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HB-1A-Mk3 7&14MHz miniature transceiver reviewed

Antennas
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YouKits HB-1A-MK3

40m & 20m

The Tiny QRP Radio that fits in your brief case or saddle bag!

Above is Peter Waters G3OJV with the designer of the HB-1A in the USA.
Peter says *"I am knocked out with this little CW transceiver. I get 4W out with internal AA cells and 6W on 13.8v. Full coverage on 40m & 20m (inc SSB rx.). I use it static mobile from car and my push bike. It's super stable, has 8 bandwidths, built-in elec. keyer and even calls CQ for me automatically (inc. callsign). RIT and attenuator included. Final assembly and testing is done here in Hockley. If you want some real fun with this tiny package - call now."*

Now In Stock! **£199.95 D**

ICOM NEW IC-9100 ALL-ROUNDER

HF to 23cms Base Transceiver

The IC-9100 has received rave reviews and is THE radio for those who want everything in one box! Add the 23cms module & D-Star board to expand your hobby even more. A real gem & comes with 2 year warranty. **UX-9100** 23cms **£599**. **UT-121** D-Star board **£129.95**. **FL-430/1** Roofing filters **£52.95.**

HF/6m/2m	100W
70cm	75W
23cm (option)	10W

Satellite Mode Operation:
Optional D-Star DV Mode.

£2999 D

ICOM NEW IC-7410 HF - 6m Transceiver

- *100W HF-6m all modes.*
- *Receiver +3-dBm IP3 + 15kHz roofing filter*
- *36kHz DSP IF 32 bit razor ahrp filter*
- *Internal auto ATU included.*
- *USB interface for PC control and audio out*
- *Large LCD with comprehensive display*
- *Integrates speech synthesizer*

Another winning design from Icom, the "expensive" features introduced a few years ago are migrating down to some of the more affordable radios.

£1999.95 D

YAESU

Major Shortages!

The production of Yaesu has been badly hit by the earthquake in Japan and there will be a severe shortage of some models, including FT-950, FT-2000, FT-2000D and FT-817!

FT-2000 *160 - 6m Transceiver - We have the LAST FEW!*

This radio needs no introduction. Covering 160m to 6m, it is the favourite of contesters and DXpeditions. Available as 100 Watt or 200 Watt version.

£1999.95 D

"When I switch my FT-2000 on I never cease to be amazed at what this radio offers in terms of value for money. I love the filtes and the variable IF - it always seems to be able to pull the weakest of signals out of the noise. For me it is both my DX machine and chat box - you guessed it, I love it."

ID-E880

2m/70cm 50W Mobile with D-Star & D-Star Repeat Mode. Features GPS compatability, CTCSS & DTCS, Airband Receive. **£439.95 D**

IC-E80D

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

FREE software on Icom site

In Stock Now **£329.95 D**

IC-E92D SPECIAL OFFER!

Buy the IC-E92D 2m/70cm handheld and HM-175GPS speaker mic with GPS receive ***together*** and save over £35!

£489 D

IC-T70E

Dual Band 2m/70cm Handy.

£159.95 D

IC-E90

Triple band 6m, 2m, 70cms.

£244.95 D

IC-E2820

Great dualband mobile.

£499.95 D

Fitted with UT-123 D-Star module. **£699.95 D**

YAESU

Two Great Mobiles

FT-2900E

75 Watt 2m mobile with 3W loud audio, CTCSS, DTMF mic and the "WIRES" internet feature.

£139.95 D ***LAST ONE!***

FT-7900E

2m/70cms mobile delivers 50/40W with CTCSS, DTMF, "WIRES" internet, 1000 mems and wide rx up to 999MHz.

£239.95 D

FT-450D 3yr Warranty!

NEW

£799.95 D

Now with Auto ATU & Extra filter.
Are you looking for a reliable and feature packed HF transceiver that is affordable, yet can compete with the modern day demands of ham radiom and the crowded bands? The take a careful loo at what this radio has to offer. And to make it even more attractive, for a limited period we are offering you a 3-Year warranty - **FREE.**

PART EXCHANGE WELCOME

HF Transceivers

FT-DX5000	200 Watts of raw power and performance.	**£4399.95 D**
FT-DX5000D	200 Watts plus additional station monitor.	**£4795.95 D**
FT-2000	100W 160 - 6m 12V transceiver ***LAST ONE!***	**£1999.95 D**
FT-2000D	200W 160 - 6m 230v AC PSU trnscvr ***LAST ONE!***	**£2599.95 D**
FT-DX9000contest	200W HF - 6m "formula one" contest machine	**£4899.95 D**
FT-DX9000D	Deluxe fully loaded base station	**£8199.95 D**
FT- DX9000MP	Amazing 400W "legal limit" radio	**£8999.95 D**
FT-857D	HF to 2m mobile. portable or base - up to 100W	**£679.95 D**
FT-817ND	1.8-440MHz all mode transceiver	**£509.95 D**

HF Transceivers IC-7600

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.

£3299 D

IC-7800	Deluxe HF / 50MHz All-Mode 200W Transceiver	**£8995 D**
IC-7700	1.8-54MHz 200W with built-in PSK-31 + keyboard	**£5999 D**
IC-7200	HF & 6m DSP 0.005-3335MHz wideband receive with USB port	**£839 D**
IC-7000	160m-70cm 100W (hf) Mobile, portable or base station	**£1189 D**
IC-718	160m-10m 100W transceiver that brings HF to those on a budget	**£595 D**

Other Radios

IC-910H	**£1299.95 D**	**IC-R6**	**£179.95 C**	**IC-R8500**	**£1439.95 D**
IC-2200H	**£229.95 D**	**IC-R20**	**£399.95 C**	**IC-R9500**	**£10999.95 D**
IC-R3	**£399.95 C**	**IC-R2500**	**£649.95 C**		

VHF Mobiles & Handhelds

FTM-350E	2m/70cm Mobile Bluetooth GPS APRS	**£479.95 D**
FTM-10SE	50/40W 2m/70cms stereo FM	**£309.95 D**
FT-8800E	Dualband Mobile 50W / 30W	**£329.95 D**
FT-8900R	10/6/2m & 70cm Mobile	**£369.95 D**
VX-3E	2m / 70cm Handheld Wideband receive	**£159.95 D**
VX-7R	Waterproof dualband handy (silver / black)	**£289.95 C**
VX-6E	2m/70cms handy, 5W Wideband Receive	**£239.95 C**
VX-8DE	Triple Band 6/2m/70cm Upgraded APRS	**£369.95 D**
VX-8GE	Dualband 2m/70cm 5W + GPS Antenna	**£359.95 D**
FT-60E	2m/70cms, 5W handy Wideband Receive	**£129.95 C**

< VX-8DE

Carriage Charges: A=£4, B=£5, C=£8.50, D=£11

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Cross Needle Meters

High quality, accurate VSWR meters with large, clear X-needle display.

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

NEW BLACK-BOX-MKII

Now with Switchable Audio Filter!

The airband monitor that safe to use in the aircraft cabin & can tune to any unknown frequency is back with a switchable audio filter!
** Non radiating device * Antenna built into earpiece (included) * Built-in selectable speaker * Squelch control On/Off light * 12v External power socket * Power: 12v car cigar adaptor (supplied) or PP3 battery (not supplied)*

£79.95 D

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AR-MINI

This amazing little radio covers 100kHz - 1.3GHz AM FM & WFM. 1000 memories, over 30 programmable features inc. CTCSS & DCS. Alphanumeric memories give meaningful channels and there is a built-in bar antenna covering 100kHz - 5MHz. Inc. NiMH pack & charger.FREE software database for PC loading via www.aorja.com.

£159.95 D

AR-8200-MKIII

The famous scanner with the quality performance. 530kHz - 3GHz AM FM FMW & SSB. Inc batts, charger + cigar lead. If you are looking for a truly wide-band great performer this is the best in its class!

£469.95 D

AR-8600MKII Base or Portable

The AR-8600MKII is a base or portable station receiver covering 530kHz - 3GHz. All modes AM FM FMW & SSB with standard rotary tuning. Requires external 12V or optional internal batt pack. A great station accessory for general listening or extra receiver.

£669.95 D

QUANSHENG TG-UV2 2m/70cm Dual Bander

** 3 Power Levels: 5W / 2.5W / 1W*
** Steps: 5, 6.25, 10, 12.5, 20, 25, 30, 50 & 100kHz*
** CTCSS, DCS & 1750Hz Tone*
** Dual Watch*
** 200 Memories Alpha Numeric*
** 2 Deviation Levels*
** 2 Bandwidths*
** CTCSS & DCS Scan*
** Built-In LED Torch*
** Backlit Screen*
** PTT or VOX*

£81.95 D

MFJ Antenna Analyser

NEW MFJ-266

The new model from MFJ that is totally digital. A highly accurate analyser that extends from 1.5 - 490MHz. Fitted with a 10:1 vernier dial for smooth accuracy.

Wide range from 1.5 to 490MHz (with gaps between 65-85MHz and 185-300MHz. As well as VSWR it also measures complex impedance & impedance magnitude, capacitance, inductance, field strength, frequency, and is a frequency generator. Use it for stub adjustment, coax test, baluns, and lots of other RF tests.

£339.95 C

KENWOOD NEW TH-D72E

The very latest handheld from Kenwood is a dual bander with GPS, APRS and TNC capability. The TH-D72 has a built-in SiRF Star III GPS receiver and its antenna, so that you can enjoy various GPS functions with the radio stand-alone. You also can output its GPS data (NMEA-0183) to a PC through the USB port. You can even operate dual receive on the same band.

In Stock Now! £426.95 D

HF Transceivers

TS-2000E £1549.95 D

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

TS-2000X +23cm **£1799 D**

TS-480HX Ideal for mobile, portable or base station. Gives a massive 200W on HF and 100W on 6m. **£879 D**

TS-480SAT This model gives 100 Watts on all bands up to 6m, but adds a built-in automatic ATU. **£779 D**

Handhelds

TH-F7E	2m/70cm 5W (2-pin Kenwood) SMA **+FREE Clip Mic**	£236.95 D
TH-K2E	2m 5W 4-Key Keypad (2-pin Ken) SMA **+FREE Headset**	£163.95 D
TH-K2ET	2m 5W 16-Key Keypad (2-pin Ken) SMA **+FREE Headset**	£172.95 D
TH-K4E	70cm 5W (2-pin Kenwood) SMA **+FREE Headset**	£163.95 D

VHF Mobiles TM-V71E £299.95 D

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.*

TM-271E	2m FM 60W mobile. CTCSS, 200 Memories, DTMF Mic	£169.95 D
TM-D710E	2m/70cms 50/50W mobile. APRS +EchoLink, DTMF Mic	£445.95 D

KENWOOD The Amazing TS-590S!

160m - 6m with superb receiver inc. dual roofing filters, Auto ATU, 32 bit f/p DSP & USB PC connection.
This is not an updated TS-570, but a completely new design embodying the very best engineering crafted by Kenwood to compete with the very best.

£1369.95 D

MFJ QRP CW Transceiver

NEW MFJ-9200

£259.95 D

Made in Chuna for MFJ, We are pleased to announce the introduction of the new QRP CW transceiver from MFJ. Covering 80m to 15m, it is supplied with one plug-in module of your choice. Okeaase not: as supplied it covers just one band.

Extra Band Modules £29.95 Each

** Frequency 80m-15m with modules * RIT * 8 memos per band * LCD backlighted * TX/RX CW * RX SSB * CW offset 700Hz * Full QSK * 0.1uv sens. * 600Hz / 2.5kHz bandwidth * Iambic or straight key * CQ & callsign memory * Rx current just 40mA * CW speed 3-45 wpm * Transmit 0.9A @ 10v & 1.2A @ 14v * Supply volts 8-14V * Size 120 x 80 x 34mm * Weight 7.4oz.*

Watson Power Supplies

Power-Mite-NF

Back In Stock! The original Mini 25A PSU. 25A Peak, 22A Cont. with Noise Offset.

£79.95 C

Power-Max-45-NF

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

£129.95 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.

£239.95 D

POWER-MAX-25-NF	22A PSU	£89.95 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

Carriage Charges: A=£4, B=£5, C=£8.50, D=£11

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MFJ It's Official! - W&S The World's Largest MFJ Distributor

Martin Jue, President and founder of MFJ (2nd from right) and long time friend, confirmed W&S as the largest MFJ dealer in the world. That means we have the world's largest stock! So now you know where to come for MFJ.

L-R, Randy (MFJ) Jeff Stanton, Phylis (MFJ), Martin Jue (MFJ President) & Peter Waters. Dayton, Ohio May 2011

Watson W-25AM
25 Amp Variable Power Supply

The W-25AM analogue power supply is back in stock. The ham's favourite low noise, fit-and-forget, supply. Keeps RF noise to a minimum with it's huge analogue transformer. With meters and variable voltage.

£92.95 D

MFJ Radio Accessories

"The World's Best Auto ATUs Buy with Confidence! Just Press PTT You're TUNED!"

MFJ-998 AUTO TUNER

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

W&S £664.95 C

MFJ-929 AUTO TUNER

1.8-30MHz 200W, LCD readout, 20,000 memories, long wire & coax, radio interface.

A great Auto ATU that needs just a single coax feed and 12V DC. Press the PTT & you are tuned! W&S £214.95 C

MFJ-925	Compact auto tuner	£174.95 D
MFJ-927	200W remote auto atu	£254.95 D
MFJ-928	Basic auto atu	£203.95 D
MFJ-991B	Auto atu 150W	£214.95 D
MFJ-993B	Auto atu 300W	£254.95 D
MFJ-994B	Auto atu 600W	£349.95 D
MFJ-931	Artificial ground	£114.95 C
MFJ-932	Mini loop tuner	£143.95 C
MFJ-934	Artificial ground + ATU	£204.95 C
MFJ-935B	Portable loop system	£204.95 C
MFJ-945E	Mobile atu 300W	£134.95 C
MFJ-962D	1.5kW ATU	£299.95 D

MFJ-962D

MFJ-969	160m - 6m 300W	£219.95 D
MFJ-971	Portable ATU	£122.95 C
MFJ-974B	Balanced ATU	£194.95 D
MFJ-986	3kW differential tuner	£359.95 D

MFJ Radio Accessories

MFJ Vertical HF Antennas. Ideal for small gardens.

MFJ-1796 A 1.5kW40m - 2m self supporting vertical. Requires no radials. Height 3.65m **£244.95**

MFJ-1798 An 1.5kW 80m to 2m vertical that is self supporting and needs no radials. Height 6.7m **£309.95**

MFJ-1625	Window Ant + Tuner	£204.95 D
MFJ-1796	40m-2m vertical	£244.95 D
MFJ-1798	80m-2m vertical	£309.95 D
MFJ-1908H	43ft fibre glass mast	£244.95 D
MFJ-1922	Digital screw driver control	£101.95 D
MFJ-1924	Prog. screw drvr control	£132.95 C
MFJ-1925	ATAS-100 controller	£74.95 C
MFJ-202B	Receiver noise bridge	£82.95 C
MFJ-250X	1kW dummy load (x-oil)	£56.95 C
MFJ-260C	300W dummy load	£45.95 C
MFJ-261	100W dummy load	£33.95 C
MFJ-265	2.5kW load fan cooled	£209.95 C
MFJ-403	Micro CW keyer	£67.95 C
MFJ-403P	Micro travel iambic	£82.95 C
MFJ-4103	PSU for FT-817	£53.95 C
MFJ-417	Pocket morse tutor	£77.95 C
MFJ-442	Slim electronic keyer	£204.95 C
MFJ-461	Pocket morse reader	£101.95 C
MFJ-4726	6-way remote ant switch	£164.95 C
MFJ-490	Memory keyer + paddle	£249.95 C
MFJ-495	Memory keyer	£192.95 C

MFJ RF Current Meters

If you are using an end fed wire, the only true way to make sure it is matched correctly is to adjust for max current flowing through the wire with an RF Current Meter.

All cover 1.8 - 30MHz

MFJ-834	0.3, 1 & 3 Amps	£85.95 C
MFJ-834H	3, 10 & Amps	£92.95 C
MFJ-835	Bal line X-Needle 0.3-3A	£131.95 C
MFJ-836	Combined VSWR & Ampmeter using cross needles 0.3, 1 & 3A	£141.95 C
MFJ-836H	As above but 3, 10 & 30A	£152.95 C

DV-Dongle 2 Models!

DV-DONGLE USB to your PC or Mac and work D-Star by accessing internet open D-Star repeaters worldwide. £169.95 C

NEW DV-ACCESS Access Point, similar to above but able to TX/Rx over short distance so that with 2m D-Star radio you can work through your PC. £229.95 C

Miracle Antennas
Miracle-Whip

A tuneable telescopic whip covering 3.5 to 460MHz. Up to 25 Watts PEP, fiited with PL-259 plug. Great for FT-817 & IC-703 or any other QRP radio.

£129.95 C

Diamond
VHF/UHF Antennas

A144S5R	5el 2m 9.1dbi 0.95m L	£49.95 D
A144S10R	10el 2m 11.6dbi 2.13m L	£94.95 D
A430S10R	10el 70cm 13.1dbi 1.19m L	£59.95 D
A430S15R	15el 70cm 14.8dbi 2.25m L	£75.95 D
SB144	Boom for dual 2m Yagis	£26.95 A
SB430	Boom for dual 70cm Yagis	£21.95 A
SS144	Stack transformer 2-way 2m	£94.95 C
SS430	Stack transformer 2-way 70cm	£81.95 C
KB144	Mast stand-off for vert. polarise	£19.95 A
KB430	Mast stand-off for vert. polarise	£17.95 A

Tonna
VHF/UHF Antennas

220505	6m 5 el. 10.1dBi gain 3.45m	£118.95 D
220809	2m 9 el. 13.1dBi gain 3.47m	£79.95 D
220909	70cm 9 el. 13dBi gain 1.24m	£74.95 D
220919	70cm 19 el. 16.2dBi gain 2.82m	£94.95 D
220623	23cm 23 el. 17.9dBi gain 1.75m	£77.95 D
220725	13cm 25 el. 18.3dBi gain 1.45m	£102.95 D

Uniden Bearcat

UBC-30XLT

A real bargain whilst stocks last.

Frequency Range: 87.5 - 107.9MHz WFM, 108-136.9875MHz AM, 137 - 173.99MHz FM

The radio has 200 memories, LCD display and can scan at 25 channels per sec.

£62.95 C

Check full spec. of these radios @ www.wsplc.com

UBC-3500XLT

FM FMB WFM AM Frequency:
- 25-512MHz
- 806-960MHz
- 1240-1300MHz.

2500 memories, RF near signal capture, Quick keys, Scan 100 channels per sec., CTCSS & DCS, Alpha numeric tags, Data skip, Auto store, Display contrast adjust, AC adaptor/charger included.

This is the Bearcat Flag Ship radio. It pacts an amazing number of features into a small package. If you are looking for a serious VHF/UHF scanner that covers the entire spectrum and resolves all the popular analogue modes, then this is a serious contender. **£209.95 C**

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	£11.95 C
W-285	2m 3.4dBv 1.33m	£16.95 C
W-77LS	2m/70cm 0/2.4dBv 0.43m	£14.95 C
W-770HB	2m/70cm 3/5.5dBv 1.1m	£19.95 C
W-7900	2m/70cm 5/7.5dBv 1.58m	£32.95 C
W-627	6/2/70cm 2/4.5/7.2dBv 1.6m	£39.95 C

MFJ-269

The Antenna Analyser has been refined over the years & the MFJ-993B tells you just about everything you need to know about your antenna system - resonance, impedance, reactance & can even measure coax losses & identify the position of open & short circuits. All in a compact unit that covers 160m to 70cms. Can you afford to be without one? W&S £369.95 C

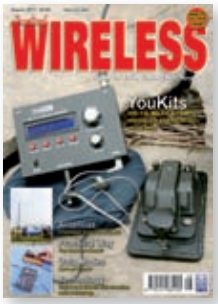
- *1.8 -170 & 415-450MHz*
- *Frequency Counter*
- *LCD readout*
- *SWR & impedance*
- *N-socket (Ant), BNC (Counter)*
- *AAx10 or ext. 12V DC*
- *Size 103w x 173h x 60d mm*
- *Weight 750g*

Create
Rotators

These are hunky Japanese rotators that we recommend for reliability & performance.

RC5-1 £569.95 D
RC5-3 £719.95 D

Carriage Charges: A=£4, B=£5, C=£8.50, D=£11



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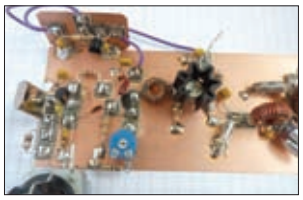

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Front Cover:
Out and about with the The YouKits HB-1A-MK3 7 and 14MHz Miniature Transceiver and putting the Chameleon antenna through its paces!

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Rob Mannion G3XFD/EI5IW's

Keylines

The Editor discusses missing Foundation Licence Amateurs and the benefits that come our way as members of radio clubs.

I've been busy carrying on my scheduled *PW* club visits – which can be one of the most enjoyable aspects of my job as Editor. It can be extremely tiring driving in the UK nowadays – but the welcome I receive acts a stimulant and I then forge ahead with the evening and I end up wondering where last past few hours have gone!

I've learned over the years that there isn't a 'standard radio club'. Instead each club seems to have an individual approach to the hobby – together with extremely wide ranging aspects of the hobby being enjoyed by their individual members at home or during meetings. Indeed, I often leave a club having learned something new about our hobby from the members.

Some clubs have become known for contest operating, others are known for mounting UK mini-DXpeditions. Others seem to be very active in home-brewing of equipment. One or two clubs that I know of are very active in v.h.f, u.h.f. and microwave work.

Chatting to members after a club visit, I'm often delighted to find the home construction is still thriving and this can be seen by club competitions and on occasions I've been asked to either act as a judge or present awards. The standards of all the construction contest entries seem to be of a very high level and I often wish they could all be presented with prizes!

But, at some clubs where they meet monthly I've noticed that the members enjoy an entirely social type evening to catch up with friends and their news. Perhaps **it is because** they only meet monthly, that such clubs are mainly 'social' in their activities? I hope that readers haven't been offended by my attaching the 'social' label to some clubs! And I must point out that meeting and chatting with friends at my own club – **Poole Radio Society (**PRS) which meets weekly – is one of the most enjoyable benefits of club membership to me!

I don't get along to my club that often but meeting and chatting with friends as an ordinary (but talkative!) member I thoroughly enjoy meetings. However, the PRS has many other things going on. There's usually a at least one and sometimes two stations on the air and often several members are busily working away on projects. Once a month we have a guest speaker or a talk by club members. There's always something going on – something for everybody!

Like many other clubs the PRS also runs training courses – the Foundation, Intermediate and the Advanced Course. We've been privileged to have many Foundation Licence Amateurs stay with the club and everyone has been delighted to see a number of them progressing to the Intermediate and on to the Advanced Licence – something that doesn't seem to be happening everywhere.

I'm in the ideal situation to observe and comment on the various clubs I've visited. Recently, the feedback I've had from a number of clubs during the Question & Answer period that forms part of my club talks – has indicated that some the clubs have lost track of most of the Foundation Licence Amateurs they've trained. Additionally, it seems that few of the Foundation Amateurs they've trained and are still in touch with, are actively progressing on to the Intermediate Licence.

Obviously, it's the choice of the individual what they want to do after obtaining their Foundation Licence but I think it's unfortunate that so many **seem** to be falling by 'the wayside'. I would be very interested to hear what 'makes' your club meeting for you and your club's experiences with Foundation and further licence training.

Suggest A 1937 Project!

On Monday June 6th I really enjoyed visiting the **Burnham Beeches Radio Club** (BBRC) in Buckinghamshire and they made me feel thoroughly welcome. During the evening I discovered that the BBRC celebrate their 75th anniversary next year and are seeking advice on a '1937 Amateur style project'.

I've had several ideas myself but I'm hoping some of our readers could join in the fun too! The BBRC will feature in a *PW In Focus* article in 2012 – and I'm sure readers will come up with excellent suggestions. I look forward to hearing from you!

Rob Mannion G3XFD/EI5IW

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The Late Gilbert Davey & *The Boy's Own* Paper

Dear Rob
I was both saddened and surprised to read from **Les Franklin** about **Gilbert Davey's** death (July *PW*). Saddened for obvious reasons, but surprised as I imagined that he hadn't been around for some time. Back in 1961 my mum bought for me his *Fun With Short Waves* – a book which I still have and treasure.

Mr Davey had a very practical and enthusiastic way of writing, and although my first contact with h.f. was playing with my dad's radiogram (and wondering what all the strange noises were – my dad hadn't a clue either!), his book was my first technical encounter and started a lifetime hobby of experimenting with, and building of, short wave radios. All valved of course – transistors were prohibitively expensive for a seven year-old schoolboy, and all too easy to damage.

I was lucky in living in St. Albans in Hertfordshire, where a little way down Folly Lane was an Aladdin's cave for all things radio – you name it, **Les Read** had it! It was a little like the shops that you used to find in Lisle Street, Soho, in London except I seem to remember that he had connections with Marconi (then in St. Albans) rather than dealing in Government surplus gear. I still prefer valve equipment (although I do have a couple of Japanese sets).

Incidentally, Jack Cox mentions in the foreword to *Fun With Short Waves* that Gilbert Davey, *"was the first British Radio Amateur to start operating in the British sector of Berlin ... in 1945. His callsign was then D2AH and he used 10 Watts power on the 10 metre band on telephony."* I can't find any other callsign he may subsequently have used.
Regards.
Steve Jones
Luton
Bedfordshire

£20 Star Letter

Memories of my teenage years came flooding back – thanks to *PW*!

Dear Rob,
I was taken back some 53 years while flicking through *PW*'s June issue, when I noticed a picture of the November 1958 editions front cover my memories of my very early teenage years came flooding back!

The cause of the sudden rush of nostalgia? It was sight of the "Micro-Midget Pocket Portable", I remembered building this little radio after scouring Lisle Street and the Tottenham Court Road for all the parts.

Of course the little radio worked a treat but one little peculiarity of the device, perhaps caused by me leaving a turn or two off of the coil was that from time to time I heard two chaps chatting to each other on the low frequency end of the tuning dial! This I eventually found out was Top Band and the two stations were **G3MFB** and **J Miller G3LRU**, I spent many hours listening to the chatter of these two fellows and eventually found out the address of G3MFB in Raynes Park and plucked up the courage to call on him.

This was the start of a long and eventful interest in radio communications and the support and encouragement given by these two Amateurs to a sniffy-nosed 13 year-old was to guide me into a lifelong career and a terrific hobby. I was always more interested in building equipment than actually operating however, my later membership of the **Carshalton Amateur Radio Club** and later the **Kingston and District Club** gave me the opportunity to assist with many **HF** and **VHF Field Days**, all great fun especially the v.h.f/u.h.f. operations which was, and still is my main area of interest.

With all the pressures of school and college and the sudden interest in the opposite sex I did not have time to get my Licence until 1979 at which time I was married and living in Ireland and pursuing a career in Bio-Medical Engineering. But I am now retired and can do what I like when I like but the radio bug has never left me and I still get a great kick from listening and occasionally going on the air with a couple of watts and having a natter.

To imagine that a lot of the above is due to the little radio described in your great magazine more than 50 years ago is most amusing and all I can say is "Thank you most sincerely *Practical Wireless*!"
Tony Enright. EI6DT
Dublin 16
Ireland

Editor's comment: *What a wonderful story Tony! many Radio Amateurs active today owe much to the help we received from friends we met after hearing them on broadcast receivers. I have happy memories of sitting with* ***Gordon Meikle G3NIM*** *as he chaired the Southampton area Top Band net – desperately trying to ensure my voice couldn't be heard through his microphone (thus breaking the strictly controlled regulations in those days). I'm sure there are many other stories similar to yours waiting to be told Tony – thanks for sharing your memories with everyone!*

Gilbert Davey's Books

Dear Rob,
After *Practical Wireless* July issue arrived I was interested – but saddened – to hear about the death in Reader's Letters of **Gilbert Davey**. I went into my shack and pulled out a little hard-backed book published in 1981 written by him called *Fun With Silicon Chips In Modern Radio*.

There was no mention of his Amateur Radio callsign, but he came across as being very enthusiastic and something of a diplomat in his praise of silicon chip manufacturers ! I'm unable to help with his callsign but it is nice to have one of his publications that I found so useful in my early years of Amateur Radio construction. All the best to you and your team at *Practical Wireless*.
Jack (Tich) Nelson G0DNC
Stockport
Greater Manchester

Editor's comment: *Thanks Tich! Nice to hear from you again. I hope you can make it over to the Newark Show this year on either September 30th or October 1st where we last met – indeed I'm hoping to meet many* PW *friends there at the 2011 show. Please join me on the* Topical Talk *page for further comment on Gilbert Davey's Amateur Radio operations in Germany.*

The Old RAE & The Progressive (?) Licence System

Dear Rob,
Just recently, I was fortunate to be given some *Wireless World* magazines from the mid 1980s. As you can imagine, they made interesting reading. In his *Communications Commentary* column in the February 1985 issue of *WW*, **Pat Hawker G3VA** drew attention to the decline in the number of candidates sitting the Radio Amateur's Examination (RAE) in 1984. Apparently, the 1984 total was 5,922 candidates, well down on the 7,542 candidates who sat the examination the previous year. And in 1982, there had been a peak of 8,176 candidates, according to Pat's information.

I was pleasantly surprised that the numbers had been so high. Reading further, the very high numbers in 1982 were thought to reflect the increased interest in Amateur Radio caused – at least in part – by the introduction of legal CB in the UK. Just after I had seen these figures, I came across the Annual Report on Examinations in 2010, published by the Radio Communications Foundation (RCF). The RCF conducts Amateur Radio examinations, recognised by Ofcom, which candidates must pass in order to become licensed Radio Amateurs. The Report gave the number of candidates and number of passes for the Foundation, Intermediate and Advanced Examinations for the last five years.

I was astonished! Last year only 321 candidates sat the Advanced Examination. The figure was lower than the average for the past five years but not unduly so. Given that almost 6,000 candidates sat the 1984 RAE (which is broadly equivalent to the Advanced Examination today, of course), I find the figure of 321 candidates extremely disappointing. And as I've mentioned, the figure is not far from the five-year average, so it cannot be taken as spurious.

According to the RCF Report, the total number of candidates who passed the Advanced Examination over the last five years was 1,261. Compare that figure with the 1984 pass figure, when I believe in excess of 3,500 candidates passed the RAE in that year alone. Adding together the number of candidates for the Foundation, Intermediate and Advanced Examinations held in 2010, the figure still only comes to 2,869: around half the number of RAE candidates in 1984.

Even the relatively modest pass figures for the Foundation and Intermediate Examinations (2010 figures: 1,605 and 596 respectively) may ultimately be misleading. This is because candidates sitting the Intermediate Examination will have – at some point – appeared before in the figures as candidates for the Foundation Examination. Similarly, candidates for the Advanced Examination will very likely have appeared in the figures twice before.

However, it's the small number of candidates taking the Advanced Examination over the past five years which concerns me most. In my opinion, the figures seem to suggest that once licenced, Foundation and Intermediate Licensees are not progressing to the Advanced Licence very quickly. In addition, there is one aspect of the current licensing regime which troubles me. It's the necessity for any prospective Radio Amateur to sit both the Foundation Examination and the Intermediate Examination before they can sit the Advanced Examination.

Could this forced 'progression' be discouraging those prospective Amateurs who are professionally or academically engaged in some aspect of electronics? The same might be true of electronics hobbyists who are sufficiently advanced in their art.

I much prefer the old regime where a prospective Radio Amateur could enter the hobby at whatever level they desired, be it Foundation, Intermediate or Advanced. The web page *ra190.htm* (from 2002), held in the Radiocommunications Agency archive on the Ofcom web site (**www.ofcom.org.uk**), briefly describes the old licensing regime. Naturally, examinations have to be fashioned to allow entry at any level, but that was indeed the case for many years.
Philip Cadman G4JCP
Dudley
West Midlands

Sympathy For Lawrie & Encouragement To Progress

Dear Rob,
I'm writing in response to the letter from **Lawrie Richardson M3UHQ,** in the June edition of *PW*. I agree with you that the abuse of new licencees is unacceptable – we all have to start somewhere, and friendly advice and assistance is what's needed, not abuse.

However, I find it disappointing that so many 'new' licencees seem content to remain on the first rung of the incentive licencing scheme for very many years. Many do so well beyond what would make them 'new' to the hobby – and make no attempt to advance towards what should be the ultimate goal – the 'full' Advanced Licence.

Lawrie in his letter rightly bemoans the mistreatment he's suffered since he gained his callsign in 2007. However, surely what better way to counter the prejudice would it be to pass the next two stages of exam, gain a full licence and show that you're taking the hobby seriously? I would have thought that four years was ample time to progress to Intermediate and then Advanced, especially if you're getting some on-air

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**

experience using your M3 callsign and you have the desire.

On the very few occasions that I listen to 40m or 80m phone I hear M3 calls that have obviously been active for many years, using the latest top of the line equipment (so there's no doubting their financial commitment) – why haven't they continued the progression beyond this tiny first step? The M3 stage was supposed to be a simple way to get on the air, and gain useful experience, not to be the final destination on the journey.

I realise that some people will have difficulties in studying and gaining the expertise needed – but **it is a technical hobby after all** and everyone should embrace the chance to stretch themselves, no-one should be satisfied with only achieving Foundation Level. I remember, and met on a few occasions, **Peter Odell G3MUM** the extremely disabled Amateur (now a Silent Key). If he could study and gain a full licence (including Morse code), back before the days of the incentive scheme, then it should be possible for most, if not all, of today's Foundation holders to go to Intermediate and then Advanced, within a reasonable timescale.

