

Practical

WIRELESS

Britain's Best Selling Amateur Radio Magazine

Polish Amateur Radio

Henry Kotowski SM0JHF's brief history of the hobby in his Polish homeland

Radio Personality

Martin Jue - Founder of MFJ in the USA chats to the Editor

In Focus

Takes a look at the Vintage and Military Radio Society VMARS

What Next

Colin G6MXL discusses choosing a suitable transceiver



Build The Knapp
A specialised receiver by
Tim Walford G3PCJ

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New Hockley D-Star Repeater GB7SS! Rx 439.8625 Tx 433.2625

Watson Wireless Weather Station

NEW

W-8681



- * No Cable Connection Required
- * LCD Touch Screen
- * Atomic Locked Date & Time
- * Indoor / Outdoor Temp.
- * Wind Speed & Direction
- * Rain Gauge
- * Indoor / Outdoor Humidity
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- * USB Connection to PC
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Hundreds In Use - Simple To Install

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FT-450

NEW



160m - 6m 100W
SSB CW AM FM
IF DSP
Voice Memories
23 x 8.4 x 22 cm



Also get voice recorder and announcer!

W&S £529 D

Deal: Get FREE Extra DC Lead! Exclusive to PW Readers - Request when ordering

FT-450AT with Built-In ATU £609 C

FT-950

NEW



100W
160 - 6m

W&S £999 D

DSP filtering, incorporating features such as Variable Bandwidth, IF Shift, and Passband Contour tuning. Digital Noise Reduction and Digital Auto-Notch Filtering. On transmit you get a three-band graphic equaliser and the ability to change the transmit SSB pass-band. There are plenty of other features which you will get from the Internet. What you won't get elsewhere is our offer to PW readers!

Deal: Get FREE W-25XM power supply worth £99 when you buy FT-950 from W&S. Offer to PW readers only at time of order.

These Yaesu offers expire 31/3/08

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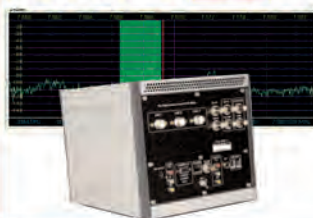
FLEX-5000A

NEW

HF Transceiver 100W 160m-6m

FlexRadio Systems

Software Defined Radios



Performance Packed Radio!

This new software transceiver brings you performance and features no other radio in the world can offer!

SSB CW AM FM from milliwatts to 100W. 105dB dynamic range at 2kHz! 33dB intercept point. Single Firewire cable to PC. No sound card needed. 24 bit sampling at 192kHz, TCXO 0.5ppm ref. xtal. True plug and play with PC or laptop. Self-test and calibrate. Many contest & DXing features - **W&S**
www.flex-radio.com

Optional Internal Auto ATU **£225**

£1695 D

Avair Power Meters

AV-201

Ideal for HF and VHF operation. It features high power handling up to 1kW.
 * 1.8-160MHz * 5W, 20W, 200W, 1kW * Av or PEP



£49.95 C

AV-400

140 - 525MHz, 5W, 20W, 200W, 400W

£49.95 C

AV-601

1.8 - 160MHz(S1), 140-525MHz(S2)

£69.95 C

Get Ready For D-Star (first repeater at Herne Bay)
Log on to GB7WW repeater at Hockley

ICOM IC-E2820

This dual band mobile offers D-Star facilities with digital speech as well as normal FM at 50W



IC-E2820 Mobile FM £379 C

IC-E2820 with D-Star £519 C

PW customers can claim an extra DC lead when ordering!

IC-E91

Fitted with D-Star

£349.95 C



D-Star Repeater - Low cost subsidised Icom repeater available to clubs when purchasing D-Star Radios from us. Phone for details.

FT-2000



1.8-30MHz +6m 100W

£1695 D

FT-2000D 200W

£2399 D

FT-897D



*HF + 6m, 2m, 70cm
 *CW, SSB, AM, FMN, FMW, PACKET, DIGITAL
 *HF/6m 100W, 2m 50W, 70cm 20W



W&S £579 D

Deal: FREE DELIVERY

FT-857D



*Tx: 160-6m(100W), 2m(50W), 70cm(20W)
 *USB, LSB, CW, AM, FM (WFM Receive)

New Low Price!

W&S £449 D

FT-DX9000D



FT-DX9000D £7,299 D

FT-DX9000CONTEST £3,799 D

FT-DX9000MP £8,299 D

FT-817ND



*TX: 160-10m, 6m, 2m, 70cm
 *USB, LSB, CW, AM, FM, WFM, Digital (AFSK), Packet (1200/9600 FM)



Deal: bhi DSP fitted £449

W&S £349 D

TM-V71E

NEW

KENWOOD

EchoLink Memories & NODE Terminal
 50W on 2m & 70cms!



W&S £269 D

FTM-10R/E

NEW



Bluetooth

W&S £249 D

New 2m/70cm Mobile with Bluetooth option
 *50W 2m 40W 70cms
 *Removeable front
 *Built-in PTT & Microphone!
 *Size: 11 x 3.7 x 17 cm

Deal: FTM-10E with Bluetooth Adaptor (BU-1), Headset (BH-1) & Charger (CAB-1) Total List Price £382 Offer Price £279.95 D

IC-7700

NEW

ICOM



*160m-6m *200W *SSB CW AM FM *+40dBm Intercept *7" Colour TFT Spectrum Scope

Billed as a Contest Radio, the design takes features from the IC-758 & IC-7800 to give you a transceiver packed with features. Available February.

Deal: NC-4 Headphones FREE

£3999

IC-7800

Icom's greatest HF transceiver ever. Invest in the best! 200W HF Built-in PSU



Deal: SP-120 Filter Spkr FREE

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Banish Switch Mode Noise!

Meet the New Power Mite NF



£59.95 C

22 Amps of continuous power output with variable voltage plus the new Noise Offset Function (NF). This allows you to move any noise spikes out of the ham band with the front panel tuning control.

Banish Switch Mode Noise!

Meet the New Power Max NF



£89.95 C

This very compact base station supply delivers 22 Amps of continuous power with the new Noise Offset Function (NF) that moves noise out of the band. Includes cigar socket.

TS-2000



- *100W All-mode
- *160m - 70cms
- *Duplex operation
- *Satellite ready
- *DX cluster QSY

The TS-2000 offers all-band coverage in one very neat & effective high performance system. This is one of the best buys in ham radio. Add our W-25AM 13.8v supply (£89.95) and you are ready to go.

Deal: FREE Extra DC Lead (Quote advert when ordering)

W&S
£1295 D

TS-2000X with 23cms

£1599 C

KENWOOD



IC-756PROIII

ICOM



HF + 6m
100W
All-Mode

W&S £1749 D

IC-756PROIII Special Deal

- IC-756 Pro III
- + SM-20 Desk Mic
- + NC-2 Noise cancelling 'phones
- + W-25AM power supply
- + Spare DC lead

Only £1829 D

IC-7000

ICOM



HF/VHF/UHF
All-Mode
Transceiver

W&S £899 D

Deal2: With TFT PAL TV Screen £989

Deal3: With TFT + Power-Mite PSU £1009

IC-7400

ICOM

HF - 70cms 100W transceiver plus SP-21 spkr and SM-20 mic

£1295

IC-718 HF 100W transceiver

£439

IC-706IIGDSP

ICOM



HF/VHF/UHF
100W
Transceiver

Deal: IC-706 + New Power-Mite-NF FREE

W&S £649

IC-703DSP

ICOM



10W QRP
HF-6m built-in
Auto ATU + DSP

W&S £449.95 D

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Keyboard
For FT-817,
FT-857 & FT-897



- Rig not included!
- * Direct frequency entry
- * Mode change
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Speaker and
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Offers dramatic noise
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"Noise Away" Amplified
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Fits in-line between the
equipment & speaker.

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NEIM-1031

Noise Eliminating
In-Line Module.



£139.95 C

NEDSP-1061-KBD

Noise Eliminating DSP module designed
for retro-fit in a number of transceivers,
FT-817, TS-50, IC-
706MkIIIG, FRG-100,
DX-77. With Keyboard.



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NEDSP-1062-KBD

Noise Eliminating DSP module
simply fits into Loudspeaker
path, features a small
keyboard to control
functions.



£104.95 C

Icom
VHF/UHF Mobile/Base

IC-E208

Dual Band FM Mobile
*144-146MHz, 430-
440MHz Tx *55/50W (3 pwr steps each
band) *Wideband Rx 118-173,
230-549 & 810-999MHz



£219.95 D

IC-910H

2m/70cm 100W Base station all-modes
Option for 23cm module (UX-910 £359)

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IC-910HX

As Above but with 23cm Module ready
fitted and a big saving as well.

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IC-2200H

2m 55W FM mobile with rugged
construction and with digital option.

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IC-2725E

2m/70cm radio. Easy to operate and
install and a lovely detachable head.

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Kenwood
VHF/UHF Mobiles/Base

TM-271E

2m FM 60W Mobile
Transceiver. MIL-SPEC
DTMF Mic. Built-in
CTCSS & DCS
encoder / decoder.



£149 D

TM-D710E Low Price

£399 C

Dual band APRS 50W FM

Yaesu
VHF/UHF Mobiles/Base

FT-7800E

*2m/70cm Dual Band
Mobile *High power
50W 2m /40W 70cms
*Wide receive inc. civil & military airband
*CTCSS & DCS with direct
keypad mic. *1000 memories



£169 D

FT-1802E Low Price!

£99 D

*2m FM Mobile transceiver *5,10,25,50W

FT-8800E Low Price!

£219 D

*2m/70cm Dualband FM Mobile transceiver

FT-8900R Low Price!

£249 D

*2m/70cm/6m/10m Quadband FM Mobile

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Programming Software For Your Radio
Programme Memories and all your radio's
functions from your PC. Includes Windows
software and serial lead with adaptor for your Radio.

ADMS-1 F for VX-110/150 / ADMS-1G for VX-7

ADMS-1H for VX-2E / ADMS-1J for FT-60E

ADMS-2H for FT-8900 / ADMS-2I for FT-8800

ADMS-2J for FT-2800 / ADMS-2K for FT-7800

ADMS-3 Programming Kit for VR-500

ALL £39.95 with FREE PC Radio Data Lead.

ADMS-4A for FT-817 & ADMS-4B for

FT-857/8 BOTH £29.95 both these items require

a separate CT-62 lead at £29.95

Watson
Power Supplies



W-25AM
Output 25A, 0-15V DC.
Dual meters

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Check Website for Spec

W-3A

Output 3A, 13.8V DC, supply 230V AC

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W-5A

Output 5A, 13.8V DC, supply 230V AC

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W-10AM

Output 10A, 0-15V DC, supply 230V AC

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W-25XM

Output 25A, 9.7-17V DC, Dual meters

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Output 30A, 0-15V DC, Dual meters

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Icom
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IC-E91

D-Star Ready

Latest dual-band handheld
transceiver. receiver that covers
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with D-Star

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7W 2m Digital

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70cms Digital

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6m/2m/70cm

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IC-T3H

2m 5W

£129.95 C

IC-E7

2m/70cm Wide Rx

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Kenwood
VHF/UHF Handhelds

TH-F7E

* 144-146MHz Tx/Rx: FM
* 430-440MHz Tx/Rx: FM
Up to 6V out with Li-ion
battery and "scanner" style
coverage from 100kHz to
1300MHz including
SSB on receive!



£199.95 C

TH-K2E

2m 5W

£99 C

TH-K2ET

2m 5W FM

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TH-K4E

79cm 5W FM

£139 C

Yaesu
VHF/UHF Handhelds

VX-7R (Black)

Limited Special Offer

Totally waterproof, Wide
frequency coverage
500kHz-900MHz AM/FM.

£209 C



VX-6E

2m/70cm wide rx 5W

£169 C

FT-60E

2m/70cm wide rx 5W

£129 C

VX-120

2m 5W w/8-key pad

£99 C

VX-170

2m 5W w/16-key pad

£109 C

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



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MFJ-269E HF/VHF/UHF ANALYSER

Deal:
Comes complete with set of:-
• 10 x 2.6 Amp NiMH cells
• AC cell Charger
• 12V Cigar cell Charger

- * Frequency Coverage 1.8-4, 4-10, 10-27, 27-70, 70-114, 114-170, 415-450MHz
- * Frequency Counter
- * LCD readout
- * SWR & impedance meters
- * Connectors: N-socket (Ant), BNC (Counter)
- * Supply: AAx10 Cells or ext. 12V DC
- * Size 103 x 173 x 60mm
- * Weight 750g



W&S £239.95 C

MFJ-259B DIGITAL SWR ANALYSER

- * Frequency Coverage 1.8-170MHz
- * Frequency Counter * LCD readout
- * SWR & impedance meters
- * Connectors: SO-239 (Ant), BNC (Count)
- * Supply: AA Cells or ext. 12V DC
- * Size 103 x 173 x 60mm * Weight 750g



W&S £199.95 C

MFJ-260C 300W DUMMY LOADS



MFJ-260C 0-600MHz 300W 50 Ohm SO-239 **£34.95 C**

MFJ-260CN 0-600MHz 300W 50 Ohm 'N' Connection, Size: 180 x 57 x 63mm, Weight 450g **£44.95 C**

MFJ-264 0-650MHz 1.5kW 50 Ohm SO-239 **£59.95 C**

MFJ-264N 0-650MHz 1.5kW 50 Ohm 'N' Connection, Size: 197 x 70 x 75mm, Weight 680g **£69.95 C**

MFJ-265 2.5kW 1.8 - 54MHz VSWR / Power, Can be switched in / out of line **£179.95 C**

MFJ-962D 1.5kW 1.8 - 30MHz ATU

- * Standard 'T' network
- * VSWR meter
- * 0-200/0-2kW
- * 6-way Antenna/load switch
- * Balanced feeder terminals
- * Roller coaster Inductor



W&S £239 C

MFJ-969 300W 1.8 - 54MHz ATU

- * 'T' match network
- * Coax, balanced and end fed ants
- * Built-in dummy load
- * Roller coaster inductor
- * Very accurate Average/ PEP meter
- * 3-way antenna switch



W&S £159 C

MFJ-902 TINY TRAVEL TUNER 1.8 - 30MHz



This Ultra compact tuner covers 3.5-30MHz up to 150W and matches coax or wire. Size: 11.5 x 5.7 x 5.7cm

W&S £79.95 C

MFJ-904 TINY TRAVEL TUNER 1.8 - 30MHz



The same as the MFJ-902 above but with large cross-needle VSWR/PWR meter.

W&S £99.95 C

MFJ-941E 1.8-30MHz ANTENNA TUNER

- * 300W
- * Cross needle meter
- * VSWR & 30/300W pwr meter
- * Size 260x180x70mm
- * Weight 1.6kg



W&S £99.95 D

MFJ-945E 1.8-54MHz MOBILE ATU

- * 300W max
- * Cross needle meter
- * VSWR & 30/300W power meter
- * Size 210 x 150 x 60mm
- * Weight 865g



W&S £99.95 C

MFJ-976 BALANCED LINE ATU

- * 1.8MHz - 30MHz * 1500W PEP
- * Matches 600 Ohm open wire, 450, 300 Ohm ladder lines, 300/72 Ohm twin, coax & random wires
- * Size 310x180x410mm
- * Weight 4kg



W&S £389.95 D

MFJ-921 2m VHF AUTO ATU 200W



W&S £79.95 C

MFJ-924 70cms UHF AUTO ATU 200W



W&S £79.95 C

MFJ-834 RF CURRENT METER 1.8-30MHz



- * Current: 0.3A, 1A, 3A
- * Sockets: SO-239
- * Calibrated RF ammeter (3in meter)
- * Size: 140 x 86 x 79mm
- * Weight: 425g

W&S £59.95 C

MFJ-853 CLAMP-ON RF CURRENT METER

Clamp-on RF current meter allows you to accurately measure RF current in antenna elements, ground wires and coax shields. Ferrite clamp opens up enabling you to slip over wire or coax to be measured without undoing the connections. **W&S £49.95 C**



MFJ-936B INDOOR TRANSMIT LOOP ANTENNA

- * Power rating 150W
- * Internal VSWR/PWR meter
- * 40m - 6m
- * Int Antenna current meter
- * Carry handle
- * No power supply
- * Size 260 x 240 x 134mm
- * Weight 1.6kg



W&S £209.95 C

This system has been developed by MFJ for indoor use. Our director, G3OJV, has worked VK and W stations on SSB from indoors. It also offers a very good immunity to noise. Either purchase the optional loop kits or make your own. The square wire loop needs sides approx. 1/16th wave length for lowest band ie. total wire length = 1/4 wave.

Loop Kits (self supporting on top of MFJ-936B)

MFJ-57B PVC cross & wire for 20/15m loop **£29.95**

MFJ-58B Kit for 20/15, 30/40 & 17/10m **£44.95**

Phone for details of mini loop tuners from £119

MFJ-1704 4-WAY COAX SWITCH



- * 4-way
- * Connectors SO-239 / N
- * Power 2.5kW
- * Range DC - >500MHz
- * Isolation 60dB at 30MHz, 50dB at 500MHz

W&S £59.95 C

MFJ-704 LOW PASS FILTER



- * 1.8-30MHz 1kW max
- * Less than 0.5dB loss
- * SO-239 Sockets

W&S £45.95 C

MFJ-948 1.8-30MHz ANTENNA TUNER

- * 300W
- * Large cross needle meter
- * 30/300W PEP power meter
- * Size 260 x 190 x 83mm
- * Weight 1.65kg



W&S £109.95 C

MFJ-949E 1.8-30MHz ATU / DUMMY LOAD

- * 300W
- * Large cross needle meter
- * 30/300W PEP power meter
- * Size 260 x 190 x 83mm
- * Weight 1.8kg



W&S £119.95 C

MFJ-901B 1.8-30MHz "VERSA TUNER"



- * 200W rating
- * Size 135 x 150 x 60mm
- * Weight 760g

W&S £74.95 C

MFJ AUTO ATUS Special Feb. Deals

MFJ-929 AUTO TUNER 1.8 - 30MHz 200W



LCD readout, 20,000 memories, long wire & coax, radio interface.

W&S £169.95 C

MFJ-925 AUTO TUNER 1.8 - 30MHz 200W

The new ultra small auto atu that sits snugly with IC-706, FT-857, IC-7000 etc. Use with coax or wire. Great for mobile or base station use. **W&S £139.95 C**



MFJ-991B AUTO ATU 1.8-30MHz

- * Frequency: 1.8-30MHz
- * 150W SSB, 100W CW
- * Matches 6 - 3200 Ohms
- * Cross needle SWR/PWR meter



W&S £159.95 C

MFJ-993B AUTO ATU 1.8-30MHz

- * Frequency: 1.8-30MHz
- * 300W SSB, 150W CW
- * Matches 6 - 1600 Ohms
- * Cross needle SWR/PWR



W&S £179.95 C

MFJ-994B AUTO ATU 1.8-30MHz

- * Frequency: 1.8-30MHz
- * 600W SSB, 300W CW
- * Matches 6 - 800 Ohms
- * Cross needle SWR/PWR meter



W&S £259.95 C

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



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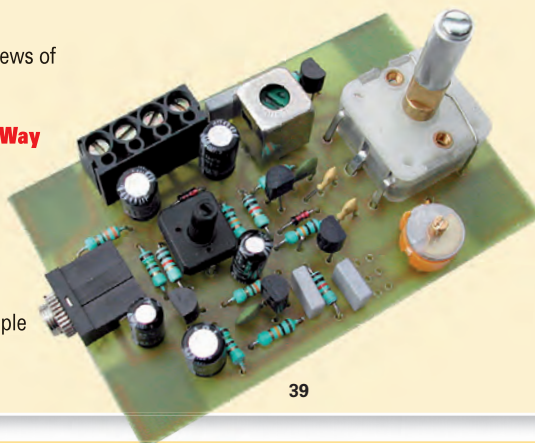
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Rob Mannion G3XFD comments on feedback from readers on the recently-introduced articles – and suggestions for the future.



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Rob Mannion's

keylines

Rob thanks everyone involved with GB75PW and pays tribute to Pat Hawker G3VA.

Saturday 29th December 2007 saw the very last airing of GB75PW, the Special Event callsign issued to help celebrate the 75th anniversary of *PW*. It took place from the **Poole Amateur Radio Society's** headquarters in Creekmoor, Poole, only a mile or so from the editorial offices.

It was appropriate that the final session was held at the Poole Club because we started operations from there in March of last year and operated over many months, except October and November when we aired the callsign from Scotland (**Kilmarnock & Loudon ARC**) and Northern Ireland (**Foyle & District ARC**) - with the Welsh operations having been held in August at the **Barry ARC**.

Although GB75PW and G3XFD were heartily welcomed everywhere at all the clubs we operated from - the Poole Club deserve special praise for the amount of support they provided. This included the long term use of their club building, provision of operators and extra equipment so we could also run GB75PW on c.w., PSK31 and also on 50 and 144MHz through the year. We didn't want for anything - nothing was forgotten!

And I pay special tribute to **Dave Mason G3ZPR**, Life President of the Poole club. Without Dave - a real wizard with anything mechanical who can literally make anything for Amateur Radio if given enough time and material!

Finally, I've to acknowledge the extremely valuable support given to GB75PW by **Icom UK Ltd**. The immediate, unquestioning and unconditional long term loan of the Icom IC-756PROIII was extremely generous indeed. The rig performed faultlessly as it was worked very hard during many hundred hours on the air. It's proved so reliable and delightful to use I've decided to buy one myself and I'm going to miss the loan rig when I return it to Icom in late January!

The GB75PW QSL Cards

Now that GB75PW has ceased operating I've started the long task of filling out the QSL cards to return to those who worked us. If you've applied for your GB75PW card direct to the *PW* offices with your own QSL card and the requested s.a.e., you'll get your card very soon. Thank you for waiting patiently!

The QSL cards coming in via the Bureau will be dealt with as they come into the office. Again, I thank you for your cards and

I hope you'll enjoy the special GB75PW QSL card when it arrives.

The Delayed CDROM

Many readers who sent in their £2-50p to apply for the *PW* CDROM callsign data disk have realised that the production and despatch of the disks has been badly delayed. Unfortunately, the delays were beyond our control as the disks could not be manufactured until the essential up-to-date data was made available from the agencies concerned.

As I was writing this edition of Keylines - in mid January 2008 - the CDROMs had just arrived at our Broadstone offices and the process of sending the disks out to readers had just started. However, many readers had become concerned that the disks may have been lost in the post and had either telephoned, E-mailed or written to **Steve Hunt, Tex Swann G1TEX** or myself to check the situation.

I take this opportunity to apologise on behalf of everyone involved and thank readers for contacting us. Everyone I had contact with was very understanding of our problems. I'm grateful for your courtesy and patience and hope that when your CDROM arrives you'll enjoy it!

Pat Hawker G3VA

The February 2008 issue of the **Radio Society of Great Britain's Radio Communications (RadCom)** journal announced that **Pat Hawker MBE G3VA's Technical Topics** series will cease in the April issue after celebrating 50 years in *RadCom* and its predecessor *The Bulletin*. This truly individual and remarkable column will be much missed by Radio Amateurs around the world.

I immediately wrote a personal letter to Pat G3VA, congratulating him on his achievement, although I realised anything I could say would be inadequate. However, in appreciating his remarkable journalism I mentioned that I was 12 years old when the column started in 1958 and I'm now approaching 62! Almost a lifetime of writing - so thanks for your magnificent efforts on our behalf Pat!

Rob Mannion G3XFD/EI5IW

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Components For PW Projects

In general all components used in constructing PW projects are available from a variety of component suppliers. Where special, or difficult to obtain, components are specified, a supplier will be quoted in the article.

Photocopies & Back Issues

We have a selection of back issues, covering the past three years of *PW*. If you are looking for an article or review that you missed first time around, we can help. If we don't have the whole issue we can always supply a photocopy of the article. See the Book Store page for details.

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Technical Help

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



readers' letters

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

Particulars Withheld? - No Thanks!

Dear Rob,

It was good to speak to you recently about the 'Particulars Withheld' problems in the various callbooks, etc. And, as you'll remember from our telephone conversation regarding the problems that you aired in Topical Talk – I want my details to be listed! I seem to remember that my listing disappeared some time ago – probably 10 to 15 years ago when the **Radio Society of Great Britain (RSGB)** had a glitch in their computer system, which lead to a number of Amateurs being listed as 'Particulars Withheld' accidentally.

I eventually telephoned the RSGB to rectify matters, only to find that they aren't responsible for the listings nowadays. So, just how do I get my details back on to the official listings?

I agree with your sentiments that a location could be published and it was interesting to read in your Topical Talk that the RSGB did their best to encourage Amateurs to have a location published in the *Yearbook*, rather than no details at all. As a keen former v.h.f. /u.h.f. operator (I now live in a valley!) I would welcome the location information.

Perhaps, if junk mail is a problem for some people, I could draw your attention to the **Mail Preference Service**, this works really well in the filtering of unwanted rubbish through the mail.

Thank you for a most refreshing magazine, *PW* is always eagerly anticipated each month here at G4MXU!

John Juleff G4MXU
High Wycombe
Buckinghamshire

It was good to talk to you John! I hope that you and others who wish to have their location/address information in the various callsign listings can

Planning Officer's Funny Visit

Dear Rob

Before commenting on your Keylines Editorial in February's issue I would like to say how much I enjoy the articles in *PW*. As I'm a fairly new member in the world of Amateur Radio I found **Colin Redwood G6MXL's** *What Next?* column to be full of useful information. To Colin I ask that he keeps up the good work as I can't wait to read the March article! The *In Focus* series is a good read too, as it's nice to learn about different groups.

Now on to Keylines and a funny story about antennas and planning permission! When I got my licence, with a small budget for equipment, I ended up with a gutter mounted second-hand 2m/6m whip and a old hand-held FT-209) borrowed from my Father **Chris G6JGI**.

I then had a visit from the local council planning officer (a nice chap) to talk to me about an antenna that had been fitted at my QTH without planning permission. After a look around, he realised the complaint he received was about the 2/6m gutter mount on my Landrover!

After commenting – with a smile on his face – he said, "If I didn't have better things to do this would be funny!"

I then removed the antenna to show him and then chatted about the great fun of radio (it doesn't hurt to educate Planning Officers!) he gave me his contact details and we parted in a friendly fashion. I then put the whip back on the Landrover so, I wouldn't run over or lose it.

To my surprise the Planning Officer was walking back – and talking on his mobile 'phone with a look of "Oh for (censor Beep Beep here) sake"! arrives back at our house and starts to laugh.

He said, with a barely controlled, obvious sense of frustration, "You might be amused to know the complainant has called the office saying you put the antenna back up straight after I left you!"

I started laughing too and the Planning Officer left to point out to the complainant that antennas on vehicles don't come under planning permission rules. However, the incident has left me thinking twice about having a base antenna at home – but I enjoy being mobile with my FT-7800 anyway!

Dave Matthews M3NFZ
Oswestry
Shropshire

If this issue was April instead of March Dave, I would have thought your story was a really good April Fool story! Thank goodness we don't have to – at the moment anyway – get planning permission for vehicle antennas!
Rob G3XFD.

soon change the situation. Readers wishing to contact Ofcom to update their details can do so via their website www.ofcom.org.uk/ and the **Ofcom Licensing Centre** number is **0300-123100**.
The Mailing Preference Service (MPS)

address is **DMA House,**
70 Margaret Street,
London W1W 8SS.
MPS Registration
line - 0845 703 4599.
Website: www.mpsonline.org.uk
Rob G3XFD.

Dipoles Rule Okay!

Dear Rob,

I hope that **Graham Ridgeway M5AAV**'s article *Antenna Thoughts* (January 2008) showing how easy it is to erect an h.f. antenna in a pocket handkerchief-sized garden will encourage people to try h.f. However, I believe that Graham is being unduly pessimistic in saying that a low 7MHz dipole will typically yield contact at 400km.

In the evenings, using c.w. and running 35W to a low dipole I work around Europe (up to 2000km) with ease and a session in the wee small hours often gives me 30 minute rag-chewing sessions at RST579 with the USA.

In 2007 I worked six continents and 62 countries using the low dipole. My all-time country score is 92 and all this has been achieved with a relaxed operating style and not as a DXchaser! Yours sincerely,

Gerald Stancey G3MCK
Oakham
Rutland

Having been a guest at Gerald's QTH in Rutland, England's smallest county, I know just how low profile his antennas are! Even the most eagle-eyed Amateur would have difficulties in locating G3MCK's

antennas! Gerald's success using QRP and relatively low power on c.w. together with his relaxed operating style should encourage everyone else to have a go. Rob G3XFD.

Antenna Interaction & Power Supplies

Dear Rob,

Just a few comments on some things I've seen in the February 2008 issue of PW where **Vince Lear ZL1VL/G3TKN** mentions in *Antenna Workshop* mentions (towards the end of his article) about checking for antenna interaction. Here's my simple way to check for interaction.

Firstly connect antenna 1 to your transceiver and listen on the intended frequency that you wish to check for interaction. Then, on the other antenna(s) attach a load or a short circuit at the shack end of the feeder whilst monitoring the receiver. If you hear crackles, or a steady signal change (in strength) then you have mutual coupling between the antennas. You can do the same trick by observing the v.s.w.r. whilst attaching a load to the other antenna. This method works a treat for me.

The mutual coupling may possibly make anything from minor to major

alterations to the other antenna's radiation pattern. Or it may just alter the impedance of the other antenna with no other effects. Just like a driven element on a Yagi.

Secondly, I agree with the sentiments of using battery power instead of a mains powered power supply (*PW Letters* and *Topical Talk*) to eliminate noise. I've been doing this for some years, along with other Amateurs who I know are using the same idea. It really does cut down on the mains borne noise. Kindest regards to everyone on PW.

Andy Foad G0FTD
Whitstable
Kent

Plea For Callsigns

Dear Rob,

I am only part way through reading my (always awaited *PW*!) which arrived here in Belgium this morning January 9th, but I want to endorse **Peter's** 'Plea for Callsigns', in the letters on page 7 of the February 2008 issue.

I agree with all Peter's remarks. However, I would add that it is not usually the modern amateurs that are at fault. There are some regular nets on 80 metres, inhabited by old timers who demonstrate a high opinion

Ford Transit Mobile!

Dear Rob,

I'm writing to tell you about something that happened at my works QTH last week. I have a Yaesu FT-8900 four-band rig in my company's Ford Transit and my Amateur Radio has always been viewed by my colleagues as 'another form of CB radio and something that's passed its 'sell buy' date!

I was busy sorting out paperwork in my van outside the depot when one of my colleagues strolled over with the assistant manager 'in tow' to talk to me. My radio was on my local IRLP link in Ipswich, (run by **Keith G7DNT**). My works manager asked me for a demo of my 'CB', so I opened up the link through to the Sydney (Australia) node and put a call out. A VK station returned (sorry, but I've forgotten his call) and we had a quick chat, he was 40km south of Sydney, sitting in his front room with a handheld transceiver!

Needless to say that both my colleague and my manager were well impressed and went away with a totally different view of Amateur Radio. I have heard die-hard Amateurs saying that talking via a link is not real radio, but I think it is just another medium for getting a QSO. The point I am making is that I received a phone call later from my manager asking how he could obtain his Amateur licence, and so I would say to make a good first impression to someone new to Amateur Radio, log on to you nearest link! Best 73 to everyone at *PW*.

Ian Bevan G0YAP
Diss,
Norfolk



Amateur Radio Personalities

Dear Rob

Thank you for the extremely interesting Amateur Radio Personality columns featuring the radio-related exploits of **Mike Devereux G3SED** and **Chris Lorek G4HCL** so far, which to me made fascinating reading.

Mike's experiences through South America and Jordan reminded me of my own travels in similar regions for reasons totally unrelated to Amateur Radio that put me into contact with some Radio Amateurs. My first visit to Jordan came to mind, where I stayed in a small hotel in 'The Princes' quarter of Amman. Arriving on a Friday I wanted to telephone my wife to let her know of my safe arrival.

Walking around I spotted an h.f. beam antenna in the grounds of a princely dwelling. Plucking up courage, I introduced myself as G3BIK and was courteously greeted by a gentleman elegantly dressed in immaculate regal-white robes, while I explained the purpose of my visit to his country. I asked if there was any possibility of passing a message to any Radio Amateur in the UK who might be able and willing to ring my wife with news of my safe arrival.

Quick as a flash my host whisked me away in a chauffeur-driven limousine to the headquarters of the **Royal Jordanian Amateur Radio Society** and personally introduced me to all concerned. Like **Mike Devereux JY8ED**, I was promptly issued with my own Jordanian callsign JY8IK and given full and immediate access to the club's h.f. station for the duration of my stay!

We found that the beam antenna was pointing away from the UK due to a faulty rotator. Then – at tremendous risk and in the true spirit of the hobby – a club member shinned right up the tower and manually turned the beam onto the required heading. I then worked into the UK and my message was duly relayed to my very surprised wife!

Reading of Chris Lorek G4HCL's problems on his arrival at Riyadh airport, Saudi Arabia, where a hand-written note in Arabic hit the right spot with the local armed security guards, I was reminded of my own experience at the gates of a Saudi-Arabian military establishment in the mountains not far from Riyadh.

My high ranking civilian companion wasn't making much headway with the armed guards. The heated dialogue continued for quite some time, until I was personally asked at gun-point to display my identity document! The response was quite dramatic, when after one brief glimpse, the guard read aloud something in Arabic whereupon they all leapt to attention with guns to the shoulder, saluted and allowed us immediate access! I found out later that the personal signature on my official permit was very meaningful.

I look forward to more of these Radio Personality columns as they are recorded history at its most interesting.

Ed. Chicken MBE G3BIK
Morpeth
Northumberland

of themselves and are often very disdainful of and rude about (and directly to) newer licensees. These Old Timers mumble their callsigns at high speed from time to time but they do not follow the regulations that still apply: Identification 7(1)(b) "at the beginning and at the end of each period of communication with a licensed amateur and when the

period of communication is longer than 15 minutes, at the end of each interval of 15 minutes." There are other requirements, but I have mentioned what I believe to be the most important.

In my listening, I have found the modern amateurs to be very good at identifying themselves, even if some of them have much to learn about

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radio procedures and etiquette.

It's a pity that the regulations do not insist that an operator should identify the station with which they are in communication with, because there are cases where a listener cannot hear everyone who is in a QSO (especially nets).

Those Old Timers who denigrate the new licensees, especially those that did not have to become proficient in Morse Code, and did not have to take the tough examinations of the past, should be setting an example of good procedures, practices and etiquette – not denigrating them.

Whilst Peter refers to UK operations particularly on 80 metres, there's much to be desired on all the h.f. bands. Some DXpeditioners, or special callsign operators, lose much time by not identifying themselves frequently enough. This means that other operators don't even know who they might be calling, so there's confusion and time is lost with QRM being generated as a result.

I rarely contest myself but do operate in the Belgian Field days, UBA contests, and ON contests. Here I have found that I can work very quickly by calling in the usual way and identifying. Then after a contact I say my callsign in a questioning tone, rather than saying 'QRZ, or, for example, 'UBA contest and my callsign'.

We must not forget that the purpose of identification is not only to identify someone that may be causing interference but for the benefit of those in a QSO. It's also for those that may be listening or those who may wish to join in order to add something useful to the QSO.

