

Practical

WIRELESS

**NOW IN
ITS 76th
YEAR!****New
Series!****Radio Personality**
Mike Devereux G3SED**What's Next?**
Your questions answered**Morse Mode**
With Roger Cooke G3LDI**Favourite
Regulars****Antenna Workshop**
Build a Moxon Tri-Band Beam
Radio Problems Solved
In the Shop with Harry Leeming G3LLL**Kenwood
TM-D710E
Mobile Dual
Bander
Reviewed****FREE
CD****Practical Wireless****Callsign
2008***A comprehensive
and totally
up-to-date listing of
licensed
Amateurs and clubs.**Produced in conjunction with***MLS martin lynch & sons**
Suppliers of Communications Equipment

R 49



WATERS & STANTON



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**At Hockley & Glenrothes
Saturday 22nd December**

Both our shops invite you to come and
join us for drinks and mince pies
Plus

Some Super Deals For One Day Only!
Come and grab yourself a bargain
Christmas present

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

£529 D 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 is our special 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 31/1/08

PAY NOTHING FOR 12 MONTHS

BUY NOW PAY LATER AT ALL 3 STORES



AVAILABLE ON ALL SALES OVER £200



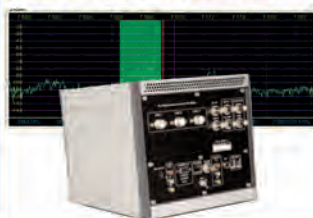
On most items over £200 in value it is now possible to buy with a finance agreement and pay nothing for 12 months without incurring any interest charges. If paid in full within 12 months then a £29 settlement fee is payable. **Typical example of Buy Now Pay Later:** Cash price - £600. Pay no deposit and pay the full amount in 12 months. **Pay no interest - just £29 fee. OR - 29.8% APR** - Repay £30.85 per month for 36 months. No settlement fee. Total amount due £1110.60. Interest is calculated from date of agreement. All finance is subject to status - written quotation on request.

FLEX-5000A NEW

HF Transceiver 100W 160m-6m

FlexRadio Systems

Software Defined Radio



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

Auto ATU **£225**

£1695 D

WATSON NEW

Introduce NEW Noise Offset Power Supplies

Watson introduce their new "NF" power supplies with a Noise Offset feature. This removes switching noise from the band you are operating on.



£59.95 C

Power Mite NF

Travel Supply, 25 Amps peak (22A), Variable 4 - 15V, Tiny size



£89.95 C

Power Max 24 NF

Base Supply, 25 Amps peak (22A), Variable 4 - 15V, Cigar Socket

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

IC-E91

Fitted with D-Star

£349.95 C



PW customers can claim an extra DC lead when ordering!

FREE repeater: Your club could qualify for a FREE repeater. Call Mark Francis here and ask for details

FT-2000



1.8-30MHz +6m 100W
£1749 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 £599 D

FT-857D



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

New Low Price!

W&S £499 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

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

KENWOOD



W&S £269 D

FTM-10R/E NEW



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!

W&S £249 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 and IC-7800 to give you a hefty transceiver packed with features. Available January. Inc. NC-4 h'phones

W&S £3999

IC-7800

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



Deal: SP-120 Filter Spkr FREE

W&S £6400 D

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

Freephone Orderline



08000 73 73 88

Online Catalogue



www.wsplc.com

UK's
Lowest
Prices



Zero Deposit
Zero Interest

**Merry Christmas &
Happy New Year
To All Our Customers**

Christmas Opening

W&S: Closed 25, 25th Dec & 1st Jan
Lowe: Closed 23rd Dec - 1st Jan Inc.
Jaycee: Closed 23rd - 27th Dec Inc.
Closed 30th Dec - 3rd Jan Inc.

A Seasonal Gift To Our Many Loyal W&S Clubcard Holders

If you make any purchase from us between now and Christmas 07 using your Clubcard then please claim your package of gifts from Yaesu, Kenwood and Icom. You must request your gift collection at the time of placing your order with us. This offer applies to mail order and shop purchases using your W&S Clubcard.

TS-2000

**PW Deal: FREE Delivery on
TS-2000 & TS-480 (ends 31/12/07)**



*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
£1739 C**

TS-2000X with 23cms



TS-480SAT
100W HF+6m **£679 D**

KENWOOD

IC-756PROIII

ICOM



HF + 6m
100W
All-Mode

W&S £1749 D

Special Deal

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

W&S £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 skr and SM-20 mic

£1199

IC-718 HF 100W transceiver **£439**

IC-706IIGDSP

ICOM



HF/VHF/UHF
100W
Transceiver

**Includes Travel Mite
Dual Voltage PSU**

W&S £Phone

IC-703

ICOM



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

W&S £449.95 D

Visit our eBay shop for more bargains!



Go to
www.wsplc.com
& click on the link
to our eBay shop

Exclusive to Waters & Stanton!

Radiomate NEW

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



Rig not included!

- * Direct frequency entry
- * Mode change
- * Carrier tune mode
- * VFO A/B
- * 20 Memories
- * Self-Powered

£99.95 C

**bhi
DSP Noise Cancelling**

NES10-2 MkII



Speaker and
programmable DSP unit.
Offers dramatic noise
reduction.

£99.95 C

ANEM

"Noise Away" Amplified
Noise Elimination Module.
Fits in-line between the
equipment & speaker.

£124.95 C

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-
706MkII, FRG-100,
DX-77. With Keyboard.



£99.95 C

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)

£1089 D

IC-910HX

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

£1239 D

IC-2200H

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

£179.95 D

IC-2725E

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

£279.95 D

**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

Dual band APRS 50W FM

£399 C

**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!

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

£99 D

FT-8800E Low Price!

*2m/70cm Dualband FM Mobile transceiver

£219 D

FT-8900R Low Price!

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

£249 D

**Yaesu
ADMS Software**

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**

PEET Bros.

Ham Radio Weather Stations

Ultimeter-100

£119.95 C



*Wind speed *Wind
direction *Outside
temperature *Wind
chill factor *Date and
time *Highs and lows
*Long-term memory data

Ultimeter-800

£159.95 C

This is the next model up and adds
• Humidity • Dew point option socket
• Indoor temperature • Static protection
• Illuminated keys • Blue LCD backlight.

Ultimeter-2100

£219.95 C

The top model adds to the Ultimeter-800
• Built-in pressure sensor
• Electrical output alarm trigger voltage

All Models come with Software & data cable.

**Icom
VHF/UHF Handhelds**

IC-E91

D-Star Ready

Latest dual-band handheld
transceiver, receiver that
covers 0.495 to 999MHz.



£239.95 C

IC-V82 7W 2m Digital

£159.95 C

IC-U82 70cms Digital

£159.95 C

IC-E90 6m/2m/70cm

£199.95 C

IC-T3H 2m 5W

£129.95 C

IC-E7 2m/70cm Wide Rx

£169.95 C

**Kenwood
VHF/UHF Handhelds**

TH-F7E

* 144-146MHz Tx/Rx: FM
* 430-440MHz Tx/Rx: FM
Up to 6W 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

£145 C

TH-K4E 79cm 5W FM

£139 C

**Yaesu
VHF/UHF Handhelds**

VX-7R

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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01702 206835

01702 204965



www.wsplc.com

MFJ ATU's & Analysers

MFJ-929

Compact IntelliTuner
Compact 200W,
1.8-30MHz, Coax or Random Wire
Auto ATU **£199.95 D**

MFJ-927

Remote IntelliTuner
Compact 200W,
1.8-30MHz Auto ATU
with Power Injector **£229.95 D**

MFJ-976

Balanced Line ATU
1.8-30MHz, 1500W Balanced Line
Antenna Tuner **£429.95 D**

MFJ-948

1.8030MHz ATU
300W, large cross
needle meter **£109.95 C**

MFJ-993B

Auto ATU
1.8-30MHz, 300W SSB, 150W
CW, Matches 6-800
Ohms **£189.95 C**

MFJ-945E

Auto ATU
1.8-30MHz, 300W SSB, 150W CW,
Matches 6-800 Ohms **£89.95 C**

MFJ-949E

ATU / Dummy
Load. 1.8-30MHz, 300W, large
cross needle meter **£124.95 C**

MFJ-901B

Versa Tuner.
1.8-30MHz, 200W, 135x150x60mm,
weight 760g **£74.95 C**

MFJ-902

Travel Tuner
3.5-30MHz, 150W,
Mobile & portable use,
90x60x80mm **£65.95 C**

MFJ-259B

HF Digital SWR Analyser
1.8-170MHz, Freq
Counter, SWR & Imped.
meters, SO-239 (Ant),
BNC (Counter). **£199.95 C**

MFJ-269

HF Digital SWR Analyser
1.8-170MHz, 415-450MHz
Freq. SWR & Imped.
meters, N-Socket
(Ant), BNC (Counter). **£269.95 C**

ABM-1 NEW Ramsey Airband Monitor Kit

Passengers can now hear the crew's VHF transmissions -
Anywhere - Anytime No tuning required!



A passive airband monitor with no oscillator or IF -
so no risk of interference even inside an aircraft
cabin. It is highly sensitive (2uv) and will hear all
local aircraft and is even safe to use inside aircraft
cabins. The radio is only available in kit form
(small components are ready mounted on board)
and it takes around 3 hours to build. Has
everything you need including smart case and
earbud phones. PP3 battery
required - not included. **£79.95 C**

SGC ATU's

SG-211

Mini-SmarTuner
1.8-60MHz
Back In Stock! **£189.95 D**

SG-237

Compact ATU
1.8 to 60MHz, 3-100W
(PEP) 40W max CW,
VSWR: <1.4:1 **£269.95 D**

SG-239

Mini SmarTuner
1.8-30MHz, 1.5-200W
(PEP), VSWR:<2:1 **£189.95 D**

SG-230

The Original Long
Wire SmarTuner -
1.6-30MHz, Power
Input 3-200W **£339.95 D**

Heil Audio Accessories

PRO-SET 4 & 5

Headphones and
boom mic.
Choose insert. **£84.95 C**

PRO-SET PLUS

As above but fitted both inserts
switchable. **£132.95 C**

AD-1 matching rig leads £12.95

HC-4 Dx Mic Insert **£29.95**

HC-5 Normal Insert **£29.95**

HTDS Traveler

Traveler Double Sided
Headset & Boom Mic
Requires HSTA patch lead. **£59.95 A**

HTSS Single earpieces model **£49.95 A**

HSTA **£17.95 A**

Matching rig leads for "Travelers"

Goldline Mic **£89.95 B**

Use as desk mic or with
optional fist mic stand. Your
choice of HC4 or HC5
insert.