I think that the best way to counter any negative on-air comments or abuse is to rise above it, show your dedication and prove your detractors wrong – get a "Full" licence and participate in the hobby in all its facets. Perhaps the fault lies in the way the incentive system works? Too much is earned at the initial Foundation level to make it worthwhile advancing. The use of increased transmitter power as the main reward means people seemingly are happy to stick on the first rung of the ladder. Many 'Full' licence holders happily use only 10W or less and achieve great satisfaction from the hobby (myself included). Where is the incentive to advance?

On-air it is impossible to to estimate the power level being used by any station, so it's impossible to police whether licence conditions are being adhered to. I don't want to imply that many Foundation holders 'bend' the rules – just that it would be easy to do so. If access to spectrum or transmission modes were also used in the incentive scheme this would have two benefits – Foundation licensees would get real benefit from moving up the ladder as more opportunities became open to them, and it would be obvious if the necessarily restrictive Foundation Licence conditions were been broken.

I'm all for newcomers entering the hobby – but it saddens me that many have such narrow horizons that they are willing to settle only for the Foundation Licence. After several years of holding an M3 call you can no longer call yourself a 'newcomer', embrace the challenges and push yourself onwards! Best regards.

John Pumford-Green GM4SLV
Bixter
Shetland Islands

Editor's comment: *For those readers who aren't aware of Silent Key Peter Odell G3MUM (later GM3MUM), he was almost totally paralysed – relying on a mechanical ventilator for his breathing – and (if I remember correctly) he only had the use of one toe to operate his rig. He was a fine c.w. operator too!*

How About Appreciating Friends Before They Become Silent Keys?

Dear Rob,

I hope you are well? It seems today I can't open a copy of *PW* without reading about the passing of another amateur who was well known and people feeling a need to pay tribute to him/her. Often with the best known resulting in a plethora of tributes on the letters page from readers.

I have to ask the following question," What good is it saying that so and so was a "such a great Amateur", "a personal inspiration", "had a wealth of knowledge", "was a technical guru," etc. after they have passed on?

Yes, this is all "feel good/feel sad" stuff for those of us left alive, but surely we should be telling those people how good we think they are **before** they die? Surely, it is time for us to think about telling the people we admire so much straight to their faces, so that they can enjoy the feel good factor from it and realise just how much they are appreciated and not wait until they die to say "what a good man he was". I know it is human nature, but I just can't help thinking of that song by Mike & The Mechanics, "The Living Years" every time I read one of those letters about people who have passed on. Perhaps it is time for *PW* to start a regular feature where you have a tribute to a (still alive) Amateur who has been particularly special to others who enjoy the same hobby.

Having had my say – it is with great sadness that I also have to advise you of the passing of **Alan Upton G3UZU** after a period of illness. Alan was the secretary of Wirral Amateur Radio Society for many years and well known to local Amateurs both club members and non-members. Alan was a great inspiration to a great number of local Amateurs as he was a keen experimenter and home brewer. As a result held a wealth of knowledge. He was in fact building projects and chairing the weekday club net until a few weeks before his untimely death. We often told him how much he was appreciated and now he's had a little obituary in *PW*!

I have now taken over the secretary's position on a temporary basis until the AGM in the autumn when a permanent secretary will be formally appointed. Our club meets each Tuesday, Wednesday and Thursday evening from 7:30 -10:30pm at **Ivy Farm**, **Arrowe Park Road**, **Wirral CH49 7NA**. Newcomers who are interested in Amateur Radio, whether licensed or not are always very welcome. Should anyone wish to contact the club, then they can do so through me either by phone on (0151) 520 8106 or via E-mail to **gordon@g8wwd.co.uk**. Regards.

Gordon Hunter G8WWD
Upton
The Wirral

Editor's comment: *Well, at least Alan G3UZU had his little obituary in* PW *Gordon! I'm also pleased you and your friends made sure Alan knew he was appreciated! However, I take your point and invite everyone to join me on the* Topical Talk *page – page 77.*

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The Second World War Remembered At Bletchley Park

Recently, within the grounds of Bletchley Park the **Milton Keynes Amateur Radio Society** played host to a group of Belgian Radio Amateurs from the **Radio Club de Binche** who operated a demonstration radio station on the lawns adjacent to the Mansion. Bletchley Park, the home of the code breakers, with its Second World War links was, for them, the ideal place to operate their station using the callsign **M/ON4WAR**.

The group contacted many stations throughout Europe using their home-brew replica Whaddon Mk VII Spysets. Several of the Belgian Amateurs were in fact related to members of the wartime Belgian resistance. They brought with them the medals issued to their relatives along with historical documents of the time.

The Mk VII clandestine radio was developed and manufactured around 1940 at the workshops at Whaddon Hall. Later in 1942 manufacture was transferred to the workshops at Little Horwood, in North Buckinghamshire.

Manufacture of the Mk VII later began at the Bontex Knitting Mill in West London for the Special Operations Executive (SOE) – where they named it the Paraset because it was dropped by parachute to agents operating in the field. There are several examples of this piece of unique equipment on display in the Museum at Bletchley Park.

Roy Woolard G8RCK
roywoollard@btinternet.com
MKARS website **http://www.mkars.org.uk/**

The good looking fellow with his back to the camera is Dave G0GQP, who is looking at the medals and documents that the Belgium Amateurs brought with them. The other reprobate (with camera) is Roy G8RCK! The Belgian Amateurs taking part were; Roland Lefebvre ON7LDR, Jean-Pierre Devos ON3DEV, Michel Bauvois ON4KMB, Michel Bauvois ON4KMB, Michel Declercq ON4KMC, Jean-Pierre Bosman ON4JPB, Omer Baras ON7YO.

Photograph courtesy of Peter Davies

Sycom Ceases Mail Order Trading

Robin Sykes G3NFV and his wife **Rosemary** have, for many years, been part of the Amateur Radio scene in the UK – with their huge range of components and specialised electronics 'bits & pieces' – and the following announcement will be sad news for many constructors.

The Sycom announcement reads, "Due to Robin having suffered a small stroke in April which affected his right side it has been necessary to close the mail order business. Having been trading for over 25 years we would like to thank all our loyal customers many of whom have become good friends. Hopefully, in due course we will be able to attend a few rallies to clear stock but at present the priority is to get back to as near normal health as possible. The good news is Robin will now be able to spend more time on the Amateur bands so maybe meet you there. Best wishes to all our customers and happy building. Robin G3NFV and XYL Rosemary."

Editorial note: *Everyone working on* PW *sends their best wishes to Robin and Rosemary for a happy retirement. I'm delighted to say that when I spoke to Robin on the telephone recently he was regaining some use of his right arm. He's retained his friendly sense of humour and we both enjoyed a joke – when I passed on some 'tricks of the trade' for working with one arm! Good luck to you both Robin and Rosemary!* ***G3XFD****.*

New Zealand CB Radio Frequency Changes

Newsdesk thanks a number of *PW* readers for news of CB frequency changes.

Since June 2nd, CB enthusiasts can now use the Australian/US style 27MHz (26.965 to 27.405 MHz) 40 Channel transceivers as well as the New Zealand 26MHz (26.330 to 26.770 MHz) 40 Channel equipment. The New Zealand 476/477MHz u.h.f. Personal Radio Service (PRS) (u.h.f. CB in Australia) has also just been updated. Existing 40 Channel 5kHz narrow band f. (n.b.f.m.) deviation units are still legal to use. However, new to the market models should be 80 channel 2.5kHz deviation equipment. Full details of the changes can be found at **http://www.rsm.govt.nz/cms/pdf-library/licensing/gurl-cbr.pdf**

The **Reading & District ARC** won the RSGB's Club of the Year title, sponsored by **Waters & Stanton PLC**. The award was announced at the recent RSGB AGM in Derby. The Lough Erne Club were 2nd and Bolton Wireless Club were 3rd. Congratulations to everyone from *PW*!

Denby Dale ARS Showcasing Amateur Radio

The Busy Denby Dale ARS committee member **Richard Blandford M0RBG** E-mailed *Newsdesk* with an interesting up-date: "In 2010 Denby Dale ARS made a commitment to take Amateur Radio and showcase it to a wider audience within the Metropolitan Borough of Kirklees in West Yorkshire, by participating in a greater number of local events. If we could create a truly portable station we would be able to visit schools, colleges and take part in community events and outdoor shows, demonstrating modern communication methods and a wider appreciation of the international bonds that can be forged among radio amateurs to a wide section of the community. This would enable more people to gain an insight into our wonderful hobby and perhaps reach a younger generation who might otherwise never see an Amateur Radio station in operation.

"While the club has a good selection of equipment, stage one was to obtain a new all band portable transceiver which could be easily powered by batteries and transported to the various venues. First of all we successfully applied for a local Kirklees Community Grant and purchased an Icom IC-706MKIIG radio and LDG IT-100 antenna tuning unit.


The new portable station in use by Denby Dale ARS members.

"Our first major event with the portable station was a local agricultural Show where we operated GB2HS using the new equipment for the very first time in the summer of 2010. The organisers of Honley Show kindly made a generous donation to the club which then enabled us to purchase a new tent.

"We then realised that we needed a better multi-band antenna for our portable operation. Fortunately, **Karol Rogawski de Rola G0UNU** came to the rescue by donating a Cobweb and vertical antenna when he recently upgraded his own antenna system. The radio, tent and Cobweb finally came together as a complete station on June 11 2011 when we once again operated GB2HS from Honley Show.

"During 2011 we will have operated from the Bicentenary Celebrations at Huddersfield Narrow Canal **GB200HNC**, Mills on the Air **GB2TMI**, **JOTA** and many other local events. Through these activities our club has received lots of welcome publicity and our membership has increased too – but most importantly we have been able to promote Amateur Radio to a wider audience to help ensure that our hobby will continue to flourish".

Richard M0RBG
E-mail: **m0rbg@talktalk.net**
Club website **www.g4cdd.net/index.php**

Waters & Stanton Have Been Busy!

Jeff Stanton G6XYU of **Waters & Stanton** contacted *Newsdesk* with an up-date of their promotional activities: "Each year we support the Industry Day of our local College, Greensward Academy, in Hockley, Essex. This year it was on Friday, June 10th. Two of our staff, **Steve Hoy G7JPU** and **Norman Crampton M0FZW** demonstrated radio equipment in a classroom while **Sam Taylor-Nobbs**, Sales Manager of **Icom UK**, brought the Icom demo vehicle onto site and gave full demonstration of Icom radio and company background. The event was also supported by **Ford Motor Company**, **Essex Water**, **Keymed** and the **HSBC** Bank. Head Teacher **Debbie Stokes** said that "the day is vital for students to gain experience of industry to enable them to make informed decisions about future employment."

Students from the Greensward Academy in Hockley, Essex visiting the Icom demonstration trailer during Industry Day, hosted by Sam Taylor-Nobbs from Icom UK and Waters & Stanton PLC.

The W&S 21st Annual Open Day on Sunday, May 29th

"We had the benefit of a nice sunny day which brought around 200 visitors to Hockley. Many of them made their purchases, sampled our free refreshments and then went to the nearby free Southend Airshow to see the Red Arrows amongst others – and the only flying *Vulcan* bomber. Yaesu, Kenwood, Icom and bhi supported the day – as did CARS, Essex Repeater Group, the RSGB bookstall and the Essex CW Club.

Several hundred pounds was raised in the raffle with subsequent donations to Marie Curie Cancer Care and the Hockley Methodist Church".


Around 200 visitors attended the W&S Open Day on May 29th.

Icom UK Visit W&S

Jeff continued, "Recently we had a visit at W&S from **Bob Stockley**, Managing Director of **Icom UK** together with **Mr Shinya Terasaki** from **Icom Europe** who is based in Germany. Icom UK were visiting key European Icom dealers to gather information to assist the planning of future products. "As an Icom dealer for more than 30 years we were able to make many constructive suggestions which we hope to see realised in future products. It's good to see Icom taking this pro-active approach". Jeff G6XYU.

Waters & Stanton PLC
***Spa House*, 22 Main Road**
Hockley
Essex SS5 4QS
Tel: (**01702**) **204965**
FAX: (**01702**) **205843**
E-mail: **sales@wsplc.com**
Website: **www.wsplc.com**


Mr Shinya Terasaki from Icom Europe standing to the left of Jeff Stanton G6XYU, with Bob Stockley from Icom UK on the right.

New Club At Friskney Making Its Mark!

Newsdesk has received a welcome report that a new club at Friskey in Lincolnshire is doing well. **Brendan Derbin-Sykes 2E0BDS** (Chairman) E-mailed, "**The Friskney & East Lincolnshire Communications Club** (F&ELCC) has been running for a little under two years. During that time we have had many guest speakers on a variety of subjects, all of which have been very enjoyable. There are more talks lined up for the rest of the year so please check out our website.

"We had a mad scramble to see what was going on at the club and an unexpected 20 to 35 people came through the door at the meetings in the first six to 12 months. Now we can boast a very reasonable 18 -26 members through the door at the club meetings at any one time.

"The F&ELCC has a very broad and experienced committee that keeps the club on a good forward and progressive footing, which is important. The club supports all forms of communication – however, Amateur Radio is the backbone of the club.

"Since the club was founded 21 months ago, we've had 18 Foundation Licence exam passes, six Intermediate Licence exam passes, and one Advance Licence exam pass. Our club trainer or tutor **Ant Freeman M0HAZ** is superb in his role and works hard to ensure candidates are well-supported pre-exam and of course after the exam whatever the outcome. More recently (Tuesday June 7th 2011) we had four candidates pass the Foundation class.

"Finally, if you would like to pop along to one of our evenings or contact us during a FELCC net (club call; **M0LFC** or **MX0LFC**), full details on the website. The Club Rally and General Car Boot Sale will be held on Sunday August 14th 2011 at the **Friskney Village Hall, Church Road, Friskney, Lincolnshire PE22 8RD (7.5 miles south of Skegness). Admission £1.50.** Open 10am to 6pm. Parking, catering, raffle, talking. Disabled facilities. Full details are posted on the website.

If you have any inquiries please don't hesitate to contact us. We look forward to hearing from you!" 73**. Brendan 2E0BDS**.
E-mail: **felcc@btinternet.com** or **bren.sykes@btinternet.com**
Mobile: **077554362020** (with answer 'phone).
Tel: (Home) **(01754) 820060**
Website: **www.felcc.com/**

Martin Lynch Introduces A Unique 70/144MHz Hand-Held!

Martin Lynch G4HKS contacted *Newsdesk* to announce that his new – and unique – 70 and 144MHz dual band hand-held transceiver, the **KG-UVD1-PL 4m + 2m** made by Wouxon in China, should be in stock by the time the August issue of *PW* is on the bookshelves.
Brief (abridged) details of the rig are as follows:

Main Features:

- Band coverage: 70 and 144MHz.
- 1750Hz tone.
- DTMF Encoding function.
- CTCSS/DCS Scan(Digital/Analog).
- Output power 5W/1W
- English voice guide.
- Wide/Narrow bandwidth selection (25/12.5kHz)
- Priority scan
- Channel Name Edit and Display
- 50 Groups CTSS/105 Groups DCS
- Selectable step frequency rate change.
- Multi scan
- VOX Transmission
- Auto/Manual keypad lock
- Wire clone, programmable by computer.

Price (Inc. VAT at 20%): £99.95
***Editorial note**: This transceiver is to be reviewed in* PW *in the near future.*

Martin Lynch G4HKS considers that the KG-UVD1-PL 4m/2m hand-held made by Wouxon in China to be unique as it's the first dual band 70/144MHz transceiver on the market.

Martin & Team Welcome A New Amateur!

After only being in the job less that six weeks, ML&S's new general manager, **Jon Davies** (now **G6MLS**) took his Foundation Licence at the **Farnborough & District ARS**. John can be seen in the middle of the group at the back.

Jon Davies M6MLS posing (centre back row) with the other successful Foundation Licence candidates at the Farnborough & District Radio Society.

ML&S Martin Lynch & Sons Ltd.,
Outline House
73 Guildford Street
Chertsey
Surrey KT16 9AS
Tel: (**01932**) **567 333**
Fax: (**01932**) **567 222**
E-mail: **Martin@MLandS.co.uk** Website: **www.MLandS.co.uk**

New Team Member Joins Moonraker!

Baby **Ava Rose Godfrey** joined the **Moonraker** antenna team in Woburn Sands in Buckinghamshire recently! Proud dad **Justin Godfrey** – **Sales Director** – poses with equally proud mum **Katie!**

Everyone at *PW* passes on their best wishes for Ava Rose's future and expect to see her on duty with mum and dad at the Newark Amateur Radio Show in the autumn – busy selling! **Editor.**

Book Reviews

The Editor Rob Mannion G3XFD has had some interesting reading in the past month or so preparing for reviewing in *PW*.

The Secret Life of Bletchley Park – The WWII Codebreaking Centre And The Men And Women Who Worked There
By Sinclair McKay
Published by Aurum Press Ltd.
ISBN 978 1 84513 539 3
Paperback £8.99

I'll start the first book review off, with the less than original statement that – "It does what it says on the tin!" Certainly it's a hackneyed phrase that's been literally flogged to death on TV adverts – but in this case it's the most appropriate term. Sinclair McKay's book *The Secret Life of Bletchley Park – The WWII Codebreaking Centre And The Men And Women Who Worked There* presents a truly fascinating account of the people who worked at Bletchley Park (BP) and their work and recreation. This book is about people working in a very special environment.

Having recently visited BP I was most interested in the place. It was so secret that even in 1978 when BBC and IBA staff visited for short courses run by British Telecom, other than the information that it was involved in codebreaking – none of us learned any more. The incredibly tight security lingered long after the Second World War and the author more than adequately conveys this in his excellent book.

However, and before I venture further – **this is not** a tome full of mathematics! The incredibly complex world of ciphers and the numerical techniques used – are only touched on in the lightest way. Indeed, as the title clearly states, this book is about **the people** who worked there and their lives – on and off duty.

The author has even managed to interview some of the codebreakers who are still alive – and they turn out to be still rather reticent in discussing their work. For those of us who are interested in the tragically short life of **Alan Turing** – firmly acknowledged as the 'Father' of modern computing – there are some revealing and sombre first-hand accounts and stories of this remarkable and ill-fated man from those who knew him. Indeed, I quickly realised after reading the book that Alan Turing was born at the right time to contribute much to the codebreaking effort – but 60 years too early for the understanding needed for his sexual orientation.

So, how do you find potential codebreakers? And when you've found potential staff to work on decrypting coded messages – what do you tell them about their future work? Fortunately, the author describes the three processes in a masterly way. It turns out that many codebreakers were recruited because of family connections and also direct from universities. There's even an example of a young man who was literally recruited straight from school! The Women's Royal Naval Service (the WRNS – 'Wrens') also played an incredibly important part – operating the electromechanical Bombe equipment often under very difficult conditions

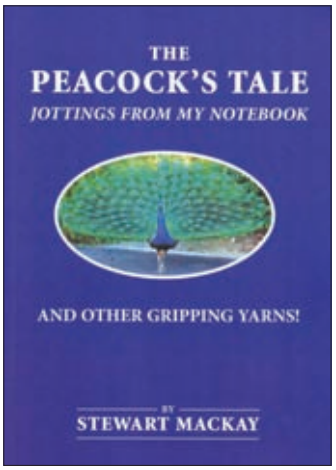
When new staff were recruited they were often sent to BP, sometimes arriving in the middle of the night at the unlit railway station! And when they were working in the main building, security was so tight that often they never learned (or asked) what went on 'next door'.

Despite the long hours – night shifts were where some of the most amazing breakthroughs were made – there was a social life complete with excellent amateur dramatics and many other activities. Winston Churchill even made sure the staff could have a tennis court! And, despite everything – romance often blossomed between staff!

I thoroughly enjoyed reading this book and Sinclair McKay has done a great job in getting former BP workers to talk to him. The BP code of silence still lingers! **Very highly recommended – a must for anyone interested in the secret life of BP! Available from the *PW* Bookstore in August. Order your copy now, only £8.99 plus p&p.**

Now For something different!

The Peacock's Tale – Jottings from my notebook and other gripping yarns!
By Stewart Mackay GI4OCK
Available from the Author for £6.50, including p&p (all profits to be donated to the RNLI).



It's said that every journalist has at least one novel to write! However, **Stewart Mackay GI4OCK** has produced a well written, self-published biography sharing the story of his interesting life and adventures in Northern Ireland. It's a great little book that gives an insight into the world of journalism in a country that's had a troublesome history. However, I think that anyone interested in aircraft would find Stewart's story of the *Shackelton* aircraft that caught fire on a flight when he was a passenger – worth the £6 itself! Enjoyable reading, describing journalism as it was and by a journalist who is a keen Radio Amateur. I wish there were more journalists like Stewart! The address for orders is: **12 Lynne Road, Bangor, County Down, Northern Ireland BT19 1NT**.

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Accessories

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MOONRAKER

HT-90E 2m single band transceiver with full 5 watts output just **£59.95**
The HT-90E is a brilliant compact radio, perfect for beginners to the hobby. Comes complete with battery, belt clip, antenna, and rapid charger all for under £60 quid! Everything you need to get on air is in the box!

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QUANSHENG

TG-UV2 dual band 2/70cm 5 Watts with 200 memories ..... **Only £81.95**

The Quansheng TG-UV2 is a dual band 2m/70cms handheld. It covers 136.00 - 173.995, 400 - 469.995MHz and FM broadcast 88-108MHz. The radio includes 7.2v 2Ah Li-ion battery for extended life. It also comes with AC charger, carry strap and belt clip. This is a very robust radio - don't underestimate its performance from the price!

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Hand-helds

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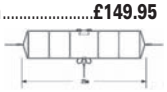
MTD-300 2-30M Broadband wire dipole antenna **£149.95**



The MTD-300 broadband dipole antenna is designed to provide optimum performance over a wide frequency range and is very easy to assemble and use.

● Frequency 2-30MHz ● Radiator length: 25m (82ft) ● Type: Terminated Folded Dipole ● Radiation: directional ● Feedline: 50 Ohm coax (30m) ● Connector: SO239 ● SWR: <2.0:1 to <3.0:1 depending on factors ● No transmatch required ● Power: 150W (PEP) ● Spreaders: 46cm (18in) ● Weight 3.1kg.

CHAMELEON ANTENNA

The CHAMELEON V1 HF/VHF/UHF Multiband AntennaTM is a revolutionary antenna that stands at a mere 8.5 feet tall and contains a unique trap coil design. This antenna is ideally designed for mobile, portable or base station purposes were limited space is a concern.

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A chance social visit to the *PW* offices led to Dave Mason G3ZPR being commissioned to review another antenna on behalf of *PW*. This time it's the Moonraker marketed Chameleon h.f. antenna.

The Chameleon V1

HF Multi-band Antenna

While in the Broadstone area I visited the offices of *PW* magazine (purely social you understand). I should have known better, for there was the Editor – all geared up to persuade me to 'have a go' at another antenna review. I was promised it would be a multi-band, multi-use device so I would be all right for main station, mobile and portable operation.

Well, there's a promise, a real challenge seemed to be on the horizon to put it to the test so, I agreed to take it on. My second mistake was to stay for a chat over a cup of *PW* coffee (the coffee wasn't bad either). Within moments the post arrived with a parcel of guess what? Correct, the very antenna I was to test. It seemed very small, but I resisted the temptation to open it immediately and took my leave of the Editor and staff clutching the parcel.

In the parcel

Look at the photograph of the contents of the parcel, **Fig. 1**, where I found a surprise awaited. Was there anything missing? Read on:

1x 3/8-24 Mount Bar.

1x 'C' Clamp 2in.

4x 25ft of 20 Gauge Counterpoise with 3/8in Ring Tongues for portable use.

4x Steel Tent Stake 200mm (8in) to hold the Counterpoise.

2x Clip-on Ferrite Beads.

1x Chameleon V1 HF Multi-band Antenna.

1x Chameleon V1 UNUN 9:1.

A six page document describing the Antenna and assembly details.

Antenna Description

The Chameleon V document described it as "a revolutionary Antenna that stands a mere 8.5ft tall and contains a unique trap coil design". It continues, "It is ideally designed for mobile, portable or base station purposes where limited space is a concern" and finally, "It's literally a 'Plug and Play' device."

The document claims 11 Band (UK) capability, 3.5, (80m), 7MHz (40m), 10MHz (30m), 14MHz (20m), 18MHz (17m), 21MHz (15m), 24MHz (12m), 27MHz (11m), 28MHz (10m), 50MHz (6m) 144MHz (2m), 220MHz (1.25m), 430MHz (70cm). It will also tune on the USAF MARS/CAP (3.3MHz, 4.5MHz and 7.6 MHz). **Note:** Some of the bands covered aren't available to UK Amateurs and are therefore not checked in this review. I was unable to carry out any tests on 6m. From here on I'll refer to band frequencies only.

The antenna requires no switches, jumper leads, or coils for band changing, simply screw the two sections together. A tuner is recommended or the 9:1 UNUN (unbalanced-to-unbalanced transformer) may be used but to tune on 3.5 and 7MHz (and the other non-UK bands) a good ground & ground plane are required. For mobile operation a heavy duty base spring assembly is recommended.

Good quality materials are used for the Mount Bar (Plated) and Tent Pegs. The bar is designed as a clamping device and can therefore only be fixed to a flat horizontal member such as metal railing fences, balcony rail etc. to keep the correct orientation for the vertical antenna.

Elsewhere, brass and stainless steel are used for joints. The 'C' Clamp will be of limited use for temporary fixing and appears to be of a cast material. The antenna itself is based on a fibreglass core and the whole assembly is covered in a heat-shrink sleeving for maximum protection.

Coaxial Feeder

When using the UNUN there is a reminder that the coaxial feeder influences the standing wave ratio (s.w.r.) so a longer length of cable will be better than a shorter length. (Sadly no one defines the measurement of 'Long' and 'Short') so it's your guess!

The UNUN (UNbalanced to

UNbalanced transformer), **Fig. 2**, is described as a wide-band impedance transformer with an impedance ratio of 9:1 which is used in high frequency (h.f.) circuits to match that circuit to the antenna impedance.

The device consists of a toroidal ferrite core wrapped with a trifilar transmission line isolated with enamel film creating a wide-band component. The windings are so arranged that their capacitance and inductance form a resonance free transmission line.

The UNUN must be fitted the correct way round so, to aid the user, one end is colour coded red, this must be connected to the antenna via the SO239 adaptor, **Fig. 3**, which is also colour coded. The feeder from the rig is connected to the other end of the device.

The Assembly

Next, it was on to the assembly stage and is the point at which I found myself challenged. The Chameleon is easy enough to assemble, just join the two components together, then screw the whole thing into the mount. But I'd began with main-station operation so, now what?

I consulted the instructions where clear guidance is given for mobile and portable assemblies – but there was no specific advice relating to main station use. I could only conclude that the portable instructions were as valid for main station as to portable – so I proceeded on that basis.

A tripod mast was shown at a height of 15ft, (the instruction showed a **minimum** of 1.5ft (was this a misprint?) so I selected a suitable aluminium mast of 15ft. The next problem was to fix the mount to the top of the mast ensuring that it was insulated from it.

The instruction diagrams show a sketch of such an assembly but no specific detail. However, I was fortunate enough to have a cylindrical attachment turned in aluminium that my son had made me for his portable satellite dish mounting. So, I considered adapting it for this task, this took considerable time as I wanted to maintain its original application the photograph, **Fig. 4**, shows the mounting bracket as supplied, the problem to solve and the completed adaptor.

The arrangement I adopted ensures electrical continuity from the outer of the SO239 connector to the counterpoise. It does so while maintaining insulation from the mast as well as providing a simple method of attachment to it, **Fig. 5**.

It's worth noting at this point that the radial ring crimps (as supplied), while suitable for the pegs, are too large for the fixing bolt at the mounting bracket although a larger washer solved the problem.

The Main Station Test

As I mentioned, my first efforts in the test schedule was to use the Chameleon V1 as a main Station antenna. The UNUN was fitted as per instructions (maintaining the red end uppermost to the antenna) and the feeder connected to the lower end with the two ferrite blocks clipped closely to the connector and kept in position with a cable tie.

The whole assembly was then raised to its operating height and the counterpoise radials stretched out to double as guys and pegged to the ground through the 3/8in ring tongues (crimp connectors) with the pegs provided.

The feeder was led to my shack via a Z100 antenna tuning unit (a.t.u) and connected to the transceiver. The first temptation when testing an antenna is to run through the bands to see how it loads up (the s.w.r. syndrome again!) and what effect it has on the power output. The results may, however, be somewhat disheartening as expectations are unlikely to be met!

I checked the V1 with and without the UNUN and the results were variable, ranging from very good (1:1) to very poor (10:1). However, I had to consider the fact that the V1 is a multi-band antenna and that perfection is unlikely to be attained across the full range.

While these tests may be of academic interest I know only too well that performance, for some reason best known to itself, may well negate those nasty meter readings. So, let's get on the air!

Company: Moonraker (Importers)

Pros: Other than my reservations with respect to portability, the Chameleon V1 is a very acceptable and flexible device for those of you who have little choice of using other types of antenna in your specific location

Cons: Portable, by definition, means just that. The Chameleon is transportable but not exactly portable!

Price: £249.95 plus p&p.

My thanks go to Moonraker for the loan of the review unit. They can be contact at **Cranfield Road**, **Woburn Sands**, **Bucks MFK17 8UR**.
Tel: (**01908**) **281706**
E-mail: **sales@moonraker.eu**
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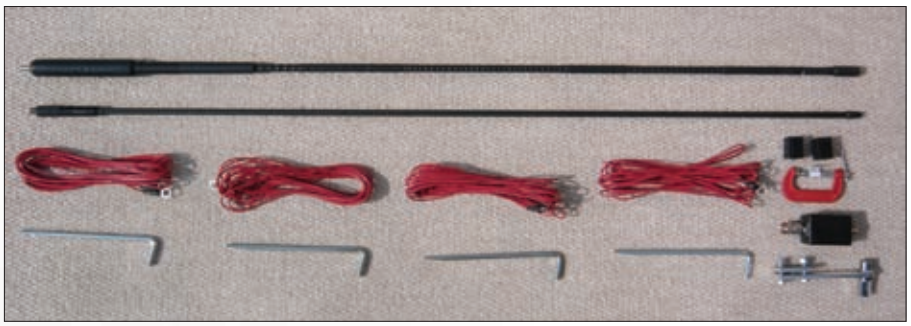

Fig. 1: The contents of the parcel.

Fig. 2: The supplied UNUN has one end colour-coded to enable it to be fitted the correct way round.

Fig. 3: Along with the UNUN, an SO-239 to SO-239 (back-to-back) adapter is supplied.

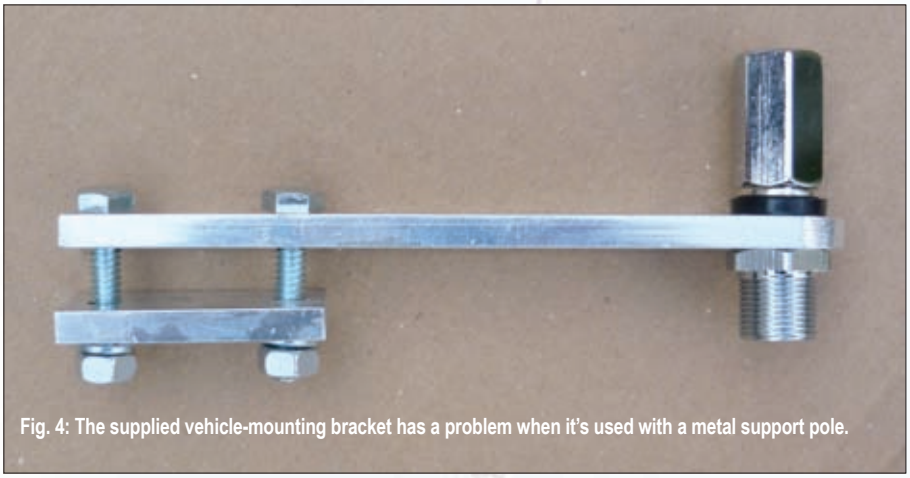

Fig. 4: The supplied vehicle-mounting bracket has a problem when it's used with a metal support pole.

On The Air

Over the test period a total of 62 contacts were made from my home QTH in Poole, Dorset. During the tests 34 separate countries were worked.

As well as Central and Eastern Europe, notable QSOs were made with USA, Canada, Asiatic Russia, Martinique Island, Cuba, the Turks & Caicos Islands, Kazakstahn and Japan.

The 7 and 14MHz bands were the liveliest closely followed by 21 and 28MHz. The 10 and 18MHz bands were also very active – but only one contact was made on 3.5MHz. Activity was clearly affected by the time of day and band in use.

Going Mobile

My next challenge was to take the V1 mobile! This was a far simpler exercise! All I had to do was just drive to a suitable location for static operation, screw the antenna directly into a large Magnetic Mount (not supplied) and connect the battery and feeder. Then switch on and start working stations!

Over a two hour period, while parked at Selsey Bill in West Sussex, I had 27 contacts of which 16 were new countries. Most were in Central Europe, The Balkans, and Eastern Europe – but the remainder were from Brazil, Chile, Turks & Caicos Islands, Canaries, Canada, USA and Japan.

It was a superb afternoon's collection, both 21 and 28MHz were lively, with plenty of activity on 10, 14 and 18MHz. I could have continued into the evening but the parking fee had run out and I had to return home to Dorset.