My best wishes to all the PW staff and readers for 2008.

Bill Abrahams ON9CGB/G0MEU
Wouterstraat 11
Belgium

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**



Elaine Richard's

news & products

A comprehensive round-up of what's happening in our hobby from G4LFM.

The 69th RSGB President Installed

In January, **Colin Thomas G3PSM** was installed as the 69th RSGB President at a ceremony in Southampton, Hampshire. He received his chain of office from the out-going president, **Angus Annan MM1CCR**. Also present were the president of IARU Region 1, **Ole Garpestad LA2RR**, The President of the Irish Radio Transmitters Society, **Father Finbarr Buckley EI1CS**, **Hans P. Blondeel Timmerman PB2T**, The President of the European DX Foundation, **Paul O'Kane EI5DI**, the author of the popular SD Contest logging software, staff of the RSGB, along with well-known Amateur Radio author **Chris Lorek G4HCL** and members of Amateur Radio clubs and societies in and around the Southampton area.

In his speech, Colin outlined the RSGB's

plans for their headquarters move later this year. When the RSGB moved to their current premises in 1982, they had 40 staff and 8,000 sq ft of office space. Nowadays, through modern working practices and technical advances, staffing levels at HQ are less than 20 people, so the new HQ building will be around 2000sq ft.

The RSGB's museum and library, as well as the HQ Amateur station, will be moving to Bletchley Park where they will be renovating one of the buildings to provide a fitting home for the heritage and history part of the RSGB. With around 50,000 visitors a year to Bletchley Park, this will provide the opportunity to introduce more people to Amateur Radio. Colin said he hoped the new building will be ready to welcome the first visitors by the end of the summer.



Colin Thomas G3PSM receiving his chain of office from out-going president Angus Annan MM1CCR.



(l-r) Father Finbarr Buckley EI1CS, Colin Thomas G3PSM, Ole Garpestad LA2RR and Hans P. Blondeel Timmerman PB2T.

BBC Club Station Back On Air!



After a year off air, the BBC Club Station **G8BBC** came back on air at 2pm on Sunday December 16th, 2007. Transmitting from their new home at the top of the East Tower at BBC Television Centre in west London, the first QSO was made between **Jonathan Kempster M5AEO** at G8BBC and club secretary **Chris Packman G6XDI** at home in London. Good

signals were exchanged on 28MHz. This was also the first time that G8BBC had been heard on the h.f. bands since the callsign was first issued in 1973.

Originally based at BBC Broadcasting House in central London, the station was forced to move out last year due to the major re-development of the BBC's headquarters. The new station also combines the equipment from the old Kendall Avenue outside broadcasts HQ (G7BBC).

The new station has a variety of equipment covering 7 to 432MHz, including a Kenwood TS450s, Yaesu FT-One and a Yaesu FT-200. For v.h.f. they have an FT-225RD and an FT-736. The antennas, which enjoy a panoramic view of London from their 13th floor rooftop site, include a dipole for h.f. and verticals for v.h.f.

www.xdinet.demon.co.uk/ARG/ARG/Welcome.html

Repeater GB3BK Operational

The 23cm (1.2GHz) f.m. repeater **GB3BK** in Bromley, Kent came on air January 6th. There may still be some teething problems so reports and feedback are welcomed by the repeater group. Reports can be sent to: gb3bk@btinternet.com

or from the website: www.wiggysweb.co.uk

Channel Input: 1293.850MHz; Output: 1299.850MHz.

QTHR: - JO01AK Location: - Bromley Kent

CTCSS frequency is 103.5Hz (Tone-G).

Amateur Radio Satellite AO-16 Reconfigured

The AO-16 satellite has been reconfigured to provide Amateurs with a novel f.m. to s.s.b. satellite transponder. The satellite was launched 18 years ago on January 22nd, 1990 and it is testimony to the high standards of Amateur Radio satellite design and construction that it is still operating after all these years.

The AO-16 was a digital satellite running an AX.25 protocol store-and-forward communications system. Since that aspect of the system has now reached the end of its days, the dedicated team of AMSAT volunteers has successfully reconfigured the satellite to give it a new lease of life as a voice transponder.

The satellite is now open to general use on voice for a test period. Please submit reports to: ao16@amsat.org

The uplink is 145.920MHz f.m. and the downlink is 437.026MHz s.s.b. \pm Doppler shift. Please restrict your uplink power to a reasonable level and do not transmit without being able to hear the downlink. All the general single-channel guidelines apply.

<http://www.amsat.org/amsat/sats/n7hpr/ao16.html>

Radio 4 Needs You!

The BBC newsreader and announcer, **Jim Lee**, who is licensed as **G4AEH**, will be a member of a team of Radio 4 announcers making a special pilgrimage to the home of 'The Pips', the familiar Greenwich Time Signal.

Jim's announcer colleague, **Rory Morrison**, has been diagnosed with a rare and currently incurable form of blood cancer. In an historic event on April 7th, the Radio 4 Newsreaders and Announcers will be off-the-air and out in the countryside to raise money for the Lymphoma Association. The event will be covered by Clare Balding for a special edition of Radio 4's walking programme *Ramblings* (to be broadcast on 25th April).

It is quite a feat to get Jim, **Charlotte Green**, **Brian Perkins**, **Peter Donaldson**, **Corrie Corfield** and the rest of the team of familiar voices off the air on the same day! They will be crossing the Sussex countryside to Herstmonceux Castle, the original home of 'The Pips', the familiar Greenwich Time Signal that sounds hourly before the news on Radio 4 - hence the event's title, *Pilgrimage to the Pips*.

A fundraising website: has been set up for sponsorship and further information: www.pilgrimagetothepips.org.uk

Jim, who will have a 2m and 70cm hand-held with him on the walk, told *Practical Wireless* that he'll be looking out for readers kind enough to make a donation via the website, so don't forget to include your callsign!



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Radio Amateurs Invalid and Blind Club

As part of their work in assisting disabled Amateurs and listeners, the RAIBC provides audio versions of the big radio magazines as well as various radio books and course material. These audio copies are then sent on to the visually impaired on audio CD, or can be downloaded from the RAIBC's members only website. Currently they are in need of volunteer readers to assist with this work. Obviously the more who volunteer the less work any one individual has to do.

If you are interested in assisting them, please contact **Graham Bedwell** on **0118 978 5348**.

CARS 16th Foundation Course

The **Chelmsford Amateur Radio Society (CARS)** recently ran their 16th Foundation course. So far, over 170 Amateurs have obtained their licences as a result of the courses, which are held at Danbury Village Hall and comprise six Thursday evenings of practical and theory.

The club is fortunate in having so many members willing to give up their time to either teach the courses or to provide the other end of the link for the on-air h.f. and v.h.f. contacts that all candidates must successfully complete before they can get their licence.

The complete set of CARS training slides for the Foundation, Intermediate and Advanced courses that can be downloaded from the website.

Another Foundation course is planned for June.

The next Intermediate Course starts on Thursday March 6th with the exam on May 15th.

To take the Intermediate you must have first passed the Foundation. If you want to know more contact **Clive G1EUC** on **(01245) 224577** or E-mail: training2008@g0mwt.org.uk or look at their website: www.g0mwt.org.uk/training/

Top Ham Competition

After the great success of the first Top Ham Competition at last year's spring Kempton Rally, Radiofairs are pleased to announce the next RSGB Top Ham Competition will be held at the Kempton Radio and Electronics Fair on Sunday April 6th. The competition is sponsored by the RSGB, Kenwood Electronics, Martin Lynch and RadioFairs.

The format remains the same and everyone at the Rally will get chance to enter the competition, free of charge. The initial round will be relatively simple multiple choice questions on Amateur Radio and electronics.

The first 100 entries handed in will all receive a commemorative prize, once marked; the 10% with the highest score will be entered for a valuable prize draw. If you wish, you can go on to enter the Top Ham round and the six people with the highest scores on the initial paper will be asked questions, in a TV style quiz, on a stage in the exhibition hall.

The final winner will be presented with the RSGB Top Ham Trophy and receive an h.f. transceiver from Kenwood, the runner up will also receive prize of a radio.

www.radiofairs.co.uk



Try a Contest!

The CQ WW 160 Metre/SSB contest takes place on February 23rd/24th for 48hrs. Stations must exchange: RS + prefix or country abbreviation in each contact. There are several categories: single-op, multi-op, high power, low power & QRP, so there should be something to suit all operators.

Scoring should be done carefully and contacts in your own country score 2 points, other countries 2 points, your own continent 5 points, other continents 10 points and maritime mobile 5 points. The multiplier is the sum of states/provinces/DXCC countries worked. So the final score is QSO points x the sum of all multipliers.

Mailing deadline for c.w. entries is February 28th, 2008; for s.s.b. entries March 31st, 2008. Send c.w. E-mail logs to: 160cw@kkn.net Send s.s.b. E-mail logs to: 160ssb@kkn.net All other logs go to **CQ 160 Meter Contest, 25 Newbridge Road, Hicksville, NY 11801 USA**. Indicate Morse or sideband on the envelope.

Further information can be found on the organisers website: www.cq-amateur-radio.com



The CARS Training Organiser, **Clive G1EUC**, was introducing ten candidates to the Foundation Course on a wet and windy Thursday evening on January 10th.

The G QRP Club Mini-Convention Moves

For the last 18 years, the **G QRP Club Mini-Convention** has been at St. Aidan's Church Hall in Rochdale; the church where **Rev. George Dobbs G3RJV** is the Vicar. However, George plans to retire in the summer of this year and a new venue has been sought – **Rishworth School**, some 12 miles from the old site. It is on the A672 (Ripponden) road from Junction 22 on the M62. The School has had strong connections with Amateur Radio through a school radio club and residential 'Stella' courses for teachers wishing to become Radio Amateurs.

The G QRP Club is pleased to announce that the 2008 QRP Mini-Convention will be on **Saturday 18th October at Rishworth School**. The event begins at 10am with an admission charge of £1.

As in previous years, the event is an 'old style' radio rally with component, junk and kit vendors. No expensive new equipment will be on sale and there will be a notable absence of computer equipment. The convention will also include a full programme of lectures throughout the day plus the traditional Pie and Peas lunch. Details can be had by sending an E-mail request to g3rjv@gqrp.co.uk or on **(01706) 631812**. The full postal address of the venue is Rishworth School, Rishworth, West Yorkshire, HX6 4QA. (53° 39' 48.25" N. 1° 57' 00.24" W for those with SATNAV systems)



Operating GB4RL

Over the past three years, **Oldham Amateur Radio Club** has hosted a series of Special Event Stations as guests of the Royton Local History Society during their hugely ambitious excavation projects at the site of the former Royton Hall. The overall project title was 'Royton Lives through the Ages' and its intention was to cast light on the way of life of Royton's people from its earliest times.

The earliest recorded details show a settlement in Royton in the year 1212 and very soon afterwards a building was recorded as having stood at the now known location of Royton Hall.

In 2002, members of the fledgling **Royton Local History Society** decided to excavate the site of Royton Hall. In 2004 a test excavation was made in conjunction with the Manchester University Field Archaeology Unit to ascertain whether or not there were any viable remains of the Hall thus making a full excavation a worthwhile proposition. Digging began in 2005.

At each successive event GB4RL was set up. The tent was erected along with a G5RV antenna for h.f. and a dual band collinear for v.h.f. The transceivers were the Yaesu FT-990 and FT-847. Slow scan TV was also put on and it was this that appeared to catch the imagination of members of the public who visited the display. The 2007 event took place in October instead of June/July.

More details are available from the club secretary, **Chris Cunliffe G7OOD** by E-mail : secretary@oarc.org.uk or by phone on **07749 347142**



Transmission 2007 Winners

The annual Transmission event, organised by the **British Wireless for the Blind Fund (BWBF)**, involves radio amateurs from across the UK making as many contacts with fellow amateurs as possible. The award for the most money raised for the second year running went to the Bittern DX Group, who brought in £1750. The group also won the category for the most contacts made during the 48-hour event: 1165 QSLs.

Steve Balding, Bittern DX Group chairman, received both trophies on behalf of the club from Radio Society of Great Britain president **Angus Annan** and BWBF Chairman, **Peter McDonagh** at a presentation at Sandford Mill Science and Industry Museum, Chelmsford.

The individual winners were **Simon Treacher**, from Orpington, Kent, who made the most number of contacts: 323 QSLs and **Dr Roger Bloor**, from Newcastle under Lyme, who raised the most money: £250. The final sum raised by the competition was: £ 4485.

The BWBF used the prize giving as an opportunity to launch a new category for next year's Transmission: a young person's prize for special achievement, aimed at the under 18s.

To find out more, or support the work of the British Wireless for the Blind Fund, visit: www.blind.org.uk or call **01634 832501**.

Amateur Radio Auction Site

A brand new online auction site dedicated to Radio Amateurs will be launched on March 1st. Unlike other auction sites on the Internet, this one has some amateur radio specific functionality.

One of the problems of using online auction services is the costs associated with listing and selling items. Basic use of the site **Hambid.com** will be completely free for the foreseeable future. There may be some costs when listing items in premium areas of the site and when using some options (bold type face for example). However, these option costs will be a fraction of the costs levied elsewhere on the Internet.

Like other online auctions, the user can list, buy and sell items in addition to being able to provide and receive feedback too. Payment methods such as Western Union and **PayPal** are also catered for within the set up and configuration on a per user basis.

Hambid.com will primarily be focused on the USA and UK markets through the one site. Both **Hambid.com** and **HamBid.co.uk** have been purchased. Should the site become busy enough and users want it, **HamBid.com** will become US centric whilst **HamBid.co.uk** would become UK centric.

For more information contact **Telco Consultants Limited** on **0800 9336336** or E-mail hambid@hambid.com

Amateur Radio Quiz Night

Pontefract and District Amateur Radio Society will be hosting a Yorkshire Region Amateur Radio Quiz Night on Tuesday, March 11th. There will be prizes for the top teams and the winning team will be presented with the G3FYQ Shield. There will be a valuable first prize provided by LAM Communications plus prizes for other top-performers.

Clubs from around the region are invited to enter a team of up to four members to take part in the quiz. More information is on the club website at www.pdars.com. If your club would like to enter a team, please contact **Chris M0JRQ** by E-mail at chris@pdars.com or on **(07970) 479200**.

Yeovil Amateur Radio Club 24th QRP Convention

The Yeovil QRP Convention will be held in Digby Hall, Hound Street, Sherborne, Dorset DT9 3AA on April 27th. Follow the white road signs to the town centre as Digby Hall adjoins the central shopping car park. Doors open at 10am. There will be trade stands, a Bring & Buy, catering and talk-in on S22. For more information, contact **George Davis** on **(01935) 425669** or look at the website: www.yeovil-arc.com

D-Star Repeater

At 10am on December 19th, the new Icom D-Star Repeater GB7ML located at the ML&S Store in Chertsey, Surrey operated for the first time. Soon, the D-Star repeater will be linked to the internet allowing connectivity to repeaters on the D-Star network world wide. Photograph shows Chris Ridley G8GJC of Icom UK and Chris Taylor of ML&S, standing by the new D-Star Repeater at the Surrey Showroom.



Club Visits

The *PW* Editor, **Rob Mannion G3XFD** will be out and about visiting Amateur Radio clubs and societies over the next few months. All the clubs and societies concerned would welcome visitors to these - or any other - meetings.

March 3rd: Hog's Back Amateur Radio Club, Crondall Scout Centre, Pankridge Street, Crondall, Farnham GU10 5RQ. Contact: Simon Lambert on (0127) 638709.

May 2nd: Coventry Amateur Radio Society, St Bartholomews Church Hall, Brinklow Road, Coventry CV3 2DT. Contact: John Beech on (02476) 273190.

June 5th: Wigtownshire Amateur Radio Club, The Aird Unit, Stranraer Academy, Stranraer, Scotland DG9 8BQ. Contact: Ellis on (07979) 692580.

The 80th Anniversary of Humber Radio Station GKZ

Many radio enthusiasts will have had contact with GKZ in one way or the other, either as short wave listeners, Radio Officers on board ships or Radio Amateurs who had taken their Morse test at the station. Established as Grimsby Radio by the Royal Navy in the First World War the station was taken over by the Post Office in 1920. It was housed in three old railway carriages on West Pier in Grimsby docks. The Station was moved

to Trusthorpe, near Mablethorpe, in 1927 and was officially opened on December 7th that year. Along with all the other Coastal Stations GKZ was closed down in June 2000

The Eagle Radio Group celebrated the 80th anniversary of the station. The special callsign of GB80GKZ was applied for and permission from the land owner to operate from the site was sought. Robert Howell of Robert Howell Plant Hire gave them permission for the two days December 8/9th. The main operating rig was an FT-990.

The village hall was opened at 10am on the Sunday with a display of pictures, a visual display and some memorabilia. Several ex Radio Officers visited together with a group from RAOTA.

Particular thanks must go to **The Radio Officers Association, The Royal Naval Amateur Radio Society, The Radio Officers Radio Society** and all the individuals around the world that lent their support to our application for the special call GB80GKZ.



Converted to D-STAR

The 2m repeater GB3MI (145.7125MHz) in Manchester is changing from analogue f.m. operation to become a D-STAR repeater. It will become GB7MI on the same channel and with a similar coverage footprint. For more details look at the website: www.ukrepeater.net/repeaters/gb7mi.htm

Repeater Donation

Every year, the organisers of the West of England Radio Rally donate some of the proceeds from the rally to local groups and clubs. This year, one award of £50 was made to the **Bristol 70cm Repeater Group**. The award was made at a Christmas Party held in Bristol on December 8th by **Sevenside Television Group** Chairperson **Viv Green G1IXE**. The donation will help to defray the costs of a frequency change for GB3BS and a new logic system for the repeater.

The Sevenside Television Group is an RSGB affiliated club, founded in 1986 and based in Bristol. It runs two ATV Repeaters, GB3ZZ on 1.3GHz and GB3XG on 10GHz. Each year on the last Sunday in June, it organises the West of England Radio Rally at Frome, Somerset. The next rally will take place on June 29th, 2008.

Listen Out For

The Balkan Contest Club will operate as **LZ130LO** from January 1st to March 31st to commemorate the 130th anniversary of the end of the Russo-Turkish War, which established Bulgaria as an autonomous principality. QSL via LZ1KZA, bureau preferred. Information on the relevant award can be found at qrz.com under LZ130LO.

Special event station **9A35RKP** will be active during 2008 to celebrate the 35th anniversary of Croatian radio club 'Pazin'. QSL via 9A7P, HRL Radio Club, POB 73, 52001, Pazin, Rep of Croatia. The French Department 'Ville de Paris' was created on January 1st, 1968. To celebrate the 40th anniversary, the Radio-Club de Paris (F6KVP) will be active under five special event call signs; February 16th - March 2nd as **TM1R**; March 29th - April 12th as **TM2I**; and May 24th - June 7th as **TM7S**. QSL via F6KVP, Radio-Club de Paris ARP, 66 Avenue de la République, 75011 Paris, France. Information on the relevant award can be found at www.arp75.free.fr/

Hardy DL3KWF has been licensed for 50 years and will activate the special call sign **DM50KWF** throughout the year 2008. QSLs via DL3KWF, Hardy Zenker, Kotkaring 1, 17493 Greifswald, Germany. Further information can be found on his website: at: www.mydarc.de/dl3kwf

Special station **DR8M** will be active between January 1st and December 31st to celebrate the 850th anniversary of the city of Munich. Information on the award can be found at: www.darc.de/distrikte/c/PDF/Diplom_Beding.htm



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MLP32	£119.95
* Frequency:100-1300MHz TX & RX	
* Boom:142cm Long Element 150cm	
* Gain 11-13 dB	
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AM-PRO 6 metre (Length 4.6' approx).....	£17.95
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AM-PRO 160 metre (Length 7' approx).....	£49.95
AM-PRO MB5 Multi band 10/15/20/40/80 can use 4 Bands at one time (Length 100").....	£69.95

Slim Jims

SJ-70 430-430MHz slimline design with PL259 connection. Length 1.00m with N-TYPE socket.....	£19.95
SJ-2 144-146MHz slimline design with PL259 connection. Length 2.00m with SO-239 socket.....	£24.95



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MICRO MAG Dual band 2/70 antenna complete with 1" magnetic mount 5mtrs of mini coax terminated in BNC.....	£19.95
MR700 2m/70cm, 1/4 wave & 5/8, Gain 2m 0dB/3.0dB 70cm Length 20" 3/8 Fitting.....	£8.95
MR700S PL259 Fitting.....	£9.95
MR 777 2 Metre 70 cm 2.8 & 4.8 dBd Gain (5/8 & 2x5/8 wave) (Length 60") (3/8 fitting).....	£17.95
MR 777S (PL259 fitting).....	£19.95
MRQ525 2m/70cm, 1/4 wave & 5/8, Gain 2m 0.5dB/3.2dB 70cm Length 17" PL259 fitting commercial quality.....	£19.95
MRQ500 2m/70cm, 1/2 wave & 2x5/8, Gain 2m 3.2dB/5.8dB 70cm Length 38" PL259 fitting commercial quality.....	£24.95
MRQ750 2m/70cm, 6/8 wave & 3x5/8, Gain 2m 5.5dB/8.0dB 70cm Length 60" PL259 fitting commercial quality.....	£34.95
MRQ800 6/270cm 1/4 6/8 & 3 x 5/8, Gain 6m3.0dB/2m 5.0dB/70 7.5dB Length 60" PL259 fitting commercial quality.....	£39.95
GF151 Professional glass mount dual band antenna. Freq: 2/70 Gain: 2.9/4.3dB. Length: 31".....	£29.95



Rotative HF Dipoles

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RDP-4 12/17/30mtrs length 10.50m.....	£119.95
RDP-40M 40mtrs length 11.20m.....	£169.95
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MR214 2 metre straight stainless 1/4 wave 3/8 fitting.....	£4.95
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(6m 3.0dBd) (2m 6.2dBd) (70cm 8.4dBd) (RX:25-2000 MHz) (Length 100")	



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BNC Solder type plug (Small entry)	£1.25
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6" Stand Off Bracket (complete with U Bolts)	£6.00
9" Stand off bracket (complete with U Bolts)	£9.00
12" Stand off bracket (complete with U Bolts)	£12.00
12" T & K Bracket (complete with U Bolts)	£17.95
18" T & K Bracket (complete with U Bolts)	£19.95
24" T & K Bracket (complete with U Bolts)	£24.95
36" T & K Bracket (complete with U Bolts)	£39.95
Single chimney lashing kit (suitable up to 2 mast)	£14.95
Double chimney lashing kit (suitable up to 2 mast)	£19.95
3-Way Pole Spider for Guy Rope/wire	£3.95
4-Way Pole Spider for Guy Rope/wire	£4.95
Mast Sleeve/Joiner (for 1" pole)	£6.95
Mast Sleeve/Joiner (for 1.25" pole)	£7.95
Mast Sleeve/Joiner (for 1.5" pole)	£11.95
Mast Sleeve/Joiner (for 2" pole)	£13.95
Earth rod including clamp (copper plated)	£9.95
Earth rod including clamp (solid copper)	£19.95
Pole to pole clamp 2" - 2"	£4.95
Di-pole centre (for wire)	£4.95
Di-pole centre (for aluminium rod)	£4.95
Di-pole centre (for wire but with an PL259 socket)	£6.95
Dog bone insulator	£1.00
Dog bone insulator heavy duty	£1.50
Dog bone (ceramic type)	£1.50
EGG-S (small porcelain egg insulator)	£1.95
EGG-M (medium porcelain egg insulator)	£2.50
EGG-XL (extra large porcelain egg insulator)	£5.95
CAR PLATE (drive on plate to suit 1.5 to 2" mast/pole)	£19.95
PULLEY-2 (Heavy duty adjustable pulley wheel)	£19.95

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RG58 best quality standard per mt	35p
RG58 best quality military spec per mt	60p
RGMini 8 best quality military spec per mt	70p
RG213 best quality military spec per mt	£1.00
H100 best quality military coax cable per mt	£1.25
3-core rotator cable per mt	45p
7-core rotator cable per mt	£1.00
10 amp red/black cable 10 amp per mt	40p
20 amp red/black cable 20 amp per mt	75p
30 amp red/black cable 30 amp per mt	£1.25

Please phone for special 100 metre discounted price

Baluns

MB-1 1:1 Balun 400 watts power	£24.95
MB-4 4:1 Balun 400 watts power	£24.95
MB-6 6:1 Balun 400 watts power	£24.95
MB-1X 1:1 Balun 1000 watts power	£29.95
MB-4X 4:1 Balun 1000 watts power	£29.95
MB-6X 6:1 Balun 1000 watts power	£29.95
MB-Y2 Yagi Balun 1.5 to 50MHz 1kW	£24.95

Duplexers & Antenna Switches

DX-720D Duplexer *Port 1: HF + 6 + 2m (1.6-150MHz). *Port 2: 70cm (400-460MHz). *Connection: Fixed 2 x PL259 & 1 x PL259	£19.95
MX-72 Duplexer *Same spec as DX-720D but with PL259 fly leads	£29.95
MX-627 HF/VHF/UHF internal Tri-plexer (1.6-60MHz) (110-170MHz) (300-950MHz)	£39.95
CS201 Two-way di-cast antenna switch. Freq: 0-1000MHz max 2,500 watts PL259 fittings	£14.95
CS201-N Same spec as CS201 but with N-type fittings	£19.95
CS401 Same spec as CS201 but 4-way	£39.95
CS401N Same spec as CS401 but with N-type fittings	£49.95

Antennas Rotators

AR-300XL Light duty UHF/VHF	£49.95
RC5-1 Heavy duty HF	£339.95
RC5-3 Heavy duty HF inc pre set control box	£419.95
AR26 Alignment Bearing for the AR300XL	£18.95
RC26 Alignment Bearing for RC5-1/3	£49.95
RC5A-3 Serious heavy duty HF	£579.95

Complete Mobile Mounts

All mounts come complete with 4m RG58 coax terminated in PL259 (different fittings available on request).

3.5" Pigny magnetic 3/8 fitting	£7.95
3.5" Pigny magnetic PL259 fitting	£9.95
5" Limpet magnetic 3/8 fitting	£9.95
5" Limpet magnetic PL259 fitting	£12.95
7" Turbo magnetic 3/8 fitting	£12.95
7" Turbo magnetic PL259 fitting	£14.95
Tri-Mag magnetic 3 x 5" 3/8 fitting	£29.95
Tri-Mag magnetic 3 x 5" PL259 fitting	£29.95
HKITHD-38 Heavy duty adjustable 3/8 hatch back mount	£29.95
HKITHD-SO Heavy duty adjustable SO hatch back mount	£29.95
RK1T-38 Aluminium 3/8 rail mount to suit 1" roof bar or pole	£12.95
RK1T-SO Aluminium SO rail mount to suit 1" roof bar or pole	£14.95
RK1T-PR Stainless PL259 rail kit to suit 1" roof bar or pole	£24.95
PBKIT-SO Right angle PL259 pole kit with 10m cable/PL259 (ideal for mounting mobile antennas to a 1.25" pole)	£19.95

Antenna Wire & Ribbon

Enamelled copper wire 16 gauge (50mtrs)	£17.95
Hard Drawn copper wire 16 gauge (50mtrs)	£19.95
Equipment wire Multi Stranded (50mtrs)	£14.95
Flexweave high quality (50mtrs)	£27.95
PVC Coated Flexweave high quality (50mtrs)	£37.95
300Ω Ladder Ribbon heavy duty USA imported (20mtrs)	£14.95
450Ω Ladder Ribbon heavy duty USA imported (20mtrs)	£17.95

(Other lengths available, please phone for details)

Miscellaneous Items

CDX Lightning arrestor 500 watts	£19.95
MDX Lightning arrestor 1000 watts	£24.95
AKD TV1 filter	£9.95
Amalgamating tape (10mtrs)	£7.50
Desoldering pump	£2.99
Alignment 5pc kit	£1.99

Telescopic Masts (aluminium/fibreglass opt)

TMA-1 Aluminium mast ★ 4 sections 170cm each ★ 45mm to 30mm ★ Approx 20ft erect 6ft collapsed	£99.95
TMA-2 Aluminium mast ★ 8 sections 170cm each ★ 65mm to 30mm ★ Approx 40ft erect 6ft collapsed	£189.95
TMF-1 Fibreglass mast ★ 4 sections 160cm each ★ 50mm to 30mm ★ Approx 20ft erect 6ft collapsed	£99.95
TMF-1.5 Fibreglass mast ★ 5 sections 200cm each ★ 60mm to 30mm ★ Approx 30ft erect 8ft collapsed	£179.95
TMF-2 Fibreglass mast ★ 5 sections 240cm each ★ 60mm to 30mm ★ Approx 40ft erect 9ft collapsed	£189.95

HF Yagi

HBV-2 2 BAND 2 ELEMENT TRAPPED BEAM FREQ:20-40 Mtrs GAIN:4dBd BOOM:5.00m LONGEST ELEMENT:13.00m POWER:1600 Watts	£399.95
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ADEX-3300 3 BAND 3 ELEMENT TRAPPED BEAM FREQ:10-15-20 Mtrs GAIN:8 dBd BOOM:4.42m LONGEST ELE:8.46m POWER:2000 Watts	£329.95
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ADEX-6400 6 BAND 4 ELEMENT TRAPPED BEAM FREQ:10-12-15-17-20-30 Mtrs GAIN:7.5 dBd BOOM:4.27m LONGEST ELE:10.00m POWER:2000 Watts	£599.95
40 Mtr RADIAL KIT FOR ABOVE	£99.00

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MTD-2 (2 BAND) FREQ:40-80 Mtrs LENGTH: 20Mtrs POWER:1000 Watts	£59.95
MTD-3 (3 BAND) FREQ:40-80-160 Mtrs LENGTH: 32.5m POWER: 1000 Watts	£99.95
MTD-4 (3 BAND) FREQ: 12-17-30 Mtrs LENGTH: 10.5m POWER: 1000 Watts	£49.95
MTD-5 (5 BAND) FREQ: 10-15-20-40-80 Mtrs LENGTH: 20m POWER:1000 Watts	£89.95

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

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GAIN: 3.5dBi HEIGHT: 6.50m POWER: 2000 Watts (without radials) POWER: 500 Watts (with optional radials)**£119.95**
OPTIONAL 10-15-20mtr radial kit.....**£39.95**
OPTIONAL 40mtr radial kit**£14.95**

EVX5000 5 BAND VERTICAL FREQ:10-15-20-40-80 Mtrs
GAIN: 3.5dBi HEIGHT: 7.30m POWER: 2000 Watts (without radials) POWER: 500 Watts (with optional radials)**£169.95**
OPTIONAL 10-15-20mtr radial kit.....**£39.95**
OPTIONAL 40mtr radial kit**£14.95**
OPTIONAL 80mtr radial kit**£16.95**

EVX6000 6 BAND VERTICAL FREQ: 10-15-20-30-40-80 Mtrs
GAIN: 3.5dBi HEIGHT: 7.30m POWER: 2000 Watts (without radials) POWER: 500 Watts (with optional radials)**£299.95**

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★ Gain: 1.5dB.....**£49.95**

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★ Socket: N-Type ★ Gain: 4.5dB.....**£49.95**

ROYAL DOUBLE DISCONE 2000 ★ Type: Stainless ★ Freq RX: 25-2000Mhz Freq: TX 2&70cm ★ Length: 150cm ★ Socket: N-Type
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G.SCAN II ★ Type: Twin coil ★ Freq: 25-2000Mhz
★ Length: 65cm ★ Base: Magnetic/Cable/BNC
.....**£24.95**

SKYSCAN MOBILE ★ Type:Multi whip
★ Freq: 25-2000Mhz ★ Length: 65cm
★ Base: Magnetic/Cable/BNC
.....**£19.95**

Scanner Portable/Indoor Antennas

SKYSCAN DESKTOP ★ Type: Discone style
★ Freq: 25-2000Mhz ★ Length: 90cm
★ Cable: 4m with BNC.....**£49.95**

Tri-SCAN 3 ★ Type: Triple Coil ★ Freq: 25-2000Mhz
★ Length: 90cm ★ Cable: 4m with BNC.....**£39.95**

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.....**£19.95**

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SSS-MK1 Freq: 0-2000Mhz RX ★ Length: 100cm ★ Socket: PL259**£29.95**
SSS-MK2 Freq: 0-2000Mhz RX ★ Length: 150cm ★ Socket: PL259
★ Gain:3dB over SSS-1.....**£39.95**

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A great pre-amp at an incredible new low price!

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★ Freq: 25-2000Mhz
★ Gain: 6-20dB ★ Power: 9-15v (battery not included) ★ Lead: 1m with BNC.....**£29.95**
M-100 ★ Professional 24-2300Mhz pre-amp ★ Freq: Band A:225-1500Mhz Band B:108-185Mhz Band C: 24-2300Mhz ★ Gain: -10 to +22dB ★ Impedance: 50 Ohms.....**£69.95**

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★ Connection: SMA**£12.95**
MRW-310 ★ Type: Helical rubber duck ★ Freq TX: 2&70 RX: 25-1800Mhz ★ Power: 10w ★ Length: 40cm ★ Connection: BNC Gain: 2.15dBi**£14.95**
MRW-200 ★ Type: Helical rubber duck ★ Freq TX: 2&70 RX: 25-1800Mhz ★ Power: 10w ★ Length: 21cm ★ Connection: SMA**£16.95**
MRW-205 ★ Type: Helical rubber duck ★ Freq TX: 2&70 RX: 25-1800Mhz ★ Power: 10w ★ Length: 40cm ★ Connection: BNC Gain: 2.15dBi**£19.95**
MRW-222 SUPER ROD ★ Type: Telescopic whip ★ Freq TX: 2&70 RX: 25-1800Mhz ★ Power: 20w ★ Length:23-91cm
★ Connection: BNC ★ Gain: 2m 3.0dB 70cm 5.5dB
★ DX Performance**£24.95**

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MRW-HF6 ★ Type: Telescopic Whip ★ Freq: TX: 6m RX: 6-70cm ★ Power:50 Watts ★ Length: 135cm
★ Connection: BNC**£19.95**
MRW-HF10 ★ Type: Telescopic Whip ★ Freq: TX: 10m RX: 10-4m ★ Power: 50 Watts ★ Length: 135cm
★ Connection: BNC**£19.95**
MRW-HF15 ★ Type: Telescopic Whip ★ Freq: TX: 15m RX: 15-6m ★ Power:50 Watts ★ Length: 135cm
★ Connection: BNC**£19.95**
MRW-HF20 ★ Type: Telescopic Whip ★ Freq TX: 20m RX: 20-6m ★ Power: 50w ★ Length: 135cm ★ Connection: BNC**£22.95**
MRW-HF40 ★ Type:Telescopic Whip ★ Freq TX: 40m RX: 40-10m ★ Power: 50w ★ Length: 140cm ★ Connection: BNC.....**£22.95**
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UKSCAN-B The 9th Edition UK Scanning Directory A must have publication!
.....**£19.50**

LOGBB-B Base log book for licensed amateurs
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1m RG58 PL259 to PL259 lead**£3.95**
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30m RG213 Mil spec PL259 to PL259 lead**£34.95**
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(All other leads and lengths available, ie. BNC to N-type, etc. Please phone for details)

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★ Fitting: PL259.....**£24.95**
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★ Fitting: 3/8.....**£22.95**
ATOM-10S ★ Freq: 10m ★ Length: 130cm ★ Power: 200W
★ Fitting: PL259**£24.95**
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★ Fitting: 3/8.....**£22.95**
ATOM-15S ★ Freq: 15m ★ Length: 130cm ★ Power: 200W
★ Fitting: PL259**£24.95**
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★ Fitting: 3/8.....**£22.95**
ATOM-20S ★ Freq:20m ★ Length:130cm ★ Power: 200W
★ Fitting: PL259**£24.95**
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★ Fitting: 3/8.....**£24.95**
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★ Fitting: PL259**£26.95**
ATOM-80 ★ Freq: 80m ★ Length: 130cm ★ Power: 200W
★ Fitting: 3/8.....**£27.95**
ATOM-80S ★ Freq: 80m ★ Length: 130cm ★ Power: 200W
★ Fitting: PL259**£29.95**

ATOM Multiband Mobile Antennas

ATOM-AT4 ★ Freq: 10/6/2/70cm ★ Gain: (2m 1.8dBd) (70cm 3.5dBd) ★ Length: 132cm ★ Power: 200w (2/70cm) 120w (10/6m) ★ Fitting:PL259.....New low price **£49.95**
ATOM-AT5 ★ Freq: 40/15/6/2/70cm ★ Gain: (2m 1.5dBd) (70cm 3.5dBd) ★ Length: 129cm ★ Power:200w (2/70cm) 120w (40/6m) ★ Fitting:PL259.....New low price **£59.95**
ATOM-AT7 ★ Freq: 40/20/15/10/6/2/70cm (5 bands at once) ★ Gain: (2m 1.8dBd) (70cm 3.5dBd) ★ Length: 200cm
★ Power: 200w (2/70cm) 120w (40/6m)
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★ Length: 50cm ★ Fitting: PL259**£24.95**

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antenna workshop

John Heys G3BDQ continues his experiments with Slinky toys as antennas.