Goldline models GM-4 or GM-5
require a CC-1 adaptor lead to
match your rig. **£19.95**

Check out other accessories
on www.wsplc.com

Watson Power Supplies

Power-Mite

*11-15V Variable.
*20A continuous
*23A peak, 100 - 260V
*AC in. 2 x Meters
*150 x 55 x 165 mm
£49.95 C

W-3A Output 3A, 13.8V DC, supply 230V AC **£22.95 C**

W-5A Output 5A, 13.8V DC, supply 230V AC **£29.95 C**

W-10AM Output 10A, 0-15V DC, supply 230V AC **£59.95 D**

W-25AM Output 25A, 0-15V DC, Dual meters **£89.95 D**

W-25XM Output 25A, 9.7-17V DC, Dual meters **£99.95 C**

W-30AM Output 30A, 0-15V DC, Dual meters **£119.95 D**

W-25SM Output 22A (25peak), 13.8V DC, supply 230V / 115V AC **£79.95 C**

Diamond Power Supplies

GSV-3000

*Output voltage: 1 - 15V DC
*Output current 30A continuous
*Built-in cooling fan *Supply 230V
AC 50Hz *Size 250x150x240mm
*Weight 9kg **£124.95 D**

GSV-2500 Output 25A, 5-15V DC, supply 230V AC, Switch
Mode, Overvolts Protected. 21x11x22cm **£119.95 D**

GSV-4000 Output 40A, 5-15V DC, supply 230V AC, Switch
Mode, Overvolts Protected. 21x11x30cm **£159.95 D**

GSV-6000 Output 60A, 1-15V DC, supply 230V AC, Switch
Mode, Overvolts Protected. 21x11x36cm **£299.95 D**

Manson Power Supplies

EP-925 Price Down!

A general purpose 3-15V DC,
25A (30A peak) power supply
able to provide the needs of the
modern 100W HF transceiver. **£89.95 D**

NEW W-8681 Wireless Weather Station



- * No Cable Connection Required
- * LCD Touch Screen
- * Atomic Locked Date & Time
- * Indoor / Outdoor Temperature
- * Wind Speed & Direction
- * Rain Gauge
- * Indoor / Outdoor Humidity



What You Get:
Large LCD Control Panel
(23x14.5x3.5cm),
Wind Speed Sensor,
Wind Direction Sensor,
Rain Gauge, Stub Mast,
Outside Temperature Sensor
& Transmitter,
Sensor Mounting Arms,
Sensor Cable Harness,
USB Lead & PC Software.

WATSON Antennas

BASE Antennas

Fibre glass and stainless
steel SO-239 Base

W-30	1.15m 2m/70cms vertical 3 - 6dB 150W	£29.95 C
W-50	1.8m 2m/70cm vertical 4.5-7dB 150W	£39.95 D
W-300	3.1m 2m/70cm vertical 6.5-9dB 150W	£49.95 D
W-2000	2.5m 6m-70cm vertical 2-6db 100W	£59.95 D

Mobile Antennas

Stainless steel PL-259 base

W-2LE	2m quarter wave	£9.95
W-285	2m 5/8th 1.33m	£14.95
W-77LS	2m/70cm 0.42m 0-2.5dB	£14.95
W-770HB	2m/70cm 1.1m 3-5.5dB	£24.95
W-7900	2m/70cm 1.58m 5-7.6dB	£32.95
W-627	6m-70cm 2-7dB	£34.95
WSM-270	2m/70cm with mini mag mount	£19.95
WM-08B	Mag base 8cm + 5m RG-58 cable	£9.95
WM-14B	Mag base 14cm + 5m RG-58 cable	£12.95
W-3HM	Hatch mount	£14.95
W-3CK	Cable kit for above	£18.95
W-300S	Triple magnetic mount S-0239 or 3/8th	£39.95

Hustler HF Antennas

6-BTV

*6-band vertical, 7.3m tall, 1kW.
*Coverage: 80, 40, 30, 20, 15, 10m
Can be used at ground level with earth
stake. Ideal for small gardens

Price Down! £199.95 D

5-BTV

*5-band vertical, 7.64m tall, 1kW.
*Coverage: 80, 40, 20, 15, 10m
Can be used at ground level with
earth stake. Ideal small gardens

Price Down! £179.95 D

4-BTV

*4-band vertical, 6.52m tall, 1kW.
*Coverage: 40, 20, 15, 10m
Can be used at ground level with
earth stake. Ideal small gardens

Price Down! £149.95 D

6-BTV



W&S
£89.95 D

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

Treat Yourself For Christmas!



Practical Wireless January 2008

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Your last chance to order a free UK and Eire callsign CDROM.



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Your last chance to order a free UK and Eire callsign CDROM.

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81 Topical talk

Rob Mannion G3XFD discusses h.f. band contests and looks at making your own transistors.

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Rob Mannion's

keylines

20 words max Intro to be written to go in here. Intro to be written to go in here.

In the past few months there has been much comment in the media about increased data communications over the 'mains' power supply and other forms of potential radio frequency (r.f.) 'pollution'. Even more recently I wrote a letter to the UK's *Daily Telegraph* newspaper regarding interference caused by some cheap imported domestic lighting 'low energy bulbs'.

Of course, those of us in the Amateur Radio hobby realise that the so-called 'bulbs' are in fact miniature fluorescent tubes. The point of my letter, was a reaction after the UK Government announced their planned withdrawal from sale of higher power incandescent (filament) bulbs. My aim was to draw attention to the fact that that millions of such tubes in the UK contribute to the tremendous level of electrical noise radiating from electricity distribution grid lines.

Although the newspaper (I respect it very much indeed) printed the name and address of *PW*, part of my letter was edited out – a pity because I was trying to make the important point that due to less-than-satisfactory coverage on Band II v.h.f. broadcast f.m. radio service, drivers – listening to the BBC Radio 4 national service – often have to use the parallel service from the Droitwich 198kHz long wave transmitter, which is in the English Midlands. Additionally, there are times when the long wave service is used specifically for broadcasting International Cricket commentaries.

There were two main reasons why I mentioned the 198kHz service. The first was that whenever power lines (particularly 33kV and upwards) are nearby, the hash radiated from the overhead lines can make listening to the broadcast impossible for several hundred metres. And it's particularly noticeable as you drive under them in a car. The second was to make the point that even though I feel that the situation is poor at the moment – it's likely to get worse with even more fluorescent tubes in service.

Radio frequency (r.f.) telemetry (for grid monitoring and housekeeping) signals have been used for many years and although some of these are easily detectable as we drive by they don't cause any problems I

know of. But it could get much worse – so we have to keep alert!

Switched Mode Supplies

The worst electrical noise problem I have at my home in Bournemouth originates from switch mode power supplies and their many harmonics. However, from what I have heard from other Amateurs – I get way quite lightly. The only band that's affected in the daytime is usually 18MHz, where there's a prominent switch mode unit's harmonic that peaks just below (fortunately) the 18.110MHz International Beacon Project (IBP) frequency. Other Amateurs tell me that they find large portions of the bands are unusable during the day and evening because of similar problems.

Fortunately for me I've found that – with most houses and flats empty during the day – the h.f. bands are much quieter. Recently though, a near neighbour asked for my help because some form of interference was spoiling his reception on v.h.f. Band II.

When I tried the set out for myself I saw it was a 'boom box' (a portable unit with very large loudspeakers with CD player, etc.) type of set with an external switch mode power supply. I soon proved that the pulse type radiation and the resultant harmonics from the switch mode power supply was so strong it was being picked up by the receiver's 10.7MHz intermediate frequency (i.f.) strip! In the past I've found that very few 10.7MHz f.m. i.f. stages are 'saturated' and so they actually respond to amplitude and pulse interference very effectively!

I demonstrated the problem to my friend by running his 'boom box' from one of my heavy duty 20A transformer-equipped power supplies. The difference was remarkable – the interference dropped dramatically and he was also able to hear the quieter passages (there were a few!) within the music that was playing because of the excellent smoothing on my power supply.

There was also some benefit for me (as we're on the same phase of the local distribution transformer) as I noticed the 3.5MHz band was not so noisy!

Rob Mannion G3XFD/EI5IW

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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*.

Contests & QRP

Dear Rob,

The November issue of *PW* was eventually delivered here in Holland – despite the Royal Mail strikes in the UK! On to the contests topics now and I'm writing this over the weekend when, "CQ WW SSB" means "five nining" (you can hardly call that a contest or a QSO), with most of the c.w. section of 40m being taken over by those s.s.b. rascals who are not playing to the rules.

Also, there are the RTTY contests (especially for c.w. QRP operators) that are even worse when, on many more bands – especially the QRP frequencies – are taken over by "ritty". This isn't helpful for those who work all week and have only a little extra time for radio during the weekends, who like their c.w. mode but who don't use any other mode.

With contests I think it's often a case of 'Amplifier off the shelf and the operating practice on the shelf'! Perhaps not necessarily for contest groups but it's often what happens when the megalomaniacs that shout along during the contest in the 'five-nining' mode from home.

As for DXpeditions, I think they usually only cause havoc over five, or perhaps 10kHz and the real problems are usually only caused by the megalomaniacs I've already mentioned. However, it can be quite a nuisance on a narrow band like 10MHz (where, as usual, it's the QRP frequency that suffers) but it's not really a problem on the wider bands. Besides, especially on c.w., QRP operators do get the chance to work the DXpedition as, usually, they're run by very good operators!

When my friend **Uffe PA5DD/OZ1DOQ**, who works with me, was operating as **XP1AB** from a DXpedition to Greenland, I called him on 40m c.w., running 5W into an inverted-V style W3DZZ. He answered: "PA?" I replied 'de PA9RZ' and he replied "Hi Robert, it's Uffe here. You're 599, really S9, are you running

Star Letter

Amateurs & The Bandplans

Dear Rob,

I read carefully the Topical Talk page in the last *PW* (November) and I want to write my thoughts about the DXpeditions. For the last four years about, I have not any problem caused by the DXpeditions (I am licensed from 2003). Furthermore I like to work DXpeditions and as you can imagine, working DXpeditions with a vertical antenna and 100W power has some difficulties!

I agree with **Dave G0DJA** in that, the DXpeditions seem to have extremely efficient and skilful operators. Generally they are working in split frequencies, in order to help us to hear them. So, I thank DXpedition operators because they give us the opportunity to work new countries. Now I am looking forward, to work the new Greek DXpedition to the Arwad island in Syria, in the beginning of November 2007 (although I think this letter will miss the *PW* date – for more information please, visit www.yk9sv.com/index1.htm

Unlike DXpeditions, during contests the whole bands are occupied from contest stations (of course 17m. band is free and the 12m. band is also free every ten years!). Moreover, many contesters, don't operate according to the bandplan. For example last weekend (October 27–28th 2007) I heard contest stations calling on 'phone s.s.b. in the c.w. portions of the 40m band.

I strongly believe that Radio Amateurs must work only according to the bandplan. Please, write about it as soon as possible!