Operating Portable

My test rig is definitely portable and self contained. The V1 antenna may be considered portable – but its prescribed mounting requirements (i.e. tripod capable of extending to 15ft) is most certainly not, as it doesn't collapse and hook over your shoulder!

Portable, by definition, means just that. You have to be able to carry the entire set-up to your chosen location, which may not be accessible to your car. It was therefore necessary for me to load up my car and travel to a location where I could unload and set up close by. Transportable yes – but perhaps, not exactly portable!

From Pamphill, a site near Wimborne in Dorset, my results weren't good but the selected time didn't help. I only made four contacts (three European countries) on 14MHz. I returned home to recharge the battery overnight with a view to an early morning session the next day.

An early start – 0700hrs the next morning – saw me at Baiter Park in Poole, up went the antenna and operating commenced. I was able to check out conditions on 7, 10, 14 and 21MHz, all of which were active. I made 12 contacts to 11 countries, mainly Balkan and East European.

Australia was active but there was no way I was going to penetrate the pile up despite numerous attempts! This was most disappointing in the light of my earlier mobile success to Japan.

A final portable test seemed appropriate so I set out a trip to Steeple Hill in the Purbeck Hills (almost on the coast to the west of Swanage). This brought disappointing results, only three contacts were made over the period, one Hungarian and two Asiatic Russian stations. It just wasn't my day!

The 144MHz Tests

For my tests on 144MHz tests I fitted the V1 on top of the pneumatic mast at my home QTH and elevated to 30ft as a straight whip (no UNUN). As this band sees very little activity locally, a call was made to friends in the Poole Radio Society 144MHz net to receive reports that I could compare with my own home-brew 2m antenna, which is a vertical dipole.

The reports were very favourable from the G4PRS Net, an improvement on the homebrew all round. The rig used for this test was a Trio TS-7800 running at 10 and 100 watts with reasonable reports even on the low power setting.

Testing On 432MHz

Special arrangements were made to test on the 432MHz band as I had no 70cm capability. I borrowed an FT-817 from a fellow club member and the V1 was fitted on the same 10m pneumatic mast used for the 2m tests.

A sked was set up and I awaited a call from **Colin Redwood G6MXL**. This duly arrived and others joined in the QSO. Satisfactory reports were received from several stations in the area although these reflected the low radiated power from the transceiver at my station – 2.5W – all on the internal batteries.

Not Plug & Play

Other than in the mobile mode, I don't think that the Chameleon V1 can really be considered as a 'Plug and Play' device. Although the antenna is a simple 2-piece radiator with bracket and counterpoise with pegs, doubling as guy lines, that's only half the story.

My opening questioning remark in the review of, "is anything missing" simply meant that I immediately realised that this device required much more in the pack if it was claiming to be a portable antenna. It is fair to say that when purchasing an antenna for fixed station use you must expect to provide mounts and mast and that if you intend to go mobile then a mag mount is all you need to supply. But, if it is claimed to be portable then I expect it to be complete in a carrying case with all that is needed for its speedy and simple erection on site.

The comments under the heading 'The Assembly' clearly show that I made considerable efforts to find a suitable insulated mast adaptor and, for the portable mode, a 15 ft Tripod. Not the usual thing you might just happen to keep stuck behind the shack!

Despite the setbacks I was determined to test the claims of the manufacturer wherever possible and made every effort to conduct those tests in accordance with the makers instructions. And I've found the results most interesting!

The best performance of the V1 was its use as a roof mounted mobile whip. All I needed to do was to screw it into the mag-mount base, switch on and work the

world! I made a point of checking all the h.f. bands – but at the time,10, 14, 18, 21 and 28MHz were the most active. This performance was most pleasing!

The fixed station arrangement also gave good results on seven of the UK Amateur Bands. These were 3.5, 7, 10, 14, 21 and 28MHz and the performance compared favourably with my Comet CH250 Vertical.

Using the V1 as a portable antenna – I didn't get the results I expected. After three excursions into town and country locations only 19 contacts were achieved using 7, 10, 14, 18, and 21MHz. The furthest contact made being Near Asiatic Russia. This clearly did not reflect the success of the mobile experience where Japan and Chile were easily worked.

The v.h.f. operation from my home QTH in Poole returned very good results, better than my own antenna on 144MHz! I had nothing available for comparison on the 430MHz band – but results were very acceptable allowing for the low power rig I used.

In making these comments I'm aware of the fickleness of propagation and the random likelihood of desired stations being on the air at the same time I was conducting tests. The map, **Fig. 6**, shows the countries that I worked with the Chameleon antenna, and I think it speaks for itself!

While I don't conclude that the V1 is a good portable antenna I wouldn't rule out its use as a supplementary Field Day antenna, where there's less chance of members of the public likely to trip on guys, more transport and manpower available to erect the antenna to a suitable height and continuous use over, say 24hrs, to enable a broader view to be achieved. This would be closer to Fixed Station conditions and should give a better picture than shown in these tests.

Could It Solve Your Problems?

Where an Amateur has a small garden or likely planning issues, the Chameleon V1 could well solve the problem. For the antenna to be at the correct height of 15ft a garden of 28ft square is required to deploy the counterpoise/guys to their full length.

Clearly the requirements could be slightly modified to a rectangular set-up but the closer you are to a square the more effective they are as the counterpoise lines function as guys. They could be pegged at a distance from the end leaving the remaining part bent round to fit into a smaller space but I don't know how this would affect performance.

I should also add that the orientation of your house may get in the way of some good DX unless you have a good take off over other gardens, field or parkland. A south facing back garden is best and although my tests were carried out from a north facing garden, the antenna was set up at 60ft distance from the house.

If careful consideration is given to the mounting of the antenna, so that it can be lowered for easy removal of the whip, it can then be used mobile on the car.

Other than my reservations with respect to portability, the Chameleon V1 is a very acceptable and flexible device for those of you who have little choice of using other types of antenna in your specific location.

No antenna can do everything to perfection but the Chameleon V1 does quite a lot reasonably well. I can see its use clamped on a balcony rail in a block of flats being ideal for 144 and 432MHz, as well as trying other arrangements at the same location for use on h.f. I also show on the world map the areas where contacts have been made with this antenna during the test period so readers can see the results I achieved.

PW

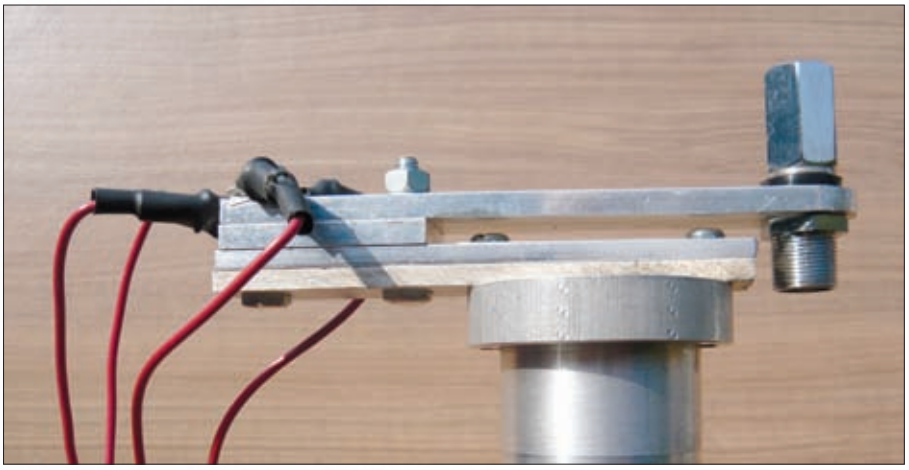

Fig. 5: Dave's answer to the problem was to add an insulating 'washer' under the bracket, so separating the bracket and metal pole.

Fig. 6: The countries and distribution that Dave worked, while using the Chameleon antenna.

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28A at 13.8V yet under 2kgs. (H 57mm, W 174mm, D 200mm approx). Fully voltage protected. Cigar socket & extra sockets at front/rear. Ultra slim.
NISSEI HAVE BECOME RENOWNED FOR PUTTING QUALITY FIRST, YET MAINTAINING A GOOD PRICING STRUCTURE. A TRULY SUPERB POWER SUPPLY UNIT
'Smallest version to date' now with cigar socket.
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Power max (25A)	£89.95
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2m + 70cm + wideband Rx. ~~£179.99~~ **£129.99**

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10m + 6m + 2m + 70cm. (up to 50W).
INCLUDES WIDEBAND RECEIVE AS STANDARD (PLUS DUAL RECEIVE)
INCLUDES DTMF MIC.
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2m/70cm Tcvr with APRS & dual Rx (50W O/P). Includes wideband Rx. Includes DTMF mic.
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Fully automatic (1.8-30MHz). 300W SSB.
Easy to use ATU.
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OUR PRICE **£339.99**
Dip Coils 259/269 £29.99 Case 269B £29.99

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New extra heavy duty 2" mast set. 4 sections x 6 foot that slot together.

SPECIAL BUY

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NEW SWAGED MAST SETS

24 foot mast. 1½" – 4 sections (6ft long). (Swaged)

£49.99 OR 2 SETS £84.99

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18 foot (1½" dia).

18 foot – 6 x 3 foot (1½") slot together ally sections.

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NEW CAR BOOT MAST SET

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Heavy duty die-cast hanging pulley. Hook and go!

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220811 11ele 2m	£109.99
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220818 9ele 2m XD	£129.95
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TM-3000 1.8-60MHz (3kW) Incls mod meter ..... £69.95 P&P £6.50

RS-40 144/430MHz Pocket PWR/SWR..... £34.99 P&P £5

DL-30 diamond dummy load (100W max) ..... £29.99 P&P £5

LOW LOSS PATCH LEADS

£4.50 P&P

Connectors	Length	Price
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PL-259 - PL-259	1m	£14.99
PL-259 - PL-259	4m	£19.99
PL-259 - PL-259	20m	£49.99
BNC - BNC	1m	£12.99

MT-3302

Heavy duty universal mount.

Includes 5m cable **£29.99**

MT-6601

Adjustable roof rack/window bar mount

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(with up/down). Many amateurs (over 4000) have been pleased with it's performance. Includes 8-pin round Yaesu mic lead. Icom/Kenwood & other leads available. Phone (£19.99 each). Replacement foam windshield £3.00 + P&P.

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(Can be hand operated or by compressor/foot pump)

Del £40 10m MAST, ONLY **£1199.99**

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Amazing performance. Twin folded dipole. 2-30MHz – and it really works. No ATU required (25mts long). Supplied with 30 mtr PL-259 feeder – ready to go. If you want great transmission, look no where else. Japanees quality made product

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Q-TEK PENETRATOR

"We've sold 100s all over Europe"

★ 1.8 - 60MHz HF vertical ★ 15 foot high ★ No ATU or ground radials required ★ (200W PEP).

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80mtr inductors + wire to convert ½ size G5RV into full size. (Adds 8ft either end) ..... £34.99 P&P £4.00 (a pair)

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2 way CX-201 (0-1GHz) SO239.....£24.99

2 way CX-201 'N' (0-1GHz) 'N' £29.99

4 way CX-401 (0-500MHz) SO239.....£79.95

4 way CX-401 'N' (0-500MHz) 'N' £89.95

WATSON COAX SWITCHES

(POST £4.00)

CX-SW4N DC-1.5GHz (5xN).....£59.99

CX-SW4PL DC-800MHz (5 x SO-239).£56.95

CX-SW3N DC-1.5GHz (4 x N) £49.95

CX-SW3PL DC-800MHz (4 x SO-239).£41.95

CX-SW2N DC-3GHz (3 x N) £32.95

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DC-2 Standard 2-pin/15A fits most VHF/UHF .... £10.00 P&P £3

DC-3 Fits Yaesu FT-7800/8800/8900, etc ..... £17.50 P&P £3

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True military spec real UK coax

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GS-050 stay bearing £39.99 OUR PRICE **£89.99**

DIAMOND YAGIS

No tuning required

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2m/10 element	No tuning required	SO-239 feed..... £84.99
70cms/10 element	No tuning required	SO-239 feed..... £54.99
70cms/15 element	No tuning required	SO-239 feed..... £69.99
6m/2 element	No tuning required	SO-239 feed..... £89.99

Q-TEK COLLINEARS (VHF/UHF)

Del £10.00

X-30 GF 144/70, 3/6dB (1.1m)..... £44.99

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X-510H GF 144/70, 8.5/11dB (5.4m) £139.99

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MX-72 "N" 144/430..... £42.99

MX-62M (1.8-56MHz + 76-470MHz) £79.99

MOBILE ANTENNAS

Del £10.00

DB-7900 2m/70cm (5.5/7.2dB) 1.6m (PL-259)..... £44.99

DB-770M 2m/70cm (3.5/5.5dB) 1m (PL-259)..... £24.99

Diamond HV-7CX 7/14/21/28/50/144/430..... £129.99

Diamond CR-8900 10/6/2m/70cm (1.26m) £99.99

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RH-9000 BNC

40cm flexible whip for the ultimate in gain. **£32.99** P&P £5.00

Tx:- 2m + 70cm (Rx:- 25MHz-2.9GHz).

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40cm flexible whip that is ideal as replacement. Tx:- 2m + 70cm. Rx:- 25MHz-2.9GHz **£36.99** P&P £5.00

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Over the ear earpiece.

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RH-770H (BNC)

2m/70cm Tx + wide Rx. High gain up to 5.5dB.

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STATION A4 LOG BOOK OFFER

3 FOR £10.00

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EARPIECE/BOOM MIC

Over ear earpiece + boom mic. Available in Kenwood version or Yaesu/Alinco/Icom.

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DOUBLE THICK FERRITE RINGS

A superb quaility ferrite ring with incredible properties. Ideal for "R.F.I". Width 12mm/ OD35mm. 6 for £14.99 P&P £4.00

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Hard drawn (50m roll)..... £40.00 P&P £7.50

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Flexweave (PVC coated 50 mtrs) ..... £59.99 P&P £7.50

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Copper plated earth rod (4ft) ..... £14.99 P&P £8.00

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New RF grounding wire (10m pack) PVC coated..... £14.99 P&P £5

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2" mast-floor base plate..... £16.99

6" stand off brackets (no U-bolts).. £8.99

9" stand off brackets (no U-bolts).. £10.99

12" T & K brackets (pair) £19.99

18" T & K brackets (pair) £24.99

24" T & K brackets (pair) £29.99

All our brackets are of high quality, British made and galvanised.

U-bolts (1.5" or 2") each £2.00

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15" long (2") sleeve joiner (1.5" also available) £18.99

3-way guy ring £7.99

4-way guy ring £9.99

Heavy duty guy kit (wire clamp, etc.) £49.99

Set of 3 heavy duty fixing spikes (~0.7m long)..... £29.99

30m pack (4.4m) 480kg B/F nylon guy £15.00

Roll of self-amalgamating tape 25mm x 10mtr..... £8.99

Special offer:- Self-amalgamating 3 rolls..... £20.00

The YouKits HB-1A-MK3

7 and 14MHz miniature transceiver

Phil Ciotti G3XBZ is a serious constructor of QRP equipment – but he parked his soldering iron for a while to evaluate a fascinating ready-made low power c.w. transceiver deigned by a Chinese Amateur now living in the USA.

Despite its name the YouKits HB-1A-MK3 is not a kit transceiver – confusingly it's ready made! I was delighted when the *PW* Editor asked if I would consider evaluating the rig – thinking at first I would have to build it – until Rob G3XFD told me it was 'ready to go'!

Essex-based **Waters & Stanton PLC** have been appointed distributors of the HB-1A-MK3 c.w. transceiver. The radio is available in two versions, one being for 7 and 14MHz (40 and 20m), the other for 10 and 14MHz (30 and 20m). The transceiver supplied for review was the 7 and 14MHz version. It was designed and built in China and is imported by W&S.

Full Coverage Of Both Bands

As its name suggests the transceiver is a two-band c.w. only rig with 5W output with full coverage of both bands. The receiver will also tune continuously from 5-16MHz. Transmissions outside the amateur bands are inhibited.

Provision for receiving lower and upper side band (l.s.b. and u.s.b.) signals are fitted as standard. The transceiver will accept either paddle or straight Morse keys, it also has a built-in keyer with auto "CQ" facility.

External d.c. supplies from 9-14V or internal batteries (8 x AA) cells can be used to power the radio. There are 20 memory channels for storing your favourite frequencies and rapid band change are available. A CDROM is supplied which contains the operating manual and circuit diagram (more about this later).

How Big?

The HB-1A was designed with portable QRP operation in mind and this is reflected in its size. The case measure 140 x 95 x 35mm (width, height and depth) excluding the feet, knobs and antenna connector. It's fitted into a two-part case, finished in a fine black-crackle paint, with white lettering for the labeling of the controls.

The front panel, which (unusually) is positioned on the top of the transceiver owing to its compactness, contains all of the controls needed for its operation. The controls are adequately spaced, allowing ease of use without accidentally pressing or moving the adjacent one.

On the vertical side nearest to the operator are the 3.5mm connectors for the key and headphones. The rear vertical side has the external d.c. input and a BNC antenna connector. The bright 16x2 line display has a blue background with white text, which gives a high contrast and a wide viewing angle.

Small and compact but covers two complete bands!

The Manual

The supplied CDROM auto-started on my PC using *Windows XP*. The file did not take long to load, as it comprises of mostly text with a circuit diagram of the transceiver as its last page. All functions are covered, although the translation into English is very muddled at times.

For example, when talking about the internal battery installation or replacement the manual says, "removed the two screws on the back can be installed or replacement battery." I knew what was meant but couldn't help smiling when I read it! Indeed, the Editor and I found the manual to be hilarious – and confusing! However, I did find two omissions, which will be covered later in the review.

When trying the receiver for the first time I discovered one of the omissions mentioned above. This concerns the external d.c. input connector. The polarity of the centre pin is not shown in the manual or identified on the transceiver itself. Checking with the circuit diagram and an ohmmeter confirmed the centre pin to be positive with respect to the case. The supplied (very short) d.c. input lead was similarly not marked either. I also noticed that the power switch was not labelled as to which position was on or off.

Switch On!

With everything connected correctly the receiver came to life and clear signals were heard on 7MHz. The fluted tuning knob was easy to grip and rotate. Pressing the tuning knob down changes the frequency step size, enabling either small or large frequency variations to be obtained.

The receiver is a superhet design with

a very stable Direct Digital Synthesiser (DDS) as its local oscillator (l.o.). A crystal filter in the intermediate frequency (i.f.) chain provided the main selectivity with additional switched audio bandwidth filters. Four stages of filtering are provided for c.w. and four more for s.s.b. use.

The bandwidths available are 900, 700, 500 and 400Hz and for s.s.b 2.2, 2.0, 1.8 and 1.6kHz respectively. These can be quickly changed to the desired setting by pressing and holding the **ATT/IF** button.

The existing bandwidth is displayed and further presses of the same button step through the choices available. Normal operation of the receiver will resume after approximately two seconds. **Note:** All functions of the HB-1A are activated by the short press or 'press-and-hold' feature of the menus.

During the listening periods I found that the receiver was sensitive across all of the tuning range. I tried all receive functions and they all worked as stated in the manual. The automatic gain control (a.g.c.) action was fast, so I didn't experience any unexpectedly loud signal in my ears. This is especially important when using headphones!

However, I did find the radio frequency (r.f.) attenuator to be a bit too effective, taking strong signals down to low levels with very small adjustments. For portable operation using small simple antennas I would imagine that this function isn't used.

Keying Up

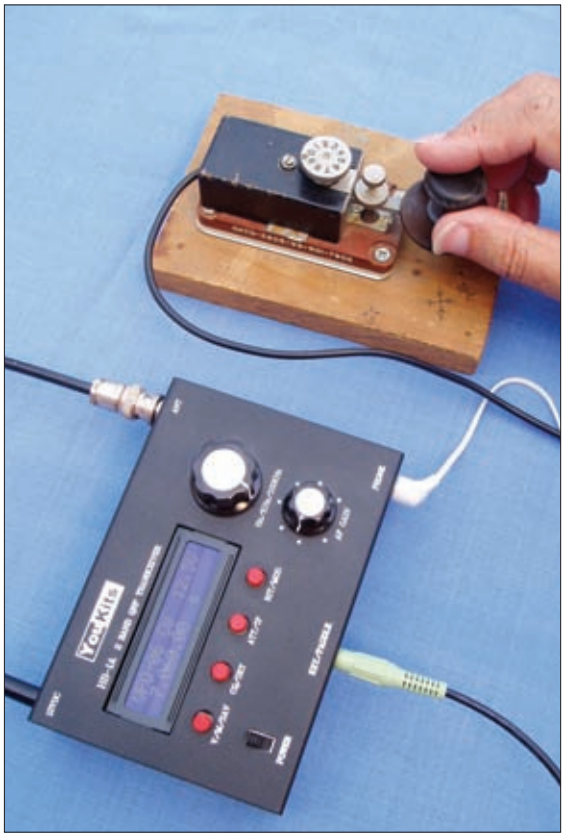
Connecting a power meter and dummy load to the transceiver and keying up enabled some basic tests to be carried out. The transceiver can be used with either paddles or a straight key.

When the HB-1A is switched on the Morse letter 'A' is heard in the headphones. This let me know that the rig was in the keyer mode. I wanted to use a straight key so I plugged this in.

The manual states that the transceiver auto-detects which type of key is connected. However, when I touched the key to transmit a series of dots was sent. I re-read the manual, only to find that there are no instructions on how to change from auto to straight key operation! (This was the second omission that I mentioned earlier).

By trial and error, I discovered that by 'shorting' the ring of the 3.5mm stereo plug to ground it changed to manual operation. The morse letter 'M' was then heard in the headphones. Unfortunately, whenever the YouKits HB-1A was switched on for another session of operating the same procedure had to be repeated.

Using the **SET** menu the speed of the keyer can be adjusted by use of the dot paddle to increase or the dash paddle to decrease it.



Add a miniature key and headphones and you could have an ideal solution for SOTA portable h.f. work!

When using a 13.8V d.c. supply, 6W of r.f. power was measured into a 50Ω dummy load. An external 12V battery provided 5W and 8 x AA cells fitted internally gave 3W output. **Note:** Very fast switching between transmit and receive was observed during the tests.

On The Air

The output of the transmitter is designed to operate into a resonant antenna for the band in use. If you're planning to operate portable with a non-resonant

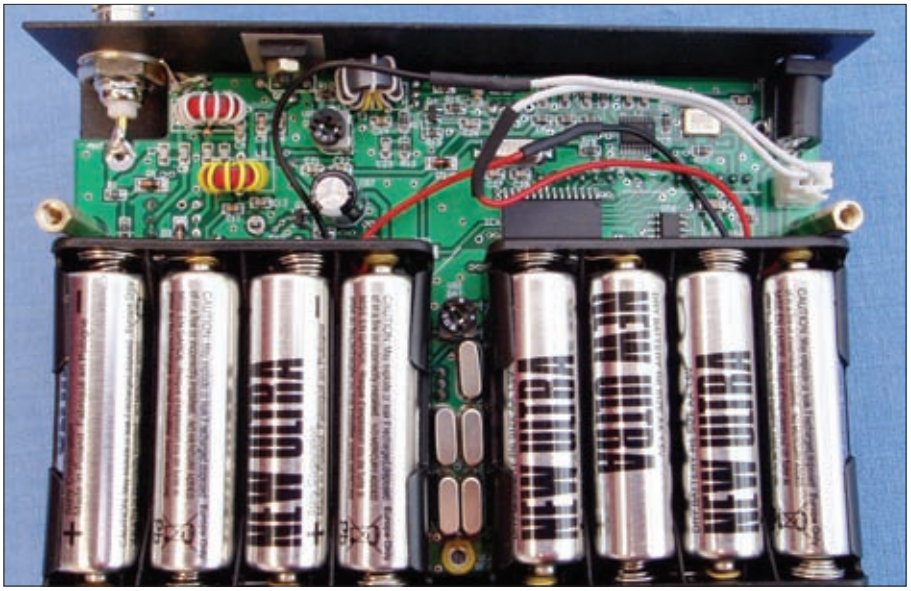
Supplier:
Waters & Stanton

Pros: An excellent QRP transceiver. Easy to use simple menu system. Display is easily read in bright conditions

Cons: The very poor English translation of the manual. Confusion regarding power lead and internal keyer switching.

Price: The price is £199.95 inc. VAT plus £8.50 for insured courier delivery.

Further information from
Waters & Stanton PLC,
Spa House,
22 Main Road,
Hockley,
Essex SS5 4QS.
Tel: 01702 204965
FAX: 01702 205843
E-mail:
sales@wsplc.com
Website:
www.wsplc.com



Compact as it is, there's room inside for eight AA-sized cells for self contained operating.

antenna – you'll need an antenna tuning unit (a.t.u.). However, at home I was using my ZS6BKW dipole (a modified G5RV design) antenna.

While preparing for some operating on 7MHz a good friend, and fellow club member, **Colin Davis G0JII** came to see me. His c.w. operating is far superior to mine – so he didn't take much persuasion to use the key!

The first contact in the log was **Bernard Wilson G3PNH** in Chippenham, Wiltshire who gave Colin a 539 report. An RST579 was the reply to Bernard. Next came **Cyril G3SQS** in Norwich, Norfolk reported RST579 with RST589 given in return. **Juergen Wagner DL4KE/M** near Cologne in Germany was next with exchanges of 589 both ways. He was operating from his car with a mobile whip antenna.

Moving up to 14MHz **Mick Thiess LA5SAA**, using QRP, near Stavanger in Norway, said our signals were RST559 with some QSB (fading). Colin replied with RST449 also with QSB. Finally on 7MHz we worked **Gus Gamsjaeger OE6GUG** in Graz, in Austria, who gave us an RST569, with RST579 being sent in return.

Portable Operation

Colin and I had been discussing the possibility of going portable for a little while. With the arrival of the HB-1A we decided the time had come to do something, rather than just talk about it!

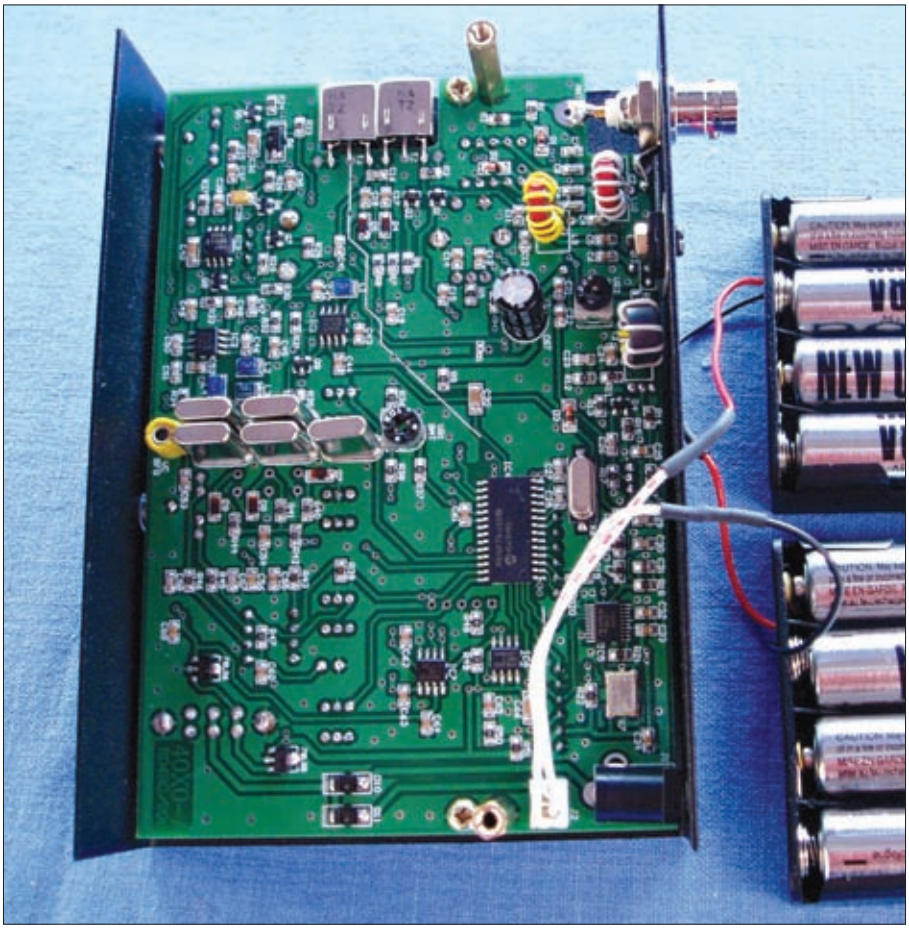
The portable station consisted of the HB-1A, a manual a.t.u. and a Pro-Whip vertical antenna with the radial running parallel to the shoreline of Poole Harbour, taking advantage of a local park.

Using the internal battery pack 3W were available from the transmitter. Despite hearing stations no firm contacts could be established. Due to the inclement weather conditions, we withdrew to the warmth of Colin's motor home!

The station was re-assembled, but this time a 12V sealed lead cid (SLA) type battery was used, taking the output power to 5W. Two contacts on 14MHz were successfull completed using the whip. The first contact being **Poul-Erik Karlshoej OZ4UN**, in Denmark who received the HB-1A at RST449 and RST599 was sent in return. Secondly **Imre HA8LTO**, in Hungary, gave RST449 with RST599 being the reply to him.

Excellent Rig & Simple Operation

Summing up, I found the HB-1A to be an excellent QRP transceiver and enjoyed its simplicity of operation very much.



An inside view of the transceiver with the internal battery pack removed.

The receiver is sensitive and the display informs the operator of any changes made when in use. During periods of outdoor operation the display could be seen easily, even when the sun was shining brightly.

The Receiver Independent Tune (RIT) function has a very wide range, it was still tuning at ±100kHz! The transmitter gave its quoted output power depending on the different voltages used. **Note:** There's no provision for altering the output power from the power amplifier (p.a.) stage.

The HB-1A proved to be reliable when used throughout the review period. When used with resonant antennas, so that an a.t.u. is not required, it would make an ideal compact portable station ideal for Summits on The Air (SOTA) type operation and for keen outdoor operations with a tent and backpack. Incidentally, this is just the type of operation I think the rig was designed for.

My main concern has nothing to do with the radio itself. The manual certainly needs attention to include the omissions I've mentioned and certainly to improve on the very poor translation. I feel that if this could be done – it would add to the very good product that's on offer.

My thanks go to Waters and Stanton, PLC for the loan of the HB-1A1MK3-40-20; and also to Colin Davis G0JII for his expertise in Morse operating

Jeff Stanton G6XYU replies on behalf of Waters & Stanton

Thanks for the courtesy copy of the review. In fact the units are supplied to us in part-kit form for final assembly here. So that we can sell them fully assembled.

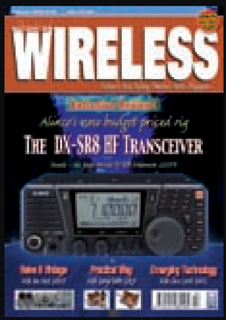
We may offer some future products in either kit or ready made form but we thought that we would offer the HB-1A only as ready built. We have asked the manufacturer to increase the length of the d.c. lead and mark the polarity more clearly on future production. We are already re-writing the instruction booklet here into better English language!

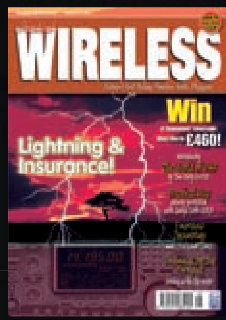
We've had very good feedback from early purchasers and I was pleased to see some on-air contacts reported by the reviewer, **Phil Ciotti G3XBZ**, in his interesting article. In fact my business partner – **Peter Waters G3OJV –** was using one on the back of his pushbike with a whip antenna in Hockley Woods just recently although I have no reports of the quality of his Morse!

Best regards, Jeff G6XYU

The *Practical* Wireless Archive 2010 on CDROM

You've been asking for them and you've been waiting for them! At last they're here!





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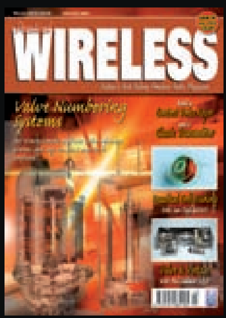
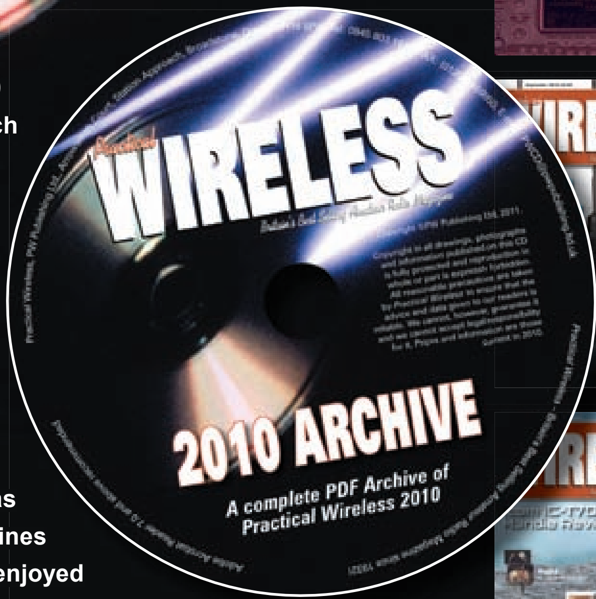
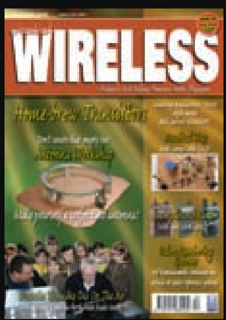
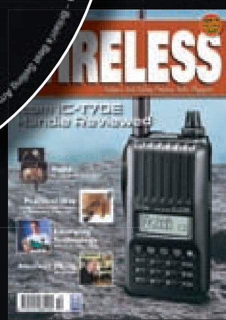


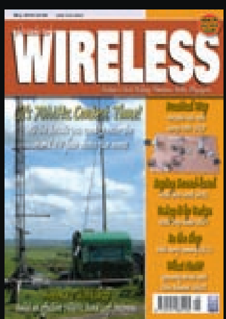
Once you've purchased the 2010 archives there'll be no need to search through a year's worth of paper magazines or struggle to hold a heavy set of issues in binders! The CDROM will make things so much easier!