Professional radio engineer **H. H. (Harold) Beverage W2BML**, invented his low noise receiving antenna in 1921. During the First World War, signallers using very simple crystal sets discovered that if their long wire antennas (which were often shot down by enemy fire) were laid out on the ground, that good low noise reception off both ends of the wire became possible. Beverage improved upon this but raised the height of his very long wires to about three metres above ground.

The optimum length of a Beverage antenna lies between one and four wavelengths at the frequency of operation. So, on the 1.8MHz (160 metre) band it's a physical impossibility for most Radio Amateurs to have a full-sized Beverage antenna in their gardens.

Even though a full sized Beverage antenna needs considerable signal gain at the receiver, it still delivers a superb signal-to-noise ratio at the input. Because of the low signal level, an additional stage of r.f. amplification is often needed. This shouldn't be a problem as many modern transceivers now employ two r.f. gain stages in their design.

The classic Beverage antenna is usually grounded via a non-inductive resistor at the end farthest from the feed-point and this greatly reduces any pickup of noise or signals located

away from the run of the antenna wire towards the terminating resistor. My version of the Beverage doesn't have a terminating resistor as I wanted good DX reception from most directions.

Too small

Although I'm fortunate in having a 70m long garden it's still far too small to accommodate even a one wavelength Beverage for 1.8MHz. But having read that some American Amateurs were having great success with physically shorter Beverages made up from two to four Slinky coils in series pulled out to total lengths of 50–70m (150 to 200ft approximately), I decided to try my hand with some spare Slinky toys that I had in my 'junk' cupboard.

Readers of *PW* must, by now, be familiar with my use of the Slinky toy for a variety of antennas and I'm now becoming very used to employing them in antenna projects. Having 70m of garden length I decided to use four of the Slinkys to form the antenna. I'm also fortunate in having a garage wall with a useful fixing point for the antenna at the house end and a 4m aluminium pole tied up against a sturdy tree at the far end of the garden.

My resolve to go ahead was strengthened when I acquired a copy of *DXing On The Edge, The Thrill of 160 Meters* by **Jeff Briggs K1ZM**

and discovered a simple design for a Slinky Beverage antenna. There's another metal coil toy very similar to the original American Slinky and it is called 'Springy'. They're very similar to – and perform just as well as – the Slinky does. The vital statistics for both types are as follows:

Diameter:

Slinky, 69.5mm,
Springy, 68mm

Number of coil turns:

Slinky, 87
Springy, 76

Conductor length:

Slinky, 19m (60ft)
Springy, 16m (52ft).

Both the Slinky and the Springy types can be soldered, after their surfaces are abraded with sandpaper or file. You'll also need to use an hot heavy duty soldering iron too.

Antenna Construction

Slinkys (or the Springy toy) are very 'bouncy' things and a stout catenary rope is needed to support them. I used a 75m length of rope with a 5mm diameter, which is usually used to support the masts of small yachts. It's made with man-made fibres and is rot-proof and long lasting. It dries out rapidly after rain.

After sliding the Slinky onto the

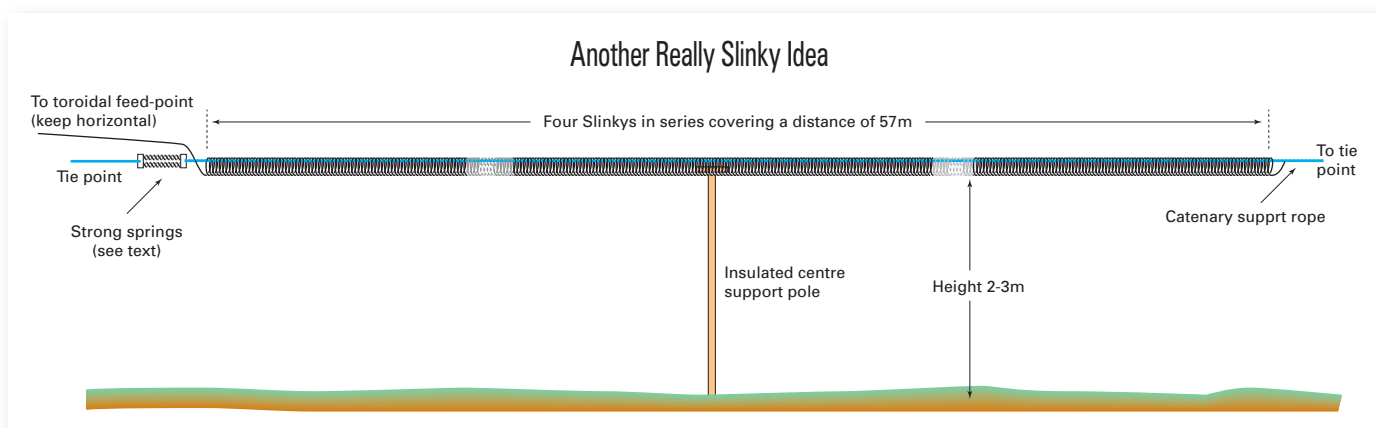


Fig. 1: The overall layout of the Slinky Beverage (not to scale) made and used by G3BDQ. The short connections from the matching box should run as near horizontal as possible.

rope, to reduce sag, I used a couple of strong springs (salvaged from an old 'Anglepoise' lamp) arranged in parallel, at the house end of the rope to put tension on the rope. I then used nylon cable ties keep the ends of the Slinkys in place.

Other ties were positioned at 2m intervals along the catenary rope to give anchoring points for the Slinky coils. To further help in reducing sag in the support rope, I put up a lightweight fibreglass pole as a support in the centre of the antenna. The antenna runs in a straight path, which is important, with an average height of 3m above ground and overview of the antenna is shown in **Fig. 1**.

The characteristic impedance of a long wire 3m above ground lies between 400 and 600 Ω and it behaves like a two wire transmission line. I have assumed the line impedance of the Slinkys to be very similar. The Beverage pundits say that a slight 'dog leg' of no more than 30° (in the run of the antenna) is acceptable if such a deviation cannot be avoided.

Must Be Matched

The impedance of the feed-point of the antenna must be matched to the low impedance coaxial feeder. So, assuming that the average impedance of the line of Slinkys is about 450 Ω , this would require

an impedance step-down of nine times to achieve a match. Such a 9:1 impedance step-down is relatively easy to create and is achieved by winding a simple auto-transformer with a few turns on a toroidal core.

The matching toroidal transformer must present an impedance of 450 Ω at 1.85MHz so I experimented by using a toroidal core that was bought from the RSGB for EMC purposes. The transformer is shown in **Fig. 2** and its seven turns has an inductance of 40 μ H which is needed to match the 450 Ω antenna impedance.

My Multimeter has an inductance range, which simplifies the determination of the number of turns required. If the toroid you have to hand is different, you'll need to do some experimenting to achieve 40 μ H, or at least close to this value.

The toroidal core must be of an high permeability type material, so that only a few winding turns are needed for the coil. The winding is tapped one-third of the way from its 'earthy' end, this gives a turns ratio of 3:1, which therefore has an impedance ratio of 9:1. This tap point is suitable for either 50 or 75 Ω coaxial cable feeder.

The Matching Box

The toroidal transformer must be housed in a screening box and I used a small diecast aluminium box that had been used for an earlier project.

Because of its previous use, it had to have several large holes covered to maintain the screening. The toroid should be held in position but away from the metal box wall and a common earth point connects to the coil winding and the braid of the outgoing coaxial feeder.

As shown in **Fig. 1**, the wire marked 'X' should run horizontally to the end of the first Slinky in the line. You should also try to avoid vertical wiring for this will degenerate the low noise characteristic of the Beverage. The box connects to grounding point, which in my case was made with three copper rods into a 'flower border' just below the box.

The grey, painted box can be seen in the photograph of **Fig. 3** mounted against my garage wall and level with the run of the antenna. To try to avoid, or at least minimise, earth line inductance, I used the copper braid from some scrap thick coaxial cable for the connections to the ground rods. If, as is preferable, you use more than one earth rod, then you should space them at least one metre apart and preferably one and an half metres apart.

The coaxial cable I used to go from the feedpoint to the shack, is the double-screened 75 Ω impedance variety as used with TV antennas and is white in colour. Ordinary 50 or 75 Ω coaxial cable may be used, for the matching isn't a critical factor.

A Beverage receiving antenna has a very broad-band characteristic because it's an 'aperiodic unresonant' wire. The Slinky coils with their relatively high ohmic resistance will also contribute in making the antenna broad-band. Each Slinky has an end-to-end resistance of around 2 Ω .

The figure of 2 Ω is an ohmic resistance and isn't to be taken as the r.f. resistance. This is perhaps why, antennas made with the toy coils work so well. The bandwidth extends to the 3.5MHz (80m) band and I find that my antenna is very good on that band.

Initial Test

An initial test of the antenna's performance is to tune to a local or semi-local station using sideband mode while using the main station antenna. Then switch over to the Beverage antenna. The rig's S-meter reading will fall, often by several

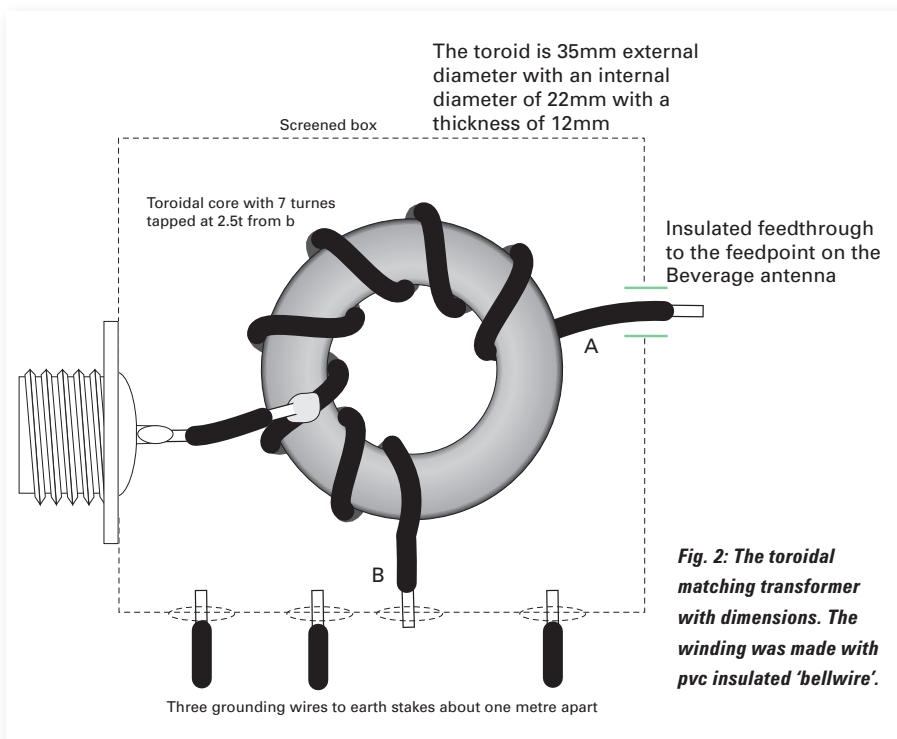


Fig. 2: The toroidal matching transformer with dimensions. The winding was made with pvc insulated 'bellwire'.

points, but the signal will be loud and clear with little or no background noise.

The advantage of a Beverage antenna is that the attenuation of the background noise is greater than the attenuation of the wanted signals. This advantage is fortunate because it allows the reception of weak stations that are almost unreadable on the station transmitting antenna - even if the signal strength is much higher.

My Slinky Beverage seems to show little directivity in the reception or radiation pattern. The greater all-round reception capability of this antenna, is no doubt because I don't employ a terminating resistor at the antenna's far end. I have been able to contact c.w. DX signals that come in broadside to the antennas length, directions that would display nulls with a terminated wire.

Practical Guide

This, article has been written as a practical guide to the making of a low noise receiving antenna for 160 metres and I've not gone into the principles of how and why Beverage antennas work. The reader will find some quite lengthy explanations of their performance in several standard antenna books. I can recommend *The ARRL Antenna Book 20th Edition* and *Low Band DXing* by **John Devoldere ON4UN**, which has a very comprehensive section devoted to Beverage antennas.

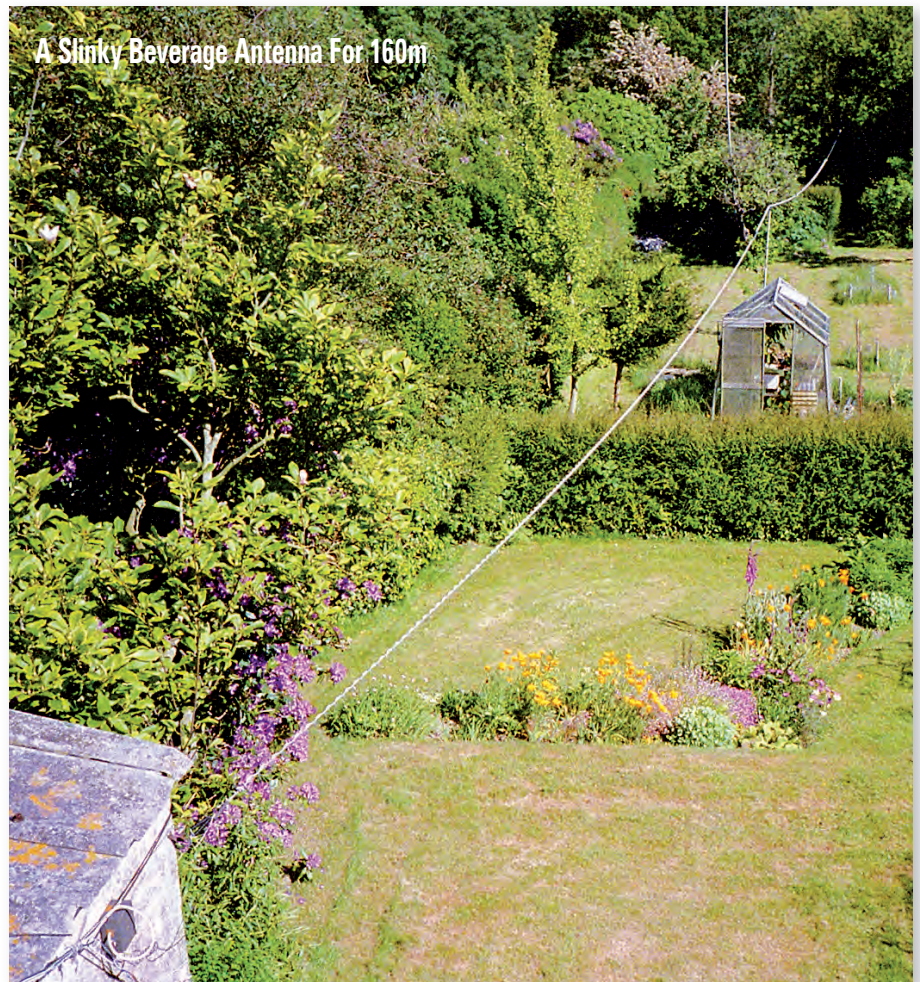


Fig. 3: looking down the garden and out onto the feed end of the Beverage antenna, mounted on the garage wall. The earth return lines go to three ground rods located directly underneath the feedpoint.

My simple Slinky version has let me work DX that, when listening on the main station antenna, was wiped out by local electrical noise. Although much weaker on the Beverage antenna the DX signal was usually good readable copy.

The Springy toys can be obtained from **TOBAR LTD., St. Margaret, Harleston, Norfolk, IP20 OTB**. As they make a mini-sized version - so make sure you order the larger type.

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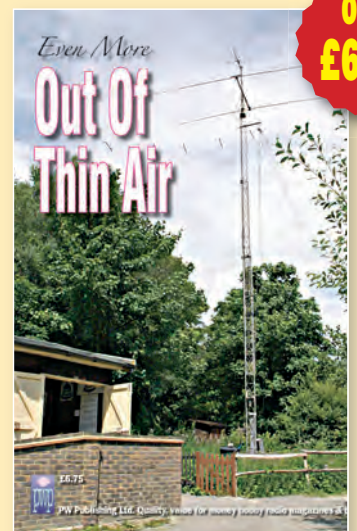
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The Polish Amateur Radio Revival

The past decade has brought an upswing in Amateur Radio activity in Eastern Europe. It seems that the Iron Curtain had effectively screened off the radio waves for half a century after the Second World War. When the curtain was torn apart, thousands of enthusiasts gained access to the radio spectrum and the global market.

The history of Amateur Radio in Poland goes back to 1918 when, after the First World War, Poland became an independent nation and there were several experimenters in different parts of Poland. Radio was banned there for many years – yet this didn't hinder Polish representatives attending the 1925 Paris conference and the founding of the **International Amateur Radio Union**.

The national Amateur Radio organisation **Polski Związek Krótkofalowców (PZK)** – the Polish Amateur Radio Union – was finally established in early 1930.

Soon after the end of Second World War the PZK was incorporated into a paramilitary league in the

Soviet style. The country had been destroyed, the borders were totally changed, millions of people perished and displaced, while a new political system was superimposed on the nation.

Until the middle of the 1950s very few SP stations were on the air. The majority of those who were authorised to use Amateur Radio transmitters were members of the oppressing 'system'.

After 1956, and a certain relaxation in the society control, many new licences were issued in Poland. The PZK was reactivated and eventually hundreds of clubs were established all over the country during the 1960s. There was much enthusiasm but very limited



Marek SQ8JLA lives in the south-eastern part of Poland and his well-equipped station is a part of the SN0HQ network during the IARU HF Championship. Marek's wife is SQ8JMB and their antennas include a rotary array for h.f. and a 30m (100ft) vertical. (All photographs by SM0JHF).

Maciek SQ6MS lives in Wrocław, south-western Poland. Licenced in 1999 and is a member of the SN0HQ team. (Here pictured at a club station SP5ZCC near Warszawa). In the background is YL operator, Donata SP5HNK.

Henryk Kotowski SM0JHF delves into the long and troubled history of the Amateur Radio hobby in his beautiful Polish homeland.

resources for actually getting on the air. The solution was joining a club and building equipment together, learning from others and sharing the facilities.

Amateur Radio Banned

In December 1981 all Amateur Radio was banned again, due to the martial law. A few years later – slowly – the equipment and the licences were given back but the enthusiasm had vanished.

Then the turbulent years at the end of the 1980s and the early 90s brought drastic changes in this region. Most of the radio clubs disappeared and there seemed to be no future for our hobby in this part of the world.

Sometime in the middle of the 1990s I witnessed the first signs of an Amateur Radio revival in Poland. A few serious contest stations were built, the number of active operators was growing, the legislation underwent the modernising process and the revival continues today!

There are several world-class contest sites in Poland now. The contest results listings are swarmed with Polish callsigns. The number of submitted contest logs from Poland is higher than average. Chasing DX is popular and the national DX association – called the SP DX Club – has close to 1000 members, 200 of them have passed the 300 mark of the DXCC units.

The national organization PZK is growing and expanding, its headquarters being located in Bydgoszcz, in the northern part of the country. Some old radio clubs are recreated, new ones launched and there are nationwide clubs for v.h.f./u.h.f. fans, digital modes, QRP, etc.

There are a few Polish stations capable of Earth-Moon-Earth communication. Homebrewing is again popular, in particular with low-power enthusiasts and using a computer-with-radios is common – not only by the young addicts! There's also a good network of v.h.f. and u.h.f. repeaters covering most of the country and several monthly magazines carry information and features about Amateur Radio.

Poland is active in the annual IARU HF Championship in July and round 100 operators are involved in the SN0HQ activity which comprises more than a dozen of well equipped stations connected in a network. The Polish team has been very successful in the past five years.

There's a huge amount of equipment in the hands of Polish Amateur Radio operators nowadays and almost anyone can now afford buy a commercially-made rig. A great deal of surplus military equipment has also been adapted for Amateur Radio purpose following Poland joining NATO a few years ago. However, the tradition for building and experimenting is still very much alive

It has never before been so easy to be an active and modern Polish Amateur Radio operator as it is today. But there's still a Morse code requirement in order to have access to h.f. bands.

The prefixes used by Polish amateur stations are SP, SO, SR, SQ, SN, 3Z and HF. Foreign Radio Amateurs holding CEPT licence are authorised to be on air up to three months.

It seems to me that our hobby, although a century old, is still in state of enthusiastic growth in many countries. One such country is Poland!



Lukasz SP8CUR shares the radio shack with his father Marek SP8CUW and they live in south-eastern Poland.



The spirit of experimenting and building your own equipment is strong in Poland! Andrzej SP8BRQ, (left) is shown in his radio room together with Edward SP8FUX as they check a power measuring instrument.



Wojtek SP8AJK has been very active on the air for 50 years using modest equipment. He holds no less than 12 DXCC awards for different bands and modes and all of them endorsed for at least 300 entities.

The simple three band v.h.f. antenna you didn't know you had!

The Easy Tri-bander

I didn't realise at first, that when I put up a vertical dipole for the f.m. part of the 50MHz band, it would work on two other bands too! I suppose the thoughts came to me as I considered that if my 7MHz dipole will work on 21MHz because it is an odd number of half waves long at both frequency, why shouldn't a 50MHz antenna work on bands at three times the frequency too?

I set about checking to see if my ideas were correct, that my 50MHz dipole would work at bands at three times its nominal frequency. And it turned out to be true. To be honest the 144MHz band isn't quite three times the frequency of the 50MHz band, but it is very close to it being so.

My 50MHz antenna, is close to three half wave-lengths long at 145MHz. And more importantly in the 430MHz band it's close to nine half waves long as well.

With a little 'fiddling' of the lengths it worked very well.

As you can see from the diagrams, there's an high current feed point at the centre for each band. The dipole is 2890mm long overall and is mounted about 9m (30ft) above the ground on my home-brew mast.

The antenna's fed with about 20m of UR67 heavy coaxial cable. I used 30mm tubing, only because I had it to hand, along with a dipole centre piece for tubing of that size. It would be a simple experiment to try this out using wire to make a suitable dipole just to test the idea although the bandwidth will be slightly narrower that when using tubing.

The picture **Fig. 3**, show the aerial 'luffed' (bent) over with a 4m dipole in the background. The second picture, **Fig. 4**, shows the mast upright between the two handy oak trees in the middle of my lawn. Good luck to anyone trying this and 73 from me.

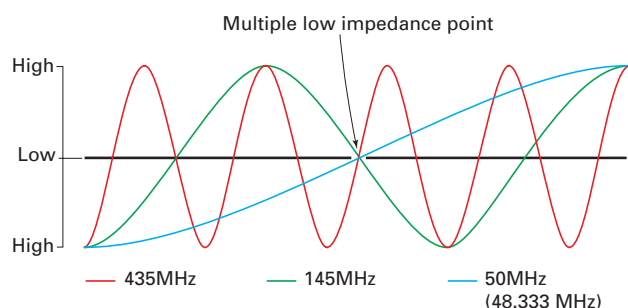


Fig. 1: The impedance variation of a dipole antenna on three harmonically related bands. And of course the 50, 144 and 430MHz bands are almost harmonically related

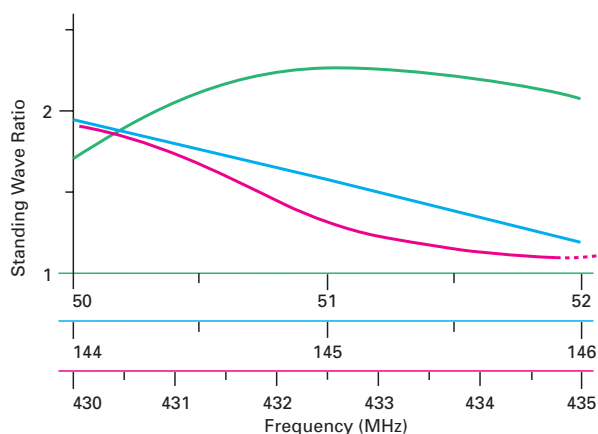


Fig. 2: The s.w.r. curves for the Tri-band antenna on the 50, 144 and 430MHz bands.



Fig. 3: The antenna, shown before erection to the working position, is 2.89m long and made from relatively large diameter tubing, which helps to increase the overall bandwidth.

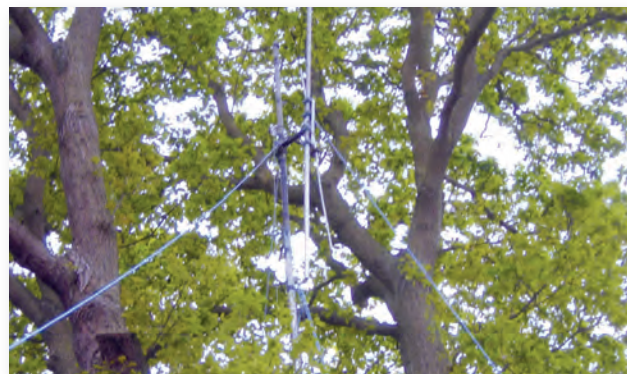


Fig. 4: The antenna's almost impossible to spot in its working position between a pair of large deciduous trees.

Ken Grover G3KIP looked at his 7MHz antenna, working on the 21MHz band and wondered if he could apply the same rules to his v.h.f. antenna.

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Tony Nailer's

doing it by design

Tony Nailer G4CFY describes the trials and tribulations that have turned the Top Band a.m. project into a design adventure!

This project started in Doing it By Design (DiBD) in *PW* for September 2007, with the development of the receiver main board, the variable frequency oscillator (v.f.o.) and the pre-selector. Part 2, in DiBD in the *PW* for November 2007 included the v.f.o. and buffer design, changes to the design of the pre-selector, together with printed circuit board (p.c.b.) layouts for the v.f.o., the buffer, the receiver, and the pre-selector. Part 3 in January 2008 *PW* covered the development of the transmit amplifier strip.

After Part 2 was written and the p.c.b.s for the VFO, Buffer Receiver, and Pre-selector stages laid out, I offered boards and kits at the end of the article. Subsequently, I found that the box for the v.f.o. was temporarily out of stock with Farnell, the CFW455HT filter for the receiver wasn't in stock with any wholesaler in the UK, the source of C804 variable

capacitors for the v.f.o. wouldn't get back to me with a quantity price, and the polyvaricon for the pre-selector was no longer in stock at the Maplin Mail Order Depot. Great fun!

Even worse, my wife fell ill in November and I didn't have the time nor the process details to do a p.c.b. print and etch run.

However, things then improved a little! A quantity of boxes for the v.f.o. was immediately put on back-order with Farnell. A wholesaler gave me a good price on a quantity of LT455HTW filters to be made in the Far East with a four weeks delivery. I then pursued the stockist of the variable capacitors and agreed a quantity price. It was a real adventure in design!

Polyvaricon Problem

The polyvaricon was more of a problem. Although the AB11M shown in the Maplin catalogue was in stock in many of the Maplin shops, there

were none of these in my area. There's no procedure within the stores to sell items by mail order, nor is there a facility for them to transfer stock to the mail order depot in Wombwell in South Yorkshire!

Various suppliers of polyvaricon were found on-line with all sorts of these devices. Most of them had different values for the dual sections, to suit them for radio frequency (r.f.) and oscillator functions. Those that had equal value sections were at an unacceptable price. Eventually, I obtained samples from three stockists for approval and measurement. One of these, which had been advertised as 160pF single section, turned out to be 300pF dual section. A price was negotiated and I bought all the available stock.

Unfortunately the 300pF polyvaricon was a different size to the AB11M, so I had to lay out the pre-selector board again to accommodate it! Also the change in value from 160pF of the previous design, to 300pF of the new component, required the recalculation of the capacitance in series with each section. I worked that one out to be 60pF which can be made up using a 27pF and a 33pF in parallel. C6 and 10 are 33pF and C7 and 9 are now 27pF.

During December all the difficult parts arrived. Since then I have been too busy to try making the boards but hope to do so by the end of January.

Transmit amplifier Development

Since the January article was written, I've obtained replacement IRFZ34E power m.o.s.f.e.t.s and undertaken further tests on the amplifier. The output power was about 8W on the test frequency of 1.9MHz but dropped off to about half that at 1.82MHz and at 2MHz it was about 10W.

I found that increasing the series capacitor from 1n5 up just 100pF gave more output. Likewise small changes to the 2n7 capacitor also helped. Eventually the circuit gave

Fig. 1: The block diagram of Tony's first design ideas, using an i.c. as a mixer stage.

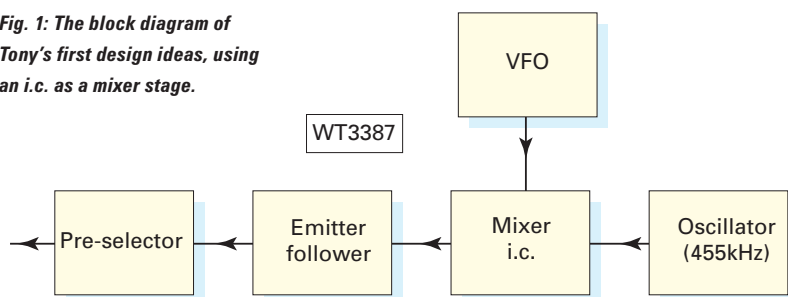
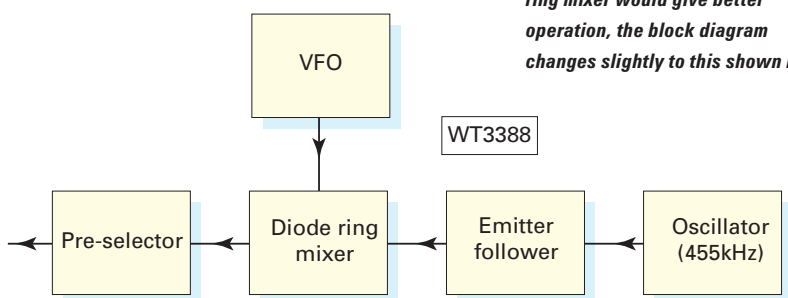


Fig. 2: After deciding that a diode ring mixer would give better operation, the block diagram changes slightly to this shown here.



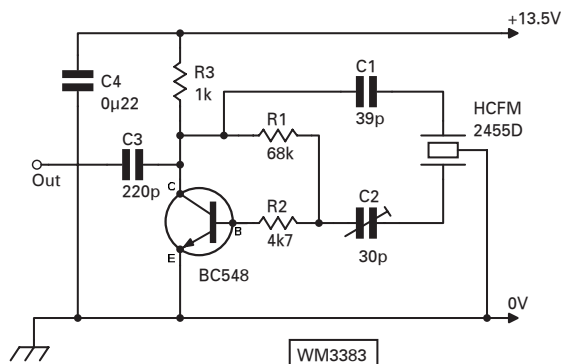


Fig. 3: A simple transistor and resonator oscillator at the i.f. frequency. The variable capacitor allows a degree of tuning.

Tony Nailer

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11W at the centre of the band and 10W at each band edge.

During the tests the 10Ω resistor in series with the 0.1μF de-coupling capacitor, the supply choke got very hot and during one test it burned out. Different values of this resistor produced different requirements of the output network, to achieve the required power, or the peak power in the middle of the band. Removing it caused the output to be modulated with a signal at about one third of the carrier frequency, at about 26dB down.

I do like to see good quality sine waves being produced by my circuits! Clearly more time needs to be spent on this to get it right. Unfortunately, after my wife fell ill all my free time disappeared, so I wasn't able to pursue it. However, after being ill for nearly three months she's beginning to get a bit better and I'm now very busy trying to catch up with my work and this project.

Transmit Generator

A 455kHz oscillator circuit employing a two pole mechanical filter (which I developed several years ago for use in a stereo encoder) is used for the transmit generator oscillator. There were two possibilities for the transmit mixer, one using an integrated circuit (i.c.) at relatively high impedance, or using a diode ring mixer at low impedance.

The first approach would require an emitter follower to match it to the pre-selector, the second would require an emitter follower to buffer the 455kHz oscillator (See Figs. 1 and 2). I decided to use a diode ring mixer, so the first step was to build and test the oscillator circuit (See Fig. 3).

The oscillator was built on a piece of blank p.c.b. material with enough

room for the mixer and pre-selector. It worked, producing a very large output signal of about 6V peak-to-peak but with a very high level of second harmonic distortion. This was evident because the wave was sharp on the positive half-cycle, and flat bottomed on the negative half-cycle. This was fine for the previous use, where it had been driving a logic divider although in this application I required as pure a wave as possible, to keep reciprocal mixing down.

An oscillator, Fig. 3, is just an amplifier with a frequency determining element and positive feedback. In this case the feedback path is from collector through the 39pF capacitor, through the filter, through the 4.7kΩ resistor and into the base. It oscillates because the transistor has a 180° phase shift between base and collector and the filter also has 180° phase shift between input and output. Together they produce positive feedback.

The base bias resistors of 68kΩ and 4.7kΩ provide a negative feedback path for the signal. The filter signal connected to the junction of these resistors sets the negative feedback at just 6%.

Presumably, if the two series resistors were replaced with a trim-pot, with the filter signal fed to the wiper, it should be possible to adjust the negative feedback to give linear operation. I didn't try that method but instead opted for the addition of a resistor in the emitter, to create what is termed degenerative feedback. It controls the gain of the stage by working in conjunction with the collector resistor.