I wish good health to you and to your family and *PW* staff, keep up the good work. Amateur Radio: ***Transmit your passion... and liberate the spirit!***

Panos Dadis SV1GRN

**Pikermi,
Athens
Greece**

Good to hear from you Panos – we've had many 'QSOs' by E-mail and perhaps we might work on 7MHz one day! Please join me on the Topical Talk page. Rob G3XFD.

QRP?" I reply, "Yes, 5W into the W3DZZ"! A few days later, back in the office, Uffe still seemed flabbergasted and he told me that my QRP signal out-performed many a QRO station! Best wishes to everyone at the *PW* offices in England!

**Robert van der Zaal PA9RZ
Sassenheim
The Netherlands**

Good to hear from you again Robert! For further discussion on the contest topic I invite readers to join me on the Topical Talk page. Rob G3XFD.

Home Brew Transistors

Dear Rob,

The letter from Jonathan Walker in December's *PW* and your comments in Topical Talk, reminded me of the construction of a transistor from two diodes which appeared in (I think) *The Short Wave Magazine* some time in the mid 1950s. The final part of the article described a 160m c.w. transmitter using the home-made transistor.

I think that (short of travelling to Brazil and mining your own quartz!)

this was about as close as one could get to 'home brew'. I assume the article was later incorporated into the book form referred to in the letter from Jonathan.

I never tried to build the transistor but I did successfully build a diode audio frequency oscillator (I was about 15 at the time so anything that I built that worked was memorable!).

The circuit came from *40 Circuits Using Germanium Diodes*, originally published in the USA by **Sylvania Electric Products Inc.** and published in the UK by **Bernards Ltd.** in 1951. The circuit was simple and relied on the fact that if sufficient reverse voltage is applied to a diode a negative resistance region is reached. The diode was a 1N34.

So, I think that it's not unreasonable that early experimenters could have achieved some gain from the materials then available. Best wishes

Bob Harry G3NRT
Harpenden
Hertfordshire

Thanks for your letter Bob! Every now and again a subject I bring up in Topical Talk generates some fascinating letters from readers (I can't publish them all but I thank everyone who responded). The home brew transistors theme certainly falls into this category and I invite you to join me on the topical Talk page for further comment. Rob G3XFD.

Windemere Steam Boat Museum

Dear Rob,

It was nice to see the *PW* editorial team – **Tex Swann G1TEX** and yourself on duty at the last **Rochdale G QRP Club's Mini Convention** in October, before it moves to the new location in Halifax across the Penines. I am sure you enjoyed it as much as all the other exhibitors and visitors!

I managed to escape with it only costing me the price of a FISTS subscription! However, during our chat at the convention you were asking about the eerie silence from me about the permanent GB2WSM callsign operating from the Steam Boat Museum at Windemere. You are

Grateful To DXpeditions & Contests

Dear Rob,

I am writing in answer to a letter in *PW* from **Dave G0DJJA**, who if I understand him correctly, believes that contests and DXpeditions encourage bad behaviour, which would go away, were they not to exist.

Recently (in October) I received direct QSL cards for contacts with HV (Vatican City) and VR2 (Hong Kong). One was worked in a contest and the other in a DX pile up. As a working man on a modest income running 100W and wire antennas, I was delighted with these contacts. In fact, I'm very grateful to all the stations for their efforts and for giving us 'small fry' the chance to work them.

I understand that the 5 Star DXers hold the top three places for the 'most worked DX stations'. I'm pleased that my modest efforts on the second and third helped them along with their score and, of course, they gave me two new countries.

I feel that everybody likes a challenge of some sort and perhaps competition is the life blood of Amateur Radio?

Perhaps Dave Ackrill G0DJJA would like to see other pursuits (which encourage bad manners) banned? How about banning sport, driving, politics and religion? Also, we must not forget those people who hang around near railways bridges to photograph passing steam locomotives. Let's ban them too!

I am, perhaps, now drifting into the realms on the Monty Python TV programme! So, to be serious for a moment I must say that I do agree that good operating practices are essential on the bands, along with good manners. Unfortunately however, we are dealing with people who can get very excited and forget themselves and their manners.

Human beings will always make mistakes and we must remember that the person who never made any mistakes never achieved anything!

I firmly believe in the art of listening and checking to see if the frequency is clear before I call on the bands. But I don't like the DXclusters, which I feel encourage operators to call, even if they cannot hear the listed station.

However, the real scourge on the bands is, in fact, none of what I've mentioned. The real problem is man-made electrical noise, which in the 25 years I have been active on h.f., has become much worse. So, in summing up, I ask that we live and let live as there's room for all of us to enjoy our particular favourite modes and styles of operating on the bands.

It's best to get stuck in and work what we can – while we can! Who knows when the day may come when we'll be able to hear anything other than electrical hash on the bands!

All the best to everyone and I wish you all the very best of good listening!

Peter Lewis G4VFG/ ISWL G20322
Ivybridge
Devon

Although you were only joking Peter, 'train-spotting' and 'photography' is often banned at railway stations ('for security reasons'!) and railway photographers on bridges are often treated with suspicion by the privatised railway operators. I've been 'moved on' myself and the topic has been widely aired in The Railway Magazine. Please join me on the Topical Talk page for further comments on contests and DXpeditions. Rob G3XFD.

The G3KPO Collection

Dear Editor,

I'm writing following your request to do so when I telephoned to ask for help in tracking down the Premier Television set I gave to Douglas Byrne G3KPO. I was sorry to hear about G3KPO's death, he came to my home one one occasion with an estate car loaded up with old radios, etc., and collected the Premier set from me. It was donated in 1983 and I also passed on the manual and Douglas told me that (at that time) it was the only example he knew of in the UK! I would be most grateful to know where the TV ended up

The premier set used an ex radar VCR97 green phosphor cathode ray tube and I had very good reception – although at that time I lived within sight of the Alexandra Palace transmitter.

The reason why I want to know where the TV is now? It's so I can get my children and grandchildren to 'visit' the set when they're in the area – just to let them know I was once a dab hand with a soldering iron.

Dennis Kaye MOCTF
Redbridge
Ilford
Essex

Unfortunately, the photograph of the TV receiver Dennis provided wasn't suitable for publication. However, if any reader can help I'll be pleased to put them in contact with him. Editor.

quite correct things have gone quiet!

At the end of last season the museum closed for a lottery funded, massive re-furbishment of craft and buildings. At present there's no published estimate of when it will be back 'afloat' but the temporary building erected on site has planning permission for five years.

The historic boats are being progressively hauled out of the water and stored on shore where they will be surveyed and eventually restored to exhibition standard. The five year life of the temporary building will give you an idea of the enormity of the task!

In the meantime I, **GOTAK/2E1RAF** and **Peter G0XTC** are 'ashore', retired, inactive and have our lives back! Peter however, has retained and renewed the **GB2WSM** callsign ready for use in the future.

In the meantime I'm aiming, next season, to activate the Seaplane Runway in the middle of the lake under the Royal Air Force Amateur Radio Society's (RAFARS) 'Airfields On The Air' Award scheme. Watch this lake!

Roy Walker GOTAK/2E1RAF
Kendal
Cumbria

Good luck Roy and I'm pleased to publish your up-date on the steam boat museum's news. To me, riding on one of the steam boats can be compared to riding in a Rolls Royce on water! Rob G3XFD.

A Waste Of Time!

Dear Rob,

Having recently spent two weeks in the Wildschoenau Valley in the Austrian Tirol, I felt I must write to say what a waste of time it was taking my Yaesu FT-817 with me! One day I took the cable car up to the top of the Markbachjoch to 1450 metres and spent a fruitless two hours calling stations and also calling CQ.

However, all around the QRP frequencies on 7 and 14MHz was dominated by Russian speaking and other East European stations – and was very troublesome. It seemed these frequencies were being used for local nets. Although I could hear strong signals, there were a number of Lighthouses on The Air at that time and I also called these without success.

I realise my 5W was low power

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and I only had a tunable whip antenna and counterpoise but it was all very disappointing. With the airline baggage restrictions today there's a limit to how much Amateur equipment you can pack, with no room for a portable beam.

I know my set-up works because I have worked 9A2YM in Croatia on 14MHz s.s.b. from sea level at Christchurch Harbour, Dorset. Unless there is greater observance of QRP frequencies the hobby will suffer, we can't all run 100W or more portable!!

Keep up the good work with PW.
Regards to all the team

Paul Hunt G8CRZ
Bournemouth
Dorset

I'm sorry you ended up feeling so frustrated Paul – please don't give up! I enjoy working portable and I often do so when on the road for PW. For many years I used to operate on 7MHz (especially) and also on 14 and 18MHz using mobile whips (usually the PRO-AM types). However, even though results were good on c.w., the vertical antennas were at a disadvantage on low power s.s.b. I then tried using a simple wire dipole – erected clothes lines fashion – for 7MHz. The results were excellent – even when the centre of the dipole was only just 2 metres above ground. Even with low power – provided I was in reasonable location the results could be excellent. Readers may remember the photograph of me operating as EI5IW at Clew Bay in County Mayo, Ireland, where I used the the portable dipole. At just above the high water mark, surrounded on three sides by mountains the DX came in very well and I was able to work into the USA and South America with only 25W or so on s.s.b. So, don't give up Paul – try a simple wire dipole!
Rob G3XFD.

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.

Radio at School

Pupils at **Prettygate Junior School** in Colchester were recently given the opportunity to experience the power of radio by making contact with Radio Amateurs up and down the UK and across Europe. The event was organised by the school's Head of Science, **Cathy Pountney**, as part of a hands-on science activity.

Colchester Radio Amateurs established their amateur station, **GX3CO/P**, at the school that enabled the pupils to make supervised contact with amateurs in the Peak District, Cornwall, Belgium, Poland and Romania.

Mrs Pountney said, "The children were really keen to get involved with the radio. We had prepared questions to ask other users and taught the pupils to use the phonetic alphabet as an international language. The pupils and staff had an enriching experience with something they are not likely to do ever again."

Chairman of Colchester Radio Amateurs, **Kevan Pugh 2E0WMG**, said, "This is the second time we have worked with a school in the area to establish an event like this and we see it as a great way of introducing the hobby to the next generation of radio amateurs."



More information on Colchester Radio Amateurs can be found at www.g3c0.com.co.uk

Starting Radio Young

Scouts, Cubs and Guides from **Cawston, Aylsham and Old Catton** are the latest young people to qualify as Radio Amateurs with the help of Norfolk Amateur Radio Club.

The nine new radio Amateurs gained their Foundation Licences at a course held in October at **Cawston Primary School**.

"On Saturday we covered the theory we needed and on Sunday we learned to use radio equipment and took the exam" said Alice who is an Explorer Scout with 1st Cawston troop. There are now 12 Scouts and 2 leaders with their own radio licence at Cawston Scouts. With the support of **Norwich Amateur Radio Club** most of the Scouts have become qualified.

