipole centre SO-239	£21.95 A
MFJ-16C06	6x dog-bone insulators	£4.95 A
MFJ-16E01	300Ω end fed SO-239	£10.95 D
MFJ-1796	40m-2m vertical	£239.95 D
MFJ-1798	80m-2m vertical	£299.95 D
MFJ-1908H	43ft fibre glass mast	£239.95 D
MFJ-1922	Digital screw driver control	£99.95 D
MFJ-1924	Prog. screw drvr control	£129.95 C
MFJ-1925	ATAS-100 controller	£72.95 C
MFJ-202B	Receiver noise bridge	£79.95 C
MFJ-250X	1kW dummy load (x-oil)	£55.95 C
MFJ-260C	300W dummy load	£44.95 C
MFJ-261	100W dummy load	£32.95 C
MFJ-265	2.5kW load fan cooled	£199.95 C
MFJ-403	Micro CW keyer	£66.95 C
MFJ-403P	Micro travel iambic	£79.95 C
MFJ-4103	PSU for FT-817	£52.95 C
MFJ-417	Pocket morse tutor	£76.95 C
MFJ-4403	Trcvr volt conditioner	£109.95 C
MFJ-442	Slim electronic keyer	£199.95 C
MFJ-461	Pocket morse reader	£99.95 C
MFJ-4714	4-way remote ant switch	£87.95 C
MFJ-4726	6-way remote ant switch	£159.95 C
MFJ-490	Memory keyer + paddle	£244.95 C
MFJ-495	Memory keyer	£189.95 C

MFJ-269 ***Antenna Analyser***

** 1.8 -170 & 415-450MHz*
** Frequency Counter*
** LCD readout*
** SWR & impedance*
** N-socket (Ant), BNC (Counter)*
** AAx10 or ext. 12V DC*
** Size 103 x 173 x 60mm*
** Weight 750g*
W&S £349.95 C

Hustler
HF & Mobile Antennas

Verticals
Hustler verticals are known around the world for their performance and sturdy construction.

6-BTV	6 band inc 30m	£259.95 D
5-BTV	5 band 80-10m	£219.95 D
4-BTV	4 band 40 - 10m	£179.95 D

Mobiles

Base Whip Sections

MO-1	137cm Folds 1/3rd Up	£38.95 C
MO-2	137cm Folds Halfway Up	£38.95 C
MO-3	137cm Non Folding	£29.95 C
MO-4	67cm Non Folding	£26.95 C

Resonator Top Section

RM-10	10m	150-250kHz	£21.95 C
RM-11	11m	150-250kHz	£21.95 C
RM-12	12m	90-120kHz	£21.95 C
RM-15	15m	100-150kHz	£21.95 C
RM-17	17m	120-150kHz	£26.95 C
RM-20	20m	80-100kHz	£26.95 C
RM-30	30m	50-60kHz	£29.95 C
RM-35	40-30m	7-10MHz	£29.95 C
RM-40	40m	40-50kHz	£29.95 C
RM-50	60-40m	5-7MHz	£29.95 C
RM-60	60m	5MHz	£32.95 C
RM-80	80m	25-30kHz	£32.95 C

Diamond
HF Antenna

BB7V
The small space answer!

** HF 2 - 30MHz Vertical*
** No radials needed*
** 250W PEP 6.7m length*
** VSWR less than 2:1*
** Weight 2.3kg*
** 50 Ohms SO-239*
£325.95 C

Butternut
Mini Beam

HF-5B ***Butterfly 5-Band Mini Beam***

20m,17m, 15m, 12m & 10m. Just 12.5ft span - DX from a small garden!

** 5 Band Coverage 10 - 20m*
** 1.2kW PEP (500W CW)*
** Full coverage on 12m, 15m & 17m*
** 1.5MHz on 10m & 200kHz on 20m*
** 12.5ft span. 6.5ft turning radius*
** Forward gain up to 5dB*
** F/B ratio up to 20dB*
** Front to side ratio up to 30dB*
** Weight 10kg*

This antenna has NO traps. It uses linear loading and capacitive elements to achieve its small size. We have just a few at this special pre-antenna season price!

Was ~~£449~~ £399

Watson
VHF/UHF Antennas

VHF-UHF Verticals

W-30	2m/70cms 3/6dB length 1.15m 150W SO-239	£49.95 C
W-50	2m/70cms 4.5/7.2dB length 1.8m 150W SO-239	£54.95 C
W-300	2m/70cms 6.5/9dB length 3/1m 150W SO-239	£74.95 D
W-2000	6m/2m/70cms 2.15/6.2/8.4dB length 2.5m 150W	£89.95 C

VHF-UHF Mobile Whips

W-2LE	2m 0dBv length 0.48m	£10.95 C
W-285	2m 3.4dBv L. 1.33m	£14.95 C
W-77LS	2m/70cm 0/2.4dBv L. 0.43m	£14.95 C
W-770HB	2m/70cm 3/5.5dBv L. 1.1m	£19.95 C
W-7900	2m/70cm 5/7.5dBv L. 1.58m	£31.95 C
W-627	6/2/70cm 2/4.5/7.2dBv L.1.6m	£34.95 C

GAP Antennas
HF Verticals for DX

Challenger-DX 8-band HF-VHF
• Bands: 80/40/20/15/12/10/6/2m. • 2kW PEP SSB • VSWR: Better than 2:1 • Height 9.6m (31.5ft) • Radials 3 x 7.6m (25ft) • 3ft drop-in ground socket supplied • Can be mast mounted • Weight 8kg
£299.95 D

Voyager-DX 4-Band LF
• Bands: 160, 80, 40, 20m • 2kW PEP SSB • VSWR: Better than 2:1 • Height 13.72m (45ft) • Radials 3 x 17.4m (57ft) • Requires guys - brackets supplied • 2ft ground pivot assembly included • Weight 13.6kg
£399.95 D

Eagle-DX 6-Band
• Bands: 40, 20, 17, 15, 12, 10m • 2kW PEP SSB • VSWR: Better than 2:1 • GAP centre fed • Height 6.4m (21ft) • 2m (80in) 3 x counterpoises • Support pipe user (31.75mm max) • Weight: 4.9kg.
£339.95 D

WATSON
New Range of Coax Switches

These Watson premium grade RF coax switches have been created to fulfil a cost effective need for RF switches that are able to cater for the ever widening commercial RF spectrum.

New 4-Way Switches Now In Stock!

CX-SW4N £59.95 C
DC - 1.5GHz 1.5kW 5x N-Type Connectors.
CX-SW4PL £56.95 C
DC - 800MHz 1.5kW 5x SO-239 Connectors.

2-Way Switches

CX-SW3N £49.95 C
DC - 1.5GHz 3-way coax switch 1.5kW 3x N-Type Connectors.
CX-SW3PL £41.95 C
DC - 800MHz 3-way coax switch 1.5kW 3x SO-239 Connectors.

2-Way Switches

CX-SW2N £32.95 C
DC - 3GHz 2-way coax switch 2kW 3x N-Type Connectors.
CX-SW2PL £26.95 C
DC - 1GHz 2-way coax switch 2kW 3x SO-239 Connectors.

Carriage Charges: A=£3, B=£4, C=£6.95, D=£10, E=£12

Practical Wireless June 2010

contents

Volume 86. Number 6. Issue 1237. On sale 13 May 2010

Phil Cadman G4JCP's Valve & Vintage: Due to space problems this month, the column has been held over and will now appear in the July issue. My apologies to Phil G4JCP and his keen readers. **Editor**.

Front cover design: Our thanks go to **Howard Ling G4CCH** for the photograph and to **Steve Hunt** for the cover design.

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Rob Mannion's

keylines

Rob discusses digital broadcasting problems.

Active Radio Amateurs can have a rough time from family and neighbours if they suspect we are responsible for what they regard as 'interference' to TV or radio broadcasts! Indeed, I've lost count of the number of times my (much loved) family have suggested that my activities are causing 'interference' to the programmes they're enjoying.

Oddly perhaps, I've also been challenged on several occasions when I've been indoors. "Something you're doing out in your shed is affecting my radio/TV." Such is life for the Radio Amateur!

However, to be fair to my wonderful family, on occasions there was some – truly accidental – connections between my radio activities and radio reception. Mostly they've been caused when I moved my antenna or erected a test system in the garden – causing problems to the incoming Band II v.h.f. f.m. transmissions.

I'm afraid that I can also cause problems when I walk past our portable Band II portable receiver (invariably tuned to BBC Radio 4 as **Carol** my wife and I enjoy the station) and reception is lost momentarily as I alter the signal pathway. This is, of course, due to the less-than-ideal telescopic antenna on the receiver that – although we all realise it's not ideal – is standard on such receivers because it permits the receiver to be fully 'portable'. And it's the 'portability' aspect of domestic radio reception that I feel is likely to be a major problem for the extension of DAB digital radio services.

Broadcasting Problems

As a dedicated Amateur Radio magazine nowadays, *PW* doesn't normally cover broadcasting topics or problems. On the other hand, most Radio Amateurs are also radio listeners too – and we're often the first port of call when the family isn't satisfied with the reception of their favourite programme!

The biggest problem threatening domestic broadcast radio reception here in the UK in my opinion, is the seemingly ill-thought out Government plans to extend digital radio services – and at the same time introduce the 'digital delay' to Band II – the inevitable decoding delay or 'latency' associated with any digital broadcasting.

In practice – using a field strength meter especially designed for the Antenna Engineer – setting up a suitable antenna system for Band III – where Digital Audio Broadcasting (DAB) is transmitted at the moment – is relatively simple. However, when an indoor antenna is employed – problems occur and tempers fray as internal reflections of the signal, combined with the decoding delay (Latency) can make the positioning of the receiver antenna a long winded affair.

I consider that whoever is responsible for the decision to even consider introducing some form of DAB radio on Band II (let alone implement the decision) has not – it seems – even discussed the practicalities of the technology. Indeed, I have become so concerned that I have launched a national campaign to try and make everyone – broadcasters and listeners alike – fully aware of the problems that are very likely to make radio broadcasting reception extremely difficult for a large proportion of listeners.

I've been fortunate so far in that *The Daily Telegraph* (*DT*) *Letters to the Editor* staff have thought my letters on the DAB radio topic to be worthy of publication – the latest (as I write *Keylines*) appeared on Tuesday April 7th. Fortunately also, I'm very concerned to read – literally every day – that *DT* readers are finding DAB radio reception and digital TV to be troublesome.

My 'Save Analogue Radio on Band II' campaign has received a great deal of support and – fortunately – the support from the *DT* is helping. There's also no doubt in my mind, that the support of a national newspaper is invaluable. Additionally, I'm pleased to have the ongoing support of **Richard Brunton G4TUT**, the Manager of the **Southgate Amateur Radio Club's** popular web site **www.southgatearc.org/** Richard regularly features item of general radio interest and has kindly set-up a section where readers can register their vote if they support the *PW* campaign. Although the problem is not directly associated with Amateur Radio – as technically informed listers I think **we must draw attention** to the problems the DAB radio service on Band II will bring. So, let's try and save analogue radio on Band II.

Rob Mannion G3XFD/EI5IW

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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.

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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. See the Book Store page for details.

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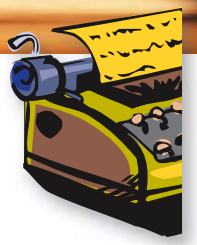
Technical Help
We regret that due to Editorial time scales, replies to technical queries cannot be given over the telephone. Any technical queries by E-mail are very unlikely to receive immediate attention either. So, if you require help with problems relating to topics covered by PW, then please write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



readers' letters

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

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**

Star Letter

Humiliating Vectis News Item In April Issue!

Dear Rob,
I am writing to offer you the opportunity to redeem yourself with Radio Amateurs on the Isle of Wight after the humiliating news item (page 10 April *PW*) under the headline *New V For Vectis Prefixes For Isle of Wight?* As a result after conversations I've had with Red Funnel Ferries and Wightlink, it has now been arranged that you should have to pay a special premium in future, so your relatives here on the Island won't be seeing much of you!

You can – perhaps – redeem yourself by publishing the news that the **Brickfields Amateur Radio Society** on the Island was 25 years old on March 13th. Our event was advertised and we had a very good attendance, all those who gave us notice that they were planning to attend received a free buffet lunch.

Enclosed, you'll find a photograph that was taken of our members and wives, which in view of the circumstances (you can perhaps redeem yourself!) you will publish in *PW*! In closing however, I must say that it was good to chat to you on the telephone about my letter. I must also comment that you are always available to us. Thank you Rob!
Yours sincerely
George Blain GV3JLN
Bembridge
Isle of Wight

Editor's reply: *Thank you George! I send my heartiest congratulations to the Brickfields ARS on reaching their 25th anniversary! However, it was quite worrying to be told by a ferry crew member recently (when I was on my way to visit family in East Wight) that I wasn't welcome on the Island! However, I was pleased that both you and he (also an Amateur) were enjoying the joke. And although I'm unlikely to enjoy displaying the fact that I'm an 'Overner' – perhaps the GV prefix would be a good idea for Island Amateurs?*

Bill Abrahams Writes & The RSGB Replies

Dear Sir,
I have seen the Radio Society of Great Britain (RSGB) Spectrum Defence advert in *Practical Wireless* magazine but have not noticed it in *Radio Communications (RadCom)*. On the other hand I have seen the advert in *RadCom* for Luso Towers. I also recall reading that the RSGB had purchased the Luso tower that was at a recent exhibition in the UK, and this at a "special price", but nevertheless many thousands of £s. However, I do feel strongly that the money would have been much better spent by donating it to the Spectrum Defence Fund instead of purchasing this tower (whilst a much less expensive British made tower would have sufficed. I would appreciate your reaction, comments and explanations to my remarks. Perhaps you would also publish your justification in a forthcoming *RadCom*, as I'm sure that many members must also have their reservations about this purchase.
Yours sincerely,
William (Bill) Abrahams G0MEU/ ON9CGB
Marke
Belgium

Editor's comment: *Bill Abrahams G0MEU wrote to me and asked*

if I could pass it on to the RSGB and ask them to provide a written answer to his letter. I also asked for a comment on the unfortunate (perhaps malicious) rumour that's being circulated, that by contributing the the Spectrum Defence Fund, individuals could compromise themselves. Peter Kirby G0TWW, the RSGB's General Manager replied.

Letter to *Practical Wireless*

(Red. Bill Abraham G0MEU's letter)

Dear Rob,
Thank you for the sight of Bill G0MEU's letter concerning donations to the Spectrum Defence Fund (SDF) and his observations regarding the RSGB's purchase of a Luso tower.

Firstly, (answering Rob's comment) There is no truth in the rumour that has been circulated by some mis-informed Radio Amateurs, that by donating to the Spectrum Defence Fund you are somehow liable if the RSGB went to court over the PLA issue and lost the case. To suggest such a thing is a complete nonsense, it suggests if you donate to **any fund** – including the village hall roof fund – you would be liable if subsequently the new roof fell in!

If the RSGB decided to make a legal challenge, and at the present time we are exploring other avenues having received legal advice from our lawyers, you can be assured we would have assessed all the risks involved before such a challenge was made. Further if we lost the case and costs were awarded against the RSGB, **it would be the RSGB** that would have to meet these cost **and not individuals** who have made a donation to the SDF. Just to finish on this subject. The RSGB would obviously take out insurance to cover against such an eventuality.

With regards to the purchase of a LUSO tower. The RSGB is currently building the National Amateur Radio Centre at Bletchley Park. This is a major investment in the hobby and the centre will project Amateur Radio in a way that it has not been done in the past. Bletchley Park received over 70,000 visitors in 2009 and all visitors to the park will have access to the new centre. The LUSO tower will add to the 'wow' factor. There is nothing comparable on the market and LUSO the company recognised the opportunity of linking their product with what will be a unique building portraying the very best of our great hobby. That is why they generously offered the tower to the RSGB at less than half the retail price and agreed to erect the tower free of charge. The tower is built to commercial specifications and can along with the antenna arrays required for the new station also carry commercial equipment – thus allowing the RSGB to attract revenue to plough back into the hobby from the investment.
I remain yours sincerely,
Peter Kirby G0TWW
General Manager
The Radio Society of Great Britain
3 Abbey Court
Fraser Road
Priory Business Park
Bedford MK44 3WH

Converting Illegal CB Transceivers

Dear Rob,
Firstly, I must say how much I enjoy the magazine and please do let us know when you might be in the Stevenage area on a Tuesday night, it would be great to see you at the club again! In the March *Topical Talk* you discussed the conversion of illegal multi-mode 27MHz CB transceivers. I was interested because I have

Radio Controlled Clocks – Again!

Dear Rob,
I sincerely hope I find you well? It's that time of the year when radio controlled clocks come to the forefront, I have two of them. You're familiar with the area where I reside – Poundon, as the crow flies, is four miles from 'Tesco Town!' (otherwise known as Bicester) and three miles from where your Sister **Rosemary** lived at Claydon and it's probably as quiet as you will get it, QRM wise.

When MSF was at Rugby we could have probably got away with a length of the proverbial 'wet string'. One of the clocks is an Oregon digital with a signal strength indicator on the display which always shows 'max', even after MSF's move to Anthorn in Cumbria and since it was purchased, some 15 years ago at Pickets Lock – it has not failed once to respond to the GMT/BST changes.

Fast forward to some five years ago when I purchased a 'Science Museum' analogue clock for my wife's bedside table. It's been a disaster! Since its purchase, it has resolutely refused to respond to the GMT/BST time changes until this last Sunday when my wife **Kath** went to bed Saturday evening and set the alarm (she's a bell ringer at the nearby Marsh Gibbon Church) and got up Sunday morning **an hour earlier than planned** as that darned clock decided it would do its own thing and respond to the time change for once!

Incidentally, in all the clock correspondence in the *Letters* pages some 18 months ago, no one seemed to question the 'quality' of the clocks themselves – but judging by my experiences this factor seems to have a great bearing on it.

All the very best. Keep taking the tablets (I rattle when I walk) and keep publishing *PW*!
Dave Williams G4BII
Poundon
Bicester
Oxfordshire

Editor's comment: *Nice to hear from you Dave and I sympathise with you as we have one clock (one of an identical pair purchased from the same source) that refuses to adjust to time changes in a particular room. Swop it over and the replacement corrects itself! I think the problem in this case must be in the individual clock. The build quality certainly (in my opinion) is certainly a factor and I've found that my German designed and produced MSF shack clock (essential for setting my IBP beacon clock) and another (Japanese designed and made) clock used in the house are much more reliable than any I've had that originated elsewhere in the Far East.*

Pontefract Club Activities On Yorkshire Day!

Dear Rob,
Thanks for the E-mails and I'm pleased that our mutual friend **Walter Farrar G3ESP** – *PW* Author and fellow member of the **Pontefract & District Amateur Radio Society** (P&DARS) has been in contact with you. However, the main reason for writing to you again is to let you know that we've just had some great news from Ofcom. Like the Isle of Wight Radio Amateurs being able to prefix callsigns with GV, from the first of April, all stations operating in the county of Yorkshire (the pre-1974 county, not the later areas which are not counties at all but administrative areas) may prefix their callsign **Golf Alpha**, eg **GA0BPK**. It's nothing to do with the fact that Yorkshiremen are Alpha Males, but merely stands for God's Acres!

Back to reality now! As usual the Pontefract & District ARS (**G3FYQ**, **G1FYQ**) will be operating GB0YD on Yorkshire Day **August 1st** (see **http://en.wikipedia.org/wiki/Yorkshire_Day**). We run this station every year, making contacts throughout the civilised world and Lancashire! Don't tell anyone – but last year in November I contacted **GB1LD** and **GB0LD** on Lancashire Day!

Incidentally, you should never ask someone if they're from Yorkshire. If they are, they'll tell you. If not, it's not fair to humiliate the poor soul! No doubt – if you publish this – there will be the usual reply of "You can always tell a Yorkshireman because.....etc" from the other side of the Pennines. All the best!
Nigel Ferguson G(A?)0BPK
Badsworth
Pontefract
West Yorkshire

Editor's comment: *Thanks Nigel – I enjoyed the joke – and the delicious Pontefract Cakes (very kind of you!). Readers will no doubt be interested to hear that Nigel distribute bags of the liquorice confectionery during his family's regular visits to the Isle of Man, to promote Pontefract to the wider world. I think Nigel's promotional initiatives deserve recognition and we also hope to publish an* In Focus *article on the Pontefract club in the near future. Well done for your initiative Nigel!* (*see* Topical Talk)

converted an old JAWS Mark 2 a.m. CB to 28MHz. I found it a fun project and certainly learnt a lot about the radio 'system' without having to build it all myself!

When the solar cycle improves I might even be able to make some DX contacts using the rig – although it has to be said that 10m a.m. isn't a busy place at the moment! In fact I converted two rigs so I could be sure of a QSO!

Anyway – as far as the documentation I can find goes, there is no restriction on converting CB equipment to any band, providing they are used by an Amateur with an Intermediate or Advanced Licence and the equipment is within the emission, etc., limits specified in IR2028. For reference I recommend *PW* readers visit **www.ofcom.org.uk/radiocomms/ifi/licensing/classes/amateur/Licences/** I also suggest this site **www.ofcom.org.uk/radiocomms/ifi/tech/interface_req/ir2028.pdf** IR 2028 Equipment, Bands and Beacons is helpful. Thanks again for a great magazine.
Nicolas Pike M1HOG
Stevenage
Hertfordshire
www.m1hog.com

Editor's comment*: Thanks for the advice and information Nicolas and I found your website to be most interesting – especially for anyone interested in home-brewing equipment. Well done Sir! I enjoy visiting clubs and will be very happy to visit Stevenage again and if an official invitation is extended – I'll be pleased to reply and arrange a date for mid 2011.*

Another Useful Program

Dear Rob,
I was reading the April issue of *PW* and saw **Colin Redwood G6MXL**'s mention in the *What Next?* article, about DX Summit. I have been using it myself and a few other programs, then one day I came across **www.sk6aw.net/cluster/** which I find very good it also has a log book in it.

The logbook uses the Swedish language in parts but is very understandable. When your information IE locator, etc., is entered it gives out a beam heading to the DX station+ the distance to it in miles or km.

There's quite a lot of other useful information. I thought you both might like to take a look at it – that is if you have not already seen it. Regards.
Derek Burton G0GKY
Redcar
Cleveland

Editor's thanks: *Very interesting Derek – thank you! The program looks very interesting and there are several Swedish-to-English websites that can help with the few translations required.*

Board With QSL Cards

Dear Rob,
You (in your comment following the letter published on page 8 of the May issue), asked if anyone recognised their card on the photo of the board full of QSL Cards. There's a card from **Mick Puttick G3LIK**, the present Chairman of the Royal Navy Amateur Radio Society (RNARS). I was a member of the RNARS myself. The **G3MLN card** – from **Mr B. Pettman** (to the right of G3LIK's card) who is also a member. I have no doubt that **G2MI** is a familiar callsign to you as it belonged to **Arthur Milne**. The **GB2RS** is the Royal Signals' club callsign. Incidentally, I chose my own callsign when I went to the Post Office HQ clutching my Morse pass in my hot and sticky hand. The lady gave me the book and said I could have any on the opened page – G3XOI rolls of the key nicely! 73 to you.
Alan Gordon G3XOI
Shoreham-by-Sea,
West Sussex

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news & products

A comprehensive round-up of what's happening in our hobby.

Support For RSGB Spectrum Defence Fund

Norman Crampton M0ZFW, Hon. Secretary of the **South Essex Amateur Radio Society (SEARS)** contacted *Newsdesk* with news of a fundraising effort: "Dear Editor, the enclosed picture was taken at the **Waters & Stanton** PLC shop, in Hockley, Essex on Saturday March 27th 2010.

"The photo shows myself presenting **Phillip Brooks G4NZQ** RSGB GM Region 12, with a cheque for £200 payable to the RSGB Spectrum Defence **Fund**. See **www.rsgbshop.org/acatalog/Spectrum_Defence_Fund.html**

"The donation was due to the success of South Essex Amateur Radio Society's 25th Annual Rally, held in February. Following that presentation Phillip Brooks formerly welcomed **Mark Sanderson M0IEO**, as the new DGM responsible for Essex.

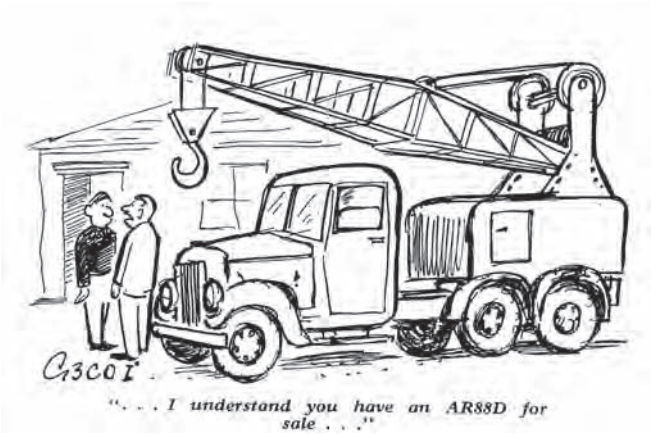
"We waited for those ceremonies to finish before we took advantage of Phillip Brooks visit (he had travelled from Norwich) for our SEARS presentation of the cheque. Jeff Stanton and his staff made us all very welcome and acknowledged us all for the work we do to keep the hobby going in Essex.

"In the picture from left to right are: **Peter Hale G4OAD**, SEARS Committee Member **Mark Sanderson M0IEO**, RSGB DGM Region 12 and **Phillip Brooks G4NZQ**, RSGB GM Region 12." Norman Crampton, M0FZW, SEARS Hon Secretary.

Further details from Norman Crampton M0FZW. E-mail: **m0fzw@homecall.co.uk**

Australia Calling All RCA AR88 Owners!

Australian based *PW* Author and friend **Alan Ford VK2DRR** is hoping to hear from readers who have and perhaps still use AR88 receivers. He's sure there are some reinforced shack shelves around that will still hold the classic receiver and writes: "The RCA AR88 is an exceptionally heavy and well-built valved h.f. radio receiver from the early 1940s and there are – surely – still many in daily use. Can *PW* readers help me please? I'm collecting information about serial numbers in order to build up a picture of how many were made. If you have one of these sets I would be delighted to receive information about the type (LF or D) and serial number, which is stamped on the rear apron of the chassis on the right hand side. If you can help please E-mail me at: **alan4d@tpg.com.au**
Thank you everyone!"



The cartoon is taken from Worthington's World, which is available from the PW Bookstore. See page 76.

Alan Ford VK2DRR
300 Soldiers Point Road
Salamander Bay 2317
Australia

Documentary Featuring Fred Judd G2BCX

Freelance film editor **Ian Helliwell** needs help from *PW* readers. He writes: "I am making a documentary film about Fred Judd G2BCX and looking for information on him to piece together the story of his work. I have already interviewed **Freda Judd** (Fred's widow) and the Editor **G3XFD**."

"I'm now seeking possible interviewees who knew or had dealings with Fred, or were inspired to make music through his lectures, articles or circuit designs, and would be prepared to talk about him on or off camera.

"The film will be coming from an electronic music angle rather than radio, but as his radio work was obviously very important it will be covered to some extent. Any leads on amateur or professional 1950s-70s British electronic music would be most welcome.

"The film will build on some of the investigations I have done for my podcast radio series *The Tone Generation*, now up to 17 editions, which explores the field of electronic music in the early days of magnetic tape recording and analogue synthesiser technology. And I hope that *PW* readers will be able to help".

Ian Helliwell
Top Flat
59 Ship Street
BrightonEast Sussex BN1 1AE
E-mail: ianhelliwell@yahoo.co.uk
Tel: (01273) 731743

Editorial comment: Samples of Ian Helliwell's work and an idea of his cinematography style can be seen on the *YouTube* website.

New Range Of Cable & Connectors From Nevada

Mike Devereux G3SED, Managing Director of Nevada, contacted *Newsdesk* with his latest news: "I'm delighted to announce we have been appointed UK distributors for a range of ultra low-loss coaxial cables and connectors, from **SSB Electronics** in Germany. Marketed under the **Ecoflex**, **Aircom Plus** and **Aircell** brand names, we can now offer a complete range of low loss 50Ω coaxial cables for the Radio Amateur and Professional user. We also carry the complete range of matching connectors."

"Additionally, during May we will introduce a brand new ultra low-loss cable, the **Ecoflex 15 plus**, which will be one of the lowest loss cables on the market, some 10dB better per 100 metres than many similar cables and handling up to 6.5kW power at h.f. The existing range is available to buy on the Nevada web site now at **www.nevadaradio.co.uk**

"The **Ecoflex 15** cable is a flexible low-loss coaxial cable for use in the frequency range of DC - 6 GHz. Advanced manufacturing techniques combined with the use of a PE-LLC Dielectric yields a foaming rate of more than 70%, resulting in very low attenuation. The use of continuous centre conductor calibration and compression as well as the application of a pre-coating guarantees low losses and stable impedance matching.

"An EMI screening immunity of >90dB at 1GHz is achieved through the use of double shielding which consists of overlapping copper foil and an additional tight woven copper braid. The copper foil has an applied PE coating which prevents foil cracking due to short radius bends. The black pvc sheath of Ecoflex 15 is UV-stabilized. It is the first choice when a low-loss, highly flexible microwave rated cable is required. Ecoflex 15 is available from stock in the following standard drum sizes: 25, 50, 100, 200 and 500m."

Mike Devereux G3SED
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Stormont Castle On The Air

Young Lady Amateur **Bobby Wadey MI0RYL** contacted *Newsdesk* with an interesting item: "**Castles On The Air** (CASHOTA) Northern Ireland have secured their first joint activation at one of Northern Ireland's most notable buildings – Stormont Castle and Stormont Buildings, Belfast.

"The activation will be the first for the Stormont estate and is being held on **Friday July 16th 2010** from 9am till 4pm. We hope to be running on on h.f. bands, and on the p.s.k. frequencies and 144MHz using the CASHOTA callsign **GN4KPT/P**.

"All stations working us will be sent a specially designed QSL card for this event, so we hope to hear as many of you on the air as possible. We look forward to working *PW* readers.

Bobby Wadey MI0RYL (CASHOTA-NI Representative)
E-mail: **lamph121@o2.co.uk**

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Waters & Stanton Open Day

Jeff Stanton G6XYU has issued an invitation to *PW* readers to attend the W&S Open Day. "Hi *Newsdesk*! I'm writing to invite *PW* readers to our 20th Annual Open day".

"The Open Day is to be held at our shop in Hockley, Essex on **Sunday May 24th**, from 10am. There's free food, free drink, free parking and a great welcome waiting for *PW* readers! There'll also be a charity raffle and we're being supported by **Icom UK**, **Kenwood UK**, **Yaesu UK** and **bhi**. The **Essex Repeater Group** will be present, together with the **Colchester ARS**. We're also offering a 'Mega Price crash on loads of gear – all under one roof in the main bulding. There'll also be warehouse clearance items! Low prices? – you've seen nothing until you visit our open day! The W&S team are looking forward to seeing you all!"

Jeff Stanton G6XYU
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Essex SS5 4QS
Tel: (**01702**) **206835** FAX: **01702 205843**
Web: **www.wsplc.com**

The Newbury Radio Rally & Boot Sale

The Newbury Radio Rally & Boot Sale takes place on **Sunday 20th June 2010**, at the Newbury Showground, next to junction 13 of the M4, Berkshire.The rally has been running successfully for 23 years and is a specialist event for anyone interested in radio communications, computing and electronics, etc. This year, the organisers have advised *Newsdesk* that there will be a big display area of Amateur Radio stations, air traffic control, special groups exhibits, clubs and societies, plus a live 'Contest Station'. Opening time for visitors is 9am. Opening time for sellers and displays set up 8am. Catering and toilets on site (including disabled facilities) Free car park. Entrance £2 per visitor, £10 per seller's pitch. Advanced bookings (with discount) can be made via the website: **www.nadars.org.uk.rally2010.asp**
Contact: **Phill Morris G6EES** Tel: (**07771**) **504738**, or via E-mail: **rally@nadars.org.uk**

Ooops!

Antenna Workshop

An Effective 14MHz Loft Antenna

On page 26 of the May issue of *PW*, there was a reference in the middle column of text to the overall length of a resonant half-wave dipole for 14MHz as 10.07m overall, which is correct. In the second full paragraph that starts "For example, using the above formulae..." it was stated that each half should have been 10.07m, when in reality this is the overall length from end-to-end, and each 'leg' of the dipole should have be half of this again at 5.04m. This length is a theoretical length and will probably vary at different locations, in fact **Mike Jones G3UED** found that at his location the final element length was 4.8m for best match.

We apologise to the author, Mike G3UED and readers for this error. **Editor**.

Equipment Stolen From G4MXR

Yet another Radio Amateur has suffered a break-in to his shack. **Ted Bottomley G4MXR** from Thornton Cleveleys in Lancashire writes, "Fellow Amateurs, I have the great misfortune to report that I have had several items of radio equipment stolen from my secured garage sometime overnight on Monday, April 19th 2010. Each item can be uniquely identified by various means but the main indications to an unwary buyer would be the lack of the original manufacturers' handbooks, manufacturer's original boxes, power leads, chargers, carrying cases, antennas and the fact that they are all in virtually new condition.

They would all appear 'to be missing something' you would expect to see, if you were buying this kind of kit from someone so, common sense should prevail if you are offered any of these items; the thief obviously does not know what they have actually stolen. Both the Police and my Insurance Company are now fully involved. The list is as below".

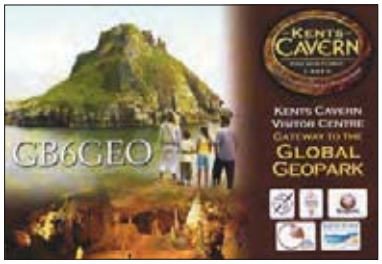
Icom IC-718 h.f. transceiver
Alinco DX-70 transceiver (h.f.+50MHz)
Yaesu FT-817ND transceiver
FC-130 hrequency counter
AV 1000 v.s.w.r./power meter

"Additionally, my Heil 'Quiet Phone Pro' headset with Icom microphone insert and adaptor were taken. Thank you". 73 DE Ted G4MXR.

Note: If you have any information regarding these items, please contact Ted G4MXR via E-mail: **Ted@ebottomley.freeserve.co.uk**s or call Blackpool Police on (**01253**) **293933**. **Case Reference AN1001155.**

Underground Radio? – GB6GEO On Air From Kent's Cavern Again!

Radio stations from around the world will be exchanging greetings over the airwaves with the English Riviera Global Geopark in May as Amateur Radio operators transmit live from **Kent's Cavern in Torquay**, right in the heart of Devon's English Riviera Global Geopark. Using a special event call sign, **GB6GEO**, will establish contact with other radio stations around Britain, Europe and around the world from a base set up outside the entrance to Kent's Cavern – Devon's internationally famous Stone Age cave and gateway to the English Riviera Global Geopark.



There are now 53 Geoparks around the world but this special radio event is being coordinated from Kent's Cavern, Visitors will be able to link up with several other Geoparks by radio over the weekend, including Araripe Geopark in Brazil; Kanawinka Geopark in Australia; Langkawi Geopark in Malaysia; the Petrified Forest of Lesvos Geopark in Greece, the Brecon Beacons in Wales, Nature Park Terra Vita, Germany, Hateg Country Dinosaur Geopark Romania, Naturtejo Geopark Portugal, and to the Copper Coast Geopark in Southern Ireland.

Many Geoparks also have show caves and those participating so far include: Smoo Cave in the North West Highlands Geopark in Scotland, Marble Arch Caves Geopark in Northern Ireland and Unicorn Cave in the Harz Mountains in Germany. With the event now global, the event will run from 0900 on Saturday 22nd May, through the night to 1600 on Sunday 23rd May.

Geopark Certificate: For Amateur Radio stations/s.w.l.s around the world who contact/hear Geopark stations, the English Riviera Geopark is offering a special beautiful commemorative European Geoparks Network radio amateur certificate for contacts with **GB6GEO** (instant qualifier), or two Geopark stations excluding **GB6GEO**. (this award will also apply to s.w.l.s on a heard basis). This certificate is endorsed by **HRH The Duke of Edinburgh**, with his own words of congratulations to the holder. Certificates will cost UK £2.50 each, Europe €4 and Rest of the world US$5.

Alternatively, certificate holders to be the first in their country to claim the certificate will have an 'FC' suffix following the certificate number. This denotes the first person in their country to claim the 'Geoparks' award. These certificate holders will be worth one point towards the basic certificate, that requires two points, or work any five (5) certificate holders. Many of these certificate holders can be found in the Torbay Amateur Radio Society nets, details from the website **www.tars.org.uk**

Certificate Manager/ direct QSLs to Martin Foster G3VOF QTHR or QRZ.COM Please also see qrz.com for the latest updates. Only log details necessary.