I found that 150Ω produced a nice sine wave with only a slight amount of flattening on the negative half-cycle. I estimated the second harmonic distortion at around -40dB.

Tuning became quite critical, this was because when the circuit was tuned even slightly from the optimum filter frequency, the level falls and the oscillation collapses. Stability from switch-on is within 200Hz until a steady state is achieved in five minutes.

Conditions for good stability didn't exist with the circuit in breadboard form as they were being affected by body heat and heat from the table lamp. However, blowing on the circuit only caused it to move about 10Hz in frequency.

I also built a breadboard Hartley oscillator using a field effect transistor (f.e.t.) and an intermediate frequency (i.f.) transformer but the stability was very poor. Stability from switch on was of the order of 2kHz over five minutes. Blowing on the circuit caused it to move about 300Hz. Clearly the best circuit is the version using the mechanical filter.

Emitter Follower

An emitter follower circuit was then designed and added to the oscillator. I chose the base voltage to be just above half supply and the collector and emitter current to be about 10mA. The supply de-coupling capacitor at 455kHz should be about 1Ω reactive. The circuit is shown in Fig. 4.

Design Calculations

Let $R_5 = 10\Omega$, $R_6 = 12k\Omega$, Supply $V_c = 13.5V$.

Base voltage $V_b = (R_6 \cdot V_c) / (R_5 + R_6)$.

$V_b = (12k \cdot 13.5) / (12k + 10k)$,

$V_b = 162k / 22k = 7.36V$.

Emitter voltage $V_e = V_b - 0.7V = 6.66V$.

Emitter current $I_e = 10mA$.

$R_7 = V_e / I_e = 6.66 / 10mA = 666\Omega$

Use 680Ω

$XC_4 = 1 / (2 \cdot \pi \cdot f \cdot C_4) = 1\Omega$.

Then $C_4 = 1 / (2 \cdot \pi \cdot f)$,

$C_4 = 1 / (2 \cdot \pi \cdot 0.455 \cdot 10^6)$,

$C_4 = 1 / (2 \cdot \pi \cdot 0.455) \mu F$,

$C_4 = 0.35 \mu F$. Use 220nF or 470nF.

Let C_5 also be 220nF.

If $XC_3 = 1k\Omega$, $C_3 = 220pF$.

Diode Ring Mixer

I always prefer to make my own ring mixers – but then I'm not frightened of toroids. The ideal diode for the job is the new Schottky type BAT42 with a knee voltage of about 200mV and miniscule reverse leakage. Unfortunately I had run out of them so used the old and tatty OA91!

Normally I use the very small FX1115 ferrite beads but on this occasion I chose FT37-43 toroids, which are 9mm diameter and will allow a reasonable number of turns. Using a hand drill and a vice, I twisted together three lengths of 34s.w.g. wire, to produce a trifilar bundle.

Then I wound two toroids each with 12 turns of the trifilar wire. Finally, I separated to one side the start and finish of one winding. The other two windings were connected start to finish and bent to the opposite side. All the parts to make the mixer were now available.

Transmit Generator Breadboard

The complete circuit of the prototype transmit generator is shown in **Fig. 5**. The mixer was fabricated onto the board alongside the 455kHz oscillator stage. The prototype v.f.o. from the November 2007 DiBD was then attached side-by-side with this board. I also added a pre-selector after the mixer.

The circuit was switched on a tested using a Marconi TF2370 spectrum analyser and an HP1740A oscilloscope. With the pre-selector bypassed, the mixing products displayed on the analyser looked a bit like a forest! Fortunately there was no products close-in to the wanted signal out the full tuning range.

With the pre-selector in circuit a number of the products were attenuated – but not as much as I had hoped. When I tested the pre-selector on its own, using the spectrum analyser with its internal tracking generator, it showed the passband to be very wide.

Pre-selector Post Design

Looking at the circuit of the pre-selector, it became clear that the tapping point of the coils were too high up, hence the 50Ω of the analyser and tracking generator were loading them down. I then added a 100Ω resistor in series with each tapping point and tested the pre-selector again. The response was markedly sharper!

So, how could I solve this problem? The coils as adjusted were 60μH inductance and had an unloaded Q of 60. A solution I considered was to wind up a couple of dust-iron toroids with primary and

secondary windings.

Referring to The Shortwave Magazine August 1998 article on toroids, a suitable type T44-15 was identified. This was 11mm diameter, with a material good for coils in the region 0.1-2MHz. The toroid has an AL value of 160μH/100turn.

Design calculations for:

$$\begin{aligned} \text{Number of turns } N \\ N &= 100 \cdot \sqrt{L(\mu\text{H})/AL}, \\ N &= 100 \cdot \sqrt{60/160} \\ N &= 61.2 \text{ turns} \end{aligned}$$

Inductive reactance XL

$$\begin{aligned} XL &= 2 \cdot \pi \cdot f \cdot L, \\ XL &= 2 \cdot \pi \cdot 1.9 \cdot 10^6 \cdot 60 \cdot 10^{-6}, \\ XL &= 716.3\Omega \end{aligned}$$

Dynamic resistance Rd

$$\begin{aligned} Rd &= Q \cdot XL \\ Rd &= 60 \cdot 716.3 = 43\text{k}\Omega. \\ 50\Omega \text{ tap.} \\ (Rd/Rs) &= (N/n)^2 \end{aligned}$$

$$\begin{aligned} \text{Then } \sqrt{Rd/Rs} &= N/n \\ \text{Also } n &= N \cdot \sqrt{Rs/Rd}, \\ n &= 61 \cdot \sqrt{50/43000}, \\ n &= 61 \cdot \sqrt{0.00116} \\ n &= 2.08 \text{ turns.} \end{aligned}$$

Knowing that *PW* readers really hate toroids I looked at the TOKO coils catalogue again. The chosen type was the only one close enough to our requirements. It only has one winding, comprising 65 turns and I decided to add the two turn link winding to each coil. Carefully prising off the cover I added two turns of 38s.w.g. wire and terminated them on the two spare pins.

After re-fitting the coils to the pre-selector a test with the spectrum analyser and tracking generator revealed a very sharp response. The

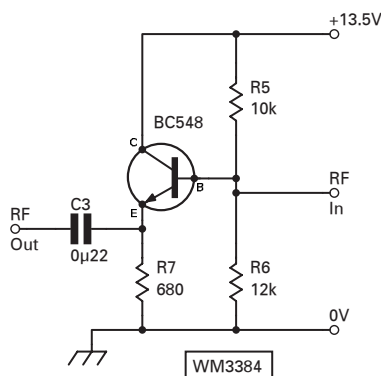
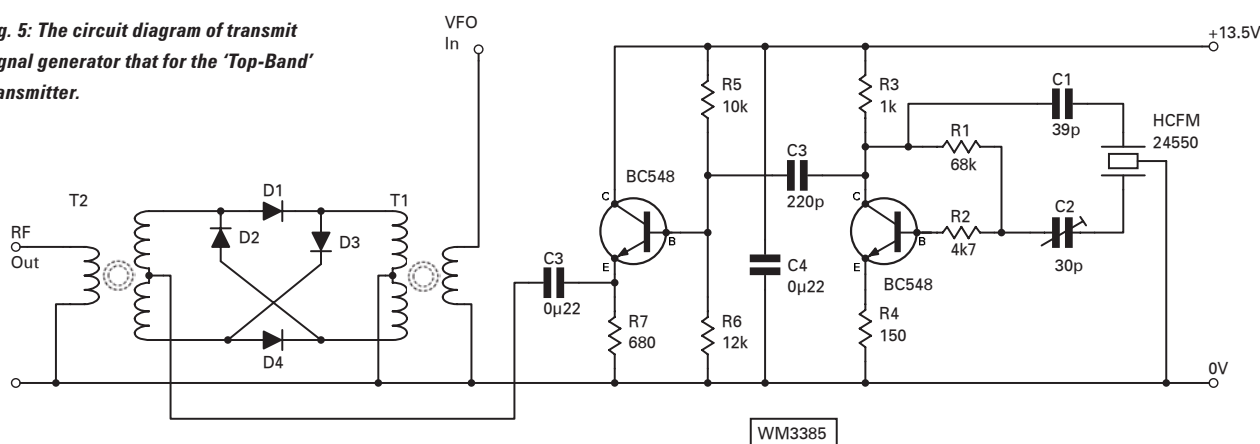


Fig. 4: The oscillator is followed by an emitter follower buffer stage to supply the high level signal to the diode ring mixer.

Fig. 5: The circuit diagram of transmit signal generator that for the 'Top-Band' transmitter.



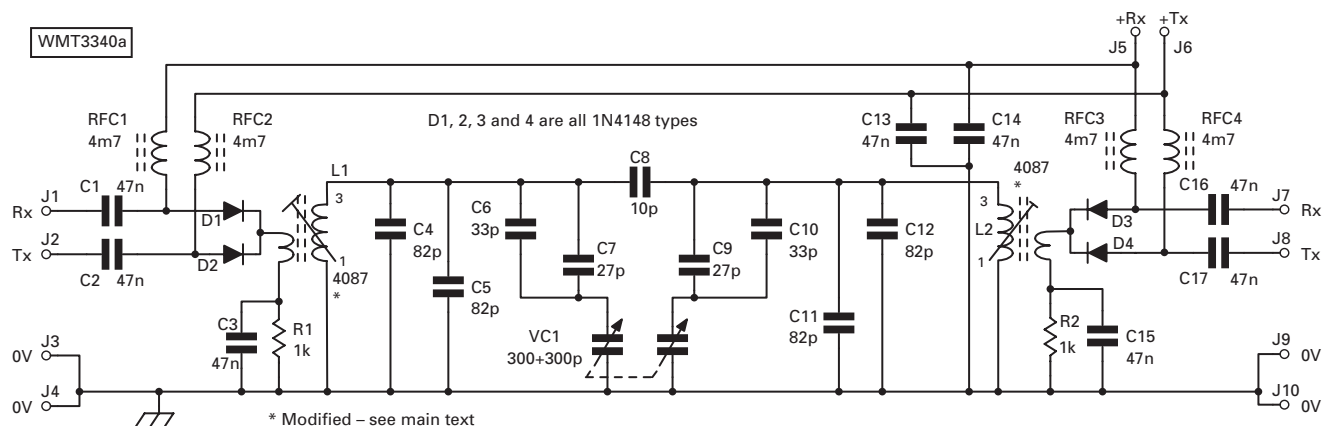


Fig. 6: The pre-selector from Tony's previous designs needed a few modifications to match into the ring mixer.

passband was about 30kHz at the -3dB points and the skirt selectivity was -40dB at plus and minus 200kHz. The problem solved and the new circuit is shown in Fig. 6, with the new p.c.b. artwork and component placement shown in Fig. 7.

Transmit Generator Monitored

The pre-selector was wired back into circuit and I monitored the output of the transmit generator on the analyser. There was a single point signal about 45dB above the noise floor, with no spurious response or harmonics visible. When the pre-selector was mis-tuned this signal was attenuated by about 35dB.

The output signal amplitude observed on the oscilloscope was initially 50mV p-p. I then changed one of the resistors in the v.f.o. buffer and increased the output to 75mV.

I then made some oscilloscope observations of the two oscillators together with the output of the mixer. The smallest signal into the mixer was from the v.f.o. and was 400mV p-p. It would be expected that – at best – the output might be only 6dB down but typically it could be as much as 10dB. This mixer was not very good, as it has a conversion loss of 14.5dB. I then planned to try fewer turns on the toroids as well as using BAT42 diodes.

A metal can mixer (like the SBL-1) was fitted into the circuit and initially produced 150mV p-p but then stopped working! It was one I had taken out of a faulty single sideband (s.s.b.) transceiver some years ago. Fortunately, I have found a supplier of a similar part at a very reasonable price and have been promised a

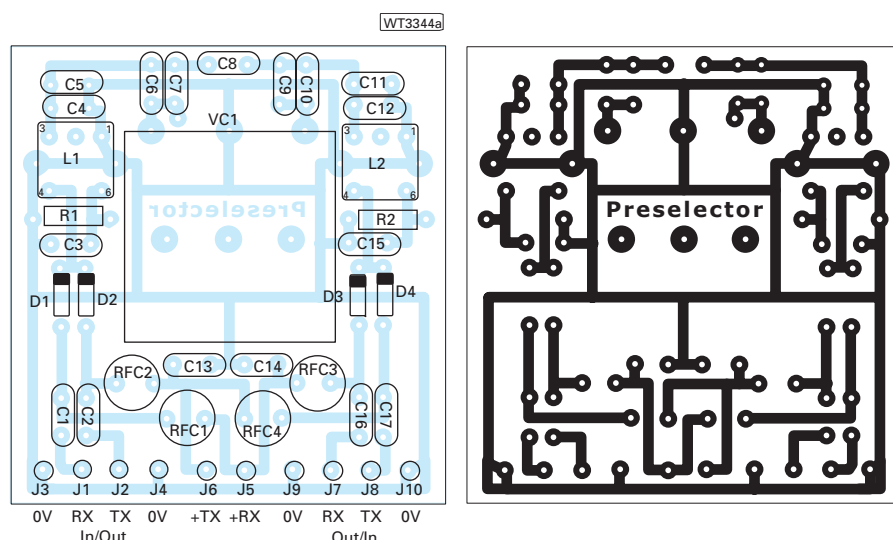


Fig. 7: The track pattern and overlay of the newly modified pre-selector.

sample. Obviously this would be more attractive to readers than them having to wind their own toroids!

In the next article in this series it's my hope that all the development will be completed. The microphone processor and modulator proved and all the boards laid out and the kits available – at last!

Editorial comment: I'm sure that readers will join me in wishing future good health in the Nailer household. I know it's been a difficult time for Tony and his wife Jean and we wish them well. Rob G3XFD.

Correspondence

If you wish to correspond regarding this article or previous ones, please subscribe to the list pw-g4cfy-on@pwpublishing.ltd.uk by sending a blank E-mail with the word **subscribe** in the subject box. When you receive confirmation from the server you can send an email to pw-g4cfy@pwpublishing.ltd.uk and your comments will be answered by myself or the PW team.

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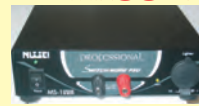
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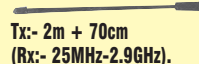
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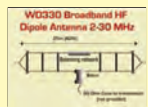
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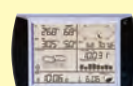
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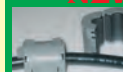
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RS-102 1.8-150MHz (200W)

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RS-402 125-525MHz (200W) £49.95 P&P £6

RS-3000 1.8-60MHz (3kW) Incls mod meter £59.95 P&P £5

RS-40 144/430MHz Pocket PWR/SWR £29.95 P&P £4

DL-30 diamond dummy load (100W max) £26.99 P&P £4



club news

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

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E-mail: pwnews@pwpublishing.ltd.uk

BERKSHIRE

Reading & DARC

Contact: Pete Milton
Tel: (01189) 695697
Website: www.radarc.org

The Reading & District Amateur Radio Club meets on the second and fourth Thursday of the month at Woodley Pavilion, Woodford Park, Haddon Drive, Woodley, Berkshire RG5 4LY. February 28th is a talk on the new IET wiring regulations by Chris Smith, March 13th is the Spring Junk Sale, 27th is a talk on The In's and Out's of the Internet by Des Howlett G8FIF. The club is running a Foundation Licence Course on April 4th and 5th.

CHESHIRE

Chester & District Radio Society

Contact: Graham
Tel: (07930) 655 121
E-mail: info@chesterdars.org.uk
Website: www.chesterdars.org.uk

The Chester & District Radio Society meets on Tuesday evenings at the Burley Memorial Hall, Common Lane, Waverton, Chester CH3 7QT. February 19th is a Silent Key Sale, 26th is a talk on No Radio Without Water by Dave Hicks, March 4th is a Surplus Sale and 18th is a talk by Dave Ollerhead.

Macclesfield & District Radio Society

Contact: Ray King
Tel: (01260) 278431
Website: www.gx4mws.com

The Macclesfield & District Radio Society meets every Monday at the Pack Horse Bowling Club, Westminster Road, Macclesfield SK10 3AT at 8pm. The club continues to hold successful licensing courses. A new Foundation licence course is underway, with keen youngsters taking part and enjoying the practical assessments. Additionally, a group of the club's current Intermediate licence holders are holding regular study clubs, in addition to their tuition, in preparation for their forthcoming full licence examinations. February 18th is a talk on Amateur Radio Direction Finding (ARDF) by Bob Titterington, March 10th is a talk on the Pennine Way by Tom and Jimmy Read and 17th is an On the Air Night.

Stockport RS

Contact: David Simcock
Tel: 0161 456 7832
Website: www.stockportradiosociety.co.uk

The Stockport Radio Society meets on the first and third Tuesdays at the Bramhall Air Scouts HQ, Leewood Hall, Benja Fold off Ack Lane East, Bramhall, Stockport SK7 2BX. February 19th is a talk on Amateur Radio Direction Finding (ARDF) with Bob Titterington, March 4th is the Reddish Rally Planning Meeting and 18th is a talk on Stereo Sound by John Shuffelbotham.

Halton RC

Contact: Sam
Tel: (01928) 714231
Website: <http://www.whcf.org.uk/memborgroups/hrc>
The Halton Radio Club meets in The Play Centre, Norton Hill, Windmill Hill, Runcorn, Cheshire WA7 6LJ every Thursday from 7.30 to 9.30pm. There's plenty of parking and full disabled access. March 6th is a Quiz night and 20th is a Video Night.

CORNWALL

Poldhu ARC

Contact: Keith Matthew
Tel: (01326) 574441
E-mail: g0wys@yahoo.co.uk
Website: www.gb2gm.org

The Poldhu Amateur Radio Club meets at The Marconi Centre, Poldhu Cove, Nr Mullion, Cornwall TR12 7JB. Tel: 01326 241656. March 11th is a talk on Pirate FM by Bob McCready.

COUNTY DOWN

Bangor and District ARS

Contact: Mike G14XSF
Tel: 028 4277 2383
Website: <http://www.bdars.com>

The Bangor and District Amateur Radio Society meets on the first Thursday of every month in "The Boathouse", Harbour Car Park, Groomsport BT19 6JP at 8pm. Visitors and new members are most welcome. March 6th is a talk on Wire aerials by G14JTF and Logger32 by G14VIV.

COUNTY DURHAM

Great Lumley AR&ES

Contact: Nancy Bone
Tel: 0191 477 0036
E-mail: nancybone2001@yahoo.co.uk
Website: www.glares.org.uk

The Great Lumley Amateur Radio & Electronics Society meets in the Community Centre, Front Street, Great Lumley, Chester le Street, Co Durham DH3 4JD every Wednesday 7.30 to 9.30pm.

Bishop Auckland RAC

Contact: Mark Hill
Tel: (01388) 745353
Website: <http://barac.m0php.net/>

The Bishop Auckland Radio Amateur Club meets every Thursday at 8pm in the Village Community Centre, Stanley Crook, Co. Durham DL15 9SN. Tuition for Foundation, Intermediate and Advanced licences is available. The club is registered as an RSGB exam centre.

DERBYSHIRE

South Normanton Alfreton and District ARC

Contact: A J Highton
Tel: (01773) 783658
E-mail: snadarc@linuxmail.org
Website: www.snadarc.me.uk/

The South Normanton Alfreton and District Amateur Radio Club meets in the Village Hall, Community Centre, Market Street, South Normanton, Derbyshire DE55 2EJ. February 18th is a Junk Sale, 25th is a Project Night, March 3rd is a Morse Class, 10th is a Fox Hunt (free fish and chip supper for those taking part) and 17th is a Junk Sale.

DEVON

Torbay ARS

Contact: Dave Helliwell
E-mail: g6fsp@tars.org.uk
Website: www.tars.org.uk

The Torbay Amateur Radio Society meets Fridays at 7.30pm in the Teignbridge District Scout Headquarters, Wolborough Street, Newton Abbot, Devon TQ12 1JR. February 29th is the AGM, March 7th is a Natter Night, there is no meeting on March 21st and 28th is a Presentation Night, tickets £5.

DORSET

Bournemouth RS

Contact: John
Tel: 07719 700 771
Website: www.brswebsite.org.uk

The Bournemouth Radio Society meets on the first and third Friday of each month at the Kinson Community Centre, Pelhams Park, Millhams Road, Kinson, Bournemouth BH10 7LH. Meetings take place in Room 5 at 8pm and members assemble in the bar from 7.30pm. Visitors are always welcome. March 9th is the Bournemouth Radio Society Sale, entry fee £1.50, car parking, access for disabled visitors, trade stands, Special Interest Groups.

SUSSEX

Brighton RC

Contact: Reg Moores
Tel: (01273) 503869

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

Hastings E&RC

Contact: Gordon Sweet
Tel: (01424) 431909
E-mail: gordon@gsweet.fsnet.co.uk
Website: www.herc.uk.net

The Hastings Electronics & Radio Club meets on the third Wednesday at the Taplin Centre, Upper Maze Hill, St Leonards on Sea TN38 0LQ at 7pm. February 21st is the AGM and March 21st is a talk on the new military communications system, Bowman.

ESSEX

Braintree & DARC

Contact: Keith
Tel: 01376 329279
Website: www.badars.org.uk

The Braintree & District Amateur Radio Society meets on the first and third Monday of the month in The Clubhouse, Braintree Hockey Club, Church Street, Bocking CM7 5LJ.

February 18th is a talk by Mrs Jiggins, March 3rd is a talk on Stamp Collecting by G3TGB, 10th & 24th are Club Net Nights and 17th is a Project Construction Night.

Colchester RA

Contact: David Chambers
Tel: 07766 543784
Website: www.g3co.ccom.co.uk

The Colchester Radio Amateurs meets at 7.30pm on alternate Thursdays at St Helena School and The Colchester Institute, Sheepen Road, Colchester, Essex CO3 3LE. Members and non-members welcome. February 21st is at St Helena School when Frank Howe and Martin Clarke present a talk on Starting in Packet, March 6th is a presentation by Trinity House at the Colchester Institute, 20th is the Three Club Quiz Night at St Helena School.

Chelmsford ARS

Contact: Martyn Medcalf
Tel: (01245) 469008
E-mail: info2007@g0mwrt.org.uk
Website: www.g0mwrt.org.uk

The Chelmsford Amateur Radio Society meets on the first Tuesday of each month in the Marconi Sports & Social Centre, Beehive Lane, Great Baddow, Chelmsford CM2 9RX at 7.30pm. March 4th is a social at Hylands House by Ceri Lowen and Richard Osocroft and April 1st is a talk on the GHz Bands by RadCom microwave columnist Sam Jewell.

Loughton & Epping Forest ARS

Contact: Marc Litchman
Tel: 020 8502 1645
E-mail: info@lefars.org.uk
Website: www.lefars.org.uk

The Loughton & Epping Forest ARS meet Friday fortnightly at All Saints House, Romford Road, Chigwell Row, Essex IG7 4QD between 7.45 and 10pm. All visitors will be made most welcome. February 28th is a video presentation on The Welsh Highland Railway with John Short G1DJJ, March 14th is HF Night on the Air and 28th is the AGM.

HAMPSHIRE

Fareham & District ARC

Contact: Ken Sapsed
Tel: 023 9279 7240
E-mail: secretary@fareham-darc.co.uk
Website: www.fareham-darc.co.uk/

The Fareham & District Amateur Radio Club meets on Wednesdays evenings from 7.30pm in the Portchester Community Centre, Westlands Grove, Portchester, Fareham PO16 9AD. February 27th is a DF Construction Evening by Graham G0UUS, March 5th is a Natter Night And Club Station Operating with G3VEF/G8KGI, 12th is a talk on Earths by Chris G8JFJ, 19th is an evening with Chris M0EAY and 26th is the Easter Quiz.

Horndean & District ARC

Contact: Stuart Swain
Tel: (02392) 472846
E-mail: g0fyx@msn.com
Website: www.hdarc.co.uk

The Horndean & District Amateur Radio Club meets on the first and fourth Tuesdays each month in the Lovedean Village Hall, 160 Lovedean Lane, Lovedean, Hants PO8 9SF at 7.30pm. Visitors are always very welcome. February 26th is a Bring & Buy Sale, March 4th and April 1st and Natter Nights and March 25th is a talk on Egypt - The island of Philae by Dave Bartlett.

HUMBERSIDE

Hull & District ARS

Contact: Raymond Penny
Tel: (01482) 504618
E-mail: sirraymond@sirraymond.karoo.co.uk

The Hull & District Amateur Radio Society meets every Friday at the Walton Leisure Centre, Walton Street, off Anlaby Road, Hull HU3 6JB.

KENT

Bredhurst RATS

Website: www.the-brats.co.uk

The Bredhurst Radio Amateur & Transmitting Society meets on Thursdays at the Parkwood Community Centre, Rainham, Gillingham, Kent ME8 9PN at 8.30pm. The Club holds a net 145.400MHz +/- Tuesdays at 9pm coverage about 15 miles around the Medway Towns Kent. If you are interested in joining the club, write to: Membership, The BRATS c/o The Club Room, The Parkwood Community Centre, Long Catlis

Road, Rainham, Gillingham, Kent, ME8 9PN. February 21st is the start of the Dummt Load Project, 28th is a talk by John Mallichan on Start Using Operational Amplifiers, March 6th is a Quiz Night, 20th is the start of the next club project An SWR Bridge with a difference and 27th is a talk by John Mallichan on Making large inductors without iron or coils.

Bromley & DARS

Contact: Graham
E-mail: bdars@grahamc.net
Website: www.bdars.org

The Bromley & District Amateur Radio Society meets in The Victory Social Club, Kechill Gardens, Hayes, Kent BR2 7NH (off B265, Hayes Lane, Bromley) on the third Tuesday of the month at 7.30pm. February 19th is Programme Planning with all members and March 18th is a talk on oscillators by Graham G4NPD.

LANCASHIRE

Oldham RC

Contact: Christopher Cunliffe
E-mail: secretary@oarc.org.uk
Website: www.oarc.org.uk

The Oldham Radio Club meets on Thursdays at No.1855 (Royton) Squadron Air Training Corps, Park Lane, Royton, Oldham at 7.30pm.

LINCOLNSHIRE

Eagle RG

Contact: Steve Burke
Tel: (01507) 600202
E-mail: m5zzz@btinternet.com
Website: www.eagleradiogroup.com

The Eagle Radio Group meets at The Eagle Hotel, Victoria Road, Mablethorpe LN12 2AJ on the second Tuesday of each month, meetings start at 8pm. The group operates an open policy so, if you are in the area, pop in. March 11th is the ERG Auction so bring along any unwanted items of radio equipment to sell.

Spalding & DARS

Contact: Graham Boor
Tel: 07947764481
E-mail: secretary@sdars.org.uk
Website: www.sdars.org.uk

The Spalding & District Amateur Radio Society meets at the Castle Sports Swimming Complex, Spalding PE11 1QF on Fridays at 7.30pm. February 17th is a Junk Sale.

LONDON

Cray Valley Radio Society

Contact: Bob Treacher
Tel: 020 8265 7735
Website: www.cvrs.org

The Cray Valley Radio Society meets on the first and third Thursdays of the month at the Progress Hall, Admiral Seymour Road, Eltham, London SE9 1SL at 7.30pm for 8pm. February 21st is a presentation by Justin Snow G4TSH and Chris Duckling G3SVL, two of the UK team to the expedition to the St. Brandon Islands in the Indian Ocean during September 2007 using the callsign 3B7C.

Southgate ARC

Contact: Donald F Berry G4DFB
Tel: 020 8360 3614
E-mail: dfberry@eggconnect.net
Website: www.southgatearc.org

The Southgate Amateur Radio Club meets on the second Thursday of the month at Winchmore Hill Cricket Club, The Paulin Ground, Firs Lane, Winchmore Hill, London N21 3ER at 7.30pm.

Wimbledon and District ARS

Contact: Jim Bell
Tel: 020 8874 7456
E-Mail: james@jbell5.wanadoo.co.uk
Website: http://www.gx3wim.org.uk

The Wimbledon & District Amateur Radio Society meets on the second and lat Friday of the month at Martin Way Methodist Church, Buckleigh Avenue, Merton Park, London SW19 9JZ. Visitors are welcome whether they are licensed or not. March 14th is a talk on JOTA 2007 GB100J by Dennis M0NDJ and 28th is a talk on VHF Dfing Antennas by Jim G4WYJ.

THE LOTHIANS

Cockenzie & Port Seton ARC

Contact: Bob Glasgow
Tel: (01875) 811723
E-mail: gm4uyz@cpsarc.com
Website: http://www.cpsarc.com/news.php

The Cockenzie & Port Seton Amateur Radio Club meets in the Thorntree Inn (Lounge Bar), High Street, Cockenzie, East Lothian EH32 0HP from 7pm till late. Organised talks are held in the Port Seton Community Centre, South Seton Park,

Port Seton, East Lothian EH32 0EE. February 15th is a Radio Check Night by John MM0JXI and March 14th is a talk on a DXpedition to Brunei V8 by Tom GM4FDM, both in the Port Seton Community Centre Resource Room 2.

Lothians Radio Society

Contact: Tony Sigouin
Tel: 07739742367
E-mail: enquiries@lothiansradiosociety.com
Website: www.lothiansradiosociety.com

The Lothians Radio Society meets on the second and fourth Mondays of the month in the Royal Ettrick Hotel, 13 Ettrick Road, Edinburgh EH10 5BJ from 7pm. Membership costs £12 per year and includes a free BBQ every June! February 27th is a visit to Scottish Microelectronics Centre - Edinburgh University, March 12th is Bring & Tell and 26th is a Surplus Equipment Sale.

NORFOLK

King's Lynn ARC

Contact: Ray Dowsett, MBE
Tel: (01553) 671307
E-mail: ray-g3rsv@supanet.com
Website: www.klarc.org.uk

King's Lynn Amateur Radio Club meets every Thursday at the Scout HQ, Chequers Lane, West Winch, King's Lynn, PE33 0NY off the A10 at West Winch at 7.30pm.

North Norfolk ARC

Contact: Tony Smith
Tel: (01263) 821936
E-mail: g4fai@btinternet.com
Website: http://www.radioclubs.net/nnarc/

The North Norfolk Amateur Radio Group meets in the Radio Hut at the Muckleburgh Collection Military Museum, Weybourne, North Norfolk NR25 7EG on Wednesdays and Thursdays from 10am to 4pm and some Sundays from 1 to 4pm. New members always welcome.

SHROPSHIRE

Telford & District ARS

Contact: Mike Street
Tel: (01952) 299677
E-mail: mjstreetg3jxk@blueyonder.co.uk
Website: www.tdars.org

The Telford & District Amateur Radio Society meets on Wednesdays at the Little Wenlock Village Hall, Malthouse Bank. Little Wenlock. Telford TF6 5BG at 8pm. February 20th is the Under-a-Fiver Construction Competition (cost excludes hardware). 27th is a meeting in the Huntsman pub to discuss the Ingenuity project latest, March 5th is an Open House/Committee Evening, 12th is the Main Construction Competition, 19th is the Ingenuity Museum Project and 26th is the Annual General Meeting.

SOMERSET

South Bristol ARC

Contact: Len Baker
Tel: (01275) 834282
E-mail: g4rzy@msn.com
Website: www.sbarc.co.uk

The South Bristol Amateur Radio Club meets at the Whitchurch Folkhouse Association, Bridge Farm House, East Dundry Road, Whitchurch, Bristol BS14 0LN. February 20th is the Mid Winter Table Top Sale, 27th is an On the Air Evening, March 5th is a Kit Builder's Evening, 12th is a Club Open Night, 19th is a Club Quiz Night and 26th is the PC & Electronics Workshop.

SOUTH GLOUCESTERSHIRE

Thornbury and South Gloucestershire ARC

Contact: Tony
Tel: (01454) 417048
E-mail: tonytsgarc@beeb.net
Website: http://jma-databases.co.uk/tsgarc/index.php/Thornbury_%26_South_Gloucestershire_Amateur_Radio_Club

The Thornbury and South Gloucestershire Amateur Radio Club meets in the United Reformed Church Hall, on the corner of Chapel Street and Rock Street, Thornbury BS35 2BA at 7.30 - 9.30pm. March 5th is a talk from the RSGB Rep.

TYNE & WEAR

Tynemouth ARC

Contact: Tony Regnart
Tel: 0191 280 1981
E-mail: tony.regnart@gmail.com
Website: www.gx0nwm.co.uk

The Tynemouth Amateur Radio Club meets each Friday from 7 to 9pm at St. Hilda's Church, Stanton Rd, North Shields, Tyne & Wear NE29 9QB. It's known locally as 'the church near the fire station'. February 15th is a Pie and Peas supper and 22nd is Operating Night and Morse

WEST MIDLANDS

Aldridge & Barr Beacon ARC

Contact: Roy Horton
Tel: (01922) 691646
E-mail: leslie137@btinternet.com
Website: www.g0neq.co.uk

The Aldridge & Barr Beacon Amateur Radio Club is a daytime club and meets at the Aldridge Community Centre, Middlemore Lane, Aldridge, Walsall WS9 8AN on the first and third Monday of every month at 2pm to 4pm. They have a long wire and a v.h.f. antenna for radio operation using the club callsign G0NEQ. March 3rd is an On the Air Night, 17th is a Demonstration of computers in Amateur Radio by Albert G0KFS, April 7th is Preparation for the PW 144MHz QRP contest and 21st is a Photoshop Master Video Show by Horace.

Wythall Radio Club

Contact: Chris Pettitt
Tel: (07710) 412 819
E-mail: g0eyo@wythallradioclub.co.uk
Website: www.wythallradioclub.co.uk

The Wythall Radio Club is based at Wythall House, Silver Street, Wythall, near Birmingham B47 6LZ. They meet every Tuesday at 8pm and meetings are informal and friendly. February 26th is a talk on Direction Finding by Martin G8VXX, March 4th is the 2m Club Championship from Shack, 18th is a talk on Antennas and Feeders by Peter G4LWF and 25th is a Natter Night.

WEST SUSSEX

Horsham ARC

Contact: Andrew Vine
Tel: (01483) 272456
Website: www.harc.org.uk

The Horsham Amateur Radio Club meets on the first Thursday of the month at The Guide Hall, Denne Road, Horsham, West Sussex. February 21st is the 80m CW Club Championship, 28th is a Social at the White Horse, Mapelhurst, March 2nd is a 2m DF Hunt, 6th is a Junk Sale, 12th is the 80m CW Club Championship, 20th is the 80m SSB Club Championship and 27 is a Social at The Blue Ship, The Haven.

Worthing & DARC

Contact: Roy or Joyce
Tel: (01903) 753893
Website: www.wadarc.org.uk

The Worthing & District Amateur Radio Club meets every Wednesday at 8pm in the Lancing Parish Hall, South Street, Lancing, BN15 8AJ. There's a free car park at the rear and full disabled access. Visitors are always welcome. February 20th is a talk on the new K3 Transceiver by G4UDU and G3VXJ and 27th is GX3WOR on-air.

WEST YORKSHIRE

Pontefract & District Radio Club

Contact: Colin
Tel: (01977) 677006
E-mail: info@pontefractradioclub.org
Website: www.pdars.com

The Pontefract & District Radio Club meets every Tuesday from 7pm and Thursday from 8pm at the Carleton Centre, Carleton Grange, Carleton Road, Pontefract, West Yorkshire WF8 3RJ. February 19th & 26th is building a c.w. decoder (p.c.b. and parts provided as a kit).