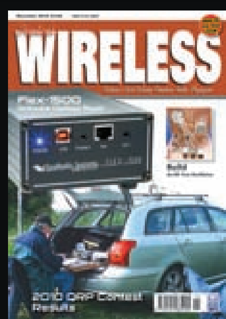






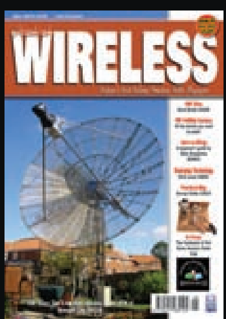
Find the articles you want much quicker. Enlarge the article and circuit diagrams to suit your needs. Use your CDROM archive as much as you like and keep your paper magazines in pristine condition to be read and enjoyed when you've found what you need on the CDROM!

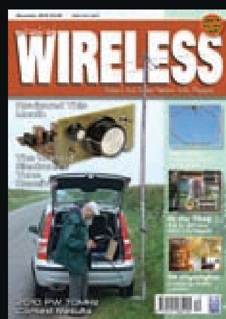




The CDROM *PW* archive for 2010 contains the complete *PW* – including the full editorial, adverts, etc. In other words – nothing is left out. No short change here – you get a fully readable archive of your favourite magazine in an amazingly compact and convenient form!

The Editor Rob Mannion G3XFD has already tried out the CDROM archive – and here's what he thinks: "What a wonderful idea! Readers have been asking for archived issues for a long time – and I can tell you that wait will have been worth it! Every day I work on *PW* I need to research previous issues so the *PW* 2010 Archive on a CDROM is perfect and I thank my colleagues for their hard work in preparing it. So, don't delay – order yours now and you'll always be 'looking back' in a much more convenient style!"





The *PW* 2010 Archive CDROM costs £14.99 plus p&p.
Please see page 75 for ordering details.

Tony Nailer G4CFY's Technical for the Terrified
PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW
E-mail: tony@pwpublishing.ltd.uk

Measuring Power And SWR

This time, Tony Nailer G4CFY turns his attention to measurements and how to make them meaningful in his *Technical for the Terrified* column.

Hello again with another *Technical for the Terrified* (*T4T*) and please accept my apologies for not providing *Doing It By Design* in the last issue *PW*. Other activities in my daily life have kept me very busy and prevented me from undertaking the experiments with the 50W amplifier, but I hope to be able to do the work in time for the next issue.

Following on from the last *Technical for the Terrified* I have received a couple of interesting E-mails. One came from **Martyn Jones GW6ITJ** who had done a great deal of literature searches for information on vertical antennas. He had then undertaken experiments relating to efficiency and standing wave ratio (s.w.r.). He offered a compilation of results on a website for anyone else who might be interested. **http://sites.google.com/site/gw6itj/theory/vertical-aerials**

Fig. 1: A typical low-cost CB-style power and s.w.r. meter.

Fig. 2: More accurate measurements of power and s.w.r., can be made with the Bird Thruline meter, though it can be an expensive solution.

Fig. 3: Just one example of the rotatable sensing elements available for the Bird Thruline. This one is suitable for frequencies of between 25 and 60MHz, with powers up to maximum of 100W. Other combinations are available.

The other E-mail was from **David Sumner G3PVH** who suggested that efficiency might vary in proportion to the cube of the height. The radiation resistance would vary with the square of the height and the reactance by the reciprocal of the height.

The thing about the comparisons of the two Springer antennas that I mentioned last time, was that the inductance of each was the same. The mini Springer antenna had more coil and less whip, so in essence a greater part of the element had been wound into the coil, so the reactance argument didn't apply. Nevertheless I was pleased to receive the input because that is how the science of radio is advanced.

Contributions To Radio Science

When I applied for my first licence I had to fill in a form to state what bands I expected to be operational on and what experiments I intended to undertake. Clearly the object of the exercise was that results of my experiments would be shared amongst the Amateur fraternity and the science of radio be increased.

For the most part these days Amateurs use commercially made equipment, have very little test equipment and either use a commercially made antenna or a standard design of antenna such as the G5RV or a trapped dipole, or even a plain dipole. Most have no idea of the loss in the feeder or the gain of the antenna at various frequencies in use.

Many Amateurs may have no idea of the calibration of the S-meter on the rig, so information exchanged about signal strength and radiated power are virtually meaningless. As so few are dabbling with home-brew circuits and I think there's very little new science being shared amongst the Amateur fraternity.

Maybe I can encourage you to build or buy some test equipment so you can determine if your antenna is resonant and what the loss is of your feeder line? First though, it's important to consider some useful pieces of test equipment.

Standing Wave Ratio Meters

Going back to my work with CB radio installations and the sale of CB equipment, from its boom period in the late 1970s and early 1980s, I quickly noticed that nine out of ten s.w.r. meters gave false readings. There were only a few variations in design and likely many were copies or were made in the same factory and badged. An s.w.r./power meter is shown in **Fig. 1**.

Most of the meters had a printed circuit board with the main Z-shaped transmission track with sampling lines each side. The board was usually symmetrical in geometry so that the sampling lines would be identical. The transmission track had a hole each end so it would be soldered directly onto the centre pins of the SO239 sockets.

Each of the sampling lines was terminated at opposite ends with a resistor, usually 100Ω, and the other end to a

germanium diode. In addition to this there was often a resistor added across the termination resistor to force the reading to a certain value. Changing the terminating resistors, is fudging the result and unbalancing the meter. A simple test done by swapping input and output will often reveal totally different results.

I bought a high-priced Amateur Radio s.w.r./power meter hoping it would provide a standard – but unfortunately it read 1.4:1 into the 2:1 load.

Calibrating The CB Meter

I made up an 8W load from four 100Ω 2W resistors in a series–parallel network to achieve 100Ω total. I also had a 50W 50Ω commercial load resistor for test and development work. Here again I have found using my accurate analogue multi-meter that some loads, which are supposedly 50Ω, may be 47Ω, or 51Ω, or even 56Ω, and I even have one which is 68Ω. So, just what sort of game are these people playing?

But returning to the s.w.r. meters, the first thing to do is, if fitted, to remove the fudge resistor. Check the meter using the 100Ω load to see how close the reading is to 2:1. In most cases it will not be that close, and could read anything from 1:1 to 3:1.

Next, replace the termination resistors with 120Ω each and see if that gets the reading closer to 2:1, otherwise try 100Ω and 10Ω in series. Usually this solves the problem and then when tested with the 50Ω load it will show no reflected power at all.

If the calibration is undertaken using an h.f. or CB rig there might be an error in reading at v.h.f. and above. If the meter is calibrated for perfect s.w.r. at 144MHz, it will usually be correct right down through the h.f. range.

Having calibrated the s.w.r. meter, you then have to understand what the meter is actually telling you when using it. Setting the switch to the 'FWD' position, a signal at the top of a band is passed through the meter to the antenna and the forward reading is adjusted and set to full scale deflection. The switch is put to reflected (often labelled 'REF') and the s.w.r. reading is noted. The transmitter should then be tuned to the bottom of the band and the s.w.r. again noted.

If the readings are equal, try doing the test again in the middle of the band. The frequency at which the s.w.r. is lowest is the resonant frequency of the antenna. Beware that it may even be above or below the band!

Cheaper CB Power Meters

The cheaper CB-type s.w.r. and power meter is okay only when it's used in the range 26-30MHz, provided it has been checked against a reliable power meter, and calibrated by adjusting the internal trim-pot. Beware though, that putting the meter's lid on often changes the reading a bit, so it's worth compensating for this.

Such a power meter can also be calibrated at other frequencies, such as 50, 70 or 144MHz, but it's then likely to be correct only on that one band. The reason is that the main transmission line is a different proportion of a wavelength at different frequencies. The reading increases in proportion to the square of the increase of frequency.

A way around this change of reading with frequency, is to employ a calibration control. This control has to be set according to the frequency of use and adjusts the full scale reading accordingly.

Bird Thruline Meter

The Bird 43 Thruline Power Meter has become a benchmark for accuracy of power measurements. Realising that sensor lines provide different results with frequency the Bird designer made a meter with a large number of sampling elements, or plug-ins. The picture of an old (but trusty) Bird 43 meter is shown in **Fig. 2**.

Within the meter is a rod transmission line suspended within a tube to maintain the nominal 50Ω characteristic. There's a hole in the tube to allow the sampling head to come into close proximity to the rod. Also on the sides of the plug-in are contacts for picking off the forward or reflected signals. When the arrow on the plug-in is pointing right the meter reads forward power and when rotated to the left it reads reflected. A picture of a sampling element is shown in **Fig. 3**.

Not only is the concept ingenious, the accuracy is excellent and for the Bird Company there's an on-going demand for sampling heads which presently are about £70 each new. Bird 43 style meters are often available for between £45 and £100 depending on condition. Second-hand sampling heads vary a bit in price with the most desired frequencies costing £30/£40 and the least desired at around £20/£25.

Wide Range Power Meter

A design for a wide range power meter is included in the *RSGB Radio Communications Handbook* fifth edition on page 18.22. It uses a current transformer comprising a secondary of 12 turns of 24s.w.g. (0.56mm) wire on an FX1596 core (probably equivalent to an FT50A Fair-rite core) with a primary formed by sliding it onto a short length of RG-58 coaxial cable.

The circuit is shown in **Fig. 4**. This arrangement requires either two meters or a cross arm meter and also a very high wattage resistor. The claim is that power measurement is independent of frequency from l.f. to 70MHz. The coaxial line has its screen terminated at the input end only so that it acts as an electrostatic screen. Apparently, the length of this cable is unimportant. The trimpot RV1 is, during initial calibration, required to achieve a zero reflected reading when feeding into a 50Ω load.

An alternative design, from a source I can longer find, used a 2-9pF trimmer capacitor in place of R1, and in place of RV1 and R2 it has a 220pF mica capacitor in parallel with

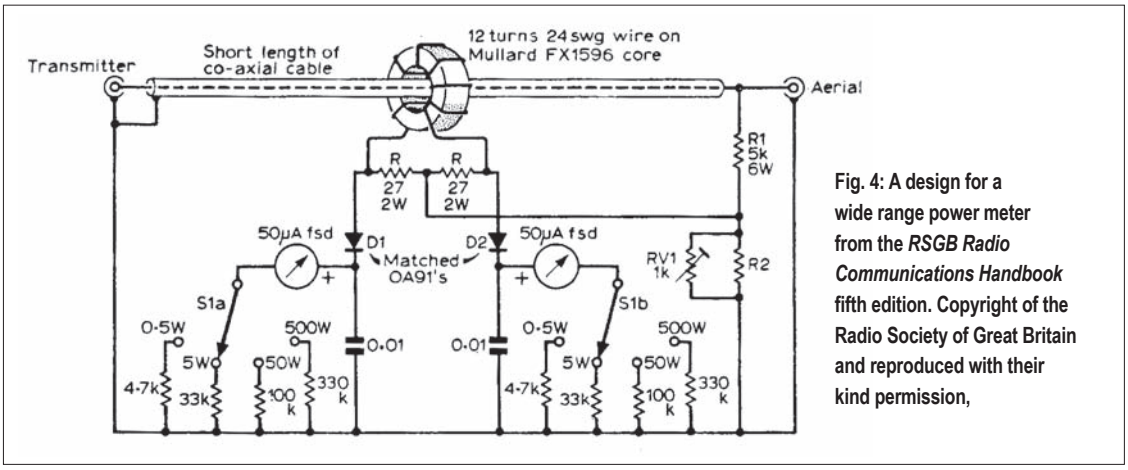


Fig. 4: A design for a wide range power meter from the *RSGB Radio Communications Handbook* fifth edition. Copyright of the Radio Society of Great Britain and reproduced with their kind permission,

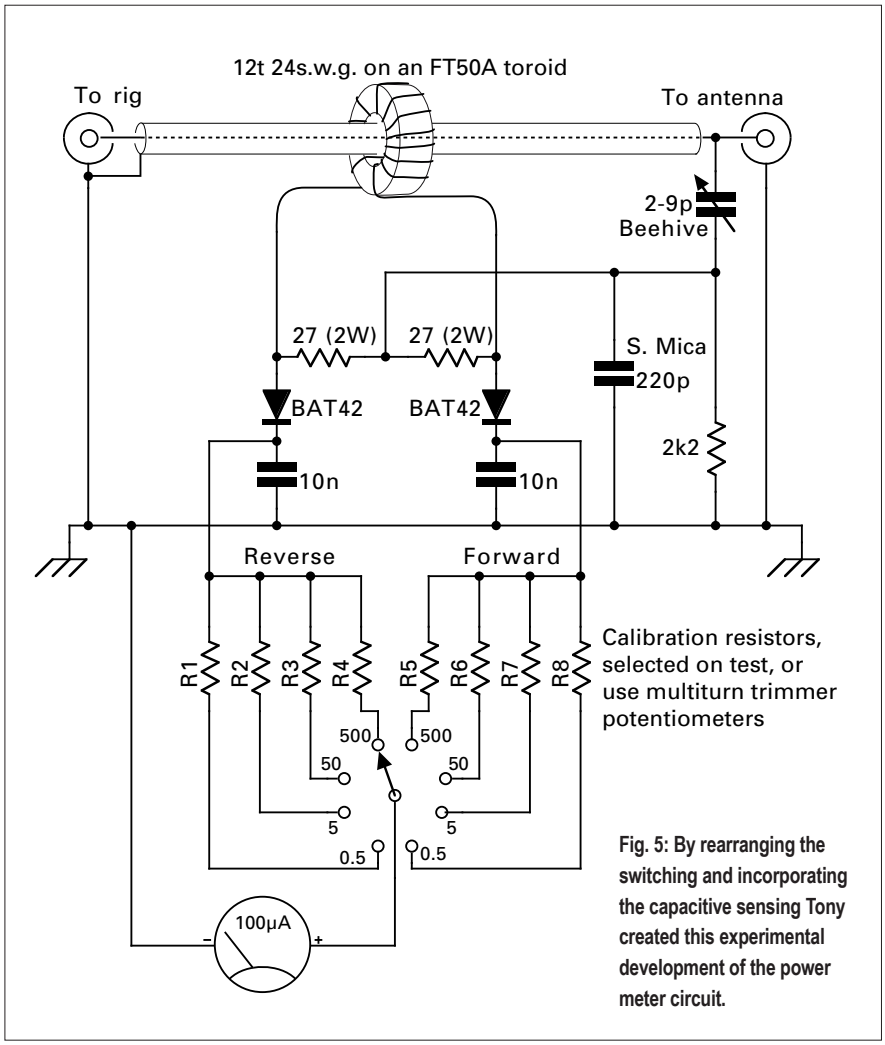


Fig. 5: By rearranging the switching and incorporating the capacitive sensing Tony created this experimental development of the power meter circuit.

The significant feature of the design, was the 365pF variable capacitor in parallel with a variable resistor forming the reference arm of the bridge. This is coupled with a fixed value capacitor of 180pF added across the antenna port. These changes provide an ability to measure values of ±180pF of reactance in the antenna. Also the toroidal transformer has four windings, wound quadrifilar, which achieves a much better balance and accuracy at the top end of the h.f. bands.

Calibration of the dial can be done using fixed values of capacitance and resistance to the antenna port and balancing the noise to a null using the receiver as the detector. Then marking the variable capacitor dial and variable resistor dial with the appropriate values.

To measure the antenna resistance and reactance, connect the antenna to the 'UNK' (unknown) port, and the receiver to the 'RCVR' port. Tune the receiver to the top, bottom and middle of the band and adjust the variable resistor and capacitor in each case for a null in the noise.

If a proper null cannot be obtained it's likely the antenna is resonant outside the band. If the readings across the band always show resistance and capacitance the antenna is too short. If the capacitance scale is negative, that is inductive, then the antenna is too long.

To use the noise bridge for transmission an antenna tuning unit (a.t.u) is required between the bridge and the antenna. Set the capacitance to mid range, that is equal to the 180pF across the 'UNK'. Set the resistor to 50Ω and adjust the a.t.u to give a null on receive. The system is set up and ready to use.

a 2k2 resistor. Rearranging the switching and incorporating the capacitive sensing gives my own experimental development of the power meter circuit, as shown in **Fig. 5**.

Construction of either of these above units is best done using stand-off terminals or Tufnel tag strip. A possible construction method would be to use a die-cast box with printed circuit board (p.c.b) guides. Assemble the transformer and sensing components at one end, sectioned off by a piece of blank of printed circuit board (p.c.b) material with two feed-throughs for meter signals.

On the lid, over the other part of the box, have a single pole eight-way switch with the calibration resistors assembled on it, and the meter. You may have already worked out that a properly set up and calibrated bi-directional wattmeter, will also work fine as an s.w.r. meter.

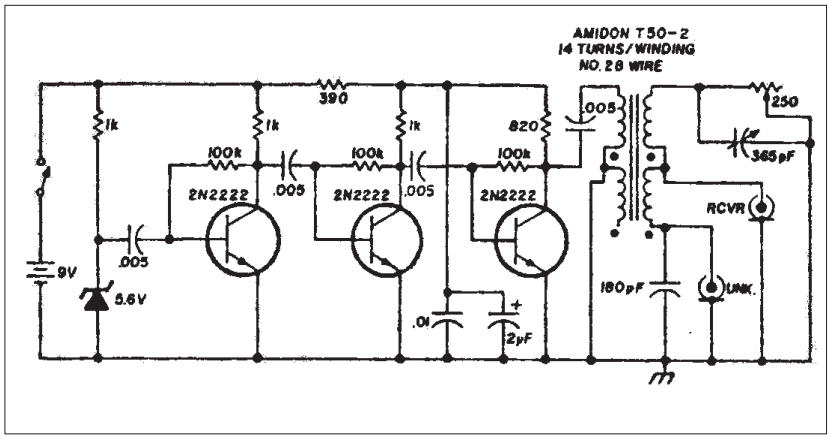


Fig. 6: The circuit shown here is a noise bridge which appeared in the American magazine *Ham Radio* in the February 1977 issue.

Antenna Noise Bridge

Another piece of useful test equipment, is the antenna noise bridge. This is a piece of test equipment to measure the resistive and reactive values of an antenna, and is used in conjunction with an h.f. receiver. When used with an antenna tuning unit it allows the best possible match to 50Ω without putting a signal out on the band. If only every amateur used one of these there would be considerably less squeaks and bursts of blank transmission on the h.f. bands.

The circuit shown in **Fig. 6** is of noise bridge which appeared in the American magazine *Ham Radio* in February 1977 issue in an article entitled 'Improvements to RX Noise Bridge', by **Robert Hubbs W6BXI** and **Frank Doting W6NKU**.

Final Remarks

If you make or obtain these pieces of test equipment, you will be able to learn more about your antenna system and maybe even then have the tools to experiment with it. What you learn could improve your station performance and give you something useful to communicate to your fellow amateurs. Wouldn't that be nice?

'Bye for now. **Tony G4CFY**. **PW**

Feature

Mike Redman explains how a letter published in *PW* during 2010 led to him becoming – M0GYL – 50 years after passing the old RAE!

And 50 Years Later!

In September 2010, *PW* printed a letter about my efforts to build a valve radio that featured in an archive copy of the magazine. The Editor requested a photograph of the completed project and – at long last – here are a couple of pictures, **Fig. 1** and **2**. It's a 2-valved tuned radio frequency (t.r.f.) short wave set, designed by J Johnstone and published in the June 1960 edition of *PW*.

The first valve provides tuning and detection, with reaction to improve sensitivity, followed by a single valve audio amplifier. It's a classic design.

The Wide Band Battery SW Two

I chose the Wide Band Battery SW Two design, shown in Fig. 1, for several reasons. Firstly, new 1S4 and 1S5 valves were available. Secondly, it's battery powered. This was important, because the project was being constructed not just for me, but also for possible demonstration to young people.

The valves, valve bases, variable capacitors (condensers in the vernacular of 1960!) and an h.f. choke were sourced from eBay. I found a vintage brass Jackson Brothers' unit that was probably manufactured when Mr Marconi was still alive!

The aluminium sheet (1.5mm) for the chassis and front panel also came from eBay. The resistors, capacitors, output transformer, on/off switch and coil winding wire came straight out of the RS Components catalogue.

The chassis specified in the article is a slightly odd shape, 12in long x 5in wide and 2½in deep (that's about 305mm x 127mm x 64mm), but it was easy enough to fold and drill and once completed the parts fitted nicely. The coil couldn't be constructed exactly as in the article. However, a stout cardboard tube of 44mm diameter provided a good substitute; it was varnished before use and the turns recalculated to give approximately the same inductance as the suggested 1½in former would have produced.

Wiring up was very straightforward; as wires and components were added, an enlarged copy of the circuit diagram was marked up with a fluorescent fibre tip pen. It was a good move – the wiring diagrams in the original article contained a 'deliberate' mistake to confuse the unwary!

The circuit diagram, **Fig. 3** is correct.

Fig. 1: The front of Mike's version of the 1960 *PW* project.

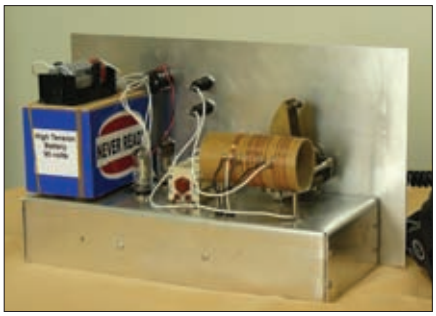


Fig. 2: And around the back of the project.

However, there was a 'deliberate mistake' in the original under-chassis layout and wiring, the 270kΩ resistor that takes grid 2 of valve 1 to +HT is shown going to –HT, which is definitely wrong.

In the absence of h.t. batteries I connected 10 PP3 9V batteries, connected in series using snap on connectors – fitted into a small wooden box made especially for the purpose. The 1.5V d.c. for the valve filaments was provided by a 'D' cell.

The antenna turned out to be a somewhat contentious issue. The master plan was to hang a long wire over the entire length of the garden. However, my wife objected and I used a wire strung along the side of the house and garage!

After a quick check with a multi-meter to make sure that there were no short circuits, the valves were plugged in, the antenna and headphones were connected and the filament switch clicked on. Almost immediately there was a loud screeching noise from the headphones, which disappeared after a small adjustment to the reaction capacitor to reveal that we were tuned to an Evangelical preacher in South Carolina USA!

Careful adjustments to the band spread and band set tuning capacitors, and gently tweaking of the reaction control to bring the set just to the point of oscillation, brought in stations from the four corners of the globe. It wasn't 'Hi Fi' but perfectly intelligible, with good inter-station separation. There's something immensely satisfying about a very simple two-valved receiver that works well!

It soon became apparent that the reaction didn't work properly over the whole tuning range; it was clear that the reaction coil winding was too far spaced from the grid coil winding. So I wound another coil unit, with the two windings closer together on the former – allowing the feedback to be increased just to the point of oscillation over the whole tuning range.

New Licence!

I have also just received my licence and callsign **M0GYL** from Ofcom – 50 years after taking the RAE while at school in 1961! I confess to being slightly bemused by the fact that it has taken me so many years to get my Licence!

I've been involved in aspects of radio technology (pagers, analogue mobile phones, industrial radio control systems, etc.) throughout my working life. However, the Amateur Licence does seem rather special. I don't think I can afford to leave it another 50 years before I get on the air!

PW

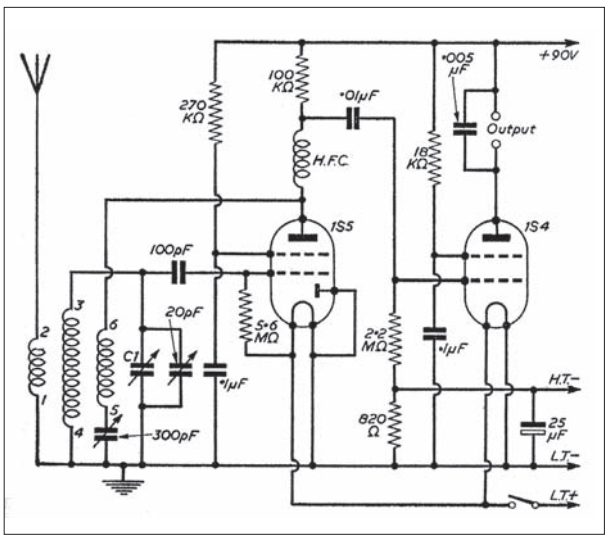


Fig. 3: The circuit diagram is correct, unlike the original overlay diagram!

KITS & MODULES

TRANSVERTERS for 2 or 4 or 6 metres from a 10 metre rig, or 4 or 6 metre from a 2 metre rig. Includes new overtone local oscillator, and integral interface unit. 20dB receive gain, 25W transmit power. Low level drive dual IF versions **TRC2-10dL, TRC4-10dL & TRC6-10dL**, high level drive single IF versions **TRC2-10sL**, **TRC4-10sL**, **TRC6-10sL, TRC4-2sL, TRC6-2sL**, Complete kit **£179.00**. **Built £266.00.**

TRANSVERTERS for ICOM rigs, supplied with cables. Automatic with no cable switching. IC756Pro & II & III, 775, 781, 7600, 7700, & 7800 use type **TRC4-10L/IC1.** IC735, 761, & 765 use type **TRC4-10L/IC3. Built to order £280.00.**

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STATION PREAMPS for 2 or 4 or 6metres. RF & DC switched. Adjustable 0-20dB gain. 100W power handling. **RP2S, RP4S, RP6S, PCB & Hardware kit £35.00, Ready Built £57.00**.

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MASTHEAD PREAMPS 400W rated, for 2 or 4 or 6metres. RF switched. DC fed via a separate wire. 20dB gain 1dB NF. Heavy duty waterproof masthead box with SO239 connector. **RP2SH, RP4SH, RP6SH. PCB & hardware kit £42.50, Ready Built £65.00**. **Masthead fitting kit £6.00**.

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A useful push-pull broadband amplifier module giving a nominal 5W output over the range 1.8 to 29.7MHz with drive levels ranging from 37 to 97mW. Harmonics typically are 2nd –42dB, 3rd –18dB, 4th –49dB, and 5th –29dB. Should be used in conjunction with a double Pi type low pass filter, either harmonic halfwave or 5 element Chebychev. Normal supply 13.5V DC with current between 900mA and 1.86A. **Full kit of parts with heatsink but without wound toroids £29. Full kit with wound toroids £39. Ready built £49**. Price includes postage but not low pass filters.

NEW PRODUCT
DUAL GANG BROADCAST VARIABLE CAPACITOR
330+330pF with 3:1 reduction drive.
£8.50 each plus £1.50 P&P.

COMPONENTS

See our web-site or send SAE for list.
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RESISTORS, ¼ W carbon film, 10Ω to 1MΩ, and trimpots.
DIODES, small signal, zener, rectifier, Shottky, & varicap.
TRANSISTORS, small signal AF and RF bipolar and FET, medium and high power VHF.
INTEGRATED CIRCUITS, linear & logic.
VALVES, tested good, B7G, B8A, Octal, and older.
QUARTZ CRYSTALS, HC18U, HC25U, & HC49U, new and used.

DUAL GATE MOSFETS
BF964S £1.50, 3SK45 £2.00, 3N201 £2.25, 40673 £2.50.

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as featured in *PW* March 2005. A vital piece of test equipment used together with an oscilloscope for setting up AM, DSB, & SSB transmitters. **PCB & hardware kit £28.00. Ready Built £52.50**.

OFF-AIR FREQUENCY STANDARD, crystal calibrator unit phase locked to Radio 4 using a two-loop system. Includes a monitor receiver to ensure Radio 4 is being heard loud and clear. Fixed outputs 10MHz at 2V p-p, and 1KHz at 1V p-p as oscilloscope CAL signal. Switched outputs 1MHz, 100KHz, 10KHz, and 1KHz at 6V p-p, into 500 Ohms. Single board design as featured in July & Sept 2008 PW. Background heterodyne whistle at 2KHz confirms lock condition. 12/13.5V DC operation at 65mA. **PCB kit with ferrite rod £50.00, PCB kit + drilled box and hardware complete £86.00. Ready built £131.50.**

SPECTRUM COMMUNICATIONS

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A rock stable FET VFO. Meets the requirement for the Intermediate Licence VFO project. Modified to allow alignment to top and bottom of required band. Several versions available: 5.0 - 5.5Mhz for 20 & 80 metres; 7.0-7.2MHz for a direct conversion for the extended 40metre band; or 7.900 - 8.400MHz for use as part of a mixer-oscillator system as local oscillator for 4m RX or TX. Supplied with Buffer 2A to deliver 1.6V p-p into 50Ω with 2nd harmonic 40dB down. **PCB and component kit with potentiometer £18.00. Drilled Box and PCB kit with potentiometer and feedthroughs £27.00. Ready built £50.00**. State required frequency when ordering.

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With 5 resistance ranges 100, 1K, 10K, 100K & 1M. 3 capacitance ranges, 100pF, 1nF, 10nF and 3 inductance ranges, 1mH, 10mH & 100mH, plus external reference. Scale calibrated 0.01 to 10 times reference value. Optional drilled and labelled plastic or painted diecast box. **PCB & parts with pot and switch £26.00. With plastic box £39.00, with diecast box £44.00.**

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An analogue low noise unit, which includes high pass filtering, clipping, and low pass filtering to enhance the higher voice tones that carry most of the intelligibility. It sounds nice too. Panel controls are included for clip level and output level. Hardware and wiring can be supplied to suit a wide range of circular mic connectors.
SP1000E, Boxed Kit £42.50, Boxed Built £60.00.

DUAL PEAK/NOTCH FILTER & AUDIO AMPLIFIER

It connects directly to the loudspeaker or headphone socket of the receiver and produces up to ½W of audio to a front facing loudspeaker. The unit can be used to notch out two unwanted heterodynes, or just one while enhancing the wanted audio frequency. Similarly it can be used sharpen otherwise dull speech or to dampen shrill audio. **PCB kit and all the potentiometers £35.75. PCB kit and all the hardware with drilled and labelled box £73.00. Ready Built £112.00.**

CLASSIC 20/80m SSB RECEIVER

Classic superhet receiver for 20 and 80m using a 9MHz IF and a 5.0-5.5MHz VFO. Uses a 6 crystal ladder filter with near symmetrical passband, 2dB insertion loss, 1.8:1 shape factor, and 70dB stopband. Minimum discernable signal 0.2uV. Fixed tuned bandpass preselector on 20m, tunable preselector on 80m. Logarithmic AGC and Signal meter response. Maximum signal handling 1mV. 500mW audio output. Supply requirement 13.5V at up to 250mA. **VFO with its drilled box, preselector and main board PCB's and component kits including crystals £92. Complete kit including box and hardware £147.00. Ready built £240.00.**

G2DYM / G4CFY AERIALS

TRAP DIPOLE for 80/40/20/15//&10m. 106 feet long. Supplied with 70 feet of low impedance twin feeder. Low TVI and low noise. 2S points quieter than a G5RV with same feeder length. PVC covered wires with lugs. Light duty 150W rated £157.00, 600W rated. £164.50, medium duty 600W rated £182.50, inc. carriage.

TWIN FEEDER 100 Ohm, 2kW rated, 24/0.2 in individual polyethylene sheaths with an outer cover of polyethylene. Solid construction to avoid water ingress. Good flexibility to overcome work hardening and fracture. Typically 0.5dB/m quieter than wide spaced 300 and 450 Ohm feeder and coax. Loss 0.04dB/m at 10MHz. 75p/metre plus £3 P&P. 100m drum. £70 inc P&P.

1:1 BALUN 160-10m, 1kW rated. Loss under 1dB from 1.8 to 40MHz. Ideal for use with the G4CFY trapped dipole, or any other aerial fed with low impedance twin feeder. £43.00 inc P&P. Version with Marconi-T switching. £53.00 including P&P.

TRAPPED INVERTED L AERIAL 80/40/20/15 & 10m, for a small garden. Coax driven from far end of garden and tuned against ground. A good all round aerial with 6dB more gain than a 24 foot trapped HF vertical. That's 4 times power on TX and one S point extra on RX. Regular duty £80.00, strong £95.00, inc. carriage.