There is a special glossy high quality souvenir QSL cards for this event, promoting the English Riviera Geopark.

All QSL cards will automatically be sent out via the bureau, or send an SASE (if from within the UK). If you are outside the UK, then please send an addressed envelope, and sufficient funds for return postage, if you would like a card direct (Please QSL via **G3VOF**).

Any information required about **GB6GEO** please contact Martin Foster **(G3VOF)** E-mail: **martin@riviera.fm** or via qrz.com. If you live in Austria, Australia, China, Croatia, Norway, Czech Republic, France, Italy, Spain or Brazil and would like to participate this year 2010 in the Geoparks Communication Festival by putting on a "GEO" call sign please get in touch with **G3VOF**.

The TARS HQ is located at:
The Teignbridge District Scout Head Quarters
The Burdett Building,
Wolborough Street,
Newton Abbot, Devon TQ12 1LJ

Waters & Stanton Host Club Of The Year Presentation

To encourage more Amateurs to join local clubs, the RSGB have sponsored a nationwide competition to find the Club of the Year. **Waters & Stanton PLC** sponsored the Region 12 (East Anglia) competition which covered Kent, Essex, Suffolk & Norfolk, which **Chelmsford Amateur** Radio Society won.

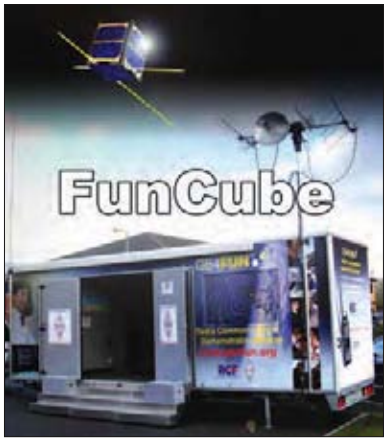
On Saturday March 27th, the Chairman, **John Bowen G8DET**, Vice President **Geoff Mills G3EDM** and several Members of the Chelmsford Amateur Radio Society visited us to receive their prize as winners of the Region 12 Club of the Year competition. This was presented by the Region Chairman, **Phillip Brooks G4NZQ** to the Chairman John G8DET and was sponsored by Waters & Stanton PLC.

Jeff Stanton G6XYU (left) pictured with Philip Brookes G4NZQ, as John Bowen G8DET receivers the RSGB Club of the Year Trophy. Photo courtesy W&S.

The *FUNcube* From AMSAT Takes Shape!

Newsdesk reports: AMSAT-UK has released details of the Command, Control and Telemetry (CCT) board being developed for the *FUNcube* Amateur Radio satellite. The *FUNcube* is the latest satellite project being developed by AMSAT-UK members. In addition to a telemetry beacon *FUNcube* will carry a 435 to 145MHz linear transponder for SSB/CW operation. It will be the first time a satellite this small has carried such a transponder. The CCT Board is one of the circuit boards being designed and built by members of the AMSAT-UK *FUNcube* development team. Its function is to control what the satellite does in realtime, for example:

* Automatically switch the satellite from 'Education mode' to 'Amateur mode'.
* Gather readings from more than 30 sensors on the satellite, e.g. temperatures, battery voltages, currents, etc, and convert them ready for downlinking via the beacon transmitter.
* Collect and store the data from the Material Science Experiment for a whole orbit to demonstrate variations in thermal performance of material having different surface finishes when in a vacuum and with, effectively, no gravity.
* Monitor the main battery voltage, and switch the satellite into a low power mode if the battery voltage drops below a certain pre-set level.



It will also contain the vital circuitry to deploy the 144 and 430MHz antennas when the satellite is in orbit. The board uses an I^2C bus to communicate with the rest of the satellite. Pictures and further information can be found on the *FUNcube* site at: **www.FUNcube.org.uk**/ There will be a presentation on *FUNcube* at the AMSAT-UK International Space Colloquium to be held in Guildford from July 31st to August 1st 2010.

AMSAT-UK publishes a colour A4 newsletter, *OSCAR News*, which is full of Amateur Satellite information. Join online at **https://secure.amsat.org.uk/subs_form/** AMSAT-UK: **http://www.uk.amsat.org/**

Amateur Radio & The Early South African Airforce

Keen *PW* readers and supporter **Dave Gemmell ZS6AAW** writes: "In 1920 in the wake of the celebration of the Silver Queen Cape to Cairo 'Air Race', the South African Air Force (SAAF) was established by **Col. Pierre van Ryneveld**, Director of Air Services on February 1st 1920. This date marks the official birth of the SAAF. We, South Africans, are proud of the fact that the SAAF is one of the oldest Air Forces in the World – indeed it's second only to the RAF!"

"In April 1921, a site at Swartkop, approximately 10km south east of Pretoria, was selected as the SAAF's first aerodrome. This site became known as **Swartkop Air Force Base** and is also now the home of the **SAAF Museum**. Radio Amateur members of the **Friends of the SAAF Museum** decided to commemorate the SAAF 90th anniversary with a special station using the callsign **ZS90SAAF**. (Many thanks to the Chairman of the Friends of the SAAF Museum, **Wally Moll ZS6BCI** for organising the callsign in record time!). The main station will be operated from the 'Wireless Hut' during the year. This 'Hut' is in fact a corrugated iron sheet structure in the south eastern corner on the inside of Hangar 3 and is so named because of its resemblance of a typical old fashioned garden hut! It's actually the main radio exhibit of the Museum and will be used on other occasions as well, but using the permanent callsign **ZS6MUS**.

"We will be operating mainly on s.s.b. between 3.650 – 3.7MHz, and between 7.080 – 7.140MHz and around14.125MHz as at the moment there is only a trapped dipole for these bands at the moment. There are limitations as we are operating from a heritage site which prevents us from erecting a more permanent beam antenna. For the time being, operating times will be 0830 to 1500hours SAST/CAT on Saturdays only. We will, however, be on the air on other 'special' days during the year, such as Air Shows and the anniversaries of various squadrons. Other information can be obtained from the following websites: **www.saaffriends.co.za** and **www.saafmuseum.co.za** I hope we can work some *PW* readers!" 73 Dave Gemmell ZS6AAW. More information from Dave via E-mail at: **dave@zs6mus.org.za**

Dave Gemmell ZS6AAW on duty in the 'Wireless Hut' - which (as it's made of corrugated iron) – can get very hot in the South African sun!

One of the former SAAF Shackleton marine reconnaissance aircraft now preserved at Swartkop Air Force base.

Hambleton ARS In Full Steam At Vintage Vehicle Rally!

The **Hambleton Amateur Radio Society**, based in Northallerton, North Yorkshire will be operating a Special Event (SE) callsign **GB2VVR** from the **Head of Steam Museum, Darlington Railway Museum, North Road Station, Darlington DL3 6ST**, on May 23rd between 1000 and 1600hours. The Event is the **Vintage Vehicle Rally** and it's being held in the museum grounds. The SE station will be active on 3.5, 7 and 14MHz during the day, a special event QSL card will be issued.

The Hambledon ARS Club meetings take place every fortnight on a Wednesday evening. Doors open at 7.30pm with activities usually starting shortly after 8pm. For more information about the Club or directions, please contact our Club Secretary **Tim Allison G0TYM**. Tel: (**01642**) **711334**. Club meetings are held at the Mencap Centre, **off Quaker Lane, Northallerton DL6 1EG**.
For more information contact: **Ian Stevenson M3XNM** (Club Chairman) E-mail: **m3xnm@yahoo.co.uk**
Web site: **www.radioclubs.net/hambletonars/about.php**
www.darlington.gov.uk/Culture/headofsteam/welcome.htm

Manufacturers of radio communication antennas and associated products

HUSTLER HF Verticals

Brilliant ground mounted antennas that work!

4-BTV	4 Bands 40-10m, Power 1000 Watts, Length 6.5m	£179.95
5-BTV	5 Bands 80-10m, Power 1000 Watts. Length 7.6m	£219.95
6-BTV	6 Bands 80-10m, Power 1000 Watts, Length 7.3m	£259.95

MOONRAKER VHF/UHF Mobiles

GF151	Glass Mount 2/70cm, Gain 2.9/4.3dBd, Length 78cm complete with 4m cable and PL259	£29.95
MRM-100	MICRO MAG 2/70cm, Gain 0.5/3.0dBd, Length 55cm, 1" magnetic base with 4m coax and BNC	£19.95
MR700	2/70cm, Gain 0/3.0dBd, Length 50cm, 3/8 fitting	£9.95
MR777	2/70cm, Gain 2.8/4.8dBd, Length 150cm, 3/8 fitting	£17.95
MRQ525	2/70cm, Gain 0.5/3.2dBd, Length 43cm, PL259 fitting (high quality)	£19.95
MRQ500	2/70cm, Gain 3.2/5.8dBd, Length 95cm, PL259 fitting (high quality)	£24.95
MRQ750	2/70cm, Gain 5.5/8.0dBd, Length 150cm, PL259 fitting (high quality)	£34.95
MR2 POWER ROD	2/70cm, Gain 3.5/6.5dBd, Length 50cm, PL259 fitting (fibreglass collinear)	£24.95
MR3 POWER ROD	2/70cm, Gain 2.0/3.5dBd, Length 50cm, PL259 fitting (fibreglass collinear)	£29.95
MRQ800	6/2/70cm Gain 3.0dBi/5.0/7.5dBdBd, Length 150cm, PL259 fitting (high quality)	£39.95
MRQ273	2/70/23cm Gain 3.5/5.5/7.5dBdBd, Length 85cm, PL259 fitting (high quality)	£49.95

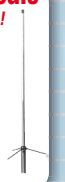
DIAMOND ANTENNA Yagi Antennas

Diamond performance from the superb Diamond factory

A502HBR	6m 2 Elements, Power 400W, Gain 6.3dBi, Radial Length 3m	£89.95
A144S10R	2m 10 Elements, Power 50W, Gain 11.6dBi, Boom Length 2.13m	£84.95
A144S5RR	2m 5 Elements, Power 50W, Gain 9.1dBi, Boom Length 95cm	£45.95
A430S15R	70cm 15 Elements, Power 50W, Gain 14.8dBi, Boom Length 224cm	£65.95
A430S10R	70cm 10 Elements, Power 50W, Gain 13.1dBi, Boom length 119cm	£49.95

MOONRAKER Mono Band Collinear Verticals

Totally encapsulated GRP fibreglass antennas which require no tuning!



BM33	70cm 2 X 5/8, Gain 7.0dBd, Length 100cm, N-Type	£44.95
BM45	70cm 3 X 5/8, Gain 8.5dBd, Length 155cm, N-Type	£54.95
BM55	70cm 4 X 5/8, Gain 10dBd, Length 250cm, N-Type	£74.95
BM60	2m 5/8, Gain 5.5dBd, Length 155cm, N-Type	£54.95
BM65	2m 2 X 5/8, Gain 8.0dBd, Length 250cm, N-Type	£79.95
BM75	2m 3 X 5/8, Gain 9.0dBd, Length 430cm, N-Type	£99.95
BM140	4m 1/2, Gain 2.75dBd, Length 230cm, N-Type	£69.95
BM260	6m 1/2, Gain 2.75dBd, Length 285cm, N-Type	£89.95

MOONRAKER HF Mobiles

Get great results with the Moonraker range of HF mobiles !
... from as little as £17.95!

AMPRO-10	28MHz, Length 220cm, 3/8th fitting (slimline design)	£17.95
AMPRO-12	24MHz, Length 220cm, 3/8th fitting (slimline design)	£17.95
AMPRO-15	21MHz, Length 220cm, 3/8th fitting (slimline design)	£17.95
AMPRO-17	18MHz, Length 220cm, 3/8th fitting (slimline design)	£17.95
AMPRO-20	14MHz, Length 220cm, 3/8th fitting (slimline design)	£17.95
AMPRO-30	10MHz, Length 220cm, 3/8th fitting (slimline design)	£17.95
AMPRO-40	7.0MHz, Length 220cm, 3/8th fitting (slimline design)	£17.95
AMPRO-80	3.5MHz, Length 220cm, 3/8th fitting (slimline design)	£19.95
AMPRO-160	1.8MHz, Length 220cm, 3/8th fitting (heavy duty design)	£49.95
ATOM-20S	14MHz, Length 130cm, PL259 fitting (compact design)	£24.95
ATOM-40S	7.0MHz, Length 165cm, PL259 fitting (compact design)	£26.95
ATOM-80S	14MHz, Length 165cm, PL259 fitting (compact design)	£29.95

TA Tarheel Motorised Mobile

The best USA motorised antennas available here from Moonraker the European distributor – All models in stock now!

Little Tarheel II 3.5-54MHz 200W max length 48" £349.95

MOONRAKER GP2500

All Band HF Vertical

This is the perfect answer for anyone with limited space and requires no radials. Covering 80 through to 6M with a VSWR below 1.5:1!

Frequency 3.5-57MHz without tuner, Power 250 Watts, Length 7.13M

All at an amazing £199.95!

NEW GP2500F fibreglass version now in stock £249.95

MOONRAKER Dual and Triband Collinear Verticals

Diamond quality – Moonraker prices ! These high gain antennas have been pre-tuned for your convenience, easy to use, easy to install, and a choice of connection ... look no further

SQBM105P	2/70cm, Gain 2/4.5dBd, RX 25-2000MHz, Length 70cm, SO239 (Radial Free)	£39.95
SQBM105N	2/70cm, Gain 2/4.5dBd, RX 25-2000MHz, Length 70cm, N-type (Radial Free)	£44.95
SQBM110P	2/70cm, Gain 3/6dBd, RX 25-2000MHz, Length 100cm, SO239 (Radial Free)	£54.95
SQBM110N	2/70cm, Gain 3/6dBd, RX 25-2000MHz, Length 100cm, N-Type (Radial Free)	£59.95
SQBM200P	2/70cm, Gain 4.5/7.5dBd, RX 25-2000MHz, Length 155cm, SO239	£54.95
SQBM200N	2/70cm, Gain 4.5/7.5dBd, RX 25-2000MHz, Length 155cm, N-Type	£59.95
SQBM500P	2/70cm, Gain 6.8/9.2dBd, RX 25-2000MHz, Length 250cm, SO239	£64.95
SQBM500N	2/70cm, Gain 6.8/9.2dBd, RX 25-2000MHz, Length 250cm, N-Type	£69.95
SQBM800N	2/70cm, Gain 8.5/12.5dBd, RX 25-2000MHz, Length 520cm, N-Type	£129.95
SQBM1000P	6/2/70cm, Gain 3.0/6.2/8.4dBd, RX 25-2000MHz, Length 250cm, SO239	£79.95
SQBM1000N	6/2/70cm, Gain 3.0/6.2/8.4dBd, RX 25-2000MHz, Length 250cm, N-Type	£84.95
SQBM223N	2/70/23cm, Gain 4.5/7.5/12.5dBd, RX 25-2000MHz, Length 155cm, N-Type	£69.95

MOONRAKER Multiband Mobile

Why buy loads of different antennas when Moonraker has one to cover all! SPX series has a unique fly lead and socket for quick band changing

SPX-100	9 Band plug n' go portable, 6/10/12/15/17/20/30/40/80m, Length 165cm retracted just 0.5m, Power 50W complete with 38th PL259 or BNC fitting to suit all applications, mobile portable or base ... brilliant!	£44.95
SPX-200	6 Band plug n' go mobile, 6/10/15/20/40/80m, Length 130cm, Power 120W, 3/8th fitting	£39.95
SPX-200S	6 Band plug n' go mobile, 6/10/15/20/40/80m, Length 130cm, Power 120W, PL259 fitting	£44.95
SPX-300	9 Band plug n' go mobile, 6/10/12/15/17/20/30/40/80m, Length 165cm, High Power 200W, 3/8th fitting	£54.95
SPX-300S	9 Band plug n' go mobile, 6/10/12/15/17/20/30/40/80m, Length 165cm, High Power 200W,PL259 fitting	£59.95
AMPRO-MB6	6 Band mobile 6/10/15/20/40/80m, length 220cm, 200W, 3/8th fitting, (great for static use or even home base – can tune on four bands at once)	£69.95
ATOM-AT4	10/6/2/70cm Gain 2m 2.8dBd 70cm 5.5dBd, Length 132cm, PL259 fitting (perfect for FT-8900R)	£59.95
ATOM-AT5	5 Band mobile 40/15/6/2/70cm, Length just 130cm, 200W (2/70) 120W (40-6M) PL259 fitting, (great antenna, great price and no band changing, one antenna, five bands)	£69.95
ATOM-AT7	7 Band mobile 40/20/15/10/6/2/70cm, Length just 200cm, 200W (2/70) 120W (40-6M) PL259 fitting, (Brilliant antenna HF to UHF with changeable coils)	£79.95

MOONRAKER Yagi Antennas

All Yagis have high quality gamma match fittings with stainless steel fixings! (excluding YG4-2C)

YG27-4	Dual band 2/70 4 Element (Boom 42") (Gain 6.0dBd)	£49.95
YG4-2C	2 metre 4 Element (Boom 48") (Gain 7dBd)	£29.95
YG5-2	2 metre 5 Element (Boom 63") (Gain 10dBd)	£49.95
YG8-2	2 metre 8 Element (Boom 125") (Gain 12dBd)	£69.95
YG11-2	2 metre 11 Element (Boom 185") (Gain 13dBd)	£99.95
YG3-4	4 metre 3 Element (Boom 45") (Gain 8dBd)	£59.95
YG5-4	4 metre 5 Element (Boom 104") (Gain 10dBd)	£69.95
YG3-6	6 metre 3 Element (Boom 72") (Gain 7.5dBd)	£64.95
YG5-6	6 metre 5 Element (Boom 142") (Gain 9.5dBd)	£84.95
YG13-70	70 cm 13 Element (Boom 76") (Gain 12.5dBd)	£49.95

MOONRAKER ZL Special Yagi Antennas

The ZL special gives you a massive gain for the smallest boom length ... no wonder they are our best selling yagi's!

ZL5-2	2 Metre 5 Ele, Boom 95cm, Gain 9.5dBd	£49.95
ZL7-2	2 Metre 7 Ele, Boom 150cm, Gain 12dBd	£59.95
ZL12-2	2 Metre 12 Ele, Boom 315cm, Gain 9.5dBd	£99.95
ZL7-70	70cm 7 Ele, Boom 70cm, Gain 11.5dBd	£39.95
ZL12-70	70cm 12 Ele, Boom 120cm, Gain 14dBd	£49.95

MOONRAKER HB9CV

Brilliant 2 element beams ... ideal for portable use

HB9-70	70cm (Boom 12")	£24.95
HB9-2	2 metre (Boom 20")	£29.95
HB9-4	4 metre (Boom 23")	£39.95
HB9-6	6 metre (Boom 33")	£49.95
HB9-10	10 metre (Boom 52")	£69.95
HB9-627	6/2/70 Triband (Boom 45")	£69.95

MOONRAKER Halo Loops

Our most popular compact antennas, great base, mobile, portable, or wherever!

HLP-2	2 metre (size approx 300mm square)	£19.95
HLP-4	4 metre (size approx 600mm square)	£29.95
HLP-6	6 metre (size approx 800mm square)	£39.95

MOONRAKER G5RV Wire Antennas

The most popular wire antenna available in different grades to suit every amateur .... All from just £19.95!

G5RV-HSS	Standard Half Size Enamelled Version, 51ft Long, 10-40 Metres	£19.95
G5RV-FSS	Standard Full Size Enamelled Version, 102ft Long, 10-80 Metres	£24.95
G5RV-DSS	Standard Double Size Enamelled Version, 204ft Long, 10-160 Metres	£49.95
G5RV-HSH	Half Size Hard Drawn Version, pre-stretched, 51ft Long, 10-40 Metres	£24.95
G5RV-FSH	Full Size Hard Drawn Version, pre-stretched, 102ft Long, 10-80 Metres	£29.95
G5RV-HSF	Half Size Original High Quality Flexweave Version, 51ft Long, 10-40 Metres	£29.95
G5RV-FSF	Full Size Original High Quality Flexweave Version, 102ft Long, 10-80 Metres	£34.95
G5RV-HSP	Half Size Original PVC Coated Flexweave Version, 51ft Long, 10-40 Metres	£34.95
G5RV-FSP	Full Size Original PVC Coated Flexweave Version, 102ft Long, 10-80 Metres	£39.95
G5RV-HSX	Half Size Deluxe Version with 450 Ohm ladder, 51ft Long, 10-40 Metres	£44.95
G5RV-FSX	Full Size Deluxe Version with 450 Ohm ladder, 102ft Long, 10-80 Metres	£49.95

Accessories

G5RV-IND	Convert any half size G5RV to full with these great inductors, adds 8ft on each leg	£24.95
MB-9 Choke Balun	for G5RV to reduce RF Feedback	£39.95
TSS-1	Pair of stainless steel springs to take the tension out of a G5RV or similar	£19.95

MOONRAKER Trapped Wire Dipole Antennas

Commercial quality trapped wire dipoles that resonate, so require no ATU!

MDT-6 FREQ:40 & 160m LENGTH: 28m POWER: 1000 Watts £79.95

MTD-1 (3 BAND) FREQ:10-15-20 Mtrs LENGTH:7.40 Mtrs POWER:1000 Watts £69.95

MTD-2 (2 BAND) FREQ:40-80 Mtrs LENGTH: 20Mtrs POWER:1000 Watts £79.95

MTD-3 (3 BAND) FREQ:40-80-160 Mtrs LENGTH: 32.5m POWER: 1000 Watts £129.95

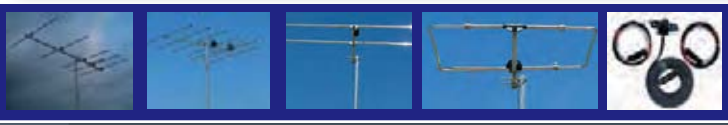
MTD-4 (3 BAND) FREQ: 12-17-30 Mtrs LENGTH: 10.5m POWER: 1000 Watts £69.95

MTD-5 (5 BAND) FREQ: 10-15-20-40-80 Mtrs LENGTH: 20m POWER:1000 Watts £119.95

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

Moonraker @ M5 Communications
Moto Services Area, Junction 30 M5 South, Exeter, EX2 7HF.
Tel: 01392 427269

NEW Moonraker Satellite shop now open in the West Country



If we advertise it – we stock it!

Come and see us at the amazing Blackpool Radio Rally Sunday 11th April For more information please visit http://www.g1gyc.demon.co.uk/narsa

Please check with the organisers that the rally is 'on' before leaving home.

rallies

Radio rallies are held throughout the UK. They're hard work to organise so visit one soon and support your clubs and organisations. PW Publishing Ltd. is attending at rallies marked *.

Send all your rally info to

PW Publishing Ltd.,
Arrowsmith Court,
Station Approach,
Broadstone,
Dorset BH18 8PW
E-mail: newsdesk@pwpublishing.ltd.uk

May

May 14-16th

The Dayton Hamvention

The world's largest radio show, the Dayton Hamvention, will be held in the Hara Arena, Shiloh Springs Road, Dayton Ohio, USA. It will be open from 9.00am to 6.00pm (8.00am to 6.00pm for the flea market) on the Friday, 9.00am to 5.00pm (8.00am to 5.00pm flea market) on the Saturday and 9.00am to 1.00pm (8.00am to 1.00pm flea market) on the Sunday. Admission will cost $25 for a three-day pass ($20 if bought in advance).

There will be talk-in on the local repeater on 146.94 and 146.64MHz and frequencies 223.94 and 442.10MHz will also be monitored. Talk-in will start on Wednesday at noon and run through to Sunday at 5.00pm and it will only be off the air nightly between 11.00pm and 5.00am. In addition, travel assistance will be available on 7.258MHz.

There is no car parking at the arena but there are various free car parks in surrounding areas and buses to the show will be available (tickets $3 per day or $8 for the weekend). There will be hundreds of exhibitors, more than 2,500 spaces in the flea market, special interest groups, lectures, a prize draw, catering and facilities for the disabled.

www.hamvention.org

May 23rd

The Dunstable Downs Car Boot Sale

The Dunstable Downs Radio Club will be holding the National Amateur Radio Car Boot Sale at Stockwood Park, Luton LU1 5NR (M1 J10 then follow the yellow DDRC signs). The doors will open at 9.00am, admission will be £2.00 and there will be talk-in on S22 and V44, car parking and catering.

www.ddrcbootsale.org

May 29th

The Mid Ulster Rally

The Mid Ulster Amateur Radio Club Rally and Boot Sale will be held in the Drumgor Youth Centre, Drumgor Heights, Craigavon BT65 4AP. The doors will open at 11.00am and there will be talk-in, car parking and a Bring & Buy.

Bobby 2I0ULL
Tel: 02838 348451
www.muarc.com

June

June 6th

The Newhaven Fort Rally

The Newhaven Fort Amateur Radio Group Rally and Fort Open Day will take place in Newhaven Fort, East Sussex. The doors will open at 10.30am, admission will be £2.00 and there will be car parking, special interest groups, catering, a car boot sale, attractions for the family and facilities for the disabled.

Eddie G0ECW
Tel: 01273 300772
E-mail: eddiezamboodle.demon.co.uk

June 6th

The Red Rose QRP Festival

The Red Rose QRP Festival will take place in the Formby Hall, Alder Street (off the High Street), Atherton, Manchester M46 9EY. The doors will be open from 11.00am to 3.00pm and admission will be £2.00 (children under 14 free). There will be a free car park, trade stands, a Bring & Buy, club stands, catering with a licensed bar and facilities for the disabled.

Les Jackson G4HZJ
Tel: 01942 870634
E-mail: g4hzj@ntlworld.com

June 6th

The Spalding Rally

The Spalding and District Amateur Radio Society Rally will take place in the Sir John Gleed Technology School, Halmer Gardens, Spalding, Lincolnshire PE11 2EF. The doors will open at 10.00am and there will be talk-in on S22 and V44, free car parking, a car boot sale, trade stands and catering.

John G4NBR
Tel: 0794 630 2815
Graham G8NWC
Tel: 0794 776 4481
E-mail: rally-secretary@sdars.org.uk
www.sdars.org.uk

June 13th

The Ipswich Rally

The Ipswich Radio Rally (The East Suffolk Wireless Revival) will be held at the Orwell Crossing Lorry Park, A14 Eastbound, Nacton, Ipswich IP10 0DD. The doors will open at 9.30am and admission will be £1.00. There will be car parking, talk-in on S22, trade stands, a Bring & Buy, a car boot sale, special interest groups, catering and the GB4SWR HF station will be operating.

John G3XDY
Tel: 07710 044858
Steve M1ACB
Tel: 07711 329624
www.eswr.org.uk

June 13th

The Junction 28 QRP Rally

The South Normanton Alfreton and District Amateur Radio Club in association with the G-QRP Club will be holding the 9th Junction 28 QRP Rally at the Alfreton Leisure Centre, Church Street, Alfreton, Derbyshire DE55 7AH (this is just 10 minutes from Junction 28 on the M1). The doors will open at 10.00am and there will be a Bring & Buy, special interest groups, catering with a licensed bar and facilities for the disabled.

Russell Bradley G0OKD
Tel: 01773 783658
E-mail: russell.bradleyG0OKD@ntlworld.com
www.snadarc.com

June 20th

The Newbury Radio Rally

The Newbury Radio Rally and Boot Sale will take place at the Newbury Showground, which is next to J13 on the M4. The doors will open at 9.00am (sellers will have access from 8.00am), admission will be £2.00 and there will be talk-in on S22 and V44, free car parking, trade stands, a display area of amateur radio stations, special interest groups, a flea market, catering and facilities for the disabled.

E-mail: rally@nadars.org.uk
www.nadars.org.uk

June 25-27th

The Ham Radio Show

Europe's largest radio event, the HAMtronic Ham Radio Show, will take place at Messe Friedrichshafen, the new exhibition centre on the edge of Friedrichshafen airport in Germany. The show will be open on Friday and Saturday from 9.00am to 6.00pm and on Sunday from 9.00am to 3.00pm. Tickets will cost €8 per day or €15 for three-days (children up to 12 free). Hall A1 will house the trade stands and clubs from around the world and there will be an enormous flea market in halls B1, B2 and B3. There will also be car paring, lectures, catering with a licensed bar, special interest groups, a camp site and facilities for the disabled.

www.hamradio-friedrichshafen.de/ham-en

June 27th

The West of England Radio Rally *

The West of England Radio Rally will take place in the Cheese & Grain, Bridge Street, Frome, Somerset BA11 1BE. There will be trade stands, an RSGB bookstall, catering, car parking and facilities for the disabled.

Shaun G8VPG
Tel: 01225 873 098
E-mail: rallymanager@westrally.org.uk
www.westrally.org.uk

July

July 3rd

The Bangor Rally

The Bangor and District Amateur Radio Society Rally will take place in the Donaghadee Community Centre, County Down BT21 0HB. The doors will open at noon and there will be trade stands, a Bring & Buy and special interest groups.

Bill GI4AAM
Tel: 028 9181 6707
E-mail: bill.langtry@btinternet.com
www.bdars.com

July 3rd

The Stockport Rally

The first Stockport Rally will be held at Walthew House, Shaw Heath, Stockport SK2 6QS. The doors will open at 10.00am, admission will be £1.00 and there will be car parking, trade stands, catering and facilities for the disabled.

Bernard G3SHF
Tel: 01625 850088 (daytime)
Nigel G0RXA
Tel: 0161 428 8413 (evenings)
E-mail: info@reddishrally.co.uk
www.reddishrally.co.uk

July 4th

The Barford Norfolk Radio Rally

The Norfolk Amateur Radio Club will be holding their Barford Radio Rally – Barford is 9 miles SW of Norwich, close to the A11 and the A47. The doors will open at 9.00am (8.00am for traders) and admission will cost just £1. There will be talk-in, car parking, trade stands, a Bring & Buy and catering.

David G7URP
Tel: 01953 457322
E-mail: radio@dcpmicro.com
www.norfolkamateurradio.org

Feature

The 27th Practical Wireless 144MHz QRP Contest

Editor's acknowledgement: Once again I have great pleasure in thanking Colin G6MXL for his year-round commitment to the 'fun' contest that was originated by **Neill Taylor G4HLX** over 28 years ago (one contest was cancelled because of an outbreak of Foot & Mouth Disease). We all still enjoy Neill's creation every year and I wish everyone a good contest and fair weather for the day! **G3XFD**.

The 27th Annual *Practical Wireless* 144MHz QRP contest takes place on **Sunday June 13th 2010 from 0900 to 1600UTC**. The format of the 144MHz contest is simple, designed to maximise participation from newcomers and keen contesters alike, whilst keeping it a friendly and fun event to take part in.

For those new to Amateur Radio contests, the *Practical Wireless* 144MHz QRP contest is a perfect introduction. Every year Amateurs who are new to contests, try their hands for the first time. In fact some radio clubs use it as an opportunity to introduce their members to the joys of Amateur Radio contests.

Members of Poole Radio Society operating in an earlier contest.

Even if you are limited to operating from home for just a short time, **please join in** all the fun of the event. So on Sunday June 13th 2010, why not find yourself a location with a good take-off, operate for a few hours with no more than 3W on the 144MHz band?

June is a time of the year, when hopefully the weather might be reasonably kind, and when **we might** be lucky with some good propagation on the 144MHz band, and there will certainly be plenty of other *PW* readers on the air, eagerly wanting to work you!

The Equipment?

In terms of equipment, all you need is a 144MHz transceiver and an antenna. While most activity will take place on upper side band (u.s.b.), there will also be some contacts on c.w. and f.m.

If you haven't tried operating from a local hill-top, you may be surprised just how far 3W can go! Sometimes, the contest is blessed with some Sporadic-E propagation when just about anywhere in Europe might be worked with just 3W on the 144MHz band!

Horizontally Polarised Antennas

For operation on both u.s.b. and c.w., you will find that most stations use horizontally polarised antennas. Indeed, you'll almost certainly work longer distances if you also use a horizontally polarised antenna.

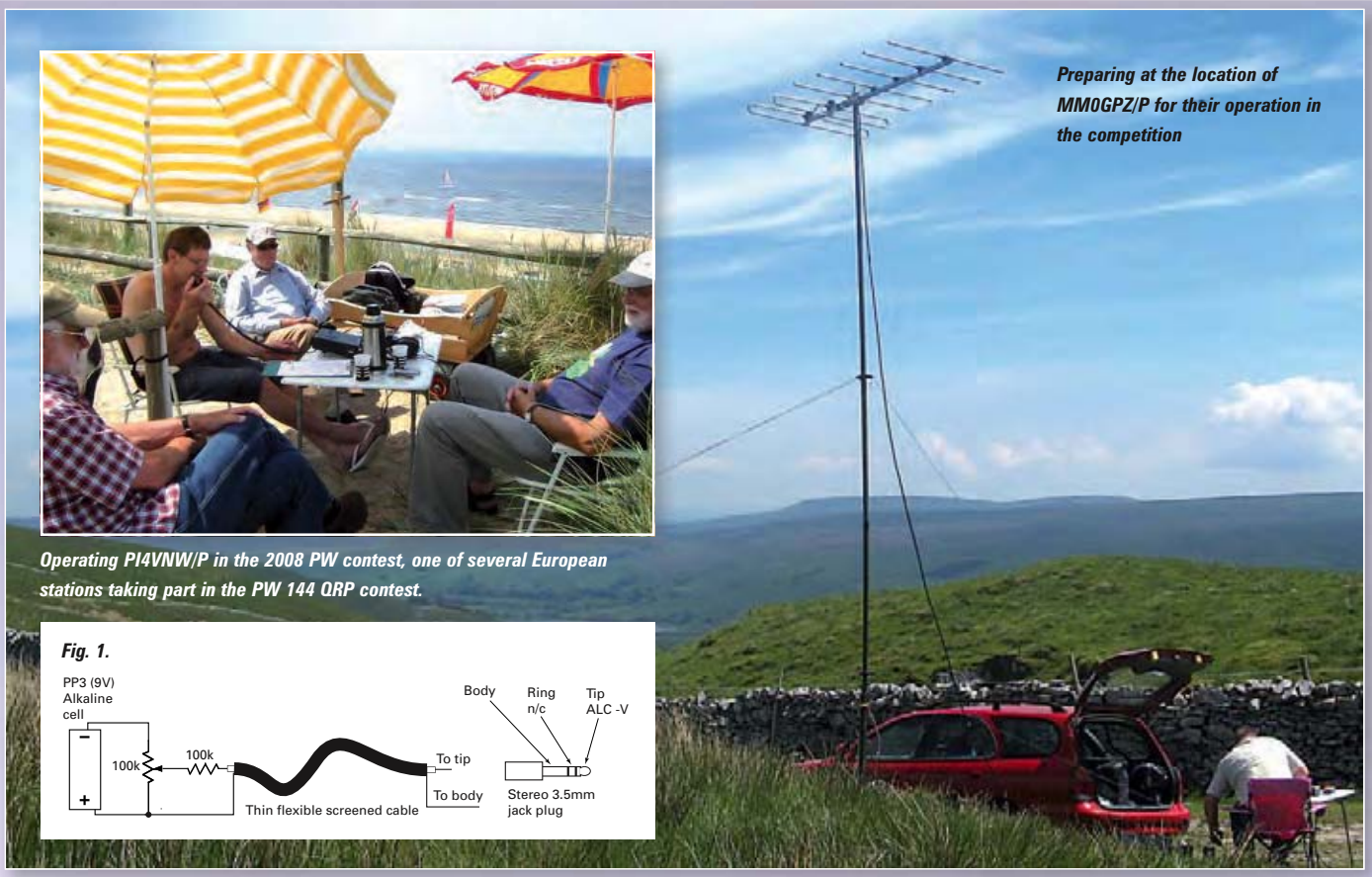
Low Power

If you have a transceiver with an output power of greater than 3W, you will need to reduce the power to 3W or below. With a number of modern transceivers such as the popular Yaesu FT-817ND for example, power can be reduced by using a menu setting. If this is an adjustment that you don't normally perform, you may want to refer to the operating manual in advance of the contest.

An alternative method of getting the output power down to 3W is to use a technique that has been

Colin Redwood G6MXL presents the introduction and rules for the 27th annual contest – a great day out for everyone!

Operating PI4VNW/P in the 2008 PW contest, one of several European stations taking part in the PW 144 QRP contest.



Preparing at the location of MM0GPZ/P for their operation in the competition

Fig. 1.

successfully employed by a number of stations over the years. This involves applying a d.c. voltage to the automatic level control (ALC) socket of the transceiver. (See **Fig. 1**).