"The foundation licence is the first step in training for Radio Amateurs," explained **Rex Hunt**, lead tutor for Norfolk Amateur Radio Club. "It is great introduction to the hobby and is particularly suitable for young people who can then progress to their Intermediate and Advanced licences by undertaking further training."

One of those who passed their Foundation Licence was 9 year-old **Marriane, M3UYY**, who is currently the youngest licenced member of Norfolk Amateur Radio Club! She is looking forward to working her peers from the weekend's course!

For more information contact **Simon Court** on (01603) 872690 (Cawston Scouts), **David Palmer Norfolk Amateur Radio Club** Chairman on (01953) 458844 or **Judi Dale** (NARC Press Officer) at m3nkw@yahoo.co.uk



Worked All Britain

The **WAB Special Event Stations Award** will run from January 1st until December 31st each year. Only contacts with special event stations using a 'GB' prefix will be valid and a station may only be claimed once during each 12 month period for any particular endorsement. A certificate will be awarded for working/hearing 20 stations, with endorsements for each subsequent 20. On working/hearing 100 stations, a further certificate will be awarded. In common with all WAB awards, this is open to s.w.l.s also. The photograph shows **Kevin M0XLT** proudly showing off his Special Event Stations Award for Working 100 GB Stations in the year 2007, in fact, this is now endorsed for working 120 stations.

Full details of the award can be found at www.worked-all-britain.co.uk



Training Course

Colchester Radio Amateurs are holding an introductory Amateur Radio training course throughout January 2008. The course includes everything needed to gain a Foundation Amateur Radio licence.

Two tutorial sessions will take place at 7:00pm on Wednesday 9th January and again on Wednesday January 16th at **St Helena School, Colchester** followed by a series of practical activities and a short multiple-choice examination on Sunday January 20th at **Marks Tey Parish Hall, Colchester**.

The course and examination fee are to cost £50 and includes all study materials.

More information on this training course can be obtained from **Brian Fitzsimmons** on **01206 822547** or by visiting the Colchester Radio Amateurs website at www.g3c0.com.co.uk

Rig Upgrade

Garex Electronics have announced the release of the 12.5kHz channel spacing upgrade for the AKD 2001 2m transceiver. The upgrade is offered in two levels: Level 1 consists of all necessary components to set up 12.5kHz spacing. Full instructions and operating handbook update are supplied. Level 2 allows the optional additional step of replacing the receiver filtering for optimum operation.

The Level 1 upgrade kit costs £11.95 plus £2.00 P&P, the Level 2 parts cost an additional £7.60.

Garex offer to carry out the upgrade work free of labour charge; charging only for the materials cost, return carriage and a small administration fee. Full details, including the fitting instructions (so that the AKD 2001 owner can decide whether to attempt the work themselves or return to Garex) can be found on the Garex website: www.garex.co.uk see under "AKD INFO"

Garex Electronics, PO Box 52, Exeter EX4 8WX. Tel: 07714 198374.



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German Website

A local Amateur group in Schwedt, Germany have an interesting website with English pages. It offers a glimpse of their travels to the UK, their recent visit to The Isle of Man and their projects. www.swschwedt.de/kunden/dl2bqd

Antennas Installed on Columbus

The Amateur Radio antennas for 1.2 and 2.4GHz (23 and 13cm), which will be attached to the International Space Station (ISS) have been installed on the *Columbus* module. The antennas will permit video links to be established for the important ISS School Contact programme and allow ATV repeater operation.

As part of the fund raising during the development of the antennas **AMSAT-UK** made two substantial donations to the project totally over 19,000. Significant donations were also received from a number of other AMSAT organisations and National Societies including the **RSGB** and **IRTS**. Not all the funding required for the project has been achieved and further donations are welcome, see <http://www.ariss-eu.org/donations.htm>

New QSL Sub-Manager

Do you have an Amateur Radio callsign in the **M1EAA - M1EZZ** series? The new QSL Sub-Manager for this group is **Chris G7NRO**. He has started up a group on Yahoo and encourages those Amateurs to join in.

Please go to <http://uk.groups.yahoo.com/group/qlsman-m1eaa-ezz/>

D-Star Repeater

The latest D-Star repeater to be licensed in the UK is **GB7ML** run by **Martin Lynch G4HKS**. The Licence Notice of Variation (NoV) was issued by Ofcom on November 15th. The repeater will be located at Chertsey in Surrey. IARU Locator IO91RJ, NGR TQ041668, Lat/Long 51.391144 -0.504657
Output: 439.9125MHz
Input: 433.9125MHz

Amateur Radio Licences

The UK regulator Ofcom has supplied the figures for the total number of Amateur Radio Licences issued as at October 31st.

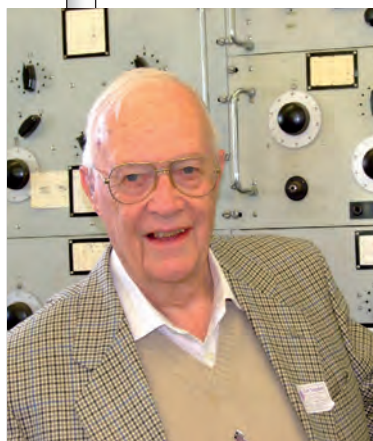
Grade	Oct 31st '07	Sept 30th '07	Change
Foundation	9323	9136	+187
Intermediate	3975	3908	+67
Full/Advanced	49992	49894	+98
Club Stations	1257	1253	+4

Old Timers go Visiting

Members of the **Radio Amateur Old Timers Association (RAOTA)** visited the **Muckleburgh Collection Military Museum**, Weybourne, Norfolk, for a 'Get-Together' hosted by the **North Norfolk Amateur Radio Group** whose 'home' is the Radio Hut at the museum.

The oldest RAOTA visitor on the day was 83-year old **Gordon Fuller G4DRF** who was first licensed as W4JJR when working in America as a ground radio engineer for Pan Am in 1941. He is still active on the air and continues to enjoy the hobby.

During the visit, RAOTA's national president, **Dr Ken Jones G3RRN**, expressed the appreciation of his members to NNARG for their hospitality and presented the Group chairman, **Laurie Buttriss M3BFU**, a one-time maritime radio officer, with a folder containing all the publications of RAOTA.



The visitors were shown around NNARG's unique collection of radio and other communications equipment, dating from Victorian times to post Second World War. The Group's operational vintage a.m. station using a Tiger TR200 transmitter, with other commercial and home-made equipment from the 1950s, was of particular interest to older RAOTA members who remembered using equipment of this type in earlier days. They also visited the main museum at Muckleburgh, enjoyed a meal in the restaurant and particularly liked the opportunity of holding their 'get together' in such a radio-orientated location.

More information on RAOTA can be found at www.raota.org/ and the NNARG website at www.radioclubs.net/nnarg/

The oldest visitor, Gordon Fuller G4DRF, a licensed radio amateur since 1941.

Re-elected Committee

The **Radio Amateurs Invalid and Blind Club** held its AGM at the Donington Rally this past September. Whilst the number of members able to get to the meeting was small, a large number of postal votes were received and the standing committee was overwhelmingly re-elected. One new member of the committee is **Brian Tuffill M0FFS**.

Brian will serve as secretary and is a welcome addition to the team. The RAIBC stand at Donington raised nearly £2000. We are very grateful to everyone who visited the stand, purchased items and often gave us a donation. Thank you again.

The annual RAIBC contest was won by **Tony Franklin M0BPL**, who was a clear winner. Tony receives the Constance Hall Memorial Trophy and £20 in vouchers.

If you would like more information about the RAIBC and its work, please visit our website, www.raibc.org.uk or telephone our helpline on 0208 2042347.

GB500DS Jamboree on the Air

The **Hog's Back Radio Club** and **Mad Jack's ARS** combined forces to mount GB500DS on behalf of the **Odiham and District Scouts** at Church Crookham near Farnborough for the 50th anniversary JOTA.

The callsign, GB500DS, ran with two stations, one on 14/21MHz and the second on 3.5/7MHz. The 30m trailer tower and Western DX33 tri-band Yagi antenna for the event, were on-loan from Mad Jack's ARS. The l.f. station ran an IC-746 barefoot with 100W into dipoles hung from the tower and got out very well around the UK and Europe. **Lawrence M0LSK** very kindly loaned an FT-2000 and Expert 1K-FA solid state linear amplifier for the h.f. setup. Despite being at the very bottom of the Sunspot Cycle, GB500DS made many great contacts on the higher bands with Scout groups around the globe including into Australia, India, North and South America and Africa.

Winching the tower up to it full height on Saturday morning raised some eyebrows among the neighbours as the tri-bander rose from the Scout hut to well above the tree canopy. The local councillor received four telephone calls as a result but acted as a great ambassador for the event because her son was one of the Scouts taking part – he was having such a great time exchanging greetings messages that he came back on Sunday for some more!

There are already several licensed Amateurs among both the Church Crookham Scouts and their leaders, another Foundation Course is planned for the near future in conjunction with Hog's Back RC www.hogsback-arc.org.uk/ Madjack's Amateur radio Club have the



One of the Scouts, Jack M3SKZ, running the Stateside pile up on 15 metres on Sunday afternoon.

The First Bath Buildathon

The first **Bath Buildathon** is to be held on January 12th to encourage newcomers to have a go at homebrewing. The Buildathon will allow those with limited soldering experience to develop their skills under the watchful eye of some very experienced homebrewers (Elmers). These events are popular in the States but this is thought to be one of the first in the UK.

The kit chosen for the Bath Buildathon is the Brendon DSB Transceiver from **Tim Walford's Somerset range of kits**. The 3W QRP transceiver has been specifically designed for the newcomer so you can be confident that you will go home with a working 3.5MHz voice transceiver.

The Buildathon will take place in Bath on the second Saturday in January and is planned to run from 9am to 5pm.



All soldering and test equipment will be made available on the day and refreshments will be provided. All you need to bring is a bucket full of enthusiasm and a packed lunch. The cost of the day will be £60 to include the cost of the kit, refreshments, room hire and so on. The event is open to anyone who would like to try out homebrewing for the first time. Why not bring the family to see the Roman City of Bath while you build?

If you are interested in joining in the fun, please contact **Steve Hartley G0FUW** on **01225 464394** (7-9pm weekdays), or by E-mail at **G0FUW@tiscali.co.uk** Places will be limited to ensure that everyone gets good mentoring from one of the local 'Elmers' **so interested parties are advised to book early.**



Special Visitor

Alisa Komarovskiy, a former Sergeant in the Israel Defence Force (IDF), recently visited **Chelmsford Amateur Radio Society (CARS)** members. She was a Radio Communications instructor in the Israeli army and was interested to hear about the CARS training programme. She met some of the members and told them of her experiences teaching radio in the military. A somewhat different scenario from the usual Amateur Radio

training course! Setting up an effective radio station in harsh desert terrain is a far more challenging experience than an Amateur Field Day station in this country.