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Rev. George Dobbs G3RJV's Carrying on the Practical Way
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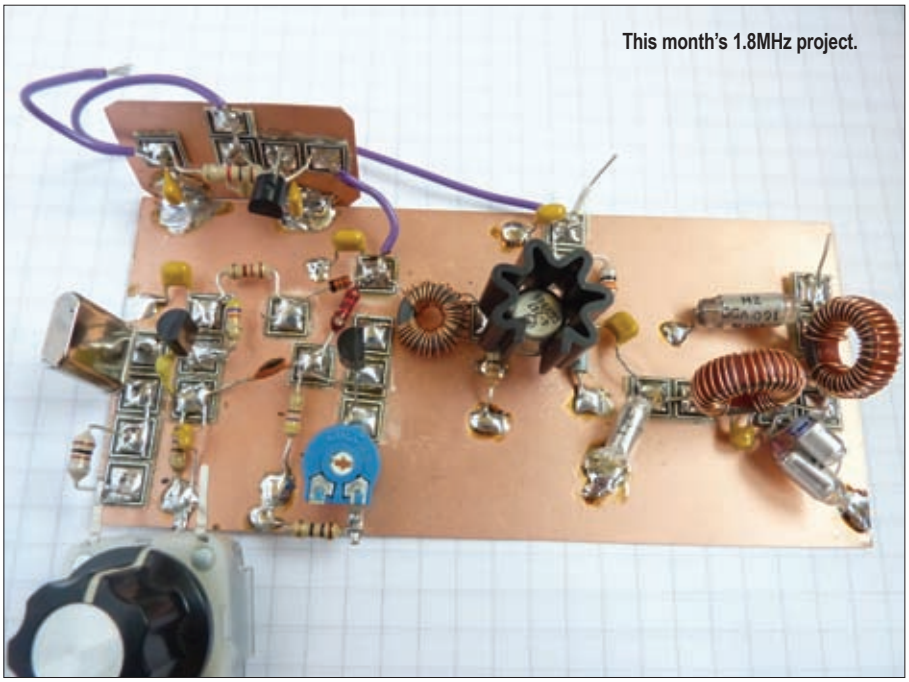
Top-Band on a Board

This month in Carrying On The Practical Way the Rev. George Dobbs G3RJV describes a 1.8MHz – 'Top Band' – transmitter after the appropriate quotation.

The 160 metre band is the oldest Amateur band and was the staple of reliable communication in the earliest days of Amateur Radio, when almost all communications were over relatively short distances.
Wikipedia



This month's 1.8MHz project.

Welcome to *Carrying on The Practical Way* (*CoTPW*)! No one can deny that Amateur Radio is completely different from when I started nearly 50 years ago. Even going back a mere 25 years to when I was at the Dayton Hamvention in Ohio, in the USA, as an alternative to expensive phone calls home, I contacted my wife **Jo-Anna G0OWH**, on 14MHz (20m) c.w. Last year at Dayton, in my hotel room, I contacted Jo-Anna via Skype holding my netbook computer in one hand and a USB telephone handset in the other hand!

The call cost me nothing! So why do we bother with short wave radio? Hardly anyone else does! The answer is simple – we are Radio Amateurs, which, by definition, means we love radio. We enjoy the vagaries of propagation by short waves for communication – and some of us enjoy building the equipment to do it.

The First G3RJV Station

My first Amateur Radio station used a separate receiver and transmitter, as did most stations in those days. The transceiver (transmitter and receiver combined) came later to the hobby.

My receiver was a BC348Q – an airborne receiver that was widely used by American forces during the Second World World War on B17 and B29 Aircraft. This was used with a home-made three valved transmitter for 1.8 to 2MHz or Top Band.

The valve line up was: EF50 – EF50 – 6V6. The EF50 was a delightful valve contained in a red painted aluminum can with a 9-pin loctal base. They are still available, usually on eBay, but the loctal bases can be difficult to find.

Dating from 1938, the EF50 has been described as "the valve that won the war". There were a lot of them around in military surplus stores when I built my first transmitter. The 6V6 was a popular audio output valve but it was usable as a radio frequency power amplifier on the lower bands.

In my transmitter, the first EF50 was an (almost) stable variable frequency oscillator (v.f.o.). The second EF50 was a buffer that later became a doubler stage to enable me to operate on the 80 metre (3.5MHz) band. The 6V6 was the power amplifier capable of giving me about 8W of r.f. output power. To operate on c.w. (Morse) I keyed the cathode of the 6V6 – a crude method that served me well.

Keying the cathode enabled me to insert a carbon microphone in place of the Morse key and operate in amplitude modulation (a.m.). This followed a well trodden path of those days. Most newcomers began on Top Band using mainly c.w. and a little a.m. for local speech contacts. This means that many Radio Amateurs of my vintage have a great sense of nostalgia for the band.

The Transmitter

The Transmitter in **Fig. 1** is a simple circuit for a reliable QRP transmitter on 1.8MHz. Although crystal controlled, the oscillator stage (Tr1) is a variable crystal oscillator (VXO). The crystal is a fundamental frequency crystal on 1.843MHz, a useful c.w. frequency on the 160 metre band. The G QRP Club also sell crystals on 1.836MHz, which is the QRP calling frequency.

Notice that an inductor (L1) and a variable capacitor (VC1) have been added in series with the crystal and ground. These inductive and capacitive elements allow some shifting of the frequency.

I have often used VXO oscillators in this column. The capacitor can shift the crystal up in frequency and the inductor can shift the frequency down. However, it's difficult to shift such a low frequency crystal very far on 1.8MHz and readers like might to experiment with values for L1 and VC1.

The oscillator output is coupled via C4 to a 2N3904 Driver stage (Tr2). T1 forms the radio frequency (r.f.)

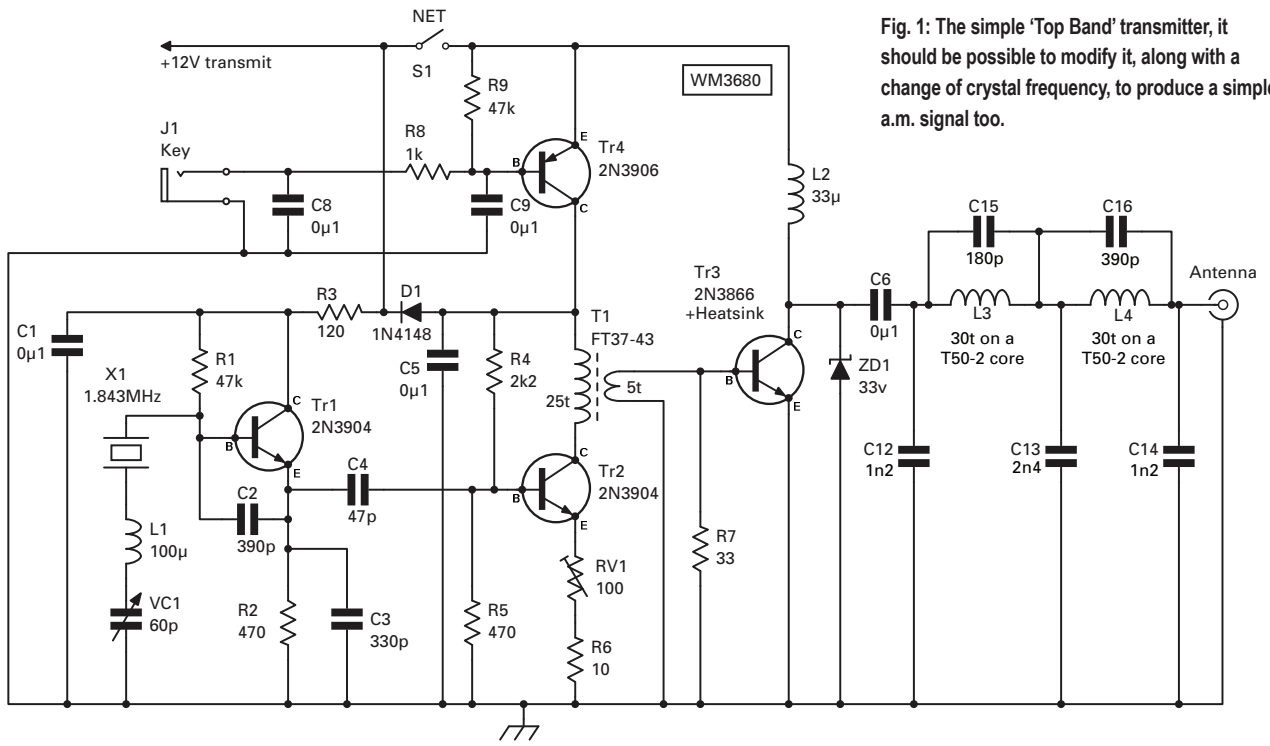


Fig. 1: The simple 'Top Band' transmitter, it should be possible to modify it, along with a change of crystal frequency, to produce a simple a.m. signal too.

load for the stage. It is also a coupling transformer to drive the power amplifier. The transformer is wound on an FT37-43 core; a ferrite core for broadband coupling.

The primary winding of T1 is 25 turns of 0.32mm (30 s.w.g.) enamelled wire. The secondary winding is five turns wound over the centre of the primary winding. More details of the transformer follow below. The value of the resistance in the emitter of Tr2 determines the amount of drive available to Tr3 and hence the output power of the transmitter. A pre-set potentiometer (RV1) is placed in series with R6 and acts as a drive control.

The *npn* 2N3906 transistor (Tr4) is used as a switch to key the transmitter on and off. It keys both the oscillator and the driver stages (Tr1 and Tr2). In many QRP transmitter designs it is common to leave the oscillator free running and to key later stages because keying a radio frequency (r.f.) oscillator can result in a 'chirpy' c.w. note. However, since Tr1 is a crystal controlled oscillator no such chirp occurs.

Keying both stages overcomes the problem of oscillator break-through when the oscillator is still running in the receive mode. This problem occurs because the receiver may be capable of picking up the oscillator signal through stray r.f. radiation.

The switch, S1, is a 'netting' switch that enables the oscillator to run without keying the transmitter. It provides 12V for the oscillator. Adding the diode D1 prevents this voltage reaching Tr2, so only the oscillator runs.

The facility that enables the VXO to keep running allows the oscillator to be heard in the receiver so that the VXO signal can be adjusted to a desired frequency or aligned with a desired station signal. This is called 'netting', which is standard practice when a separate transmitter and receiver are being used.

Older Amateur Radio operators will recall always having to 'net' their signal onto the signal of a station they wished to contact. I can even remember 'netting contests' run by my local club, the **Grimsby Amateur Radio Society**, in the early 1960s. One of the members brought in a frequency counter (a rare thing in those days), to check how accurately operators could net their signal to a provided oscillator signal.

Transistor Tr2 serves as a buffer amplifier and driver stage for the power amplifier Tr3. The collector load is a broad-band transformer wound on a ferrite core, T1 is wound on the FT37-43 core. The primary winding is 25 turns of 0.32mm (30s.w.g.) enamelled copper wire. As with all windings on a toroidal core each time the wire passes through the hole of the core counts as one turn.

The turns should be laid side by side to occupy about three-quarters of the circumference of the core. The link winding is five turns of the same wire wound over the centre of the main winding. Placement of this link winding is not too critical – just guess the centre position. When the windings have been made, trim the ends of the wires to about 10mm.

About 5mm of each wire should be carefully scraped clear of insulation and tinned with solder prior to making the connections. The control, RV1, is a pre-set variable resistor in the emitter of Tr2, as stated above, it serves as a drive control. The power amplifier, Tr3, is driven by Tr2 and RV1 will alter the current flow through Tr2. This will enable the power output of the transmitter to be adjusted.

The RF Output

The transmitter should produce about 2W of r.f. output (or a shade less than 2W). The drive control (RV1) being used to adjust the final output. Although the 2N3866 final amplifier transistor is quite rugged and is protected by ZD1, **it is** possible to destroy the transistor by overdriving it. Bear this in mind!

Transistor Tr3 is the transmitter power amplifier. This is a simple Class C amplifier biased by the drive voltage from the coupling transformer, T1. An output load is provided by L2, a 33 or 39µH r.f. choke. This is a ready made axial r.f. choke – the things that look like a rather fat resistor. More zealous constructors could wind their own r.f. choke. In this case, about 11 or 12 turns of wire on an FT37-43 ferrite core would do the job.

A zener diode (ZD1) offers protection for the output transistor should the

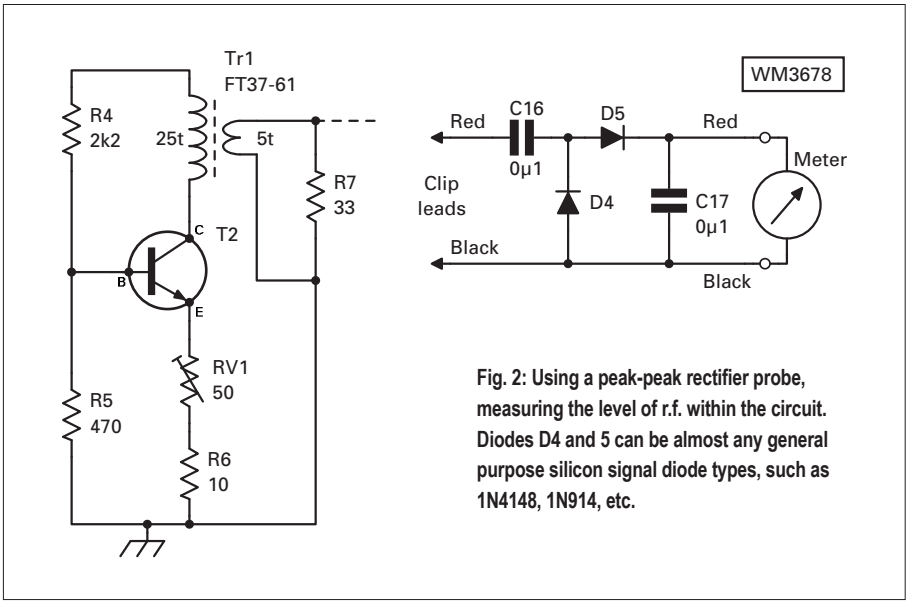


Fig. 2: Using a peak-peak rectifier probe, measuring the level of r.f. within the circuit. Diodes D4 and 5 can be almost any general purpose silicon signal diode types, such as 1N4148, 1N914, etc.

transmitter be inadvertently operated without an antenna or into a short circuit. It prevents the voltage at the collector of Tr3 going high enough to damage the transistor. **Note:** A clip-on heat-sink is also necessary for Tr3 to keep the transistor cool.

The capacitor, C6, couples the r.f. output to a low-pass filter. This low-pass filter was designed for maximum attenuation of the second harmonic of the 160 metre signal. It came to me via **Chuck Carpenter W5USJ** who lives in Texas. We had been exchanging E-mails about transmitter design and I asked if he had a good low-pass filter design for 160 metres. In fact the design is the product of the *Elsie* filter design software. Should readers wish to try that software, there is a free version available at **www.tonnesoftware.com**

The filter seems to work very well. The higher values of capacitance can be made up using smaller values connected in parallel. The output is designed for an antenna with a nominal output impedance of 50Ω; either a dipole or an antenna tuned to match 50Ω.

Building The Transmitter

I think it's a good idea to build half of the transmitter first, check that it works and then complete the rest of the circuitry. I would advise building as far as R7 and then checking the output.

My prototype was made using a mix of 'ugly' construction and pad (sometimes called 'Manhattan') construction. The method is shown in the photographs and is very versatile.

I built the key switch (Tr4) on a small sub-board because I ran out of space on the main board. Once the transmitter is completed as far as R7 the output is tested using a diode probe. A simple diode probe circuit is shown in **Fig. 2**. Ideally, the meter in Fig. 2 should be an analogue type (with a needle indicator) connected as shown.

Depressing the Morse key or joining the key wires should give an indication of a few volts in the meter connected to the r.f. probe. The oscillator, driver and key switch stages are all working if the meter shows an output voltage. Around 3V is a reasonable value, and you should be able to change this with the drive preset.

If all is well, the amplifier (Tr3) and the low-pass filter can be added. Remember to add a clip on heat-sink as the transistor can run quite warm.

The Final Testing

For the final testing of the transmitter, a 50Ω dummy load resistor must be added across the output of the low-pass filter. The output can be checked with an r.f. power meter which may already contain a suitable 50Ω load.

If a power meter is not available the diode probe can be connected across the 50Ω load resistor. The output in watts may be calculated from the voltage reading on the meter.

The calculation is simple:

The output in watts = r.m.s. (root mean square) voltage^2 divided by 50.

The voltage reading is peak-to-peak (p-p) so divide by 2 for the peak voltage.

The peak voltage multiplied by 0.707 gives the r.m.s. voltage.

The r.m.s. voltage multiplied by itself = r.m.s. voltage^2

Divide this by 50 (the load resistor value) for the r.f. power output in watts. The transmitter is designed for about 2W output, so a peak voltage of around 10V (or 20V p-p) gives this level.

Transmit-Receiver Switching

I've not included any method for transmit/receive change-over. But in practice this could be a simple manual switching arrangement. I have featured several transmit/receiver change-over circuits in past editions of this column.

A transistor change-over circuit appeared in the May 2007 column, with two r.f. change-over circuits in the following issue. In August 2010, I suggested what I called the 'simplest transmit/receive switch'. There are many suitable circuits in Amateur Radio literature, but **Fig. 3** shows a suitable version.

I hope this little transmitter will inspire some readers to try Top Band, both old timers and hopefully some for the first time. It's an interesting band with dedicated operators who welcome newcomers. In fact it used to be called "The gentleman's band".

PW

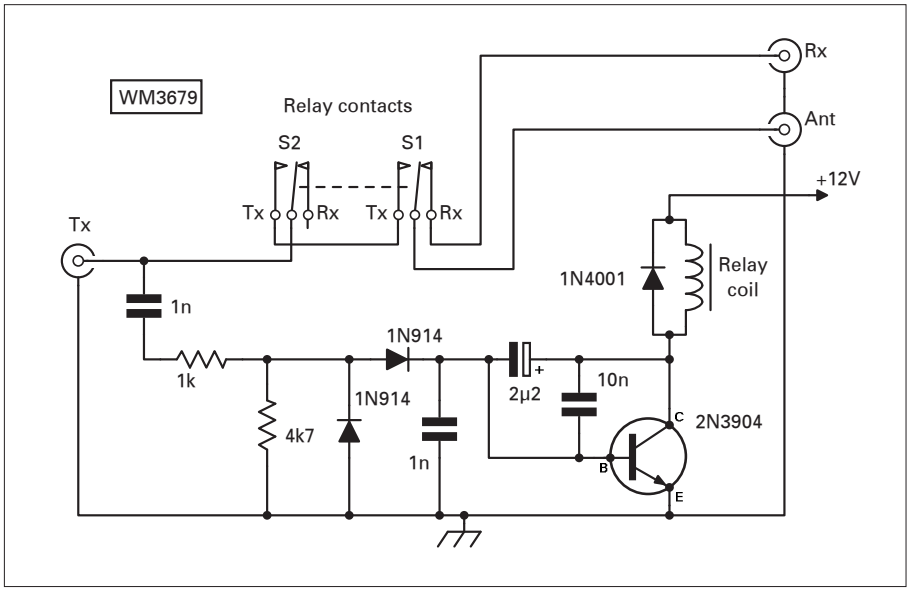


Fig. 3: A simple relay-based transmit/receive switchover circuit. As shown here in the inactive position, the antenna is connected directly to the receiver with the transmitter completely isolated.

Mike Richards G3WNC's Data Modes
PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW
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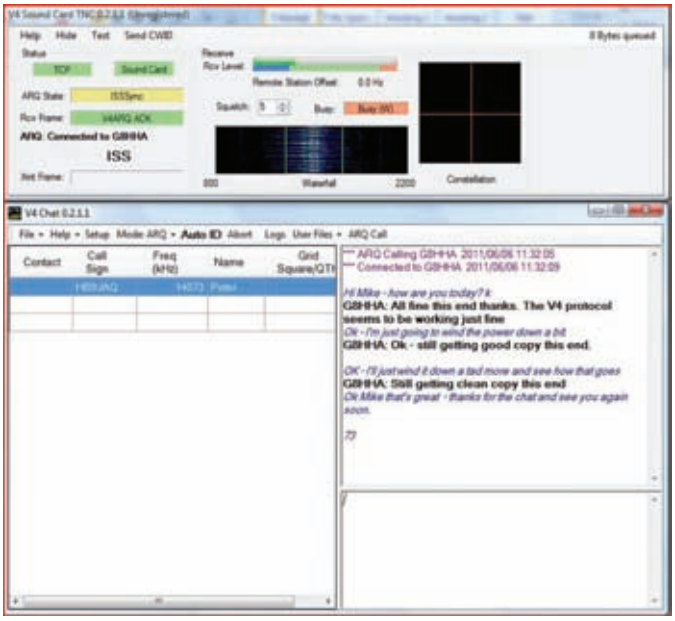
More On Winmor

Following-on from last month's look at Winmor, Mike Richards G4WNC takes a look at a new and exciting variant of this mode.



V4Chat in operation with an ARQ QSO.

Welcome to the Data Modes where I'm looking at a Winmor variant this time. During the development of Winmor, the team received a number of requests for a variant that would support keyboard-to-keyboard QSOs rather than the *Winlink* E-mail that it was originally designed for. And I'm pleased to say that the V4 protocol is the first attempt to achieve just that. The system uses the same *Winmor* software (virtual) TNC (Terminal Node Controller) but uses new software (*V4Chat*) to handle the keyboard exchange.

While there are plenty of other digital modes around, a number of these require relatively wide bandwidths that preclude them from using restricted bandwidth segments. The idea behind V4 was to use the knowledge gained from *Winmor* to develop a narrow-band keyboard mode that could use the existing Winmor TNC and enjoy the benefits of that system. Some of the key areas that the team wanted to include in V4 were:

a) Good weak signal and multi-path performance.
b) Narrow bandwidth for operation in restricted bandwidth segments.
c) Handle moderate typing speeds and a full ASCII character set along with provision for UTF-8 characters.
d) Speedy operation to support live chat QSOs.
e) Automatic signal capture and tuning.
f) Suppress spurious signal printing, i.e. printing random characters from noise.
g) Support 1:1 and QSO nets plus ARQ and FEC modes.
h) Allow printing of uncorrectable errors but suppress noise printing.

Modulation Systems

As you may recall from last month, the excellent Winmor TNC supports a number of modulation systems, all of which are available when employed on *WinLink* E-mail duties. However, the V4 keyboard mode has a different set of requirements and the ability to operate using a narrow bandwidth limits the range of modulation modes that can be used.

Lessons learnt from some other successful modes such as MFSK16 and Olivia, show that FSK (Frequency Shift keying) offers useful improvements over PSK range when it comes to dealing with weak and multi-path affected signals. Choosing the best FSK combination was a case of examining the required combination of typing speed and bandwidth.

Using 200Hz as the bandwidth limit, allows room for a four-tone (4FSK) signal providing the baud rate is kept to 47 or less. I've shown details of the four tones in **Table 1**, where you can see that the four tones are spaced evenly at the baud rate of 46.875.

However, the system needs some form of built-in error correction if it is to be successful as a weak signal mode. The solution here was to use the, NASA *Voyager* system with rate ½ and a length of 7 that we have seen in many previous Datamodes.

This convolutional encoder adds extra bits to the signal but provides

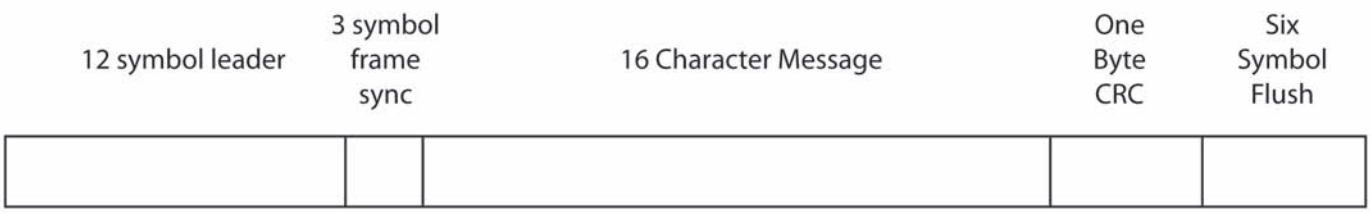


Fig. 1: V4 Protocol Frame Construction.

strong error correction and gives V4 an overall typing speed of around 55 words per minute (w.p.m.) whilst operating within a 200Hz bandwidth. As with many other convolutionally encoded systems, the output of the encoder is passed to a block interleaver that systematically changes the order of the bits leaving the encoder.

The purpose is to spread the bits in time so that a short burst of interference will not destroy a complete block of data. Although this adds a small amount of latency (waiting time) to the decoding process, it makes the system much less vulnerable to short bursts of interference.

The V4 system uses a fixed frame format for all its transmissions – see **Fig. 1**. This comprises a 12-symbol leader (more on this later) followed by a 3-symbol frame synchronisation that's used to convey the type of frame that follows – this can be FEC data, ARQ data, ACKnowledgement, IDLe or NAK. This is then followed by the payload which is essentially the message content and comprises 16 characters.

The 16 characters of the message content are followed by a one byte CRC that's used to check the decoding. Finally there's a six symbol flush of all 0s which is designed to clear any remaining pattern from the Viterbi decoder and so prepare it for the next frame.

The V4 Protocol supports FEC broadcast mode or ARQ 1:1 mode. The FEC broadcast mode allows communication with more than one station and is ideal for CQ calls and also for running a net.

The ARQ mode on the other hand is designed to link two designated stations and includes a handshake where the receiving station either sends a confirmation that each frame has been received or requests a repeat for a damaged frame.

Demodulation System

The standard method for decoding a convolutional encoded signal is to use a Viterbi decoder and this is the technique use for the V4 protocol but with a subtle difference. The Viterbi decoder is a sophisticated algorithm that uses banks of software decoders to work out the most likely content of the message from the pattern of received bits.

The predicted message content from these decoders is then compared with the actual message and the most successful decoders are kept and the others discarded to be replaced by clones of the successful decoders. This process continually repeats itself so the decoding process self-adapts to the incoming signal.

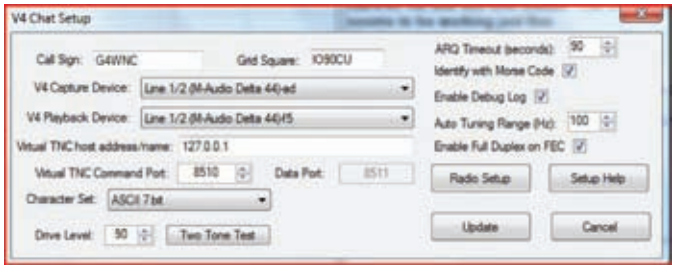
For the best results, the Viterbi decoder needs to receive IQ (In-phase and Quadrature) signals from the receiver but a standard 4FSK receiver based on tone detectors doesn't provide an IQ signal. This would lose about 2dB of coding gain so the authors set about devising a software solution to derive IQ signals.

Deriving the IQ signals was done by creating a vector sum of the magnitude of the four carriers and translating this to the IQ plane. The only snag with this system is that the tone decoders require extremely precise tuning as each of the 4PSK carriers needs to be in the centre of the tone detector's passband. The solution to this was to employ a short leader at the start of each message block that's used by the decoder to tune the tone detectors to within 1Hz and to extract synchronisation data.

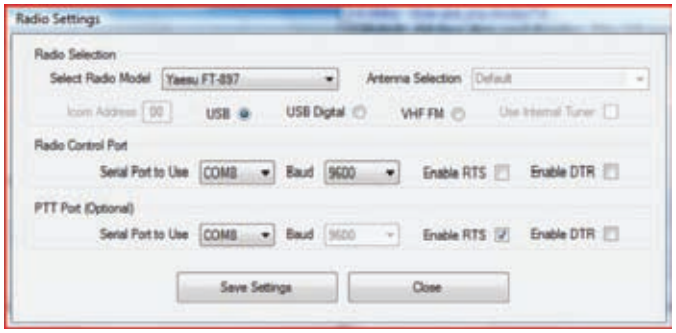
In a practical system, the leader uses the two centre tones of the 4FSK set to generate an eight-symbol two-tone modulated signal. The actual tones employed are 1500Hz and 1546.875Hz. This leader has a number of functions as follows:

Shows the presence of a V4 signal and can be used by the decoder to inhibit decoding/printing of spurious text from noise.

1) Provides audio to trigger VOX switched transmitters.
2) Used to automatically tune the 4FSK tone detectors.
3) Provides vital synchronisation timing for the decoder.



V4Chat Setup Screen.



V4Chat Radio Setup.

Incidentally, the software tone detectors used in V4 are known as Goertzel detectors. This software tone detection system was devised back in 1958 by Gerald Goertzel and is more efficient than Fast Fourier Transforms (FFT) when used to detect a small number of tones.

The automatic tuning of the tone detectors has a range of ±200Hz so receiver tuning is much less critical as the decoder will correct tuning errors or small drifts in the transmit or receive frequency.

Setting-Up For V4

As with most of the modes I've covered in this series, the software necessary to run V4 is completely free and available for download from the Internet. However, the Winmor virtual TNC does request a voluntary donation of $35 to support the ongoing development.

The first task should be to join the V4 Protocol Yahoo Group as this is where you will find the very latest software plus stacks of useful information to help you get started – you can find the group here: **http://groups.yahoo.com/group/V4Protocol/**

Once you've joined the group, go to the Files section and download the latest version of *V4Chat* – this is the software that interfaces with the Winmor virtual TNC and creates the interface for keyboard to keyboard QSOs. At the time of writing, the latest version was 0.2.1.1. and this includes the virtual TNC. This software is still in the Alpha development stage so it's worth keeping an eye on the user group so you can pick-up the regular updates and fixes.

Installation of the software is very

straightforward – but when you run the program for the first time you need to go through the set-up process for your station. The *V4Chat* software includes limited rig control with support for a good range of popular transceivers. The first stage of the set-up is to add your callsign and locator, then select the soundcard that you want to use.

The remaining options during set-up can be left at the default values. Then the next step is to configure the rig control by selecting the 'Radio Setup' option from within the main setup. Now you can choose your rig from the drop down menu, selecting the radio control and push-to-talk (p.t.t.) ports.

I would recommend using p.t.t. switching in preference to VOX switching as most rigs introduce a delay (it's 100mS on the FT-897) which shortens the length of the transmitted leader and can make your signal more difficult to decode.

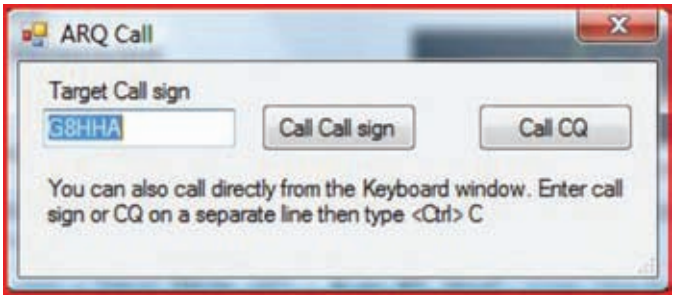
One important point to note about V4 is that it requires your transmitter to be running in linear mode so you have to be careful to avoid overdrive, keeping the output power below the level that brings the ALC system into operation. The *V4Chat* software makes this easy to adjust as you will find a 'Two-Tone Test' button in the Setup menu along with a drive level adjustment.

Pressing the Two-Tone Test, as you would expect, sends a two-tone signal for four seconds so, you can set the drive to the point where your rig's ALC is just starting to kick-in. If you want to carry out some further familiarisation you can run a few back-to-back tests. The simplest is to connect the 'line-out' audio of your PC back to the 'line in'. You can then select the FEC mode in *V4Chat* and type to yourself – don't forget to press <Ctrl>+<Enter> to transfer your typing from the buffer to the transmit queue.

If you want to try a more complete test, grab someone else's laptop (someone you know of course!) load *V4Chat* and cross connect the two machines' line-in and line-out sockets with suitable leads. Once connected, you can play with the FEC, Monitor and ARQ modes and get a good idea of how they work.

On The Air With V4

With any relatively new mode, patience is a virtue as you can't expect to just tune-in and start chatting. The most common frequencies at the moment are listed in **Table 2**. The V4 system is a good weak signal mode so, you don't need to use much power – I've been running about 20W when I'm putting out



The New ARQ Call Box introduced in version 0.2.1.1.

Table 1
4FSK Tone Selection (46.875 baud)

Symbol	Calculation	Tone
0	31 x 46.875	1453.125Hz
1	32 x 46.875	1500.000Hz
3	33 x 46.875	1546.875Hz
2	34 x 46.875	1593.750Hz

Table 2
V4 Operating Frequencies

Band	Dial Frequency (u.s.b.)
80m	3.583MHz, 3.590MHz
40m	7.073MHz, 7.040MHz
30m	10.131MHz, 10.136MHz
20m	14.073MHz
17m	18.085MHz, 18.103MHz
15m	21.073MHz

'CQ' calls and then dropping the power once a contact is established.

The *V4Chat* software, being in the earlier stages of development, is a bit basic at the moment whilst it's going through this phase, but it does work remarkably well. Probably the best way to start is with a CQ call using FEC, so set the Mode menu to FEC and then type your CQ call in the type-ahead buffer. The call can be very simple and I use:

"CQ CQCQ DE G4WNC G4WNC".

"CQ CQ CQ DE G4WNC G4WNC [IO90CU] KKK".

It's important to add the 'K' at the end of your transmission so that any listening stations know you've finished calling! It's not a bad idea to use <Ctrl>+<C> to copy the CQ call to your clipboard then you can use <Ctrl>+<V> to paste it back into the buffer. Once you have the CQ call in the buffer you need to place your cursor at the end of the text and type <Ctrl>+<Enter> – this moves the text to the transmit buffer and starts sending.

You will notice that V4 sends the message in 16 character bursts. When you have a call established, you need to remember to periodically hit <Ctrl>+<Enter> to send your typed text. Otherwise, there will be a deathly silence from your end!

For the ARQ mode you gain an extra menu item called ARQ Call. You use this to initiate a general ARQ CQ call or to put out a call to a specific station. To initiate a link to a specific station you enter their call in the appropriate box and the system will start calling.

If the station's on air the connection will set-up automatically and you will get a message to confirm the link and you can type away (don't forget <Ctrl>+<Enter>!). The changeover from sending station to receiving station is handled seamlessly in the protocol so you can freely chat away swapping overs with <Ctrl>+<Enter>.