WILTSHIRE

Trowbridge & District ARC

Contact: Ian Carter
Tel: (01225) 864698
E-mail: ian.i.carter@btinternet.com
Website: http://uk.geocities.com/ttdarc@btinternet.com

The Trowbridge & District Amateur Radio Club meets at Southwick Village Hall, Southwick (nearest postcode is BA14 9QN). The 2007 Committee wish to remind members and prospective members that the club celebrates its 25th Birthday in December 2008 and all members joining in 2008 will have free membership in 2009. March 5th is the "The Longleat Rally Video Archives" - a look back at 45 years of the much loved and sadly defunct radio rally with Shaun O'Sullivan G8VPG, 19th is a Natter Night.

WORCESTERSHIRE

Worcester RAA

Contact: Martin Carter
Tel: 07976 917987
E-mail: secretary@m0zoo.co.uk
Website: www.wraa.co.uk

The Worcester Radio Amateurs Association meets on the second and fourth Tuesday at the Hallow Scout HQ, off Main Road, Hallow, Worcester WR2 6PP. Visitors, as always, will find a warm welcome at the new clubhouse, as will potential new members.

Lots of hard work is involved in running and promoting your local radio club so please try and support them. Why not pop along and join in? New members will be made most welcome.

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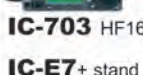
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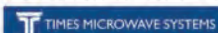
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The Rev. George Dobb's

carrying on the practical way

George has more ideas on building projects and discusses some ideas from Mike Brett 2E0LTJ.

"Simplicity is the ultimate sophistication."

Leonardo da Vinci

Most of the projects I describe in *Carrying on the Practical Way* (COTPW) are modest and simple, such is the nature of the column. This also applies to the methods of construction. The use of printed circuits boards (p.c.b.s) has been avoided.

Generally, the COTPW approach also applies to the more complex projects I've built over the years. An etched circuit board is better suited for multi-production circuits. (I do have equipment and software for making printed circuit boards but it's underused).

The other advantage of the more impromptu methods of construction is that they lend themselves to easy circuit modification during building and testing. One of my least favourite exercises is de-soldering components from a p.c.b!

Ugly Construction

Many of the projects I have described used 'ugly construction', a term first coined by **Wes Hayward W7ZOI**. With this technique a piece of un-etched p.c.b. material forms a ground-plane over which the components are mounted. The grounded components are connected directly to the ground-plane and the other parts are soldered around them.

Complex equipment has been built using the ugly method including the famous *40 Metre Optimized Transceiver* by **Roy Lewallen W7EL**. This month I want to look at another couple of ways of building circuit boards. One of these is the result of feedback from a reader of the column.

Surface Mounting

There are several methods of simple radio construction which use surface mounting of the components.

Surface mounting is usually associated with surface-mount technology (SMT) using surface-mount devices (SMD). These are tiny leadless components used in modern electronic construction.

The advance of SMD has been so rapid in recent times that we humble amateur electronic constructors are finding it increasingly difficult to obtain components with leads. Our method of surface mounting uses conventional leaded parts – but not mounted through holes in the circuit board.

The method is quick and easy and very tolerant of component sizes. Additionally, the parts don't have to fit in the spaces dictated by the spacing of the mounting holes. It also allows for easy re-working of the board.

Island Construction

Perhaps the simplest method of surface mounting a project is the one I call 'island construction'. In this method, the conductive tracks between the components are made by laying down islands of conducting material. Suitable materials might

include small pieces of blank p.c.b. material or pieces of thin copper or brass, often called 'shim'.

Sheets of copper and brass shim are usually available in model shops. It has the advantage that it can be easily cut using scissors. But for most of us, it's probably easier to use scraps of copper clad p.c.b. material.

I'm fortunate in that a few years ago I bought a quantity of very thin p.c.b. material. This cuts very easily using a pair of the cheap household scissors commonly sold in 'Everything for a Pound' shops.

The basic requirements are an easy to cut material for the conductive islands, a base to mount the islands and a suitable adhesive. As an illustrative example, I decided to use a very simple format; thin p.c.b. material mounted on a cardboard base.

My wife **Jo** has a supply of coloured mounting card about 2mm thick, so I made a small raid on her off-cuts! Almost any card would have served the purpose, even a postcard or a section of a cereal packet but Jo's off-cuts looked nice and is quite rigid. Copper or brass shim

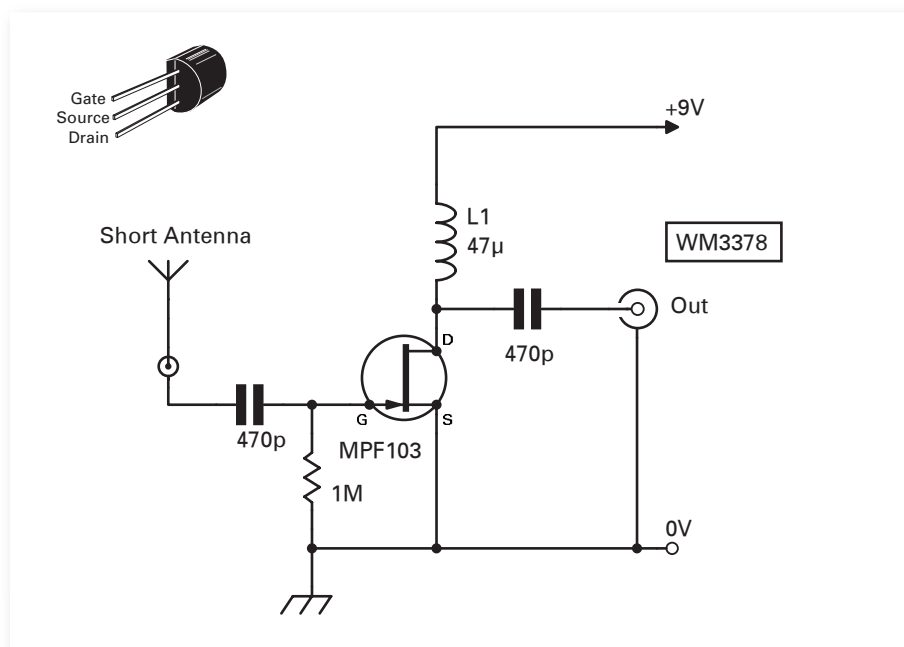


Fig. 1: The circuit of a simple active (or amplified) antenna, that may reduce the need for a physically bigger antenna.

could replace the thin p.c.b. material as could normal p.c.b. material, although this would require sawing to make the islands.

Simple Circuit

The diagram, Fig. 1, shows the simple circuit I used to build the sample project. It's an active antenna based on a single field effect transistor (f.e.t.). This circuit has been around in several forms for many years. I don't think I have used it in this column in the past, but if I have, my apologies for repetition!

The idea of an active antenna is to be able to replace a large antenna with a small whip or piece of wire and an amplifier. It's useful thing to build but a bit of a compromise to use. Those readers who use amplified indoor television antennas will know that they are second best to a proper external antenna.

My experiments with an amplified antenna feeding a set-top digital TV converter to drive the television in my study soon proved that to me. Slightly snowy analogue pictures were good enough for my very occasional TV viewing but digital signals either lock or they don't – and many didn't! But having said that, this circuit can be useful for improving a simple receiver or providing signals when a decent antenna is not available.

In Fig. 1, the MPF102 is configured as a common-source mode amplifier with an inductive load at the drain and a resistor between the gate and ground. This resistor sets the input impedance to the desired value. As a short whip antenna or a short piece of wire will form the antenna, the impedance will be high – hence the 1M Ω value.

The value of the inductive load, L1, depends upon the intended frequency of operation. For the Amateur h.f. bands a value of 47 μ H is probably about right but readers may like to experiment with other values. The rule of thumb is the higher the value, the lower the usable frequency.

The signals are coupled in to and out of the amplifier using 470pF ceramic capacitors. Note: I've assumed the amplifier will be powered by a PP3 battery. If a mains power supply is used the supply line may require de-coupling capacitors to reduce mains hum.



Fig. 2: The physical layout of the project of Fig. 1, created by George G3RJV sticking small pieces of p.c.b. material onto 2mm thick card.

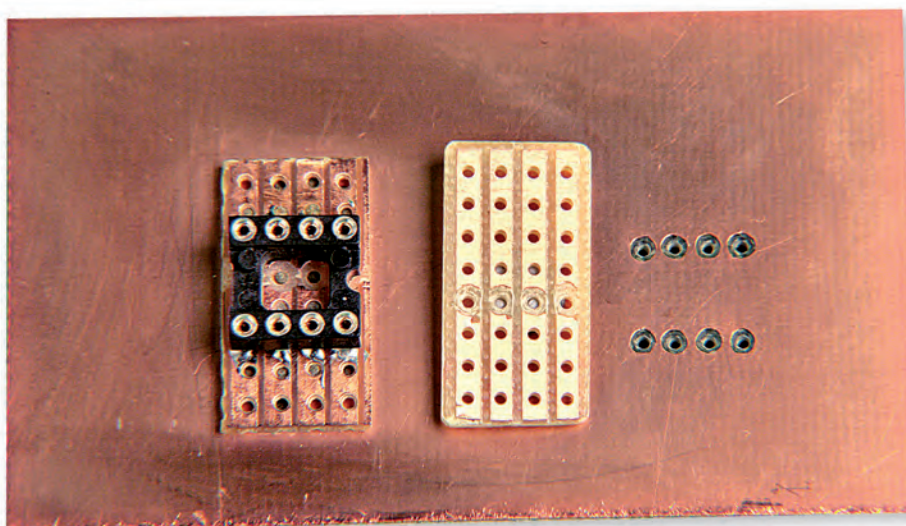


Fig. 3: A method suggested by Mike 2E0LTJ was to make a 'daughter-board' using a small piece of Veroboard and stuck over a matching set of cleared holes on the main p.c.b. material baseboard.

Building The Project

Building the project is very simple. The first task is to decide on the number and sizes of the islands. It helps to draw the layout on a scrap of paper to provide a rough template for the islands. I tend to cut one long strip of the conductive material and chop off pieces to suit the sizes of the islands.

Mounting the strips requires the use of an adhesive that will firmly hold the islands to the base and will not come loose when a hot soldering iron is applied. Some constructors like to use super glue (Cyanoacrylate adhesive) but I tend to shy away from its use and the semi-porous cardboard is not the best material for that type of adhesive.

I've had good results with general purpose Uhu Glue but to build my

prototype quickly I use doubled-sided tape. Double-sided tape doesn't like prolonged heating but with quick tinning and soldering operations it can be a viable choice Fig. 2.

The completed active antenna is shown in the photograph. As can be seen, the layout follows the layout of Fig. 1. I mounted a small nut and bolt to attach the whip antenna to the input capacitor. The little circuit did its job and using clip lead about 50mm long, it proved to be useful on the front of one of my simple direct conversion (DC) receivers. It was worth building for just a few parts and about an hour's work.

Mike Brett's Ideas

One of the pleasures of writing for PW is when readers write to me with suggestions for inclusion in

Fig. 4: The circuit of this audio oscillator may be used for continuity testing or as a Morse 'buzzer'.

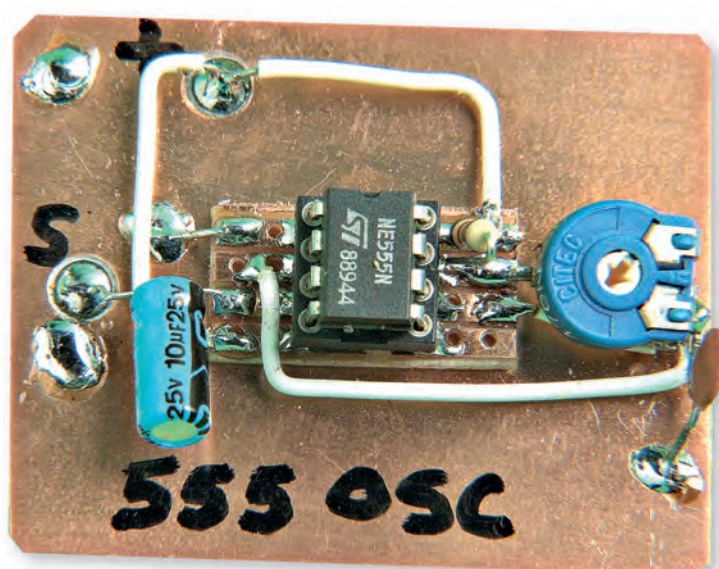
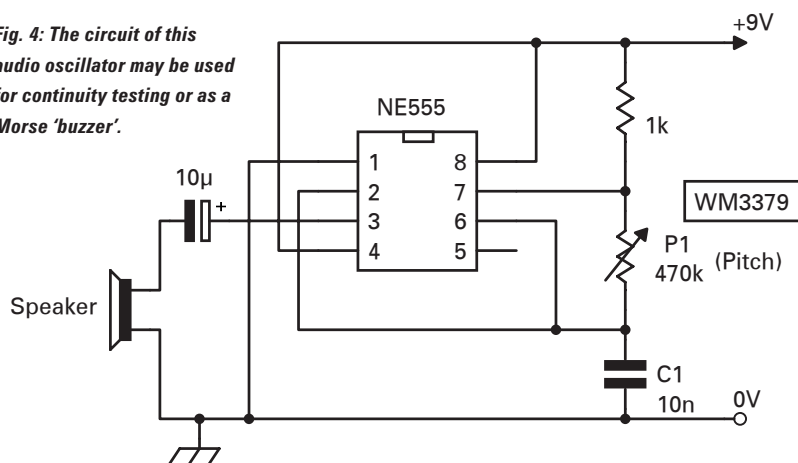


Fig. 5: And the project of Fig. 4, laid out using Mike's ideas for a daughter board over a groundplane p.c.b.

the column. Suggestions are better than complaints – but all letters are welcome! A few weeks before I prepared this column, **Mike Brett 2E0LTJ** sent me a short note and a sample board illustrating how he tackles the use of integrated circuits (i.c.s) in ugly construction. Mike's idea works very well, so I'm pleased to share it with COTPW readers.

Mike wrote, "I have always used ugly construction when I can as it's quick and very effective. The only trouble I find with this method is when I come to mount integrated circuit chips. I find putting them upside-down on the p.c.b. makes it harder to copy a circuit with the pins reversed to the printed schematic. Also it's very difficult to replace an item if a problem should occur, plus you cannot see the marking on the top."

What Mike does with his integrated

circuit (i.c.) chips is make a carrier from a small piece of Veroboard and an i.c. holder. The method is shown in the photographs.

The first stage is to prepare a small piece of Veroboard to hold the i.c. holder. For the 8-pin dual in line (d.i.l.) chip in this example, the board requires four tracks and a width of eight holes. The tracks will act as solder terminals. This requires the tracks to be broken and this is done by using a Vero cutting tool or a suitable drill bit to cut away the copper around each of four holes in a row. This should be the fourth row of holes from one end. When the i.c. holder is soldered in place, a portion of copper track with two holes will protrude from each side. This is shown in **Fig. 3**.

Soldering the i.c. holder to the Veroboard requires a little care. The Veroboard is used copper side up so

Rev. George Dobbs G3RJV

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the pins of the i.c. holder are soldered to the tracks in the space beneath the plastic of the i.c. holder. To do this, place the Veroboard (track side up) on the workshop bench.

The i.c. holder is placed in the appropriate holes as shown in Fig. 2. The pins will be raised up enough to leave a gap revealing the pins. With care, the pins can then be soldered to the tracks. (Check the continuity between the i.c. sockets and the tracks).

The completed carrier then needs to be mounted on the copper p.c.b. material that will form the groundplane for the ugly construction. Mounted directly on the copper material the pins could connect to the groundplane so insulation is required between the bottom of the pins and the groundplane.

The simplest way is to drill the groundplane with a hole for each pin. Mike used a hand-held 12V drill, pushing the drill bit through holes in another small piece of Veroboard. Copper can then be removed around the holes with a Vero cutting tool or small drill bit. The carrier may then be stuck in place with super glue.

Thanks Mike! Very interesting – thanks for the ideas!

The G3RJV Prototype

To test Mike's ideas, I build the simple project shown in **Fig. 4**. This is a standard NE555 audio oscillator circuit. The i.c. carrier was placed in the centre of a 50 by 40mm groundplane and the other parts were added ugly style. All the parts are attached around the i.c. holder and two insulated islands were added for the power line and the speaker output.

The oscillator, **Fig. 5**, proved the usefulness of Mike's technique and is quite useful in itself. The potentiometer provides a useful range of audio tone. I think it could serve as a Morse practice oscillator or even a simple continuity tester.

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The PW Knapp Receiver

This month's project – *The Knapp* – is a regenerative tuned radio frequency (t.r.f.) receiver and it's part of my K series of simple rigs where 'performance for a minimum outlay' is important to potential builders. Incidentally, the village of Knapp is near Taunton in Somerset, but the name is appropriate because a knap is a hill – like the shape of the response curve of *The Knapp's* tuned circuit!

The project uses modern devices in a receiver form that was very popular in the first half of the 20th century. This makes it much easier to operate and obtain a usable performance in today's crowded bands.

Complete kits are available (see end panel) but since it uses a single sided printed circuit board (p.c.b.), it's even easier for readers to make their own board. Hence the inclusion of the track layout – although the rig is so simple I would make it 'ugly style' if I didn't have the p.c.b. to hand!

The Concept

Before 1920, most receivers were just sets with a detector and lots of audio amplification. Soon, valves that could act as radio frequency (r.f.) amplifiers were available. These were used with multiple-tuned stages of r.f. circuits to improve the selectivity and

these stages had a tendency to oscillate. Somebody noticed that the tendency to oscillate could be beneficial if it were controlled. What was happening, of course, was that the Q (the 'goodness' or selectivity) and hence the gain of the tuned circuits was increasing as the r.f. stage was about to break into oscillation.

In those early days it was difficult to control the crucial point of operation as the regenerative stage (the stage that was nearly oscillating) was often operating as the r.f. amplifier, the detector or as a combined 'oscillating detector' stage. Nowadays, the regenerative stage can be separate and can be controlled much more easily without altering other aspects of the receiver. The improvement in selectivity and gain can be very marked – to the extent that a usable receiver with just a single tuned r.f. circuit becomes possible!

The possibilities lead to the simple block diagram shown in Fig. 1., which comprises of a broadband r.f. amplifier feeding the single tuned circuit, followed by the detector and audio amplifier. The regeneration stage is also connected to the tuned circuits – its action lifts the response curve to a much sharper peak and has a good ability to reject unwanted signals (rather similar to unfit people trying to walk up large hills!).

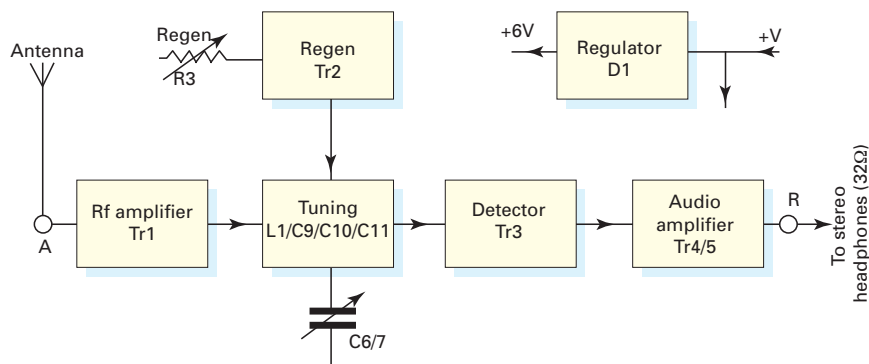


Fig 1. Block Diagram of the Knapp.

Tim Walford G3PCJ presents his simple Knapp receiver – a design that Tim says, "Comes with performance for a minimum outlay."

The Circuit

The Knapp circuit, **Fig. 2**, shows the complete design. Signals from the antenna are fed to a broadband grounded gate amplifier, Tr1 which uses a j.f.e.t. – this is better at matching the typical 50Ω antenna impedance encountered with transmitters. More importantly it also prevents radiation from the antenna when the regeneration stage is oscillating – which is not permitted! **Note:** The r.f. amplifier feeds the single tuned circuit but as the receiver is intended for any single 'band' between 3.5 and 15MHz, there are several circuit options provided.

The main tuning inductance is provided by the 6441 TOKO inductor, which has a 65pF trimmer, C9, across the main winding. This suits the higher frequency bands but to get down to 3.5MHz (80m) another 300pF of capacity is needed, hence the inclusion of C10/11, which can be installed in parallel across L1. The p.c.b. layout also allows for these two capacitors to be connected in series for 7MHz (40m).

With just a single tuning control the frequency range needs to be less than about 150kHz, otherwise the tuning action will be very fierce. This is why there are more options for the connection of the PolyVaricon tuning capacitor - either direct using LK1/2 or through a small capacitor C5, to either the top of tuned circuit or by using the tap used for the regenerative circuit. Incidentally, this circuit (around Tr2) is connected as a Hartley oscillator across the main tuned circuit but with variable bias provided by the shafted pre-set R3, which acts as the regeneration control.

With zero base bias the regenerative stage has no effect but as the bias is increased, the stage begins to have gain and when it gets nearer the point of oscillation, the *Q* of the tuned circuit L1/C9/C10/C11 is much increased. And when it's actually oscillating, the regenerative stage then becomes a local oscillator (l.o.) for Tr3, which can then act as a product detector, so enabling reception of c.w. (Morse) and single sideband (s.s.b.).

Infinite Impedance Detector

The j.f.e.t. detector, Tr3, is an infinite impedance detector type that doesn't load the tuned circuit but acts much like a diode when demodulating conventional amplitude modulated (a.m.) signals from broadcast stations. The time constant at its output R7/C13 allows signals below about 3kHz to pass to the following audio amplifier.

The audio frequency (a.f.) stage uses two BS170 m.o.s.f.e.t.s, Tr4/5, arranged as a pair of direct current (d.c.) fed back common source amplifiers. And, because they need a positive gate bias of about 2V, the d.c. voltages settle with 2V across R13 and nearly 4V on the drain of Tr4 and hence also on the gate of Tr5.

The resistor R9, in conjunction with C14, provides a little more audio bandwidth shaping. The resistor, R11 is a 'gate stopper' to make certain that Tr5 doesn't oscillate!

The drain load of Tr5, comprising R12 in parallel with the normal 64Ω impedance of series connected portable cassette player type stereo phones, leads to only a small gain contribution from Tr5. However the low output impedance provides flexibility for any external circuits – such as a 4.7kΩ logarithmic type potentiometer a.f. gain control followed by an a.f. power audio amplifier for driving a loudspeaker.

The Knapp PCB

The *Knapp* p.c.b. is laid out on a single sided board with dimensions of 50 x 80mm. You should check that any photocopy of the track pattern, **Fig 3**, to be used for etching is this actual size and adjust the photocopier's zoom control as necessary.

The lettering should be correct when viewed from the copper clad underside of the p.c.b. This means that the track pattern copy, when placed underneath the copper of the p.c.b., will need to be upside down.

You can use the ultraviolet (UV) exposure technique on photo resist-coated board. You can also use the iron-on resist method, or even do your own layout (based on Fig 3) but altered to suit your actual component sizes.

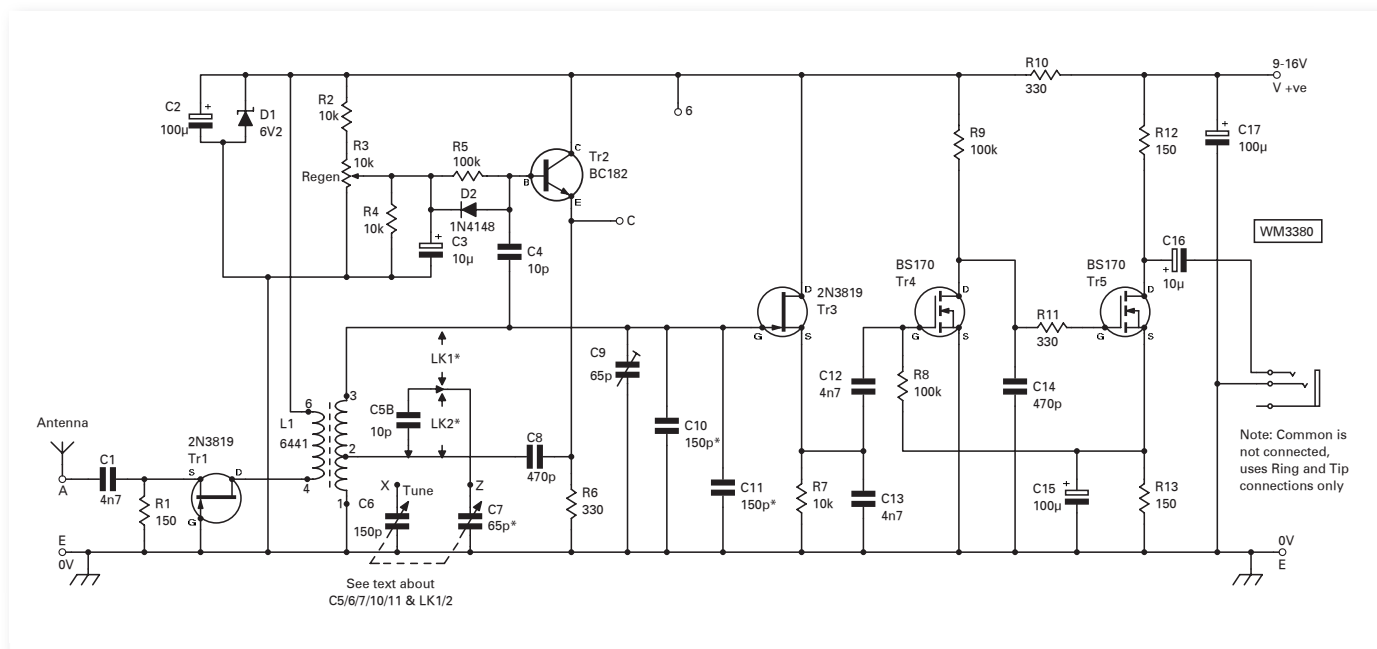


Fig 2. Circuit of the Knapp.

The smallest round pads should be drilled with a 1mm bit, the larger round pads with a 1.3mm bit and the 'square' pads (PolyVaricon leads, headphone socket and for the lugs of the TOKO can) should be drilled with a 2mm bit. Please don't attempt to use a hand-held drill, as you're quite likely to break the expensive tungsten carbide bits that are recommended for drilling fibreglass. Use the photographs to help you locate the holes and pads for each component.

Building the Knapp

Building the Knapp is very straightforward! By all means put it in a box – but I recommend building it in the 'open' style as in the photos first – study these to see where parts are located. Start assembly with the 'mechanical parts' such as the four screw connectors, the TOKO can and trimmer C9, the shafted preset R3 and the PolyVaricon.

The shafted pre-set potentiometer needs to be mounted on three wire legs so that the knob, when fitted later, will clear the other components. Note: The PolyVaricon should first have its trimmers set for least capacitance and is held in place by a wire strap tightened across its body (see photos).

Then you should add the power supply components and check for 6V on point 6. Then you should add the audio amplifier and check that the d.c. conditions (as already described) are correct. You can also do the screwdriver finger hum test while listening on the headphones!

The next job is to add the detector and the r.f. amplifier stages, checking that their source voltages are about 4 and 1V respectively. Note: If you're building the Knapp for 3.5MHz (80m) fit C10/11 in parallel and if it's for 7MHz (40m) fit them in series and omit them altogether if your receiver is for 14MHz (20m)! (There is a pair of isolated linked pads for the series connection.)

Broadcast Signals

After reaching this point you might be able to hear some off-air broadcast a.m. signals by adjusting the trimmer C9! The normal tuning control, using the PolyVaricon C6/7, has several options so that the actual tuning range is not normally more than roughly 150kHz on any band.

For 3.5MHz, try the 65pF section connected directly to the top of L1 with LK1 and for 7MHz try the 65pF section connected directly to the L1 tap marked Y with LK2. For 14MHz, use the 10pF C5 in the B position to connect the 65pF section C7 to the L1 tap point.

After connecting C7, you'll need to reduce the trimmer C9 to get back to your wanted band. Then you should add the regeneration stage parts associated with Tr2.

When you advance the regeneration pre-set, R3, there should now be a 'plop' as that stage breaks into oscillation with a similar sound when it stops oscillating as you reduce the value of R3. The tuning should now be much more critical when R3 is set just below the point of oscillation.

Provided the regeneration stage is actually oscillating (R3 up), you can set the frequency with C9 while listening on a general coverage receiver. Alternatively, you can use a frequency counter with a divide by 10 probe connected to point C.

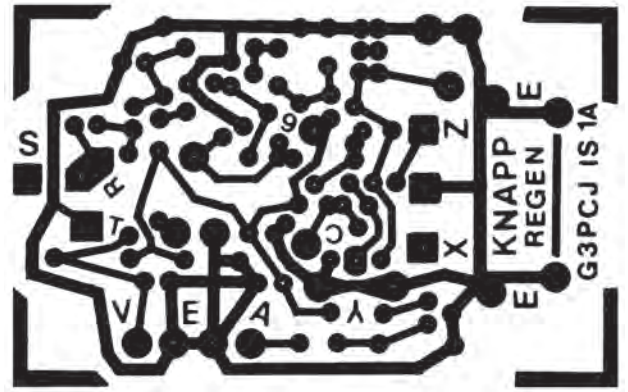


Fig 3. Track pattern of the Knapp.



Fig. 4: Little and Large – the Knapp with knobs fitted!

Normally, you should not need to adjust L1 but if you can't quite obtain the desired frequency with C9, then should gingerly adjust L1. Note: Eventually stocks of the 6441 TOKO will run out but you can use a T68-2 toroid, which will also improve the frequency stability but there's no space for those details here!

Using The Knapp

For receiving a.m. stations, such as those broadcasting stations just above the amateur 3.5 and 7MHz allocations, the point of highest sensitivity and selectivity is just below the point of oscillation on the regeneration control R3. Listen for the 'plop' and then back R3 off by just a whisker!

The a.m. stations are usually pretty strong – especially on the 41 metre broadcast band above 7MHz – so the length/height of the antenna will not be critical and much fun can be had with the wire just strung around the room. For receiving Amateur Radio signals, most commonly c.w., s.s.b. and occasionally double sideband (d.s.b.) phone, the point of maximum sensitivity is just above the point of oscillation.

For s.s.b. or d.s.b., the tuning is adjusted for best intelligibility, which is when the regeneration stage is on the same frequency as the incoming signal. For c.w. reception, the frequencies need to differ by the desired audio beat note and there will be two tuning points, above and below the wanted signal. I suggest that you try to get

as familiar as you can with the regeneration control action as very small alterations will have a marked effect on sensitivity and selectivity.

When very strong signals are present, such as those from from broadcasting (BC) stations at night, they can overload the receiver and cause un-tunable interference (BCI). Often a small decrease in r.f. 'gain' (a shorter antenna or some signal input attenuation), will remove the unwanted 'mush' while only slightly reducing the wanted signal and in do so much improving the intelligibility.

For serious Amateur Radio use, a decent antenna with a selective antenna matching unit (a.m.u.) is my preferred option. Some simple rigs are prone to hum problems, so if you do have this trouble, you should experiment with different antenna and earth arrangements and try running on a battery to remove any potential earth loops – with or without any 'intentional' mains earth connections.

Although the Knapp is designed as a stand alone receiver, it can easily be used with either of the K series transmitters. These include the Kilton for c.w., or the Kilmot for d.s.b. 'phone.

Good luck building your Knapp – it's great fun.
Tim G3PCJ.

Kits and Bits

Kits for the Knapp are available from Walford Electronics. They include all parts to build them 'open' style as in the accompanying photographs. Prices are:-

Knapp

Regen t.r.f. receiver:

Discounted for PW readers to £22

Kilton

c.w. transmitter: £19

Kilmot

d.s.b. 'phone transmitter: £24

P&P is £3 per order.

Please send your orders with a cheque direct to **Walford Electronics, Upton Bridge Farm, Long Sutton, Langport, Somerset TA10 9NJ**. Further information is available at www.users.globalnet.co.uk/~walfor

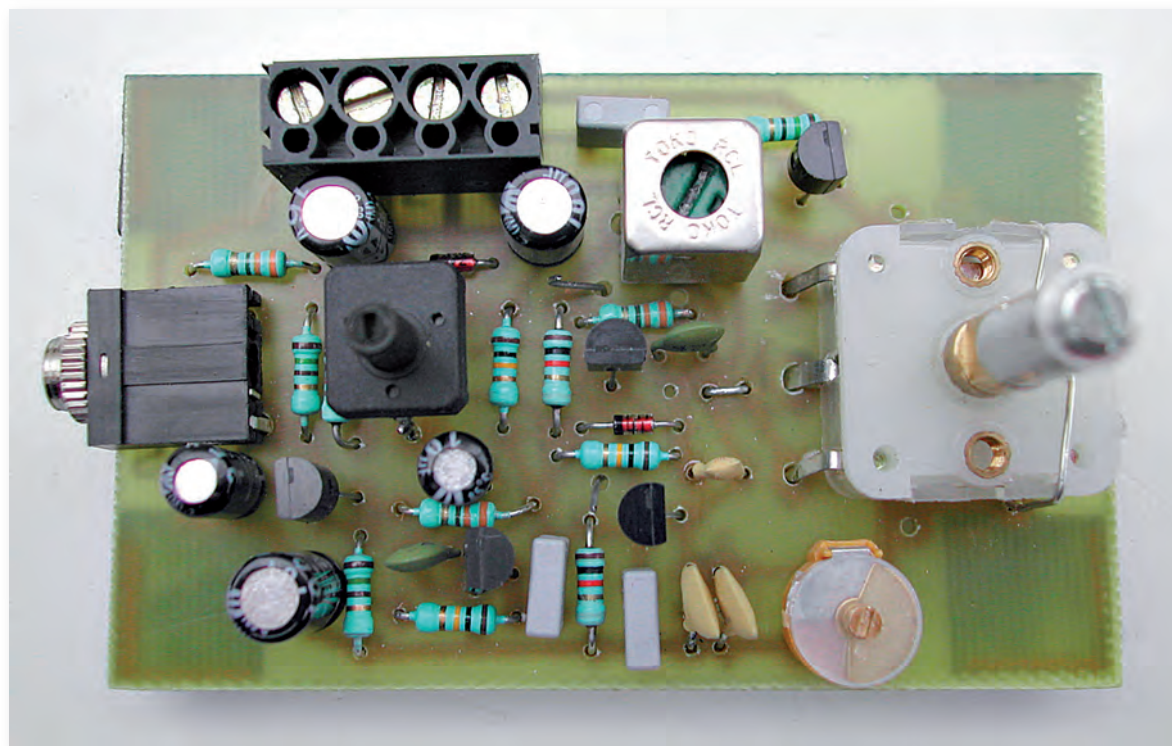
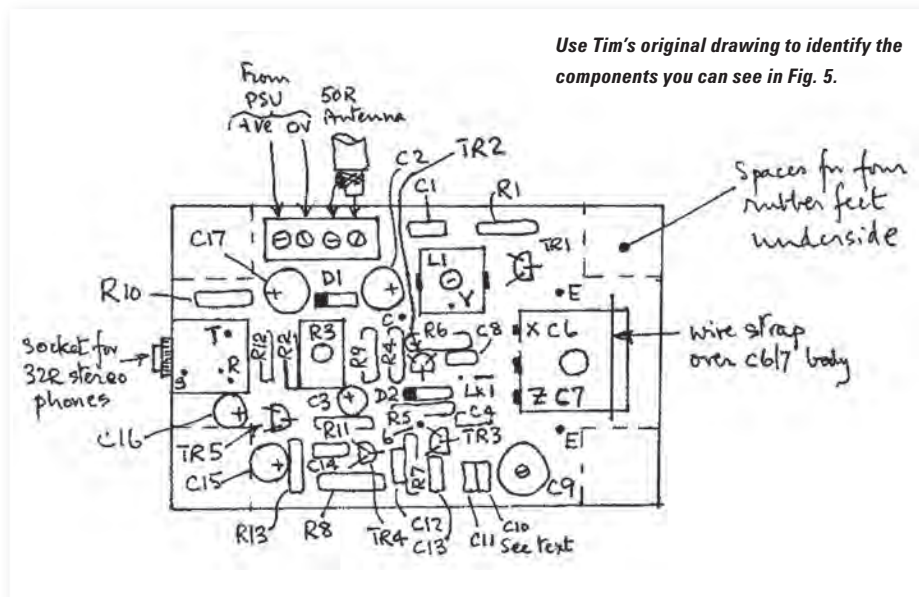


Fig. 5: A Knapp for 3.5MHz without the knobs.