Courses for the Foundation, Intermediate and Advanced Radio Communications exams are all run by CARS. For details contact **Clive G1EUC** on **(01245) 224577** or E-mail **training2008@g0mwt.org.uk** or visit the webpages at www.g0mwt.org.uk/training/

New D-STAR Hand-held

A new D-STAR hand-held, the **Icom ID-92**, has been announced in Japan. This new rig should be available in Japan by the end of November and will sell for 59,800 yen which is about £250.

The ID-92 features a GPS microphone for location information and D-PRS (Digital Position Reporting System). It allows simultaneous reception on V/V and V/U, U/U-2 and is a waterproof design to the equivalent of JIS7.

The Icom announcement (in Japanese) can be seen at: www.icom.co.jp/release/20071112/index.html

Four Metres for all Eire Amateurs

The Eire regulator, **ComReg**, will be making the 70MHz Amateur Radio band available to all Amateurs, according to the latest **Irish Radio Transmitters Society (IRTS)** bulletin. As soon as the necessary documentation is amended by ComReg, the secondary allocation at 70MHz will be made generally available to existing and new licensees without the need for a special application in each case. <http://www.irts.ie/>

Iraqi Amateur Radio

It was announced recently that the government of Iraq reopened the Amateur Radio service on November 20th.

Scott AD7MI, will be active as **YI9MI** from November 20th to May 15th, 2008 from the US Army Camp in Taji. Activity will be on 3.5-28MHz on the key or with voice, PSK-31 and RTTY. You can QSL via AD7MI either by the bureau or direct to: **MAJ Scott Hedberg 3 BN, 2 BDE, 9 DIV MITT, TAJI, IRAQ, APO, AE 09378, USA.**

Amateur Radio Direction Finding

A few members of the **Oldham Amateur Radio Club** attended an Amateur Radio Direction Finding (ARDF) symposium in Wakefield to find out how it is done. As there was no ARDF activity north of Birmingham, members of Oldham Amateur Radio Club took up the challenge and decided to do something about it.

Six 3.5MHz QRP transmitters of the design by **ON7YD** were built as published in the *RSGB ARDF Handbook*, which uses a simple oscillator and PIC to generate the r.f. and Morse characters.



The original TX was constructed with all the bits housed in a diecast box, although later it was decided that the mechanical design of the transmitters was very cumbersome and a change of design was deemed appropriate.

The Oldham club is fortunate in having its HQ at the local Air Training Corps, which has large grounds. This afforded the opportunity to set out the transmitters for test purposes.

Three local Orienteering Clubs showed interest and an ARDF demo evening was set up at the ATC to which Amateurs and Orienteers came. It transpired that **South East Lancashire Orienteering Club** (SELOC), were holding an Introduction to Orienteering Day at Tandle Hill

Country Park in Royton, Oldham to which the Amateurs were invited to add a Radio Course. This was to be the training ground for **Phil M0GIE** and **Geoff G0BJR** to organise an ARDF event.

The Tandle Hill Country Park event was scheduled for Saturday October 27th and Friday 26th was antenna hoisting day. At 8am on the Saturday, two bodies were to be seen scuttling from tree to tree in the park, connecting and hiding TXs.

The first entry was from **John Martin G8JGM**, a member of the **Manchester and District Orienteering Club** (MDOC), who was keen to have a go. He was issued with a map and control card and, after tuning in his RX, off he went.

Their only disappointment of the day was the final result: Orienteer entries – many, Amateur Radio entries – one only!

Phil M0GIE would also be happy to hear from any other northern clubs interested in staging an event, they have the equipment which they will be happy to loan out and the know how and will be happy to advise and help.

For further information, E-mail Phil Ellis at m0gie1@ntlworld.com

For more details on ARDF visit www.oarc.org.uk and www.ardf.btinternet.co.uk

With thanks to: **Phil Ellis M0GIE**, **Geoff Oliver G0BJR**, **Alan Burgess G4GLV**, **Sue Burgess G0RKE**, **Chris Mackay M0TVL**, **Bertie Whitcher G7JUL**, **John Williamson M3UXW** and **Peter Rushton G7PMZ**.

All Ladies RAE Classes

In South Africa, the **Kempton Park Amateur Radio Technical Society** has been hosting unusual Radio Amateurs Examination classes – for ladies only. Four ladies attended the RAE classes, which finished with a written exam. Following the ladies only classes, **Odette De Kock** passed the Class A exam and received her **ZS6O** callsign, **Renè Swart** passed the Class B exam and received her novice **ZU6R** callsign.

Clive Reece, left front in the photograph,

also sat the exam and passed the RAE Class A with a 100% pass mark and received his **ZS6BT** callsign.

The photo was taken during the exam and shows Odette (2nd on left) and Renè far right.

The Kempton Park Amateur Radio Technical Society, <http://www.kats.za.net> hosted the RAE classes and the RAE exam.



RSGB HQ to Move

After 25 years at Potters Bar, the **Radio Society of Great Britain** is moving its headquarters to Bedford. A quick look at the RSGB website says that with modern IT technology and business practice, Lambda House is no longer cost effective to run as an HQ and, due to the age of the building, it is proving increasingly costly to maintain.

The move, which the Society hopes to complete by March 2008, will also involve a relocation of the museum, shack and library. Discussions are taking place with the **Bletchley Park Trust**, the aim being to establish a heritage centre dedicated to Amateur Radio and the RSGB at Bletchley Park. It is envisaged that the Bletchley Park site will be the centre of the Society's training activities and will also be the home of the RSGB HQ station GB3RS, which it is hoped will be on the air daily.

www.rsgb.org/

New Bands in Thailand

Thailand's Radio Amateurs are celebrating the granting of new Amateur Radio h.f. bands.

1.800 - 1.825MHz
3.500 - 3.540MHz
10.100 - 10.150MHz
18.068 - 18.168MHz
24.890 - 24.990MHz



Rucksack Antenna

There has been growing interest in the **Summits on the Air** (SOTA) community in antennas that can be used while actually walking – allowing the users to keep in touch at all times. In response to this demand, SOTA Beams has introduced the Rucksack Special.

The Rucksack Special is an half wave antenna for 144MHz f.m. that is designed to sit inside a rucksack. "It will give a significant improvement in performance over the standard 'rubber duck' type of antenna" say SOTA.

As with all SOTA Beams products, it is robust and very light at just 300g. It comes complete with a feeder fitted with a BNC plug. The Rucksack Special breaks down into two sections for easy transport. And SOTA Beams expect that RAYNET members will also find this a useful addition to their kit.

The Rucksack Special is available in an introductory offer for £14.95 plus £2.50 P&P from SOTA Beams, **89 Victoria Road, Macclesfield, Cheshire SK10 3JA**. <http://www.sotabeams.co.uk>

Log Periodic

MLP32	£119.95
* Frequency:100-1300MHz TX & RX	
* Boom:142cm Long Element 150cm	
* Gain 11-13 dB	
MLP62	£199.95
* Frequency:50-1300MHz TX & RX	
* Boom:200cm Long Element 300cm	
* Gain 10-12 dB	



AM-Pro Mobile HF Whips (with 3/8 base fitting)

AM-PRO 6 metre (Length 4.6' approx).....	£17.95
AM-PRO 10 metre (Length 7' approx).....	£17.95
AM-PRO 17 metre (Length 7' approx).....	£17.95
AM-PRO 20 metre (Length 7' approx).....	£17.95
AM-PRO 40 metre (Length 7' approx).....	£17.95
AM-PRO 80 metre (Length 7' approx).....	£19.95
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



VHF/UHF Mobile Antennas

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

RDP-3B 10/15/20mtrs length 7.40m.....	£119.95
RDP-4 12/17/30mtrs length 10.50m.....	£119.95
RDP-40M 40mtrs length 11.20m.....	£169.95
RDP-6B 10/12/15/17/20/30mtrs boom length 1.00m.....	£239.95

Single Band Mobile Antennas

MR214 2 metre straight stainless 1/4 wave 3/8 fitting.....	£4.95
PL259 type.....	£5.95
MR214S-2 2 Metre stainless steel 1/4 wave with built in spring PL259 fitting.....	£12.95
MR258 2 Metre 5/8 wave 3.2 dBd Gain (3/8 fitting) (Length 58").....	£12.95
MR268S 2 Metre 5/8 wave 3.5dBd gain Length 51" S0239 fitting.....	£19.95
MR290 2 Metre (2 x 5/8 Gain: 7.0dBd) (Length: 100"). PL259 fitting, "the best it gets".....	£39.95
MR444S-2 4 Metre straight stainless 1/4 wave with spring and PL259 fitting.....	£14.95
MR625 6 Metre base loaded (1/4 wave) (Length: 50") commercial quality.....	£19.95
MR614 6 Metre loaded 1/4 wave (Length 56") (3/8 fitting).....	£14.95



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6 metre 1/2 wave (Length 120") (Gain 2.5dB) (Radial free).....	£44.95
6 metre 1/4 wave (Length 150") (Gain 4.5dB) (3 x 28" radials).....	£49.95

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SQBM100 Mk.2 Dual Bander.....	£39.95
(2m 3dBd) (70cm 6dBd) (RX:25-2000 MHz) (Length 39")	
SQBM110 Mk.2 Dual Bander (Radial FREE!).....	£49.95
(2m 3dBd) (70cm 6dBd) (RX:25-2000 MHz) (Length 39")	
SQBM200 Mk.2 Dual Bander.....	£49.95
(2m 4.5dBd) (70cm 7.5dBd) (RX:25-2000 MHz) (Length 62")	
SQBM223Mk.2 Tri Bander.....	£59.95
(2m 4.5dBd) (70cm 7.5dBd) (23cm 12.5dBd) (RX 25-2000MHz) Length: 62"	
SQBM500 Mk.2 Dual Bander Super Gainer.....	£64.95
(2m 6.8dBd) (70cm 9.2dBd) (RX:25-2000 MHz) (Length 100")	
SQBM800 Mk.2 Dual Bander Ultimate Gainer.....	£119.95
(2m 12.5dBd) (70cm 12.5dBd) (RX:25-2000 MHz) (Length 5.2m)	
SQBM1000 Mk.2 Tri Bander.....	£69.95
(6m 3.0dBd) (2m 6.2dBd) (70cm 8.4dBd) (RX:25-2000 MHz) (Length 100")	



Single Band Vertical Co-Linear Base Antenna

BM33 70 cm 2 X 5/8 wave Length 39" 7.0 dBd Gain.....	£34.95
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BM55 70cm 4 X 5/8 wave Length 100" 10 dBd Gain.....	£69.95
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BM65 2mtr 2 X 5/8 Wave, Length 100", 8.0dBd Gain.....	£69.95
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MFJ-976 1.8-30MHz 1500W balanced line tuner with X-needle SWR/WATT meter.....	£429.95



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HB9-6 6 metre (Boom 33").....	£44.95
HB9-10 10 metre (Boom 52").....	£69.95
HB9-627 6/2/70 Triband.....	£64.95



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These very popular antennas square folded di-pole type antennas



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Convert your half size G5RV into a full size with just 8ft either side. Ideal for the small garden

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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

Cable & Coax Cable

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" Pigmy magnetic 3/8 fitting	£7.95
3.5" Pigmy 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
PBK1T-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

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

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

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

Trapped Wire Di-Pole Antennas (Hi grade heavy duty Commercial Antennas)

MTD-6 FREQ:40 & 160m LENGTH: 28m POWER:1000 Watts	£59.95
MTD-1 (3 BAND) FREQ:10-15-20 Mtrs LENGTH:7.40 Mtrs POWER:1000 Watts	£49.95
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)

"NEW" M-100 Professional 24-2300MHz Pre-amplifier



This is brand new M-100 Professional GaAs FET Pre-amplifier uses the most upto date and advanced technology. With variable gain control and band pass filters to minimize interference, just connect between your radio and antenna for amazing results!