See you next time! **PW**

Stop Press Update

As we were going to press, we were informed that **Rick Muething KN6KB** has just released a new version of V4 Protocol that's incompatible with the previous versions! Version 0.3.0.0 of *V4Chat* has been launched, which includes improvements to frame synchronisation that make it incompatible with earlier versions of *V4Chat*.

Please make sure you download version 0.3.0.0 or later from the V4Protocol Yahoo Group.

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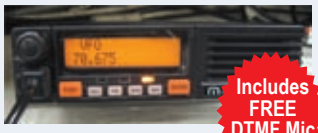

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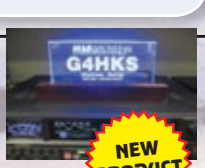

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Colin Redwood G6MXL's What Next?
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Coming Back to the Hobby

This month Colin Redwood G6MXL looks at some of the changes to the hobby over the last 20 or so years.

Welcome to *What Next?* (*WN?*) where this month I'm aiming at helping someone returning to the hobby, and what they need to know about. I'm hoping to encourage successful Foundation candidates to apply for their Foundation Licence and get on the air as soon as they can.

One of the nice things about Amateur Radio is that you can pick it up and put it down whenever you wish. For many Amateurs the gaps between picking up a microphone or a soldering iron may be just a few hours, days or perhaps weeks. However, some find that it can be difficult or impossible to keep the hobby going during the years of bringing up a family.

Many return to the hobby later in life, when the children have 'flown the family nest'. For others retirement brings with it an opportunity, to pursue long abandoned hobbies, or to try new hobbies. At my local club we have certainly seen many newcomers to the hobby in the latter category and the *PW* Editorial offices often get telephone calls from people keen to get back on the air, enquiring what they have to do to regain their licence, which have been passed on to me.

In my experience the modern training schemes are suitable for newcomers of all ages from teenagers to nonagenarians. However, there doesn't really seem to be an effective way to welcome Amateurs back into the hobby after a period of several years or more away from the hobby.

So, this month I am going to look at how someone returning to the hobby can get restarted after a long break. As is often the case, this was prompted by a letter from *WN?* reader **Mike Johnson G6ONV**. I'll let Mike explain.

Original Licence

Mike started out by saying: "I got my original Class B licence back in 1982 and was quite active for about four years on v.h.f. I was an active member of RAYNET and spent many happy hours with QSOs all over using 5 and 25W f.m. with both vertical and horizontal polarisation.

"Then the family began to arrive and the shack became smaller and smaller and the available time less and less, until 1988, when the equipment finally found its way to the loft in a big cardboard box.

"This box was destined to not see the light of day again until a couple of months ago when I found it and thought that now the family have bled me dry and moved on to pastures new, perhaps I could blow the cobwebs off and get started again!"

Mike continued, "I applied for, and got my old callsign back from Ofcom and understand that I can now do pretty much what I like on any of the Amateur bands as long as I comply with band plans, etc. My question is: Where should I start? I get the impression that 2m is fairly quiet nowadays, and although I still have a 2m f.m. rig, it might be advisable to aim for something different?

"I would struggle a bit with a decent external aerial as my back garden is about the same size as an A4 notepad! My other problem is that I have forgotten much of the theory needed to pass the old RAE and this will, at least initially, limit my home building capabilities. There seems to be quite a bit of cheap equipment on the market, so any advice on what I might do would be very much appreciated."

Fig 1: Kenwood's TS-830 h.f. transceiver with a valve power-amplifier was a highly regarded transceiver in the 1980s.

Where To Start!

Thanks for contacting me Mike! It's difficult to know what to suggest in terms of 'where to start'. Amateur Radio has changed quite a lot in the last 20 or 30 years. It's quite understandable that Mike needs some help to get back into the hobby.

My advice falls broadly into five areas: licensing and bands, equipment, operating, clubs, and a visit to an Amateur Radio dealer. I should mention for newer Amateurs that a little about the Amateur Radio scene in the 1980s when Mike was first licensed, so that they can understand how things have changed.

Licensing In The 1980s

Back in the 1980s there were no Foundation or Intermediate Licences. To get an Amateur Radio licence you needed to sit and pass two multiple choice papers set by the City & Guilds that between them were approximately the equivalent of the current Advanced exam.

After waiting for a couple of months for the results, you then applied for a licence. Many weeks later you would receive a Class B licence, which allowed access to the v.h.f., u.h.f.

and microwave bands. To operate on the bands below the then recently introduced 50MHz (6m) band, you also had to pass a 12 words per minute (w.p.m.) Morse test (no crib sheets then), and wait for a Class A licence. You also had to pay an annual fee for your licence, and you had to keep a log book of contacts.

Licensing In 2011

Mike has the equivalent of a Full (Advanced) licence (as if he had also passed a 12w.p.m. Morse test in the 1980s). I would recommend that Mike reads and understands the new licence, schedule and becomes familiar with current band plans.

The licence describes what you can and can't do. Whilst the wording has changed over the years, in reality the intent is still broadly the same as in the 1980s: namely stick to the bands, powers and modes you are permitted, don't cause undue interference, identify your station periodically and use Amateur Radio for what it is intended for.

The main differences in the licence are, that Mike will no longer have to keep a log (although many Amateurs still do) and the licence is free for life, although Mike will need to notify Ofcom (who now regulate Amateur Radio) of any change of address and confirm his details at least every five years.

Mike can download a copy of the current licence schedule from the OfCom web site at **http://licensing.ofcom.org.uk/binaries/spectrum/amateur-radio/guidance-for-licensees/samplelicence07.pdf**

Amateur Bands

Mike can use up to 400W on most Amateur bands (there are a few exceptions) from l.f. through h.f., v.h.f., u.h.f. and microwave in the UK and many countries around the world. There have been a number of changes to the schedule in the last few decades. These are generally beneficial in terms of more bands becoming available. The schedule and band plans have changed to reflect additional bands and the increasing popularity of various data modes.

Current band plans can be obtained from the RSGB web site at **http://www.rsgb.org/operating/bandplans/**

On the v.h.f. and u.h.f. f.m. channels, I should also point out that the 'old' nomenclature for simplex channels (such as S20, SU20 etc.) has 'officially' been replaced with a 'new' nomenclature. However, the new nomenclature doesn't seem to have gained the general acceptance that the old nomenclature had!

Fig 2: Yaesu's FT-897 h.f./v.h.f./u.h.f. transceiver has a semi-conductor power-amplifier stage, and is an example of the compact transceivers currently available.

Transceivers Of The 1980s

In the early 1980s transceivers covered either the h.f. bands (**Fig. 1**) or a single v.h.f. or u.h.f. band. Many h.f. transceivers were fitted with valves rather than transistors in their power amplifiers. It's likely that an older transceiver may not even be fitted with the World Amateur Radio Conference (WARC) bands of 10, 18 and 24MHz or the 50MHz band (in recent years h.f. transceivers have tended to be fitted with 50MHz (6m).

Today there are transceivers covering all the h.f. bands, 50, 144 and 432MHz bands (**Fig. 2**). Now that all UK amateurs have access to h.f. bands I suggest that Mike considers a transceiver that covers the h.f. bands as well as v.h.f. and perhaps u.h.f. He will find more activity on the h.f. bands than the v.h.f. and u.h.f. bands.

Antenna Importance

The importance of antennas has not changed. No matter what band(s) Mike chooses it's important to try to use a resonant antenna as high up as he can get it. A 14MHz (20m) dipole can be a good starting point as he is limited in space (see *WN?* July 2008). Additionally, an h.f. vertical can also be a good choice, particularly if space really is as limited as Mike suggests.

Using Older VHF/UHF Transceivers

Many transceivers from the 1980s are still capable of operating on the bands today, but there are a few aspects of their operation that will need careful consideration. On the v.h.f. and u.h.f. bands, 12.5kHz channel spacing has been adopted over the years for the narrow band frequency modulated (correctly n.b.f.m. but usually referred to just as f.m.) signals replacing the 25kHz spacing used in the 1980s, so that narrower filtering is needed for 2011 operating.

Fig 3: Adaptors to allow modern hand-held transceivers with SMA antenna sockets to be used with feeder terminated in BNC (left) and PL259 (right) plugs.

If Mike is tempted by a new hand-held transceiver, it will almost certainly come with an SMA connector. To use these with the feeder from an external antenna, an adaptor will be needed (**Fig. 3**). These are readily available from Amateur Radio dealers.

Repeater Access

Many repeaters have now adopted the system of Continuous Tone Coded Sub-audible Squelch (CTCSS) tones to access them. In some cases these

repeaters continue to support the older 1750Hz tone-burst access, but this is less common these days.

Back in the 1980s 430MHz (70cm) repeaters only used +1.6MHz split operation. These days there are some 70cm repeaters using a +7.6MHz separation, although the majority still use the +1.6MHz separation. (I'll be looking at repeaters in a future *What Next?*).

Chasing VHF & Up

For those keen on chasing DX on the v.h.f./u.h.f./s.h.f. bands, the old European locator system has been replaced by a 'new' worldwide locator system (**Fig. 4**), often termed the 'Maidenhead' system. I described this in the April 2008 *WN?*

Note: On h.f., split operation is frequently used by big DXpeditions. I would consider this an important feature of a transceiver if Mike wants to chase DX stations.

Data Modes

In the early 1980s it was rare to find a computer in a shack and whilst there was some data mode activity, it was mainly radioteletype (RTTY) with many Amateurs using old mechanical teleprinters (as described by **Roger Cooke G3LDI** in the February 2011 issue of *Practical Wireless*).

Whilst RTTY is still a popular mode, PSK31 and other data modes have become very popular. A simple interface can be bought or built (See *WN?* February 2009) to go between a transceiver and a modern computer (**Fig. 5**) , which together with free software will allow Slow Scan Television (SSTV), RTTY, PSK31 and a host of other data modes to be used.

Amateur Radio Clubs

I think visits to local Amateur Radio clubs would be a particularly good suggestion for Mike. There, he will be able to meet and talk to others and hopefully see various, perhaps new, aspects of the hobby, so that he can see what interests him now. He might also get an invite to visit one or two members and their shacks to see a 'modern' station.

Armed with some knowledge from members of his local clubs, I think a visit to an Amateur Radio dealer would be a good idea. Mike can see and try a good range of transceivers. If money is limited, then a second-hand transceiver can be a good choice, provided the transceiver is not too old.

Many dealers around in the early 1980s are no longer in business,

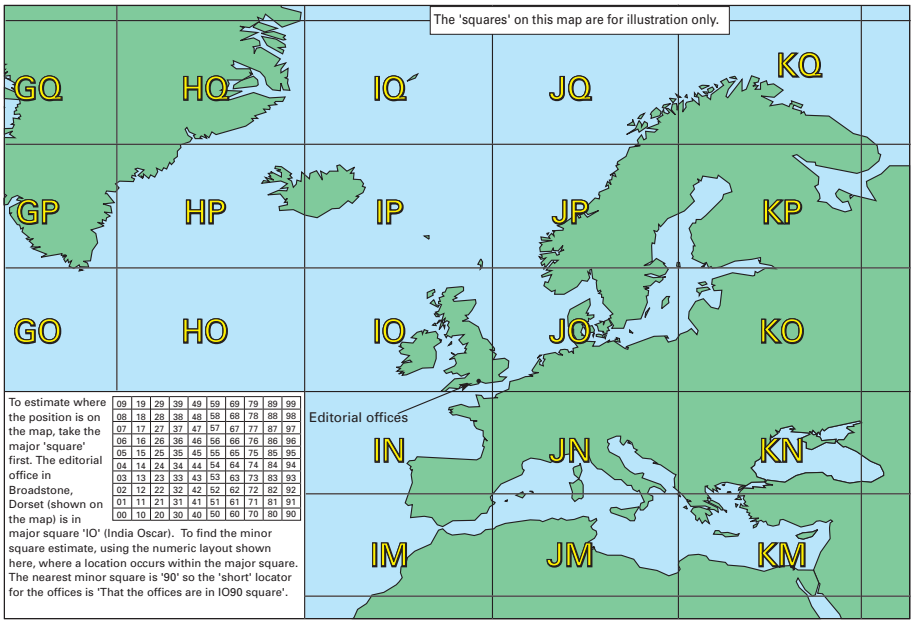


Fig 4: The international locator squares (sometimes called 'Maidenhead Squares') have replaced the older European system.

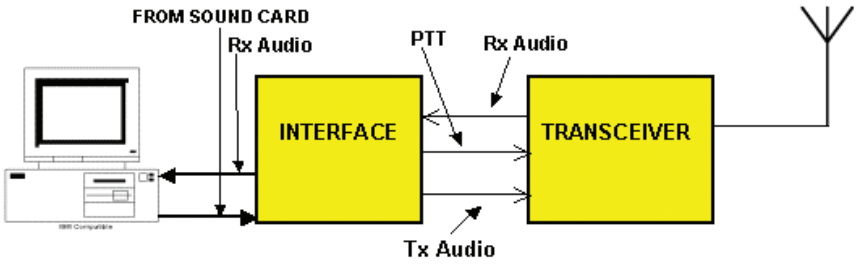


Fig 5: A data interface isolates the computer from the transceiver.

however a look through the pages of *PW* will soon identify a number of reputable dealers who I am sure will be pleased to help Mike and others returning to the hobby.

Helpful Suggestions?

I hope that my suggestions will help Mike to return to Amateur Radio after a break of many years. It's good to welcome back a fellow G6 to the bands! Perhaps readers have other suggestions for helping those returning to the hobby after a long break? If so, I would be pleased to include them in a future *WN?* column. I have a feeling that there may be many like Mike out there looking for some help!

Upgrading Licence

At this time of year, many clubs will be finishing off their training courses, and their trainers will be having a well earned rest during the summer months. There will, no doubt, be many successful candidates wondering what to do next. I really would encourage successful Foundation candidates to apply for their Foundation Licence and get on the air as soon as they can.

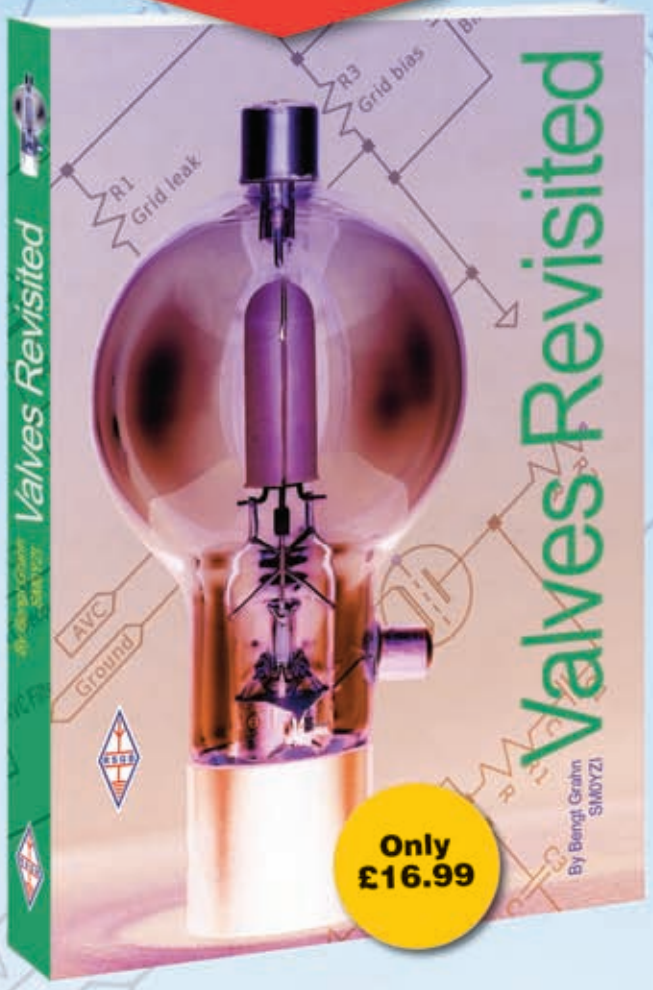
Many Amateur Radio clubs, particularly those who run training courses, are happy to provide assistance to those who have passed their training courses. I would strongly suggest that successful candidates join their local radio club and actively participate in their activities.

I was recently talking to a successful Foundation Licence candidate who's certainly caught the Amateur Radio bug! He passed his foundation exam in late November 2010. By the end of 2010 not only had he got his callsign, but he had set up a station, and had worked 26 DXCC countries across seven bands! I think this is an impressive achievement in the space of a month!

My friend is now working towards his Intermediate exam. With his activity on the air using his Foundation Licence, he is taking the Operating Practices and Procedures of the Intermediate exam in his stride. It is much easier to learn 'Q' codes, abbreviations, RST signal reports, country prefixes by hearing and using them on the air in the context of a contact (QSO), rather than trying to learn them from a book.

NEW

RSGB shop



Valves Revisited

Bengt Grahn, SM0YZI

A fascinating guide to the world of thermionics

For over half a century, valves (or tubes) dominated electronics. They could be found in public address systems and hearing aids, televisions and computers, communications and medical equipment, and of course in the radio set in every home. Since the advent of the transistor and the silicon chip, valves have almost completely disappeared. However, valves are still the preferred device in specialist applications, usually involving high power, including microwave ovens and some transmitters. There are hi-fi enthusiasts who argue that valve audio amplifiers give a more accurate and pleasing sound than those using semiconductors.

Valves Revisited is a wide ranging book that provides the basics of how valves work through to how to build your own. There are details of the use of valves in domestic radios, test equipment and amateur transmitters. There are also detailed descriptions of the use of valves in amplifiers, receivers, power supplies, signal generators along with guides to modulation, receiver design, measurement, fault finding and much more.

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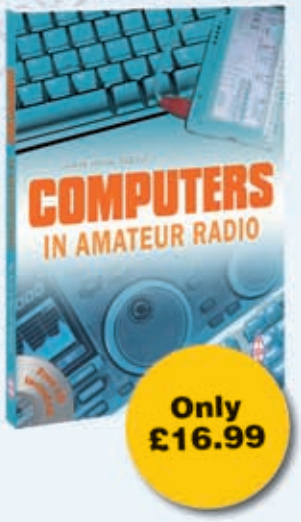

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Computers in Amateur Radio

Steve White, G3ZVW

Radio amateurs have always been quick to embrace changes to their hobby to make operating easier or provide something extra. Computers are no exception and they have become essential tools to get the job done quicker and easier than ever before. But there is much that can be done with a computer and many are simply not aware of the huge potential they offer. *Computers in Amateur Radio* sets out to provide an insight into the wide range of amateur radio uses for the humble home computer. Where appropriate, *Computers in Amateur Radio* contains step-by-step guides to assist the first-timer in becoming familiar with an activity. For the more experienced there is great reference information and even basic fault-finding tips. *Computers in Amateur Radio* is a straightforward guide to the use of computers in the hobby and all will find something of value here.

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Readings – Believable Accuracy?

Harry Leeming G3LLL harks back to the time when he ran a very busy Amateur Radio shop. This time he discusses the Yaesu FL-50B, meter accuracy and totally misleading statistics!

Ross Bradshaw G4DTD is a *PW reader and* author living in Cornwall, who likes to renovate equipment and, over the years he has raised various issues with me that have helped to fill this column. Recently he has been working on an FL-50B.

The FL-50B is a 3.5 to 28MHz (80 -10 metre) transmitter and it has a companion receiver the FR-50B. From what I gather these economy items were not originally intended for export, but were made in the 1980s for sale to Japanese novice operators, who were then restricted to low power crystal controlled operation.

Despite Yaesu's intentions, various European importers spotted the receiver, and it sold in quite large quantities to short wave listeners (s.w.l.s). When the owners of the FR-50B became licensed, there was a demand for the matching transmitter and so some of these were imported along with a matching variable frequency oscillator (v.f.o.). Yaesu never got round to producing a properly printed English manual for these rigs and they were accompanied by a rather inferior duplicated version.

The transmitter has no internal v.f.o., but if operated with the receiver, it can be wired to transceive using the receiver's v.f.o., or an external v.f.o. can be used. With either v.f.o. option, frequency stability is not of the highest order and anyone using c.w. is advised to mount the key on a separate table. Otherwise over-enthusiastic operation of a conventional key tends to vibrate the v.f.o. and make the frequency jump.

Ross had managed to get his FL-50B operating well on the 3.5, 7 and 14MHz bands, but was having problems on 21 and 28MHz, and so he emailed me thus.

"*On 15 and 10 metres running into a dummy load, I found that on the front panel meter of the FL-50B, I could not get a dip so, I increased the loading to about the 'one o'clock' position, and got 'a sort of dip' but output at only 2W. The only way to tune was by watching output on my s.w.r. meter (dummy load plugged into it). However, I then noticed that maximum output on the power meter coincided with a maximum reading in the front panel meter, no way was the meter dipping, if it did – output power fell dramatically.*"

I realised Ross G4DTD had run into a typical replacement power amplifier (p.a.) valve problem. The original Toshiba 6JS6A has long since been discontinued, and so it's now necessary to replace it with a GE 6JS6B. Unfortunately, this valve is rather more difficult to neutralise and while it will usually operate as a plug-in replacement on the lower frequencies, on 21 and 28MHz the neutralising is critical.

When substituting an original Japanese 6JS6A or B for one of another make, I suggest that you first fire up the rig into a dummy load on 3.5MHz, so you can be sure that the p.a. stage doesn't burst into oscillation and cause damage.

Next, set the neutralising capacitor on this band so that maximum dip (i.e. minimum p.a. current) coincides with maximum output. Then switch to 7MHz and do the same and then repeat the operation on 14, 21 and 28MHz in that order.

As you go higher in frequency, the adjustment will gradually get more and more critical. But once you have it set on 10m, it should then be 'near enough' on the other bands, if necessary you may have to compromise the setting to get good results on both 21 and 28MHz.

Ross followed my suggestions and all was well. He also kindly sent me a photo of his set-up **Fig. 1**, from which I can only presume that he has a gentle touch on the key.

Fig. 1: Ross Bradshaw G4DTD's FL-50/FR-50 set-up in action in his shack. Harry reckons he must have a light touch on the key, to keep the v.f.o. from jumping around in time with the 'pumping' action!

A Good Signal Generator

Many cheap and modestly priced signal generators are useless if you want to

Fig. 2: Big it may be, but the internal screening of this Marconi TF202B at nearly 50 years old, is very good, making it possible to inject low level signals into a receiver without swamping it.

try to inject a small signal, let's say 2µv, into an high frequency (h.f.) receiver to calibrate the S-meter, as with the attenuator set for minimum output, the receiver's S-meter will still read 'S9+'.

With the advent of frequency counters, the dial accuracy of signal generators is nothing like as important as it used to be. However, if you wish to make meaningful comparisons of the sensitivity of receivers, it's important that the generator's screening and attenuator are good. A large, cheap and heavy second-hand Marconi unit can fit the bill well.

Most of the generators I had at the shop came from rallies and while some needed a bit of service work, they served me well. I still have the one shown in the picture photo in **Fig. 2**, and its great point is that the output attenuator is accurate, the fact that the dial it is a fraction off frequency doesn't matter at all, as if I want it to be 'spot on' – I simply plug my frequency counter into it, and tune on this.

And how did I check that the r.f. output meter on the generator is accurate? Well the Marconi TF2002B generator, which set me back £25, covers 10kHz to 90MHz, and as my AVO 8 is accurate on the alternating current (a.c.) ranges up to 15kHz, I checked it using this on the lowest frequency range into a 50Ω load.

Lies With Statistics!

If you had been in the retail trade for as long as I was – there was one thing I could (and can!) be sure of – you'll also have become very sceptical regarding advertised fact and figures! Those figures and specifications in advertisements – and on equipment boxes, are often more likely to confuse – rather than inform!

Some time ago, I spotted a pair of speakers priced at £9.99 with built-in amplifiers in a computer shop. Clearly stated on the box, was the specification "300 Watts Output PMPO."

The give-away was that included with the '300 Watt' system was a mains adaptor rated at 15V 1A. With only 15W input (even with around 70% efficiency) the amplifier could not possibly give more than about 5W per channel output. (i.e. 10W total). The speakers units were very light and obviously had small magnets; what else could you expect for the price? At a guess their efficiency would be less than 0.5% in the mid frequencies, falling to almost zero at the lower frequencies. The total acoustic output power would therefore be about one thousandth of that apparently claimed!

If the difference between the claims and the results were so wide, how can it be that Trading Standards had not been knocking on the door? The secret is the term 'PMPO'. This is reputed to mean 'Peak Momentary Power Output' or possibly 'Peak Music Power Output' but its definition is so vague that no one really knows. So, if no one knows what '300 Watts PMPO' means – it's difficult to see as to how a manufacturer could be prosecuted for not complying with it!

I wrote to a computer magazine and suggested that the term meant that the makers had a licence to be generous with the figures and economical with the truth, they agreed and awarded me a £300 monitor for my *Star Letter*. So, it was worth looking in that shop!

Choosing A Linear?

Don't laugh too loud though, it's not just computer buyers that can be taken in! If you were going on a DXpedition and were in the market for a high power h.f. linear amplifier, which of the following would you chose? Model 'A' "Cut through the QRM with a gigantic 1,200W of power, all bands 1.8 to 28MHz" Or Model 'B' , "Gives from 700 to 500W output, all bands 1.8 to 30MHz?

Hard to choose? At first glance model 'A' sounds the most impressive, but actually both specifications describe the same linear. Specification 'A' refers to the power going into the valves, while specification 'B' refers to the output power and allows for the fact that the efficiency falls a little at the h.f. end of the range. The technical department will write a specification and then it's (seemingly) the advertising department's job to 'jazz it up' somewhat!

Meter Accuracy

In the January 2011 issue of *In The Shop* (*ITS*) I referred to the accuracy (or lack of it) on power output meters. However, very often claims for accuracy on test equipment are buried in confusion. First I'll look at an example of how it should be done.

The AVO model 8 multi-range analogue test meter was a rather expensive instrument, and, unlike the suppliers of much cheaper equipment, AVO make very clear claims for its accuracy as follows:

"Limits of accuracy d.c. voltage, 2% of indication between full-scale and half-scale deflection. Below half-scale, 1 % of full scale value".

Hence, if you try to measure 4.9V on the hundred volt range, the guaranteed accuracy will be ±1V. You'll get greater accuracy if you keep your readings to centre scale. So, in practice you would

normally switch to the 10V range to get a guaranteed accuracy of ±0.1V.

Unfortunately, many meter manufacturers don't spell things out quite as clearly. I have one that simply claims "Accuracy 4%" and leaves you guessing, 4% of what? Unless otherwise stated, you can probably take it that the most attractive figure will have been chosen, and that the guaranteed accuracy is ±4% of full scale deflection (4% FSD) on the range which is selected.

If you switch the above mentioned meter to the 100V range and the meter reads 11V, then the actual voltage could be anything from 7 to 15V. And the meter would still be within specification!

About 20 years ago I spotted an advert in an American magazine for a rather nice looking $99 dollar frequency counter. The advert claimed it could measure to an accuracy of ±1p.p.m. (±1 Part Per Million) from 100Hz to 600MHz. It sounded rather too good to be true – but as the company selling it were well known I decided to risk it.

The unit arrived promptly, looked very nice, and worked well. But when I tried measuring my 10MHz frequency standard, the counter was about 200Hz (20p.p.m.) off frequency. When I read the instructions carefully I found that the counter could indeed measure to within 1p.p.m., but to achieve this one had to set the internal calibration trimmer against an external standard before making the measurement.

On a very careful re-reading of the advert, I suppose this could have been what they meant – but it wasn't what I expected. The internal reference crystal drifted like mad and the trimmer needed frequently resetting to get accurate readings. In the end I obtained and fitted a good quality temperature compensated crystal, after which the unit performed very well.

Damned Lies & Statistics

If you see words like 'average' or 'prefer' without any explanation be wary. If you were to ask me "How much do you earn for writing for magazines?" I could truthfully reply, "On average about £1 a word." (The Editor may just have read that, and choked on his mug of tea). Well for the letter to the computer magazine mentioned above I got £2 a word, for many other letters and for refused articles I get nothing – average £1 a word.

Fig. 3: Not only was the AVO Mk8 multi-meter a fine example of measuring equipment, but it's statement of accuracy was explicit too! Unlike many items that come up for sale.

No doubt this wouldn't be the 'average' you were thinking of! But it's perfectly true, as there are **several definitions of average**. If you're writing an advert, or making a protest on behalf of a union about your member's wages being 'below average' – you can simply select the meaning of the word average that makes your point.

Here's an interesting example: Over 97% of Radio Amateurs prefer to read *Practical Wireless*! Of course, you must know that this is correct – but do you want to prove it statistically? (You can!). Provide a nice comfortable room at a radio club, and offer free copies of *PW*, and the Inland Revenue's publication '*How to Fill in Your Tax Return*'. I think you'll find that the vast majority prefer to read *Practical Wireless*!

So, when you're reading specifications or any other statement in promotional material, it's as well to ask yourself not only what you think the words mean, **but what they could possibly mean**? In the 1930s a friend of my father responded to an advertisement offering *"Sure death to caterpillars, with full instructions 1s 6d"* He received two blocks of wood marked 'A' and 'B'.

The instructions stated, "Place caterpillar on block 'A', and bring block 'B' smartly down on top of it". It wasn't quite what he was expecting, but perfectly true! I have no doubt that the Advertising Standards Authority would jump on this example today!

If you want to try and avoid being taken for a ride, you must read the paperback book *How to Lie With Statistics* by **Darrell Huff**, it costs about £7, is hilarious, and has been selling for over 50 years. You can view excerpts from the book on line at Amazon's web site.

Now get out in the sunshine and enjoy yourself, as for much of the time during the next few weeks, temperatures are expected to be well above average! The *average* UK year-round temperature is about 10°C (50°F)! See you next month!

PW

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50MHz has been Fizzing!

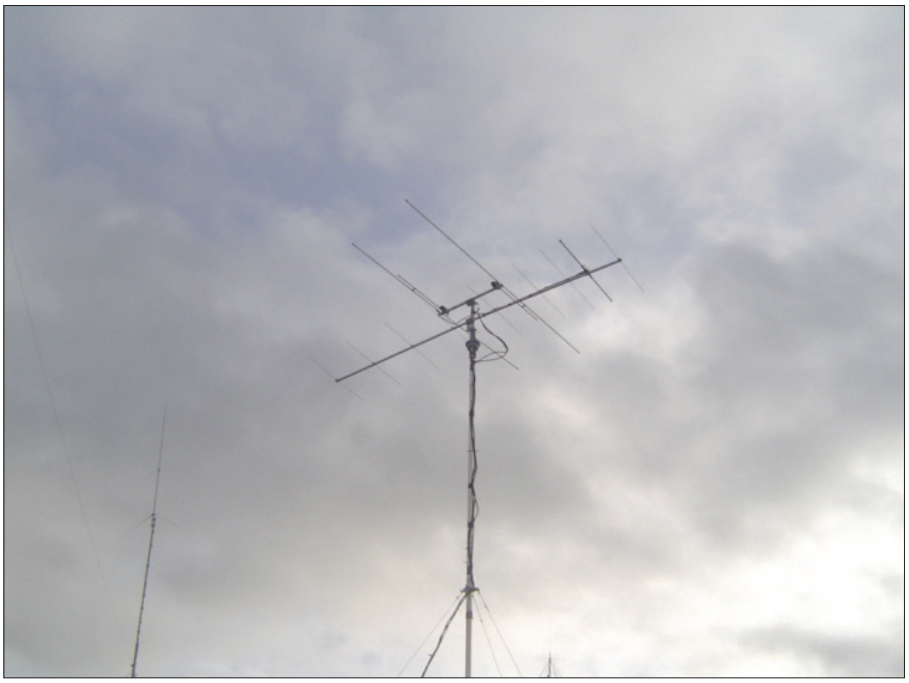
Tim Kirby G4VXE has much to report this time – it seems as though the v.h.f. bands are fizzing with activity!

Welcome to the *World of VHF (WoVHF*) where we enjoy the bands above 30MHz! The bands have been going well for the last month, particularly 50MHz, so there are lots of band reports. Thank you to everyone who has sent their news in, it's much appreciated.

With the summer season upon us, don't forget to try and pack some v.h.f./u.h.f. gear with you if you are off on holiday. If you are on holiday by the coast, it is amazing what can be done with simple v.h.f./u.h.f. hand-held or mobile equipment, particularly during the early-ish morning or the evening, as the temperatures change. So, take some equipment if you can, and remember to call "CQ"!

Similarly, if you are out and about on the hills or mountains, calling "CQ" even with low power equipment can result in some surprising and exciting QSOs. Hand-held transceivers for 70, 145 and 433MHz have never been cheaper, so we're all hoping that this will result in more activity.

Of course, if you do make some interesting QSOs, please let us know via *WoVHF* – hopefully your activity will inspire others to have a go. Many hand-helds are f.m. only, but if you are able to operate on c.w. or s.s.b then your horizons will probably be even greater, particularly if you are lucky enough to be able to catch some good propagation.



An unusual mounting for a 9-element Tonna for 144MHz underneath a 2-element 50MHz HB9CV type beam, with a multi-band v.h.f./u.h.f. vertical in the background.

Monitoring On The Move

Over the last year or so, I have been gradually programming more and more repeater and simplex channels into my mobile rig and scanning them as I'm on the road. It's fascinating and it's quite frequent for something slightly unusual to pop out of the noise for a few seconds.

I quite deliberately scan channels which are often quiet and have stations just out of regular tropo range, so that I'll hear them when the bands come up in that particular direction. I'd found this so fascinating in the car that I realised that it would be fun to try and do something similar at home.