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in focus

The Vintage & Military Amateur Radio Society

John Keeley G6RAV introduces a specialist society that's making some tremendous strides towards preserving, operating military and Amateur Radio equipment.

Welcome to In Focus! I'm sharing the story of the **Vintage & Military Amateur Radio Society** (VMARS), which began in 1999, when the Society came into existence with a handful of members. Today, in 2008, VMARS has around 350 members, mostly in the UK but with a number in Europe, North America and Canada. The Society is governed by a constitution and managed by a democratically elected committee.

What's VMARS Purpose?

To answer the question as to what is VMARS's purpose for being – isn't as easy as it may first appear, as there's a wide spectrum of interests across the membership. As one member recently put it, "A lot of us simply enjoy Amateur Radio with a vintage twist". However, VMARS goes beyond that and a fair summary of what the Society does is that the overall aim of VMARS is to preserve our radio communication heritage.

Preserving the heritage includes the continuing use of c.w. (Morse) and amplitude modulation (a.m.), the restoration and operation of vintage equipment (where this can be done in accordance with the Amateur Radio Licence requirements), research into and re-construction of obscure, or lost equipment.

With many a rare item in evidence, much of which is lovingly restored, there's a very strong interest in military man-packs, military wireless vehicles, and spy-sets. We're also interested in radar, history and museums and not least in Amateur Radio construction of valved equipment.

In respect of what I've already

mentioned, the Society boasts a unique body of theoretical and practical experience of, and knowledge about, valved equipment and its uses in military, commercial and Amateur Radio service. This is reflected also in examples of projects undertaken by Members.

Some members explore the fascinating resourcefulness of early wireless designers and are able to achieve remarkable results with relatively modest circuitry. Other members research historical records to replicate equipment of which there's no longer any tangible example. Other members work to safeguard this important part of our heritage.

The Society also believes it has an important role in raising the profile of our radio communication heritage by staging exhibitions and demonstrations of vintage equipment in use at radio rallies and other events. The Leicester Amateur Radio show is just one important event we attend each year,

In fact, during the rally season VMARS members can often be found hosting a Society stand. A range of vintage equipment is on display illustrating various aspects of our radio communication heritage and hobby. Members are on hand to welcome visitors, to talk about the equipment on display and to explain what the Society is about.

On The Air

The Society actively preserves the use of on-the-air use of c.w. and a.m. through weekly nets. The a.m. net can be found at 3.615MHz each Saturday morning beginning at 0830 (local time) and continuing to around 0930.

A wide range of equipment can be heard in use on the nets, ranging from high power equipment such as the British Army Wireless Set 53 and the RAF T1509. Both these sets operate at the maximum legal carrier power limit and they can be heard alongside Heathkit vintage a.m.



Fig 1: The society's quarterly technical journal
The Signal is available to all members.

rigs such as the DX100, the Labgear LG300 and KW Vanguards. There's also lower power equipment, such as the British Army Wireless Set 19 and the American TCS transmitter.

Of course, QRM and QSB can sometimes be a problem but a striking feature of the net is the 'armchair quality' that a.m. can provide. Incidentally, samples of transmissions from the a.m. net can be downloaded from the VMARS website www.vmars.org.uk/

A smaller c.w. net is run most Sunday mornings on 3.615MHz at around 0900 local time and a conventional single sideband (s.s.b.) net operates on Friday evenings, also on 3.615MHz, beginning at 1930 local time.

The nets are not restricted to VMARS members and any Radio Amateur with the appropriate licence and a.m. equipment is most welcome to join in. And I'm proud to say that the fact that a.m. is very much in evidence and increasing in popularity on 80 metres is much to the credit of VMARS members!

Society Publications

The Society publications are central to life in VMARS. These were re-launched in 2006 and each member now receives a monthly *News Sheet* providing Society news, events listings and reports, as well as member's advertisements for equipment 'swaps', 'wants' and 'for sale'.

A quarterly technical journal



Fig. 2: Featured recently in *The Signal* was this 100W a.m. transmitter based on a pair of TT21 valve working in parallel.

– *Signal* – offers a wide range of articles covering operational and technical aspects of vintage equipment and components, constructional projects and historical research. The journal reflects the many strands of interest and expertise within the Society.

Recently, a typical constructional project featured in *Signal* was a 100W a.m. transmitter based on a pair of TT21 valves working in parallel. High level anode modulation is used and a novel technique is employed where an off-the-shelf semiconductor m.o.s.f.e.t. audio amplifier drives a surplus mains transformer to provide the necessary modulating voltage (in shunt) across the power amplifier (p.a.) valves.

The Society's web site includes a 'virtual library' of manuals for vintage equipment, many of which can be downloaded at no charge. This library is supplemented by many paper documents, for which copies are available to members.

Special Interest Groups

Another facet of life in VMARS is the Special Interest Groups, or 'SIGS' as they are known. A SIG is a group of VMARS members to come



Fig. 3: Mike Hazell G1EDP in his shack operating with the Labgear LG300 transmitter and the Marconi CR100 receiver.

together to investigate obscure equipment or technical issues.

A current SIG is researching the TRD transceiver. The TRD was designed during the early stages of the Second World War and was issued to 'Stay Behind' agents who would remain behind enemy lines in the event the of the UK being invaded.

The TRD was unique in that a double modulation system was employed. This meant that while signals could be intercepted on a conventional radio receiver, signals could only be read on another TRD set.

As a result, the TRD is probably the first known example of a secure radio system. At the end of the war all of the TRD equipment and documentation was destroyed. However, by painstaking research the TRD SIG team have managed to make contact with people who knew of the set and were trained to operate it. From their recollections, it has now been possible to construct an accurate space model of the TRD, although some of the circuit detail remains to be confirmed and this is now on display at the **Norfolk Aviation Museum**.

Send all your club info to

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Fig. 4: Seen at the 2007 Lincoln Short Wave Club Hamfest, is VMARS member Colin Guy G4DDI demonstrating a German SEM35 v.h.f. f.m. man-pack radio.

Contacting VMARS

If you would like to contact us get to know more about VMARS and our activities please visit our website: www.vmars.org.uk New members are always welcomed and if you would like to join us do please contact our Membership Secretary, **Mike Bayliff** on +44(0)1822 834373 or via E-mail to memsec@vmars.org.uk For general enquiries please contact the Honorary Secretary, **John Keeley G6RAV** on +44(0)1926 831355 or email to secretary@vmars.org.uk We look forward to hearing from you!

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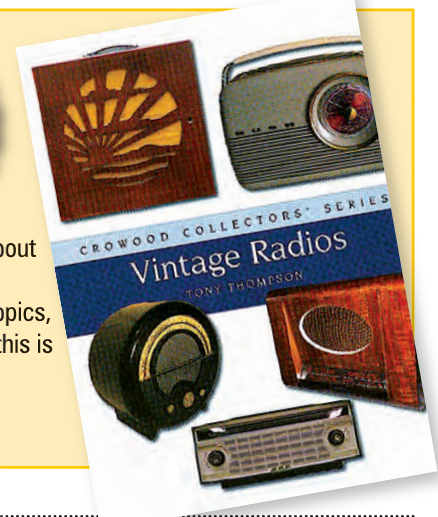
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Amateur

radio personality

Martin F. Jue K5FLU

Rob Mannion G3XFD: I've had the very great pleasure of meeting Martin F. Jue K5FLU, on numerous occasions at the Dayton Hamvention in the USA and I'm delighted to welcome you to the PW Amateur Radio Personality feature Martin!

Martin K5FLU: Thank you Rob and I'm delighted myself to be featured in PW! We see the magazine at MFJ headquarters but miss you at Dayton nowadays!

Rob G3XFD: Yes, I certainly enjoyed my trips to Dayton Martin and despite it being incredibly busy for you and the PW team I managed to bring my interest in railroads (railways) into our conversations. That's where I learned from you, just how your ancestors originally came from China to work on the Union Pacific Railroad. It was a great undertaking that joined America physically after the Civil and a fascinating part of your family history, although I know there are also some sad aspects.

Martin K5FLU: Yes, that's right Rob. As I understand it, my great grandfather came over to America during the late 1860s after the American Civil War to work on the transcontinental railroad. I think he was originally in the state of Utah. I was told that 90-95% of the original group of Chinese that came to America during the Gold Rush of 1849 and to work on the transcontinental railroad and up to recent times (1950s to 1960s) came from four counties in southern China from the Canton province, which I think is now called Gongjoe – the spelling is slightly different now. This is also the province where the city of Canton – (Canton is the old spelling) – is located. This province is about 150 miles north or so from Hong Kong.

Most came over as labourers

and settled in California. After the transcontinental railroad was built, a group settled in Mississippi to work on plantations but soon after, they started small grocery stores catering to the farm and plantation workers. I remember looking up the Chinese population statistics when I was in high school in the late 1950s and early 1960s and found that there were about 100,000 Chinese in the USA with about 95,000 in California.

Interestingly, in 1882 Congress passed the Chinese Exclusion Act that regulated Chinese immigration. It wasn't repealed until the middle of the Second World War.

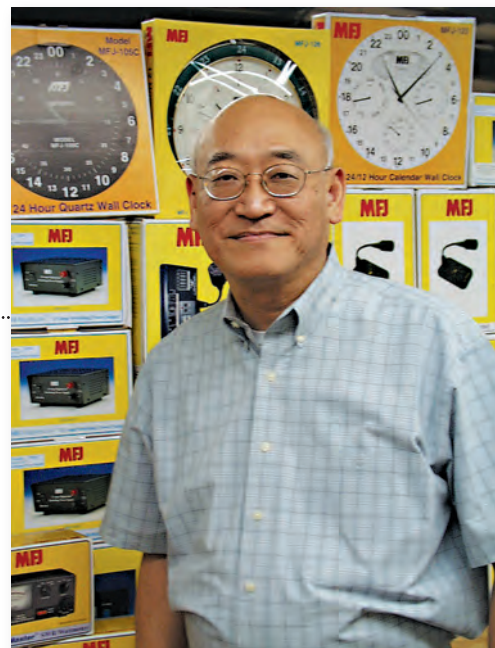
Rob G3XFD: A truly fascinating and rather sad story in some ways Martin! However, your family moved away



The Jue grocery store.

after the transcontinental railway was built and settled in the deep south. Did many other ethnic Chinese head that way too?

Martin K5FLU: In Mississippi, there were about 2000 to 3000 Chinese who settled in the Mississippi Delta region, which is the very flat area along the Mississippi River from about Memphis, Tennessee and south to Vicksburg, Mississippi and east to Greenwood, also in Mississippi. Most of the Chinese operated small grocery stores.



The MFJ at MFJ!

I was born on February 27, 1944 in the city of Vicksburg, Mississippi which is a port city on the Mississippi River. My family at the time was living in Rolling Folk, just north of Vicksburg and just 22 miles south of Hollandale, where I grew up.

My family had a general grocery store where we sold everything a farm worker needed including all the staple food, meat, flour, lard, fruit, vegetables, etc., as well as kerosene (known as coal oil back then!) for heating and lighting. Even in the 1950s, not all the rural homes had electricity for lights (or even running water) and we also sold traps for hunting, hunting rifles, chewing tobacco and snuff! We opened at 8a.m. and closed at 9p.m. every day except

on Saturday when we stayed open until midnight for the farm workers to do their shopping in town. Our store was in the town of Hollandale in the Mississippi Delta, just a few miles east of the Mississippi River.

Rob G3XFD: You're a busy family man aren't you Martin and I believe your daughter gave you an appropriate radio surprise recently?

Martin K5FLU: I have one daughter, **Deanna**, who is 27 years old and lives in Atlanta. She's in charge of adding content for the San Francisco web-site **yelp.com** for the city of Atlanta. And,

The Editor interviews the man behind the MFJ brand of Amateur Radio equipment and finds a fascinating history and a continuing mystery!

yes, she completely surprised me at Christmas when gave me a small (very nicely) wrapped box with a rolled up piece of paper with a ribbon around it like a small diploma. It was the proof of passing her ham radio license. Her new call is KF4BFO!

My wife **Betty** grew up just 17 miles from where I grew up but we only met when she attended Mississippi University for Women and I was attending Mississippi State University. No members of my family work with me.

Rob G3XFD: *I remember you telling me that MFJ started when you were at University. Just how did it all start?*

Martin K5FLU: Yes Rob, I have a BSc degree in electrical engineering from Mississippi State University and a Master's degree in electrical engineering from the Georgia Institute of Technology. I completed all the course work for a PhD in electrical engineering at Mississippi State University but did not do the dissertation. I had started MFJ during that time and found it more interesting running a business than completing the degree!

I taught courses full time at Mississippi State for seven years or so to make enough money to eat while I was growing MFJ. During this time I never took money out of MFJ but ploughed it all back in. I finally left teaching when we had about 30 employees.

It had always been my intention to start some kind of business since I grew up in a business environment. I started MFJ Enterprises when I came back to Mississippi State University to work on a PhD. At first MFJ was an engineering design company as I had just left an engineering job designing military electronics for the Vietnam war.

My intention was to do circuit design projects for the various

research departments at MSU but it turned out that there wasn't enough work so I ended up doing all the work by myself!

One of my memorable projects was measuring the amount of a leaf that was eaten by a boll-weevil! The electronics were very sensitive to temperature. I had to temperature compensate it so it would work in the field under varying conditions. I did not have temperature test chambers. So, in my apartment's garage I turned on the heaters, stove, lights to heat up my living room and in my bedroom I turned the air conditioner to maximum.

I moved the entire project back and forth between the rooms and made adjustments until temperature no longer affected it. I decided that to get bigger I would have to work through other people by designing a product and having other people reproduce it. Since I had been a Ham since high school I decided to build Ham radio products.

The first MFJ products were active audio filters for c.w. and s.s.b. I placed the first MFJ ad in the now closed *Ham Radio Magazine*. That was



Young Martin poses with the family automobile.

my favourite magazine because it was very technical in nature. The advert ran in the November, 1972 issue. It was a tiny 2 inch by 2 inch ad and was full of technical engineering jargon that even I could not understand if I read it today! I sold over 5000 filters in a couple of years with the tiny ads!

Rob G3XFD: *How did you come to choose the MFJ name Martin? And I'm also intrigued by the continuing mystery of the anonymous F of your name – nobody apart from you seems to know what it is!*

Martin K5FLU: I selected MFJ from my initials as the company name because I didn't want to use my family name in full in case the company failed – ruining it! I then added Enterprises because I wanted to show everyone that we wanted to do bigger and additional things. But let's continue the mystery of the F (my middle name) in MFJ. It's more fun that way!



Martin K5FLU and his wife Betty.

Rob G3XFD: *Just how did your company grow so well – with the huge range of radio-related products you now offer – after your early start?*

Martin K5FLU: The success of our first product, which sold several thousand units, was the seed that grew into the MFJ of today. Our growing business moved to a large room in a building on Maxwell Street (what's now known as the Cotton District Grill), then to a six hundred square foot trailer (mobile home). We then returned to the Maxwell Street location after expanding beyond the capacity of the trailer. But this time MFJ rented the entire Maxwell Street building to accommodate its growing product line.

The largest expansion in the company's history began with the move to Louisville Street where MFJ has remained (in a building it still occupies) for fifteen years. This building affectionately known as "MFJ Blue" (it once was the Starkville area's roller skating rink) houses MFJ's extensive Metalworks Department, MFJ's Antenna Shop, and Mirage Communication's Equipment. In the summer of 1995, MFJ began an extensive move to its landmark location at 300 Industrial Park Road. This is the building that now houses the main administrative office for the company as well as shipping, warehouse, and production facilities.

Rob G3XFD: *Having met many of your staff I notice there's a real international mix of people working at MFJ Martin!*

Martin K5FLU: Yes, we're a diverse lot here at MFJ as you know Rob! **Steven Pan**, Vice President of the company, hails from Malaysia and many other countries are represented in the MFJ work force. One recent visitor from the Netherlands was able to speak six different languages during his tour of the MFJ facilities! I really think that diversity certainly promotes a more creative working environment.

Rob G3XFD: *Just how did you start out selling your equipment Martin? Did you literally start selling direct to the customers?*

Martin K5FLU: We initially sold only retail, concentrating on direct marketing schemes. The company sought dealers early on but distributors weren't ready to bank on the young business! However, after the MFJ ham radio market explosion occurred, dealers and distributors were banging on MFJ's doors for a chance to stock their shelves with MFJ products!



Martin at his happiest – in his shack!

Today, MFJ is well-represented in the United States by large communications superstores and small "on the road" type businesses travelling to Amateur Radio and computer shows, known as 'Hamfests' here. In fact we travels to nearly 25 'Hamfests' a year themselves and we are well-known for our big displays of products.

As part of our work we travel from our small Mississippi hometown to hamfests as far away as Manchester, New Hampshire; Houston, Texas; Miami, Florida, and seaside Oregon. The hamfests allow MFJ to meet its customers in their local arenas. The hamfest is both a trade show and a social gathering of Amateur Radio operators and computer enthusiasts.

The worldwide business currently has over two hundred dealers in the United States, forty overseas including the UK, and ten in Canada. The company sells over ninety-five

percent of its products through dealers and the other percentage through direct mail.

American cities such as Los Angeles, Denver, Miami, Orlando, Honolulu, Chicago, Indianapolis, Las Vegas, New York, Houston, and Milwaukee are home to some of the world's largest communications stores and dealerships for MFJ. Internationally, MFJ is represented in Japan, Europe, and even Russia. South America and Asia continue to open the doors to an even wider amateur radio market.

Instead of two products, we now have over 1000 different ham radio products including products from Ameritron, HyGain, Mirage and Vecronics. Instead of a hammer, we now have computer controlled punch presses and other automated machinery for making the metal cabinets.

The electronic p.c.b. board assembly is automated using surface mount technology. Instead of a tiny 2 inch by 2 inch ad, we are now ham radio's largest advertiser. We manufacture and sell more pieces of ham radio equipment than anyone else in the world. Our products are sold

throughout the world in more than 35 countries. Over 25% of our sales are exported to other countries.

A particularly nice thing to know about is that a quarter of our employees have been here over 10 years and one in ten of our employees has been with us over 20 years.

Rob G3XFD: *I'm amazed at how much there is your catalogue Martin. There seems to be an ever expanding range of products. I was pleased when you took inspiration from Phil Cadman G4JCP's PW design for a beacon clock to design your own at MFJ using the International Beacon Project's beacons. And it seems you're always getting new ideas. What's in the pipeline now?*

Martin K5FLU: We're always on the look out for new ideas Rob! Extensive research and development goes into the Ham Radio communication hobby business. New products are constantly on the horizon as MFJ

realises that to stay on top, we must continue to create and innovate. The main source of inspiration for new products comes from MFJ's growing customer base. We receive many letters and 'phone calls from our customers requesting new equipment to be built. Other requests come formally, in person, and at hamfests. So, if readers have got an idea – please let us know!

Rob G3XFD: *Your company has really grown over the years Martin! What other companies do you now own and where are they all?*

Martin K5FLU: Nowadays MFJ owns four sister companies, Ameritron, Mirage, Vectronics, and Hy-Gain.

The metalworking shop, silk-screening facility, engineering, print shop, and antenna shop are also located in the 921 Louisville Road building. Almost every MFJ product starts here from scratch (as just an idea).

In 1996, MFJ began making some of its own components used in the production of antenna tuners and designs have been designed to handle high power operation. Constantly changing and constantly improving, we try to make sure that MFJ and its subsidiaries have managed to stay on top of their share of the market by a generous customer service policy and listening to what the customer wants.

Rob G3XFD: *In the USA you offer an unconditional warranty. How does that work?*

Martin K5FLU: Yes Rob, in the USA we offer a one year unconditional warranty called the "No Matter What" warranty. We will replace or repair a customer's MFJ unit – at MFJ's option – for one complete year. A technical help support line is also offered toll-free for customers needing help or advice with a ham radio project.

Rob G3XFD: *I know you're very active in Amateur Radio Martin – but how did you get involved in the hobby?*

Martin K5FLU: I got hooked on ham radio early on and first learned about

radio through the Cub Scouts and the book *Fox Hole Radio*. Listening to the a.m. broadcast band on a crystal radio set I heard **Chuck Sudduth W5VMC** – now a Silent Key – on 75 metres. Chuck was the local TV repairman in Hollandale, Mississippi where I grew up.

I then built a Knight Space Spanner Kit, a three tube regenerative receiver while I was in the 8th grade at school.



Martin with his daughter Deanna who has just become KF4BFO!

Actually, one of our current products (MFJ-8100K) is based on that first radio! It was an inexpensive kit that worked well and allowed kids like me and old men alike to experience that 'first exciting feeling' of radio.

Chuck Sudduth was my 'Elmer' when I was a young teenager. I worked for Chuck, who was a TV repairman for free, in exchange for old television parts and knowledge. Chuck actually told me that he was pleased with my hard work and gave me an old hand-made transmitter – modelled after a Heathkit DX35 – and made from recovered television components.

For my antenna system I would unwind magnetising wire from electro-dynamic radio speakers that came from the 1930s. I used speaker wire as an antenna because I didn't have much money for anything else! That's why Chuck's friendship, tutoring and workshop was so important to me. My ham shack was in the attic of the grocery store where all of the family worked and lived so there wasn't much room for a hobby! I spent hours and hours in that attic playing with my new – old – radio. I operated c.w. all the time because I didn't have a modulator for this radio and, course, this was in the 1960-1962

era just before s.s.b. became more common.

Rob G3XFD: *What piece of equipment from your early days do you remember enjoying the most Martin?*

Martin K5FLU: My first home-made transmitter! This was based on a Second World War surplus 1625 vacuum tube – 12V heater version of an 807 – 25 cents each at the time! I used it as my final amplifier and it came from a company called B.A. Electronics out of Missouri. The input power was 22W and had about 10W output. At college I operated mostly on 20 and 40 Metre 'phone and controlled carrier a.m. modulation. Other Hams said I sounded so bad that they thought I was on s.s.b!

After I moved away to Starkville to go to college, I purchased an s.s.b. single-band 20 metre Heathkit HW-32 transceiver, that retailed at \$99 and I still have a cigar box in my house full of old QSL cards from my early collection. The same guys I talk to now on the radio were the same guys of yesteryear!

Of all of my prize radio collections in my office is a Hallicrafters S-40A, like one I had as a kid. I also really like the Heathkit HR-10 Receiver that I used with my DX-40 years ago. I like to collect the radios that I had when I was young, or the ones I could not afford back then! They may have not been the fanciest radios back in those days but I sure appreciated them back then – and even more today as I look at them in my office!

Rob G3XFD: *Thanks for taking the time out of your busy schedule to spend so much time chatting to me Martin. I felt honoured you found the time. And I'm so pleased to hear you're feeling so much better following your heart by-pass operation. There'll now be much more time and energy for you to enjoy the hobby! Best wishes to you from everyone at PW.*

Martin K5FLU: It was my pleasure talking to you Rob. Please keep in contact and keep producing *PW* for everyone to read!

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Colin Redwood's

what next?

Colin Redwood G6MXL aims to help readers to set about choosing a transceiver – quite a job sometimes!

This month I want to look at what for most Radio Amateurs will be their biggest expenditure in setting up their station – namely choosing their main transceiver. And from experience I can tell potential transceiver buyers – it can be quite a difficult job – and although this article is aimed at those purchasing a transceiver, please don't forget that you can also build transmitters and receivers.

First, if you're starting out with a Foundation Licence you'll need to be certain that any transmitter that you purchase can operate within the power limits of your licence (10W on most of the bands available to Foundation Licence Holders). Likewise, if you have an Intermediate Licence you'll need to keep within the 50W power limit on most bands.

Basic Considerations

There are number of basic considerations that will mainly dictate the scope of your search: Which bands to you want to operate on, which modes do you want to use, whether do you want to mainly operate portable, mobile or from home?

If you mainly want to operate portable on 144MHz (2m) or 430MHz (70 centimetre or 70cm) using frequency modulation (f.m.), then a

hand-held portable transceiver will probably be on your shopping list. However, if you want to operate using single sideband (s.s.b.) high frequency (h.f.) to try to work long distance (DX) stations, then you'll need to be looking at something else!

Power Supply

Most transceivers will require either a mains supply or an external power supply capable of delivering 13.8V. If you opt for a 13.8V transceiver then – if you want to use it at your main station you'll also need to budget for a suitable power supply unit (p.s.u.) capable of supplying sufficient current and suitable units are available with current rating of between 20 and 30A (amps), short for amperes.

Dedicated Transceivers

Historically, most commercially-made Amateur Radio transceivers were dedicated multi-band h.f. or single/or multi-band v.h.f./u.h.f. transceivers. In recent years, however, we have seen a blurring of this divide, with some transceivers covering almost every Amateur Radio band from 1.8 MHz (160m) to 1296MHz (23cm).

Combining many bands into one box has a major advantage of saving space in the operating position of a shack. But please don't underestimate the benefits of having to master just one set of controls! The main drawbacks are the cost, although in some cases the 23cm module is an optional extra, which need not be purchased initially.

If you decide to buy separate transceivers for the h.f. and v.h.f./u.h.f. bands, be aware that transceivers from different manufacturers

often use different connectors or different pin allocations on their microphone sockets! This means that a microphone suitable for use on – for example an Icom transceiver – may not work with a Yaesu or Kenwood transceiver. Please note that this can also be a consideration when you want to use data modes with transceivers from different manufacturers.

Antenna Tuning Units

Antenna tuning units (a.t.u.s) must also be considered and nowadays many multi-band h.f. transceivers are available with a built-in automatic antenna tuning units (a.a.t.u.). These are really useful if the a.t.u. covers the bands that you need.

Note however, that an a.a.t.u. may not match as wide a range of antennas and feeders as a separate dedicated tuning unit.

Despite the limitations, personally I really like these built-in a.a.t.u, as they save valuable space in the operating position, and allow rapid switching from one band to another. Perhaps my liking for an automatic tuning system is due to the fact that as a G6 I have come down to the h.f. bands from v.h.f./u.h.f. where a.t.u.s are almost unheard of!

Receive & Transmit

Most commercially produced equipment produced in the last 15 years has obtained type approval in a number of countries, so you can reasonably certain that there's not much wrong with the transmitter side. So, in our search for our ideal transceiver we need to focus on the receive side. We have to bear in mind that our h.f. bands are really crowded these days.

When choosing a modern transceiver we have to make sure of having a good, well equipped receiver section. This section will have a number of ways of helping the operator to 'pull out the signal' that's wanted from everything else. Options should include a variety of filters to



Icom IC-2200



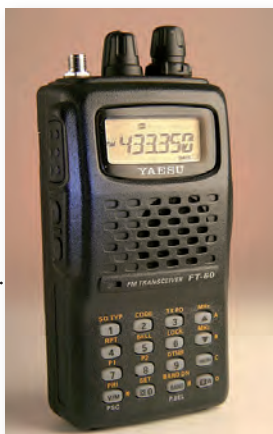
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Kenwood TMV-71E



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suit s.s.b. and c.w. signals.

Good attenuators and notch filters are also of prime importance nowadays. On some bands, e.g. on the 7MHz band (40 metres), signals are often so strong that an attenuator can be very useful in reducing the background noise. Notch filters can also be used to minimise the QRM from other transmissions.

Keen c.w. operators may also find the need to invest in a special optional narrow band c.w. filters for the best receiver performance. These are often available as an optional extra.

Try Before Buying!

I would strongly recommend that anyone consider buying, that they should try out an h.f. receiver (or receiver section) before parting with the money! Don't risk your money on a transceiver if you can't try it out with reasonable antenna that's resonant on the band you are most interested in operating on.

Don't forget that you really need to be sure that the receiver is seeing plenty of challenging signals. This helps you to be certain that the receiver can filter out as many of the unwanted signals as possible, leaving just the signal that you want to hear.

Finally on this topic, with the possible exception of software defined radios, digital signal processing (DSP) should, in my opinion, be regarded as the 'icing on the cake' to an already well filtered receiver. In other words I think that the DSP should not be the only/or main filtering.

The VHF/UHF Bands

Turning to the v.h.f./u.h.f. bands now, I really think there's an important balance to be struck between sensitivity and selectivity. Regrettably in my opinion, too many rigs have provided sensitivity without the necessary good selectivity to go with it. It's no good if the weak signal you're trying to hear just above the noise is drowned out by a strong signal on an adjacent channel. In fact, I think that many modern hand-helds are quite poor in this respect when used with anything other than their 'rubber duck' flexible whip antenna.

The trend has been to provide wideband reception of many frequencies outside of the Amateur Radio bands. Whilst this may be seen by many as a positive selling point, it has caused problems. In too many instances it has resulted in a front-end wide open to 'out of Amateur band' signals causing intermodulation (the imposition of the modulation from another signal on to the transmission you wish to hear) and other distortions to weak signals within the Amateur band.

Here I'll now repeat the advice (that I gave for h.f. receivers) for v.h.f. and u.h.f. hand-held by advising that: If you intend to use these transceivers with anything other than the flexible whip antenna, check the receive performance on a good external resonant antenna before parting with your money. It's advice that could help you avoid a lot of frustration when listening on the Amateur bands!

Perhaps my own experiences

might help to persuade readers! One rig I tried a few years ago included wide-band f.m. coverage of Band II (88 to 108MHz). Using the receiver I discovered that even with the standard flexi-whip antenna – some 40km from the nearest main Band II transmitter – I found broadcast stations all over the other v.h.f. bands from 70 to 130MHz!

That's it for this month but don't forget I'll be very pleased to hear from you whether it be specific questions or suggestions for the column. Cheerio for now!

Looking For A Rig? Read On!

Rob Mannion G3XFD writes: If you're looking for a new or second-hand rig the regular advertisers in *PW*, together with the Bargain Basement section, could solve your problem!

If you're very new to the hobby and need basic help – your local club could be a starting point. Some clubs may have their own transceivers for use on air by members (some clubs are even prepared to loan rigs to members for evaluation). If your local club offers this facility it could prove very useful.

'On the air' evenings at clubs can also provide you with valuable experience with individual transceivers and also provide helpful advice from members who may be able to help demonstrate their own rigs. There's also bound to be a great diversity of equipment owned by different club members – so I strongly advise that any newcomers seek their advice.

Of course, there's a healthy second-hand trading system in operation within the hobby. When someone buys a new rig, there's often another well kept rig entering the second-hand market. Again, this is where friends can help with advice and opinions on what you need to look out for. Good luck in your search!

Colin's waiting to hear from You!

I like to solve problems with anything to do with Amateur Radio for newcomers! I can answer questions and publish my findings here for the benefit of all *PW* readers.

Remember the mains supply is potentially lethal. Unless you really know what you are doing, always pull the mains plug out, do not just switch off at the wall socket, when working on equipment.



rallies

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

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February 24th

Bredhurst R&TS Radio Rally

E-mail: O.wheeler@btopenworld.com
The Bredhurst Receiving & Transmitting Society Radio Rally will be held at Rainham Girls School, Derwent way, Rainham, Kent ME8 OBX, just off the A2 & M2 J4. There will be car parking, special interests groups and trade stands. Doors open 9.30am for disabled visitors and 10am for others, admission is £2.50.

Swansea ARS Amateur Radio Show

Contact: Roger Williams
Tel: (01792) 404422

The Swansea ARS Amateur Radio Show will be held at Afan Lido (The Aquadrome), Aberavon Seaford, Port Talbot SA12 6QW. There will be trade stands, a Bring & Buy, special interest groups, catering and talk-in on S22. Doors open at 10.30am.

March 1st/2nd

MOVOG Radio Club Rally

Contact: Michael Buckley
Tel: 0208 654 2582
E-mail: mikeb@vmars.org.uk
Website: www.firepowerradiorally.zoomshare.com/

The MOVOG Radio Club Rally will be held in the Firepower Museum, Royal Arsenal, Woolwich, London SE18 6ST. This small rally will have a vintage radio display, demonstrations and radio junk sale (no computers).

March 2nd

Exeter Radio & Electronics Rally

Contact: Pete
Tel: 07714 198374

The Exeter Radio and Electronics Rally will take place in America Hall, Pinhoe, Exeter EX4 8PW. There will be traders, a Bring & Buy and refreshments. Entry fee is £1.50 with all profits from the event shared between GB3SW and GB3EX, the local 2m and 70cm repeaters.

Cambridge and District Amateur Radio Club Rally

Contact: David G8JKV
Tel: (01223) 355254
Website: http://www.sim-racing.co.uk/cdarc/cdarc_rally2008.php

The Cambridge and District Amateur Radio Club Rally will be held at the Britten Arena, Wood Green Animal Shelter, King's Bush Farm, London Road, Godmanchester, Cambs PE29 2NH. The Britten Arena is 1650 square meters in size and is heated. Free parking is available for up to 4000 cars. With a bar, restaurant and the other attractions on site, this makes a great day out for all the family. Restaurant opens from 8.30am. Bar open from 12 noon. Doors open at 10am, entry is £3 (children under 16 free).

March 9th

Wythall Radio Club Radio & Computer Rally

Contact: Chris G0EYO
Tel: 07710 412 819
E-mail: g0eyo@blueyonder.co.uk
Website: www.wrcrally.co.uk

The 23rd Wythall Radio Club Annual Radio and Computer Rally will be held at Woodrush Sports Centre, Shawhurst Lane, Hollywood, Nr Wythall, Birmingham B47. There will be radio and computer traders, a Bring & Buy, refreshments and good on-site parking. Admission will be £1.50.

March 15th

Lagan Valley Radio Rally

Contact: Jim Henry
Tel: 048 926 62270
Website: www.qsl.net/gi4gtg

The Lagan Valley Radio Rally will be held at Lagan Valley Hospital, 39 Hillsborough Road, Lisburn, Northern Ireland BT28 1JP. Doors open 11.30am. It is expected that the usual range of traders will be in attendance together with a few additional and new attractions.