While measuring the r.f. power out, adjust the variable resistor that controls the ALC voltage that is applied to the transmitter, thereby reducing the power to the level required. This technique has been used for example with the popular Yaesu FT-897 and some h.f. transceivers when driving 144MHz transverters.

Note that the 3W limit is at the output of the 144MHz transmitter or output of the 144MHz transverter, **not at the antenna**. You cannot rely on feeder loss to meet the 3W rule!

Hints & Tips

Time for some hints and tips now and I would certainly recommend re-reading the results article of last year's contest in the November 2009 issue of *PW*. It contains many suggestions for improving your overall score in 2010.

I would encourage entrants to enter their cover sheet details on the contest website at **www.pwcontest.org.uk** and include an E-mail address, so that I can contact entrants if their E-mailed logs have not been received.

Outlying Squares

I really urge stations to point their beams towards the outlying squares. Not only can this give some really valuable multipliers, it also encourages stations in South West England, Northern Ireland, Eire, and Scotland to participate.

After the contest please submit an entry, thereby joining the thousands of Radio Amateurs who have participated over the years in this popular contest. Although electronic entries via E-mail are preferred, the 'computer-phobes' will no doubt be pleased to know that they can also easily submit an entry without going anywhere near a computer if they wish!

Log Keeping

Over the last couple of years we have not been required by our licence conditions to keep a log of our contacts. The wording on the paperwork and web site has also been revised to remind entrants that the time must be logged in UTC (not BST) and that callsign suffixes (e.g. /P) must be correctly logged for the contest.

The preferred form of a log is a computer file sent by E-mail provided it contains all the information listed above. This may be a file generated by logging software such as SDV which can be downloaded from **http://www.ei5di.com**

The log spreadsheet introduced last year will be available again this year. It proved to be popular with many entrants. It can be downloaded from the *PW* Contest web site at **http://www.pwcontest.org.uk** (Submitting logs using the spreadsheet will really assist the adjudicator!).

Files in any other suitable format (plain text is fine

Sunday June 13th 2010

provided each of the items required is separated by a separating character such as a comma or tab) can also be accepted. Please don't mix separators within your entry!

No matter how you enter the contest, **please clearly mark your entry for the 144MHz contest**.

All entrants should please note that:
The contest web site is at **www.pwcontest.org.uk**

E-mailed entries should be sent to **contest@pwpublishing.ltd.uk**

Postal entries should be sent to **Colin Redwood G6MXL, 53 Woodpecker Drive, Poole, Dorset BH17 7SB**.

No matter how you submit your entry, please note that it must be **received by Tuesday July 6th 2010. Late entries will not be accepted.** If you are entering by post, you are recommended to use First Class post.

Please clearly mark your entry for the 144MHz contest. Even if you are a regular participant, please take the time to read the rules thoroughly.

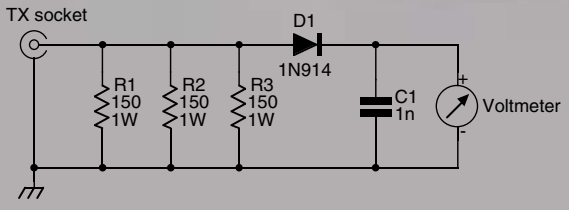
Entering From Abroad

If you are entering the Contest from outside the UK, please note that in order for your entry to be tabulated in the main adjudicated results table, at least one of your contacts must be with a station located in the United Kingdom (including the Channel Islands, Isle of Man) or the Irish Republic (Eire). Other overseas entries are welcome. A separate certificate will be provided to the overseas station with the highest score.

Let's hope for some good propagation on the day so that we can all have a really enjoyable time. Make a note in your diary now, the 27th Annual *Practical Wireless* 144MHz QRP contest takes place on Sunday June 13th 2010. Don't forget to charge your batteries a day or two before, and also make a note to remind yourself to submit your entry on time! ●

Don't forget, if you're heading for the hills, to wrap up warm, as demonstrated by Jim MM0SMP/P in last year's competition.

Fig. 2.



The 2010 Rules

The 27th Annual *Practical Wireless* 144MHz QRP Contest

1. General: The contest is open to all licensed Radio Amateurs, fixed stations or portable, using s.s.b., c.w., a.m. or f.m. in the 144MHz (2m) band. Entries may be from individuals or from groups, clubs, etc. The duration will be from 0900 to 1600 UTC on Sunday June 13th 2010.

All stations must operate within the terms of their licence. Entrants must observe the band plan and must keep clear of normal calling frequencies (144.300MHz and 145.500MHz) even for "CQ" calls. Avoid frequencies used by GB2RS during the morning (144.250MHz and 145.525MHz) and any other frequency that is obviously in use for non-contest purposes. This year there is also an Amateur Television contest taking place the same day – so please also avoid the ATV talk-back frequencies of 144.525 and 144.750MHz. **Contest stations must allow other users of the band to carry out their activities without hindrance.**

The station must use the same callsign throughout the contest and may not change its location. Special event callsigns may not be used.

2. Contacts: Contacts will consist of the exchange of the following minimum information:
(i) callsigns of both stations (**including any /P suffixes**)
(ii) signal report, standard RS(T) system
(iii) serial number: a 3-digit number incremented by one for each contact starting at 001 for the first contact.
(iv) locator (i.e. full 6-character IARU Universal Location for the location of the station.

Information must be sent to, and received from, each station individually, and contacts may not be established with more than one station at a time. Simultaneous operation on more than one frequency is not permitted.

If a non-competing station is worked and is unable to send their full universal locator, their location may be logged instead. However, for a square to count as a multiplier (see Rule 4), a full 6-character locator must have been received in at least one contact with a station in the square.

Contacts via repeaters or satellites or using digital modes (including DSTAR) are not permitted.

3. Power: The output power of the **transmitter or transverter** final stage shall not exceed 3W p.e.p. If the equipment in use is usually capable of a higher power, the power shall be reduced and measured by satisfactory means. The simplest way is often to apply a (variable) negative voltage to the transmitter ALC line reached via the accessory socket (See **Fig. 2**). Stations cannot rely on feeder loss to meet the 3W power limit.

With a number of modern transceivers such as the popular FT-817ND for example, power can be reduced by using a menu setting. The output power can be accurately measured using the simple circuit of Fig. 1. Connect this to the 50Ω output of the transmitter and adjust the power so that the voltmeter does not exceed 16.7V on a 'good whistle' into the microphone.

4. Scoring: Each contact will score one point. The total number of points gained in the seven-hour period will then be multiplied by the number of different locator squares in which contacts were made (a 'square' here is the area defined by the first four characters of the universal locator).
Example: 52 stations worked in IO81, IO90, IO91, IO92 and JO01 squares; final score = 52 x 5 = 260.

Only one contact with a given station will count as

a scoring contact, even if it has changed its location, e.g. gone /M or /P. If a duplicate contact is inadvertently made, it must still be recorded in the log, and clearly marked as a duplicate (not necessary in computer logs submitted by E-mail).

5. The Log: Logs may be submitted by E-mail or by post. In either case the log must contain the following information for each contact:
(i) time (**UTC - NOT BST**)
(ii) callsign of the station worked (**including any /P suffix**)
(iii) report sent (e.g. 56)
(iv) serial number sent
(v) report received (e.g. 54)
(vi) serial number received
(vii) locator received (or location).

The preferred form of a log is a computer file sent by E-mail. This may be a file generated by logging software, provided it contains all the information listed above, or a file in any other suitable format (plain text is fine) provided each of the items above is separated by a separating character such as a comma or tab. Give the file a name including the station call sign (e.g. g6mxl-p.log), and send as a standard E-mail attachment to **contest@pwpublishing.ltd.uk**

Most formats of log are acceptable – if there is any problem with your entry, you will be contacted by E-mail.

If a computer log file is not available, a paper log may be sent by post. This must be clearly written on one side of A4 sized paper only, ruled into columns for each of the items listed above. Underline or highlight the first contact of the locator squares worked. At the top of each sheet, write:

- callsign **(including /P suffix)** of your station used in the contest
- your locator as sent during the contest
- sheet number and total number of sheets (e.g. 'Sheet no. 3 of 5')

144MHz.
Log sheets and covering information sheets which may be used for paper-based entries are available for downloading from the contest Web site **www.pwcontest.org.uk**

6. Entries: The covering information listed below must be provided with each entry. The preferred method of submitting this is by the use of the online facility on the web site **www.pwcontest.org.uk**
Alternatively, the information may be written in the E-mail message to which the log file is attached. For entries sent by post, it should be written on a separate sheet of A4-sized paper.

The information required for every entry is:

- Name of the entrant (or of a club etc. in a group entry as it is to appear in the results table and on the certificate callsign used during the contest **including any /P suffix** (e.g. G6MXL/P)
- Name and address for correspondence
- Location of the station during the contest
- Full 6-character locator as sent during the contest
- Whether single or multi-operator (a single-operator is an individual who received no assistance from any person in operating the station, which is either his/her permanent home station or a portable station established solely by him/her); if multi-operator, include a list of operators' names and callsigns
- Total number of contacts and locator squares worked (not required for a log sent as a computer file)
- List of locator squares worked (not required for a log sent as a computer file)
- A full description of the equipment used including transmitted p.e.p. output power
- If the transmitting equipment (including any transverter employed) is capable of more than 3W p.e.p. output in the 144MHz band, a description of the methods used to (i) **reduce** and (ii) **measure** the 144MHz output power
- Antenna used and the approximate station height in metres above sea level (a.s.l.)
- If you receive or send a report of poor quality signals (e.g. wide / splattering), full details of the complaint, including time, callsign, nature of complaint and actions taken **during** the contest to investigate and resolve.
- The following declaration must be included in the E-mail text or written and signed by the entrant: "I confirm that the station was operated within the rules and spirit of the event, and that the information provided is correct."

Entrants must clearly mark their log as an entry for the 144MHz contest.
Failure to supply the required information may lead to loss of points or disqualification.

Entries & Other Information
Entries by E-mail must be sent to **contest@pwpublishing.ltd.uk**
Paper entries should be sent to: ***Practical Wireless* Contest**, c/o **Colin Redwood G6MXL, 53 Woodpecker Drive, Poole, Dorset BH17 7SB.**
Entries must be received not later than Tuesday July 6th 2010. Please clearly mark your entry for the 144MHz contest. Late entries will be disallowed.

Any other general comments about the station, the contest and conditions during it are welcome (written in a separate sheet of paper in the case of entries sent by post). Photographs of the station are also invited. Please note photographs cannot be returned and may be used for publication in *Practical Wireless* or on the **www.pwcontest.org.uk** website. If these are not available by the time the entry is submitted, they may be sent later by E-mail or post, **to arrive by August 11th 2010.** A summary of the results will be published later this year in *Practical Wireless*.

7. Miscellaneous: When operating portable, obtain permission from the owner of the land before using the site. In particular observe any restrictions on access associated with Bird Flue, Blue Tongue, Foot & Mouth etc. Always leave the site clean and tidy, removing all litter. Observe the Country Code.

Take reasonable precautions to avoid choosing a site which another group is also planning to use. It is wise to have an alternative site available in case this problem does arise.

8. Poor Signals: Make sure that your transmitter is properly adjusted and is not radiating a broad or poor quality signal, e.g. by over-driving or excessive speech compression. On the other hand, be aware that your receiver may experience problems due to the numerous strong signals it will have to handle, and that this may lead you to believe that another station is radiating a poor signal.

Before reaching this conclusion, try heavy attenuation at the received input. The use of a high-gain r.f. pre-amplifier is likely to worsen strong-signal problems, so if you do use one, it is best to be able to switch it off when necessary.

If you receive or send a report of poor quality signals (e.g. wide/splattering), you must record on the cover sheet full details of the complaint including time, callsigns of stations involved, nature of complaint and actions taken **during** the contest to investigate and resolve.

9. Adjudication: Points will be deducted for errors in the information sent or received as shown by the logs. Unmarked duplicate contacts in paper-based logs will carry a heavy points penalty. Failure to supply the complete information required in Rule 6 may also lead to deduction of points. A breach of these rules may lead to disqualification.

In the case of any dispute, the decision of the adjudicator will be final.

Feature

A Beginner's Guide to DXing


BG7LHY BD7LHY TO RADIO: M3NCG
Amateur Radio Station Of China
CQ 24
ITU 44
CONFIRMING ☑ OUR QSO ☐ YOUR SWL REPORT

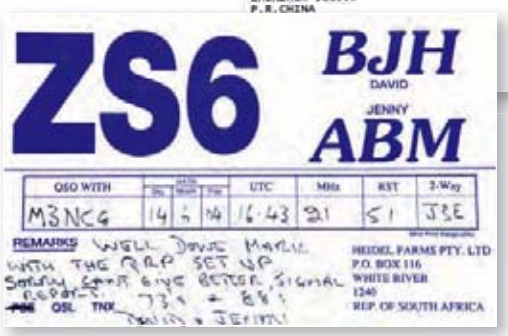
DATE	UTC	MHz	2-WAY	RST
2005.04.10	1834	14.256	SSB	59

☐ PES QSL ☑ TNX QSL

JORDAN LV
P.O.BOX 003-20
SHENZHEN 518003
P.R.CHINA

VY 73!

China can be worked on 20m during late evenings in March and April.


ZS6 BJH DAVID JENNY ABM

QSO WITH				UTC	MHz	RST	2-Way
M3NCG	14	4	14	16.43	21	51	J3E

REMARKS: WELL DONE MARK. WITH THE QRP SET UP SOUNDS GREAT GIVE BETTER SIGNAL REPORT- 73's + BB's
QSL TNX
HEIDEL FARMS PTY. LTD
P.O. BOX 116
WHITE RIVER
1240
REP. OF SOUTH AFRICA

One of the first stations I ever worked, high up the 15m band (21.350MHz). Perseverance required!

With the solar cycle showing no real signs of increased activity, and with band conditions down in the doldrums, newly-licensed amateurs need something to give them the DX 'bug' – and sooner, rather than later in my opinion!

I passed my foundation test and received the call **M3NCG** in 2004. Back then, I remember being told by members of the local radio group that "conditions on h.f. weren't very good" and "the solar cycle, which basically defines radio conditions, is declining at the moment so conditions aren't great!"

As I was only aged 14 at the time, I didn't have a great understanding of the solar cycle or what it meant – so I looked into it a bit more. I then discovered that a solar cycle is (normally) 11 or 12 years in duration, with a peak and a trough.

At the peak of the cycle, I learned there are a number of 'spots' on the sun – areas of magnetic activity – which lead to good conditions on the h.f. bands for long-distance contacts, or contacts with rare countries (also known as DXing). However, after the peak the number of sunspots declines and therefore h.f. band conditions also fall. The last such solar maximum was in 2002, and therefore by 2004 conditions were well on the 'slide downwards' .

It's also known that a high solar flux index (SFI) leads to good conditions on the h.f. bands. A typical solar maximum will provide an SFI of about 200, with it falling to 65 during the solar minimum. When I started in 2004, the SFI was normally around the 90 mark, with occasional activity bringing it up to 100.

We're currently just exiting the deep trough of a solar minimum, with the SFI reading in the high 70s or low 80s most days with a rise above 90 being rare. Therefore, we wouldn't expect h.f. conditions to be too good and most of the time we would be right. However, by listening at the right times and having a knowledge of the best times for DX, there's still some long distance contacts to be had.

Try Listening

The first thing to try is listening across the bands – it's something I quickly learned. With modern advances such as the DX cluster, once a rare station gets 'spotted' online (and the 'feeding frenzy' starts), a station running just 10 or 50W to simple antennas would find it next to – if not impossible – to work them. Therefore, I've learned that the best thing to do is spend some time tuning across the bands, listening to stations. Newcomers to the bands will soon pick up (in the same way as I did) and remember accents and remembering to relate them to certain countries and be able to pick out the rarer countries easier.

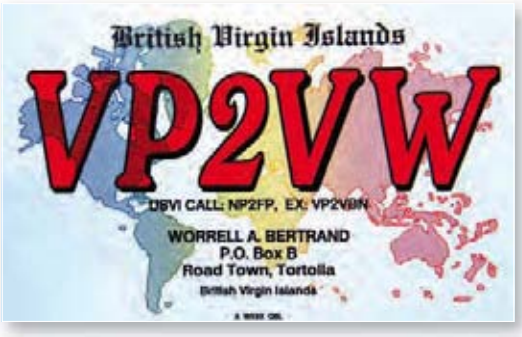
Fortunately for the keen DXer, most big DXpeditions nowadays put a list of planned frequencies on their website before they leave, so keep a list of these handy. It would be a good idea to leave the rig monitoring one of the frequencies – I've found that if you're ready and waiting when they move onto that frequency, you should be able to 'pounce' and make your QSO before they're put on the DX cluster and the rest of the world calls!

Best Times?

I soon learned that the best time of the year for band conditions on h.f. is around the spring and autumn equinox – falling in March and September. Like me, the newcomer will find that around this time of year, after 7pm, once it starts getting dark bands including 14MHz (20m), 18MHz (17m) and 21MHz (15m) begin to 'open' to South America. You'll also find that a lot of European stations 'disappear' and you can only hear the stations which are much farther away.

Between the months of September and March especially, 3.5MHz (80m) and 7MHz (40m) are fantastic for working long distances both around sunrise and

Mark Dumpleton 2E0NCG, provides his introduction to DXing – written from the viewpoint of a relative newcomer to the hobby.



40m and 80m opens to the Caribbean before/just after sunrise between September & March, with QRP contacts possible.

sunset. From my experience, both 3.5 and 7MHz seem to be better in the mornings than in evenings. Working American stations and those in the Caribbean can be achieved with a modest set-up and Australian stations can also be worked too, although less often.

Keep At It!

You may hear a rare station and think "I'll never get through with all these stations calling", but I've found it best to keep at it! Some DX stations listen specifically for those stations who are using lower power – so for an M3/M6 station that would be a perfect time to call.

You never know though, so keep calling through the pile-up! All it takes is for the pile-up to die down just as you call – try to listen to the DX station first and understand their habits. Do they come back to the first station that is strong enough for them to work easily, or do they wait until the pile-up dies down before picking out a station? If it's the latter, then try timing your call right. Then time how long it takes them to come back to a station after calling "QRZ", and then call around that time. More often than not, I've found that this technique actually works!

Operating Technique

If you're trying to work a DX station in a pile-up, don't just shout "QRP" or other assorted suffixes at the station. Instead Give your whole call, unless the station asks for the last two letters of your call only. A quick listen before calling will give you the information you need.

Also, by listening before calling, you may notice that if a station has a pile-up they may be operating 'split' – listening on a different frequency to the one they are transmitting on. This is done to help everybody else hear the DX station and to allow QSOs to be made at a quicker rate. All modern rigs have a 'split' function and I have discovered tat this is often very simple to set up.

If a received station is weak, it's likely they're running low power also, so persevere and you will get through eventually!

Big Antennas Not Required!

I've also discovered that you don't need a big antenna and high power to work rare stations! In fact I managed to obtain DXCC, with just 10W to simple wire antennas within a year of getting my licence.

If you have the space, try to go for separate antennas for as many bands as you can – a multi-band antenna is always a compromise and will not yield the same results as a single-band antenna. Think about whereabouts in the world you want to contact too – if you have a dipole antenna and want QSOs with America, your antenna would (roughly speaking) need to face East/West.

Rig Configuration

If you're wanting to work DX, then it's best for you to adjust the settings on your rig for your transmitted audio. Many new rigs come with a menu function, which is something along the lines of 'TX Equaliser'. Get a friend to go on another radio, and get them to listen while you talk into the microphone with the different settings.

Coupled with adjusting the microphone gain, you want your transmitted voice to be as punchy as possible without being distorted or too quiet. I personally set my TX Equaliser to the 'high boost' setting, as a slightly higher pitched voice will often break pile-ups easier.

Mini-Competitions

If you get a chance, then I advise that you try setting yourself a target for the month of how many DXCC entities you can work. There are well over 50 DXCC entities in Europe, so reaching around 50 DXCC entities shouldn't be too difficult.

Also, try challenging a friend to see how many countries you can work during a contest weekend; or see how many you can work over the whole year. Your QSO logs will be of interest to other hopefuls too – so why not send your total into **Carl Mason GW0VSW** who compiles *HF Highlights* in *PW*?

I hope that this information has been of use to anybody looking to get into DXing, be they new licensees or existing Amateurs renewing their interest in this period of low solar activity and poor h.f. band conditions. If anyone wants further information or anything else, then feel free to E-mail. My full profile is available on *QRZ.com* 73, Mark 2E0NCG. ●

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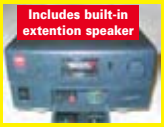

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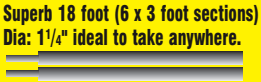

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The Rev. George Dobbs'

carrying on the practical way

The Rev. George Dobbs G3RJV has "some radio doodles" for readers and, of course, the usual appropriate quotation!

"Bring your work back to the workshop twenty times. Polish it continuously, and polish it again."
Nicholas Boileau (French poet and literary critic, 1636-1711)

Welcome to *Carrying on the Practical Way* (*COTPW*) where I'm wishing that I was as fastidious as M. Boileau in his quotation! My workshop style has always been rough and ready; building little radio projects in the easiest and quickest manner. That applies even more so now my workshop is a small fold-down surface in the second smallest room in our modest retirement house. It's seeing what happens, and tinkering with the circuit if it doesn't happen, that's important to me!

My radio projects are rather like a pilgrimage where the journey is often more important than the destination. Projects rarely get re-built in a smarter format and enclosing them in a case, hardly ever happens. I guess I'm just a radio construction 'doodler' – but I do admire those who build pieces of radio equipment that look like jewellery.

A fair bit of my workshop time is devoted to projects for this column; playing with circuits that may amuse, and occasionally inform *PW* readers. This month I thought I would mention a couple of the workshop doodles of recent days. Not all of my efforts come to fruition as completed projects – but I will offer some ideas that may inspire readers to warm up their soldering irons to useful purpose.

The G QRP Club runs an Internet list where members post ideas and questions, as well as information about their QRP operations on the Amateur bands. Recently, one of the members extolled the virtues of the TDA7052A audio amplifier chip suggesting that members might like to use it in preference to the common LM386 chip.

A Stable Amplifier

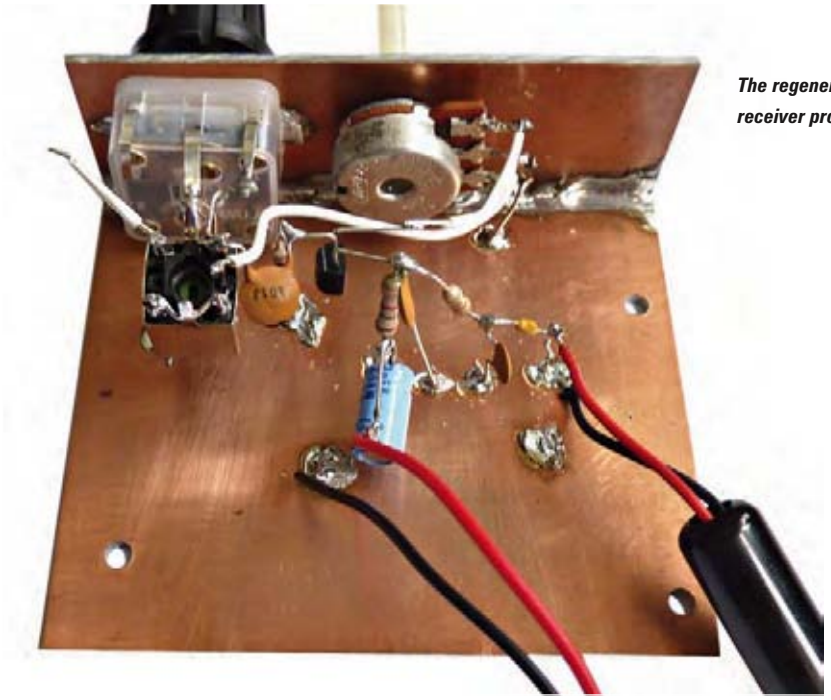
The TDA7052A is more stable than the LM386, certainly less noisy and it requires virtually no extra parts to make a working audio amplifier. A circuit for a basic audio amplifier using the TDA7052A is shown in **Fig. 1**.

The first thing to notice is that the only external parts required are two de-coupling capacitors on the power supply line. You may also notice that the output, from pins 5 and 8, is isolated from ground on both sides. This is because it uses a (bridge-tied load (BTL) configuration for the output. That means the output load, the loudspeaker, is connected between two amplifier outputs; bridging the two outputs.

The bridging can double the voltage swing at the speaker compared with a speaker that has one connection going to ground. The maximum output from the TDA7052A is 1.2W – greater than any version of the LM386. Having said that, the voltage gain, about 35dB, is less than the 46dB maximum available from the LM386.

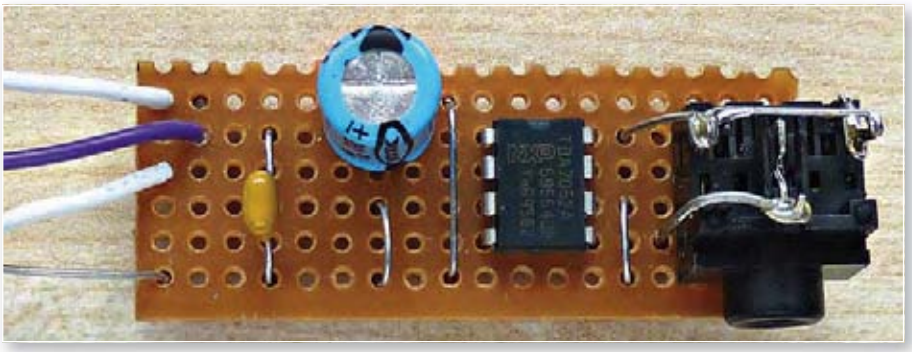
I built up a sample amplifier using Veroboard; the 0.1 inch matrix board with copper strips on the underside. This is some what unusual for me since I'm not a fan of Veroboard, but I found web page layout for a version using this technique.

Sure enough, it did not have the background hiss of an LM386 amplifier and performed well. It would make a useful little amplifier for many projects although it does have two disadvantages. To replace the LM386



The regenerative receiver project.

The stable audio amplifier made up on a section of matrix board.



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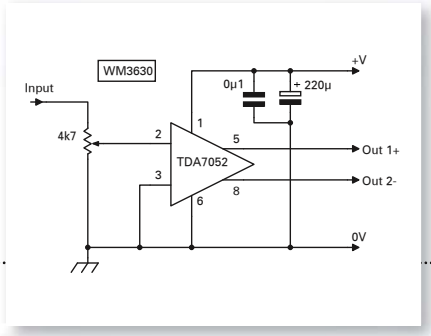


Fig. 1: Basic circuit for the TDA7052A amplifier integrated circuit (i.c.).

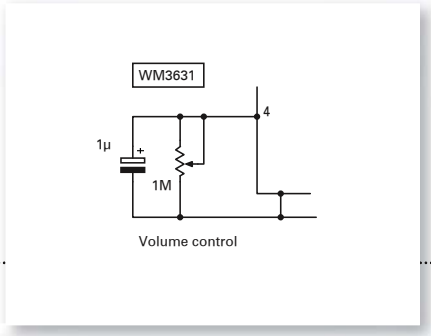


Fig. 2: A d.c. volume control circuit for use with the TDA7052A.

in some applications a pre-amplifier stage may be needed to make up for the lower voltage gain.

A single stage bipolar transistor stage would serve the purpose. The balanced output could also be tricky as both sides of the output must be isolated from ground. This requires the use of a fully insulated output socket – the commonest jack sockets used for audio output have one connection going to ground.

The manufacturer's data sheet for the TDA7052A describes it as, *"a mono BTL audio amplifier with d.c. volume control."* The circuit example in Fig. 1 uses a conventional signal volume control. In fact most of the example circuits I found used that convention. It is possible to control the volume of the amplifier without a control in the signal path. The recommended circuit for a d.c. volume control is shown in **Fig. 2**. I like the TDA7052A and I'll certainly use it again!

Spectrum Coils

Regular readers will recall that in the May edition of *COTPW,* I described a range of coils sold in the UK by Spectrum Electronics. These are a replacement for the now largely unavailable Toko 10K series of core adjustable, screened, coils for the shortwave frequencies. In that article I gave some data charts for the Spectrum coils to illustrate their usefulness for constructors of shortwave equipment.

The series of coil's usefulness is much enhanced by their adjustable cores in the centre of the coil former. This enables screw adjustment of the inductance of the coil; a real bonus when making tuned circuits. The coils come in 10mm screened cans with five pins at the base of the can. The layout of the pins is shown in **Fig. 3**. The main winding is between pins 1 and 3, with tapping point in this winding at pin 2. Pins 4 and 6 (there is no pin 5) go to a link winding, inductively coupled to the main winding.

One of the most useful coils is one with a nominal inductance of 5.5µH that will easily tune the 7, 10.1 and 14 MHz Amateur bands. The Spectrum designation for this coil is 5u3L. For many of the coils, the tapping point at pin 2 is the centre of the main winding between pins 1 and 3. It was only after I wrote the article for the May edition, and was looking at the data again, I noticed that the tapping for the 5u3L coil was not in the centre of the main winding.

The diagram, Fig. 3, shows a small extract from the supplied data for the 5u3L coil. Looking at the number of turns between the pins of the main winding, it can be seen that there are a total of 20 turns between pins 1 and 3, but pin 2 is only five turns from pin 1. The tapping is not in the centre but at a quarter of the total number of turns. Always looking for little circuit ideas, what immediately came into my mind was 'Hartley oscillator and regenerative receiver'.

Let me explain what I mean. I have discussed regenerative receivers many times in this column. I hope not too many!

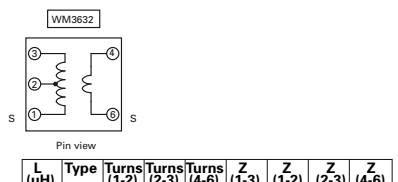
To over-simplify, a regenerative receiver is all about controlling an oscillator set on the required receive frequency. The two commonest oscillator configurations used in regenerative receivers are shown in **Fig. 4**. The classic regenerative receiver uses the Armstrong circuit shown in Fig. 4**b**.

Edwin Armstrong

The regenerative circuit is named after **Edwin Armstrong** (1890 – 1954); the doyen of early radio development. He is credited with inventing the regenerative circuit, patented in 1914 when he was still a student; the superheterodyne receiver, patented in 1918 and frequency modulation (f.m.), patented in 1933. After that radio inventing we might say "what's left?"

A radio frequency oscillator requires feedback between the output and input of the oscillating device; a field effect transistor (f.e.t.) in the case of Fig. 4. This needs to be positive feedback that is in phase with the input signal. The feedback instigates, and maintains, the oscillation of the circuit.

Everyone knows of the feedback effect – especially from badly installed public address systems. If the microphone is too close to the loudspeaker and the volume control



L (µH)	Type	Turns (1-2)	Turns (2-3)	Turns (4-6)	Z (1-3)	Z (1-2)	Z (2-3)	Z (4-6)
5.3	5u3L	5	15	1	19814	1238	1145	49

Fig. 3: A small extract from the supplied data for the 5u3L coil.

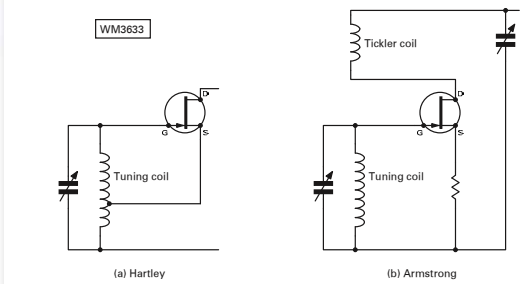


Fig. 4: The two most common oscillator configurations used in regenerative receivers are shown in Fig. 4. The classic regenerative receiver uses the Armstrong circuit shown in Fig. 4(b).

of the amplifier is turned up, a nasty howling (oscillation) can occur. The feedback from the speaker to the microphone is the cause. In the Armstrong circuit a coil in the output of the oscillator is coupled to the coil of the tuned circuit.

For obvious reasons this is sometimes called a 'tickler coil'. A variable capacitor at the tickler coil controls the amount of feedback to enable the regenerative effect. This is the classic regenerative receiver as patented by Armstrong but there are other ways of producing, and controlling, the feedback.

One simple method is to use the Hartley oscillator configuration. This was named after **Ralph Vinton Lyon Hartley**, a radio pioneer born in 1888. He developed the Hartley oscillator which was patented in 1920.

The Hartley oscillator arrangement is shown in Fig. 4**a**. This circuit only uses one inductor (coil) that serves as both the tuning and the feedback coil sections. To do this the coil has a tapping point; in this case is connected to the source of the field effect transistor. This allows the feedback to reach the tuned circuit without the need for the tickler coil.

There are several ways to control the amount of feedback; but more of that later. Usually the feedback tapping point on the tuning coil is about a quarter of the total number of turns from the grounded end of the coil.

Ideally the turns ratio should just be enough to maintain the oscillation but I wondered if the 5u3L coil, with a tapping point a quarter of the number of total turns, would function in a Hartley-type regenerative receiver?

The diagram, **Fig. 5**, shows the circuit of the Hartley regenerative receiver I used to test the viability of the 5u3L coil in a Hartley based receiver. The receiver tuned circuit is formed by a 5u3L coil and the variable capacitor Ct.

There are two possible ways to connect an antenna. One obvious way is to use the link winding (pins 4 and 6) of the coil. This offers a low impedance input although, in practice, this antenna input worked with most of the antennas I tried with the circuit. If using a simple length of wire (say 3m or longer) this will present a higher impedance and connecting the antenna to the top of the tuned circuit via a capacitor will give a better match.

The value of the coupling capacitor should be as low as it's possible to use and still hear plenty of signals because overloading the receiver input impairs the regenerative effect. Start at about 100pF and try lower values until the receiver begins to go 'deaf' (lose sensitivity).

I used the 5u3L coil with a nominal 60pF variable capacitor for Ct. In fact the variable capacitor range measured 12.8 to 73.5pF which, with a coil measuring 5.3μH should give a frequency swing of 8.0 to 19.3MHz. Using the core adjustment, I managed to get the tuned circuit to cover the 7, 10.1 and 14MHz bands.

Band Spreading

To be able to tune this wide range Ct requires some form of band-spread control. This might be a smaller value variable capacitor (say 10pF or less) in parallel with Ct or a reduction drive for the main variable capacitor.

In fact, readers may like to experiment with a small capacitance value for Ct and add fixed capacitors in parallel to achieve the required frequency coverage.

The tuned circuit is connected to the f.e.t. via a 100pF capacitor. I used a 2N3819 device but the common MPF102 would also do the job. Notice the way the feedback is controlled. A 1kΩ linear potentiometer is used as the source resistor and this enables the amount of signal fed back to the tuned circuit to be controlled. This must be a carbon track potentiometer (the commonest type) rather than a wire wound component – a wire wound track would introduce extra inductance to the circuit.

The audio output from the f.e.t. is taken from the drain of the device. It's coupled via a simple resistor/capacitor filter to an audio amplifier. I have not added the amplifier circuit because anything with enough gain will serve the purpose.

Although if you end up choosing the TDA7052A as I've already described it will probably need an extra stage of audio pre-amplification. Incidentally, I fed my version of the receiver into an old computer amplified speaker system!

I'm pleased to say the circuit worked well. The turns ratio on the 5u3L enabled smooth control of the feedback potentiometer. However, when using the receiver, remember the regenerative mantra; Adjust it to be just below oscillation for a.m. signals and just above oscillation for c.w. and s.s.b. signals.