Since I'd only ever had horizontal beams for 144 and 432MHz, a new vertical antenna was called for and I opted for the Diamond V2000 which would cover 50, 144 and 432MHz. Then it was time to listen!

With the antenna up at around 10m above ground, I started programming the memories in the same way that I'd done on the mobile, although of course from the base station, distances are a little greater. I'm already finding that the early mornings and evenings are 'rich' times to listen and that the repeaters on the south coast, normally just out of reach, pop out of the noise surprisingly frequently.

Certainly it has also made me realise that there is much more v.h.f./u.h.f. activity than people give credit for – it's rare that I cannot hear several QSOs taking place over the 35 or so channels that I'm monitoring. Additionally, while monitoring the c.w. beacons such as PI7CIS, ON0VHF and GB3VHF gives an idea of more distant tropo openings, it seems that there are many more localised enhancements which are just as fascinating.

So, if you have a mobile rig in the shack and a vertical – try scanning a few quieter channels and see what you can hear. I hope you will be pleasantly surprised!

The 50MHz Band

It was really good to have a letter from **Dave Oswald GM3COQ** (Montrose, Angus in Scotland) who I used to see regularly at **Cheltenham Amateur Radio Association** (CARA) meetings in the 1980s! Dave lives in the centre of Montrose and prefers to keep a low profile, so has installed an indoor 3-element fixed beam for 50MHz in his loft.

Dave adds that the beam hangs in the middle of a 3.5MHz dipole which he has squeezed into his loft – it's

clearly a very big loft! Dave particularly enjoyed the opening on May 21st when, during a period of two hours he made 82 QSOs, in 49 grid squares in 17 European countries. Impressive Dave – well done!

Another new correspondent is **David Bowen 2W0ZJA** (Brecon), who runs 50W from an FT-857D to a 2-element HB9CV beam. He enjoyed the opening on May 21st and worked 44 stations throughout Europe, ranging from OH3KT (KP20) in the north to I0WTD (JN61) in the south.

During the remainder of the month, David made a number of good QSOs. The highlights were HB1OK (JN36), SC3DX (JP82), OH2AUK (KP19) and EA4FTF (IM68). David was particularly pleased to work K1RZ (FM19) during the opening on June 4th.

Philip Oakley G0BVD (Great Torrington in North Devon) has just got a new Diamond V2000 antenna up for 50/144/432MHz and has been enjoying putting it through its paces on 50MHz. During the opening on May 21st, Phil compared signals between his IC-706 and vertical antenna and his TS-590 and dipole antenna. He found it interesting to note the difference in signal strengths.

Because the E layer is moving around all the time, when signals are reflected, they very often change their polarisation, so although most people use horizontal polarisation for 50MHz – by the time it has been reflected back to earth, the polarisation is often anything other than horizontal! During the May 21st opening, Phil worked 13 stations with the best DX being LY53B (KO26) and LA1TNA (JP20).

Phil found a number of openings during the month and made a good number of QSOs including OH1TX (KP00), YL2JZ (KO26) and CS0RCL/P (IM56). A 'gotaway' on June 4th was **Ronald Pincho ZB3D (Gibraltar)** who Phil heard briefly, but CN8NK (IM60) was worked late the same evening. Phil has also made some nice tropo QSOs on 50MHz, during the UK Six Metre Group contest on June 4/5th including G8BCG (IO70) and G5WQ/P (IO81).

Ronald Pincho ZB3D has had a good month and worked lots of DX. On May 14th he worked EI8IQ (IO62), EI4DQ (IO51), G0NCE (JO01) and then finally EA8CCG (IL18).Ronald particularly enjoyed the multi-hop Es opening to the Caribbean on May 30th when he worked NP4A and KP4EIT. Signals were so strong that Ronald suggested they QSY to 51.510MHz and try on narrow band f.m. (n.b.f.m.).

A closer look at the two anetnnas for 50 and 144MHz in use with David Bowen 2W0ZJA.

The signal was absolutely solid S9, with a little fading – with both stations sounding like locals. Once NP4A and KP4EIT had completed their QSOs with Ronald, KP4BJD and WP3UX both followed. What a fascinating opening! Ronald was using 30W and the ZX-4 Yagi antenna.

On June 4th, Ronald found a good multi-hop Es opening to the USA and had a nice pileup from the east coast of the USA and Canada. Ronald had the opening for about an hour and twenty minutes, before the propagation shifted and favoured stations in the Canary Islands (EA8). Ronald reports that **Ernie Stagnetto ZB2FK** made some c.w. QSOs into North America using his V2000 vertical antenna during the opening.

Paul Bowen M0PNN (Newport, Shropshire) kindly sent his log containing some nice QSOs spread over several openings. Additionally, EA7/G1WUU and other EA stations were worked on May 7th. Sometimes working stations just out of tropo range and under Es range is particularly difficult, so ON8DM (JO10) was a nice one on May 8th. Then IC7CQF (JN70) from Capri and IM0/IS0BSR (JM48) were worked on May 20th.

Paul caught an opening into the Ukraine on May 21st, with UT2XQ (KO40) and UX5NW (KN28) being the more distant QSOs before the propagation moved further to the southeast and he worked TA7X (KN90). Then came 4X13AR and SV3DCX (KM08), who were the best DX during an opening to south eastern Europe on May 24th.

There was an opening to Iceland on May 27th and Paul worked TF3ML (HP94) and TF8GX (HP84). On June 1st there was a good opening to the south, EA8AK, EA8CDP (IL18), EA8BWY (IL18) and CN8KD (IM63) all being worked. Paul caught another opening to the south on June 3rd with the highlights being EA8/DL3GCS (IL07), CS0RCL/P (IM56) and CN8SG (IM64).

Mark Marment CT1FJC (Portugal) also had an f.m. QSO with NP4A on May 30th, following a QSO on s.s.b. Mark found a good number of openings during the month. As well as some Es on May 1st, TZ6TR was a nice one. Mark had openings on May 4th, 5th, 7th, 9th, 10th, 11th, 13th, 15th, 17th, 20th, 21st, 22nd, 23rd, 24th, 25th, 26th, 27th, 28th, 29th, 30th, June 1st, 2nd and 4th.

Highlights of Mark's log on the band were FG5GP, FM5WD, CU7AJ, FJ/OS1T, 8P9XB and WP3UX on May 15th with a similar opening on May 17th. Then came 4Z1UF (KM71), who was a nice distance at over 4000 km on May 25th. Next came TF3ML (HP94) who was a nice one on June 28th – over a path that Mark doesn't hear very often. Another 'good one' was A45XR (LL93) – another good distance QSO via multi-hop Es at 6475km on May 29th. Also, A92GR (LL56) was worked over the same path on June 2nd as well as YO4PX, JY4NE, 4Z1TL, 9H1GB, 9H1CG, IW0FFK and IT9VDQ, which gives an idea of where the first two hops were.

Finally, on the evening of June 4th, Mark worked W5UWB on JT6M with W3TC, W3TEF, VA3LX and

Along with the two horizontal v.h.f. arrays, and the multi-band vertical at 2W0ZJA, there's a CWS-80 Carolina Windom for h.f. too.

KB3RHR all worked on s.s.b. What a fantastic log! It just goes to show how exciting it can be to operate from the Mediterranean area during the Es season.

It's also very interesting to see the distribution of openings. Here in the southern UK openings have been on average every couple of days during the month and then further north the openings have been more scarce. You can easily see (based on the openings recorded by CT1FJC) how the incidence of Es increases as you head south.

My own **G4VXE** (Oxfordshire) log is a bit sparse in comparison, but I have made a good number of QSO on 50MHz, mostly on c.w. using the new V2000 vertical antenna that I installed last month. During the very widespread opening on May 21st, the highlights were YL2TQ (KO37), LZ2WO (KN23), LZ1UQ (KN12), IC8TEM (JN70). I caught a evening opening on May 26th and worked 9H1SP (JM75) and EA6DX (JM19).

The band was open late, around 2130z on May 28th and I worked 9H1BT (JM75). Perhaps my most challenging and rewarding QSO of the month was working GW3JXN (IO72) on tropo during the UK Six Metre Group contest on June 4th – the vertical, though it works well for Es is less than optimum for longer distance tropo contacts, being cross-polarised.

Peter Goodhall 2E0SQL (Oxford) has been using a combination of the *CW Skimmer* and *MixW* software to make lots of c.w. QSOs on the band. The highlight being T77C (San Marino) as well as many other Italian stations.

Gavin Nesbitt M1BXF (Trumpington) had a run-in with the 'DX police' on 50MHz, who said he was working stations in the 'DX Window'. Gavin asks what conditions have to be fulfilled before QSOs can be made in the 'DX Window' on 50MHz? However, I must say that I'm not a fan of 'DX Windows' – they seem to cause grief wherever you find them, be it top band or 50MHz.

The point is, you try and leave the area around 50.110 free for 'long DX' – but in a massive opening, the window is going to get squeezed. And if you hear a EU station calling CQ DX on 50.100 would you call him? I wouldn't – but I bet there are some people who would and who's to say that they are wrong. Most 50MHz operators aren't going to deliberately cause QRM to a DX operation – if they do so accidentally, then a quick courteous exchange will do the trick.

The 70MHz Band

Here at G4VXE, I was delighted to work LA6MV (JO59) on May 21st for my first QSO with Norway on the band. I also heard LA4ANA (JO59) and the LA5VHF beacon (JO48) on 70.064. I also worked 9A2SB (JN95) for the first time this year on the same day. Less distant, but still very interesting was a 70MHz f.m. QSO that I had with **Andy Joyce G6REG/M** as he was driving from Burford towards Shrivenham near Swindon over some quite variable terrain.

Andy was running 25W to a mobile antenna and I was using similar power to a half-wave vertical at about 10m. We were able to compare coverage with similar power on 144MHz and it was clear that 70MHz 'filled-in' the valleys slightly better than the higher frequency.

Mark Marment CT1FJC has made some good QSOs. There was an opening on May 26th when he worked S57A (JN65), LX2LA (JN39), OZ1DJJ (JO65), OZ1BNN (JO55), ON5VW (JO10), OZ2PBS (JO55), DI2BK (JO30), G8HVY (IO90), EA6SX (JM19), ON5QRP (JN29), SV3BSF (KM08), 9A2SB (JN95) and 9A2Z (JN86). There was another opening on June 1st when Mark worked G0CHE (IO90), EI8IQ (IO62), G7RAU (IO90), G7SVF (IO90), CU3EQ (HM68) and G4DPH (IO91).

Some interesting QSOs this month and I think it's good to get a sense of what DX is available on the band. It's always handy to have the callsigns in the back of your mind when you are tuning around listening to weak signals.

The 144MHz Band

It was good to hear from **Jonathan Kempster M5AEO** (London). Jon has recently repositioned his v.h.f./u.h.f. vertical so that it's higher and much more in the clear. Interestingly, as well as listening to repeaters, Jon has been monitoring the GB3VHF beacon in Kent and noticed that the signal level was very unstable.

Sometimes the beacon is the usual S7 or S8 level, but other times it was fluctuating between S8 and no-signal. Jon wondered why and monitored the signal strength during the day. It seems to be that as the temperature builds up during the course of the day, the signal strength reduces and then as it cools off again in the evening the signal strength rises. Even more intriguingly, on a horizontally polarised antenna, the signal is a steady S7.

Jon wondered whether the heat from a nearby metal-clad roof could have something to do with it. He also mentions that he is on the approach to London City Airport, so it's more than possible that the vertical antenna 'sees' more high-angle reflections from aircraft in the sky above.

Like Jon, I have noticed that there is much greater variation on the vertically polarised f.m. signals I hear, compared to the relatively steady horizontally polarised beacon signals on c.w. from say, GB3VHF or ON0VHF. Could it have something to do with heat rising in the same plane as the vertically polarised signals? I can't immediately find any reference to this, but it seems to be a possibility.

Once again, Mark CT1FJC has been making the best of conditions. During an Es opening on June 2nd he worked 9H1GB (JM75), 9H1CG (JM75), CT3HF (IM12), IW0FFK (JN61), IT9VDQ (JM68), IW0FRR (JN61), IS0YFG (JM49), LZ1ZX (KN32) at 3067km, I7CSB (JN71), LZ3GM (KN32) at 3129km, IK0LZR (JN52), EA8AVI (IL28) and IK0SMG (JN61). The QSOs over 3000km are very good going and it would be interesting to find out if they were long single-hop or perhaps multi-hop propagation.

From G4VXE, I found a few continental stations to work on s.s.b during the contest on 7th/8th May; ON4WY (JO11), TM2A (JN18) and ON3KHG (JO10). With the new vertical giving me the ability to monitor the f.m. calling channel, 145.500MHz on another receiver I've been pleased to make QSO over distances that surprise me for the f.m. mode.

Whilst writing this column on June 5th, I heard **Roger Gregory G4OCO/M** calling "CQ" and was surprised to learn that he was near Ely in Cambridgeshire a distance of around 140km from me. Sadly the propagation was only short-lived but long enough for us to have a rudimentary QSO.

Later in the afternoon on June 5th, I noticed an f.m. carrier on 145.675MHz which was weaker than the local repeater, GB3RD and stronger than other signals that I usually hear on that frequency. The signal came up and the QSOs was in a language that I didn't immediately recognise.

Fortunately the repeater had a c.w. identifier which sent LA9MR, from Norway. The LA9MR repeater is in the southern part of Norway in locator JO38 and is around 920km from Longworth. What was interesting was that there were no Norwegian signals on the s.s.b. part of the band.

The duct seemed to last about an hour before the repeater faded back into the noise. It's probably the most distant f.m. signal that I've ever heard on 144MHz.

Philip G0BVD (Great Torrington) was pleased to work G5FZ/P in Lincolnshire (IO93) during the RSGB 144MHz contest on 21st/22nd May using his vertical antenna. It's a good distance from North Devon!

Horizontal antennas are unquestionably the way to go to work DX on the v.h.f. bands, but if you are short of space, and applying the principle that any antenna is better than no antenna, it's always well worth listening on a vertical antenna with your c.w./s.s.b. rig. You will lose signal owing to the crossed polarisation, but with luck there will still be some dB to spare and you will be able to make some interesting contacts!

The 432MHz Band

Little to report this month on the 432MHz band – I think everyone has been concentrating on the lower bands, but I did get on for the RSGB 432MHz Activity contest on May 10th and worked a few.

Perhaps the most interesting QSO over a difficult path from here was GW8CAK (IO82). The opening on June 5th/6th allowed me to hear a number of 433MHz repeaters which are not usually audible in Oxfordshire including GB3DY (Derby) and GB3LC (Louth, Lincolnshire). Cheerio until next month!

PW

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Air Band Radio Handbook 8th Edition £5.00
Air Band Radio Guide 6th Edition £5.00
Airwaves 2007 £8.00
ARRL Handbook 1982 £10.00
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ARRL Handbook 1986 £10.00
ARRL Handbook 1987 £10.00
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ARRL Handbook 1995 £10.00
Usborne Audio and Radio Book £5.00
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BBC Radio Transmitting Stations Spring 1990 £5.00
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Microcomputers in Amateur Radio £5.00
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Scanners 2 International £5.00
UK Scanning Directory 4th Edition £5.00
UK Scanning Directory 2nd Edition £5.00
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Shortwave Voices of the World £5.00
"49 The Thyristor Book" £5.00
Transistor Equivalents and Substitutes £5.00
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UK Scanning Directory 8th Edition £5.00
USA Radio Amateur callbook 1986 £5.00
VHF Communications Magazine 1975 £5.00
Wireless Servicing Manual £5.00
WRTV Handbook 36th Edition £5.00
WRTV Handbook 1987 Edition £5.00
WRTV Handbook 40th Anniversary Edition £5.00
WRTV Handbook 27th Edition £5.00
RSGB Amateur Radio Operating Manual 5.00
Electronic Service Manual £20.00
ARRL Operating Manual £10.00
Scanners 4 Book £5.00

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Emperor Ninja CB £69.00
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Ranger RCI 2970DX 10 - 12m " 150w" Transceiver £249.95
Magnum S-9 Multi Mode mobile Transceiver £240.00
Maycom EM-27 CB Transceiver £55.00
DX-5000 K-PO - AM/FM/SSB 10/11Meter Mobile £189.00
CB Magmount Antenna £10.00

DAB Radio
Gemini 46 Digital Radio £39.00
Sony XDR-S55DAB £30.00

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ERA Microreader CW Decoder £79.00
USB 56K MODEM £10.00
MFJ-1278b DSP Multimode Data Controller £249.00
UT-118 Digital Unit £130.00
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NC-386 Ni-Cd Battery Charger £20.00
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Packer TVI Filter £9.95
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FDC-150A 2m Handheld £79.00
Quansheng 70cm Handheld £79.00
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Icom IC-7700 - TRANSCEIVER £4,295.00
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HX-240 Tokyo Hy-Power HF transverter £149.00
Yaesu FT-450D HF/6m transceiver £675.00
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Emerging Technology

No – this isn't the April issue of *PW*! You've been warned!

Chris Lorek G4HCL shows how red wine can improve superconductivity, details batteries that run on air and describes how your club newsletter could be read by communication satellites of the future!

A technology that allows wireless signals to be sent and received simultaneously on a single channel, with no 'time division multiplexing' whatsoever has now just been developed by Stanford, USA, researchers.

In the past, full-duplex communications, i.e. for simultaneous transmit and receive, required either two frequencies, one for transmit and another for receive, or a very fast 'ping-pong' transmit/receive cycle combined with digital encoding to give near-instantaneous transmit and receive on a single channel although this naturally at least halved the amount of 'throughput' in terms of bandwidth that could be used on a given channel.

In a similar way to noise-cancelling earphones, which look at an unwanted signal and remove this from a wanted signal by adding it in anti-phase, the Stanford researchers took the same approach in that if a radio receiver could filter out the signal from its own transmitter, weak incoming signals could be heard. Very simply, their set-up takes advantage of the fact that each radio 'knows' exactly what it's transmitting, and hence what its receiver should filter out.

This technique immediately makes radio operations at least twice as fast as existing technology. And with some further tweaking, this could even lead to faster and more efficient networks in the future, by sending and receiving signals at the same time. Maybe we'll soon be having single-frequency 144 and 430MHz repeaters – with no expensive duplexers needed? Watch this space!

Alcoholic Drinks Inducing Superconductivity?

We've often been aware that the odd beer or two helps the contacts flow during field day events and the like. But now – it seems – these tipples could also improve your chances of DX contacts! No, this isn't the April issue of *PW* – read on.

Scientists from the National Institute for Materials Science in Japan have recently found that immersing pellets of an iron-based compound in heated alcoholic beverages for 24 hours increased their superconducting ability.

Iron-based compounds can become superconductive after being exposed to air, but this process can often take up to several months. However, this study has shown that superconductivity can be induced in just one day. Because of the variety of technological applications of superconducting materials, there has been a scramble for substances that may induce and enhance superconductivity in iron-based compounds.

Now you may be asking – what booze did they use? Well the alcoholic beverages used were red and white wine, beer, Japanese sake, shochu, and whisky. Samples of an iron-based compound were submerged in each alcoholic beverage, heated at 70°C for 24 hours, and then analysed.

Possibly surprisingly – red wine was shown to induce the best superconducting properties. However beverages with the same alcohol concentration did show a difference. This suggests that it may not be the alcohol contributing to the creation of superconductivity, but is instead due to another component present in the beverages.

A possible reason behind all this research is that iron-based compounds undergo a process called 'magnetic order' whereby the molecules align in a regular pattern. To achieve superconductivity, magnetic order must be suppressed, and in order to become superconductive the elements in the iron-based compounds can be substituted with elements present in alcohol.

But like many things, the actual mechanism behind this effect is mostly unknown. Although the researchers suggest that it could be because of the addition of electrically charged particles into the layers of the compound. An alternative theory is that the alcoholic beverages help to supply oxygen into the sample, which in turn gives the superconductivity effect.

Professor Yoshihiko Takano at the National Institute for Materials Science in Japan, said, "The iron compound becomes superconductive by air exposure but the sample needs to be exposed to air for a few months to show superconductivity. However, the sample immersed in the red wine becomes superconductive in only one day, much faster than air-exposure."

Now some of us have heard of the elusive 'SWR Grease' which is reputedly used on an antenna to improve the SWR and improve performance. But now perhaps regularly splashing red wine on our antennas could give us a significant gain in our signal strengths!

Compressed Air Batteries

We've had zinc chloride, lead acid, alkaline, nickel cadmium, nickel metal hydride and lithium batteries – even organic batteries. But now batteries that use compressed air for power? Yes, that's right! Developed and manufactured in the UK by the Cheshire-based firm of **Energetix Pnu Power.**

The company makes batteries that run on air that may be used as direct replacements for conventional lead-acid batteries – primarily those designed for UPS (Uninterruptible Power Supply) systems for vital radio communication systems. They're also used for emergency services such as police control centres, hospitals, and many other places where non-mains power is essential. The compressed air battery technology also claims lower carbon footprints, lower maintenance and an overall lower cost over their life.

In use, incoming air energy is supplied by ordinary compressed air from cylinders or ring mains, or a compressor which automatically recharges cylinders after each discharge. The air supply is regulated by an electro-pneumatic controller, which provides immediate start-up on demand and matches the electrical output to the load. It's basically a development of technologies which have been used in applications like the control of submarine pneumatics.

The 'heart' of the system is a scroll expander, which responds to the required load, and the exhaust output is just cold, clean air which can be used for cooling if required. A scroll expander is effectively a scroll compressor working in reverse, similar to the device that is used in refrigerators, air conditioning, automotive superchargers and vacuum pumps. The resultant electricity is produced by a low inertia generator and the output can be a.c., d.c. or split a.c./d.c. in any voltage from 24 to 240V. Maybe we'll soon be using compressed air bottles for portable field day operation rather than smelly petrol or diesel generators?

Spacecraft To Think For Themselves?

In a recent *Emerging Technology* column, I detailed 'intelligent' satellites for radio communications and now these have gone one step further. The world's first control system that will allow engineers to program autonomous satellites and spacecraft to think for themselves has been developed by scientists from the University of Southampton, Hampshire in southern England.

Professor Sandor Veres and his team of engineers at the university have developed a cognitive software agent control system called 'sysbrain'. Using natural language programming (NLP), the software agents can actually read special English language technical documents on control methods. This gives the vehicles advanced guidance, navigation and feedback capabilities to stop them crashing into other objects. It also includes agent-based control with mission execution capabilities like, "which frequencies and modes to communicate on?", and the ability to recognise and reconfigure faults which develop, in other words they can even repair themselves.

Professor Veres, who is leading the EPSRC-funded project, says: "This is the world's first publishing system of technical knowledge for machines and opens the way for engineers to publish control instructions to machines directly." He adds "We have invented sysbrain to control intelligent machines. Sysbrain is a special breed of software agents with unique features such as natural language programming to create them, human-like reasoning, and most importantly they can read special English language documents in 'system English' or '*sEnglish*'.

Human authors of *sEnglish* documents can put them on the web as publications and sysbrain can read them to enhance their physical and problem solving skills. This allows engineers to write technical papers directly for sysbrain that control the machines."

So, perhaps in the future if you put something together on the Web, maybe details of your evening 'ragchew' nets in your club newsletter, it might just be used by one of the future Amateur Radio 'Oscar' series of satellites who could be reading it and using it for contacts!

Smallest Multi-mode Radio Base Station?

Just when you thought radio transceivers couldn't get any smaller, along comes 'Picochip' from the firm of the same name who are based in Bath in the UK. It's a next generation femtocell SoC (System on Chip) for two-way multimode speech, data and video radio communication.

As an example, the PC3008 Picochip integrates the key components of a 3G (3rd Generation) femtocell into an i.c. package that's just 12mm square. It allows final equipment manufacturers integrate this into a wide variety of products, which use two-way radio for communication between themselves.

As well as the device itself, the Picochip system provides a number of complete radio designs to users to make things easy, so maybe we'll be seeing these in amateur handheld transceivers of the future?

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

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

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

JULY

July 17th
The McMichael Rally
The McMichael Rally and Boot Sale will be held at the Reading Rugby Club, which is just off the A4 east of Reading. The doors will open at 9.30am and admission will be £2.00. There will be talk-in, free car parking, trade stands, a car boot sale, special interest groups, a prize draw and catering with a licensed bar.
Pete G8FRC
Tel: 01189 695697
E-mail: g8frc@radarc.org
www.McMichaelRally.org.uk

July 17th
***QRP in the Country**
QRP in the Country will be held at Upton Bridge Farm, Long Sutton, Langport, Somerset TA10 9NJ. The event is organised by Tim Walford of Walford Electronics and will be held on his farm an admission is free. There will be a Bring & Buy, special interest groups, lectures and seminars, family attractions, catering and a licensed bar.
Tim Walford G3PCJ
Tel: 01458 241224
E-mail: walfor@globalnet.co.uk
www.walfordelectronics.co.uk

July 31st
The Horncastle Summer Rally
The Horncastle Summer Rally and Boot Sale will be held a the Horncastle Youth Centre, Willow Rd, Horncastle, Lincolnshire LN9 6DZ. The doors will open at 10.30am and admission will be £1.50. There will be catering and facilities for the disabled.
Tony G3ZPU
Tel: 01507 527835

AUGUST

August 7th
The Great Eastern Radio Rally
The King's Lynn Amateur Radio Club will be holding the 22nd Great Eastern Radio Rally and Amateur Radio Car Boot Sale at the Gaywood Community Centre, off Gayton Road, King's Lynn, PE30 4EE. The doors will open at 10.00am, admission will be £1.50 and there will be trade stands, a car boot sale and catering.
Ray Dowsett G3RSV
Tel: 01553 671307
E-mail: ray-g3rsv@supanet.com
www.klarc.org.uk

August 7th
The Lorn Radio Amateur Rally
The Lorn Radio Amateur Rally will take place at Crianlarich Village Hall, Crianlarich, near Oban FK208QN. The doors will open at 10.00am and there will be trade stands, a Bring & Buy, catering and a prize draw raffle.
GM0ERV
E-mail: stewart.mciver@btinternet.com

August 12th
The Cockenzie Mini Rally
The Cockenzie and Port Seton Amateur Radio Club 18th Annual Mini Rally Night will be held at the Community Centre, Main Hall, Port Seton, East Lothian.
It's an opportunity to bring along your own junk and sell it yourself. The event runs between 6.30pm and 9.30pm and admission costs £2.00, tables will be available on a first come first served basis.

August 14th
***The Flight Refuelling Hamfest**
The Flight Refuelling Amateur Radio Society Hamfest will be held in the Cobham Sports and Social Club Ground, Merley, Nr. Wimborne, Dorset BH21 3AA. The doors open at 10.00am and there will be talk-in on S22, car parking, trade stands, a car boot sale, a licensed bar and catering.
Mike M0MJS
Tel: 01202 883479
E-mail:frars@frars.org.uk
www.frars.org.uk

August 14th
The Friskney Rally
The Friskney & East Lincolnshire Communications Club Rally will be held in the Friskney Village Hall, Church Road, Friskney, Lincolnshire – this is 6.5 miles south of Skegness. The rally will be open from 10.00am to 2.30pm and admission will be £1.50. There will be talk-in on S22, car parking, a prize draw, catering and facilities for the disabled.
Bren 2E0BDS
Tel: 01754 820 204
E-mail: felcc@btinternet.com
www.felcc.webs.com

August 20th
The GI HF Conference
The GI HF Conference will be held at the Technology Education Centre, Omagh BT78 1FA. Registration will take place from 11.00am.
Philip MI0MSO
E-mail: mi0mso@yahoo.co.uk

August 21st
The Rugby Rally
The Rugby (Princethorpe) Annual Radio Rally will take place at Princethorpe College, Princethorpe, Rugby CV23 9PU (SP395710). The rally will be open from 10.00am to 4.00pm and admission will be £2.00. There will be talk-in, car parking and catering.
Tony
Tel: 07759 684 411
E-mail: rally@raugbyats.co.uk
www.rugbyats.co.uk

Join the Radio Society of Great Britain for FREE

The Radio Society of Great Britain (RSGB) is your club, working for you and your interests. The RSGB keeps you informed of the latest amateur radio news and amongst friends who understand the hobby. Remember you don't need to have an amateur radio licence to join the RSGB and get all the great benefits of membership.

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Being an RSGB member is much more than just RadCom and during the three month trial, you can access our "members only" website, take advantage of membership discounts, in fact you can access all the services we offer our members (see the full list of benefits).

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- You can cancel a Direct Debit at any time by simply contacting your bank or building society. Written confirmation may be required. **Please also notify us.**

The Loewe Radio 3NF

Rod Burman G4RSN takes a look at a complex valve from Germany that included electronics components within the same glass envelope – possibly making it the first 'integrated circuit'!

This 3NF valve features pins and no internal metallising.

The insides of the 3NF look more like a 'ship-in-a-bottle' than a valve.

The information sheet for the 2HF, a two-unit valve designed for r.f. use.

Welcome to *Valve & Vintage* (*V&V*) – where I'm the guest author this month looking at a rather unusual valve from the early days of valved radios. Up until the mid 1920s virtually all thermionic valves either diodes or triodes with a single active device in each glass envelope.

There were a few exceptions such as the Nelson multivalve, which was really one triode with three separate filaments and the Quadruple Valve Company (QVC) of Northampton offering of up to four triodes in a single envelope.

The QVC's valves however, were not integrated circuits (i.c.) as they contained no components other than the triode valves. It was left to the German Loewe Company run by Dr. Sigmund Loewe in partnership with Dr. Manfred von Ardenne to produce a new concept in multiple valves.

The 3NF Valve

The 3NF (Nieder Frequenz in German or Low Frequency in English) valve introduced in 1926 contained three separate triodes, together with four resistors and two capacitors – all within a single envelope. This development meant that it was then possible to build a complete tuned radio frequency (t.r.f.) receiver by just adding a tuning capacitor, suitable inductors and a loudspeaker.

In fact Loewe offered just such a radio for sale, the OE 33. It was a small Bakelite cased unit, into which the 3NF valve plugged directly in, as did the coils. Apparently more than one million of these sets were sold!

All that was then required for operation was an external high impedance loudspeaker, a 4V low tension (l.t.) supply and a 90V high tension (h.t.) battery with tappings. The tapping was usually provide with separate sockets providing either 6, 9, 24, or other voltages 'tapped off' from the 'battery stack' which was usually made up of 1.5V cells mounted together in series – to provide grid bias.

One of the most common batteries of this type in the UK was the Ever Ready Winner h.t. battery - which was quite a heavyweight! In fact it was still in production until the 1960s and the *PW* Editor mentioned that he'd used it himself as a young constructor. The problem was that this battery was expensive in the early days and even more expensive in the 1950s and 1960s – **Rob G3XFD** remembers paying £1.10s (£1.50) for one before he left school – about four weeks pocket money!

Why Was The Valve Developed?

Readers may ask the obvious quest – "Why was the valve developed?" One of the stimuli for creating the 3NF was the fact, that in Germany at that time there was a tax levied on radio manufacturers – based on the number of valve holders in the set. So that by having everything in one envelope, the tax was minimised!

Interestingly, in the lecture given by **Professor Peter Scott** from the University of Reading, which was the very first **Douglas Byrne G3KPO Marconi Memorial Lecture** on March 1st at the Bodleian Library in Oxford (reported in the May issue of *PW Newsdesk* and so ably organised by the late **Gordon Bussey**) the taxation problem and its solution was featured – and it rather amused the audience! From Peter's lecture we learned that many devious (from the customer's point of view anyway) licensing tricks led to the manufacturers getting as much as possible out of one valve to keep the receiver price down.

While having all the resistors and capacitors as well as the valves in one envelope, simplified assembly of the radio, a disadvantage of having these components within the vacuum system was that they could 'outgas' (emit gas) during the life of the valve and hence destroy the vacuum. To overcome this problem Loewe encapsulated each of the passive components in individual glass vials – before its final assembly into the valve's main envelope.

Two Standard Triodes

The 3NF contained two standard triodes suitable for detection and low frequency amplification and a larger output triode for driving the loudspeaker. All these valves were directly heated* – so there was always the danger of burning out one or more of the filaments.

The possibility of filament failure was one of the disadvantages of the

multiple valve, namely if one valve failed the entire unit was rendered useless. To overcome this problem Loewe offered a repair service. In reality probably all they did was to recover the resistors and capacitors and send a new valve back to the customer!

At around this time Loewe also introduced an high frequency (h.f.) valve the 2HF. this contained two tetrodes, two resistors and a capacitor and was intended to be used as two-stage resistance-capacity-coupled h.f. amplifier. Note that the tetrodes were of the 'space charge' type, rather than screened grids.

*Later valves became indirectly heated and these are the most common type seen today. The indirectly heated valve has a filament (often referred to as the 'heater') that's placed inside a chemically coated tube that then forms the emissive cathode. The coating gives off electrons when the heater raises it to a specific temperature (they can be very bright inside the cathode tube. In contrast, the older directly heated valve filaments – with the emissive coating applied directly to the filaments – look very much like a dull glowing lamp.

Intricate Glass Blowing!

As can be seen from the picture of the 3NF some very intricate glass blowing was involved, which resulted in the high production costs of these valves.

Later Loewe used mica supports for the internal assembly which resulted in a somewhat less tidy appearance and later types had external metalising applied to the envelope.

Loewe's UK Subsidary

In 1927 the German Loewe Company set up a UK subsidiary, the Loewe Radio Co. Ltd, with premises at 4, Fountayne Road, Tottenham, London, N15. The 1928 Radio Olympia issue of Wireless World carries an advertisement for the Loewe Radio Company announcing that, "The famous Loewe Radio Multiple Valves and sets will be made at our Tottenham Factory immediately we have trained the necessary staff and labour."