Dutch National Radio Flea Market

E-mail: info@radiovlooiemarkt.nl
Website: www.radiovlooiemarkt.nl

The Dutch National Radio Flea Market will be held at Autotron, Rosmalen ('s-Hertogenbosch, just off A59 motorway). Doors open at 9am with trade stands, a flea market and admission is 6 Euros.

March 16th

NORBRECK Amateur Radio, Electronics and Computing Exhibition

Contact: Peter Denton G6CGF
Tel: 0151 630 5790

The NORBRECK Amateur Radio Electronics and Computing Exhibition organised by the Northern Amateur Radio Societies Association (NARSA) will be held at the Norbreck Castle Exhibition Centre, Blackpool FY2 9AA. It's the largest single day exhibition in the country. Morse tests will be available at the show.

April 6th

Spring Militaria & Electronics & Radio Amateur Hangar Sale

Contact: Rod Siebert
Tel: (01270) 623353
Website: www.hackgreen.co.uk

The Spring Militaria & Electronics & Radio Amateur Hangar Sale will be held at Hack Green Secret Nuclear Bunker, Nantwich Cheshire CW5 8AP (CW58AP Sat-Nav). There will be a sale of militaria & electronics in the large hangar with a variety of traders. Also on the same day is the Ex-Military Landrover Association 'Bunker Crank Up' with a large display of military vehicles.

April 13th

Enniskillen Amateur Radio Show

Contact: Alan
Tel: 02866341108
Website: <http://www.loughneradioclub.co.uk/>

The Lough Erne Amateur Radio Club is hosting the 27th Enniskillen Amateur Radio Show at The Share Centre, Lisnaskea, County Fermanagh. There will be a Bring & Buy and all the usual facilities including food and parking on-site.

April 27th

Yeovil Amateur Radio Club 24th QRP Convention

Contact: George Davis
Tel: (01935) 425669
Website: www.yeovil-arc.com

The Yeovil QRP Convention will be held in Digby Hall, Hound Street, Sherborne, Dorset DT9 3AA. Follow the white road signs to the town centre as Digby Hall adjoins the central shopping car park. Doors open at 10am. There will be trade stands, a Bring & Buy, catering and talk-in on S22.

May 4th

3rd Dambusters Hamfest

Contact: Tony Nightingale
Tel: (01507) 527835

E-mail:

G3ZPU@hotmail.com

The third Dambusters Hamfest will be held at Thorpe Camp Museum, Nr Coningsby, Lincolnshire LN4 4PE (the 617 Dambusters Squadron base). Free pitches are available for traders and entry is £2 per person, which includes entry into the museum. There are no inside pitches but traders can bring their own tents, gazebos or marquees at no extra cost. Please book these in advance. The Naffi will be open for hot drinks and home made cakes. Doors open for visitors at 10.30am.

May 5th

Dartmoor Radio Rally

Contact: Peter M1AYI
Tel: 01822 860277

The 24th Dartmoor Radio Rally will be held at Tavistock College, Crowndale Road, Tavistock, Devon PL19 8DD. There will be trade stands, special interest groups, a Bring & Buy, catering and free parking. Doors open at 10.30am (10.15am for disabled). Talk in on 145.550MHz.

June 1st

Spalding Rally 2008

Contact: Alan
Tel: 0776777296
E-mail: rally-secretary@sdars.org.uk
Website: www.sdars.org.uk

The Spalding Rally 2008 will be held at The Sir John Glead Technology School, Halmer Gardens, Spalding, Lincolnshire PE11 2EF. Doors open 10am, There will be a Fleamarket, free parking and plenty of catering.

June 15th

Newbury & District ARS Rally and Boot Sale

Contact: Richard Jolliffe
Tel: (01635) 46241
E-mail: carbboot@nadars.org.uk

The Newbury & District ARS Rally and Boot Sale will be held at the Newbury Showground - nearest postcode RG18 9JU. Pitches are £10 each or you can erect your own marquee for £50. The entry fee for visitors is £2.

June 29th

West of England Radio Rally

Contact: Shaun G8VPG
Tel: 01225 873 098
Email: rallymanager@westrally.org.uk
Website: www.westrally.org.uk

The West of England Radio Rally will be held at the "Cheese & Grain" venue, Frome, Somerset BA11 1BE.

July 13th

McMichael Rally and Boot Sale

Contact: M Standen
Tel: 01189 723 504
E-mail: g0jms@radarc.org
Website: <http://www.radarc.org/MMRally.htm>

The McMichael Rally and Boot Sale will be held at Reading Rugby Football Club, Holme Park Farm Lane, Sonning Lane (B4446), Sonning on Thames, Reading RG4 6ST, just off the A4 East of Reading, Berkshire. It is a large site and the boot sale area is on level ground. There will be Special Interest Groups, computer equipment, demonstrations and lectures, catering services, a fully licensed bar and plenty of parking areas with disabled special parking on level ground. Gates open at 9.30am and admission is £2. Gates open for sellers from 8.30am. Boot Sale Pitches costs £10, no booking required. Hall traders, tables £10 pre-booked or £12 on the day.

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David Butler's

v hf d x e r

Share your news, views and reports with fellow readers. Reports to David by the last Saturday of each month please.

This Month David Butler G4ASR has reports of tremendous tropospheric propagation on the v.h.f., u.h.f. and microwave bands.

The dominant propagation mode during December was an extensive tropospheric opening (tropo) that enabled numerous c.w. and s.s.b. contacts to be made of over 2000km on the 144MHz and 430MHz bands, many of them deep into the Baltic States and Russia. A small number of Sporadic-E events were reported on the 50 and 70MHz bands during December with single-hop contacts being made throughout Europe.

Reports were also received from 50MHz operators that the transatlantic path to Canada opened up on one occasion. The Earth encountered the Geminids and Ursids meteor showers during the month, creating a small increase in DX activity, especially on the 144MHz band. And there's good news for 'Four metre' enthusiasts as further countries gain access to the band.

Tropospheric Openings

During the 5-day period 17th to 21st December 2007, many UK amateurs experienced what was arguably some of the best tropospheric propagation conditions for many years. The tropo lift was particularly favourable in the North of England and along the East coast of Scotland with stations on the 144MHz band working well into the Baltic States of Belarus (EW) Estonia (ES), Kaliningrad (UA2), Latvia (YL), Lithuania (LY), Russia (UA) and the Ukraine (UR).

The DX Cluster system also reported 144MHz contacts into Scandinavian countries that included the Aland Islands (OH0), Denmark (OZ), Finland (OH), Norway (LA) and Sweden (SM) and also mainland Europe into Belgium (ON), Czech

Republic (OK), France (F), Germany (DL), Netherlands (PA), Poland (SP) and Switzerland (HB9). The tropo propagation was also extensive on the 430MHz and 1.3GHz bands with contacts being made into similar areas. Propagation on the 2.3, 3.4, 5.7 and 10GHz appeared to be restricted to Denmark, Germany Norway and Sweden.

On 10GHz, the contact between the stations of **GM4LBV** (IO86) and **SM7LCB** (JO86) over a path of 1170km was quite exceptional. One other long distance contact reported occurred on the 144MHz band between the stations of **GM0TGE** (IO87) and **UR5LX** (Ukraine KO70) over an extended path of around 2600km. This contact is even more remarkable given that the path extended across the land-mass of Europe and was not solely due to sea ducting.

The opening did not, however, favour everyone and stations in the South and West of the UK reported that very little was heard of the Baltic opening. For many stations throughout the UK the **real** DX eluded them and they had to make do instead with short-haul paths of up to 1000km into Scandinavia, Germany and Poland.

Although there had been some reasonable tropo propagation to Denmark, Norway and Spain (EA) in the first two weeks of December, all of these contacts were transitory in nature with path distances of less than 800km or so. These are fairly 'bread and butter' stuff for a tropo working. It wasn't until 17th December that DX conditions starting 'hotting up' - although the outside temperature definitely didn't! High pressure had set in for a longer than usual time, producing a good number of frosty, sunny days. It also produced some gloomy grey ones too, as the high pressure zone wriggled around the near continent.

During the afternoon of 17th December the 144MHz station of **David Storrs G8GXP** (West Yorkshire

IO93) heard **SM7CXI** (JO73) and **SK7OA** (JO65) and then went on to work a number of Polish stations on a different beam-heading that included those of **SP1NQN** (JO84 1211km), **SP6VGJ** (JO81 1239km), **SP2MKO** (JO93 1307km), **SP2IPK** (JO93 1346km), **SP5JTO** (KO02 1510km), **SP5QAT** (KO02 1514km) and **SP4BY** (KO13) at 1635km. Other UK 144MHz operators reported c.w. and s.s.b. contacts throughout the evening with stations in DL, HB9, LA, OZ and OK up to 1600km away.

The most unusual aspect of this extensive opening that occurred between December 17-21 was the large number of Russian and ex-Republic stations that could be worked on the 144MHz band. **David Johnson G4DHF** (Lincolnshire IO92) heard the stations of **RA2FF** (KO04) and **UA2FL** (KO04), both located in Kaliningrad. This is a Russian enclave situated between Poland and Lithuania located 300km away from the border of Russia and because it is detached from Russia proper it counts as a separate DXCC country. Other stations worked from the UK included **EW6FS** (KO35) from Belarus and **ES2CM** (KO29), **ES3RF** (KO29), **ES5PC** (KO38), **ES6DO** (KO27), **ES6RQ** (KO28), **ES7GN** (KO28) & **ES8TJM** (KO18) from Estonia.

Stations from Latvia included **YL2GJW** (KO06), **YL2OK** (KO37) & **YL3GDF** (KO26) and from Lithuania **LY2BAW** (KO25), **LY2R** (KO15), **LY2SA** (KO14) and **LY3A** (KO25). Russian stations **RA3LBW** (KO64), **RV3YM** (KO63) and **RW3LL** (KO64) were also contacted but the best DX were stations from the Ukraine at distance well in excess of 2000km. These included **UR5LX** (See his antennas in **Fig. 1**), **US5WU** (KO20), **UT0YW** (KN28), **UT2XQ** (KO40), **UT5ERP** (KN77), **UY5HF** (KN66) and **UY5UG** (KO50). Additionally, many UK operators also picked up a new DXCC country by contacting the 144MHz stations of **OH0JFP** and **OH0JN** who were located on the Aland Islands, an archipelago in the Baltic Sea. Next

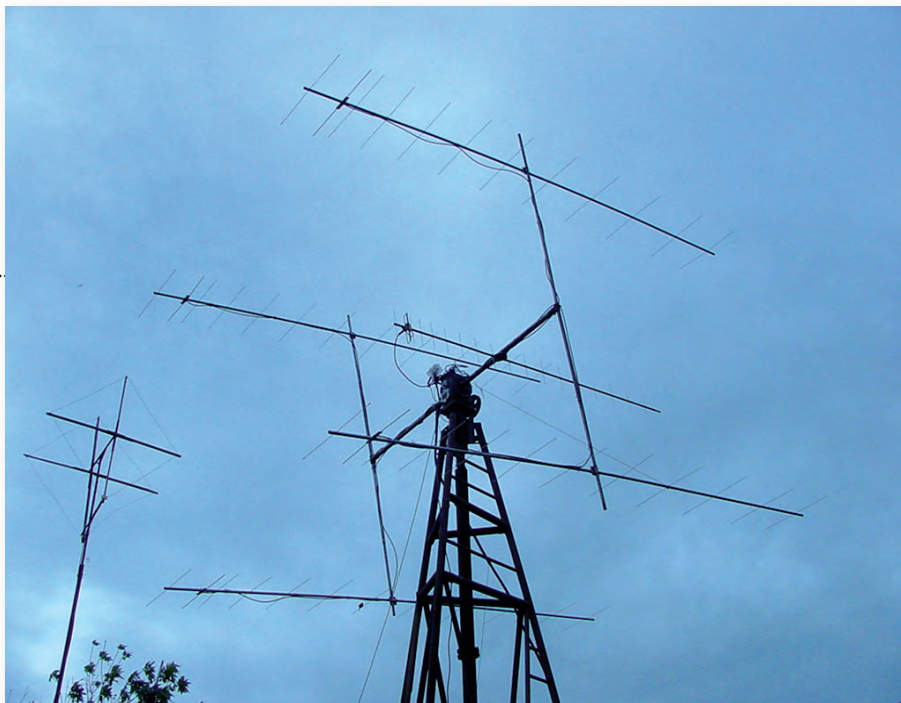


Fig. 1: The 4x12-element 144MHz Yagi antennas at the QTH of UR5LX.

month I'll give details of all the DX worked on the 430MHz band and higher microwave bands.

The 50MHz Band

During the Winter solstice period there is always a small peak in Sporadic-E (Sp-E) propagation. This mode is a form of radio propagation that utilises characteristics of the Earth's ionosphere by bouncing signals off a 'cloud' of highly ionised material in the E-region around 90 kilometres above the surface of the Earth.

Although the increase in activity during the winter period is fairly insignificant compared to the Summer Sp-E season it does nevertheless create DX opportunities for those operators active on the 50MHz and 70MHz bands. Activity often begins in mid-December in the northern hemisphere with the days immediately after Christmas being the most active.

A total of five Sp-E openings were reported on the 3rd, 18th, 25th, 26th and 27th December, the two 50MHz 'after Christmas' events being particularly intense. The opening on Boxing Day (26th), consisted of three discrete events. It commenced at 0955UTC with stations in southern England hearing video signals emanating from central Europe.

Although most Band I television video carriers are transmitted below the 50MHz band (typically 48.250MHz or 49.750MHz) their sidebands can

be detected over many megahertz. The carriers are transmitted using amplitude modulation (a.m.) mode so by listening in single sideband (s.s.b.) mode you can hear the video buzz even when they are very weak.

A few minutes after the video signals were first heard stations in Scotland started working into Germany, Italy and Switzerland and at the same time stations in central England were making contacts into the Czech Republic and Poland. This opening faded out at 1015UTC but four hours later another path opened up and this time it was across the Atlantic Ocean.

Daran Josey MW0HMY

(Carmarthenshire IO71) reports that at 1420UTC he was tuning across the 50MHz band and heard a weak c.w. beacon transmitting on 50.039MHz. As he knew that this was the allocated frequency for VO1ZA (Newfoundland, Canada) he swung the beam around to 300° and there it was peaking at RST 579.

To his amazement the beacon was heard at his QTH for more than an hour with reports varying from 529 to a genuine 599 over a path of 3500km. The beacon was also spotted by other UK operators, mainly located in southern England. Unfortunately no other North American stations were heard during this very unusual opening.

The third opening of the day commenced at 1530UTC with operators in England, Northern Ireland,

David Butler G4ASR

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E-mail: g4asr@btinternet.com

Scotland and Wales contacting stations in Austria (OE), Croatia (9A), Germany (DL), Hungary (HA), Lithuania (LY), Poland (SP), Romania (YO), Serbia (YU), Slovakia (OM) and Ukraine (UT). This was quite an intense Sp-E opening that faded out around 1815UTC. Daran MW0HMY (see his superb shack in **Fig. 2**) mentions that the 50MHz band opened up at his QTH at 1600UTC with many contacts being made for nearly two hours into Germany and Poland. Some of the stations worked included DL1DRP (JO71), DL7DF (JO83), SP5SS (KO02), SP6GZZ (JO80), SQ7TEE (JO91), SP9DSD (JO90), SP9ODY (KN09) and SQ9IAU (KO09).

On the following day, 27th January, two further Sp-E openings were reported. The first event, between 1145-1300UTC, seemed to be mainly restricted to operators in Scotland who reported contacts with the Scandinavian stations of OH8HTG (Finland), LA5QFA (Norway) and SK2AT (Sweden).

A much larger event was reported to have started at 1630UTC with 'Six metre' operators throughout the UK working stations such as CN8KD (Morocco), CT1HZE (Portugal), DK1MAX (Germany), F1GTR (France), GM4ODA/P (Shetland Islands), HA1FV (Hungary), IW0FFK (Italy), OE9RWV (Austria), OM3CLS (Slovakia), SP6MLK (Poland), S51DI (Slovenia), ZB3B (Gibraltar) and 9A5CW (Croatia).

The opening lasted for three hours fading out around 1930UTC. Incidentally the 28MHz band makes an excellent indicator for Sp-E especially during the weaker winter openings. Coincident with the 50MHz opening a number of Ten Metre operators in the UK were reporting contacts into DL, EA, F, HB9, I, IT9, OE, ON, PA, SM, S5 & UA2. The 28MHz station of M3WUH reported contacts with DH8SL, HB9EFJ, IZ0KRC, IZ1MLQ & IV3OKO and the well known v.h.f. station of G7RAU reported the 28MHz stations of DK0TEN, DM0AAB, DO1KRT,

DJ5KX, DL7UAG, DH8BQA, GI7AXB, PF30FRG, SM5COP & SM5HUA.

All of these contacts were very indicative of what was being worked higher up on the 50MHz band. So if you're really keen on making contacts on the 50MHz band it is worthwhile having a 28MHz capability as well.

The 70MHz Band

Three Sporadic-E openings were reported on the 70MHz band occurring on 3rd December to Denmark, on the 26th December to Eastern Europe and on the 27th December to Slovenia. The opening on the 26th between 1535-1730UTC was first detected by the station of G7RAU who heard the f.m. broadcast station designated as EU/MGO1/8 transmitting on 70.280MHz. It is located in Belarus (KO42) and transmits in the Eastern European f.m. broadcast band that covers 65.800-74.000MHz. Although most European countries use the 87.5 to 108MHz broadcast band some countries such as Belarus, Moldova, Russia and Ukraine still use the old allocation.

The 70.0-70.5MHz (Four metre) amateur radio allocation used in the UK is entirely within the Eastern European f.m. band. Operators of the 50 and 70MHz bands often use the presence of broadcast stations as an indication that there's an opening into Eastern Europe or Russia. This can be a mixed blessing because the 70MHz amateur allocation is only 500kHz wide and a single broadcast station can cause considerable interference to a large part of the band.

Other broadcast stations received by G7RAU during the opening included units in Belarus operating on 70.910MHz (KO12), 71.450MHz (KO43), 71.690MHz (KO12) & 73.010MHz (KO43) and f.m. stations in Ukraine on 70.760MHz (KN18), 72.080MHz (KO50) and 73.790MHz (KO60). Unfortunately no countries with a 70MHz allocation were in range to the east of the UK but it did allow some cross-band contacts to be made with stations in Austria, Germany and Poland.

Mart Tagasaar ES2NJ (v.h.f. Manager of the Estonian Radio Amateurs Union) passes on the excellent news that from the first of January 2008 the 70MHz band was officially allocated for regular



Fig. 2: The shack of Daran Josey MW0HMY.

Amateur Radio use in Estonia on a secondary basis. The Estonian band from 70.140-70.300MHz may be operated by all national licence classes (A, B and D). A foreign Radio Amateur, who is the holder of a valid CEPT licence, can also use their callsigns on 70MHz during a temporary stay (up to three months) in Estonia with no extra registration, application or charge. The secondary status means that operation is on a non-interference basis to other communication services in Estonia. The r.f. power output limit is 100W (20dBW) for A & B national classes and 10W (10dBW) for the Novice class D. All modes are permitted and the use of a horizontally polarised antenna is recommended.

Hans Fischer DL8PM (Germany JO30) mentions that he obtained a temporary allocation that allowed him to transmit on 69.950MHz. Using the experimental call sign **DI2PM** his licence was valid from 15th December 2007 to 29th February 2008 so, there's a few days left in which to work him.

Hans is using an OZ2M transverter into a 6-element ZX Yagi and prefers to operate using JT6M or c.w. modes.

All contacts are in split frequency operation, transmitting on 69.950MHz and listening around 70.150MHz.

In October 2007 a new propagation beacon J5SIX became operational on 50.012MHz from the centre of Bissau, the capital of Guinea Bissau, West Africa. The beacon keeper J5JUA passes on the news that he has now obtained permission to install two additional beacons on the 70MHz and 144MHz bands. The beacon J5FOUR will operate on 70.010MHz with 20W into a horizontal dipole and J5TWO (frequency to be announced) will run 20W into a Diamond X510 vertical antenna.

Deadlines

That's it for this month. Tropospheric propagation during February and March is normally quite subdued and ionospheric propagation at this point in the solar cycle is equally uninspiring. It won't be until May that the 50 and 70MHz bands will start coming alive again. If you hear any DX or have any other news to pass on then please send the details to me before the last Saturday of each month.

73 David G4ASR

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Roger Cooke G3LDI welcomes readers to the World of Morse. If you enjoy c.w. this is the page for you!

Welcome to the second column in this series. I've had some feedback in the form of E-mails, all of which have been good and very encouraging. In fact I shall be including some of the suggestions in future columns.

As I reminded readers, the UK licence doesn't require you to do Morse. Some operators obviously will be extremely pleased with that – hating the idea of having to do c.w. in the first place!

But consider what you're missing and just how you are handicapping yourself. For example, in the CQWW SSB contest, it's virtually impossible to have regular QSOs on h.f. as the bands are absolutely crammed full with huge single sideband (s.s.b.) signals all causing mayhem!

On the other hand, if you could use c.w., there's some peace and tranquility on sections of the bands. Just look how much space you are missing: 20% of 1.8, 30% of 3.5, 25% of 7, 100% of 10, 25% of 14, 40% of 18, 30% of 21, 50% of 24, 15% of 28 and 25% of 50MHz. This fact should hopefully give you even more encouragement!

How do I start?

You may ask me, "How do I start using c.w.?" Well in answer, you have to want to do it and also be encouraged. A good place to start might be to buy my book, *Morse Code for Radio Amateurs*, published by the RSGB and available from the PW Bookstore. There's much information and it comes with a CD with some useful programs.

Learning the code can be done in two ways. You either learn the whole 26 letters, 10 numbers and a few punctuation marks off by heart, then practice with a program using the Farnsworth method, or you can employ a program using the Koch method. (Try doing both and see how you get on).

To try learning all the code at once

cut some pieces of cardboard, about an inch square. Write the letter on one side, i.e. A, and then on the other side, write dit-dah. This is how Morse sounds when resolved on a receiver with a beat frequency oscillator (b.f.o.) – don't write the code in dots and dashes!

When the cards are ready, jumble them up and put them in your pocket. Then take one out at a time and convert from Morse to the letter/figure/punctuation or the other way round (it doesn't matter which way round you do it) it works but will take a while.

After you have learned everything off by heart, start listening to some slow Morse and try to copy it down. Try a program by **AA9PW** (Ref 1). It's interactive and you can set the parameters to what you think is best for you. Always try to copy a speed slightly faster than you can manage, to strain and train the brain!

The second technique, using the Koch method, is to download a program and start by learning just two letters and playing two

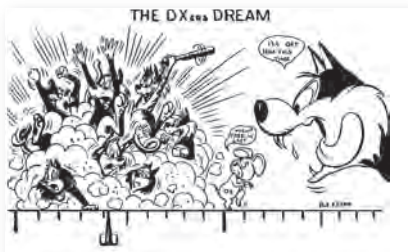


Fig. 1: Cracking the pile-up.

characters back at a high character speed (around 20w.p.m.) and copying them down on paper. They're sent at random word lengths and you'll find that just two letters will sink in very quickly.

Keep the speed just above what you can copy comfortably and then introduce another character, so you now have three to copy. You'll find progress is quite rapid and strangely enough, quite enjoyable! I now use this method in my classes

and everyone likes it a lot. Try downloading a program by **Ray Goff G4FON** (Ref 2). It's easy to set up and very easy to run.

Dedication Required!

I cannot stress enough that dedication is required and a fair amount of time. However, the rewards do justify the effort I can assure you!

By the time you read this, the RSGB Club Championship contests will be under way. Listen during the c.w. event and try to copy some of the callsigns and serial numbers that are being exchanged. This is always good practice and there's a QRS (slower sending) area that's supposed to house the beginner who might be sending at around 12-18 wpm. Try listening out for the slower operators.

Please don't touch a Morse key until you can receive at around 12-15w.p.m. and then only under supervision. There's a proper technique and it's best to start with the correct one!

If you don't have a local volunteer to put GB2CW on the air, try to promote the idea at your club. Ask any potential volunteer to write to me and I'll send a letter of confirmation of their schedule and get it onto the list. We need a lot more volunteers all over the UK and the more the merrier!

There are some interesting DX-peditions in the first quarter of 2008, so might see some of you in the pile-ups! Cracking a pile-up is fun, even if you don't actually need that particular country. It hones your operating skills and is quite satisfying, plus there are some very nice QSL cards to be had.

I also hope to be working some of you in the RSGB CC contests during the year. So 73 and May the Morse Mode be with you! ●

Ref 1 <http://www.aa9pw.com/radio/morse.html>

Ref 2 <http://www.g4fon.net/>

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Carl Mason's

hf highlights

Share your news, views and reports with fellow readers. Reports to Carl by the 15th of each month please.

Carl Mason GWOVSW brings you news of the HF bands and a report of one high level aeronautical QSO.

I begin this month's column with news from two *PW* reporters.

The first is **Roy Walker G0TAK/2E1RAF** who obtained permission to use the Royal Air Force ARS callsign **G8FC** from his home in Kendal, Cumbria. The callsign G8FC was issued over 70 years ago and has been operated during that period from the RAF College at Cranwell, Lincolnshire, RAF Locking near Western Super Mare. More recently it's been operated from the Defence College of Aeronautical Engineering at RAF Cosford.

The RAFARS HQ at Cosford has been overshadowed by the completion of a metal clad exhibition building dedicated to the 'Cold War' and this has affected the multi band

beam antenna used for the group's Amateur Radio activities. To keep G8FC going, it has been necessary for members to air the call from their home stations and Roy had a good deal of success over the Christmas period.

Using QRP power levels from an Elecraft K2 and auto tuner with a nest of seven dipoles in his loft and an 80m square loop in his garden he made 118 contacts. Roy's best DX of the session was K9EU in Illinois. If you worked Roy using this special call you can QSL via the bureau.

In New Zealand **Vince Lear ZL1VL** (ex G3TKN) is operating from Dannemora on the Eastern Beaches area of Auckland running an IC-756 PROII together with an Alpha 99 linear amplifier and a 40m corner fed Delta Loop. His preferred band is 7MHz using c.w. though he does venture onto other bands occasionally giving Zone 32 to those stations fortunate enough to work him, especially in CQWW contests. He says "One of the pleasures of

operating down here is the lack of QRM compared to those back home."

However, there are often some good signals to be read from the UK and Europe, though they rarely rise above S9 on my meter. During last year's CQWW I did hear one station, OK5C, with a signal 15dB over 9 and he's the strongest station I have heard by far! When I operate, most of the activity I hear on the bands, is from Mid and Eastern Europe and parts of the Mediterranean.

The pattern of reception is, I believe, due to the more Northerly latitude of Auckland (nearer the equator) compared to other parts of New Zealand which results in signals from the UK and Western Europe passing nearer the aural zone. Often I hear stations in the South Island working Gs on 40m long path which are inaudible to me here in the North".

Listen out for Vince on 40m and if you do manage to work him send in a report!



Vince Lear ZL1VL is one to listen out for on the 7MHz band.



Roy Walker G0TAK/2E1RAF had special permission to operate the RAF ARS G8FC station from his home in Cumbria.

New DVD

A new DVD has become available that may be of interest to you and gives a "colourful and comprehensive account of life on Ile du Sud, Saint Brandon during the recent 3B7C DXpedition". Also included is the video of the 3B9C Rodrigues expedition, with each running for approximately 45 minutes. Full details can be found at www.3b7c.com/DVD.htm

The DX News

On to some DX news now and **David Croasdale VK6YEL** sent in an E-mail to say that The Northern Corridor Radio Group in Perth, Western Australia will activate Faure Island OC-206 in the Shark Bay area and will be active on all bands using all modes from the 25th March for seven days. The island is a nature reserve so special permission had to be obtained to operate there. No callsign was known as I put the column together.

If any of you require contacts with Thailand on 3.5MHz c.w. then listen out for **Don HS0ZEE** who operates daily between 3505 and 3507kHz from 2100 to 0030UTC running a Kenwood TS-940s to a 30m high dipole. He welcomes 'skeds' so if you would like one send an E-mail to g3vfu@hotmail.com

There will be some h.f. activity from the Polish research station "Henryk Arctowski" based on King

George Island AN-010 in South Shetlands. Marek SP3GVX is back there until later in the year and you can expect him to be active when time allows using the HF0POL callsign. The QSL route is via Tomasz Lipinski, SP3WVL, Ul. Paderewskiego 24M 1, 69-100 Slubice, Poland and logs will be uploaded to LoTW.

In the Marshall Islands **Randy V73RY** has been very active on h.f. from Kwajalein OC-028 since early 2005 but will now be returning to the U.S.A. at the end of May. While s.s.b. is his preferred mode he does operate some c.w. and digital modes including PSK31. The QSL route is via Richard J Moen, N7RO, 2935, Plymouth Drive, Bellingham, WA 98225, U.S.A. and his logbooks can be found on LoTW.

In St Helena and operating until April, is **Tom ZD7X** (KC0W) who plans to spend the majority of his time working 3.5MHz using both s.s.b. in the DX window or around 3.502MHz c.w. depending on QRM and the QSL route is via Laurent Thomin, W0MM, 1615, Beaconsire Rd, Houston, TX 77077-3817, USA direct or via the bureau.

Closer to home the Belgium Air Force Amateur Radio Association will be celebrating its 40th Anniversary by running the call **ON40BAF** until the end of the year. Activity will be on all bands and using all modes and the QSL is via Francois (Frans) Nevelsteen ON6KN,

Carl Mason GW0VSW

2, Golwg-y-Bryn,
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Mgr. Cruysberghsstraat 43, B-2450 Meerhout, Belgium direct or through the bureau.

QSL Manager Updates

There is just enough space for some manager updates now and effective from the 1st January Peter PA2V will no longer be the QSL manager for **HZ1MD** though Peter will honour all requests for cards for HZ1MD's activities from Farasan Islandss AS-193.

In Hungary Gabi HA3JB expected the cards for **SU8BHI** to arrive by the end of January and you can obtain one direct only to Kutasi Gabor, POB 243, H-8601 Siofok, Hungary. If you do not receive a card then E-mail him at ha3jb@t-email.hu

Finally, if you worked either YB0ZZ, the ORARI DKI Jakarta Club Station or YE0X, Contest ORARI Daerah DKI Jakarta then the new address for cards is Jl. Suryo Pranoto No. 8 Gedung Prasada Sasana Karya Lantai 10, Jakarta Pusat (10130), Indonesia.

New Entity

In December 2003 Saint Martin (FS) and Saint Barthelemy (FJ) voted in favour of autonomy from Guadeloupe (FG) in order to form separate Overseas Collectives or Collectivites d'outre-mer (COM). In February last year the French Parliament finally passed a bill granting this COM status and this took effect on 21st February 2007 when the law was published in its official journal. Up until late last year both had formed just one DXCC entity.

The ARRL announced on 14th December that the St Barthelemy would be added to the DXCC list of entities making the island number 388. The US State Department Fact Sheet published this day was updated by the Bureau of Intelligence and Research which added St Barthelemy to the List of dependencies and Areas of Special Sovereignty with its administrative Centre in Gustavia.

St Barthelemy is therefore qualified under DXCC rules in section II – Political Entities (C). New QSL card submissions will be accepted provided the contact date was on or after 14th December 2007 and if you have any questions about this or the DXCC programme you can send an E-mail to dxcc@arrl.org For the CQ DX Field Awards Saint Barthelemy is in grid field FK and more information on this and other CQ awards can be found at the CQ Awards page www.cq-amateur-radio.com/awards.html

Your Reports

On to your reports now and the first is once again from the log of **Leighton Smart GW0LBI** in Trelewis, Mid Glamorgan who has been operating on Top Band once again using c.w. between 2000 and 0100UTC. His list of contacts included VY2ZM (Canada) on Prince Edward Island NA-029, CN2FF (Morocco), EA6IB (Balearic Islands) EU-004, RU1A (European Russia), OH0M (Aland Island) EU-022, LZ9W (Bulgaria), S53V (Slovenia), ES2JD (Estonia) and OM0M (Slovakia) using his Yaesu FT-100 at 100W into a 70 foot long wire antenna.

Leighton says "The band has been improving of late with some nice openings around 2300UTC and some small adjustments I made to the antenna during the autumn seem to have paid off". Running at 100W his log included 3X5A (Guinea), EY8MM (Tajikistan), ZF2AH (Cayman Islands) NA-016, SV9CUY (Crete) EU-015, 3V2A (Tunisia), RX9FM (Asiatic Russia), CN2R Morocco) and 9H3HH (Malta) EU-023.

In Worcester Park, Surrey **Eric Masters G0KRT** also tried 1.8MHz using his Kenwood TS-570DG at 100 watts c.w. into a modified W3EDP antenna 84 feet long and tuned via an SGC230 auto tuner working OQ5M (Belgium) 2050 and ES2CM (Estonia) at 2058UTC.

The 7, 10 & 14MHz Bands

Using s.s.b. and a Yaesu FT-2000 with 10 watts to a folded half-size G5RV was **Martin Addison 2E0MCA** in East Finchley, North London who made contact with DL0EAM (Germany) 1419, 9A73AA (Croatia), 1702 and IV2MVC (Italy) at 1958UTC on 7MHz.

This band provided **Ted Trowell G2HKU** on the Isle of Sheppey in



Ian G0YAP, got this card for working Jeremy Becnel KC2TEN, who was in his 'shack' at the time, 600nm out and 40,000ft above the Atlantic Ocean.

Kent with some QSOs and his report listed V2BK (Antigua) NA-100, 4Z4DX (Israel), HI3FCG (Dominican Republic) NA-096, PJ2T (Netherlands Antilles) SA-006, 7W53N (Algeria), CO8LY (Cuba) NA-015 and 7X4AN (Algeria) around 2200 to 2315UTC. On 10MHz ted found conditions poor working just one station, CN2FB (Morocco) at 2210 using a Ten Tec Omni V and 70W to a G5RV antenna.

The 14MHz band provided an interesting contact for **Ian Bevan G0YAP** in Diss, Norfolk who worked **Jeremy Becnel KC2TEN** from Bordentown, New Jersey. Nothing unusual about that except Jeremy was flying as the 'boom operator' on board a modified DC-10 at 40,000 feet and 600nm from the UK coast on a refuelling mission for the USAF.

The DC-10 aircraft is fitted with a Rockwell/Collins AN/ARC-190V system with two transceivers feeding one antenna with couplers loading up the leading edge of the vertical stabiliser that allows powers of up to 400W output. Even more interesting is that this Aeronautical Mobile station was worked using a home-brew antenna hidden inside the amber flashing light of Ian's Ford transit van with 40W from an Icom IC-707MK1.

In Chelmsford, Essex **Martyn Medcalf M3VAM** used his Icom IC-746, SGC-237 auto tuner and half-size G5RV working s.s.b. stations EA7TN (Spain) 0904, RZ1ZZ (European Russia) 0906, HG1S (Hungary) 0913, LY8O (Lithuania) 0915, DA1A (Germany) 0953, TM6M (France) 1429, PI4COM (Netherlands) 1432, OE7AJT (Austria) 1450, T70A (San Marino) 1515, SX7W (Greece) 1833, OM5DP (Slovak Republic) 1857 and VE3AT (Canada) Ron in Islington, Ontario at 2212UTC.