So just a couple of ideas from my workbench, perhaps readers will try them on their own benches …. and probably make them look better than mine! Cheerio for now. ●

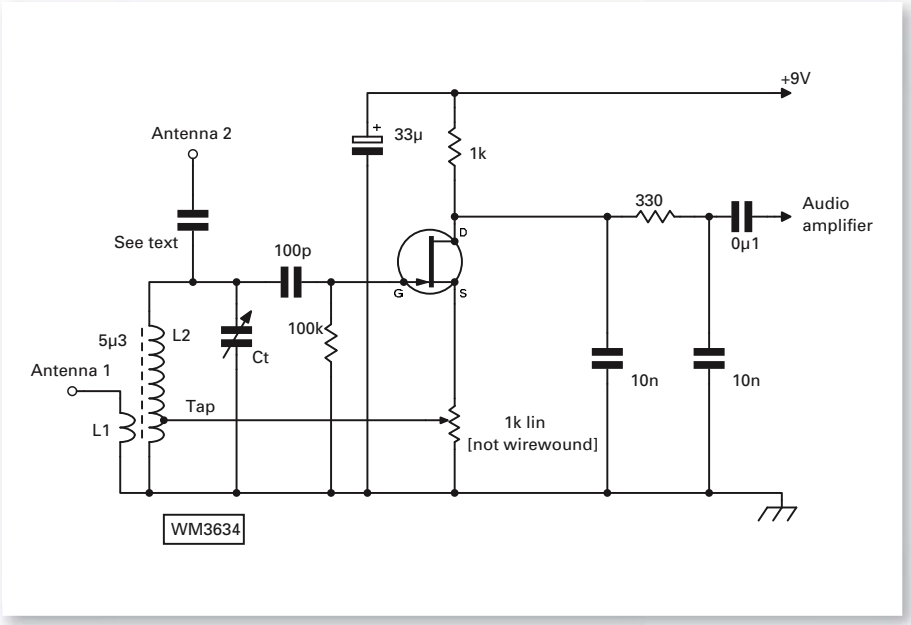


Fig. 5: The circuit of the Hartley regenerative receiver used by George G3RJV to test the viability of the 5u3L coil in a Hartley based receiver. The receiver tuned circuit is formed by a 5u3L coil and the variable capacitor Ct .

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Tony Nailer's

technical for the terrified

Tony Nailer G4CFY suggests that older analogue filter designs have many advantages.

These days it's digital methods for everything and apparently, often just for the sake of 'going digital'. The encroachment of use of digital techniques into every area of our lives is almost a disease. A downside, is that it often brings with it the penalty of high power consumption and noise.

Most modern rigs include digital signal processing (DSP), usually as a receive function, but also possibly as audio processing on transmit as well. Also there is Digital Audio Broadcasting (DAB) with much poorer quality than conventional analogue Band II v.h.f. radio, and also with high power consumption of the receivers.

These days to filter audio we have printed circuit boards laden with large-scale digital integration including a 'clock', microprocessor, and switched capacitor filter. All these circuits consuming hundreds of milliamps from a regulated 5V supply.

Previously audio filtering was created by analogue engineers, perhaps using four operational amplifiers (op-amps) such as the quad package TL074N. With such analogue op-amps, four two-pole stages of low pass filtering could provide up to 48dB of attenuation at two times the corner frequency. All this powerful filtering using just 5–6mA from a 12V supply.

Basic Filter

The simplest filter comprises a single resistor and capacitor, referred to as a single-pole filter, which can be configured as either low pass or high pass. See **Fig. 1.** The circuit is passive and can only have a smooth roll-off, above or below the frequency at which the value of resistance equals the capacitive reactance.

The frequency at which both reactance and resistance are numerically equal is termed the corner frequency. With a low pass filter, a signal applied at the corner frequency will appear at the output reduced to 0.707 (-3dB) the input amplitude, and with a phase delay of 45°.

The phase change at the output is due to the reactive current being at 90° to the resistive current. The amplitude of 0.707 of the input equates to –3dB (the half-power point). The rate of roll-off (above or below the corner frequency) is halving the amplitude, which is 6dB, for every doubling of frequency for the low pass configuration. For the high pass configuration the -6dB change happens with every halving of frequency.

In music there are eight (full) notes between each doubling of frequency, from where the term octave was coined. This has been applied likewise to audio filters so we can describe the roll-off as 6dB/octave. However, due to the limitation of space in this article I will only deal with low pass filters.

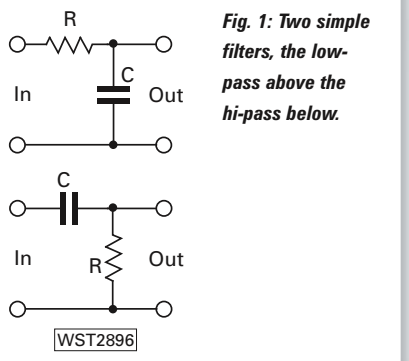

Fig. 1: Two simple filters, the low-pass above the hi-pass below.

Cascaded Stages

Putting two identical stages in line, referred to as cascading, causes the amplitude at the corner frequency to be –6dB and the over-all roll-off is 12dB/octave. In practice the second filter loads the first and the required performance is not achieved.

To reduce the loading by a following stage, one solution is to make the value or the following resistor 10 times the first, and the capacitor one tenth of the first. See **Fig. 2.**

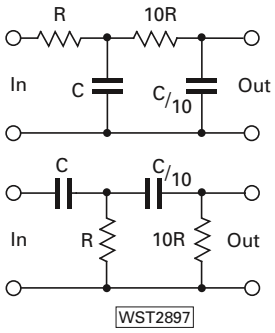

Fig. 2: Cascading two of the filters from Fig. 1 gives a better roll-off in the stop-band.

The loading effect of the second stage can now be defined as a damping factor (Z) to control the sharpness of the filter characteristic. At a damping factor above 1.0 the roll-off is more gradual, starting further back in the pass-band and having a shallower descent at the start of the roll-off curve. A filter of this type designed to give a linear phase change with frequency is called a Bessel characteristic. But, although it has its uses – I have never needed it in microphone audio or radio related design.

With a damping factor of 1.0 the pass-band is flat with no ripple and the cut-off occurs at the –3dB point. This specific filter shape is termed a Butterworth characteristic. With cascaded stage with the same cut-off frequency but with damping factors below 1.0 the filter

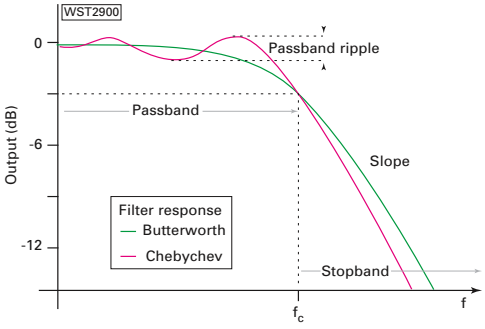

Fig. 3: The response curves of two common types of filter types, the Chebychef gives a better roll-off in the stop-band at the expense of some ripple within the pass-band.

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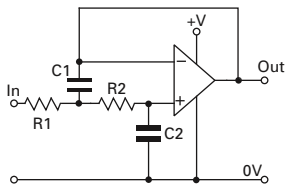


Choose F & Z

$C1 = \frac{2*10^7}{Z*\omega}$ (pF)

$C2 = C1*Z1^2$ (pF)

$B = \omega*C2*10^{-12}$

$R2 = \frac{10^{24}}{R1*C1*C2*\omega^2}$ (Ω)

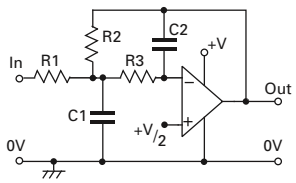
$\omega = 2 * \pi * F$

$Z1 = \frac{2*10^7}{\omega*C1}$

$A = Z1 + \sqrt{Z1^2 - \frac{C2}{C1}}$

$R1 = \frac{A}{B}$ (Ω)

Fig. 4: The allen-Key low-pass filter and the design formulae.



Choose F, Z, A & C1

$C2 = \frac{C1*Z^2}{A+1}$ (pF)

$R3 = \frac{R2}{A+1}$ (Ω)

$\omega = 2 * \pi * F$

$R2 = \frac{Z*10^{12}}{\omega*C2}$ (Ω)

$R1 = \frac{R2}{A}$ (Ω)

Fig. 5: The multiple feedback low-pass filter and the design formulae.

peaks close to the cut-off frequency before descending quicker into the stop-band region.

The roll-off can be made steeper still using stage gain, damping factor adjustment, and different stage cut-off frequencies. This results in either a smooth pass-band a steep roll-off and a wavy stop-band, or a wavy pass-band a steep roll-off and a smooth stop-band. Such a filter is referred to as having a Chebychev characteristic, and is principly chosen for specific stop-band attenuation and amount of ripple.

The mathematics of Chebychev filters are very complex, and there are different sets of damping characteristics for every different amount of pass-band ripple. Also to determine the gain of the stages and the specific frequencies designated as cut-off and stop-band are beyond all but professional analogue engineers. Consequently all the following filter theory will relate to circuits to achieve a Butterworth response. The relative curves of Butterworth and Chebychev filters are shown in **Fig. 3.**

Butterworth Cascaded Filters

To achieve the required stop-band attenuation it's often necessary to increase the number of filter sections. When three or more sections are used, it's necessary to choose specific damping factors, to maintain a flat pass-band and a specific cut-off frequency.

The mathematics is quite complex and way beyond the scope of this series, but the damping factors have a soft roll-off with the first filter stage followed by a twin section with a sharp roll-off, giving a peak close to the cut-off frequency.

A single section always (by definition) is a basic R and C with a damping factor of one. A two section can be created using the active filter with a damping factor Z of 0.707. A three section will be a single section followed by a double section with Z = 0.5. A four section filter is made from two cascaded two section filters, the first with Z = 0.383, the second with Z = 0.924. See **Table 1.**

Sallen-Key Filter

To create a Sallen–Key filter, the op-amp is used in its non-inverting mode and the second component of the filter, which would normally be grounded, is fed back from the low impedance output of the op-amp. Though it's electrically simple to make, the design equations are quite complex, but please don't panic! The term ω is often used in all almost all filter designs and radio applications, it's merely a replacement for the terms 2*π*F. See **Fig. 4** for the circuit and design equations.

To begin the design, first choose the cut-off frequency F and the damping factor Z, and then calculate ω. Then calculate C1 and choose the nearest preferred value. This will mean that the damping factor Z isn't quite right, so calculate the new damping factor Z1, using the value of C1 in pF. Calculate C2 and choose the nearest preferred value.

The calculation of R1 is quite complex so it is broken into three steps. To calculate A, first divide C2 by C1 and make note of it, or store it in the memory of your calculator or computer. Then square Z1 and subtract the ratio of C2/C1 previously noted. Then square root this number, and then finally add it to Z1.

Next, calculate B, then calculate R1, and again choose the nearest preferred value. Finally calculate R2 using all the preferred values chosen.

In a practical circuit, the op-amp can be run from a dual supply rails (positive and negative) with R1 connected to a point sat at 0V. When using a single supply, R1 is connected to a potential divider of equal value resistors between positive and ground. The input will then ned to be capacitively coupled to the source.

Table 1

Sections	1	2	3	4	5	6	7	8
Damping	1	0.71	1 & 0.5	.38 & .92	1 & .31	.26 & .7	1 & .22	.2 & .56

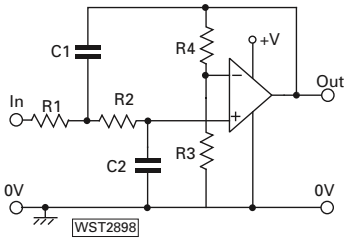
Multiple Feedback Filter

The multiple feedback form of filter uses two paths feeding the output back into the filter elements. This filter has the advantage that gain can be included. The op-amp is used in the inverting configuration and will be capacitively coupled to the source and have the non-inverting input connected to a potential divider between the supply rails. See **Fig. 5** for circuit and design equations.

The multiple feedback filter uses one more resistor than the Sallen-Key type but in comparison it's much easier to calculate values. It also gives the benefit of gain as well if it's required.

To design a multiple feedback filter, first choose F, Z, gain A, and C1. Calculate C2 and note if the value is close to a preferred value. If not, then change C1 and try again. When C1 and C2 are suitably selected, calculate a value for ω, then calculate R2 using the value of C2 in pF, and choose the nearest preferred value.

Finally, calculate R3 and R1 and choose nearest preferred values. **Note:** In some cases I have used two resistors in series or two in parallel if there's nothing close.



Choose F, Z, A & C1

$\omega = 2 * \pi * F$

$C2 = C1*(A-1 + \frac{1}{4*Z^2})(pF)$

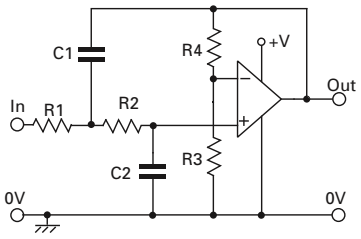
$R1 = \frac{2*Z*10^{12}}{\omega*C1}(\Omega)$

$R2 = \frac{10^{12}}{2*C2*\omega*Z}(\Omega)$

$R3 = \frac{10^5}{A}(\Omega)$

$R4 = R3*(A-1)(\Omega)$

Fig. 6: The VCVS variable gain low-pass filter and the design formulae.



Choose F, Z & C1

$\omega = 2 * \pi * F$

$A = (3-Z)$

$C2 = C1\ (pF)$

$R1 = R2 = \frac{10^{12}}{\omega*C1}(\Omega)$

$R3 = \frac{10^5}{A}(\Omega)$

$R4 = R3*(A-1)(\Omega)$

Fig. 7: The VCVS equal element low-pass filter and the design formulae.

The VCVS Variable Gain

The voltage controlled voltage source filter (VCVS) is like the Sallen-Key filter but uses two extra resistors to allow gain to be selected. The op-amp is again used with the filter feeding the non-inverting input. Calculations are not quite as difficult as the Sallen-Key but slightly more complicated than the multiple feedback type. See **Fig. 6** for the circuit and design equations.

Begin by choosing F, Z, gain A, and C1. To calculate C2 first square Z then multiply it by 4, and then divide this number into 1 (or use the 1/x symbol on the calculator), note or store this number. Then subtract 1 from A, then add the stored number, now choose the nearest preferred value. If there's nothing close then try again with a different value of C1 or with a different value of gain.

Then calculate ω and calculate R1 using the value of C1 in pF. Calculate R2 using the value of C2 in pF. Finally calculate the values of R3 and R4. Choose the nearest preferred values.

Like the Sallen-Key filter, the VCVS filter needs to be fed from a source at half supply rail, which can be equal resistors between the supply rails. Its input can then be capacitively coupled to the previous stage.

Equal Component VCVS

The equal component VCVS filter is a variant of the filter with the two Rs and two Cs in the filter section being equal value. The penalty for this simplicity is that the gain is somewhere between zero and 3, and is determined by the damping factor. See **Fig. 7** for the circuit and design equations.

The equal component VCVS filter is the easiest of them all to calculate. Choose F, Z, and C1 and calculate ω. Then calculate R1 using the value of C1 in pF. Calculate A, then R3, then R4. Choose nearest preferred values.

Further Advice

Always drive a filter from a low impedance source, or if this isn't possible then take into account the source resistance or impedance and deduct this from the value of R1. Always drive an active filter into a load at least ten times the output impedance of the op-amp – and generally speaking, something in excess of 1kΩ is good.

Each of the outputs should use a coupling capacitor to the following stage unless that is another filter section, which would benefit from the d.c. level. In the case of the multiple feedback filter, I normally capacitively couple the stages but take the non-inverting inputs to a decoupled common mid-point rail.

Final words

Often I find that running the calculations results in non-preferred values, so rather than keep reworking the equations by hand, it is easier to put them into an Excel spreadsheet. You can then let the computer do the calculations and put preferred values back in as required.

I hope that you have not been frightened off by the algebra, and that the presentation with the equations presented in traditional form, with a numerator and denominator, is easier to understand. Also by removing the equations from the text, means that those who don't want to delve into them can just read on. Those that may wish to use them again can see them more easily than when they are buried in the text. Cheerio until next time!

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Feature

Emerging Technology

Chris Lorek G4HCL looks at new developments in radio communication

Welcome

Welcome to the series where I look ahead at what could be 'just round the corner in our area of radio and electronics. So, first this month – how about two-way portable radio power from your clothing?

Indeed, let's look even closer – how about a clothing fabric that could conduct and store electrical energy? That's exactly what the 'Intelligent Textiles' company is planning to achieve. However, it's not a 'pie in the sky' hope either as they've just been awarded eight million £'s worth of research funding by the UK's Centre for Defence Enterprise (CDE) who are the research funding body of the Ministry of Defence!

The idea is that it will be able to be used in combat fatigues which will be made of the conductive material and would be able to power weapons, radios and charge batteries for electronic equipment, as a result reducing the number of batteries that soldiers have to take with them and reducing the weight of the equipment they carry. By being able to conduct electricity, the fabric could also be used as a computer keyboard, as seen here in the accompany photo.

We've had kinetic-powered watches for a while now, where the wearer's physical movement is converted into small amounts of electrical energy, but this new technology will of course take things far further.

Fig. 1: A fabric which can store and conduct electricity is being developed, your clothing could even be used as an electronic keyboard (Photo credit: Ministry of Defence)

Car Bodywork Battery?

On a similar subject, researchers from Imperial College London and their European partners, including Volvo Car Corporation, are developing a prototype material which can store and discharge electrical energy and which is also strong and lightweight enough to be used for car parts.

Not only that, but the researchers also believe the material, which has been patented by Imperial, could potentially also be used for the casings of many everyday objects such as two-way radios, mobile 'phones and computers, so that they would not need a separate battery. This would make things like our dual-band hand-helds much smaller, more lightweight and more portable.

The project co-ordinator, **Dr Emile Greenhalgh**, from the Department of Aeronautics at Imperial College London, says: *"We are really excited about the potential of this new technology. We think the car of the future could be drawing power from its roof, its bonnet or even the door, thanks to our new composite material. Even the SatNav could be powered by its own casing."*

"The future applications for this material don't stop there – you might have a mobile 'phone that's as thin as a credit card because it no longer needs a bulky battery, or a laptop that can draw energy from its casing, so it can run for a longer time without recharging. We're at the first stage of this project and there is a long way to go, but we think our composite material shows real promise."

The material itself is made of a composite of carbon fibres and a polymer resin, and it's capable of storing and discharging large amounts of energy much more quickly than conventional batteries. As well as this, the material doesn't use a chemical process, which makes it quicker to recharge than conventional batteries.

Additionally, there's the benefit that the recharging process doesn't cause much degradation in the composite material, again because it doesn't involve a chemical reaction, but batteries we've been using up to now, all degrade to some extent over time. A rechargeable battery could soon be part of a handheld radio's casing using this technology and if it could be combined with the MoD technology it could even charge itself!

An Alternative To GPS?

Most if not all of us are aware of GPS, the Global Positioning System, used by 'SatNav' devices such as those in cars – and increasingly being incorporated in up-market in mobile phones and even cameras as well. However, when you need to absolutely rely on GPS coverage, for example in safety-of-life and security systems, it can suffer from problems. Firstly, GPS 'jammers', like cellphone jammers, can be used to disrupt signals causing receivers over a wide area and they become useless.

Another posibility, potentially of use to criminals and the military, is that of 'spoofing.' This is where fake GPS signals are transmitted to make a GPS receiver think it's somewhere else. A typical case would be where criminal curfew tags are used, and in 'asset-tracking' systems such as security transit vans. The GPS signals are extremely weak when the reach the Earth's surface, so it doesn't need a powerful transmitter to over-ride the signals, just a fraction of a watt is enough. Incidentally, the system was originally intended for – and is still used by the military.

However, the military airborne GPS guidance systems, as fitted in cruise missiles and fighter jets for example, use phased antenna systems which are electronically steered to carefully track the genuine GPS satellite signals. This means that simple ground-based jamming like this isn't much of an issue to them.

There's another problem though! And this, as many readers will have discovered, is that once you take a GPS receiver indoors and out of radio 'view' of the weak overhead satellite signals, you lose a 'fix'. Likewise, when you're travelling through streets lined with high-rise buildings, or through tunnels, as well as walking through woodland areas with plenty of tree branches and water-soaked leaves above you. All these can, and often do, lead to a loss of a 'fix'.

Fortunately, there are alternatives as we're literally surrounded by radio transmitters. These be medium wave and v.h.f. Band II radio transmitter sites, u.h.f. TV transmitters, cellphone sites both 'macrocell' and 'microcell', utility telemetry transmitters (such as those uses for water reservoir monitoring), non-directional beacons for aircraft navigation and Amateur Radio propagation beacons. In fact, the list is endless.

Even underground in tunnels there are often cellphone 'microcell' transmitters to provide communication. All of these transmitters could be used as an alternative, with radio triangulation used to get an accurate location of a roaming mobile positioning receiver.

Engineers at BAE Systems, led by **Dr Ramsey Faragher**, have been looking into doing just this. In fact, Dr Faragher recently took part in the GB70GB special event station at the BAE Systems Open Day on 3rd October 2009, so you may even have had a contact with him on air. He and his team have developed a prototype positioning system that uses radio, television and mobile phone signals to let GPS devices work even when GPS satellite frequencies are being blocked.

The positioning system essentially operates on the same principle as existing GPS receivers. However, as it collates information from various different terrestrial signal sources it's claimed to be much more accurate. Although the BAE company are currently keeping quiet about how it uses data from transmitters at unknown locations, they are quite optimistic on its future potential.

Dr Faragher says "*Our system is a dedicated positioning system and will eventually have the flexibility to use GPS, other satellite signals, all mobile phone networks, TV signals, radio signals, WiFi, dedicated beacons – anything we program it to identify basically.*"

He added, "*GPS will never penetrate indoors as well as these higher-powered terrestrial signals. If we develop a 'super-GPS' chip in the near future that behaves exactly like the GPS everyone is used to, but still happily works well indoors, in tunnels, under dense tree cover, etc, then I'm sure they'll sell pretty well as the new industry standard 'GPS' chips in SatNavs, phones, tracking systems and other commercial devices.*"

The prototype system is claimed to be fully compatible with systems that already rely on GPS, and to prove the point Dr Faragher has even used it, with signals from medium wave transmitters rather than GPS, to operate an 'off the shelf' SatNav on a journey across Bristol. So there we are, in the future we could simply be using signals from the many radio transmitters all around us, and getting much more accurate and faster position results by using these, thanks to technology being developed here in the UK.

Direct Conversion The Latest Thing!

Many of us will have heard of direct conversion (DC) receivers, indeed some readers may well have built one up either from scratch or from a kit. The veteran Heathkit HW7 QRP transceiver used such a receiver many years ago and there are many modern kits available as well as home-brew designs from Radio Amateurs around the world. A look through some issues of the G QRP Club's *Sprat* magazine will reveal plenty.

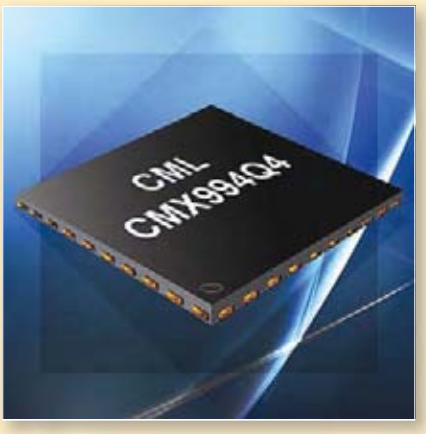
In the DC receiver, the receive antenna signal is mixed in the receiver with a local oscillator down to a 'zero intermediate frequency (i.f.), giving a very simple design. However, the description of one of the very latest communication integrated circuits (i.c.s) from CML Microcircuits, the CMX994 DCRx, is the very same! They say: "*Until recently, most radios have used*

the superheterodyne (Superhet) receiver, however enhancements in semiconductor technology have enabled the integration of a DC receiver, allowing it to become the technology of choice for radio receivers in many applications."

A DC receiver mixes the wanted radio frequency (r.f.) signal down to 0Hz in a single quadrature mixing process using a local oscillator (l.o.) tuned to the wanted r.f. channel frequency. Selectivity filtering and gain can now take place at base-band with practical, low power, analogue and digital circuits. The DC receiver also eliminates the need for an image-reject filter.

But CML says it's not a case of going backwards, as the new i.c. specifically targets the next generation of multi-mode Software Defined Radios (SDR), which regular readers will have read about in this column in the past. Unusually though, unlike most Amateur Radio DC receivers, which are mainly used on the h.f. bands, the CMX994 has an operating range of 100MHz to 1GHz – rather higher than we're used to in such receivers!

It also comes complete with an on-chip voltage controlled oscillator (v.c.o.) and base-band filtering with selectable bandwidths, to give the possibility of a multi-mode receiver



for v.h.f. and u.h.f. Maybe we'll be seeing some home-brew designs for a 144 and 430MHz multi-mode receiver using one of these in the near future?

Wireless Credit Cards?

Another innovation that many of us may very well come across in the very near future is that of the 'new breed' of wireless credit cards. I'm not talking here of 'touch to pay' cards but instead - the real wireless types, with a range of a metre or two.

So when you're out shopping and you reach the checkout, which are increasingly also becoming automated with RFID sensors to check you're paying for what you have in your basket or trolley. But rather than popping your card in to the 'Chip and PIN' reader, it'll automatically detect the wireless payment card you have in your wallet inside your pocket or purse, and invite you to enter the PIN for this.

Of course, the system could be really useful, for (as a shopper myself) I've often been behind a person who, after having been through the checkout with a massive pile of shopping, and then gets invited to pay for it by the checkout operator – slows things up. They can often say "Oh, I've got to pay now, so where's my purse, ah yes it's at the bottom of my bag, now, where is it? It's somewhere here – now why can't I find it. Ah here it is, now, which compartment did I put my card? " Fumble, fumble, fumble…. you probably get the picture!

What could be of interest to readers is that the radio frequency which is used for these cards is in the narrowband licence-exempt ISM (Industrial Scientific and Medical) band centred on 13.560MHz with a bandwidth of ±7kHz. Which, of course isn't too far away from our 14MHz (20m) Amateur allocation, where we can legally transmit hundreds of watts.

Unfortunately (for Amateur Radio), there can't be that much physical room in credit cards for narrow band r.f. filtering components – so I wonder what problems are going to be encountered in real use? I've listed the ISM bands currently in use in the accompanying table, it'll be interesting to see which other future devices will be using these in days to come, watch this space!

Table 1
International ISM (Industrial, Scientific and Medical) **Bands**

Frequency range	Centre frequency	Availability
6.765–6.795 MHz	6.780 MHz	Subject to local acceptance
13.553–13.567 MHz	13.560 MHz	
26.957–27.283 MHz	27.120 MHz	
40.66–40.70 MHz	40.68 MHz	
433.05–434.79 MHz	433.92 MHz	
902–928 MHz	915 MHz	Region 2 only (Americas etc)
2.400–2.500 GHz	2.450 GHz	
5.725–5.875 GHz	5.800 GHz	
24–24.25 GHz	24.125 GHz	
61–61.5 GHz	61.25 GHz	Subject to local acceptance
122–123 GHz	122.5 GHz	Subject to local acceptance
244–246 GHz	245 GHz	Subject to local acceptance

That's it for this month, I hope you've enjoyed reading about what's new radio-wise and particularly how we Radio Amateurs are again helping in emerging technology. Please do get in touch with me if you've any comments or ideas, either by email to **g4hcl@rsgb.org.uk** or post to **PO Box 400, Eastleigh, Hampshire SO53 4ZF.**

See you soon as I explore the future on behalf of *PW* readers. Chris G4HCL.

Colin Redwood's

what next?

This month Colin Redwood G6MXL discusses using Macros for PSK31 – and it seems they can be timesavers!

Welcome to *What Next?* (*WN?*) where I'm looking at abbreviations for PSK31 and RTTY, RSQ reports for data modes and then develop some macros for the *Digipan* PSK31 software to save typing during a QSO.

Having spent some time using PSK31 and RTTY recently, I realised that in my articles on these modes in early 2009 I hadn't covered some important topics including procedural considerations, data reports and the use of macros. To some extent these topics overlap and I'm going to cover the procedural aspects firstly, then reports and finally look at how these can be incorporated into macros to reduce the amount of typing needed.

Procedural Characters & Abbreviations

Just as in Morse Code, procedural characters and abbreviations are used to save typing several words in PSK31 and RTTY QSOs. If you have a look at **Table 1**, you'll soon see what I mean. It's quite common to combine several of these abbreviations or special characters in one short phrase. However, I must admit that until I really got into operating using data modes – I thought these were only for the c.w. (Morse) mode.

The important thing to realise is that by using these and a few 'Q' codes, it is possible to have a very basic 'rubber stamp' contact with a station that does not speak English. Many of these will be quite obvious to many readers, especially those who use Morse on the bands.

Data Modes

If you operate on data modes you'll no doubt have noticed that some stations use RSQ instead of Readability, Signal Strength and Quality (RST). What is this and why I can hear you asking?

If you think about typical data mode operation using a computer sound card, the signal is not normally heard by the ear at all – so giving a report based on what can be heard is pretty meaningless. Instead, a system is used where the R (Readability) is based on the extent to which characters and words are missing or incorrect (**Table 2**), S (Strength) is based on how clear the trace on the screen is (**Table 3**), and Q (Quality) is based on the number of sidebars visible (**Table 4**). I think this makes a lot more sense than RST.

As RSQ was only adopted over the last few years for data modes, software, QSL cards, log books have not all adapted. So you will still see many instances where RST is still mentioned, not least on many data mode software screens. Fortunately, for the purposes I've mentioned here they can be interchanged.

Useful Macros

Having discovered how useful these procedural characters and abbreviations are, it's time to move on to the useful macros. However, before going further, I should first explain what a macro is!

A macro is a set of instructions that you want a computer to carry out, and you don't want to tell the computer how to do it every time. Probably the easiest way of thinking about this is to consider calling CQ. A typical CQ call on PSK31 or RTTY might be CQ CQ CQ DE G6MXL G6MXL G6MXL PSE K. So, by just setting up a macro it's possible to reduce the typing effort to the pressing of just one key or one click of a mouse button!

Note: The examples I am using are based on the macro facilities in *Digipan*, but similar macro facilities are available in many other PSK31 and RTTY programs.

Digipan Macros

As supplied, *Digipan* **(Fig. 1)** has some very basic macros assigned to each of the buttons near the top of the screen which are initially labelled **'Lookup'**, **'CQ'**, **'Call'**, **'Signoff'**, **'Brag'**, etc. To start with, I'm going to describe how to make some changes to the macro associated with the button labelled 'CQ' button.

By right-clicking on the button it's possible to see the macro 'behind' the button, make changes to the macro and even re-name the button (**Fig. 2**). The current macro is in the left-hand pane. I suggest that you highlight this by clicking on it and press the delete button on the computer keyboard.

When I click on the button or press the '**F2**' key on the keyboard, I would like the macro in *Digipan* to send a CQ call. The first thing that needs to happen is that transceiver must go into transmit. So from the scroll bar on the right of the edit macro window, scroll down until you see the command you want: in our case this is <TX> - start transmission, and click

Fig. 1: Digipan following installation. It is possible to allocate macros to each of the buttons near the top from Lookup to Multi and label them as you wish.

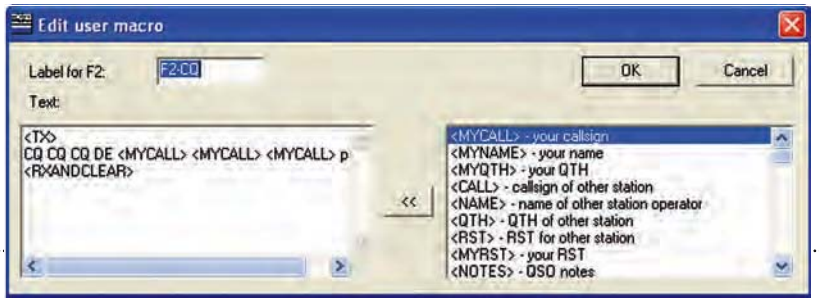


Fig. 2: Selecting the MYCALL option from the right-hand pane to build a Macro by highlighting it and 'clicking' the << button.

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on it. Next click on the '<<' button, and you will see the command move across to the left hand pane. Next I want the text 'CQ CQ CQ DE' to be transmitted, so I type just that on the next line.

Next I want my callsign to appear three times (just in case it gets corrupted by QRM or fading). I could just type my callsign in. But *Digipan* already knows my callsign, so I can scroll up on the right-hand pane and find <MYCALL> - your callsign and highlight it and again click on the << button three times. Then I can type 'PSE K'.

The final step for this macro is to find the <RXANDCLEAR> - RX and clear window entry in the right-hand pane, highlight it and click on the << button. This last step will stop the transmission and clear the transmit area at the bottom of the screen.

To remind me which of the 'F' keys on the keyboard are allocated to which macro, I like to change the label to something appropriate. In this case I have changed mine to read F2-CQ. Then press OK, and you have saved your first macro. Now if I want to call 'CQ', I can click on the F2-CQ button with the mouse or I can press the F2 button on the keyboard and not even have to touch the mouse!

Incidentally, you may be wondering why I chose to use <MYCALL> rather than typing my callsign into the macro. The answer is simple – if I ever want to operate with a different callsign (for instance if I'm working portable or operating in a different country, or using my club's callsign on a club activity), I just need to change the relevant details in the 'Configure>Personal Data' in one place and all the macros will reflect the change.

Including Variables In Macros

Having covered a reasonably basic macro, it's time to look at incorporating information specific to a particular QSO into a Macro. Imagine that you are in QSO with another station. A typical over might be something like 'M6ABC de G6MXL M6ABC de G6MXL UR RSQ 599 599 599 KN'. In addition to my callsign which can use <MYCALL>, there are two items which will change from QSO to QSO.

The first is the other station's call sign (M6ABC in this case, but it might be EA8ABC on the next QSO), and the report (599 on this QSO, but perhaps 579 on the next QSO). It's easy to get these and other similar of variable items into a Macro to avoid having constantly type them on the keyboard with all the risks of fingers slipping in the heat of the moment.

Have a look back at Fig. 1. On the screen just below the Macro buttons there is a row of fields where data can be entered (and optionally saved) during a QSO. These fields are labelled '**Call**' (the callsign of the other station in the QSO), '**Name**', '**QTH**', '**Rec'd**' (Report Received) and '**Sent**' (Report Sent).

Once you have entered the appropriate information into these fields, each is available to a Macro. These fields are <CALL>, <NAME>, <QTH>, <MYRST> and <RST> in Fig. 2. So a report Macro might be something like:
"<TX>
<CALL> DE <MYCALL> <CALL> DE <MYCALL> UR REPORT <RST>

Table 1

Abbreviation	Meaning	Example
DE	From	M3ZZZ DE G6MXL
K	Over - used to indicate the end of your over and that you are expecting a reply either from the other station or a station that wants to break in.	M3ZZZ DE G6MXL K
KN	Over - used to indicate the end of your over and that you are expecting a reply from the other station only. Often used when a station has replied to your CQ call and you want to be clear that you intend to work the specific station.	M3ZZZ DE G6MXL KN
PSE	Please	CQ CQ DE G6MXL G6MXL PSE K
BTU	Back to you	BTU M3ZZZ DE G6MXL KN
SK	End of QSO - You are not expecting any further transmission for the station you are in contact with.	M3ZZZ 73 AND GOOD DX DE G6MXL SK
UR	Your	M3ZZZ de G6MXL UR RST 599
RST	"READABILTY, SIGNAL STRENGTH, TONE "	M3ZZZ de G6MXL UR RST 599

Table 1: Examples of common Morse Code abbreviations and procedural characters that have been adopted by operators using digital modes such as PSK31 and RTTY.

Table 2

Abbreviation	Meaning	Example
Readability	% of Text	
R1	0%	Undecipherable
R2	20%	Occasional words distinguishable
R3	40%	"Considerable difficulty, many missed characters"
R4	80%	"Practically no difficulty, occasional missed characters"
R5	95% +	Perfectly readable

Table 2: Readability for data modes is based on the extent to which characters and words are missing or incorrect.

Table 4: Quality for data modes is based on the number of sidebars visible.

Table 3

Abbreviation	Meaning
S	Strength
S1	Barely perceptible trace
S3	Weak trace
S5	Moderate trace
S7	Strong trace
S9	Very strong trace

Table 3: Strength for data modes is based on how clear the trace on the screen is.

Table 4

Abbreviation	Meaning
Q	Quality
Q1	Barely perceptible trace
Q3	Weak trace
Q5	One easily visible pair
Q7	Multiple visible pairs
Q9	Splatter over much of the spectrum

<RST> <RST>
My name is <MYNAME>
My QTH is <MYQTH>
<CALL> DE <MYCALL> <CALL> DE <MYCALL> PSE K PSE K
<RXANDCLEAR>"

It's up to each operator to decide what to put into PSK31 macros. However, I would suggest having a range of macros that cover CQ calls, Replying to CQ Calls, Short Reports (e.g. for use during a contest), Longer Reports (e.g. when having more of a natter than a contest-style exchange), Signing Off at the end of a QSO, Toggling between Transmit and Receive (the supplied F9 macro does this), Toggling between single and multiple QSO display (the supplied F12 macro does this). My initial suggestions are in **Table 5**, but please feel free to experiment!

Having composed each macro, I would suggest checking it out before using it on the air. For many macros this can easily be done by just switching off the transceiver and trying the macro to see that what you want to transmit actually appears on the screen. If you find a particular macro works well for you, please let me know and I'll pass on details to *WN?* readers.