SPECIFICATION:

- Frequency: Band A:225-1500MHz Band B:108-185MHz Band C: 24-2300MHz
- Gain: -10 to +22dB
- Impedance: 50 Ohms
- Weight: 100g
- Size: 100 x 53 x 38mm
- Power: 9v battery (PP3) or 12v DC supply

Just £69.95
plus £5.00p+p

HF Verticals

VR3000 3 BAND VERTICAL FREQ: 10-15-20 Mtrs
GAIN: 3.5dBi HEIGHT: 3.80m POWER: 2000 Watts (without radials) POWER: 500 Watts (with optional radials)**£99.95**
OPTIONAL 10-15-20mtr radial kit.....**£39.95**

EVX4000 4 BAND VERTICAL FREQ:10-15-20-40 Mtrs
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**
OPTIONAL 10-15-20mtr radial kit.....**£39.95**
OPTIONAL 40mtr radial kit**£14.95**
OPTIONAL 80mtr radial kit**£16.95**

EVX8000 8 BAND VERTICAL FREQ:10-12-15-17-20-30-40 Mtrs (80m optional) GAIN: 3.5dBi HEIGHT: 4.90m RADIAL LENGTH: 1.80m (included) POWER: 2000 Watts.....**£319.95**
80 MTR RADIAL KIT FOR ABOVE.....**£89.00**

(All verticals require grounding if optional radials are not purchased to obtain a good VSWR)

Scanner Discone Antennas

DISCONE ★ Type: Ali ★ Freq: 25-1300MHz
★ Length: 100cm ★ Socket: PL259.....**£29.95**

SUPER DISCONE ★ Type: Ali ★ Freq: 25-2000MHz
★ Length: 140cm ★ Socket: PL259
★ Gain: 3dB.....**£39.95**

HF DISCONE ★ Type: Ali ★ Freq: 0.5-2000MHz
★ Length: 185cm ★ Socket: PL259
★ Gain: 1.5dB.....**£49.95**

ROYAL DISCONE 2000 ★ Type: Stainless
★ Freq: RX: 25-2000MHz Freq: TX 6/2&70cm+ ★ Length: 155cm
★ 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
★ Gain: 5.5dB.....**£59.95**

Scanner Mobile Antennas

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**

Scanner Hand-held Antennas

Going out? Don't miss out! Get a super Gainer!
p+p just £2.00

MRW-100 SUPER GAINER ★ Freq: 25-1800MHz ★ Length: 40cm ★ Fitting: BNC.....**£19.95**

MRW-210 SUPER GAINER ★ Freq: 25-1800MHz ★ Length: 40cm ★ Fitting: SMA.....**£19.95**

Scanner Fibreglass Vertical Antennas

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**

Scanner Preamplifier

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

MRP-2000 Mk2 ★ Active wideband pre-amp
★ 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**

Guy Rope 30 metres

MGR-3 3mm (maximum load 250 kgs).....**£6.95**
MGR-4 4mm (maximum load 380 kgs).....**£14.95**
MGR-6 6mm (maximum load 620 kgs).....**£29.95**

Hand-held VHF/UHF Antennas

Postage on all handles just £2.00

MRW-300 ★ Type: Helical rubber duck ★ Freq TX: 2&70 RX: 25-1800MHz ★ Power: 10w ★ Length: 21cm
★ 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**

Hand-held HF Antennas

Postage on all handles just £2.00

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**

MRW-HF80 ★ Type: Telescopic Whip ★ Freq TX: 20m RX: 80-10m ★ Power: 50w ★ Length: 145cm ★ Connection: BNC.....**£24.95**

100m Cable Bargains

RG58 Standard 6mm coax cable**£24.95**

RG58M Military spec 6mm coax cable.....**£39.95**

RGMINI8 Military spec 7mm coax cable.....**£54.95**

RG213 Military spec 9mm coax cable.....**£84.95**

RH100 Military spec 9mm coax cable.....**£99.95**

FLEXWEAVE Original antenna wire.....**£49.95**

PVC FLEXWEAVE Original pvc coated antenna wire.....**£69.95**

300 Ribbon cable USA imported.....**£59.95**

450Ω Ribbon cable USA imported.....**£69.95**

Books

UKSCAN-B The 9th Edition UK Scanning Directory A must have publication!
.....**£19.50**

LOGBB-B Base log book for licensed amateurs.....**£4.95**

LOGBM-B Mobile/Portable log book for licensed amateurs.....**£4.95**

Patch Leads

STANDARD LEADS

1m RG58 PL259 to PL259 lead**£3.95**
10m RG58 PL259 to PL259 lead**£7.95**
30m RG58 PL259 to PL259 lead**£14.95**

MILITARY SPECIFICATION LEADS

1m RG58 Mil spec PL259 to PL259 lead**£4.95**
10m RG58 Mil spec PL259 to PL259 lead**£10.95**
30m RG58 Mil spec PL259 to PL259 lead**£24.95**
1m RG213 Mil spec PL259 to PL259 lead**£4.95**
10m RG213 Mil spec PL259 to PL259 lead**£14.95**
30m RG213 Mil spec PL259 to PL259 lead**£34.95**
1m H100 Mil spec PL259 to PL259 lead**£5.95**
10m H100 Mil spec PL259 to PL259 lead**£19.95**
30m H100 Mil spec PL259 to PL259 lead**£44.95**

(All other leads and lengths available, ie. BNC to N-type, etc. Please phone for details)

ATOM Single Band Mobile Antennas

New low profile, high quality mobiles that really work!

ATOM-6 ★ Freq: 6m ★ Length: 130cm ★ Power: 200W
★ Fitting: 3/8.....**£22.95**
ATOM-6S ★ Freq: 6m ★ Length: 130cm ★ Power: 200W
★ Fitting: PL259.....**£24.95**
ATOM-10 ★ Freq: 10m ★ Length: 130cm ★ Power: 200W
★ Fitting: 3/8.....**£22.95**
ATOM-10S ★ Freq: 10m ★ Length: 130cm ★ Power: 200W
★ Fitting: PL259.....**£24.95**
ATOM-15 ★ Freq: 15m ★ Length: 130cm ★ Power: 200W
★ Fitting: 3/8.....**£22.95**
ATOM-15S ★ Freq: 15m ★ Length: 130cm ★ Power: 200W
★ Fitting: PL259.....**£24.95**
ATOM-20 ★ Freq: 20m ★ Length: 130cm ★ Power: 200W
★ Fitting: 3/8.....**£22.95**
ATOM-20S ★ Freq: 20m ★ Length: 130cm ★ Power: 200W
★ Fitting: PL259.....**£24.95**
ATOM-40 ★ Freq: 40m ★ Length: 130cm ★ Power: 200W
★ Fitting: 3/8.....**£24.95**
ATOM-40S ★ Freq: 40m ★ Length: 130cm ★ Power: 200W
★ 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)
★ Fitting: PL259.....New low price **£69.95**

SPX Multiband Mobile Antennas

All these antennas have a unique flyleaf & socket to make band changing easy! Just plug-n' go!

SPX-100 ★ Portable 9 Band Plug n' Go HF mobile antenna ★ Freq: 6/10/12/15/17/20/30/40/80m ★ Length: 1.65m retractable to 0.5m ★ Power: 50w ★ Fitting: 3/8 or PL259 with adapter included.....**£44.95**
SPX-200S ★ Mobile 6 band Plug 'n Go HF mobile antenna ★ Freq: 6/10/15/20/40/80 ★ Length: 130cm ★ Power: 120w ★ Fitting: PL259.....**£49.95**
SPX-300 ★ Mobile 9 band Plug 'n Go HF mobile antenna ★ Freq: 6/10/12/15/17/20/30/40/80m ★ Length: 165cm ★ Power: 200w ★ Fitting: 3/8 Thread.....**£59.95**
SPX-300S ★ Mobile 9 band Plug 'n Go HF mobile antenna ★ Freq: 6/10/12/15/17/20/30/40/80m ★ Length: 165cm ★ Power: 200w ★ Fitting: PL259.....**£64.95**

Mobile Colinear Antennas

Ever wanted colinear performance from your mobile?

MR3-POWER ROD ★ Freq: 2/70cm ★ Gain: 3.5/6.5dBd
★ Length: 100cm ★ Fitting: PL259.....**£29.95**
MR2-POWER ROD ★ Freq: 2/70cm ★ Gain: 2.0/3.5dBd
★ Length: 50cm ★ Fitting: PL259.....**£24.95**

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WOBURN SANDS, BUCKS MK17 8UR**





club news

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

Send all your club info to:

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

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. December 18th is a Construction Contest, January 8th is the AGM and 22nd is the Construction Contest Winner's presentation.

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.

COUNTY DOWN

Bangor and District ARS

Contact: Mike G4XSF
Tel: 028 4277 2383
Website: www.bdars.com
Bangor and District Amateur Radio Society meets on the 1st Thursday of every month in 'The Boathouse', Harbour Car Park, Groomsport at 8pm. Visitors and new members are most welcome. January 3rd is the Annual Quiz Night.

COUNTY DURHAM

Great Lumley ARS & ES

Contact: Nancy Bone
Tel: 0191 477 0036
E-mail: nancybone2001@yahoo.co.uk
Website: www.glares.org.uk
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. January 23rd is the AGM when various committee members will be standing down.

DERBYSHIRE

South Normanton Alfreton and District ARC

Contact: A J Highton
Tel: (01773) 783658
E-mail: snadarc@linuxmail.org
Website: www.snadarc.me.uk/
South Normanton Alfreton and District Amateur Radio Club meets in the Village Hall, Community Centre, Market Street, South Normanton, Derbyshire DE55 2EJ.