Back in Kent Ted found time to work A71AN (Qatar) 0900 and later 7X4AN (Algeria), OY1CT (Faroe Islands) EU-018 and PJ4A (Netherlands Antilles) around 1800UTC while Martin 2E0MCA had QSO's with UE9WFJ (Asiatic Russia) 0821, IS0IGV (Sardinia) EU-024 at 1044, LY10KDR (Lithuania) 1141, S56SD (Slovenia) 1143, AN5KB (Spain) 1214, EA6ACF (Balearic Islands) 1252, UE3DXZ (European Russia) a club call to commemorate the 1941 battle for Moscow, EW8CM (Belarus) 1419, W4KRT (U.S.A.) in St Augustine, Florida at 1435, ON7HJA (Belgium) 1446 and LZ2RS (Bulgaria) 1450UTC.

The 18 & 21MHz Bands

Up to 17MHz now which was open for some of the day though "QRN was high most of the time" according to Eric G0KRT but he did manage two stations, VE2IM (Canada) at 1522 and W2FJ (U.S.A.) in Portland, Oregon at 1536UTC with s.s.b. at 100W.

On the 21MHz band **Peter Lowrie MI5JYK** in Newtonabbey, fired up his Yaesu FT-817 and with just 3W s.s.b. to a 2 radial ground plane and worked 6W1RY (Senegal) 1135, CU2A (Azores Island) EU-003 1237, TA3D (Turkey) 1250, C50C (Gambia) 1259, VE2IM (Canada) 1345, ZY7C (Brazil) 1350, P40PA (Aruba) SA-036 at 1436 together with a long list of American stations including W3PP in Laurel, Delaware at 1452 and K4ZW in Stafford, Virginia at 1540 followed by HC8N (Galapagos Island) SA-004 at 1550UTC which is excellent going considering such low power and a simple homebrew antenna!

Also spending some time on the band was Martyn M3VAM who worked s.s.b. once again adding IS0/K7QB (Italy) 1518, AO3K (U.S.A.) 1536, HB9BLQ (Switzerland) 1546 and OE7AJT (Austria) at 1744UTC to his log.

Signing Off

Well, that's about all I can squeeze this time around. It's always good to see the h.f. bands open with activity although the higher bands have suffered once again this month! My thanks go to all our reporters for their logbooks and also to **Mauro Pregliasco I1JQJ/KB2TJM** editor of the 425 DX Newsletter for the DX information. Until next time I wish you all good DX. **73, Carl GW0VSW**

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Phil Cadman's

valve & vintage

The peculiar 144MHz band-plan of the late 1960s and updating a valved radio designed by F. G. Rayer G3OGR.

Hello and welcome back to the Valve and Vintage 'shop'! I do hope you all had an enjoyable Christmas and New Year, and that Santa obliged with some 'vintage' presents. Now before moving on to my main topic, there's a point from last time I'd like to mention.

You may remember that in my December column, I asked if anybody knew why the 144MHz s.s.b. calling frequency, as used in the late 1960s, was 145.41MHz. A curious frequency indeed! Well, I did find reference to the adoption of 145.41MHz, in the *Four Metres And Down* column in the June 1966 issue of the RSGB Bulletin. Written by that well-known v.h.f. enthusiast **Jack Hum G5UM**, it was his first time as author of the column.

Jack reported that a new 144MHz band plan would come into force on 1st August 1966, which included the s.s.b. calling frequency moving from 145.1MHz to 145.41MHz. This was to bring the British Isles into line with the Continent. Ah, that explains why 145.41MHz was adopted in the UK but it still doesn't answer the question as to why the Continentals chose that particular frequency.

Fortunately, I did receive one possible explanation, from **Brian Carter G8ADD**. Brian tells me that many years ago, while in QSO with prominent Midlands v.h.f. enthusiast **Tom Douglas G3BA**, he asked why 145.41MHz had been chosen. Tom replied that the frequency is a palindrome, and its symmetry made it easy to remember!

I've also heard that it was chosen simply because crystals were easily obtainable for some piece of v.h.f. s.s.b. equipment but unfortunately, I have no details. For the moment, I'm going along with Brian and Tom's explanation.

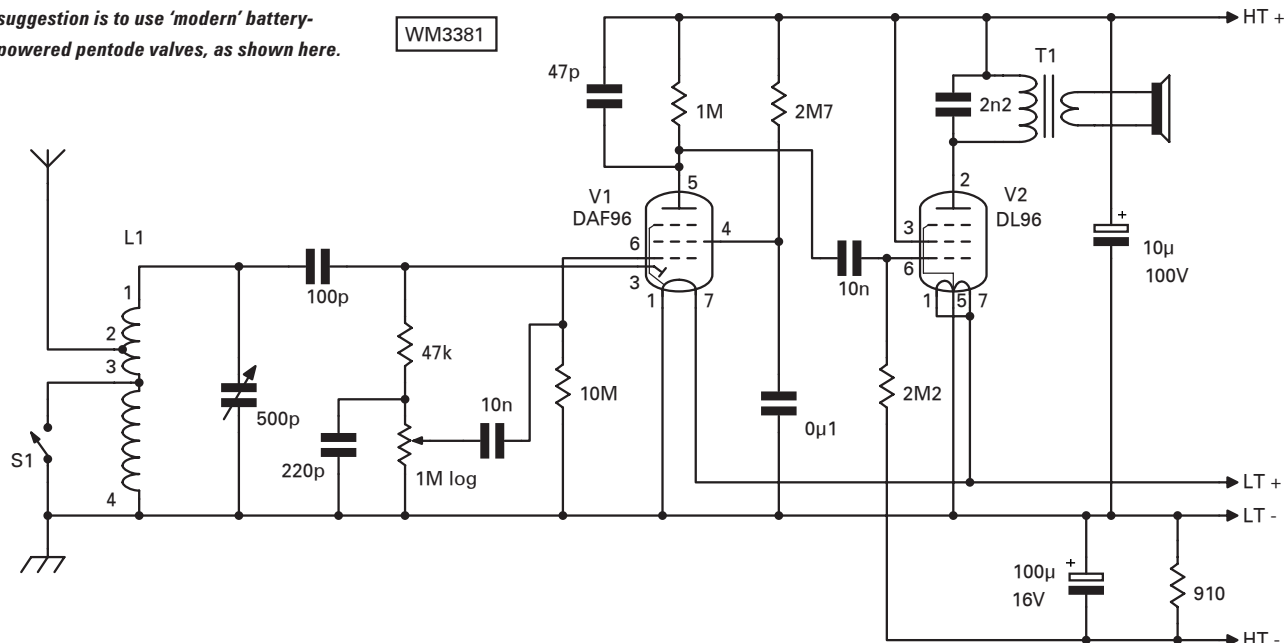
Pen Names

The December 2007 issue of *PW* featured an excellent article about **F. G. Rayer G3OGR**, written by **Stef Niewadomski**. One interesting detail which intrigued me was the number of pen names that G3OGR had used. I noted in particular the name R.F. Graham.

Looking through some of my old copies of *PW*, I'd come across several instances where there were articles by both F. G. Rayer and R.F. Graham in the same issue, just as Stef had described. And it was while thumbing through the August 1949 issue that I came across the rather impressive sounding, **D.D.T. Quality Receiver** under his own name, F. G. Rayer.

Maybe it's something to do with artistic licence, but the 'Quality Receiver' turned out to be no more than an amplified crystal set! The circuit used a double-diode-triode (hence the D.D.T. of the title), driving a power triode, both valves being common 2V types. Actually, the

Fig. 1: The original D.D.T. Quality Receiver, written by F. G. Rayer in the August 1949 issue of *PW* used triode valves. Phil's suggestion is to use 'modern' battery-powered pentode valves, as shown here.



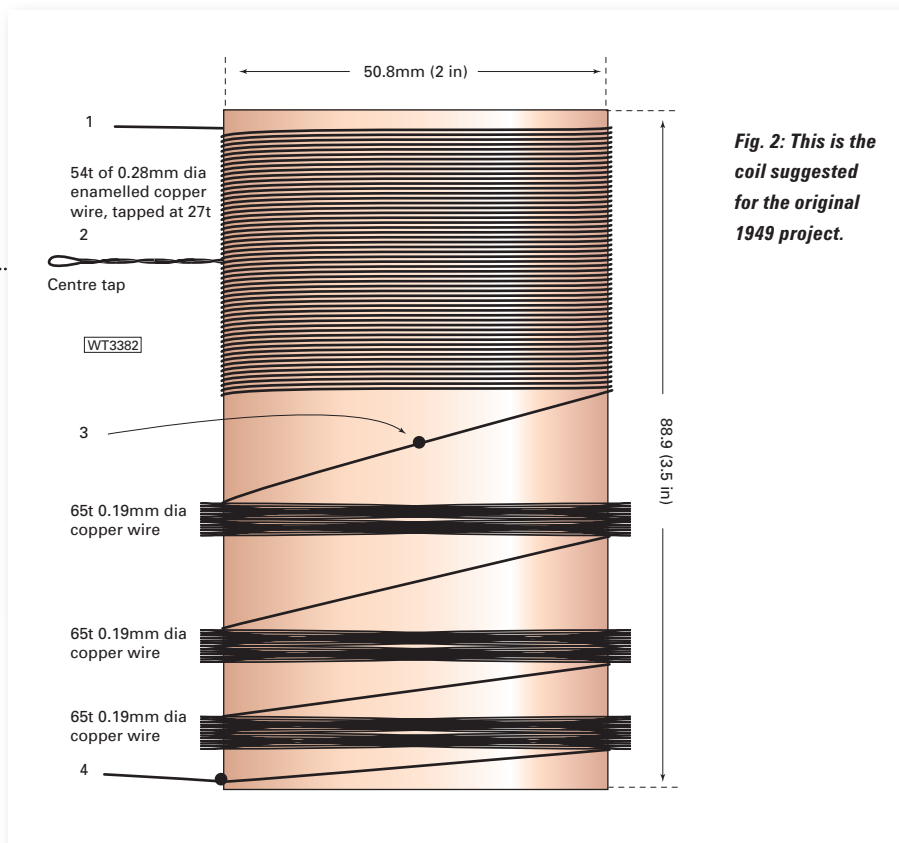


Fig. 2: This is the coil suggested for the original 1949 project.

description 'crystal set' isn't strictly true, as one of the diodes in the first valve was used as the detector.

Having got over my surprise, I thought the circuit – if suitably updated – would make a nice valved receiver project. I decided to replace the triodes with 'modern' miniature (B7G) pentodes. The resultant circuit is shown in **Fig. 1** about which there's nothing remarkable. It's very similar to what you'll find in the audio stages of many of the last-generation valved portables, but here in this circuit, they're fed by what is basically a crystal set.

Reasonable Antenna

Because the receiver section is a crystal set, it means that a reasonable antenna and earth connections are necessary. And if so provided, the set should produce acceptable loudspeaker volume from local stations. By the way, short antennas can be connected to pin 1 on the coil, although this may compromise selectivity, which I have to say, isn't good to begin with!

Points to note are: switch S1 is the wave change switch, which is open for long wave and closed for medium wave reception. The pentode amplifier, V1 (DAF96), gets its biasing conditions by grid rectification, hence the 10M Ω grid resistor. If you can't get hold of this value of resistance, then put the largest

value you can find in this position.

The 47pF capacitor across the 1M Ω anode load is there to remove any stray r.f., and to provide a touch of h.f. roll-off to the audio side of things. You can increase the value to 100 or 220pF (or perhaps even more) if you find the sound is too 'toppy' (or 'tinny').

The output valve V2 (a DL96) uses automatic grid bias, produced by the voltage dropped across the 910 Ω resistor connected between l.t.- and h.t.- (use a 1+10k Ω resistors in parallel if you haven't got a 910 Ω resistor.) Of course to make this method work, make sure that the h.t. and l.t. supplies are isolated.

Output Transformer

The audio output transformer T1 should ideally be one salvaged from an old valved portable set, but a three or six watt (VA) mains transformer can be used with some success. As the DL96 should 'see' an a.c. load of 13k Ω , a 240V to 6V transformer will work quite nicely for an 8 Ω loudspeaker. And if you're using a lower impedance, say a 3 or 4 Ω , loudspeaker, then you could use a small mains transformer with 3V output (although a 4V secondary is marginally better).

Being a valved receiver, the circuit uses an h.t. of 90V, which can easily be provided by ten PP3-type batteries. Ordinary batteries are often available quite cheaply in various shops and

Phil Cadman G4CJP

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on market stalls and are fine for intermittent use. Unless you know of a cheap source of them, alkaline versions are considerably more expensive but will, of course, last much longer.

If all is well, the set should draw approximately 6mA with a fresh set of batteries. Please be careful when first trying the circuit, as the accidental application of 90V across a 1.4V filament is very bad news. I strongly suggest using an h.t. current limiter, like the one I described in my March 2007 column in *PW* (page 48), to prevent such mishaps.

No More Complicated

The l.t. supply need be no more complicated than a 1.5V dry cell. The DAF96 consumes 25mA, and the DL96, 50mA, making 75mA in total. (The DL96 has a centre-tapped 2.8V/25mA filament, though here, the two halves should be wired in parallel.)

The valve filaments are rated at a nominal 1.4V (1.35V is suggested if a regulated supply is used) but they tend to be tolerant to limited over and under-voltage working. That said, the filaments were designed for use with then contemporary zinc-carbon cells and not modern alkaline cells.

The on-load terminal voltage of a typical zinc-carbon cell of circa 1950 vintage, fell quite quickly to 1.4V. However, modern, high-performance alkaline cells will maintain a higher on-load terminal voltage for much longer. This load improvement may be enough to stress tired filaments. The same may be true, albeit to a lesser degree, with modern zinc-carbon cells.

With modern cells, I'd suggest wiring a low-value resistor in series with any 1.5V cell to prevent the filament voltage exceeding 1.4V. This resistor can be shorted out when the on-load cell voltage falls to 1.4V. Try a value between 1 and 1.5 Ω . Maybe I'm being over-cautious, but a 0.25W resistor costs only pennies – valves are more expensive!

According to the DL96 data sheet, the maximum audio output will only be around 200mW so, you'll need a

fairly efficient loudspeaker. Actually, the DAF96/DL96 combination could be used wherever a portable (low power) valved amplifier is needed. For instance, how about a portable amplifier for those dreadful MP3 players? Just build two amplifiers (with two separate sets of batteries, of course!) and be the envy of your all-solid-state friends!

Simplicity

Apart from its simplicity, another reason for featuring this circuit is the fact that G3OGR gave details of the coil he used. Almost from the very beginning of home radio construction, manufacturers produced all manner of coils and r.f. transformers.

Some of the coils then available, may have been expensive, but they were easy to obtain. This is not the case today! I'm not aware of any manufacturer currently making coils suitable for valved sets. Although I'm sure a reader will let me know if I'm wrong.

Consequently, unless you have a suitable second-hand coil that's available, you'll need to wind your own coil as shown in **Fig. 2**. Winding the long wave section may be a little awkward, so if you don't need long wave reception, then don't bother winding it, and leave out S1.

It's not just antenna coils and r.f. coupling coils that have disappeared with the demise of traditional coil manufacturers. New intermediate frequency transformers are similarly extinct too. Latterday i.f. transformers (for use in valved sets) consisted of two coupled coils, each fitted with a fixed

silvered mica capacitor in parallel.

The resonant frequencies of the transformers was adjusted by means of threaded iron-dust cores screwed into the internally tapped former. But it wasn't always like that. The rather old i.f. transformer shown in **Fig. 3**, consists of two air-cored coils and two air-spaced trimmers. It occurred to me that this could be one way of making i.f. transformers, but using miniature film-dielectric trimmers instead of air-spaced trimmers.

The mutual coupling between the tuned circuits could be varied by making one of the coils slide on the common former. I wonder, has anybody made such an i.f. transformer? If so, I'd very much like to hear from them.

Coil Formers

On the subject of coils and coil formers, a good friend of mine, **John B. Dickinson** from Tamworth in Staffordshire, wrote to me early last year describing how he makes his own plug-in coils out of DIN plugs and plastic solder dispensers! Incidentally, John is a prolific radio designer and constructor, who specialises in transistor and f.e.t. designs, but has recently built valved sets and is now trying his hand with surface mount devices (s.m.d.).

Although not the first to use DIN plugs and sockets in this way, John has found that the plastic cases from Altai solder dispensers fit neatly over the business end of a DIN plug. Antex also sell solder in dispensers, and these too may be suitable.

This form of coil construction

would seem to suit home-made i.f. transformers as well. The two trimmers would have to be mounted some way, perhaps glued to the side of the plastic tube. Or they could be mounted on a small piece of strip board (or plain perforated board) and glued to the end of the tube. Alternatively, the commercial construction style shown in **Fig. 3** could be copied. (Note: there are actually four support wires, two are hidden by the two that are visible.)

It seems to me, as more and more valve-era components become unobtainable (or too expensive), we may be forced to make our own components from everyday items, much as the very first radio experimenters had to.

One final point: does anyone have any ideas on screening cans for coils and i.f. transformers? Not long ago there were aluminium 35mm film cans aplenty, and even those tablets for cleaning dentures came in metal tubes. But this is no longer the case!

I'm sure that there must be some household items that come in small metal cans suitable for our purpose, but what? How about offering your suggestions please!

Well, time to put on my 'cans' and take a listen across the bands. Until next time then, happy hunting in the kitchen.

Please send your comments and suggestions to me, either via E-mail to: **phil@g4jcp.freemove.co.uk**, or by mail to: **21, Scotts Green Close, Scotts Green, Dudley, West Midlands DY1 2DX**.

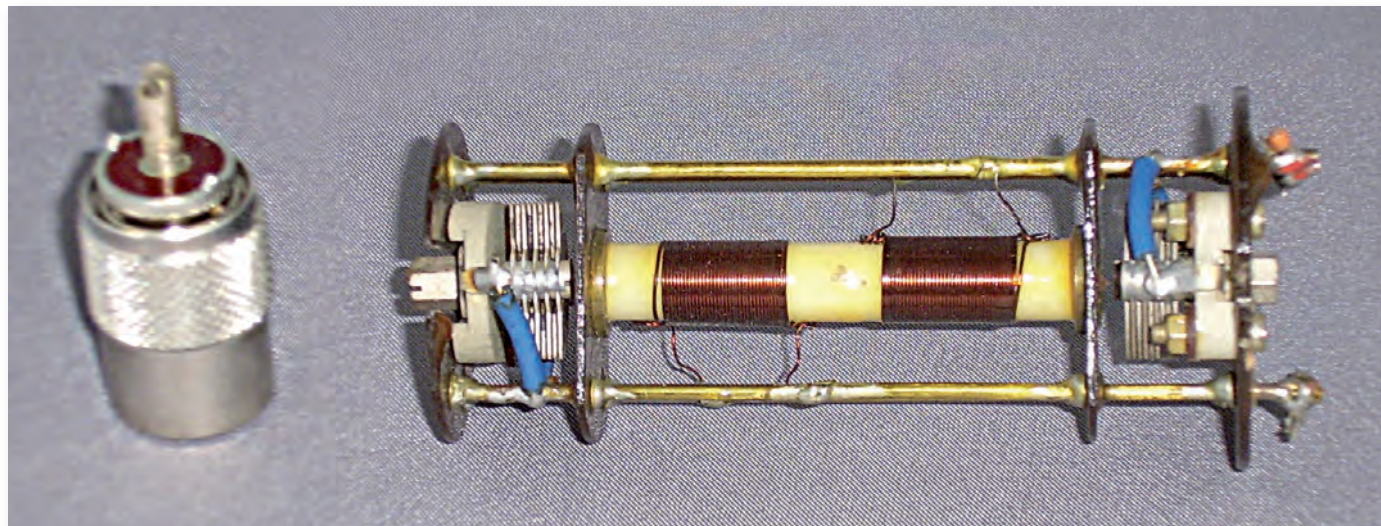


Fig. 3: Following an old design idea for making tuneable i.f. transformers. Each coil/capacitor has two separated connection wires. Due to the way this has been photographed the second connection is hidden behind the front one (PL259 shown for size comparison).

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Harry Leeming's

in the shop

Harry Leeming G3LL remembers how he dealt with a difficult customer, discusses Decibels and ALC problems.

'Mr Jones' (not his real name!) purchased a low-priced, hand-held, multi-mode, wide-range scanner from me. A few months later, when presumably he had decided that he would prefer a different kind of toy, he sent a letter demanding a refund. According to him it had been tested in the laboratory of the hi-tech company at which he worked and it was not 'fit for purpose' under the trade descriptions act!

The main faults (he claimed), were that it was 5kHz off frequency at 1000MHz, and that it was so insensitive around 430MHz, that he could not hear stations that he could pick-up on his friend's Tandy scanner. He also made some vague complaints about the linearity of the detector and the audio response.

Multiple Stores

Multiple outlet stores, such as Marks & Spencer might be able to afford to provide a refund – even when customers are obviously in the wrong – but small independent Amateur Radio shops aren't in the same league. I also smelled a rat!

When customers made reasonable requests I would normally have fallen over backwards to oblige but this letter didn't ring true and I contacted a friend who worked at the same laboratory.

I rang my friend and got a surprise. "Oh you mean Fred", he said, "he's not technically qualified and is little more than a sweeper-up here"!

It transpired that Mr Jones had been seen by my friend trying to test a scanner on equipment that he was not conversant with, and which, moreover, he wasn't supposed to use. I was also told that Mr Jones had a reputation for boasting about how he had got suppliers to replace goods, or give refunds, after claiming that they were 'not fit for purpose'. I was right in my suspicions!

When considering as to whether or not any item is up to scratch, it's only reasonable to look at the price. The multi-mode scanner Mr Jones had purchased made no claim as to its

frequency accuracy but an Icom semi-professional v.h.f./u.h.f. receiver at five times the price claimed an accuracy of ± 5 p.p.m. (parts per million). At 1000MHz this works out at ± 5 kHz, just the same as the 'unacceptable' error on Mr Jones' very much cheaper unit!

Discreet Enquiries Made

My friend then made discreet enquiries as to exactly how Mr Jones had decided that the his scanner was 'deaf' in the 430MHz range. He found out that Mr Jones was trying to receive stations that could be heard loud and clear on a Tandy scanner, such as the local police.

What Mr Jones did not realise was that the actual transmitting frequency of the police transmitters was not in the 430MHz range – instead they were 21.4MHz higher in frequency. The Tandy scanner was very 'generous' in that it picked up many stations twice, both at their designated frequency, and at the 'image frequency', twice the intermediate frequency (i.f.) lower in frequency. Mr Jones' scanner having a much higher intermediate frequency, was not sensitive to image problems, and so would only receive stations when it was tuned to their actual frequencies in the 450MHz range.

I looked up a few reviews on the receiver and I found similar wording regarding the linearity of the audio and detector stages. Some of the words seemed to have been copied, the difference being that the reviewer said, "that this did not effect the operation and the set was very good value for money."

I wrote back to Mr Jones and told him of my findings. I also reminded him that he had used the name of the well-respected company he worked for to back up his spurious claims, something I was sure his employers would not appreciate. I also told him that I would not on this occasion make a formal complaint but pointed out that other people might see things differently if he tried it in future. Thankfully that was the last we heard of him and I was glad to allow him to take his custom elsewhere!

Stepping-Stones

Not being a genius at mathematics, and not wanting to look everything up in tables, I find it very useful to have a few 'set points' in my mind. These help me – when repairing equipment – to show me whether a signal level or a.d.c. voltage is in the correct range. I'll now explain what I mean.

Power in circuits: If you apply 'X' volts to a resistor of the same numeric value in Ohms (Ω) it will dissipate 'X' watts. For example, if you apply 5V to a 5Ω resistor the power heating up the resistor is 5W. Likewise a 50Ω dummy load on the output of your transmitter will have 50V across it if the power is 50W, or (alternatively) 8V across a hi-fi amplifier's output terminals into an 8Ω resistor equals 8W.

Remember that power is square law related. If you half the voltage you have only a quarter of the power, or if you double the voltage the power goes up by a factor of four. (i.e. 100V across a 50Ω dummy load equals 200W, or 16V into an 8Ω speaker equals 32W)

The Decibel Mystery!

Let's now look at decibels. These are a mystery to many people, and the seeds of confusion continue to be sown by instructions such as "Apply a signal of +19dBs".

The important thing to remember is that there's no such thing as a signal of +19dB. The term means that the signal is 19dB stronger than some signal that the writer has in mind. If it's applied to the output of a signal generator, the writer could well mean that it's 19dB stronger than 1V. However, if this is what he or she means, they should say so – as not all manufacturers of signal generators use the same reference level!

Once we have a reference point, of let's say $1\mu\text{V}$ (one microvolt), an increase of 6dB means that a voltage is doubled, and so what does an increase of 19dB on $1\mu\text{V}$ mean? I'll now explain!

It's of course possible to go into calculations, but to be honest this isn't the page for that (**Tony Nailer G4CFY** does a good job on this subject

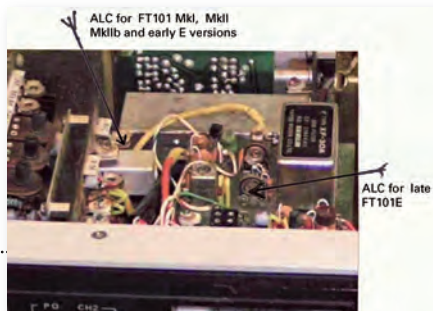


Fig. 1: Position of the ALC controls for various models of the FT-101.

in *Technical for the Terrified!*) I can't remember the formula and, as the attenuator on a signal generator is likely to have an accuracy of no better than 20%, there's simply no point in working things out to the nth decimal place. So, in practice 19dB is 3 times 6dB plus a bit!

Even if you can only remember that 6dB means a doubling of voltage, you can still work it out by splitting it up. So, $1\mu\text{V}$ plus 6dB = $2\mu\text{V}$, $2\mu\text{V}$ plus 6dB = $4\mu\text{V}$, plus another 6dB (for a total of 18dB) = $8\mu\text{V}$. Add 'a bit' and a signal of + 19dB (reference $1\mu\text{V}$) is approximately $9\mu\text{V}$.

Other useful figures to remember are an increase in voltage of 6dB = x2, 20dB = x10, and 40dB = x100.

From these 'stepping-stones' you can estimate any intermediate point very easily. So, +46dB for example on 2 mV (two millivolts) = 40dB+6dB = 100 times twice is an increase of 200 times, and so $2\text{mV} + 46\text{dB} = 400\text{mV}$. And, of course, - 46dB is 200 times less than the reference level.

The FT101E & ALC

'Peter' arrived in the shop with his FT-101E. He explained that he had bought it second-hand and while it seemed to operate satisfactorily, there was something wrong with the automatic level control (ALC). When he tried to monitor the transmit signal drive the ALC meter went hard over against the stop and would not kick back as per the manual. He had tried to adjust the ALC pre-set potentiometer but it made no difference at all.

I have had this complaint many times, and it is due to Yaesu's confusing labelling, and the fact that they have even got it wrong in many manuals!



Fig. 2: Three different sizes of crystal mounting canisters. But – as Harry explains – it's not just the physical size that can vary!

Yaesu made several versions of the FT-101E, which was the top rig with all the extras including the speech processor. The FT-101EE, was the same minus the processor, and the FT-101EX omitted some of the range crystals, the processor, and the choppers and heat sink for 12V operation.

On the very oldest production models of the FT-101E, which can be identified as they **don't have** a dual gang pot in the clarifier position. On the FT-101EX and EE the ALC re-set potentiometer is labelled and is on the balanced modulator board.

Interestingly, on some later versions of the FT-101E there's still a pot labelled 'ALC' on the balanced modulator board but it's not connected and has no effect at all! The real ALC 'pot' on these rigs is on the speech-processing unit, which is mounted on the top of the variable frequency oscillator (v.f.o.). And – sometimes – just to add even greater confusion this isn't labelled (See Fig. 1). A slight adjustment of the correct pot was all that Peter's rig needed.

Replacement Crystals

'Terry' purchased (cheaply) an FT-101Z, he got it at a very good price because its previous owner had fitted some CB crystals in the 7 and 28MHz band positions. Fortunately, Terry realised this before transmitting on these bands, and so he had to order some replacement crystals on the correct frequencies.

When the crystals arrived he fitted them, and the set performed okay on 7 and 28MHz, but the dial calibration was over 10kHz out, with reference to the other bands. He complained to his crystal supplier who advised him that they had made the crystals to standard

Harry Leeming G3LLL

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loading parameters and told him that if he had wanted to stipulate different loading conditions he should have advised them. What on earth were they on about?

Manufacturing crystals, so that they will be on the specified frequency, is very difficult as the maker needs to know as to exactly the characteristics of the circuit in which they will be used. Are they to operate on a harmonic, what's the load capacity and impedance and is there any inductance in the circuit? This is the kind of information that isn't too easy to get hold of.

It's many years now since I had to order crystals for my business but then I had a simple method that always seemed to produce the correct results. I would send a sample, and tell them to make me a dozen, or whatever quantity I wanted, exactly the same. If I didn't have a sample crystal for a band position such as 28MHz, I removed and sent the nearest original crystal (often the 21MHz band crystal) and told them to make me a crystal "as per sample but 7MHz higher in frequency". Or if (for example) the lower sideband (l.s.b.) crystal was faulty on a rig, I would send the upper sideband (u.s.b.) crystal as a sample and clearly stipulate the difference in frequency. Although my advice was too late to help Terry it will hopefully put PW readers on the right track!

Customers letters

When I was an apprentice in the radio and TV trade, the company I worked for also serviced pianos! One day the manager received the following unpunctuated short note, from a lady who was postponing an annual piano-tuning visit.

"Dear sir please do not send your piano tuner yet as since he was here last time I have had a baby". You can imagine just how much the poor piano tuner was ribbed about that!

Problems

I like to hear about problems with older equipment, particularly pre 1990 Yaesu rigs. Please email me, (add some radio related term in the subject heading, to differentiate against spam), or write and enclose a stamped addressed envelope. Remember that electricity is dangerous, if you are not familiar with safety precautions you must never work on your equipment whilst it is plugged into the mains. (Switching off at the wall socket does not necessarily make equipment safe)

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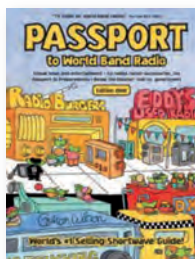
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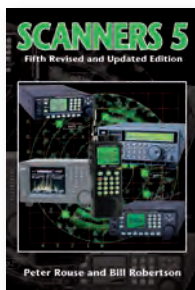


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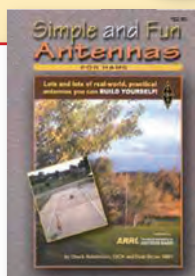
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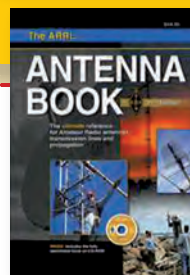
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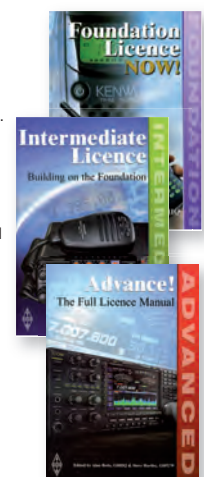
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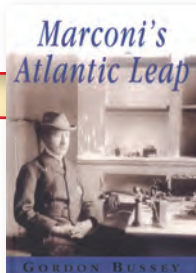
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Rob Mannion's

topical talk

Feedback from readers on the recently-introduced articles in *PW* and suggestions for the future.

The feedback from readers regarding our recently-introduced articles and features coming back to **Tex Swann G1TEX** and I from readers is very pleasing indeed! In fact, readers seem to be enjoying the *What Next?* series by **Colin Redwood G6MXL** and *The Morse Mode* by **Roger Cooke G3LDI** very much!

The comments coming in from various radio clubs seem to give another 'thumbs up' for our expanded club news session and everyone seems to be co-operating fully with our 'maximum details policy' (full contact name and telephone number and post code) so that they can be accepted for free inclusion in the Club News section of *PW*.

In Focus

The *In Focus* feature seems to be particularly successful and all the clubs and Amateur Radio related organisations who have used it so far have been impressed with the published results and the added publicity they've gained. Additionally, several of the clubs who have been featured have taken advantage of one offer (full details in the *In Focus Guide* available from the *PW* offices) with enthusiasm.

The *In Focus* offer allows the clubs to use the article published in *PW* to be used on web-sites and for club/organisation publicity material. It's a doubly effective approach because along with publicising the featured club, *PW* is also promoted. In this way we're helping each other in a very practical way.

However, although the *In Focus* features have proved remarkably effective I have been rather disappointed at the reaction of some club members who have contacted me about their possible *In Focus* features. The disappointment arises because the most often heard comment is, "Our club can't possibly compare or compete with some of the clubs you've featured!"

It seems this opinion arises because some *In Focus* articles have resulted in some club committees becoming overawed at the success stories we've published! Such reactions have amused me and I've had pleasure in re-assuring the not-so-confident *In Focus* applicants that the very clubs that had impressed them had been – in the first place – somewhat

reluctant themselves, doubting their own worth to submit an *In Focus* feature!

In fact, I have enjoyed telling such 'Doubting Thomas' characters that they've reminded me of the old saying 'Hiding your light under a bushel'. So, please don't hide your club light under a bushel and get it into the *In Focus* feature and published as soon as possible by contacting me at the *PW* offices and asking for the *In Focus* guide. I look forward to hearing from you soon!

The Amateur Radio Personality

The letter from **Ed Chicken G3BIK** (Letters this month) commenting favourably on our recently introduced *Amateur Radio Personality* feature has confirmed several things for me! Firstly, the introduction of the feature has provided an interesting read for many readers. Secondly, it has confirmed – although I didn't really need proof – that there are many Amateur Radio Personalities waiting to have their story told!

Ed Chicken is a wonderful character himself with a fascinating history (thanks for your letter Ed) and whenever I have to call him on the telephone to discuss an article or idea – it's very hard to stop the conversation as we're both enjoying the chat. However, the point I'm really making here is that it's highly likely that readers will know of a Radio Amateur who we could feature in *PW*. There are some amazing characters in our hobby who have often busily worked away in the background and deserve some recognition.

So, if you can think of anyone you would like to be featured in *PW* I would be more than pleased to interview them on behalf of *PW* and its readers. I'm also planning to make the feature internationally appealing and intend to include Amateur Radio Personalities from anywhere in the World because, of course, we're all in the same family so to speak.

I'm sure that the new feature will help to focus on people that who have often worked for years on our behalf or for the hobby in general. I'm also sure that our feature will be a small but worthwhile tribute.

Rob Mannion G3XFD/EI5IW

coming next month



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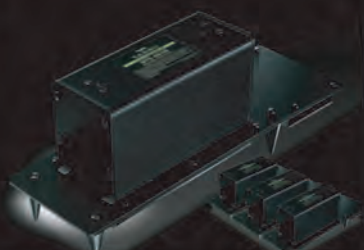
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