Using RTTY Macros

Just as macros can be built to make operating PSK31 easier, the same applies to RTTY. I'll look at MMTTY macros in more depth on another occasion. In the meantime, right-clicking on the relevant macro's button will get you underway.

Technical For Terrified

There is just space left this month for me to mention the new *PW* book *Technical for the Terrified*. Having looked through it, I think it will particularly appeal to those who enjoyed the technical basics, transmitters, receivers and antenna sections of the Advanced Course. The book, from **Tony Nailer G4CFY**'s series in *PW*, is an excellent way of building on the knowledge acquired in these modules in bite-sized sessions, with plenty of real-life practical examples. Cheerio for now! ●

Table 5

Macro name	Meaning	Example of text actually sent	PSK31 Digipan Macro
F2 CQ	Calling CQ	CQ CQ CQ de G6MXL G6MXL G6MXL PSE K	<TX> CQ CQ CQ DE <MYCALL> <MYCALL> <MYCALL> pse K <RXANDCLEAR>
F3 Call	Replying to a CQ Call	M3ZZZ de G6MXL M3ZZZ DE G6MXL M3ZZZ DE G6MXL PSE K	<TX> <CALL> <CALL> <CALL> DE <MYCALL> <MYCALL> <MYCALL> K <RXANDCLEAR>
F4 Rpt	Sending a short report	M3ZZZ de G6MXL UR RST 599 599 BTU PSE K	<TX> <CALL> DE <MYCALL> UR <RST> <RST> BTU PSE K <RXANDCLEAR>
F5 Rpt	Sending a long report	M3ZZZ de G6MXL M3ZZZ de G6MXL UR RST 599 599 599 MY NAME IS COLIN MY QTH IS POOLE, ENGLAND, LOC IO80XR. M3ZZZ DE G6MXL PSE K	<TX> <CALL> DE <MYCALL> <CALL> DE <MYCALL> UR <RST> <RST> <RST> My name is <MYNAME> My QTH is <MYQTH> <CALL> DE <MYCALL> <CALL> DE <MYCALL> PSE K PSE K <RXANDCLEAR>
F9 T/R	Toggle between transmit and receive, so that if you were transmitting, change to receive, and if you were receiving start transmitting.		<TXTOGGLE>
F11 Clear			<CLEARRX><CHANNELSCLEAR>
F12 Multi	Toggle between single and multi QSO display		<CHANNELSTOGGLE>

Table 5: Some suggested Macros for **Digipan**. *Using macros such as these will reduce the amount of keyboard activity needed to conduct basic rubber stamp PSK31 QSOs.*

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MMD-20 20M MIXED MODE DIPOLE, OTHER BANDS WITH ATU..... **£89.95**
MMD-30 30M MIXED MODE DIPOLE **£99.95**
MMD-40 40M MIXED MODE DIPOLE **£99.95**

Miracle Ducker iL HF-70cm Mini ATU with BNC..... **£109.95**
Miracle DuckerHF-70cm with PL-259 ..... **£109.95**
Miracle AntennaHF-70cm fitted with telescopic..... **£109.95**

Perseus VLF-LF-HF Receiver

PERSEUS is a VLF-LF-HF receiver based on an outstanding direct sampling digital architecture.

only **£699.95** as reviewed in Radcom May Issue

Unlike lower class direct sampling receivers, the PERSEUS RF analog front-end has been carefully designed for the most demanding users. PERSEUS can also be operated in a wide band mode as a 10KHz - 40MHz spectrum analyzer with more than 100dB dynamic range in a 10KHz resolution bandwidth. PERSEUS is a Software Defined Radio and relies on PC software applications to carry out the demodulation process.

RFspace

SDR-IQ™ Software Defined Radio, Spectrum Analyzer and Panoramic Adapter.
Now in stock together with the IF-2000 IF Interface board for the FT2k & FT-950. £469.95 Both on DEMO at Chertsey.
See http://www.hamradio.co.uk/acatalog/RF_Space.html

The World's Biggest Selling Virtual Radar System

Now includes built-in Airband & FM!

SBS-1eR Pocket Radar **£479.99**

MyDEL

HB-1A Ultra Compact 3 Band CW Transceiver

Offering up to 4 Watts output on 40/30/20M Bands, this tiny HF portable is powered by 8 x AA cells and is aimed at the serious QRP enthusiast and has performance similar to that of the Elecraft KX-1.

- 20 meters, 30 meters and 40 meter amateur bands.
- CW Transceive, SSB receive.
- Receiving from 5 MHz to 16MHz.
- Maximum transmission power of about 4 watts on external 12V.
- Weight 350Grams (approximate).
- Battery compartment to hold 8 rechargeable AA cells.
- Built-in auto function keys.
- DDS VFO with 20 frequency storage memory.
- Digital dial with LCD technology.
- Automatic keyer with the CQ programmable with your call.
- RIT 10 Hz, 100 Hz.
- Frequency conversion super-heterodyne receiver.
- Unit will operate with voltage supply from 8-14 VDC.
- Built in AGC function.

£249.95. Call or see website for further details.
NOW IN STOCK - very limited quantity.

LDG

LDG Auto Tuner Range

AT-100proII NEW	Desktop tuner covering all frequencies from 1.8-54 MHz	£199.95
AT-200pro	Designed for new generation of rigs	£214.95
AT-1000Pro	1kw 160m-6m (1.8-54MHz) High speed Auto ATU, tuning range 6-1000Ohms	£510.95
AT-897Plus	Bolt-on Alternative Auto Tuner for the FT-897. Wider tuning range and cheaper too!	£183.95
IT-100	New version of the AT-7000	£159.95
YT-100	NEW AUTO ATU for FT-897/857 or FT-100 with additional Cat Port Control	£173.95
Z-817	Ultimate autotuner for QRP radios, including the Yaesu FT-817D	£122.95
Z-100Plus	Ultimate autotuner for Yaesu FT-817D	£143.95
Z-11ProII NEW	Portable compact & tunes 100mW to 125W	£159.95
RCA-14	4-way DC Breakout Box	£49.95
KT-100	Dedicated tuner for Kenwood radios	£173.95
RBA-1:1	Probably the best 1:1balun out there	£35.71
RBA 4:1	Probably the best 4:1 balun out there	£35.71
FT-Meter	Neat Analogue back-lit Meter for FT-897/857. S-meter, TX Pwr, ALC Etc	£45.95
NEW FTL- Meter	Jumbo version of the famous FT-Meter	£79.95

MyDEL

AS REVIEWED IN PW December Issue 2009

CG SB-2000 USB Radio Interface

Only £99.95

- This small self contained beautifully styled box weighing only 400 grams really is a one stop solution to your data and radio control. It employs a CAT/CIV interface as standard and supports CAT with RS232 protocol.
- The MyDEL CG SB-2000 Interface connects to your PC via USB and Sound Card and connects to your radio via Custom leads.
- Once connected and configured you have Computer Control via USB and decoding via your soundcard using HamRadio Deluxe or other packages.
- Only £99.95 High quality ready-made leads for most rigs available at only £18.95.

Palstar New Product

Palstar Commander HF-2500 1.5kW Amplifier
Palstar are pleased to announce a new range of HF Linear Amplifiers built to the highest standard (As you would expect from the USA Manufacturer). We have started with the "Commander HF-2500" which is available from stock. The 2m & 6m versions will be available during early 2010. ML&S: £3499.95. See web for more details.

AT-500 600W PEP Antenna Tuner	Special Price	£349.95
NEW AT-Auto Now handles a massive 1500W		£999.95
AT-1500DT 1500W Differential Antenna Tuner		£449.95
AT-2KP (2000W) Antenna Tuner		£429.95
NEW AT-2KD The AT-1500DT and the AT-1KP have been combined into a new 2Kw Tuner		£419.95
AT-4K (2.5kW) Antenna Tuner		£729.95
AT-5K (3.5kW) Antenna Tuner		£999.95
BT-1500A Balanced Antenna Tuner		£599.95
PM-2000AM Power/SWR Meter		£159.95
Palstar Dummy Loads		
DL-1500 (1.5KW)		£119.95
DL-2K (2kW)		£229.95
DL-5K (5kW)		£349.95
Palstar R30A Receiver		
Palstar R30A, fitted Collins filters for SSB & AM		£569.95
MW550P Active preselector & ATU for AM & 160M reception		£259.95
SP30 Matching Desk Speaker		£69.95
AA30 Active Antenna Matcher 300kHz-30MHz		£99.95

MyDEL

CG-3000

With 200W and 200 memory channels.

ML&S: £289.95

CG-3000 shown with optional remote switch.

See web for full specifications

CG-5000MkII

At last! 600W PEP High Speed Remote Tuner from MyDEL

ML&S: £559.95

NEW! Remote control for the CG-3000 and CG-5000. £39.95

DV-Dongle

NEW

Want to dabble in D-Star without the expense of a radio? The new DV-Dongle is ideal.

The DV Dongle connects to your PC or Apple Mac via a USB port and provides encoding and decoding of compressed audio using the DVSI AMBE2000 full duplex vocoder DSP chip. AMBE technology is used in all D-Star radios to provide efficient voice transmissions. It is also used in some HF digital protocols by vendors like AOR. The DVTool application used with the DV Dongle may be installed and run on Microsoft Windows XP/Vista, Mac OS X Leopard, or many flavors of Linux.

In stock, works with MAC or PC. £199.95

MyDEL **Power Supplies**

New MyDEL PS-30SW11

Latest high performance switch mode PSU. Die-cast Alloy chassis, full over-voltage protection and short circuit design. **RRP £119.95. ML&S only £84.95**

SPS-8250	25A continuous, fully metered power supply	£79.95
MP-9626	120A, 13.8V DC power supply	£299.95
MP-8230	13.8V DC, 25A power supply	£69.95
MP-925	Linear 25-30A, 13.8V DC power supply	£99.95
MP-9600	60A switch mode power supply	£179.95
MP-6A	13.8V DC, 6A power supply	£29.95

NEW Mini VNAPro Now with Bluetooth!

The new miniVNA PRO, the big brother of the well-known miniVNA, is an extraordinary and unique handheld vector network analyzer that makes available a multitude of new features and capabilities which are perfect for checking antennas and RF circuits for hams and commercial users. Together with your PC/Laptop, you can add to your laboratory the further advantages of having this first-class VNA instrument. This is the first world's wireless analyzer able of scanning and sending the data using an integrated Bluetooth module to a remote PC/Notebook up to 100 meters from the miniVNA PRO's location. This makes real-time antenna setup easy!

ML&S: £349.95

MiniVNA original still available (without Bluetooth): £259.95

See www.hamradio.co.uk for more details on all of these items ... and much, much more! E&OE

Feature

Valve Numbering Systems Part 3

Many Russian valves are now available for sale on eBay and via other sources. I recently bought some (supposedly!) EF86 equivalents, coded as 6Ж32П. (See **Fig. 5** for how this code appears on the envelope of the valve. On the internet there are many sources of translation (or more accurately **transliteration**) of the Russian Cyrillic alphabet. One such source is shown in reference 11.

On on-line valve data sites such as TDSL the character Ж (which is equivalent to the 'zh' sound) is represented by the letter 'J'. Therefore my 6Ж32П valve is looked up by entering 6J32P. Alternatively a code such as '&#1040'; for A, '&#1041'; for Б, and so on, or if you have one, a keyboard with Cyrillic characters, can be used. See: **http://tdsl.duncanamps.com/cyrillic.php** for more information on these codes.

I've attempted to summarise the post-1950 Russian coding system in **Table 14**. But please note that this is definitely a 'work in progress' and guidance would be appreciated if you have more information, or corrections to this table.

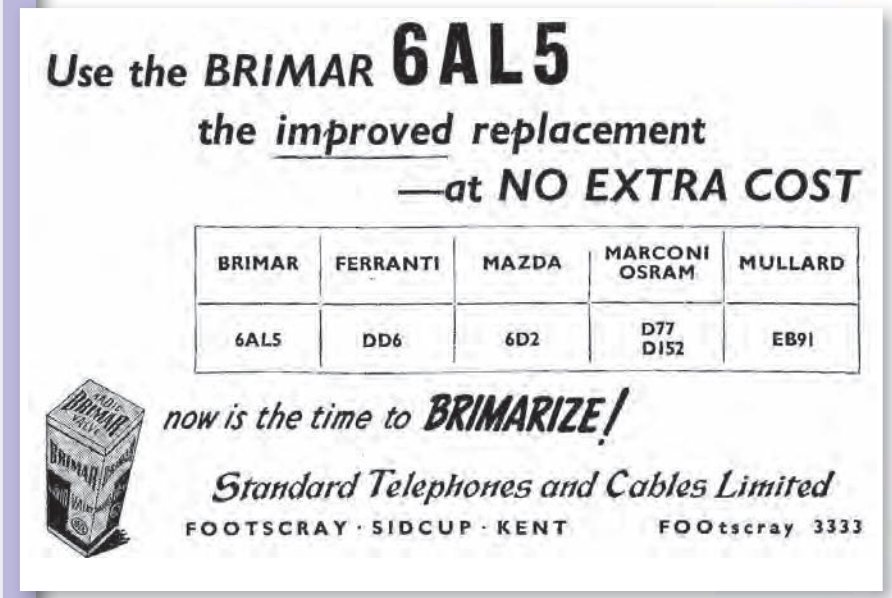

Figure 6: A Brimar advert claiming that its 6AL5 was equivalent to Ferranti's DD6, Mazda's 6D2, Marconi-Osram's D77 and D152, and Mullard's EB91 valves.

New Valves

New valves are still being manufactured at a few locations in the world, for example in China and India – mainly to satisfy the demand for 'new' valves for Hi-Fi and guitar amplifiers. Thankfully, these manufacturers use existing numbering systems, mainly the European Pro-Electron Receiving Valves (Table 7 – p39 March 2010) and US RETMA (Table 8 – p50 April 2010) systems, because the biggest market is for newly-manufactured favourites such as the ECC83, EF86, EL84, and a few others.

The demand for these valves has driven up the price of even the 'old' versions of these valves, and so it's useful to know some equivalents, as shown in **Table 15**. Please note that I've tried to be as accurate as I can with these equivalents, but it's up to the user to verify that they will really do the job of the 'original'. **Hint:** The TDSL website is a very useful source of equivalent data.

Discussion Forums

There are many discussion forums (for example, at **http://www.harpamps.com/micKtubes/12AX7-Comparisons.html**) comparing the qualities of valves with the same number, as manufactured by different companies. Again, this tends to come from the use of valves for Hi-Fi and guitar amplifiers – and the differences may be subtle to say the least.

Manufacturers' Production Codes

The manufacturers of valves needed to document when and where their valves were manufactured and to what revision of the design. This is marked on the envelope of most 'quality' valves.

There were obviously good reasons for the markings, including the ability to track down and eliminate manufacturing issues – perhaps when an excessive number of faults were found 'in the field' with a particular batch. Similar systems are followed today by integrated circuit (i.c.) manufacturers for exactly the same reasons.

In fact, understanding production codes is a whole

In the third article of the series Stef Niewiadomski continues unravelling those mysterious valve identification numbering systems, turning to Russian-made valves!

Fig. 5: My 6Ж32П valve showing how the Cyrillic code appears on the envelope of the valve.

subject in its own right! Today it's of interest to Hi-Fi and guitar amplifier enthusiasts, who maybe believe that EF86s from Mullard's Blackburn works (in the north west of England) 'sound' better than those from Mullard's other manufacturing sites.

If you look on eBay, you'll see popular audio valves, such as the low noise EF86, ECC83s, EL84s, etc., for sale at higher prices when the vendor can guarantee that the valve has a special pedigree and it's new old stock (NOS, that is, unused). Even the colour of the writing on the valve can be significant!

See for example: **http://www.audiotubes.com/PhilipsCodeList.pdf** and **http://www.cs.helsinki.fi/u/oheinone/valves/pvm-coding.html#r3** for lists of identifying marks on Mullard/Philips valves.

All Numbers Valve Coding

Many Radio Amateurs will be familiar with all-number coded transmitter valves such as the 807, 5763 and 6146. There are also all-number receiver valves like the 'Acorn' types 954, 955, etc.

You may also be aware that the 6060 is a special quality version of the 12AT7. So, is there any way of decoding these 'all number' codes? Unfortunately, as far as I can see, the answer is no. You simply have to look the code up on say TDSL or in printed literature.

Cathode Ray Tubes

There are European and US numbering systems (new and old) for cathode ray tubes (c.r.t.s), which I have not included in this article. Those interested are advised to look at: **http://www.tubecollector.org/documents/numbers-16.htm** or **http://www.bvws.org.uk/405alive/tech/valvenos3.html**

Unifying Codes?

Clearly, from the descriptions of the coding systems given here, it's not surprising that occasional attempts

Table 13: Voltage Stabilisers

UK numbering system: System 1
First element: Two letters
QS — Voltage Regulator
Next element: Group of digits
* — Digits indicating the nominal working voltage
Separator:
/ — Oblique or 'forward slash' character
Next element: Group of digits
* — Maximum rated current in mA
Example
QS108/45 — A 108V stabiliser with 45mA working current.

UK numbering system: System 2
First element: Two letters
QS — Voltage Regulator
Next element: Group of digits
**** — 4 digit serial number
Example
QS1215 — A 150V stabiliser with 30mA working current, similar to 0A2

UK numbering system: System 3
First element:
* — Nominal working voltage
Next element: Letter
* — A, B, C, etc
Next element: Sequence number
* — No significance
Example
150C3 — A 150V stabiliser with 40mA working current

USA numbering system: System 1
First element: Two letters
VR — Voltage Regulator
Next element: Group of digits
* — Digits indicating the nominal working voltage
Separator:
/ — Oblique or 'forward slash' character
Next element: Group of digits
* — Maximum rated current in mA
Example
VR150/30 — A 150V stabiliser with 30mA working current. Still retains this number even though the current rating was later uprated to 40mA.

USA numbering system: System 2
First element: digit
0 — Indicating a cold cathode (ie no heater) valve
Second element: digit
* — Reference letter, based on the RMA receiving valve codes
Third element: digit
* — Indicates the number of electrodes
Example
0D3 — A 150V stabiliser with 40mA working current.

USA numbering system: System 3
A transistional system, combining systems 1 and 2.
Example
0D3/VR150 — The 0D3 or VR150

Table 13: Voltage stabilisers codes (UK and US).

were made to unify the systems. As far as I can tell, manufacturers never really embraced any form of changeover to unify their systems.

Reference 12 shows a 1954 Amateur's view on the subject, though the system he proposed resulted in rather 'clunky' codes such as BG12CC18K, indicating a 12V heater, double triode, low-mu, serial letter K, on a miniature 7-pin base. The codes would have been

allocated by some central committee. Suffice it to say that the proposed system was not adopted!

French & German Codes

In this article I've concerned myself mainly with valve codes of UK and American origin, although many foreign manufacturers followed the same or similar coding schemes. Useful sources of French and German valve codes can be found at: **http://s206301103.websitehome.co.uk/valve.htm** and **http://www.bvws.org.uk/405alive/tech/valvenos2.html** which may be of interest to collectors and restorers of foreign military equipment.

Semiconductors & Missed Opportunity?

As semiconductor devices started to become commercially available in the early to mid-1950s, manufacturers tended to adapt existing valve numbering systems to cover these new diodes and transistors. It was accepted that this was an opportunity to standardise on a common numbering system – but this didn't happen, in the UK at least.

As is well known, Mullard initially used the 0A*xx* series for germanium diodes and 0C*xx* for germanium transistors; 0AZ*xx* for zener diodes and 0CP*xx* for phototransistors; and then AF*xx*, BC*xx* and so on. Note

Table 14: Russian Receiving Valve Numbering System (post 1950)

First element: Rounded heater voltage

* Heater voltage

Second element: one or two letters of the Cyrillic alphabet: electrode type

Cyrillic	Roman	Look-up	
А	A	A	Frequency changer or mixer valve (hexodes and heptodes)
Ь	B	B	Diode-pentode
В	V	V	Secondary emission valve ??
Г	G	G	Diode-triode, dual diode-triode, triple diode-triode
Д	D	D	Diode (except for rectifiers)
Е	E	E	Indicator tube 'magic eye'
ж	Zh	J	HF Pentode
И	I	I	Triode-heptodes or triode-hexodes
К	K	K	Variable-mu HF Pentode
Л	L	L	Beam tubes (except for beam tetrodes)
Н	N	N	Dual triodes
П	P	?	Power (output) pentodes or beam tetrodes
Р	R	R	Dual tetrode, dual beam tetrode, or dual pentode
С	S	S	Triode
Ф	F	F	Triode-pentode
Х	H	X?	Dual diode (except for rectifiers)
Ц	Tz or Ts	C	Rectifier of any kind
Ć	No direct equivalent	Z	Tetrode
С Р	SR	SR	Dual pentode-triodes

Third element: a sequential number indicating the chronology of the valve

Fourth element: Cyrillic letter indicating the envelope type

В	V	V	Increased mechanical strength and reliability
Г	G	G	Miniature glass envelope with diameter of larger than 10,2mm with flexible wire leads
Д	D	D	Ceramic envelope with disc-type contacts
ж	Zh	J	Acorn valve
К	K	K	Ceramic envelope with rigid pin-type contacts
Л	L	L	Loctal tube with a locking base
М	M	M	Small glass envelope of reduced height, with octal base.
Н	N	N	Nuvistor tubes
П	P	P	A "finger" tube (reference to the relative size and thickness) – glass envelope with diameter of up to 22mm
С	S	S	Large glass envelope with diameter of over 22,5mm or metal-ceramic envelope. OCTAL base
Р	R	R	Miniature glass envelope with diameter of less than 5mm with flexible wire connectors
No Letter			Metal large envelope with octal base

Fifth element: Special property of the valve, multiple instances allowed

А	A	A	Miniature glass envelope: 5-8mm diameter with flexible wire leads
Е	E	E	Higher-rated lifetime: 5,000 hours and longer
Д	D	D	Extremely high durability valve: 10,000 hours and longer
И	I	I	Impulse mode tube
К	K	K	Increased mechanical strength and reliability with higher shock resistance rating
Р	R	R	Increased mechanical strength and reliability (better than "В" (V) ????
	V		?

Examples

6ж32П	6J32P	6V heater HF pentode B9A base
6Н23ПЕВ	6N23PEV	6V heater double triode, higher-rated lifetime

Table 14: Russian receiving valve codes (post 1950).

Table 15: Equivalents of some popular audio valves

ECC83	12AX7, 12AX7R, 12AX7-WA, 12AX7-WB, 5751, ECC803S, ECC83-S, E83CC,
EF86	EF806S, E80F, EF804, EF804S, 6267, 6F22, CV10098, CV2901, Z729
EL34	CV1741, EL34G, EL34WXT, 6CA7
EL84	6BQ5, 7189, 6–ΠΙ14–ΠΙ (6P14P), CV8069, N709
KT66	CV1075, CV321, VT75 (RAF),
KT88	CV5220, KT88S, KT88SC, 6550
6L6	6L6G, 6L6GT, CV1286, CV1947, CV1948, VT115, VT115A

Table 15: Equivalents of some popular audio valves.

that the first digit is a zero, and not a letter O. The 0 indicates that the device has a zero volt heater, which isn't strictly true, since it doesn't have a heater at all. The 'C' indicates a triode, that is, a 3-terminal device.

As other companies started to produce semiconductors, they introduced their own numbering systems. Newmarket Semiconductors, for example, numbered their low power transistors NKT*xxx* and their power transistors beginning with the letter 'V'; Ediswan numbered their transistors XA*xxx*, XB*xxx*; Ferranti with ZTX*xxx*; etc., and so it goes on. As a result many systems developed, and semiconductor numbering is a subject in its own right, and beyond the scope of this article.

In the US most (but not all) transistor and diode manufacturers adopted the 1N*xx* and 2N*xx* coding system, for diodes/rectifiers and transistors respectively. They were using the heater rating codes and 'type of device' = N, that is crystal rectifier (later used to indicate any semiconductor device), in the RETMA/RMA special purpose valves system, as shown in Table 9 (p51 April 2010). Clearly the '1N' or '2N' at the beginning of the code gives you some information, but the following numerals are just a serial code and don't tell you anything about the ratings of the device.

Stayed To The End?

Hopefully, you've stayed with me to the end and aren't totally confused! Perhaps you can now see why the claim by Brimar (see **Fig. 6**) that its 6AL5 was equivalent to Ferranti's DD6, Mazda's 6D2, Marconi-Osram's D77 and D152, and Mullard's EB91 could be true!

If, like me, you're getting on a bit, don't attempt to memorise the coding systems, but stash this and the other two copies of *Practical Wireless* away somewhere safe and refer to it as needed. You might also want to make a photocopy (Okay for your own use) and carry it with you wherever you are liable to encounter valves and feel the need to have a go at identifying them. Good luck!

Editorial note: *This isn't quite the end yet readers! Stef will be back later this year with an information up-date to conclude his work on this fascinating topic.*

References

Reference 1: *Radio Valves and Tubes – 1 Numbering Systems* by Geoff Arnold. *Radio Bygones* No 9, February / March 1991.

Reference 2: *Radio Valves and Tubes – 2 UK & US Military Equivalents, pre-1944* by Geoff Arnold. *Radio Bygones* No 10, April / May 1991.

Reference 3: *Radio Valves and Tubes – 3 Military Common Valve (CV) Equivalents* by Geoff Arnold. *Radio Bygones* No 11, June / July 1991.

Reference 4: *Radio Valves and Tubes – 4 Further Data* by Geoff Arnold. *Radio Bygones* No 14, Christmas 1991.

Reference 5: *Valve Coding Systems* by J Alexander. *Practical Wireless* February 1960.

Reference 6: *Valve Codes ... What do they Mean?* by Alan Guy. *Radio Constructor* July 1964.

Reference 7: National Valve Museum at www.r-type.org/static/museum.htm

Reference 8: *70 Years of Radio Tubes and Valves* by John W Stokes. Published by The Vestal Press Ltd, New York, 1982.

Reference 9: www.andycowley.com/valves/old/Data-Books/TRIO/Triotron.html

Reference 10: *Commercial Equivalents of American VT Valves* unstated author. *Radio Constructor* August 1961.

Reference 11: www.appliedlanguage.com/translation/russian_translation/russian_alphabet.aspx

Reference 12: *Valve Codes – Problems of Devising a Useful and Flexible System of Designation* by M H N Potok. *Wireless World* January 1954.

Other sources of valve coding data:

Radio Valve and Transistor Data by A M Ball. Various editions, Published by Iliffe.

ARRL Handbooks had a useful valve reference data section at the back.

There are many editions of the *Mullard Technical Handbook* around which contain useful data.

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FT-8900 - 10m/6m/2m/70cm. £329.00.
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FT-2900M - 2m 75W mobile.. £138.00.
VX-7R - 6m/2m/70cm handy. £256.00.
VX-6E - 2m/70cm handheld.. £199.00.
VX-3E - 2m/70cm handheld.. £139.00.
FT-60E - 2m/70cm FM 5W .. £145.00.
FT-450 - HF/6m transceiver. £585.00.
FT-450AT transceiver..... £639.00.
VX-8D with APRS..... £429.95.

YAESU FT-2000 - £PHONE
FT-2000D 200W - £PHONE

MFJ

MFJ-989D 1500W Auto ATU..£389.95.
MFJ-986C 3Kw HF.....£349.95.
MFJ-991B Auto Intellituner....£209.95.
MFJ-976 1500w ATU .....£469.95.
MFJ-969 300w Rollercoaster £209.95.
MFJ-962D 1.5Kw Inductor.....£289.95.
MFJ-949E 300w W/D-Load....£179.95.
MFJ-948 300w HF.....£162.95.
MFJ-945E Mobile .....£128.95.
MFJ-941E 300w .....£139.95.
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MFJ-921 2m ATU.....£96.95.
MFJ-924 70cms .....£96.95.
MFJ-914 Extender .....£89.95.
MFJ-901B 200w Versa tuner..£109.95.

Analysers

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MFJ-269 HF/VHF/UHF .....£349.95.
MFJ-201 grid dip meter.....£156.95.
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HM-5 Handy mic w/HC-5 insert £79.95.
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Icom IC-R75 £449.00
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Amateur Radio

in focus

Bob Glasgow GM4UYZ explains the story behind an unusual Amateur Radio Club with an interesting history.

The Cockenzie & Port Seton Amateur Radio Club

Welcome to *In Focus*, where I'm about to share the story of the **Cockenzie & Port Seton Amateur Radio Club** (C&PSARC). If you look on the map Cockenzie & Port Seton is located about 13 miles to the east of Edinburgh on the southern shore of the Firth of Forth. It's actually two villages which have joined together, Cockenzie being the older of the two.

The predominant industry was fishing with coal mining a close second. Today, there are still a number of fishing boats that operate out of Port Seton. They're primarily fishing for 'prawns' as they are known locally (langoustines, Norwegian lobsters, 'scampi' are some of their other names), although the industry is dying on its feet. Coal mining has also long since gone. Most of the work, in one form or another these days is found in and around Edinburgh.

It's now 25 years since the birth of the C&PSARC, which was formed in 1984, by myself, GM4UYZ. I thought that it would be good to get all the Amateurs in Port Seton together once a month to enable everyone to get to know each other, pass on ideas and generally talk about Amateur Radio.

At that time the Amateurs living in Port Seton were **Ron Brown GM4IKU**, **Russell Kerr GM1FCF** (now **GM0CBX**), **Ian Johnston GM4INE**, **Bob Purves GM4IKT**, **Alex Blyth GM4TAL**, **John Fraser GM4DKO**, **Tom Hood GM4LRU** and myself.

The first meeting took place in the early summer of 1984, although the exact date can't be remembered as it was held in the Lounge Bar, Thorntree Inn, Port Seton! The attendees were Russell Kerr, Ron Brown, Bob Purves and myself. The meetings continued once a month on different dates as both Russell and I then worked shifts.

Our numbers varied from two to 10 per meeting so it was decided in the December of 1985 to try a mail-shot to all the Amateurs in East Lothian and Musselburgh to let them know of the club's existence. This proved to be worthwhile, since then the numbers have steadily increased to now averaging between 20 to 25 licensed Amateurs attending, making it a reasonably strong club.

However, we're far from being a purely local club because we now have people who travel to on a regular basis from the Borders, Fife, Dumfries & Galloway, Strathclyde, Central and Lothian regions. The club now meets on the first Friday of every month, between 7pm and closing time, in the lounge bar of the Thorntree Inn (second Friday in January and the July date which also varies to accommodate VHF Field Day).

Visitors and members may come along for as long or as short a time as they like during these hours. Club meetings are **very informal** events and, of course, are really an excuse to have a rag chew and a few beers!

An Informal Club

The informality of the club, and our quest to keep it that way, means that there's no formal club committee. However, almost all club events are organised, on a voluntary basis, by a small core of enthusiastic members.

In addition to club nights it's our aim to organise at least one other event each month. These include technical talks, equipment test nights, direction finding hunts, visits, social nights, special event stations, contests and our annual junk sale.

Bob Glasgow teaching the September 2009 Foundation Licence.

The majority of our indoor events are held in the Port Seton Community Centre and require the hire of a room or hall. At these events a nominal entry fee is charged to cover hire costs and any excess money raised is added to help club funds and our chosen charity, **The British Heart Foundation**.

A unique feature of C&PSARC is that 'membership' is free. We ask for no subscription although our expenses have risen a lot since we started (our equipment insurance, printing, callsigns, etc.) and we now invite members to contribute to our expenses at £2 per club night.

We work on the basis that if you walk through the door you are a member! Members receive the free club newsletter *Elements* containing all the previous months' news, puzzles, cartoons, technical articles and information on forthcoming Amateur Radio events in Scotland.

The newsletter is also available for download from the club's website at **www.cpsarc.com** It has also has won the Local Club Magazine Section in the **Club Spotlight Trophy** competition run by *Practical Wireless*. (We all though this was a fantastic achievement!).

The club was one of the first Amateur groups to run a website. This was created by **Alistair Downs GM6NEI** back in February 1996. Sadly Alistair died very suddenly in October 1998. Since December 1998 **John Innes MM0JXI** (at very short notice) took on the task of running website. Like everyone John was devastated at Alistair's sudden death but greatly appreciated what Alistair had been trying to achieve.

John realised the possibilities of what could be achieved with getting the users involved in content creation rather than just having static pages and after a great deal of development time and effort the vibrant, interactive resource at **www.cpsarc.com** is the

Left-right: Bob Glasgow GM4UYZ Instructor, Barry Taylor, Cambell Stevenson Lead Invigilator, Graham Tinn, Gary Bourhill MM0FZV Assistant Invigilator and Ian Macdonald.

The location is Elephants End at Gott Bay, on the Island of Tiree. All our antennas are single band designs for 7, 14, 21 and 28MHz.

The 2009 Tiree Team, left–right: Geoff Crowley MM5AHO, Bob Purves GM4IKT, Brian Pickup M0RNR, Stevie Hargreaves MM3YPN, John Innes MM0JXI, Ellis Simon GM4GZW, Aung Moe MM0MRM, Gary Bourhill MM0FZW, Malcolm Gibson MM0YMG, David Goodenough MM0XDG, Brian Gale G3UJE, Elaine Williamson 2M0GOY (Host), Cambell Stevenson MM0DXC, Caroline (MM0DXC YL), Bob Glasgow GM4UYZ, Duncan Taylor MM0GZZ and Jim Barlow G3VOU.

result. The site now gets more than half a million 'hits' a month.

Since 1993, after the sudden death of another our club members, – short wave listener (s.w.l.) **Robert Anderson** due to a heart problem, the club has adopted the British Heart Foundation as the club's 'official' charity. Since then the club has raised and donated a total of £14,518 to the British Heart Foundation. The majority of the money has been raised from our Annual Junk Night, held in August each year.

This year however, there has been a change in policy within the club in that not all the money being raised will be going to the charity as there is an active project to find permanent club premises which will require funds. The task of finding suitable premises is proving to be a lot harder to achieve than originally thought – but I'm sure it will be eventually achieved!

The club has its own callsigns **MM0CPS** and **GM2T**. The MM0CPS call is the club's general callsign. The GM2T call is a special short callsign, solely used for contesting.

Special Events & Contesting

Special Events and Contesting are important activities within the radio club. The most prominent Events that we take part in each year are the **Lighthouses Weekend** in August and **Museums on the Air** in June. During Lighthouses Weekend we use the callsign GB2LBN (Lighthouse Barns Ness – located to the east of Dunbar, East Lothian right on the North Sea) and have activated this since 1995.

During Museums Weekend we use the call sign GB2MOF activating the Museum of Flight, East Lothian and have done so since 2001 (the *Concorde* G-BOAA is now located at the museum).

The club was invited by club member **Jim Hume MSP MM0DXH** to put on a Special Event station to commemorate the 10th Anniversary of the opening of the Scottish Parliament, using the callsign GB10SP. This was a massive honour for the club and we were the first Radio Amateurs to actually transmit from the Scottish Parliament. The whole event was also webcast live and clips of that event can be found on the club's website.

Since 1996 the club has taken part in many contests. The prime area of interest in the early years was on v.h.f. and we still take part today in v.h.f. contests now – mainly the RSGB VHF Field Day and the 6m and 2m Trophy contests.

We've been successful as a club

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E-mail:newsdesk@pwpublishing.ltd.uk

in contesting and have won the Restricted Section on VHF Field Day and for the past three years have been the leading Scottish Station in the Open Section winning the Tartan Trophy. As an encouragement to other groups within Scotland the club donated the **Cockenzie Quaich Trophy** to be awarded to the leading Scottish Station in the Restricted Section. (A Quaich is a special kind of Scottish shallow two-handled drinking cup or bowl, often used for Whisky).

After a talk to the club by **Tom Wylie GM4FDM** on the RSGB Islands On The Air Contest (IOTA), we were inspired to take part in the contest. But 'where do we go?' was the initial question. Easy answer – just open a map of Scotland, take a pin and close your eyes and see where the pin lands! It landed close to the Island of Tiree (EU008) located in the Inner Hebrides.

So, since 1998 we've taken part in the RSGB IOTA Contest from Tiree. How have we done? Well, for the 2008 contest the club were fifth in the world in the DXpedition Section.

The club also focuses greatly on encouraging new members and less experienced contesters to take part. This gives them the opportunity to operate a large contest-grade station

To be honest we don't (now) go to only take part in just the contest – we also enjoy the hospitality that the people of Tiree give us. There are no words that can describe that effectively!

We finish off the year with the biggest contest in the world – the CQWW SSB contest in October. It's an educational contest, learning operating skills, propagation, learning teamwork to build a large 'Multi-Multi' station and it's also very tiring! We'll never win – but we have been the leading station from Scotland so it makes all the effort worthwhile!