DEVON

Torbay ARS

Contact: Dave Helliwell
E-mail: g6fsp@tars.org.uk
Website: www.tars.org.uk/
Torbay Amateur Radio Society meets Fridays at 7.30pm in the Teignbridge District Scout Headquarters, Wolborough Street, Newton Abbot, Devon TQ12 1JR. December 21st is a Natter Night, 28th and January 4th are Operating Nights, January 11th is a Natter Night, 18th is a Technical Night and 25th is a Construction Contest.

THE LOTHIAN

Cockenzie & Port Seton ARC

Contact: Bob Glasgow
Tel: (01875) 811723
E-mail: gm4uyz@cpsarc.com
Website: www.cpsarc.com/news.php
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. January 18th is an Open Forum in Port Seton Community Centre Resources Room 2 from 7 to 9.30pm.

Lothians Radio Society

Website: www.lothiansradiosociety.com/
Lothians Radio Society (GM3HAM) 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! January 14th is a talk on Software Defined Radio by Peter Waters G3OJV (Waters and Stanton).

EAST SUSSEX

Hastings E&RC

Contact: Gordon Sweet
Tel: (01424) 431909
E-mail: gordon@gsweet.fsnet.co.uk
Website: www.herc.uk.net
The Hastings & District Radio Club meets on the third Wednesday at The Phoenix Hall, William Parker School, Parkstone Road, Hastings TN34 2NT at 7pm. January 16th is a talk on Soft Rocks and Computer Radio by Leon Heller and February 13th is the AGM.

ESSEX

Braintree & DARC

Contact: Keith G4MIU
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.

Chelmsford ARS

Contact: Martyn Medcalf G1EFL
Tel: (01245) 469008
E-mail: info2007@q0mwt.org.uk
Website: www.q0mwt.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. January 8th is a talk on Software Defined Radios by Peter Waters G3OJV of Waters & Stanton.

Loughton & Epping Forest ARS

Contact: Marc Litchman G0TQC
Tel: 020 8502 1645
E-mail: info@lefars.org.uk
Website: www.lefars.org.uk
Loughton & Epping Forest ARS meet Friday fortnightly at All Saints House, Romford Road, Chigwell Row, Essex, IG7 4OD between 7.45 and 10pm. January 4th is a talk on TV DX'ing & Satellite TV by Selim Alpuvan 2E0EKF and 18th is a talk on The Work of the RSGB's EMC Committee by Colin Richards G3YCR and Robin Page-Jones G3JWL. All visitors will be made most welcome.

HAMPSHIRE

Fareham & District ARC

Contact: Ken Sapsed
Tel: 023 9279 7240
E-mail: secretary@fareham-darc.co.uk
Website: www.fareham-darc.co.uk/
Fareham & District Amateur Radio Club meets on Wednesday evenings from 7.30pm in the Portchester Community Centre, Westlands Grove, Portchester, Fareham PO16 9AD. December 19th it's Short talks and A Review of The Year plus mince pies and on the 26th there's no meeting but meet on the air on 2m at 8pm.

Horndean & District ARC

Contact: Stuart Swain
Tel: (02392) 472846
E-mail: g0fyx@msn.com
Website: www.hdarc.co.uk
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. January 22nd is a quiz night arranged by Arthur G0JRN and February 5th is a natter night/social evening.

HUMBERSIDE

Hull & District ARS

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

Bromley & DARS

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

LANCASHIRE

Oldham RC

Contact: Christopher Cunliffe G7OOD
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.

LONDON

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 2nd Thursday of the month at Winchmore Hill Cricket Club, The Paulin Ground, Firs Lane, Winchmore Hill, London N21 3ER at 7.30pm.

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.

SHROPSHIRE

Telford & District ARS

Contact: Mike Street G3JKX
Tel: (01952) 299677
E-mail: mjstreetg3jkx@blueyonder.co.uk
Website: www.tdars.org
The Telford & District Amateur Radio Society meets on Wednesdays at the Community Centre, Bank Road, Dawley Bank, Telford, Shropshire TF4 2AZ at 8pm. December 26th the HQ is closed but there is a Society net on 144.6MHz ± and GB3TF and January 2nd is HF OTA, open house and committee meeting.

SOMERSET

South Bristol ARC

Contact: Len Baker
Tel: (01275) 834282
E-mail: g4rzy@msn.com
Website: www.sbarc.co.uk
South Bristol Amateur Radio Club meets at the Whitchurch Folkhouse Association, Bridge Farm House, East Dundry Road, Whitchurch, Bristol BS14 0LN. December 19th is the Christmas Social, 26th the club is closed, January 2nd is an On the Air Night, 9th is a display of the club archives, 16th is a Technical Matters Forum and 23rd is Computer Training Software.

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
Thornbury and South Gloucestershire Amateur Radio Club meets in the United Reform Church Hall, on the corner of Chapel Street and Rock Street, Thornbury at 7.30 - 9.30pm. December 19th is the Chairman's Quiz and Social. January 2nd there is no meeting, 9th, 23rd and 30th are all On the Air Nights and 16th is a Video night.

TYNE & WEAR

Tynemouth ARC

Contact: Tony Regnart
E-mail: tony.regnart@gmail.com
Website: www.gx0nwm.co.uk/
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'. December 21st is an Operating and Morse Night,

28th is the Christmas break, January 4th is 'Vot I got from Santa', 11th and 25th are Operating and Morse Nights, 18th is a talk on Magnetic Baluns by Glen G0SBN.

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 2 metre antenna for radio operation using the club callsign G0NEQ. December 17th is arrangements for the New Year Lunch and discussion for impending AGM, January 21st is an On the Air Night (this is an amendment and replaces AGM which has been re-scheduled for February 4th) and 23rd is the New Year Lunch.

Wythall Radio Club

Contact: Chris Pettitt G0EYO
Tel: (07710) 412 819
E-mail: g0eyo@wythallradioclub.co.uk
Website: www.wythallradioclub.co.uk
Wythall Radio Club is based at Wythall House, Silver Street, Wythall, near Birmingham B47 6LZ. They meet every Tuesday at 8pm and meetings are informal and friendly.

WEST SUSSEX

Brighton RC

Contact: Reg Moores
Tel: (01273) 503869
Radio Club meets on the second and fourth Tuesdays of each month at the Vallance Community Centre, Sackville Road, Hove, at 7.30pm. Anyone wishing to know more are welcome to come along to a meeting, entrance is free.

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. December 22nd is Waters and Stanton Christmas Cracker Deals from 9am to 5.30pm, 25th is the Christmas Day net on 3.722MHz at 10am and January 3rd is a Mystery Slide Show.

WEST YORKSHIRE

Pontefract & District Radio Club

Contact: Colin G0NQE
Tel: (01977) 677006
E-mail: info@pontefractradioclub.org
Website: www.pdars.co.uk
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. December 20th is a Pie and Peas Christmas Special, January 8th and 15th are construction evenings (materials and parts provided).

WILTSHIRE

Trowbridge & District ARC

Contact: Ian Carter
Tel: (01225) 864698
E-mail: ian.l.carter@btinternet.com
Website: <http://uk.geocities.com/tdarc@btinternet.com>
Trowbridge & District Amateur Radio Club meets at Southwick Village Hall, Southwick (nearest postcode is BA14 9QN). On January 16th, the club will hold their Annual General Meeting starting at 8pm. 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.

WORCESTERSHIRE

Worcester RAA

Contact: Daniel Thompson
E-mail: m3jtt@hotmail.co.uk
Website: <http://g0wxt.demon.co.uk/>
Worcester Radio Amateurs Association meets at the 3rd Worcester Scouts HQ, Vicar Street, Off Rainbow Hill, Worcester WR3 8EU.

Kenwood TM-D710E Dual Band Mobile



required data connection to enable it to be an *Echolink* node.

The TM-D710E comes as a two-part rig – it has the main radio unit measuring 140 x 44 x 142mm with protrusions and a detached front panel measuring 156 x 71 x 56mm with protrusions. The '710E front panel unit is a bit larger than that of the '700E but as you can see from the photographs of the mobile installation, the head unit fitted in my car without any trouble, **Fig. 1**.

Thumbs Up!

Initially, I was not at all convinced about the increased size of the head unit. However, it got a huge 'thumbs up' from my better half, **Diane M3HJN** and a good friend of mine (and '700E owner) **Steve Rann G1YNY**.

The TM-D710E screen is easier to see than its predecessor and the information on it is much easier to read. This is especially true when operating in APRS mode as you can choose to have station information across the whole screen; there's now more information displayed and also the ability to send more information as well.

In the end, as always, I had to agree with Diane that the display on the TM-D710E was a hit. You can even choose whether you want an orange or a green back light!

Operation of the rig is much easier, access to the menu function and the more frequently used options are conveniently to hand. You also have the ability to programme two **PF** keys with your own menu choices for quick and easy access.

The head unit has a mini DIN connection for use with the optional extra PG-5G data cable when connecting the built-in TNC to a computer. It also has the 2.5mm jack socket connection on it and this is for connecting the rig to a compatible GPS or Weather Station.

The rig is supplied with a ready to use cable terminated in a 2.5mm stereo jack for the operator to add to your GPS or Weather Station data lead. Putting these connections on the head unit has made it a lot easier to connect the required additions to the rig for some of the

Since Kenwood introduced the ground breaking TM-D700E Automatic Packet (Position) Reporting System-ready rig with built-in packet modem to the market some years ago, I've been waiting for other similar radios to follow. However, although we have seen some transceivers arrive with some great features, the '700E seems to have set the bar for the mobile Packet/APRS operator, until now as Kenwood have released the Kenwood TM-D710E. Yes, the wait is over and the best bit? I've been asked to take a look at it for *PW*!

An Overview

I'll look at each main feature in detail but first I think it's best to provide a bit of an overview. The purpose of this review is to look at The Kenwood TM-D710E. However as a very satisfied owner of a TM-D700E it is going to be difficult not to do just a few comparisons!

The Kenwood TM-D710E is true dual v.f.o, dual-band Amateur Radio rig covering the 144 and 430MHz bands. It also has extended receive coverage, which may be of interest for those with an interest in Air band and Marine band.

In addition to being a well-made and feature-packed dual-band rig, the TM-D710E also boasts a built-in TNC and built-in firmware for the Automatic Packet (Position) Reporting System operation, built-in firmware and the

Richard Newton G0RSN takes a look at what he considers to be a very special mobile rig. As Richard discovered – it's a mobile with a host of extras and he quickly found himself using the versatile rig at home and in his car.

more advanced data features, GPS and laptop for example. These connections were on the main body of the rig on the '700E and because the radio invariably goes under a seat or in the boot, Kenwood have made making these connections a much easier and less back-breaking exercise by putting them on the head unit.

The rig comes with two mounts for the head unit. There's a small mount for use in the car – this is the same size as the mount for the '700E, great for me as I only had to clip the '710E head on my existing set up! The other head mount is far more substantial and is supplied for when the rig is being used as a base station, **Fig. 2**.