Another advertisement in the same issue promoted their glass encapsulated resistors and capacitors, similar to those used in the multiple valves. The valves were initially almost certainly assembled from components made in Germany.

Other advertisements offered the Loewe Radio cone loudspeaker type EB.71 and the OE 333 radio. In 1929 the Loewe advertisement promoted "The Set for The Million" at 70/- (£3.50). This was basically an OE 333 fitted with the modified 3NF, the RNF7. The RNF7 valve

had an extra connection brought out to the centre of the base, which allowed reaction to be used in the receiver considerably enhancing it's performance.

Another of the UK advertisements offered the valve repair service mentioned earlier. Loewe Radio UK also offered a gramophone pick-up enabling you to hear your records, "through your loudspeaker at any strength you like."

In 1932 Loewe UK were offering "British Made High Vacuum Resistances" with standard values between 1000Ω and 10MΩ as well as tubular paper condensers (capacitors) and wire ended resistors.

Later Developments

With the more ready availability of mains electricity in the early 1930s Loewe later developed a multiple valve for use in mains receivers, the 3NFW. This valve contained two indirectly heated triodes, one for r.f./detector use and the other an audio frequency (a.f.) amplifier.

There was also a directly heated output triode, and also four resistors and two condensers (capacitors). To complement this valve, Loewe produced a directly heated half-wave rectifier type 10NG.

Interestingly the 3NFW in my collection is also marked "Manufactured under licence from Marconi's Wireless Telegraph Co. Ltd, The Gramophone Co. Ltd." (There is evidence that these valves were used in a few Loewe made radios up to 1932).

Whole Range

Loewe continued to develop a whole range of multiple valves for use in their own radios, known as the WG series. The details of these are as follows:- the WG33 containing two triodes and an output pentode plus six resistors and three capacitors.

Then came the WG34, which contained two pentodes, plus one resistor and two capacitors. Next, the WG35 contained two pentodes, a diode (rectifier?) and one resistor.

There were a variety of bases combined with and without internal metallising on offer.

The WG36 contained two r.f. pentodes and a regulator triode – but no passive components (resistors, capacitiors).

The WG range were all made with indirectly heated cathodes and series connected heaters drawing 0.18A (180mA), so that the radios which used them were suitable for use on both alternating current (a.c.) and direct current (d.c.) mains*. These valves were used in a range of Loewe and Opta radios up to about 1937 and at this time the company also produced a range of more conventional valves using the Opta name.

* The a.c. mains system did not become universal in the UK until well after the Second World War. Some areas – especially inner city locations where trams and trolley bus systems operated with d.c. – still had d.c. mains in the late 1940s and early 1950s. The *PW* Editor mentioned to me that his Grandfather told him that the areas around Southampton Docks were one of the last in Hampshire to have d.c. mains.

The Second World War

At the outbreak of the Second World War the Loewe company was transferred to the manufacturing of items for the Wehrmacht – the German Army. A particularly interesting device made by them was a battery double-triode designed for use in weather balloon radiosondes.

In 1942, as part of the Nazi "Ayrianisation" programme, the Company was forced to change its name to Opta. This was because its founder – Dr. Sigmund Loewe – had already fled from Germany in the mid 1930s due to persecution of the Jews.

As well as continuing to make several types of conventional valves Opta also made cathode ray tubes (c.r.t.s) for German radar systems and glass encapsulated quartz crystals. After the war the Loewe Opta name was revived and a number of factories started up to manufacture domestic electronic products such as radios TVs, tape recorders, etc. The company had a fascinating history with some remarkable innovations and I'm proud to have some samples in my collection!

PW

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At Last– A New One!

Graham Hankins G8EMX get excited about a new ATV receiver, some captioning ideas and brings you up to date with other topics.

Welcome to *In Vision* (*IV*) and I'm pleased to say the transparent postal cover that enclosed the 233rd issue of the British Amateur Television Club's quarterly magazine *CQ-TV*' dated May, was ripped off much more quickly than usual.

What had prompted this frenzy of unwrapping? Granted, it had been a long wait after Issue 232 in November 2010 but the editor, **Chris Smith G1FEF** had been so short of copy that the club took the decision to delay publication until it could fill a 40 page magazine. But no, it was neither this, nor the smart new front cover or a new BATC club badge prompted my hasty tearing of the envelope. I had spotted this, screaming from the top of the contents list on the front cover – "New! FM ATV Receiver."

Well about blooming time too! The last 24cm (1.3GHz) ATV receiver that was associated with the BATC had been the 'Dove' kit designed and supplied by **Bob Platts G8OZP** several years ago. Bob's receiver kit had all components, needed no alignment and worked very well, particularly if preceded by a pre-amplifier. So this latest *CQ-TV* was instantly opened to see what the BATC's 2011 receiver looked like.

Designed in New Zealand by **Grant Taylor ZL1WTT** with ideas from **John Dunn ZL1JD**, an L-band tuner feeds sound and video circuits, mounted on a double-sided printed circuit board (p.c.b.) with an additional board for a digital display. Grant says:""So far, this receiver has out performed any other receiver I currently own and it's a big improvement over the older Mark I design."

No Complete Kit

There is no complete kit available (yet) and the circuit description mentions four adjustable components, but BATC chairman Trevor Brown G8CJS is doing his very best to supply a 'bare bones' kit (which includes the tuner, both p.c.b.s, a pre-programmed microprocessor and a digital display) and is sourcing as many of the components as he can find.

The receiver features wide and narrow-band intermediate frequency (i.f.) settings, a dual-switchable sound demodulator plus positive and negative video output. So I have bought a kit from Trevor and will have to get 'around to' building it – some time hi!

But even after the pleasant surprise I wasn't finished with the May issue of *CQ-TV*. Generating a 'test card' or even callsign and locator captions are very easy with computers, but PCs generally don't produce the composite video outputs needed to modulate television transmitters. So, in his long-running and acclaimed *CQ-TV* page 'Circuit Notebook', **John Lawrence GW3JGA** introduced readers to the Emprex Digital Media Box.

John dubs this a 'cracking little box' which will accept SD memory cards and memory sticks with videos, photos or test cards then outputs them as VGA, component video and composite video and sound via phono connectors, so this little box is an obvious source of ATV–ready video, independent of computers.

Several Modifcations

John includes the box in his 'Notebook' because several modifications are needed for ATV portable work. The video output is only 0.6V when terminated in 75Ω and the box needs a 5V supply. So he has designed two video booster amplifiers and a voltage regulator to us a 12V supply. The Emprex is available from various on-line suppliers.

Meanwhile, here in Birmingham the good folks are beginning to realise that they need to 'do something' because their analogue TV transmitter at Sutton Coldfield will be closing down come September. I was recently asked to give a talk to a local club because, in the words of one of the members, "We haven't got a clue!" So, in a 40-slide *PowerPoint* (what else??) presentation, I took them through the basics of analogue TV.

The doors were then locked (hi!) as I took them through the 'science and maths' bit of binary conversion, sampling et al – before explaining the many varieties of set-top box, the connectors, and the high-definition options. Perhaps there was 'too much information' – but they seemed happy at the end!

When the Sutton Coldfield analogue transmitter closes, what's going to happen to the bits? You may remember that, last year, I wrote to the London Science Museum, the National Media Centre in Bradford and to the then Secretary of State for Culture, urging that some analogue television transmission equipment was moved into public display.

Abridged Reply

At the time, I received this (abridged) reply from the Relationships Manager at the Department for Culture, Media and Sport: *"Thank you for your email of 12th August about the preservation of analogue television transmission equipment. I have been asked to reply... we have shared your request with the NMSI and the Museum has provided the response below... The NMSI (which includes the Science Museum in London and the National Media Museum in Bradford) has collected and preserved several items of analogue television transmitter technology over the years... In relation to the digital switch over, NMSI, represented by National Media Museum and Science Museum (London), will be liaising with contacts at Arqiva (the company refitting the national terrestrial transmitter network) to monitor what is available. The suggestions for selected items put forward by Mr Hankins will receive full deliberation".*

I have now emailed the Relationship Manager again - to ask if there has been any progress!

In June's *In Vision* I introduced **Bill Shepherd G0KPR**, who is very familiar with the ATV scene in the Netherlands. Bill is presently in a campervan in Switzerland (after 'phoning me from Ireland – the lad gets about hi!) and he's is working on a report from one of his Dutch contacts. Hopefully that will appear in this column next time!

PW

Radio Spectrum under threat!

As users of the Spectrum, the issue is simple: PLA devices are causing interference and if we don't do something now we might not have a hobby take part in – it's that serious. We have created a Spectrum Defence Fund – not just to fight the PLT issue but other threats as and when they come up.

The Spectrum Defence fund is made up from donations from individuals and organisations with an interest in protecting the Radio Spectrum from noise, interference, and other issues that may affect licensed Amateur Radio Operation and Short Wave Listening. It is used to cover the cost of challenging the regulators of the spectrum (Ofcom, EU etc) over threats to spectrum noise level.

We are looking to our administration (Ofcom) to protect our interests, which it is their statutory duty. There are other challenges ahead and the fund will be used only to protect the Spectrum when and where we need to do so. This is a long term project and all monies donated will be 'ring fenced' for these actions alone.

If every amateur in the UK pledged £10 to the Spectrum Defence Fund we'd probably have enough to fight the cause and so we need your donations (no matter how small) to help us meet the threat.

Please help amateur radio and the radio spectrum by donating to the fund today!

RSGB

Help us protect the future of Amateur Radio

Please donate online at

www.rsgb.org/defencefund

You can also donate by post by sending a cheque payable to 'The Spectrum Defence Fund' and sending it to; Spectrum Defence, RSGB, 3 Abbey Court, Fraser Road, Priory Business Park, Bedford, MK443WH. The 'Spectrum Defence Fund' is a secure and independently audited fund, the proceeds of which will only be used in defence of the radio spectrum.

Spectrum Defence Fund

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Japan to remove Morse requirement from October 1st!

Carl Mason GW0VSW presents his monthly round-up of your activities on the h.f. and has hot news from Japan! All information, news and reports to Carl by the 15th of each please!

Welcome to this month's *HF Highlights* (*HFH*)! And I begin with the news that yet another country is set to remove its Morse test requirement. The Japanese Ministry of Internal Affairs has decided to delete Morse telegraphy testing for its Amateur Radio Class 1 and 2 licences with effect from October 1st, this year after a public consultation that was held earlier in the year.

Surprisingly, only 39 people responded to this consultation and the Ministry then decided to announce that Morse telegraphy testing would be discontinued. You may recall that Japan pioneered the high frequency (h.f.) 'No-Code' Amateur Radio licence Class 4 which is similar to our own Foundation Licence in the 1950s though testing was still a requirement for higher licence classes.

The DX News

On to some DX news now and there should be plenty of IOTA activity around this month if h.f. conditions allow! First the **VK9HR** DXpedition to Lord Howe Island OC-004, a small island in the Tasman Sea east of the Australian mainland, which was originally scheduled to take place in early July has now been postponed for a short time. They will now be active from July 23rd to August 2nd, which will enable the team to participate in this years RSGB IOTA Contest (see **www.rsgbcc.org/hf/rules/2011/riota.shtml)** that always takes place over the last 'full' weekend of July. With several stations operating at the same time there should be a good chance of working them and updates can be found at **www.lordhowe2011.com** while the QSL route is via EB7DX.

Once again **John Abbruscato W5JON** will be active as **V47JA** from St. Kitts NA-104 in the Leeward Islands, West Indies until August 2nd. He will operate s.s.b. on all h.f. bands, while his wife **Cathy W5HAM** will occasionally operate as **V47HAM.** Please QSL via W5JON.

Others calls active in this year's contest include **Paul De Witte K9OT** and **Peg Haese KB9LIE** who will be in the North Atlantic Ocean and operate as **FP/K9OT** from Miquelon Island NA-032 from July 21st to August 4th. They'll be using both c.w. and s.s.b. on all h.f. bands but plan to concentrate on 7, 10, 14 and 18MHz. Their website is at **www.hamradio.pnpfarms.com** and you can QSL via the home call direct or via the bureau and Log Book of The World (LoTW).

On to Ascension Island AF-003, it's an isolated volcanic island in the equatorial waters of the South Atlantic Ocean. Here **Gerd Sapper DJ4KW**, **Werner Hasemann DJ9KH**, **Wolf-Erich Rose DK1IP**, **Arno Polinsky DL1CW** and **Rainer Hellmann DL7OR** will be active operating **ZD8D** from July 24th to August 9th. The group plan to operate using two stations on all h.f. bands with both c.w. and digital modes and possibly some s.s.b. You can QSL via DL9HO and their website **www.zd8d.de** will have all the latest details.

Santa Rosa Island NA-142 is part of the Channel Islands National Park and is located about 26 miles (42 km) off the coast of Santa Barbara, California. It's from here that **Swen 'Rick' Friedrichsmeier DF2MM** will be active as **W4/DF2MM** between July 18th and August 25th operating 'holiday style' on most h.f. bands QSL via the home call either direct or through the bureau.

Finally, permission has been given by the US Fish and Wildlife Service for **Yuri Sushkin N3QQ** and other Russian Robinson Club members to operate as **KL7RRC** from St. Matthew Island NA-232 and activate a new IOTA between July 19th and August 5th. The DXpedition will be dependent on the local weather and finding suitable transport. St. Matthew is a remote island in the Bering Sea in Alaska and the 43rd largest island in the United States. Its most southerly point, Cape Upright, features cliff faces that exceed well over 300m (1000ft).

In the 1940s the United States Coast Guard maintained a manned LORAN station on the island and in 1944 29 reindeer were introduced by the Coast Guard to provide an emergency food source. The station was abandoned a few years later but the reindeer remained. The population gradually rose to about 6,000 in 1963 and then died off over the next two years leaving just 43.

Scientific studies have since shown the population crash was down to the limited food supply and extreme weather conditions particularly the winter of 1963-64 which was exceptionally severe for the region. The entire island's natural scenery and wildlife is now protected as part of the Bering Sea unit of the Alaska Maritime National Wildlife Refuge. A QSL will be available via UA9OBA and N7RO but check **www.na-234.com/** for the latest updates.

Your Reports

On to our first log now which is from **Eric Masters G0KRT** in Worcester Park, Surrey who used his Kenwood TS-570 at 100W to a modified home brew W3EDP antenna 26m (84ft) long with counterpoises tuned with an SGC-230 to work IZ8SW (Italy) with c.w. at 1920. Then he tried 7MHz where he worked DL2BDM/M (Germany) 1924 and PA0WDZ/P was logged at 1937 using s.s.b. Moving to 10MHz Eric tried QRP and with 5W managed DJ3XD (Germany) 1800, LY2PX (Lithuania) 1820 and EA6/DJ5AA (Balearic Islands) EU-004 at 2000UTC.

Also on this band was **George Davis G3ICO** in Yeovil, Somerset who logged HA50HH (Hungary) 0737, YO8BDQ (Romania) 1545 and SQ0MORSE (Poland) with a special call marking the 220th anniversary of the birth of Samuel Morse (QSL via SP1PBW). George was using a Elecraft K2 at 5W to a 40m long doublet antenna.

In Scotland **Jim Pedley GM7TUD** in Locharbriggs, Dumfries took the opportunity to air the 'R' prefix and as GR7TUD was in good demand. He logged many stations including EG5CI (Spain) 0650, 5M2TT (Liberia) 0653 QSL via I2YSB and J5UAP (Guinea-Bissau) 0703UTC (QSL via HA3AUI). Jim was using a Kenwood TS-590 with 100W and Cushcraft D3W rotatable dipole.

Meanwhile, **Roy Walker 2R1RAF/ GR0TAK** in Kendal, Cumbria also had fun using the Royal Wedding prefix and logged nearly 200 calls running 50W c.w. These included DL0IS (Germany) 0834, SM6AQR (Sweden) 0846, OK5JM (Czech republic) 0854, SP6LK (Poland) 0929, OH1NDA (Finland) 0941, LA1FH (Norway) 0952, F6GUF (France) 1849, RU4SO (European Russia) 1855, HB9CIC (Switzerland) 1911, LZ1ZJ (Bulgaria) and II0SQJ (Italy) 2035UTC.

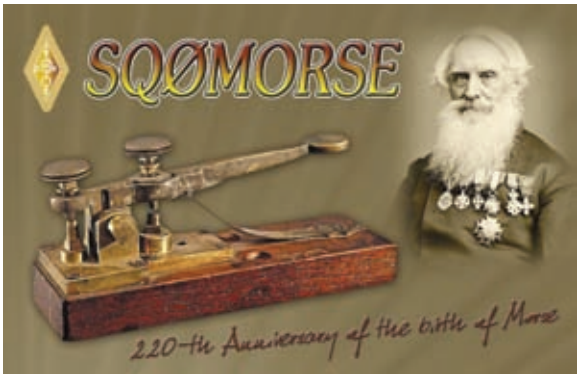
In Scotland, Jim Pedley GM7TUD took the opportunity to air the 'R' prefix for the Royal Wedding period.

The 14MHz Band

The 14MHz band provided **Martyn Medcalf M3VAM** in Chelmsford, Essex with EW4AR (Belarus) 1047, SN2B (Poland) 1051, OH2V (Finland) 1052, ED5K (Spain) 1158, OL9Z (Czech Republic) 1341, S52OCC (Slovenia) 1354, LY2IA (Lithuania) 1359, 9A3B (Croatia) 1443, LZ5K (Bulgaria) 1506. Martyn was using a Yaesu FT-897, with 10W s.s.b. and Comet CHA-250BX Vertical antenna.

Operating the special event station **GB5RST** at Rockbeare Shutter Telegraph in Devon was **John Wakefield M0XIG** who found both the weather and band conditions "good". He made over 1000 QSOs using computer logging (DX4WIN) and a Heil headset to keep his hands free. For this operation John changed the Comet H-422 dipole for a Butternut HF6V vertical with 60 10m long radials, together with a WA2NAN True Talk G5RV in an East/ West direction was pleased with the results.

The QSL card for a contact with special call RK50G (European Russia) sent to Tom G0HUT.



A QSL from SQ0MORSE (Poland), a special call marking the 220th anniversary of the birth of Samuel Morse.

A QSl from the special event station GB5RST at Rockbeare Shutter Telegraph in Devon.

The rig was a FT-1000MP MkV with an ACOM 1000 amplifier and running an average of 200W voice contacts included HZ1GW (Saudi Arabia) 0647, TK5NC (Corsica) EU-014 at 0759 and ZL1ALA (New Zealand) North Island OC-036 at 0807. Then came VK3ZNA (Australia) OC-001 in Victoria at 0813, CN8QN Morocco) 0823 QSL via EA7FTR, EA8BGO (Canary Islands) AF-004 at 0849 and ER1CS (Moldova) 0910. Then came 4U1ITU (ITU Geneva) 1012, VE1CHW (Canada) 1027, 8P6HX (Barbados) NA-021 at 1028, TF3ARI (Iceland) EU-021 at 1255, W1IZQ (USA) Harold Hayman (G3IZQ) in Acton, Massachusetts at 1805. Finally, he worked YB6NE (Indonesia) OC-143 at 1845 and RA2FAC (Kaliningrad) at 1910UTC.

In Farnborough, Hampshire **Tom Hutton G0HUT** was pleased to receive a QSL card for a contact with special call RK5G (European Russia) in March at 1307 using s.s.b. It marked 50 years since Yuri Gagarin's first space flight and he also received one from II3SOM (Italy) at 1633 for a digital contact using PSK31.

Steve Wellon M0SAS in Worcester received cards for QSOs with Japan using PSK31 including JA2DXB and JA2GSD. He was running a Yaesu FT-857D at 20W to a Mydal SB-2000 interface and a Cushcraft MA5B mini beam antenna.

In Bath, in Somerset **Steve Hartley G0FUW** has been enjoying some low power operating and spent an interesting month working the **Club 72** QRP Marathon. This took place in April and Steve comments, "It's a kind of contest in slow motion with just one contact a day being logged for each day in the month. You can operate for as long as you like on any h.f. band, using c.w., 'phone or Digital Data modes with a scoring system that gives you points per kilometre with adjustments for the power used at each end of the QSO.

"The lower the combined power the more you score. Although there were over 30 stations registered to participate – only two from the UK took part (**Dave Sergeant G3YMC** and myself). I managed a QSO every day using my FT-817 and Cobweb dipole and racked up enough points to make it into the top ten. Stations in some 15 countries were worked and all but one was 2-way QRP. Most days I was running 3W but later wound the power back to 1W and even had my first two-way QRPp contact using 500mW while LZ2RS was running 250mW.

"The highlight was working VK6ANC at around 0700UTC with just 3W of s.s.b. while he was running considerably more power at 400W to a Yagi!" Club 72 was founded by Oleg Borodin RV3GM and is a QRP Club devoted to promotion of Small Power Amateur Radio Communication around the World. To become a member you must show that you are an active QRPer and participate in club events. It is not often a new code is introduced into amateur radio so Oleg RV3GM suggested that QRP operators adopt the new code '72' to mean "Wishing you Good QRP". You can find more information on Club 72 and the next marathon at **www.club72.su/index.html** Why not take a look and join in!" Thanks for that Steve and '72' to you!

Also on the band was **Bill Ward 2E0BWX** in Edwinstowe, Nottinghamshire who logged OE1RKS (Austria) at 0955UTC running JT65HF at 10W from an Icom IC-7400 and a 'new' Pro Whip antenna which he is very pleased with. Check out **www.prowhipantennas.co.uk/** for further details on this and other antennas.

Steve M0SAS received these cards from JA2DXB and JA2GSD for QSOs using PSK31 on the 14MHz band.

The 18 & 21MHz Bands

The 18MHz band provided George G3ICO with c.w. stations ZA/LZ1UQ (Albania) 1102, 3V8SS (Tunisia) 1435, JA0FVU (Japan) 1907, 9M2CNC (West Malaysia) 1947 and FM5LD (Martinique) NA-107 at 1957UTC. Roy GR0TAK worked II0GXQ (Italy) 0914 and later DJ5IL (Germany) 1456 and UT4B (Ukraine) at 1505UTC.

For Jim GR7TUD the 21MHz band had some great conditions for a time as he logged s.s.b. stations VK4LDX/P (Australia) OC-171 at 0655, E52CG (South Cook Islands) OC-013 at 0702, ZL50VK (New Zealand) 0815 celebrating the 50th year of the Papakura Radio Club. Then came 3D2IR (Fiji) 0818 QSL via EA1IR, WH7Z (Hawaii) OC-019 at 0822, P29VCX (Papua New Guinea) OC-034 at 1619 (c.w.). Then came T88KR (Palau) OC-009 at 1900 and 5M2TT (Liberia) at 1915UTC.

In Devon John GB5RST had a large number of s.s.b. contacts in the log and was pleased to work VA2TG (Canada) 1446, YF8RIM (Indonesia) 1448, PY2POL (Brazil) 1526.He then logged OD5TE (Lebanon) 1533, 4Z5PI (Israel) 1803, LU7DMP (Argentina) 1837, 9H1KZ (Malta) EU-023 at 1844 and TA3EU (Turkey) at 1956UTC.

The 24 & 28MHz Bands

On to 24MHz next and to Bill 2E0BWX who tried PSK31 at 25W to work HA1DRA (Hungary) at 0915 while best DX for Eric G0KRT was 5B4AHL (Cyprus) AS-004 at 0805 and later JY6ZZ (Jordan) 1451. Then came A92TO (Bahrain) AS-002 at 1455 and ZS6JPY (South Africa) at 1540. Then 28MHz opened for a time allowing 4X6DK (Israel) 1349 and OK1AQW (Czech Republic) 1547 to enter the log – all achieved with 100W s.s.b.

Signing Off

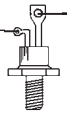
Well that's it for this month and a busy one it has been judging by all the logbooks received. Please remember to include as much information as possible when you send in a report particularly the equipment you have used and the times/modes and antennas used for all the contacts. It helps to give a better idea what band was worked with what and when! As usual my thanks go to **Maurio Pregliasco I1JQJ/KB2TJM** editor of the ***425 DX Newsletter*** for all the DX information and to all our reporters for their logs. Until next month I wish you all good DX. 73 and 72 from Carl GW0VSW. **PW**

Tom G0HUT was also on 14MHz PSK31 to have the QSO that gained him this card from II3SOM.

If you're lucky enough to contact Aldemir Ventura PY4ZT in Brazil, this is a QSL card you might receive.

J. BIRKETT

ELECTRONIC COMPONENTS SUPPLIERS



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Alinco	DJ-X30E	100kHz-1300MHz AM, FM, WFM Hand Held Receiver 1000Ch.	£129
Alinco	DJ-191E	2m FM H/Held Transceiver + CTCSS & DTMF keypad	£119
Icom	IC-R3	0.5-2450MHz AM,FM,WFM Hand Held Receiver 450Ch. + 2" TFT colour TV	£269
Icom	IC-756 pro III	HF + 6m All Mode Base Transceiver + ATU, DSP & Gen.Cov. 12V	£1,590
Icom	IC-910HX	2m,70cm & 23cm All Mode Base Transceiver 100W, 75W 12V inc UX-910	£1,079
Revex	W-520	1.8-200MHZ SWR,PWR meter 200W	£45
Bencher	ST-1	Bencher Chrome Single Paddle on a Black metal base	£79
Welz	SP-300	1.8-500MHz 1kW (max) SWR/PWR meter + 3 sensors	£89
Kent	KTPA	Brass Twin Paddle Morse Key on Heavy Metal Base	£69
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Uniden	UBC-92XLT	25-960MHz (with gaps) AM,FM Hand Held Receiver + "CloseCall" 200Ch.	£79
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Roberts	RD-6R	Gemini-6 DAB & FM RDS Desk Radio + Remote & Optical Output 240V AC	£89
Diamond	SX-200	1.8-200MHZ SWR,PWR meter 200W	£69
Kenwood	TH-F7E	2m,70cm FM Palm Held Transceiver + 0.1-1300MHz All Mode RX	£159
Swiftech	M-168	Marine FM Mobile 25W + Dual Watch & scan	£99
AOR	AR-3000	100kHz-2036MHz All Mode Receiver 400Ch. 12V + psu	£299
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Yaesu	FRV-7700 E	118-130, 140-150, 150-160MHz Converter for FRG-7700/8800	£59
President	KP-77	40ch 4w UK CB Base Transceiver mains or 12V DC	£79
Team	Euro-8000	80ch 4w UK/CEPT CB Base Station 12V or mains	£99
Zetagi	B300P	20-30MHz 10W in-200W out (300W SSB) Amplifier + Pre-Amp	£89

RADIOWORLD

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Kenwood TS-2000 HF, 6m , 2m & 70cm Transceiver	£1,199.00
Icom IC-R8500 Receiver	£1,099.00
EXPLORER 1200 Linear Amp UK 1200W HF Linear Amplifie	£975.00
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Yaesu FT-450D HF/6m transceiver	£675.00
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AOR AR-7030	£550.00
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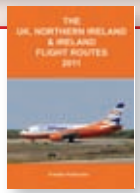

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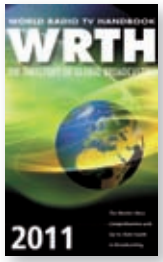

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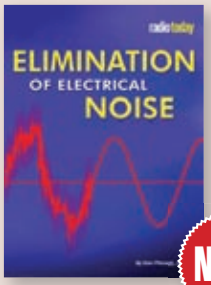

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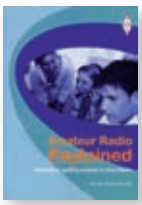

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Written by well-known author and radio amateur Ian Poole, G3YWX, this book provides the ideal introduction to the wonderful world of amateur radio. Amateur Radio Explained is for people first taking an interest in amateur radio and those ready to move on from Foundation level. Written in a readable and easy-to-understand fashion, Amateur Radio Explained is the perfect introduction to the exciting world of amateur radio. 80 pages.

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AIR TRAFFIC CONTROL HANDBOOK

The complete guide for all aviation and air band enthusiasts.
This is a reincarnation of the Air Band Radio Handbook, an essential reference book first published over 20 years ago and a strong seller throughout its eight editions. The new title reflects not just the extent of overhaul and updating that has occurred for this new version, but also the fact that a larger proportion of the audience these days comprises air traffic controllers themselves (both trainees and fully qualified) as well as the traditional air band listening enthusiast. The expert author's accessible and comprehensive text explains the intricacies of air traffic control and its jargon, enabling the reader to locate and interpret what is actually going on in the airways overhead.

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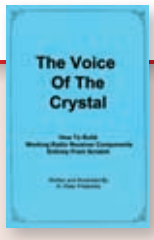

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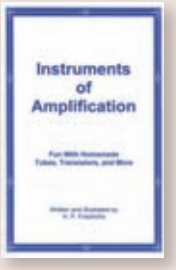

INSTRUMENTS OF AMPLIFICATION

Rob Mannion G3XFD writes: Peter Friedrichs has written a truly superb book but has chosen a title that really hides its 'light' under the proverbial bushel! Armed with the book an interested constructor can literally build a radio from scratch anywhere! Perhaps a better title could have been Desert Island Radio for the Shipwrecked because everything from simple earphones, detectors and mechanical amplifier to home made valves (tubes) and transistors. If you enjoy Rough Science on BBC2 you'll love this book! **Very highly recommended**.

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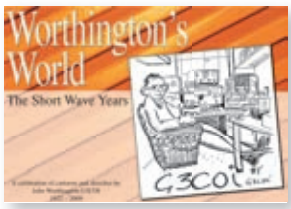

WORTHINGTON'S WORLD
The short wave years

An amazingly apposite tribute to a wonderfully zany cartoonist that are presented in categories that blend together like a silky chocolate cake mix (John G3COI loved an old fashioned chocolate cake!). Chuckle away – you'll find old favourites and cartoons you missed!

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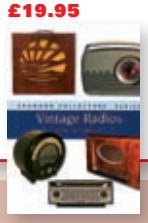

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Rob Mannion G3XFD/EI5IW's

Topical Talk

The Editor comments on topics raised by readers in this month's letters pages. He also reacts to a letter from Gordon Hunter G8WWD with a suggestion for everyone!

Gordon Hunter G8WWD – who lives in Upton on the Wirrall Peninsula, in north west England, is a friend and regular correspondent. In fact I think Gordon represents the typical *PW* reader as he's dedicated to our hobby and supports his local club. But I was quite intrigued and surprised with his most recent E-mail!

In Gordon G8WWD's latest letter (*Letters* this month) he offers a challenge to all of us – suggesting that we honour our Radio Amateur friends before they die! His letter has been prompted because of the never-ending list of tributes, appearing in *PW,* to Radio Amateurs and others who are closely linked to our hobby.

I make no apologies for the regular appearance of Obituaries in the news pages – and occasionally in my *Keylines* pages – because I've emulated the Editorial policy of the *Daily Telegraph* (*DT*) by making such tributes available to everyone. I've admired the editorial policy of the *DT* for many years because people from all walks of life – from roadsweepers to test pilots and from teachers to surgeons – have been honoured in their Obituary pages.

I've permitted obituaries whenever possible – because I don't think there's any other Amateur Radio publication where people who have achieved much (often quietly working away in the background and rarely in the headlines) can be remembered in detail. They could be Club's Instructors,Treasurers, or have been dedicated in many other ways.

In fact, I'm sure my Editorial policy reflects the general 'atmosphere' that I try to instill in the pages of *PW* – making it a magazine for Amateur Radio hobbyists of all technical levels. Our readers may work in farming (I know several readers who have mobile equipment in their tractors) – in electronics, some form of Engineering – or a huge list of other jobs, vocations and professions that would be too long to list here!

However, having explained my policy, I find myself in full agreement with my friend Gordon G8WWD. In his letter he states, "Surely we should pay tribute to these people **before they die?**" Of course, Gordon is right and what a pity it is that we don't do as he suggests!

In my defence, I must remind readers that I introduced the series *Amateur Radio Personality* in *PW* – to do just as Gordon suggests. Unfortunately, with some notable exceptions very few people responded to my request that they should feature in the feature.

Interestingly – I approached a large number of people in the hobby – the majority who politely refused told me that, "My life has been, and remains, very ordinary and I haven't achieved much!" Of course, I couldn't agree! It's also worth mentioning that everyone who did (in some case very reluctantly) agree to appear in the Amateur Radio Personality feature also told me that they wondered what had lead them to be invited to take part!

Ever anxious to ensure that *PW* serves our readers and the hobby in the best way possible – I ask individual readers to highlight the history of their own Amateur Radio Personality – while they're still with us! Why not do (as **Phil Cadman G4JCP** has suggested) and record the voices of your friends 'for posterity' and then, with their help, you could write an article about them for *PW*? I'm sure that there are many of our our friends who fit into the category – so please get busy!

Club Trainees Lost?

From the feedback I've been receiving – it does seem that most readers who have contacted me regarding Foundation Licence trainees – have lost contact with most of their successful candidates.

As I mentioned in the July *PW*, the 'loss' of Foundation Licence holders by the clubs that trained them – took me by surprise when the topic was raised during the Question & Answer' session at a well attended *PW* Club talk. It's certainly not the case at my own club – where we have a good number of members who've ventured onwards from Foundation to the Intermediate and Advanced Licence.

So, how does your club fare in the Intermediate and Advanced Licence training stakes? If you are 'bucking the trend', with candidates progressing on to the Intermediate and Advanced exams – why do you think your club so successful? I look forward to your comments!

Rob Mannion G3XFD/EI5IW

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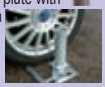

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