Foundation Intermediate & Advanced

The club is very active in delivering training for the Foundation, Intermediate and Advanced exams. In 1994 I started running Novice Courses from my garage and although I could only teach four people at a time – 24 candidates completed their exam to obtain their Novice Licence.

In 2002 when the Novice Licence was dropped in favour of the current structure, I started teaching the Foundation Licence. Then in 2004 I started teaching the Intermediate and finally the Advanced in 2006. All the courses are run over Saturdays in the **Port Seton Resource Centre**. To August 2009 I have successfully taught 126 Foundation Licences, 68 Intermediate Licences and 37 Advanced Licences. Full details of our training courses can be found on our website under training and if any one is interested they can contact me at **gm4uyz@cpsarc.com**

We applied for a Lottery Grant under the *Awards for All* Scheme and were awarded £4772 in 2005 to purchase equipment (laptop, LCD projector, etc) for use in our training programme.

The Club has also been awarded two grants for £290 and £310 from the BT Community Champions Scheme after John MM0JXI – who works for BT – applied to the scheme on behalf of the club.

Finally, what makes a radio club? Well it's all of the people that are members. I maintain there are three types – those who just want to come along and attend a club meeting without any involvement, those who will actively take part when time allows and lastly the 'drivers' who strive hard to take a club forward.

Running a radio club is hard work and requires a lot of commitment and dedication and they need help in making the right decisions. Decisions should be with the overall club in mind and not just to suit an individual. Remember, volunteers are doing all this for yo and this is the way we work at the C&PSARC – and it works for us. Every club is different so do what is required to ensure your club succeeds and Amateur Radio would be the poorer without clubs! ●

The GB10SP Team left–right: Pierre Cassot F5NED, Ogilvie Jackson GM4VYU, Martyn Whyte MM3XXW, Gary Bourhill MM0FZV, David Goodenough MM0XDG, Jim Hume MSP MM0DXH, Bob Glasgow GM4UYZ, Bob Purves GM4IKT, Malcolm Gibson MM0YMG, Bob Bertram 2M0KLL and Robin Farrer MM3SRF.

Two Museum Weekend stations in the hangar, each with an FT-1000MP and Alpha Linear, networked and using Wintest. Operators are (left) Bob Purves GM4IKT and (right) Gary Bourhill MM0FZV

During the CQWWSSB contest, the station operated on 1.8-28MHz. Left–right:. Brian Pickup M0RNR, Gary Bourhill MM0FZV and Bob Glasgow GM4UYZ.

The Barnes Ness lighthouse, operating site for GB2LBN and also for CQWW SSB. The lighthouse is located to the east of Dunbar on the shores of the North Sea.

club news

Please remember to include full details of your club, E-mail and telephone contact details and the postcode of your meeting venue - it helps potential visitors to find you!

Send all your club info to

PW Publishing Ltd.,
Arrowsmith Court,
Station Approach,
Broadstone,
Dorset BH18 8PW
E-mail: newsdesk@pwpublishing.ltd.uk

AYRSHIRE (Scotland)
Kilmarnock & Loudoun ARC
Graham MM0GHM: (0780) 2954 739
E-mail: mm3gdc@btinternet.com
www.klarc.org
We meet every 2nd and 4th Tuesdays at the clubhouse at E. Ayrshire Internal Transport, 36a Main St., Crookedholm, Kilmarnock KA3 6JS

BEDFORDSHIRE
Shefford & DARS
David Lloyd. Tel: (01234) 742757
www.sadars.org.uk
The Shefford and District Amateur Radio Society meets every Thursday at the Community Hall, Ampthill **Road**, Shefford, SG17 5BD (next to the Chip shop). See web site for our full programme.

BERKSHIRE
Reading & DARC
Pete Milton. Tel: (01189) 695697
www.radarc.org
The Reading & District Amateur Radio Club meets on the second and fourth Thursday of the month at Woodley Pavilion, Woodford Park, Haddon Drive, Woodley, Berkshire RG5 4LY. Mid-september sees commencement of the Advance Licence Course run by Alison Johnson G8ROG, details from g3ngx@radarc.org

BUCKINGHAMSHIRE
Milton Keynes Amateur Radio Society (MKARS)
Roy, G8RCK Tel: (01908) 282585
www.mkars.org.uk
The Milton Keynes Amateur Radio Society meets every Monday evening, starting at 7pm, at its clubroom within the grounds of Bletchley Park which is situated off Sherwood Drive, Bletchley, Milton Keynes. MK3 6EB. When using a SatNav. please put in Sherwood Drive, Bletchley as the post code will take you to the wrong location. June 28th...Club BBQ – see website for more details

The Burnham Beaches Radio Club
Charles Tel: (01753) 861115
E-mail: bbrcinfo@btconnect.com
http://come.to/bbrc
The club meets every first and third Monday of the month at the Farnham Common Village Hall, Victoria Road, Farnham Common. The club participates in a wide range of amateur radio activities and runs regular courses for those wishing to get on the air. For more information contact , visit our website at or E-mail us.

CAMBRIDGESHIRE
Huntingdonshire ARS
Gerald G8AKL. Tel: (01487) 740794
E-mail: hunts.hams@yahoo.co.uk
www.hunts-hams.co.uk
Huntingdonshire ARS meets at the Medway Centre, Medway Road, Huntingdon PE29 1SF. Meetings are from 7.30pm until 10pm on the 2nd & 4th Thursday of the month.

Peterborough & DARC G4EHW.
David Howlett M0VTG
E-mail: padarc@tesco.net
www.radioclubs.net/padarc
Meets on 4th Wednesday of the month at Southfields Community Centre, Stanground, Peterborough. PE2 8RZ. Directions and full details on website.

CHESHIRE
Chester & DRS
Barbara Green.
Tel: (07957) 870770
E-mail: barbara@rutland.go-plus.net
www.chesterdars.org.uk
The Chester & District Radio Society meets on Tuesday evenings at the Burley Memorial Hall, Common Lane, Waverton, Chester CH3 7QN.

Halton RC
Sam. Tel: (01928) 714231
http://g7wfs.sytes.net/hrc/index.htm
The Halton Radio Club meets in The Play Centre, Norton Hill, Windmill Hill, Runcorne WA7 6LJ every Thursday from 7.30 to 9.30pm. There's plenty of parking and full disabled access.

Macclesfield & DRS
Adie Dodd. Tel: 0795 7765511
www.gx4mws.com
The Macclesfield & District Radio Society meets every Monday at the Pack Horse Bowling Club, Westminster Road, Macclesfield SK10 3AT at 8pm. Licence courses are run year round and visitors are always welcome.

Stockport RS
David Simcock. Tel: 0161 456 7832
E-mail: secretary@gx4mws.com
www.stockportradiosociety.co.uk
The Stockport Radio Society meets on the first and third Tuesdays at their new location of: Walthew House, Shaw Heath, Stockport SK2 6QS

Warrington Amateur Radio Club
Paul Carter.
E-mail: g7odj@warc.org.uk
www.warc.org.uk
The Warrington Amateur Radio Club meets every Tuesday at 8pm at the Grappenhall Youth and Community Centre, Bellhouse Lane, Grappenhall, Warrington WA4 2SG.

CORNWALL
Cornish RAC
Steven G7VOH
Tel: (01209)844939
E-mail: g7voh@btinternet.com
www.cornishradioamateurclub.org.uk
The Cornish Radio Amateur Club meets at the Church Hall, Church Road, Perranarworthal, Truro TR3 7QE on the first Wednesday of every month at 7.30pm. There is also a Computer Section that meets at the same venue and time on the second Monday of every month, except December.

Newquay and District ARS
Joe Bell Tel: (01726) 891557
E-mail: joe_bell@btinternet.com
www.btinternet.com/~kevin.francks/index.html
The Newquay and District ARS meets every other Thursday at Treviglas Community College, Bradley Road, Newquay. TR7 3JA with either arranged talks on the evening or just a general chit chat amongst members. Also the club offers foundation training on club nights.

Poldhu ARC
Keith Matthew.
Tel: (01326) 574441
E-mail: g0wys@yahoo.co.uk
www.gb2gm.org
The Poldhu Amateur Radio Club meets at The Marconi Centre, Poldhu Cove, Nr Mullion, Cornwall TR12 7JB. Tel: 01326 241656.

COUNTY DOWN
Bangor and District ARS
Mike. Tel: 028 4277 2383
www.bdars.com
The Bangor and District Amateur Radio Society meets on the first Thursday of every month in 'The Boathouse', Harbour Car Park, Groomsport BT19 6JP at 8pm. The Bangor and district ARS 2010 rally is to be held on Saturday 3rd July 2010. This year the rally is on a Saturday and at a new location ! Starts at 12 Noon In "Donaghadee Community Centre".

COUNTY DURHAM
Bishop Auckland RAC
Mark Hill. Tel: (01388) 745353
http://barac.m0php.net/
The Bishop Auckland Radio Amateur Club meets every Thursday at 8pm in the Village Community Centre, Stanley Crook, Co. Durham DL15 9SN. Tuition for Foundation, Intermediate and Advanced licences is available. The club is as an RSGB registered exam centre.

Great Lumley AR&ES
David Barclay. Tel: 0191 3888113
E-mail: m0bpm@btinternet.com
The Great Lumley Amateur Radio & Electronics Society meets in the Community Centre, Front Street, Great Lumley, Chester-le-Street, Co. Durham DH3 4JD on Wednesday nights from 7 to 9pm.

DERBYSHIRE
South Normanton Alfreton and District ARC
A J Higton. Tel: (01773) 783658
E-mail: Snadarc@aol.com
www.snadarc.com/
The South Normanton Alfreton and District Amateur Radio Club meets in the Village Hall, Community Centre, Market Street, South Normanton, Derbyshire DE55 2EJ.

DEVON
Exemouth ARS
Mike G1GZG. Tel: (01395) 274172
E-mail: micael.newport1@btinternet.com
The club meets on the 1st and 3rd Wednesdays of each month at 'The Scout Hut', Marpool Hill, Exmouth Devon EX8 1TD.

Exeter ARS
Phil 2E0PCJ
Tel: (01392) 877413
E-mail: philcjays@aol.com
The Exeter Amateur Radio Society meets on the 2nd and the 4th Monday at 7.30pm in the Moose Centre, Spinning Path Lane, Blackboy Road, Exeter EX2 5RP. Tuition for Foundation, Intermediate and Advanced licence is available. The club is an RSGB registered examination centre.

Plymouth, Radio Club
Bob G7NHB
Tel: 01752 343177
E-mail: freebobx@yahoo.com
http://radioclubs.net/g3prc
The club meets on the second Tuesday of every month at 7.00 pm for 7.30 at the Raffles Club, Ermington Terrace, Mutley, Plymouth PL4 6QG.
See web site for details and club location. Foundation and Intermediate Courses and all examinations are provided by the Plymouth Training Team.

Torbay ARS
Dave Helliwell.
E-mail: g6fsp@tars.org.uk
www.tars.org.uk
The Torbay Amateur Radio Society meets Fridays at 7.30pm in the Teignbridge District Scout Headquarters, Wolborough Street, Newton Abbot, Devon TQ12 1JR.

DORSET
Blackmore Vale ARS (BVARS)
Nick Perrin. Tel: (01747) 838936
E-Mail: bnperrin@theiet.org
www.radioclubs.net/bvars/
BVARS meets in The Youth Club, Coppice Street, Shaftesbury Dorset SP7-8PF each Tuesday evening at 7.30pm. The Club callsign is G4RBV. The main meeting is the second Tuesday of the month and details of events and full details of the Club can be found on the website.

Bournemouth RS
John. Tel: 07719 700 771
www.brswebsite.org.uk
The Bournemouth Radio Society meets on the first and third Friday of each month at the Kinson Community Centre, Pelhams Park, Millhams Road, Kinson, Bournemouth BH10 7LH. Meetings take place in Room 5 at 8pm and members assemble in the bar from 7.30pm. Visitors are always welcome.

Poole Radio Society G4PRS
'Tex' G1TEX. Tel: 07966 460 552
www.g4prs.org.uk
Meetings are every Friday at 19:30 for 20:00 at the The Old Chapel Hall, Cabot Lane, Creekmoor, Poole BH17 7BX, the second meeting of each month is the formal evening, all others are basically shack and Natter nights. We run successful courses at all levels of the Radio Amateur examination.

DUMFRIES & GALOWAY (Scotland)
The Wigtownshire Amateur Radio Club
Ellis Gaston. Tel: (01776) 820413
Web: www.gm4riv.co.uk
The club meets every Thursday from 19:00 Hrs at the The Aird Unit, Stranraer Academy, Stranraer, DG9 8BQ, South West Scotland.

EAST SUSSEX
Brighton RC
Reg Moores. Tel: (01273) 503869

The Brighton Radio Club meets on the second and fourth Tuesdays of each month at the Vallance Community Centre, Conway Court, Sackville Road, Hove BN2 3WR at 7.30pm. Anyone wishing to know more are welcome to come along to a meeting, entrance is free.

Hastings E&RC
Gordon Sweet.
Tel: (01424) 431909
E-mail: gordon@gsweet.fsnet.co.uk
www.herc.uk.net or
http://g4cus.mysite.wanadoo-members.co.uk/
The Hastings Electronics & Radio Club meets on the third Wednesday at the Taplin Centre, Upper Maze Hill, St Leonards on Sea TN38 OLQ at 7pm.

ESSEX

Braintree & DARC
Keith. Tel: (01376) 329279
www.badars.org.uk
The Braintree & District Amateur Radio Society meets on the first and third Monday of the month in The Clubhouse, Braintree Hockey Club, Church Street, Bocking CM7 5LJ.

Colchester RA
www.g3co.ccom.co.uk
The Colchester Radio Amateurs meets at 7.30pm on alternate Thursdays at St Helena School and The Colchester Institute, Sheepen Road, Colchester, Essex CO3 3LE. Members and non-members welcome.

Chelmsford ARS
Martyn Medcalf. Tel: (01245) 469008
E-mail: info2007@g0mwt.org.uk
www.g0mwt.org.uk
The Chelmsford Amateur Radio Society meets on the first Tuesday of each month in the Marconi Sports & Social Centre, Beehive Lane, Great Baddow, Chelmsford, Essex CM2 9RX at 7.30pm. - All welcome.

Loughton & Epping Forest ARS
Marc Litchman. Tel: 020 8502 1645
E-mail: info@lefars.org.uk
www.lefars.org.uk
The Loughton & Epping Forest ARS meet Friday fortnightly at All Saints House, Romford Road, Chigwell Row, Essex IG7 4QD between 7.45 and 10pm. All visitors will be made most welcome.

South Essex Amateur Radio Society
Norman M0FZW. Tel: 01268 692776
E-mail:
secretary@southessex-ars.co.uk
www.southessex-ars.co.uk/
Meets: Meet at 8pm on the second wednesdays of each month at South Benfleet Primary School, High Rd, South Benfleet, Essex SS7 5HA. (Entrance: 51°33'10.45N 0°33'39.65E), (Opp. Smiths Wood Yard). All are welcome to come along or join our net on 145.225MHz weekdays @17.00hrs.

FIFE (Scotland)

Glenrothes & DARS GM4GRC
D Francis MM0DYX.
Tel: 01383 823878
Meet Wednesdays at the Football Pavillion, Station Rd. Thornton Fife KY1 4AX. Club Chairman Ken GM3YBQ runs course at all licence levels.

GLOUSCESTERSHIRE

Cheltenham ARC G5BK (CARA)
Derek G3NKS. Tel: 01242 241 099
E-mail: g3nks@blueyonder.co.uk
www.caranet.co.uk
The club meetings are held on the first Friday of each month, starting at 8p.m. at Prestbury Library, The Burgage, Cheltenham, Gloucestershire, GL52 3DN.

Forest of Dean Amateur Radio Group
Adrian Lane M3TVF
Email: adrian@fodarg.com
www.fodarg.com
We will be meeting every Tuesday night as from now at 19:30 hours at Ruardean Sports & Social Club, Ruardean Hill, Drybrook, Gloucestershire GL17 9AS. Anyone with an interest in any aspect of radio or electronics is welcome.

Gloucester Amateur Radio and Electronics Society
Anne 2E1GKY/M3GKY
Tel: (01452) 548478 (After 10am)
E-mail: hamreed@blueyonder.co.uk
www.g4aym.org.uk
Meet at Churchdown School, Winston Road, Glos. GL3 2RB, every monday evening at 7-30pm until 10pm except for Bank Holidays when we operate from a local escarpment.

GWNEDD (Mid-Wales)

Meirion ARS.
John MW0VTK. Tel: 07772 720099
E-mail: tawelfan@talk21.com
http://meirionars.multiply.com/
Meirion ARS, meet in the Royal Ship hotel, Dolgellau LL40 1AR, on the 1st Thursday evening of each month. 8.30 p.m. for 8.45 p.m. start New members and visitors are very welcome. Regular talks are organized and all the details for meeting and special events can be seen on the club website.

HAMPSHIRE

Andover Radio Amateur Club.
Martin M0MWS. Tel: (01980) 612070
E-mail: martinsmith@kukltd.co.uk
www.arac.co.uk
The Andover Radio Amateur Club meets on the first and third Tuesdays in the month at the Club venue in The Village Hall at Wildhern, SP11 0JE. Map Ref SU350510 at 19:30 hours.

Fareham & District ARC
Alastair Sinclair.
Tel: 01329 235397
E-mail: secretary@fareham-darc.co.uk
www.fareham-darc.co.uk/
The Fareham & District Amateur Radio Club meets on Wednesdays evenings from 7.30pm in the Fareham Sailing & Motor Boat Club, The Boathouse, Lower Quay, Fareham. PO16 0RA

Farnborough & District Radio Society (FDRS)
Derek G3OFA
E-mail: mail@fdrs.org.uk
www.fdrs.org.uk
Meets every 2nd and 4th Wednesday in the month at 7:30 for 8:00 pm in the Farnborough Community Centre, Meudon Avenue, Farnborough, Hampshire, GU14 7LE Visitors and new members are always most welcome. July 22nd Construction Contest and Junk Sale.

Horndean & District ARC
Stuart Swain. Tel: (02392) 472846
E-mail: stuart.swain@hotmail.co.uk
www.hdarc.co.uk
The Horndean & District Amateur Radio Club meets on the first and fourth Tuesdays each month in the Lovedean Village Hall, 160 Lovedean Lane, Lovedean, Hants PO8 9SF at 7.30pm. Visitors are always very welcome. Want to take the Radio Licence Exam – more details can be obtained from Stuart.

Isle of Wight Radio Society
Tony Pegg
Tel: 01983 868 978
E-mail: tony.pegg1@btinternet.com
www.g3sky
The IWRS meets every Friday evening 7.00pm-10.pm at Haylands Farm,Salters Rd. Ryde PO33 3HU. Visitors very welcome. The club runs courses for Foundation, Intermediate and advanced licenses. The club is registered as an RSGB exam centre.

Itchen Valley ARC
Charlie M0WYM
Tel: (02380) 439560
E-mail: secretary@ivarc.org.uk
www.ivarc.org.uk
The Itchen Valley ARC meets on the second and fourth Friday of each month at The Scout Hut, Brickfield Lane, Chandlers Ford, SO53 4DP, doors open 7.30 pm. See website for our programme, visitors welcome. Join our club net on 145.550, Thursday evenings at 8.30 pm. The club is a registered as an RSGB examination centre.

Lymington Community Association Radio Club
Keith G8MZF Tel:(01590) 672337 (*work*)
(02380) 849395 (*evenings*)
Email: lymcomass@aol.com
The club meets at Lymington Community Centre, New Street/Cannon Street, Lymington SO41 9BQ, on friday nights. Talk-in on the night on or near 145.550 club call M0LCC. All are welcome. Start time hopefully 7.30pm bar open from 7.00pm. Plenty of free parking nearby.

HERTFORDSHIRE

Verulam Amateur Radio Club (St Albans)
Norman. Tel: (07773) 628912
E-mail: g1bsz@aol.com (sec)
www.radioclubs.net/verulam
The club normally meets every 3rd Tuesday of the month 800pm at Aboyne Lodge School.Etna Road, St Albans, AL3 5NL. New members and visitors are always very welcome. Regular talks, events, Foundation, Intermediate courses exams are held. Club nets also take place every Sunday 12.00noon 40m (7.150MHz), then 14.00pm 2m (145.375) and on Tuesday 19.45pm 160m (1.975) then 20.00pm 2m (145.375). For further information about the club and events please see the website.

Stevanage & District ARS
John. Tel: (01462) 459254
E-mail: jmccutcheon@freeuk.com
www.sadars.org/
The Stevenage and District Amateur Radio Society meet every Tuesday 7.30pm, at the Stevenage Resource Centre, Chells Way, Stevenage, SG2 0LT. Regular talks and demonstrations. Registered centre for Foundation/ Intermediate/Advanced exam courses (40+ passes last year). Club Net last Friday of month 7.30pm on 145.450MHz. All welcome, see website for further details.

HUMBERSIDE

Hull & District ARS
Keith Shaw.
Tel: 01482 217776
E-mail m3shw@yahoo.co.uk
raymond penny Tel: 01482 376835
E-mail penibs@penibs.karoo.co.uk
Hull & DARS meet every friday night at 1930 – 2200 at the walton street leisure centre, goathland close, walton street hull, East Yorks HU3 6NG.

ISLE OF MAN

The Isle of Man ARS GD0MAN
Andy Morgan GD1MIP
Tel: 07624 412711
E-mail: GD1MIP@manx.net
www.iomars.blogspot.com
The club holds a weekly meeting on a Wednesday at its club shack in Foxdale and monthly talks & events in Cronkbourne on the second Tuesday of the month. See the website for more details.

JERSEY

Jersey Amateur Radio Society GJ3DVC
Rob Luscombe (secretary) 2J0RZD.
Tel: 07797 923916
E-mail: gj3dvc@gj3dvc.org.je
www.radioclubs.net/gj3dvc/
The Jersey Amateur Radio Society meets every Friday at 7.30pm at The German Signal Station, Rue Baal, La Moye, St. Brelade, Jersey, JE3 8HQ, also on a Wednesday evening from time to time to maintain, alter and improve the shack, antennas etc. and also for club training. Coffee and car parking available, visitors are always welcome, shack rental available. See our website for further information.

KENT

Bredhurst RATS
www.the-brats.co.uk
The Bredhurst Radio Amateur & Transmitting Society meets on Thursdays at the Parkwood Community Centre, Rainham, Gillingham, Kent ME8 9PN at 8.30pm. If you are interested in joining the club, write to: Membership, The BRATS c/o The Club Room, The Parkwood Community Centre, Long Catlis Road, Rainham, Gillingham, Kent, ME8 9PN.

Hilderstone Radio & Electronics Club
Mike Howland
E-mail: g4mix@waitrose.com
www.g0hrs.org.uk
Meetings now at The Science Block, Chatham House School, Chatham Street, Ramsgate, CT11 7PP on 2nd and 4th Friday of the month at 7-30pm.

Bromley & DARS
Graham
E-mail: bdars@grahamc.net
www.bdars.org
The Bromley & District Amateur Radio Society meets in The Victory Social Club, Kechill Gardens, Hayes, Kent BR2 7NH (off B265, Hayes Lane, Bromley) on the third Tuesday of the month at 7.30pm.

LANARKSHIRE (Scotland)

Mid-Lanark ARS
Dennis. Tel: 07505529335
Email: mm0dnx@yahoo.co.uk
www.mlars.org.uk/
The Mid-Lanark ARS meets on Friday evenings at the Newarthill Community Education Centre, 288 High Street, Newarthill, Motherwell ML1 5JU. Visitors and new members are very welcome. The club has HF and VHF shacks for use on club evenings. Courses fro all levels are run at the club. See web site for details of our upcoming meetings.

LANCASHIRE

Oldham RC
Christopher. Tel: 07749347142
E-mail: secretaryoarc@btinternet.com
www.oarc.org.uk
The Oldham Radio Club meets on Thursdays at Royton Air Training Corps, Hillside Avenue, Royton, Oldham OL2 6RF at 7:30pm.

Ellenroad RC
David. Tel: (01706) 358650
E-mail: info@ellenroadradioclub.org.uk
www.ellenroadradioclub.org.uk/info.htm
The Ellenroad Radio Club (ERC) meets every Monday evening from 7 to 9pm at the Ellenroad Steam Museum, Elizabethan Way, Newhey, Rochdale OL16 4LG. The museum houses the UK's only fully-working cotton mill engine, complete with its 220ft high chimney. Newcomers are always welcome.

Morecambe Bay ARS
Martin Hazel. Tel: (01524) 848193
Email: martin@mbars.international-ham.com
www.mbars.internationalham.com
Morecambe Bay Amateur Radio Society meet at the Trimpell Sports and Leisure Club, Out Moss Lane Morecambe, every Tuesday evening from 1930. They also have a new website at all of their events calendar for the next year is to be found there.

Thornton Cleveleys ARS (G4ATH, & G6GMW)
John. Tel: (01253) 399377,
E-mail: m3waz@hotmail.co.uk
www.tcars.org.uk
Meet monday evenings at the Frank Townend Center, Kensington road, Cleveleys, Lancashire FY5 1ER starting from around 7.30pm.

LEICESTERSHIRE

Loughborough & District ARC
Chris Walker. Tel: (01509) 504319
Email g1etz@aol.com
www.radioclubs.net/ladarc
Loughborough & District Amateur Radio Club meets at the Glenmore Community Centre, Thorpe Road, Shepshed, LE12 9LU on a Tuesday evening from 7.30pm. The clubs programme of events can be found on our websites. Visitors and new members most welcome.

LINCOLNSHIRE

Franklin ARC
Brendan. Tel: (01754) 820204
E-mail: bren.sykes@btinternet.com
We meet the last Wednesday of every month at the Victoria Inn Wainfleet Road Skegness Lincolnshire PE25 3RG. @19:30hrs. We also have regular nets, on the 1st and 3rd Tuesday of every month on 145.550± @20:00hrs. Registered as an RSGB examination center for courses run by G0OTH Robert. We are organizing special events, field days and our own rally (See Rallies Section) this year so listen out for us, our call sign is M0FRC.

Friskney & E Lincolnshire Communications Club (M0LFC)
Bren 2E0BDS Tel: 01754 820204
www.felcc.webs.com
A new club, our meetings are held on the first Tuesday of every month at Friskney Village Hall (6m south of Skegness) Church Road Friskney Lincolnshire. The hall is large, modern and warm for those winter months., Our training officer is Ant M0HAZ and we're an affiliated test centre for Foundation and Intermediate Exams. All are welcome to come and join us.

Lincoln Short Wave Club
Pam Rose Tel: 01427 788356
E-mail: pamelagrose@tiscali.co.uk
www.g5fz.co.uk
The Club meets every Wednesday 8 p.m. at the BSA Social Club, Village Hall Lane, Aisthorpe, Lincoln, LN1 3SJ and some Saturday mornings in the shack for Foundation/Intermediate course tuition and to air the club callsigns G5FZ and G6COL.

Spalding & DARS
Graham Boor. Tel: 07947764481
E-mail: secretary@sdars.org.uk
www.sdars.org.uk
The Spalding & District Amateur Radio Society meets at the Castle Sports Swimming Complex, Spalding PE11 1QF on Fridays at 7.30pm.

Stenigot "Chainhome" Amateur Radio Club
Steve Burke M5ZZZ.
Tel: (01507) 600202
E-mail m5zzz@btinternet.com
www.stenigotchainhomearc.co.uk
Meetings are held on the third Friday of the month commencing 19.30 at Gayton le Marsh Village Hall, Gayton le Marsh, Lincolnshire. LN130NW.

LONDON

Cray Valley Radio Society
Bob Treacher.
Tel: 020 8265 7735
www.cvrs.org
The Cray Valley Radio Society meets on the first and third Thursdays of the month at the Progress Hall, Admiral Seymour Road, Eltham, London SE9 1SL at 7.30pm for 8pm.

Edgware & District Radio Society
Michael G4RNW.
Tel: 020 8950 0658
E-mail:
michael.stewart5@ntlworld.com
Edgeware &District radio Society meet at the Watling Community Centre, 145 Orange Hill Road, Burnt oak, Edgware HA8 0TR.

Radio Society Harrow
Linda Casey Tel: 020 8386 8586
Email: lcasey@imperial.ac.uk
www.g3efx.org.uk
The Society meets on friday at 20.00 on the 2nd and 4th weeks of every month, at The Elsie Fisher Room, St Lawrence Centre, St. Lawrence Church, 2, Bridle Road, Eastcote, Pinner HA5 2SJ. All welcome! We also run exam courses - see website for details

Southgate ARC
David Sharp. Tel: 01992 422622
E-mail: david.sharp1@tesco.net
The Southgate Amateur Radio Club meets on the second Wednesday of the month at Hazelwood Lawn Tennis and Squash Club, Ridge Avenue, Winchmore Hill, London N21 2AJ at 7.30 for 8 pm.

Wimbledon and District ARS
Jim Bell M0CON
Tel: 020 8874 7456
E-Mail: jamesm0con@o2.co.uk
www.gx3wim.org.uk
The Wimbledon & District Amateur Radio Society welcomes new comers to our meetings whether they are licensed or not. We hold our meetings the second and last Friday of each month at Martin Way Methodist Church, Buckleigh Avenue, Merton Park, London SW19 9JZ. The church is on the corner of Martin Way and Buckleigh Avenue.

THE LOTHIANS (Scotland)

Cockenzie & Port Seton ARC
Bob Glasgow.
Tel: (01875) 811723
E-mail: gm4uyz@cpsarc.com
www.cpsarc.com/news.php
The Cockenzie & Port Seton Amateur Radio Club meets in the Thorntree Inn (Lounge Bar), High Street, Cockenzie, East Lothian EH32 0HP from 7pm till late. Organised talks are held in the Port Seton Community Centre, South Seton Park, Port Seton, East Lothian EH32 0EE. Timings 18:30 to 21:30hrs.

Lothians Radio Society
Tony Sigouin.
Tel: 07739742367
E-mail: enquiries@lothiansradioso-ciety.com
www.lothiansradiosociety.com
The Lothians Radio Society meets on the second and fourth Mondays of the month in the Royal Ettrick Hotel, 13 Ettrick Road, Edinburgh EH10 5BJ from 7pm. Membership costs £12 per year and includes a free BBQ every June!

MERSEYSIDE

Wirral & District ARC
Tom. Tel: (07050) 291850
E-mail: secretary@wadrac.com
www.wadarc.com
The Wirral & District Amateur Radio Club meets at the Irby Cricket Club, Mill Lane, Irby CH61 4XQ on the second and fourth Wednesdays of each month. Other Wednesdays are informal (D&W) meetings at a local hostelry.

NORFOLK

King's Lynn ARC
Ray Dowsett, MBE.
Tel: (01553) 671307
E-mail: ray-g3rsv@supanet.com
www.klarc.org.uk
King's Lynn Amateur Radio Club meets every Thursday at the Scout HQ, Chequers Lane, West Winch, King's Lynn, PE33 0NY off the A10 at West Winch at 7.30pm.

Norfolk ARC
Mark Taylor. Tel: (01362) 691099
E-mail: narc@g0lgj.co.uk
www.norfolkamateurradio.org
The Norfolk Amateur Radio Club meets every Wednesday at the Eaton CNS School, Eaton Road, Norwich, NR4 6PP, where it meets weekly,from 7-10pm, usually in 6th form centre at front of school, every Wednesday from 7-10pm.

North Norfolk ARG
Tony Smith.
Tel: (01263) 821936
E-mail: g4fai@btinternet.com
www.radioclubs.net/nnarg/
The North Norfolk Amateur Radio Group meets in the Radio Hut at the Muckleburgh Collection Military Museum, Weybourne, North Norfolk NR25 7EG on Wednesdays and Thursdays from 10am to 4pm and some Sundays from 1 to 4pm. New members always welcome.

NORTHAMPTONSHIRE

Kettering & District Radio Society
Lorna Froggatt. Tel: 0153 676 2523
E-mail: LornaSteveLorna@aol.com
The Kettering & District Radio Society meets each Tuesday from 7 to 9pm in the winter at The Lilacs Pub, Church Street, Isham, Northants NN14 1HD and in the summer at the Carpetbagger Aviation Museum, Sunnyvale Farm Nursery, Harrington NN6 9PF. Courses at all levels are held regularly.

OXFORDSHIRE

Harwell Amateur Radio Society
Malcolm Tel: 01235 524844
E-mail: info@g3pia.org.uk
www.g3pia.org.uk
The Harwell Amateur Radio Society meets at the Rutherford Appleton Laboratory Social Club, Chilton, OX11 0QX. (Turn left at the Diamond Light source roundabout and continue to the satellite dish). Club meetings are held on the second Tuesday of each month at 1945 and there is a Shack Activity night on the fourth Tuesday.

SHROPSHIRE

Salop ARS
Richard Golding.
Tel : (01743) 356195
The Salop Amateur Radio Society meets in The Telepost Club, Railway Lane, Abbey Foregate, Shrewsbury SY26BT on Thursday between 8 and 10.30pm.

Telford & District ARS
Mike Street. Tel: (01952) 299677
E-mail: mjstreetg3jkx@blueyonder.co.uk
www.tdars.org
The Telford & District Amateur Radio Society meets on Wednesdays at the Little Wenlock Village Hall, Malthouse Bank, Little Wenlock. Telford TF6 5BG at 8pm.

NOTINGHAMSHIRE

Worksop Amateur Radio Society (W.A.R.S.)
'Daz' Spence. Tel: (01623) 747314
Email- g3rcw@qsl.net
www.qsl.net/g3rcw/
Meets every Tuesday at 7:00 pm. Our cubhouse is located at 59 - 61 west street, Worksop, Nottinghamshire. S80 1JP. Exams and courses run frequently for all licence levels. Licensed bar & hot food available on club meet nights. Membership fee for the year is £10.

SOMERSET

Mid Somerset Amateur Radio Club
Shaun M0RTS/G1IOK
E-mail: m0rts@hotmail.co.uk
Shaun has reformed the Mid Somerset Amateur Radio Club which unfortunately folded in 1997. The new club now meets on the 2nd tuesday of every month at: Peter Street Rooms, Peter Street, Shepton Mallet BA4 5BL at 7:00pm.

North Bristol ARC
Dick Elford Tel:(01454) 218362
E-mail: g0xay@aol.com
www.nbarc.org.uk
North Bristol ARC meet Fridays at 7.30pm at SHE7, Braemar Crescent, Northville, Filton Bristol BS7 0TD. We carry out training for all the Radio Amateurs examination, and our next training course is to be for Intermediate exams.

South Bristol ARC
Len Baker. Tel: (01275) 834282
E-mail: g4rzy@msn.com
www.sbarc.co.uk
The South Bristol Amateur Radio Club meets every Thursday evening at Novers Park Community Centre, at the rear of 122-124 Novers Park Road, Filwood, Bristol BS4 1RN

Yeovil ARC
Steve G7AHP
E-mail: steve@g7ahp.co.uk
www.yeovil-arc.com/
The Yeovil Amateur Radio Club meets at the Red Cross Centre, Grove Avenue, Yeovil BA20 2BE (on the corner where Grove Avenue meets Preston Road).

Weston-super-Mare Radio Society (WSMRS)
Kirstie M3UWI (01934) 613094
Email:- Kirstiejones1@msn.com
www.radioclubs.net/wsmrs/
Meets every Monday at the Devonshire Road social club BS23 4LG at 8pm. Main meeting including talks/Guest speakers every 3rd Monday of the month. Training to all levels of Licence available.

SOUTH GLOUCESTERSHIRE

Thornbury and South Gloucestershire ARC
Tony. Tel: (01454) 417048
E-mail: tonytsgarc@sky.com
The Thornbury and South Gloucestershire Amateur Radio Club meets in the United Reformed Church Hall, on the corner of Chapel Street and Rock Street, Thornbury BS35 2BA at 7.30 - 9.30pm.
ight.

SOUTH WALES

Barry ARS
Glyn Jones. Tel: (01446) 774522
E-mail: glyndxis@talktalk.net
www.bars.btik.com
The Barry Amateur Radio Society meets on Tuesdays from 7.30 to 10.30pm in the Sully Sports & Social Club, South Road, Sully CF64 9TG.

SOUTH YORKSHIRE

Axholme Radio Club
John Fennell. Tel: (01427) 872522
E-mail: g4hoy@tiscali.co.uk
The Axholme Radio Club meets at Hollytree Farm, Westend Road, Sandtoft, Epworth DN9 1LB on Wednesdays at 10amm to 4pm, Thursdays at 7 - 9pm and Saturdays from 10am - 4pm (other times by arrangement).

Sheffield ARC
Trevor Wood. Tel: 0114 2216947
E-mail: trevorwood6@yahoo.co.uk
www.sheffieldarc.org.uk
The Sheffield Amateur Radio Club meets at the SYPTE Social Club, Greenhill Main Road, Sheffield S8 7RH every Monday at 7.15pm. We hold classes for all licence levels .

STAFFORDSHIRE

Tamworth Amateur Radio Society
Colin Marks. Tel: (01827) 700893
E-mail: colin.marks2@ntlworld.com
The Tamworth Amateur Radio Society meets every Thursday at 7.30pm at St Francis Church, Masefield Road, Leyfields, Tamworth B77 8JB.

SUFFOLK

Bury St Edmund's ARS
George Woods G3LPT.
Tel:01359 259518
Darren Coe G7SDC
Tel: (01284) 701732
storno@yahoo.co.uk
www.radioclubs.net/bsears/
The Club meets on the third Wednesday of the month (except August and December) at the Culford school, Culford, Bury St. Edmunds, Suffolk IP28 6TX at 7.30PM. Visitors are welcome. Please see our web site for further details.

SURREY

Coulsden Amateur Transmitting Society
Steve Conway G7SYO
Tel: (01737) 353517
E-mail: steve.conway@landg.com
www.sthost.co.uk/webspace/cats/
Regular meetings are held on the second Monday in each month at-: St. Swithun's Church Hall, Grovelands Road, Purley, Surrey CR8 4LA at 20:00 to 22:00hrs. On the first Saturday of month at 1715 Crescenta Valley / CATS Net on Echolink Normally via MB7IPL node on 145.2875 MHz.

SRCC - Surrey Radio Contact Club
Ray Howells G4FYY
Tel: 0208 644 7589
www.g3src.org.uk/
The club meet 1st and 3rd monday evenings of each month at Trinity School, Shirley Park, CROYDON, CR9 7AT with meetings starting at 7.45p.m.

Sutton & Cheam RS
John Puttock. Tel: 020 8644 9945
E-mail: info@scrs.org.uk
www.scrs.org.uk
The Sutton & Cheam Radio Society meets on the third Thursday of the month at 7.30pm in Sutton United Football Club, The Borough Sports Ground, Gander Green Lane, Sutton, Surrey SM1 2EY. In addition to monthly meetings, licence training courses are held at regular intervals in Banstead Surrey.

TYNE & WEAR

Angel of the North RARC
Nancy Bone. Tel: 0191 477 0036
E-mail: nancybe2001@yahoo.co.uk
www.anarc.net
The Angel of the North Radio Amateur Radio Club meets every Monday 7 to 9pm at Whitehall Road Methodist Church Hall at the corner of Whitehall Road and Coatsworth Road, Bensham, Gateshead NE8 4LH. The entrance to radio club room is through door at the side of building next to the car park. The car park entrance is on Whitehall Road.

Tynemouth ARC
Tony Regnart G8YFA.
Tel: 0191 280 1981
E-mail: mail@g0nwm.com
www.g0nwm.co.uk
The Tynemouth Amateur Radio Club meets each Friday from 7 to 9pm at St. Hilda's Church, Stanton Rd, North Shields, Tyne & Wear NE29 9QB. It's known locally as 'the church near the fire station'.

WARWICKSHIRE

Coventry Amateur Radio Society
John Beech G8SEQ Tel: 079 58777 363
www.coventryradio.org.uk
Coventry Amateur Radio Society meets most Fridays at 2030hrs in St Bartholomew's Church Hall, Brinklow Road, Binley, Coventry CV3 2DT. Further details on CARS activities can be obtained from the Secretary – John G8SEQ

WEST MIDLANDS

Aldridge & Barr Beacon ARC
Ted Roberts. Tel:(01922) 614169
E-mail: albertg0kfs@raynet-uk.net
www.radioclubs.net/aldridgearc
The Aldridge & Barr Beacon Amateur Radio Club is a daytime club and meets at the Aldridge Community Centre, Middlemore Lane, Aldridge, Walsall WS9 8AN on the first and third Monday of every month at 2pm to 4pm. They have a long wire and a v.h.f. antenna for radio operation using the club callsign M0GRX.

Midland Amateur Radio Society
Norman G8BHE Tel:07808-078003
E-mail: nlgutteridge@hotmail.co.uk
www.midamradio.net
The club meets each wednesday between 7 and 9pm at the Selly Park Baptist Church 1041, Pershore Road, Stirchley, Birmingham B29 7PS we have regular talks and weely training classes for the RAE. Further info from on or the club website.

Midland AX25 Packet Radio Users Group
Miles. Tel: (01384) 254199
www.maxpak.org.uk
The Midland AX25 Packet Radio Users Group, MaxPak, meets on the first Monday of the month at The Sir Robert Peel, 104 Bell Lane, Bloxwich, Walsall WS3 2JS.

South Midlands RS
Don. Tel: 0121 458 1603
South Midlands RS meet in the West Heath Community Centre, Condover Rd., West Heath Birmingham B31 3QY. macrh 13th and 20th are construction evenings. 223rd is a 'ragchewing' evening.

Stourbridge and District ARS
John. Tel: (01562) 700513
www.g6oi.org.uk
The Stourbridge and District Amateur Radio Society meets on Monday evenings, except for Bank Holidays at The Radio Shack, Old Swinford Hospital School, Heath Lane, Stourbridge, West Midlands DY8 1QX at 8pm. We have Open Shack Nights - Tea/Coffee always available, along with an opportunity to get on the air or just a natter with whoever attends

Sutton Coldfield RS
Rob 2E0ZAP: (01827) 288 483
E-mail: spirit.guide@hotmail.co.uk
www.hamradio.piczo.com
The Sutton Coldfield Radio Society Meets on the second and fourth Monday of the month at 7.30pm (no meeting on bank holiday Mondays) in the Sutton Coldfield Rugby Club, 160 Walmley Road, Sutton Coldfield, West Midlands B762QA.

Wythall Radio Club
Chris Pettitt. Tel: (07710) 412 819
E-mail: g0eyo@wythallradioclub.co.uk
www.wythallradioclub.co.uk
The Wythall Radio Club is based at Wythall House, Silver Street, Wythall, near Birmingham B47 6LZ. They meet every Tuesday at 8pm and meetings are informal and friendly.

WEST SUSSEX

Horsham ARC
Andrew Vine. Tel: (01483) 272456
www.harc.org.uk/
The Horsham Amateur Radio Club meets on the first Thursday of the month at The Guide Hall, Denne Road, Horsham, West Sussex.

Mid Sussex ARS
Sue Davis: 01273 845103
E-mail: g6ypy@msars.org.uk
www.msars.org.uk
The Mid Sussex ARS meets at 1945hrs on most Friday evenings at Cyprus Hall. Cyprus Rd.Burgess Hill.W Sussex. RH15 8DX. Tuition is available for all Licence levels and the club is a registered exam centre. Our permanent and well equipped radio room is available for all to use. We offer regular talks, demonstrations quizzes etc. and radio use on all bands. Visitors always warmly welcomed.

Worthing & DARC
Roy or Joyce.
Tel: (01903) 753893
www.wadarc.org.uk
The Worthing & District Amateur Radio Club meets every Wednesday at 8pm in the Lancing Parish Hall, South Street, Lancing, BN15 8AJ. There's a free car park at the rear and full disabled access. Visitors are always welcome.

WEST YORKSHIRE

Denby Dale Amateur Radio Club
Gerald, G3SDY.
Tel: (01484) 602905
www.g4cdd.net/
The Denby Dale club meat at Pie Hall, Denby Dale, Huddersfield HD8 8RX. October 7th Mini-rally, surplus sale and flea market. 21st Annual General Meeting.

Otley ARS G3XNO & M8Y
Paul (2E0PAK) Tel: 07768 996370
E-mail: 2e0pak@otleyradio.org
www.otleyradio.org
Otley Amateur Radio Society meets every Tuesday at Clifton Village Hall, LS21 2ES, (north of Otley just before The Spite public house on Newall Carr Rd). Meetings alternate between a shack night and members' presentations/ forums/educational events - refreshments always available. The Club, a registered RSGB examination centre, also maintains the local repeater station callsign GB3WF. (Input: 434.950MHz Output: 433.350MHz CTCSS 82.5 Hz).

Pontefract & District Radio Club
Colin. Tel: (01977) 677006
E-mail:
info@pontefractradioclub.org
www.pdars.com
The Pontefract & District Radio Club meets every Tuesday from 7pm and Thursday from 8pm at the Carleton Centre, Carleton Grange, Carleton Road, Pontefract, West Yorkshire WF8 3RJ.

WIGTOWNSHIRE (SW Scotland)

Ellis Gaston 01776 820413
www.gm4riv.co.uk
Wigtownshire ARC meet weekly at The Aird Unit, Stranraer Academy, Stranraer DG9 8BQ. Visitors always most welcome

WILTSHIRE

Trowbridge & District AR
Ian Carter. Tel: (01225) 864698
E-mail: ian.l.carter@btinternet.com
www.radioclubs.net/trowbridgedarc/
The Trowbridge & District Amateur Radio Club meets at Southwick Village Hall, Southwick (nearest postcode is BA14 9QN).

WORCESTERSHIRE

Worcester RAA
Martin Carter.
Tel: (07976) 917987
E-mail: secretary@m0zoo.co.uk
www.wraa.co.uk
The Worcester Radio Amateurs Association meets on the second and fourth Tuesday at the Hallow Scout HQ, off Main Road, Hallow, Worcester WR2 6PP. Visitors, as always, will find a warm welcome at the new clubhouse, as will potential new members.

Club Secretaries

Please remember to include full details of your club, E-mail and telephone contact details and the postcode of your meeting venue - it helps potential visitors to find you!

Graham Hankin's

in vision

Graham Hankins G8EMX presents his latest round-up of news of what's been seen on the Amateur Television screen.

The latest *CQ-TV* magazine from the **British Amateur TV Club** (BATC) arrived just before the *In Vision* (*IV*) deadline (it usually arrives just after. Hi!) so, I am able to report the latest on digital ATV (DATV), as promised last time. **John Lawrence GW3JGA** of the Arfon Repeater Group (Anglesy, Wales) writes that a DATV transmitter has been fitted to the GB3TM repeater. Operating on the same 1316MHz carrier as the existing analogue transmitter, the Tx generates a continuous power of 10W.

However, the Group feels that transmitting DATV is still too expensive for the average individual Amateur station so, at this stage, it's not going to fit a DATV receiver to the repeater. Incidentally, the transmitter boards – an encoder and a modulator – were designed and built by the AGAF organisation in Germany and the last time I saw a UK price quoted for these it was around a significant £500 and they are out range of the G8EMX pocket!

Unfortunately, the boards only generate up to 430MHz, so the Group used an Up-Converter from the same source to produce a 24cm final output. Fortunately, receiving DATV is relatively inexpensive, as it is for broadcast digital TV, and the Group mentions Maplin and Comag as example suppliers of receiving equipment.

While this does expand the digital ATV network, it also highlights the problem. This is ATV by 'cheque-book', DATV transmitting – which is the 'point' of all Amateur Radio – is still beyond the budget and construction of the average Amateur in the 'shack'. Until a DATV transmitter is produced at a price running only into-double figures, it's likely to remain under-supported.

Every Two Years!

I think this copy of *IV* will be published just before the BATC's Bienniel General Meeting on Sunday June 6th. To save you running for your dictionary, I've already done that – it means every two years folks!

The BATC is again using the Helidon Lakes Hotel, which is near Daventry though it's a bit 'out in the country' and I think some satellite navigation systems were 'fooled' when members tried to find the hotel last year – it is sited along a country lane.

There are ATV exhibitors and lecture streams as there were last year, with '3D TV' promised this time! Also the important General Meeting to receive committee reports and elect new committee members. The BATC chairman **Trevor Brown G8CJS** states that: "We are considerably under-strength at the moment", so I hope to see some of you there!

Share your news, views and reports with fellow ATV readers.

Send your information to Graham.

A week after the BGM we'll see the BATC Summer Fun ATV Contest over the weekend June 12th and 13th. After writing about ATV for so long, I'm going to try to actually 'do it' myself! I'm plan to take some portable kit onto my local high spot and see who is about. I intend to use 24cm analogue ATV and run a fair few watts into quite a large high gain antenna. So, please point your beams towards Barr Beacon, north Birmingham, and we will 'see what we shall see'. And, as they say in séances (so I'm told): "Is there anybody there"?

Broadcast Analogue TV Closure

From anticipating the future, I'm now looking to preserving some of the past. The close-down of analogue television has started, some transmitters are already cold and quiet. If anyone has ever had the opportunity to visit a TV transmitter site, what a fascinating place they are! There are antenna 'farms' hidden by tubular versions of radomes and, often, clouds too, grey cabinets opened to reveal enormous valves or klystrons and feeder coaxial cables so thick they could have been the tentacles of some enormous sea creature from science-fiction. And all this is, slowly, being switched off, closed down. Gone. And with the current trend for re-cycling, destined for the local metal skip?

I think some of the analogue is worth preserving, as a tribute to the brilliant engineers who devised the analogue television service and built the transmitters, which have delivered so much enjoyment and information, to so many, for so long. I have, therefore, written to the London Science Museum, the Museum of Science and Industry in Manchester and the National Media Museum in Bradford, urging their curators to include some transmitter hardware within their exhibition space. My letter was copied to **Peter Kirby G0TWW** of the RSGB, **Trevor Brown G8CJS** of the BATC and to our own **Rob Mannion G3XFD**, who kindly replied, endorsing my sentiments.

Rob highlighted another part of analogue TV that is destined to disappear, writing: "With the cessation of analogue TV in the UK next year, we're saying 'goodbye' for ever to a remarkable British invention – Teletext/ Oracle. Okay, a pseudo-text service on the digital TV service is continuing but the use of the 'spare lines' will be gone for ever. Gone also will be the marvellous facilities for special messaging for the broadcasters and the '2T pulse', a very special pulse within the spare lines between fields. This very useful pulse provided an excellent measurement of the bandwidth of the particular system/transmission."

Rob said "I shall be so very sad to see it go, as I worked at IBA (the former Independent Broadcasting

Graham Hankins G8EMX
84 Shirley Road
Acocks Green
Birmingham B27 7NA
E-mail: g8emx@tiscali.co.uk

Graham G8EMX turns his camera lens on the ATV news, using this camera that was (literally) thrown into a skip when it was replaced by digital equipment. Waste-not-want-not is the motto of ATVers and the perfect working order camera is busy in its new life now!

Authority) headquarters where it was developed, in parallel with the BBC's system that was done at Kingswood Warren near Leatherhead." Rob concludes: "I think that it would be a good idea to mention the passing of a remarkably clever way of utilising previously 'spare' lines between transmitted fields! I hope you agree my friend." I certainly do Rob!

If, like Rob and I, you think that analogue television transmission hardware and technology deserves better than a skip, but instead deserves preserving for the continuing enjoyment and information of the nation, then please tell the museums! I wrote to the Visitor Experience Manager, The Science Museum, Exhibition Rd, South Kensington, London, SW7 2DD and those responsible for other museums can be found on the Internet. If you would like to see a copy of the letter I wrote, please email me at **g8emx@tiscali.co.uk**

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David Butler's

vhf dxer

Share your news, views and reports with fellow readers. Reports to David by the last Saturday of each month please.

This month David Butler G4ASR takes a look at Trans-Equatorial Propagation and has news of further developments on the 70MHz band.

Propagation on the v.h.f. bands during March was very similar to the rather poor performance reported in February. No Sporadic-E, no tropospheric enhancements and very little meteor scatter activity! However, there was a glimmer of hope on the 50MHz band with reports of trans-equatorial propagation between the UK and South Africa.

Trans-Equatorial Propagation On 50MHz

Since the release of the 50MHz band to UK Radio Amateurs some 25 years ago the exploration of trans-equatorial propagation (t.e.p.) has become very interesting. The identification and exploration of this propagation mode has been carried out largely by Amateurs using scientific methods.

By measuring the time delay along the path it was demonstrated that t.e.p. involves reflection from the ionospheric F-layer. It was found that the maximum F-layer ionisation occurs in two belts located north and south of the geomagnetic equator (not to be confused with the geographical equator).

These belts of ionisation form in the morning, are well developed by noon and decay after sunset to reach a minimum just before dawn. The positions of the ionisation belts are independent of the time of year but they become unbalanced in intensity as the Sun 'charges-up' either one or the other. This propagation mode makes use of both belts or regions of ionisation and these are at there best when the intensities of two regions are greatest. The time of year when both of these are equally illuminated by the Sun is around the equinox period.

The vernal (spring) equinox occurs on March 20th and the autumnal equinox is on September 23rd. So the best months to note t.e.p. on the 50MHz band is generally March-April and September-October. Unfortunately, it's not that simple! Instead, it's during the maximum of the solar cycle when the highest ultra-violet output occurs and this leads directly to more intense ionospheric ionisation of the equatorial zones.

Therefore, t.e.p. is normally prevalent around the time of Sun spot maximum but as you may know we've been in a very long and very low solar minimum period. The good news however, is that the Sun is just starting to perk up with a number of sun spots being observed during March 2010. Indeed, a recent geomagnetic storm on April 5-6th was the biggest recorded since 2006.

So that's taken care of the best years, 2011-2013, (assuming the maximum is in 2012), the best months, March-April and September-October and the best times, from midday for a few hours and the early evening for a few hours. But there is another factor that can influence whether or not you can participate in this exciting propagation mode!

The most consistent and longest paths are those that are symmetrical about the geomagnetic equator, generally between the Mediterranean area and southern Africa over paths in excess of 6000km. Similar paths exist around the World most notably between Australia (VK) and Japan (JA) and countries in South America to the Caribbean area. For the next year it's unlikely that the t.e.p. zones can be accessed directly from the UK without the aid of another propagation mode.

Sporadic-E (Sp-E) seems to be the only contender, since tropo ducting rarely (if ever) extends far enough. However, the incidence of Sp-E during March and September is far less prevalent than is often observed during the summer period. Never-the-less t.e.p. openings will be made between the UK and southern Africa but mainly by stations located on the south coast of the UK. As the Sun becomes more active the openings will spread northwards throughout the UK.

I've kept records of 50MHz t.e.p. openings made from my QTH (Herefordshire IO81) since 1985. The first series of openings that I participated in, were in the three and a half year period between October 1988 to April 1992. Then there was a seven year gap between 1993 to 1999 with no t.e.p. signals being heard at all.

The next series of openings only lasted two and a half years between March 2000 to October 2002. This was followed by an eight year gap (so far) between 2003 and 2010. From my QTH I think that my re-commencement of t.e.p. QSOs will either be in October 2010 or more likely in March 2011.

My records show that over two sun spot maximum periods the majority of t.e.p. openings to southern Africa were made in the March period rather than in October. Signals were much stronger and the openings were more numerous during the spring equinox period. During the years of sun spot maximum this period actually extended from February through to May.

In March 2010 there were 20 days when reports were made of t.e.p. activity between Europe and southern Africa on the 50MHz band. Interestingly the propagation got stronger as the month progressed with the period between March 21st-27th being particularly good.

Openings on every day except for one were made between stations located in the ideal areas either side of the geomagnetic equator. In southern Europe these included stations in the Balearic Islands (EA6),

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Cyprus (5B), Italy (I), Malta (9H), Portugal (CT), Sardinia (IS), Sicily (IT), Slovenia (S5) and Spain (EA). On the opposite side of the geomagnetic equator were the c.w. and s.s.b. stations of TN5SN (Congo), TR0A (Gabon), ZS6BTE, ZS6NK, ZS6TAF, ZS6WAB (South Africa), Z22JE (Zimbabwe) 5N7M (Nigeria) and 6W1SJ (Senegal).

In addition to these fixed stations, there were also the propagation beacon stations of S9SIX (50.079MHz Sao Tome and Principe), ZD8VHF (50.033MHz Ascension Island), ZS6JON (50.050MHz South Africa), ZS6TWB (50.044MHz South Africa), Z21SIX (50.002MHz Zimbabwe) and 9Q1D (50.021MHz Republic of Congo).

The first opening between northern Europe and South Africa (ZS) was reported between 1310-1320 UTC on March 27th 2010. **Ken Osborne G4IGO** (Somerset IO80) exchanged JT65 mode signals with Willem Badenhorst ZS6WAB but reception was very weak, not even good enough for a c.w. QSO.

Ken reports that no African television or southern European beacons were heard at the time. With the close-down of the last Spanish Band I television transmitter in March 2010 there are very few, if any, indicators to show that the 50MHz band is possibly open into southern Africa. An hour later, at 1405 UTC, the station of **Peter Scutt G3IBI** (Hampshire IO90) heard the beacon of ZS6JON peaking 319 over the 9000km path but no other African signals were noted at that time.

The 70MHz News

On March 31st 2010 the Estonian Minister of Economic Affairs and Communications announced a general release of the band 70.000–70.300MHz to all ES Radio Amateurs. Various power limits apply, 1kW for a Class A licence, 100W for a Class B licence (also applies to CEPT visitors) and 10W output for a Class D licence. All modes are allowed in accordance with the IARU Region 1 band plan and recommendations.

Next – here's an interesting development! The **Hong Kong Amateur Radio Transmitting Society** (HARTS) has recently obtained a temporary permit to operate a beacon on 71.575MHz. That's not a mistake – it really is 71MHz! The beacon using the call sign VR2FOUR runs 3W output into a vertical antenna and will be active until August 31st 2010. I'm not sure what the exact purpose of this beacon is (it may be a university project) but I hope to have further news next month.

Earlier this year **Glen Zook K9STH** submitted a proposal to the USA Federal Communications Commission (FCC) requesting access to the 70MHz band. Within the application he wrote *"The 4-Metre Amateur Radio band has been authorised in a growing number of European and African nations and establishing such privileges for Amateur Radio operators in the United States and other areas over which the Commission has jurisdiction would be of great benefit to those operators residing in such areas."*

"The recent migration of broadcast television stations to u.h.f. frequencies basically eliminates any probable interference to television channels 4 or 5. This might otherwise have occurred as the 4m band is located on frequencies that were allocated to television channel 4. Whether or not the FCC will consider establishing a new amateur radio band at 70MHz remains to be seen."

"In a major spectrum consultation exercise launched by the Bahraini telecommunications regulator, the Telecommunications Regulatory Authority is currently investigating whether all or parts of the band 69.950-70.500MHz should be offered to the Amateur Radio service in Bahrain (A9) for propagation experiments."

Coincidentally a new National Frequency Plan was published in March and Radio Amateurs in Bahrain are now authorised to use the band 50.000-50.500MHz on a national primary basis and 50.500-52.000MHz on a national secondary basis. The maximum peak envelope power at the antenna input is a massive 1.5kW for General Class licensees and 100W for Intermediate Class licensees. The first 50MHz QSO from the Kingdom of Bahrain was made on March 30th 2010 at 1730 UTC between the stations of A92GR and A92IO. So, keep a listen out for these and other A9 stations during the summer Sp-E season.

Maldive Islands DXpedition

During March a number of operators that included DL2NUD, DL3OCH, HB9CRQ and HB9QQ operated a DXpedition station located on Ari Atoll (MJ64) in the Maldive Islands. Using the call sign **8Q7QQ** the group were active on the 50, 144, 430MHz and the 1.3GHz bands making Earth-Moon-Earth (moon-bounce) contacts around the world.

On the 50MHz band they ran 400W output into a 7-element Yagi and made contact with the stations of JR6EXN (Japan), OH2BC and OH6MIK (Finland). Also worked were W1JJ, W1VHF, K6MYC and W7GJ (USA).

The most productive band for e.m.e. contacts however was 144MHz where the group made a total of 211 QSOs with stations in 39 DXCC countries. Running 500W into a 14-element crossed-Yagi, contacts were made with stations in Australia (VK), Austria (OE), Balearic Islands (EA6), Belgium (ON), Bulgaria (LZ), Canada (VE), Corsica (TK), Croatia (9A), Czech Republic (OK), Denmark (OZ), Estonia (ES), Finland (OH), Faroe Islands (OY), France (F), Germany (DL), Greece (SV), Hungary (HA), Ireland (EI), Italy (I). Also worked were Japan (JA), Malta (9H), Netherlands (PA), New Zealand (ZL), Poland (SP), Portugal (CT), Romania (YO), Russia (UA), Serbia (YU),

Sicily (IT9), Slovakia (OM), Slovenia (S5), South Africa (ZS), Spain (EA), Sweden (SM), Switzerland (HB9), Ukraine (UT) and USA (W). The UK-stations of G4CBW, G4EZP, G4FUF, G4YTL, G4ZFJ, G5WQ, G8VYK and GM6VXB were also contacted.

With only 100W and a 38-element Yagi contacts on the 430MHz band were obviously going to be a bit less plentiful. However, even with this low power system contacts were made with the stations of G4RGK (Buckinghamshire IO91) DF3RU, DK3WG, DL7APV (Germany), HB9Q (Switzerland), I1NDP (Italy), OH2DG (Finland), OK1KIR (Czech Republic), PA3CSG, PI9CAM (Netherlands), SM4IVE (Sweden and UA3PTW (Russia). The interesting point here is that if you can muster 100W and a single long Yagi – you should be able to work all these stations and many more.

Surprisingly, even more stations were worked on the 1.3GHz band. Working on 1296.090MHz with 90W output into a 59-element Yagi, digimode QSOs were made with G4CCH (Lincolnshire IO93), DF3RU, DJ9YW (Germany), ES5PC (Estonia), HB9HAL, HB9MDP, HB9Q (Switzerland), OH2DG (Finland), OK1DFC, OK1KIR, OK2DL (Czech Republic), PA3CSG (Netherlands), PY2BS (Brazil) and RW3BP (Russia). In reality, the 1.3GHz band is quite useful for e.m.e. purposes as it's relatively easy to generate large amounts of power with surplus Russian valves and physically small Yagi systems can possess a large amount of forward gain.

Because of the relatively low uplink powers and the use of single Yagi antennas all contacts from 8Q7QQ were made using the JT65 digital mode. This mode is intended for extremely weak but slowly varying signals such as those found on troposcatter or e.m.e. paths. The software can decode signals many decibels below the noise floor and often allow amateurs to successfully exchange contact information without signals being audible to the human ear.

Messages are compressed and then encoded with a process known as forward error correction (f.e.c.) using a Reed-Solomon algorithm and then transmitted using multiple frequency shift keying (m.f.s.k.) with 65-tones. The f.e.c. adds redundancy to the data such that all of a message may be successfully recovered even if some bits are not received by the receiver. Because of this f.e.c. process, messages are either decoded correctly or not decoded at all, with a very high probability.

The JT65 data mode is very tolerant of ionospheric effects such as doppler shift, fading and multi-path propagation and is excellent for weak-signal work over difficult paths. The software containing a number of weak signal communication programs (JT65, JT6M, FSK441, WSPR) can be downloaded free of charge from **http://www.physics.princeton.edu/pulsar/K1JT**

I've shown in the photograph, **Fig. 1** the 1.3GHz antenna used at the Lincolnshire QTH of **Howard Ling G4CCH**. As you can imagine this 5.4m diameter dish works extremely well on e.m.e. communications. During March he reported making JT65 contacts with the stations of IZ5MAO, JH0TOG (10W into a small 1.8m dish), PA0PLY, SM0ERR (running a single 55-element F9FT Yagi), UN7GK, VK4CDI, W3HMS and 8Q7QQ.

Contacts on c.w. were also made with the stations of F5KUG, F5SE/P, JA6AHB, K1RQK, K2DH, PA0BAT, PA3DZL and SV3AAF. It's slightly more difficult to make s.s.b. QSOs on 1.3GHz e.m.e. but Howard managed to work both W7JM and PI9CAM who was peaking 58. Signals were so strong from PI9CAM (running 60W into a 25m dish) that the station of G4CCH was also able to exchange slow scan television (SSTV) pictures.

Fig. 1: The 5.4m dish antenna at the QTH of Howard Ling G4CCH.

Both stations used the Robot-36 protocol (the same as used from the orbiting International Space Station) with a transmission time, not surprisingly, of 36 seconds. This is much faster than the popular Martin-M1 SSTV format that takes 114 seconds to complete. Enthused by his first time SSTV QSO via e.m.e. Howard then went on to make a similar Robot-36 contact with the station of PY2BS (Brazil) as shown in the photograph, **Fig. 2.**

Fig. 2: Slow Scan Television signal received by G4CCH via moon-bounce on the 1.3GHz band.

Deadline Time!

That's it again for another month and thank you for your reports. Now that the Sun has started to wake up there will be interesting times ahead! Good luck with DX on the v.h.f. Bands and I'll see you again next month.

73 David G4ASR

Carl Mason's

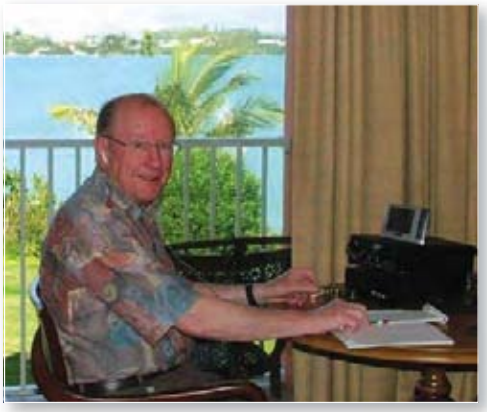
hf highlights

Carl Mason GW0VSW present his monthly up-date of readers' h.f. band operations.

Please send in your information, reports and photographs to Carl by the 15th of the month.

Welcome to the world of h.f. operating! The holiday season is fast approaching and whether you go travel abroad or take a break closer to home taking radio with you can add an extra element of enjoyment to your well earned break.

Earlier this year **David Plumridge G3KMG** decided to "do something different" from his normal run of the mill h.f. activities and change to his usual winter break. His wife then spotted Bermuda in a brochure so – with thoughts of doing a little operating from a not too common country, they booked the trip.



David said the hotel looked promising, as it was not the usual tower but smaller blocks all facing the sea and it had space at the front to put up a dipole. He wrote, "With invaluable assistance from **Allan Davidson VP9AD –** permission was obtained from the hotel to erect an antenna from the balcony."

Having obtained his licence David began operating as **G3KMG/VP9** 14MHz using c.w. and 50W. After a couple of QSOs with Ws in Texas and Pennsylvania he nearly fell off his chair when **John Hawkins VK6AU** called from Perth – which is about as far as you can possibly get from Bermuda! "I knew then that I was going to have fun, although being on holiday meant that operating was limited I still managed 800 contacts. Although VP9 is not particularly rare, I was very popular at times because I was told that there are not many Morse operators active from Bermuda except in contests."

"Being at the other end of a pile up was a novel experience and was hard work and operating split frequency was essential at times to speed things up. I find that break-in 'mucks up' my sending so I rarely use it at home but persevered on holiday and found it very helpful in quick-fire operating. When I was using the call as on my licence G3KMG/VP9 it was difficult at times to get any answers to my CQ calls. On advice from **Robert 'Rocco' Taylor VE3YS** during a rare s.s.b. QSO I tried using VP9/G3KMG instead. What a difference! Unsurprisingly, as soon as a station hears 'CQ de G3…..' off he tunes for tastier fish!"

"But when it is 'de VP9/.....' the other station takes the bait and the rest of the pack comes in for a bite."

David usually operated before his evening meal around sunset and was pleased to hear the JA stations suddenly pop up – thanks to grey line propagation – and found the callers to be among the most courteous and efficient operators. David also mentioned that he was able to work into Europe without a problem – but managed only a handful of Gs.

Note from Carl: If any of you do operate away from home or on holiday please let us all know how you get on. Your help or advice could help others!

New Beacon

There is now a new permanent beacon active from Bellinghausen, the Russian Antarctic station on King George Island, South Shetlands. The beacon R1ANF has been active since March 8th and consists of an Icom IC-706 with AT-180 antenna tuner, a switch mode power supply with a PROCOM HF-5000 vertical antenna and a GPS synchronised controller.The beacon is working on 14.101MHz and transmits the following message every full minute: "VVV R1ANF ANTBEAP R1ANF AR".

The carrier signal level is reduced – similar to the NCDXF beacons (on 14.1MHz) starting with the callsign of the beacon sent at 22 words per minute followed by four one-second dashes. The callsign and the first dash are sent at 100W while the remaining dashes are sent at 10W, 1W and 100mW.

Another beacon is ready to be installed at Novolazarevskaya station and will be active on the same frequency using the callsign R1AND. Both are part of the Antarctic Beacon Project or ANTBEAP to explore wave propagation in the Antarctic region, so if you do copy the signal please send a report to **Dominik Weiel DL5EBE** (details on QRZ.com).

Note: The NCDXF, in co-operation with the IARU, has constructed and operates a worldwide network of h.f. radio beacons on 14.100, 18.110, 21.150, 24.930, and 28.200MHz. These beacons help both Amateur and commercial h.f. radio users assess the current condition of the ionosphere and the entire system is designed, built and operated by volunteers. Further information on this project can be found at **www.ncdxf.org/beacons.html** The site includes a list of all beacons with their locations, tools for listeners, monitor stations which save the daily results as gif files which can be uploaded to a web site as well as photographs of the many beacons.

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It makes for interesting reading – so please take the time to look the site up.

The DX News

On to this month's DX news now and the Pacific Ocean where **Sergey Oskoma UX0HX** and five other operators including RK3FA, UR3HR, US7UX, UT1HF and UT5UY will be active on all h.f. bands using c.w., s.s.b. and digital modes from Samoa, Central Kiribati and Tokelau as follows, May 18th–19th as **5W0OX** from Samoa OC-097, May 22nd–June 1st as **T31X** and **T31UR** from Central Kiribati OC-043, and June 2nd–6th as **ZK3X** from Tokelau OC-048. The QSL route for all callsigns is through the bureau via UR3HR or direct to **Leonid Babich, PO Box 55, Poltava, 36000, Ukraine**.

More information is available at **www.uz1hz.com/pacificodyssey.html** At the outbreak of the First World War in 1914, New Zealand occupied the German protectorate of Western Samoa – which was roughly half way between Hawaii and New Zealand. New Zealand continued to administer the Islands as a mandate and then as a trust territory until 1962, when the islands became the first Polynesian nation to re-establish independence dropping the 'Western' from its name in 1997.

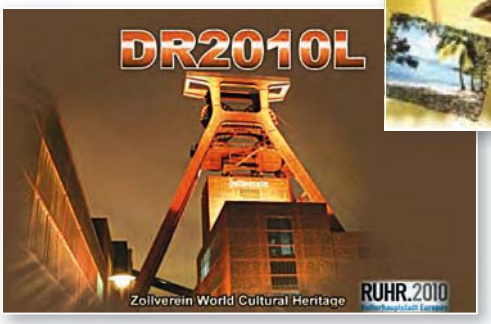
Something from Italy now! **Antonio Canova** 1757-1822 was an Italian artist who became famous for his marble sculptures that delicately depicted the nude human form. The callsign **IU3AC** will be active until May 31st, promoting the **Antonio Canova Award**, which is issued by the ARI Section of Treviso to celebrate this famous sculpture. To obtain the certificate you need to work Amateur stations located in Treviso City. Stations in European Union (EU) stations require two QSOs, while DX stations require just one and endorsements are available for any other mode or band used.

All contacts must be made between 0000h May 1st to 2359UTC on May 31st of each year. The QSL route should be via IK3GES, direct or through the bureau and the *Log book of the World* (*LoTW*). More details are available at ARI Treviso **www.aritreviso.it/Diploma Canova.html**

Your Reports

On to your reports next and the log of **Martin Addison 2E0MCA** in East Finchley, North London starts us off this month. Martin was using a Yaesu FT-2000 and 50W to a G5RV, his voice contacts on 3.5MHz included PA6Z (Netherlands) 0805, DR2010L (Germany) 2105 a special call for 'Ruhr 2010 European Capital of Culture (The QSL route via DK9ETM) and TM7WAP (France) 2058 – a special call for Antarctic Week (QSL via F8DHE).

Next, I welcome a new reporter – **George Davis G3ICO –** in Mudford, Yeovil, who said in his E-mail, "I have been at this game for over half a century and was taught my Morse code during National Service. Being retired, I can get on the air at all times and all my contacts have been made with c.w. running 10W or less – so hopefully they will give some encouragement to holders of the Foundation Licence.



Most contacts from G3IC0 were made with the Elecraft K2 (10W) and a few with the K1 (5W), "using a doublet 40 metres long and about 10 metres high at the centre." Well George's log included GI0KOW (Northern Ireland) EU-115 at 2139 followed by W1MK (USA) in Boxford, Massachusetts at 2221, while on the 7MHz band he found VK3EGN (Australia) in Geelong, Victoria at 0824 and K8LV (USA) in Holly, Michigan at 0841UTC.

Eric Masters G0KRT in Worcester Park, Surrey used a Kenwood TS-570 at 5W and home-brew modified W3EDP antenna 84ft long with counterpoises tuned with an SGC SG-230 to have 5W c.w. QSOs with DL2FN (Germany) 1939. This was followed by LY2PX (Lithuania) at 1948 while 100W s.s.b. found N1IW (USA) in Derry New Hampshire at 0749UTC.

The 14MHz Band

On to 14MHz next, and the log of **Bill Ward 2E0BWX** in Edwinstowe, Nottinghamshire who used PSK31 again and 25W, working OK1UUS (Czech Republic) 0822, DK5MJ (Germany) 1012, IZ0FYW (Italy) and SQ9BEJ (Poland) 1421. His 50W voice contacts included SQ8OKV (Poland) 1105, AO6ANT (Balearic Islands) EU-004 at 1115 and S53IV (Slovenia) at 1150. All were achieved using an Icon IC-7400 and Diamond CP-6 vertical antenna.

Living on Gran Canaria Island (AF-004) is **Baltasar 'Bal' EA8BVP** – who works mostly QRP c.w. with simple wire antennas. At present Bal is trying to get some G QRP Club awards and also his DXCC. You can find him active most mornings /P or /M with a battery powered Yaesu FT-817, LDG Z11-Pro antenna tuning unit (a.t.u.), 6m fishing rod with 6.5m of wire and a home-brew paddle around the usual QRP 'watering holes' on 10MHz and up before 0900UTC.

Incidentally, I managed a 2xQRP contact with Bal on 14MHz at 0854 running my '817 and 5W to a modified SRC X80 vertical.

In Cambridge, New Zealand **Peter Leng ZL4TE** has been discovering the delights of PSK31 and other digital modes. This month he decided to try slow scan TV (SSTV) after reading an article by **Colin Redwood G6MXL** in his *What Next?* column in the March issue of *PW* last year. Using his Yaesu FT-1000MP Mk *V* with an interface from **G3LIV** and software from *Ham Radio Deluxe*, and using a Cushcraft AV-3 vertical antenna and 100W, Peter worked his first two stations. They were EA5FO (Spain) 0827 and VK2CAW (Australia) in New South Wales at 1022, while his 500W s.s.b. log included EA6UN (Balearic Islands) 0813, EA8BN (Canary Islands) AF-004 at 0839, PI4ZI (Netherlands) 0905 and LU1DCH (Argentina) at 1009UTC.

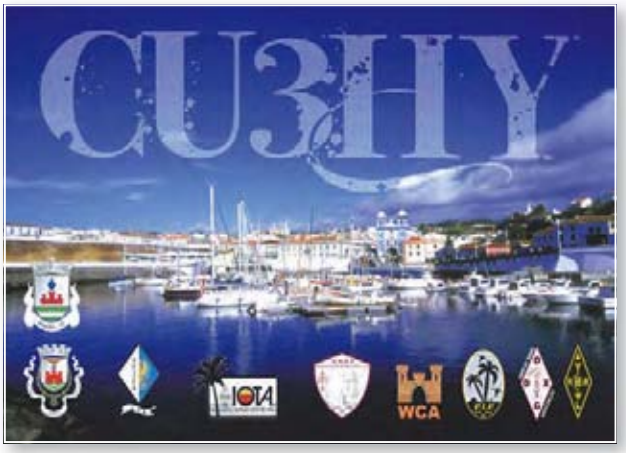
It has been a while since **David Bambrook 2E0DAB** in Little Milton, Oxford sent in a log as work had taken over for a time. However, using a Yaesu FT-747GX and loft installed dipole for the band, he worked s.s.b. stations E73E (Bosnia) 0950, IZ2FHF (Italy) 1045, SP2QOT (Poland) 1055,

EA3BFX (Spain) 1115, S51GL (Slovenia) 1120, LY2J (Lithuania) 1133, W8FHF (USA) 1224 in Norwich, Ohio, OM5PM (Slovakia) 1304 and YO2MIL (Romania) at 1634UTC.

Our next new reporter is **Tom Ruddell 2I0TJR** from Portadown, County Armagh who uses a Kenwood TS-570DGE and 50W output to a home-brew vertical antenna, which is just 3m above ground for the band. His impressive s.s.b. log includes OD5NH (Lebanon) 1401, V7T (Senegal) 1806, ZS2CR (South Africa) 1828, PY6HD (Brazil) 1929, CU3HY/P (Azores) EU-003 at 1934, VO2NS (Canada) 1935, 9Z4CT (Trinidad & Tobago) SA-011 at 2100, YV5ABH (Venezuela) 2112, CO6LC (Cuba) NA-015 at 2210 and VP8LP (Falkland Islands) SA-002 at 2255UTC.

Welcome also to **Paul Colyer M6PCZ** in Torquay, Devon who has just passed his Foundation Licence examination and received his new callsign in February. His station consists of a Kenwood TS-480SAT with a MFJ 949E a.t.u., Kenwood MC60A base microphone and a 130ft end fed wire with, while for mobile work he uses a Kenwood TS-50 and mono-band mobile whip mounted on the roof of his car. His first contacts on the h.f. bands were using PSK31 from home and were with S51AY (Slovenia) 1624 and YU7MK (Serbia) 1828.

Paul's first s.s.b. QSO was with **Adam Toynton M6RDP** from the **Watcombe Radio Club** where he took his exam. But this was quickly followed



by VA2PW (Canada) in Trois-Rivieres, Quebec at 1533 for a 5/4 report while mobile and on his return home the same station again with a 5/9 report! Paul said, "It goes without saying these contacts were made using just 10 watts, I see no point in doing otherwise!"

Also on the band was **Martyn Medcalf M3VAM** in Chelmsford, Essex who worked s.s.b. stations RC9O (Asiatic Russia) 0937 QSL via UA9PC, LZ1195IR (Bulgaria) 0938 a special call for St. John of Rila (QSL via LZ1KZA). Then came RK3DH (European Russia) 0945, IK7JWX (Italy) 0956 and S57OMA (Slovenia) 1431UTC using a Icom IC-746 and Comet CHA-250BX vertical.

The 18, 21 & 24MHz Bands

On 18MHz Eric G0KRT logged voice contacts with UA9XL (Asiatic Russia) at 0946 and later KG9N (USA) in Congerville, Illinois at 1433UTC using 100W. Tom 2I0TJR logged VE3XN (Canada) 1413, YN2TX (Nicaragua) at 1814 QSL via KB8TXZ and KH7XS (Hawaii) OC-019 The Big Island Contest Club at 1853UTC using s.s.b. again.

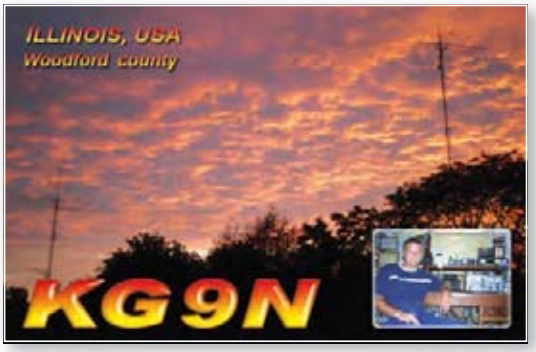
The c.w. from George G3ICO worked JA7DLE (Japan) 0840, ZB2FK (Gibraltar) 1202, KP2/K3CT (Virgin Islands) NA-106 at 1410, 5X1NH (Uganda) 1459 QSL via G3RWF. Then came 8P9AA (Barbados) NA-021 at 1506, V21RI (Antigua & Barbuda) NA-100 at 1521, ST2AR (Sudan) 1708 (QSL via S53R direct only), VP2MPL (Montserrat) NA-103 at 2029 and OX3XR (Greenland) NA-018 at 2059. Martin 2E0MCA tried 21MHz logging s.s.b. calls SV8PKI (Greece) on Samos Island EU-049 at 0941, RV3EFR (European Russia) 1023 and Z30U (Macedonia) at 1252UTC.

The 24MHz band was open for a time and Eric managed a 100W c.w. contacts with K1TG (USA) in Naugatuck, Connecticut 1620 and W9YYG in Joliet, Illinois at 1639 and a voice contact with N2TK/NP2 (Virgin Islands) at 1716. George G3ICO found 3B8DB (Mauritius) AF-049 at 1110 and KP2/K3CT again at 1540UTC.

Signing Off

It was good to receive so many logs this month and to welcome some new reporters! I hope I have managed to pull out the interesting contacts and given you all and feel for the DX around during the day!

As usual my thanks to all our reporters and to **Maurio Pregliasco I1JQJ/KB2TJM**, the Editor of the *425 DX Newsletter* for all the DX information. Until next month I wish you all good DX. **73, Carl GW0VSW**



Harry Leeming's

in the shop

Harry Leeming G3LLL is in his element this month as he continues chatting about the Yaesu FT-990 and an unusual fault.

Welcome to *In The Shop* (*ITS*) where I'm still thinking about my favourite 'Sell and forget' rig, the FT-990. However, mentioning the FT-990 last time reminded me of a simple but rather odd fault that I once had, which could occur on many other rigs and which demonstrates the effect of unwanted negative feedback.

The rig would only produce a few watts output, and yet the power amplifier (p.a.) stage seemed okay. I then traced the transmit signal through the various stages, and found that it seemed to be getting lost in the pre-driver stage, Q1022 on the radio frequency (r.f.) board. Normally, Q1022 should have been amplifying the signal, but there was very little gain, and the r.f. at the output of the transistor, wasn't much greater than it was at the input.

However, all the voltages seemed okay, Q1022 measured okay during my tests. All the other components such as the capacitors and the r.f. chokes were tested by substitution, all to no avail. The question then was – what could kill the gain without upsetting the direct current (d.c.) conditions?

Harry's Suspicion

My suspicion eventually fell on R1132, see **Fig. 1**, which is in the circuit to provide negative feedback to stabilise the gain. Oddly enough, it hadn't gone high enough to alter the d.c. operating conditions appreciably. Despite this it had increased in value to nearly a 100Ω, and was producing so much negative feedback that the stage gain had just about disappeared. Incidentally, R1132 is a microscopic surface mounted resistor but I replaced it with a standard 0.25W device and all was well.

Any impedance or resistance in the cathode circuit of a valve, the source circuit of a field effect transistor (f.e.t.), or the emitter circuit of a transistor will create negative feedback, and drastically reduce the overall gain of the stage. To prevent this, such a component will usually be by-passed, but it's not unknown for the by-pass capacitor itself to go open circuit.

The fault is quite a common with valve amplifying stages and tends to happen when an electrolytic capacitor used in this position gets warm and dries out – because it has been placed near to the (warm) cathode resistor. So, if you can't find another cause of reduced gain in an amplifying stage, try temporally connecting a substitute capacitor in parallel with the cathode by-pass capacitor. Often you'll then find that the gain increases considerably and the fault disappears.

The FT-290 Mystery Fault

In the August 2007 issue I mentioned an odd fault on the FT-290's automatic gain control (a.g.c.) and automatic level control (ALC) system system. This fault seems to be becoming more and more common and I now receive many E-mails from readers who have the problem, and who either missed or have lost the August 2007 issue of *PW*.

Typically when you switch on a suffering '290, the S-meter meter reads ¾ scale, and the receiver is very deaf, **or** the S-meter goes over to full scale and the receiver will then not receive anything and the rig will not transmit. However, over the next five to 30 minutes the S-meter gradually sinks to zero and the rig then performs as normal.

What's actually wrong is somewhat of a mystery! But somehow the base of the a.g.c./ALC transistor Q1014, **Fig. 2**, is becoming positive with respect to its emitter, causing it to conduct. The fault will temporally clear if D28 and D29 are warmed with a soldering iron, or sometimes if they are replaced. This is possibly a 'red herring' as warming up the diodes reduces their reverse resistance, as will fitting poorer quality diodes.

In some cases just 'messing around' with the set seems to cure it and I have even found that cleaning the printed circuit board (p.c.b.), can have an effect. I have wondered if gases from overcharged NiCad cells could have left a deposit somewhere – but no one seems to know.

The only 'sure cure' on the sets that I've handled has been to connect a 47kΩ resistor between the base and emitter of Q1014, **Fig. 3**. I admit that this is somewhat of a bodged repair, which I stumbled on some

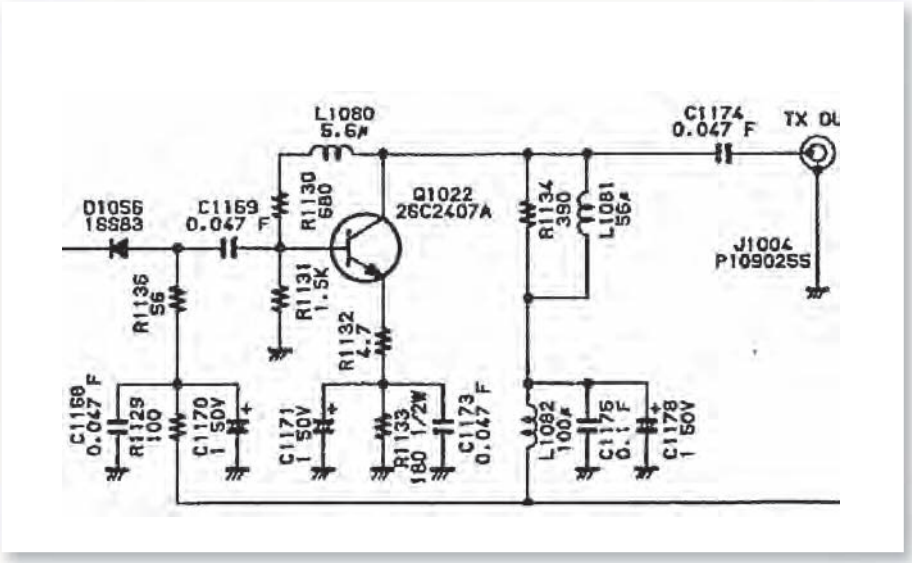


Fig. 1: Harry's suspicions eventually fell on R1132, as killing the gain without upsetting the direct current (d.c.) conditions.

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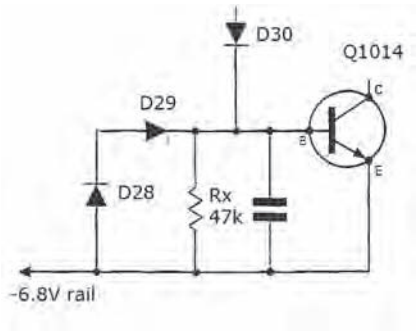

Fig. 2: the skeleton layout of the FT-190's a.g.c. circuit.

Fig. 3: A simple modification, putting a 47kΩ resistor as shown seems to cure the a.g.c. problem with some FT-290s.

years ago when I connected a test meter between these points, but for many readers it seems to have done the trick.

I sent an E-mail to Yaesu about the problem, and got the following refreshingly honest reply.

"This was a known problem with the FT-290 model, but I am afraid that no one in Japan can provide a reason for it occurring. Most of the engineers who worked on this model have now either retired or left the company and as it is now an obsolete product none of the design criteria for the a.g.c. specs are available.

Your cure for the problem appears to be the most effective solution to the problem and I am sorry we are unable to provide a definitive reason for it occurring."

Now it's over to you *PW* readers! Someone somewhere must know the answer to the following questions. Where is the voltage coming from that makes Q1014 conduct when the set is switched on from cold? Why does the fault disappear after half an hour, and what is the reason that fitting a 47kΩ affects a cure? I don't often see a rig with this fault myself, but only hear about it via E-mail. Perhaps someone out there with recent hands-on experience can come up with an answer – we're all waiting with baited breath!

Better Than A Cure!

Prevention is better than a cure! I've previously mentioned that the batteries in the FT-290 can catch fire if the the switch on the d.c. socket fails to open, when the rig is connected to an external supply.

I received the following suggestion from **Tom Ellinor G4DFA** from Banstead in Surrey, which seems like a good idea. Tom wrote, "The issue of FT-290/690/790 Mk1 battery packs catching fire is a well known problem. It usually occurs if the plug gets pulled out slightly allowing the external 12V to be connected across the NiCad cell.

My solution (and one that a number of people I have heard use) is to insert a Shottky (for low forward volt drop) diode in series with the battery such that the current cannot run back into the NiCad from the external supply. The down side is that you loose a little output because of the additional slight voltage drop across the diode when it's running on batteries."

Many thanks for that Tom! Alternatively you can, of course, remove a battery whenever you are using the '290 on an external supply – but you may forget. Tom's remedy is 100% fail safe.

That Glue Again!

I have mentioned several times the rubbery glue that Yaesu and several other manufacturers plastered oscillator stages with. **Terry Web** E-mailed me to report success with 'Stain Devils' stain remover. They make several types but the one that seems to soften the glue is labelled as being effective against grease, lubricant, tar, wax, and chewing gum amongst other things. Terry recommends applying a liberal application, leaving it to soak, and then washing it off with methylated spirit.

Not Happy!

'George' (not his real name) had recently swapped his FT-101ZD, for a more modern solid state rig, but he wasn't happy! "This FT-757 is supposed to give 100 Watts out, but the output shown on my power meter is far less than I used to get with the '101. With the '101 if I turned the microphone gain up as I spoke I got peaks of around 30 to 40 Watts, with this new rig I can only get around 10 or 15 – there must be something wrong."

In answering the complaint from 'George' I made him aware that transistors have rather different overload characteristics to valves. **Fig. 4** shows the p.a. stage of the FT-101 series of rigs. If you turn up the volume on a good quality valved Hi-Fi amplifier that's wired to speakers that can comfortably handle the full output, you'll notice a gradual increase of distortion as the amplifier starts to overload. If you do this with a transistorised amplifier however, you'll find that beyond a certain point the distortion increases rapidly and the sound quality is then awful.

As an example; about 40 years ago I gave a demonstration of a d.i.y. Budget Hi-Fi system in a concert hall that seated 850. The Rogers Cadet valved amplifier we used had an root mean square (r.m.s.) output of 6W per channel, and the speakers were Wharfedale 8in units mounted in concrete drain pipes. So that the concert hall audience could hear it, we had to push the amplifier to well past the point where the peaks were clipping – and yet the sound quality was still quite acceptable. To get the same apparent volume from a transistorised amplifier would have required two or three times the power.

Incidentally the d.i.y. system was a huge success, and we ended up buying large numbers of concrete drain pipes! I can still remember the puzzled looks on the faces of the delivery drivers who wondered 'why on earth a photographic/Hi-Fi shop should want a load of 20 or 30 concrete pipes weighing around one

hundredweight (1cwt - around 50kg) each.

While on the subject, it's worth looking back to the 1970s. In those days the Hi-Fi industry was run by enthusiasts, many of whom, while managing to run very successful businesses, seemed far more interested in the quest for the ultimate in sound quality, than in just making money! At that time the UK was a world leader in quality Hi-Fi, and we had some quite iconic figures, such as **Harold Leak** of Leak amplifier fame, **Peter Walker** of Quad, and **Gilbert Briggs** of Wharfedale.

To return to valved and transistorised radio frequency power amplifiers. The circuit of a typical valve p.a. stage is shown in Fig. 4. If you overdrive the stage the valves pass grid current on voice peaks through the bias feed resistor R8.

The pulses of audio are rectified by D2 and D3, and the resulting negative voltage is then fed back to an early stage and is used to turn the gain down to reduce the drive. This kind of automatic level control or automatic linearity control, only starts to work once the stage is being driven into overload – and so allows quite an amount of overdrive or 'flat topping' before it kicks in.

Many people who claim that they never use speech processing or clipping, don't seem to realise that with a valved rig, by advancing the microphone gain control until the ALC meter starts to become active, they are applying speech compression and clipping all the peaks.

Fortunately, as in the case of my Hi-Fi demonstration, valves don't object too much to being overdriven a little. As the output of a valved p.a. stage also contains a tuned circuit, a small amount of overdriving doesn't cause too much distortion with its resultant 'splatter' on adjacent channels. However, with transistors and a broad band output circuit it's a different story.

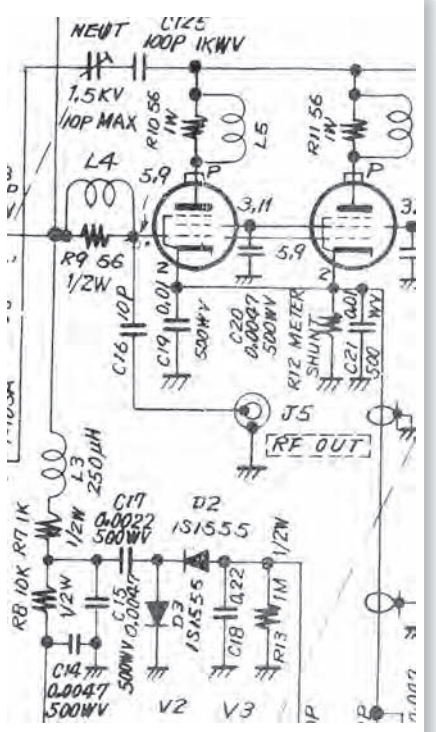

Fig. 4: The p.a. stage of the FT-101 series of rigs.

Transistorised RF Amplifier

A transistorised r.f. amplifier distorts like mad if it is driven into clipping and produces 'splatter' over a wide bandwidth. It's no use in this case having an ALC system, which kicks in as the distortion starts, it must be set to act well below the distortion threshold. Typically a 100W transistorised rig will be designed to produce around 150W maximum but will be held back to 100W to ensure a clean transmission.

Quite apart from making sure that the transmission is not anti-social (ie. not splattering!), the ALC system helps to protect the output transistors from self destruction and so tweaking the internal controls to get a little more power is definitely not a good idea. The only way you can increase the average output of a transistorised rig without causing interference to other operators, is to use some form of speech clipping or processing. If you can get hold of one second hand, my favourite is the Datong unit.

I remember chatting to the sales director of a large American Hi-Fi company at an audio fair, he seemed to forget all about trying to sell me his companies products, all he could talk about was his thrill at just having been introduced to Harold Leak.

Many of the participants beside being competitors were friends, I recall reading the book by Gilbert Briggs on Loudspeakers, in which he devoted a chapter to describing and praising the 'Quad Electrostatic' loudspeaker.

Wharfedale produced a range of d.i.y. speaker designs and kits, one of which was the drainpipe loudspeaker. The pipe was turned into a very substantial base reflex cabinet by a kit of parts, which loaded the rear of the 8in speaker unit, and formed ports at floor level.

The speaker sat on the top of the pipe pointing upwards, the high frequencies being directed into the room by a metal cone. I had two and when wallpapered and tucked into corners they looked quite good and sounded vastly better than I would have expected considering the cost. They made quite a talking point as well!

The ultimate Wharfedale speaker in those days, was their d.i.y. corner assembly. It followed two of Gilbert Brigg's speaker philosophies. "As with boxers: a good big one will always beat a good small one", and "A really solid cabinet is as important as the speaker units." It had a tweeter, a mid unit, and 15in base unit.

The cabinet? You built it with house bricks. My father-in-law had two built into the corners of the lounge whilst his bungalow was being constructed and they must have weighed a ton each. They were the only speakers I have every come across with built in damp courses and I have never (to this day) heard anything reproduce pipe organ sounds as well as they did! ●

Problems

I like to hear about problems with older equipment, particularly pre 1990 Yaesu rigs. Please email me, (add some radio related term in the subject heading, to differentiate against spam), or write and enclose a stamped addressed envelope. Remember that electricity is dangerous, if you are not familiar with safety precautions you must never work on your equipment whilst it is plugged into the mains. (Switching off at the wall socket does not necessarily make equipment safe)

TRADERS TABLE

The equipment for sale on this page is secondhand or ex-demonstration

Disclaimer

Advertisements from traders for equipment that is illegal to possess, use or which cannot be licensed in the U.K, will not be accepted. While the publishers will give whatever assistance they can to readers or buyers having complaints, under no circumstance will the magazine accept liability for non-receipt of goods ordered, late delivery or faults in manufacture.

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01202 490099

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ALINCO DJ-195 ..... £100
ALINCO DJ-S11 ..... £75
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ICOM M11 Marine H/H £70
ICOM PMR 446x2Water Resist/w.charg £200
STANDARD HX260E Marine H/H New £99

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YUPITERU MVT 7300 ..... £99
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BEARCAT UBC-9000XLT £80
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WATSON W25AM PSU £75
CG SB-2000 DATA CONTROLLER £75
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ZETAGI HP1000 SWR METER £65
MFJ 948 TUNER £75
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KENWOOD MB11 MOUNT ..... £POA
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ALINCO DR135 2M MOBILE TX 99
ALINCO DX-SR8 HF TRANSCEIVER 425
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KENWOOD TS570D TX WITH SP430 625
YAESU FT817 HF/6/2/70 PORTABLE 299
YAESU HX280E MARINE HANDHELD 79
YAESU VX8 TRIBAND 6/2/70 HANDHELD 225

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ICOM R20 HANDHELD SCANNER 249
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MIDLAND 38 MOBILE CB RADIO 49
ETON E5 PORTABLE SHORTWAVE RADIO 69
ETON G3 PORTABLE SHORTWAVE RADIO 69
ETON S350 RED PORTABLE RADIO 59
ETON G8 PORTABLE SHORTWAVE RADIO 39
ETON E100 PORTABLE SHORTWAVE RADIO 35

WATERS & STANTON

01702 206835

Make	Model	Description	Price
Uniden	UBC-60XLT	66-512MHz (with gaps) FM Hand Held Receiver 80Ch. 4 x AA cells	£55
Icom	IC-A3E	Airband H/Held + NAV/COM 50ch Alphanumeric	£180
Optoelectronics	Optolinx	TTL to RS-232 Interface (supports 4 devices)	£65
Ameritron	AL-82	10-160m 1.5kW Linear Valve Amplifier with 2x 3-500 Tubes	£1,699
Microset	PT-110	12V Stabilized 10A PSU with Over V / A protection	£69
Nevada	PSDL	50ohms Dummy load Dc-3000MHz max 15W	£30
MFJ	MFJ-216	Deluxe Amplifier Saver to Adjust Amplifiers without Transmitting	£55
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Alinco	DJ-X3E	100kHz-1300MHz AM, FM, WFM Hand Held Receiver 700Ch, 8.33kHz + Ni-MH & Charger	£109
Eton	E1100	Compact Portable AM, FM stereo & 10 Shortwave Bands Receiver + Clock	£25
Panasonic	GX-3700	Portable Receiver with 32 presets FM LW MW	£29
Alinco	DJ-X7E	100kHz-1300MHz AM, FM, WFM Hand Held Receiver 1000Ch + 8.33kHz step .	£115
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Nissei	RS-402	125-525MHz SWR,PWR meter 5/20/200W	£39
Midland	SWR-25	3.5-150MHz SWR / Power Meter 100W	£29
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Microset	RV-45	2m 3-15W in, 45W(Max) out SSB / CW / FM Linear	£89
Adonis	AM-503G	Base Microphone with Amp and Compressor	£49
Icom	IC-PCR100	500kHz-1300MHz AM, FM, WFM PC Controlled	£149
Optoelectronics	Model-2810	10Hz-3GHz Frequency Counter	£145
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Fantavox	VHF-105	108-136MHz Airband Converter using any MW or FM Broadcast Radio needs PP3	£19
Academy	CB-34	3-way SWR Bridge and Field Strenght Meter 25W (3.5MHz) 15W (7MHz)	£15
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Alinco	DR-605E	2m,70cm FM Mobile Transceiver 50W,35W + CTCSS	£119
Yaesu	FT-690mkII	6m All Mode Portable Transceiver 2.5W 8 x C cells or 12V	£199
Yaesu	FRV-7700E	118-130, 140-150, 150-160MHz Converter for FRG-7700/8800	£59
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Icom	IC-PCR1000	500kHz-1300MHz All Mode PC Controlled Receiver 12V + psu	£189
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Microset	R-25	2m 1-4W in,30W out all mode + GaAsFET Pre-amp	£40
Microset	RU-45	70cm 3-15W in,45W out Linear + GaAsFET Preamp	£149
Microset	RV-45	2m 3-15W in, 45W(Max) out SSB / CW / FM Linear	£89
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RADIOWORLD

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Yaesu VX-7R Silver Tri-band Handy	£189
Bearcat UBC-9000 Scanner	£179
Yaesu FC-20 Antenna Tuning Unit	£175
Yaesu FV-901DM VFO	£175
ICOM IC-2200H 144–146	£175
Icom AT-150 Auto antenna tuning unit	£169
Yaesu VR-500 100kHz-1300MHz Scanner	£169
UBC-3500XLT * NEW * Uniden Bearcat Handheld Scanner	£169
Kenwood TS-271E	£165
Icom PS-85 Icom 20A 13.8V Switch Mode	£159
M/Mods 144/100	£149
Microset PT 135 PSU	£149
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ICOM IC-R72 RECEIVER with operating manual. In very good condition, £345. JRC NRD-525 receiver in very good condition. No manual, £375. Delivery free up to 50 miles. Further afield at fuel cost. Tel: G3RJS QTHR 01243 262054 (Chichester, W. Sussex).

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KENWOOD R-820 TS-440 parts. May part exchange. WHY. Tel: 01279 815020 (Essex).

OLD HALF INCH FERRITE RODS must be half inch, 12.7mm, in diameter and be six inches long or more. Will pay very good money for the rods. Tel: Peter Tankard 0114 2316321 between 9am and 9pm (Sheffield).

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There have been a variety of changes to AIRWAVES since 2009. Quite a number of Military Discrete frequencies have been added, plus many existing frequencies have been reconfirmed. Further changes are likely in 2010, as it appears that the top of the Military Airband from 380 - 400 MHz will be handed over to the emergency services to increase the frequency management capability for the London Olympics. Some frequencies have already been moved out of this band recently, including three at Brize Norton. Seven London Military (East) frequencies have been moved to Scottish Military, which has been split into North and South areas and expanded. Manchester Area Control has closed and has been relocated to the Scottish Centre. All Upper Airways have been withdrawn from Shannon Control and the Oceanic Transition areas, leaving just Reporting Points, including many new ones.

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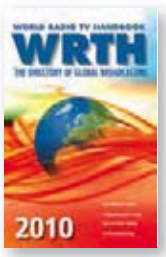

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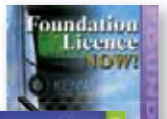

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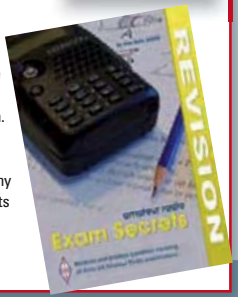

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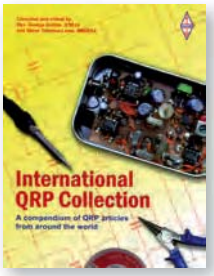

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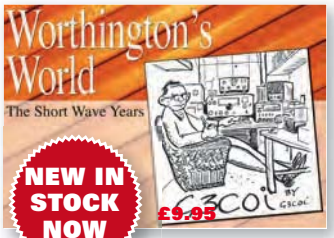

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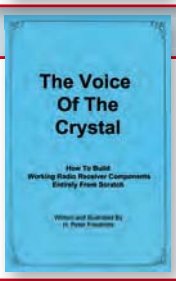

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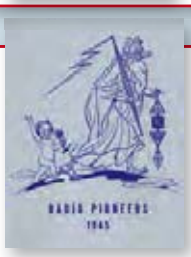

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Rob Mannion's

topical talk

This month Rob G3XFD discusses how we can publicise and promote our hobby while assisting other 'worthy' causes.

The letter from **Nigel Ferguson G0BPK** (*Letters* pages this month) clearly illustrates to me just how effective Radio Amateurs can be as voluntary 'Ambassadors'. Nigel G0BPK is a keen Amateur and is very proud of his town – Pontefract, a medieval town in West Yorkshire, which is (justly in my opinion) famous for its Liquorice products!

I've recently been in contact with Nigel to ask after a friend and ended up chatting via E-mail. I know the area quite well from my broadcasting work and I realise that Pontefract is somewhat overshadowed by the burgeoning Wakefield urban area.

I mentioned to Nigel that I had recently watched a TV documentary *Michael Portillo's Great Railway Journeys* on BBC2, where this well known former politician travelled across England by regional train services. Pontefract featured in the programme I watched and during it, **Mr Portillo** saw Liquorice being made and was also shown the only known Liquorice plant still being grown in the area. It's from the roots of this small bush (once widely cultivated in the area) that the confection is made.

I've always enjoyed Liquorice – especially Pontefract Cakes, the small round discs of the confection that are still made in the town by Dunhill Haribo, the famous Anglo-German sweet makers. I mentioned this to Nigel and then forgot all about it until a few weeks later when several packs of Pontefract Cakes arrived at the *PW* offices – a kind gift from Nigel!

It turns out that over the years that Nigel G0BPK and his family have been visiting the Isle of Man during their holidays – samples of the confection have been shared with locals. In this way, and via his Amateur Radio activities, Nigel does his best to ensure that Wakefield and the nearby giant Ferrybridge power station don't get all the publicity!

I then learned about the **Yorkshire Day** and the **Lancashire Day** that's organised on the western side side of the Pennine mountain chain, together with the Special Event (SE) Amateur Radio stations that operate to celebrate them.

Promoting Amateur Radio

Special Event (SE) callsigns – issued by Ofcom, the UK's regulator – are a superb way of promoting our hobby to the general public and drawing attention to the events they're associated with. Of course, the special callsign GB75PW celebrating *PW*'s 75th anniversary comes to mind here!

Weekends are an especially good time to hear Special Event callsigns on the air – celebrating and promoting anything from long-established village fairs to steam fairs and preserved railways. In fact, the list is endless – although I often feel that opportunities are lost!

I find that I always learn something new when I work a new SE station – whether it's celebrating a small town remembering an industry that it was once famous for, or perhaps commemorating someone famous – such as the great Scottish Bard **Robert Burns**. I'm also privileged when it comes to preparing fascinating news items to help attract other Amateurs to work SE stations. Indeed, one of the most interesting recently was a restored church tower SE station!

However, despite the large number of SE stations that are to be heard on the air during the year – I'm sure that many areas (and the local Amateur Radio clubs) – could help promote their own interesting surroundings to the rest of the world with an SE station. It's an extremely effective public relations (PR) tool and PR is something I've encouraged for many years.

However, there's another aspect of operating an SE station that can only be appreciated during and after operating with a special call – and this is the thrill of the action! Indeed, I found that operating GB75PW from the **Poole Amateur Radio Society** was exciting and the members thoroughly enjoyed themselves trying to work the resulting pile-ups! It was the same wherever GB75PW was 'aired' from – everyone enjoyed the experience. So, why not publicise your own area via our hobby? You never know – the local council or other organisations may even fund QSL cards and everyone will know a little bit more about you and our hobby!

Rob Mannion G3XFD/EI5IW

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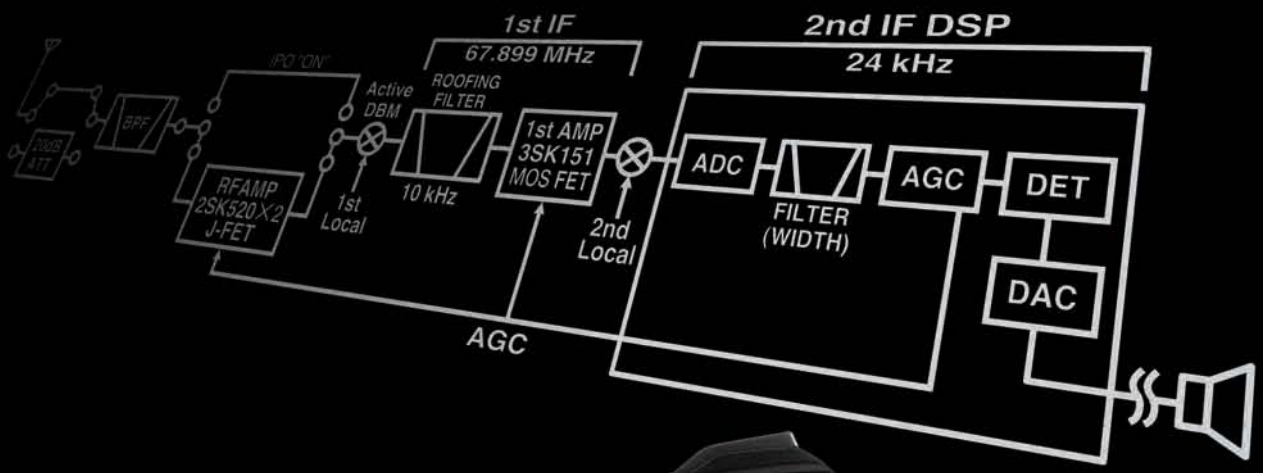

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