The larger head mount comes with rubber feet and is a really good size and weight. I set the rig up at home and found the base extremely stable, no matter what I button I pressed or what control I twiddled – it stood resolutely still. Incidentally, the base has pre-drilled holes if it has to be anchored a bit more effectively.

I was able to easily fit the rig into the car and had routed the new separation cable for the head unit and re-route my GPS cable to fix into the head of the '710E. It was all done in half an hour and I was up and running! The head unit was mounted down on the centre console, with the radio under my driver's seat.

It's possible to connect two external speakers to the '710E and these can be configured along with the two different bands. but I soon found it was possible to hear sufficiently well with the rig's internal speaker, even when it was under the driver's seat.

Truly Separate VFOs

The Kenwood TM-D710E provides the user with two separate v.f.o.s, **Band A** and **Band B**. Both bands can be used independently, thus setting this rig aside from radios that are described as 'dual-band' but only one band can be used at a time. The v.f.o.s are independent, therefore both could be used for v.h.f. or both used for u.h.f. frequencies. (This is particularly useful when using the APRS system).

In practice during the review I tended to have **Band A** set to the APRS frequency of 144.8MHz – this operates totally automatically with the volume turned down. **Band B** is then set to monitor 145.5MHz.

I also have local u.h.f. repeaters saved in memories, I can happily then tune Band B to any Amateur v.h.f. or u.h.f. frequency I desire and have the **Band B** audio output turned up to let me chat away to my heart's content. The TM-D710E also offers extended receive capability on each band.

Band A offers an extended range of 118 – 524MHz for the Air Band using amplitude modulation (a.m.), it also supports 8.33kHz channel spacing. **Band B** offers extended receive coverage from 13 to 524MHz and 800 to 1300MHz.

Formidable Mobile!

Even before considering the advanced data additions on the TM-D710E, it's still a formidable dual-band mobile rig. It offers 1000 memory channels, full DCS and CTCSS capability, 50W transmit power on both bands and many other features you would expect to see on a modern mobile rig.

Many of the features are complimented with the use of the MCP-2A operating software, this is a free download but you will need the PG-5G data cable which is an optional extra. Using this software you can configure the rig and



Fig. 1: Fitted in the car, the TM-D710E's head is slightly larger than its predecessor's.



Fig. 2: Fitted at home, and showing the alternative display background colour.



Fig. 3: The '710E acts as a stand-alone Packet Radio unit.

even set a security password to prevent the rig being used by any unauthorised user.

The '710E has three power settings. **High** power is 50W, the **Mid** power level is 10W and for those concerned about their carbon footprint there is also a **Low** power setting of approximately 5W.

I liked the fact that the mid power level has been set to 10W, despite the fact this is different to the more widely used 25W setting on the TM-D700 and other similar mobile rigs. I am assuming that this is to accommodate the Novice Licence conditions, if my assumptions are correct then I say, "well done Kenwood!"

The TM-D710E has an AX25 protocol packet modem built-in, **Fig. 3**. This means that with the use of the optional extra of a data lead and a computer, the rig gives the user easy access to any packet operation without the need for a separate TNC.

The '710E is able to use its built-in packet modem in conjunction with some built-in firmware to enable it to operate as a stand alone station using the **Automatic Packet/Position Reporting System**, otherwise known as APRS. This means that you need nothing else to get this rig on the air using APRS, **Fig. 4**.

Put simply, the APRS system uses data transmitted by packet radio via a network of repeaters called nodes on one internationally designated frequency of 144.8MHz. This can be received by stations and used to plot the positions of stations on a map. These can be either static stations or – with the addition of a Global Positioning Satellite (GPS) equipment – moving stations. The International coverage can be extended by the use of Internet Gateways.

Moving stations can be tracked on a map using software such as UI-View, the more often they 'beacon' (sending an updated position) the more often they are seen to move on the map. And when the icon is double-clicked it's possible to see enhanced information, such as speed, distance, bearing and even altitude.

Mobile operation with APRS using the 'TM-D710E requires a GPS unit, capable of outputting NMEA data to the rig using the socket provided. The '710E is ready to receive NMEA data strings and will do everything else – it's just plug in and go!

I had wondered – as we have innovations coming thick and fast – whether we may see a Bluetooth option with connectivity to GPS? This would have been very useful but I don't know how technically feasible this is. So, for now you still have to plug in the wire.

Music And Then A QSO!

The APRS facility can also be used to send text messages to stations. In fact, as I was writing this review I had the '710E sat next to me on the desk with the APRS function turned on and all of a sudden it made a little musical noise and the display started flashing with a message I had received from **Dave G1OCN** in Portland, Dorset. Messaging on the '710E – just using the radio – is a bit fiddly and after a couple of messages Dave and I went over to voice and had a conversation via the local Bournemouth repeater.

Dave runs an APRS weather station and was interested in the '710E's ability to connect direct to a weather station without the need for software.

Although the QSO was via a repeater, Dave was very complimentary about the audio from the TM-D710E. We were then joined by another old friend of mine, **Simon G0FOZ**. Simon, despite being hard at work at home near Christchurch in Dorset agreed to move to a simplex frequency to give me a report on the audio.

Simon had this to say, "Sounds very good Richard, crisp

and fully deviated, rounded and fully readable." He also said that the audio packed quite a punch and that at sat at home on his Icom IC-7000 this did seem very punchy but it was the kind of audio that he really appreciated hearing when mobile, as it would over-ride the ambient road noise very effectively.

Note: It is possible to connect a weather station to the TM-D710E. The handbook seems to suggest that the rig will accept two types of weather station, the Davis or PeetBros for direct connection. All the information will then be transmitted and will appear on other people's maps as a **WX** icon and when it's double clicked it will reveal weather information from that station, **Fig. 5**.

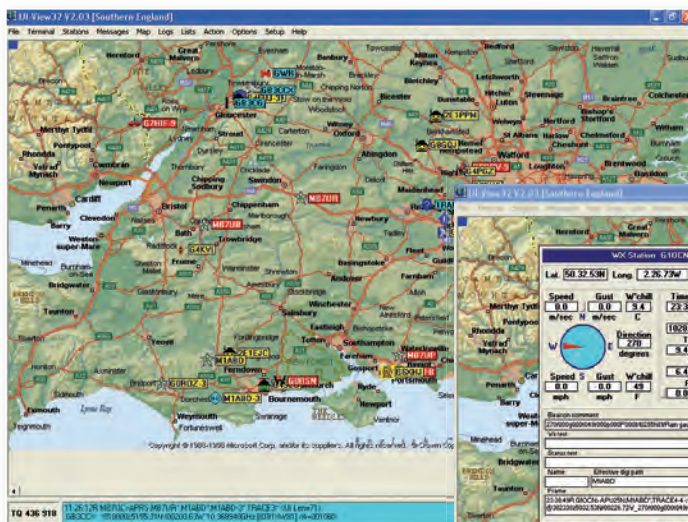


Fig. 4: An APRS display on a PC's screen.



Fig. 5: Clicking on a station's APRS icon can show that station's weather (if it's available).

Interested In DX?

For those operators interested in DX, there's a facility on packet radio where DX cluster stations

broadcast up-to-the-minute information on DX spots. The Kenwood TM-D710E can be tuned to the local DX cluster frequency and will automatically receive and display the information as it is broadcast.

The rig also has a facility that (with the optional extra cable connected to a

compatible h.f. rig) where you can press a soft key marked **Tune** and the '710e will tune your h.f. rig to the DX spot frequency shown on its display! I'm sure someone may find that useful!

Additionally and apart from the distinctive Kenwood audio, a built-in TNC and all the other features the 'TM-D710E also has built-in Voice over Internet Protocol operation (VoIP) and this is a system in which audio is passed over the Internet. I'm sure lots of you will be familiar with Skype, MSN and other software packages that enables users to talk to other people via a PC.

There are also software packages available for Radio Amateurs, such as *EchoLink* and *eQSO* which enable you to interface a radio to a PC and therefore give you a voice portal to the internet.

Note: The TM-D710E is advertised as having *EchoLink* memories included and is able to be an *EchoLink* node or link. However, the memories and the ability to be a link or node are two completely different functions. Also, by using the proprietary name, 'EchoLink', Kenwood may have caused a little confusion. I'll now try and explain why*!

Note: Please see reply panel from Kenwood UK. **Editor.**

EchoLink Program

The software programme *EchoLink* is in fact available from <http://www.echolink.org> using Voice over Internet Protocol. It's just one of several Amateur Radio software packages

available, perhaps the most well known alternative being *eQSO* this is available from <http://www.eqso.net>

The difference between the two is that *EchoLink* is a series of point-to-point nodes, using unique number identifiers. Normally one station connects to another and it would be unusual for more than two or three to be connected together.

In practice, *eQSO* is more like a chat room where many stations connect to one central point and everyone hears what's going on and everyone hears everyone else. If the local node, link or gateway is running *eQSO* you'll call up like you were listening through a repeater, it just that the repeater has world wide coverage depending on the gateways that are connected at the time you call.

If your local VoIP node on 430.05MHz and is running *EchoLink*, you would call up on that frequency and take pot luck that it was connected to another node across the internet. If however, you knew the unique number given to the node you wanted, you could send a connect request over the air using DTMF tones. The *EchoLink* software will then connect to that remote gateway station and you will be able to communicate with anyone who can hear that gateway, disconnecting when you have finished.

The TM-D710E can store up to 10 dedicated memories representing the code numbers of your favourite remote Echolink nodes. The '710E differs from most other mobiles in that it has a VoIP interface built-in and ready to go. This is not referring to the rig being used to access a node, instead it's actually being used as a node.

Where Kenwood have described the system as *EchoLink* they could have caused confusion as it's just as able to be used as an *eQSO* gateway (the protocol is the same) and it's just the software and what it offers that's different. Incidentally, to set up a gateway or node in this country you have to have a Notice of Variation (NoV), fortunately I have one and already run a modest local link on 430.050MHz.

Simple Interface

I had been using a simple interface that I built from bits and cost me less than a 'tenner'. I had used an old crystal controlled PMR rig re-tuned to 430.050MHz and had quite good results but it took me a good while to get it all set up.

With the TM-D710E all you need is a PC, the software (either *eQSO* or *EchoLink* for example) and the PG-5H PC interface cable. All I had to do was just tune to the correct frequency, set up the rig to 'EchoLink sysop' mode and adjust the software settings on the PC – it's that simple! Finally, I think it's important to note that the two major features of this rig, APRS and the VoIP Sysop mode cannot be used together.

So how did the rig shape up? Well in my humble opinion the '710e is a worthy successor to my beloved TM-D700E. I'm truly amazed at what can be achieved in a mobile rig nowadays!

In fact, the progress achieved in modern rigs got Simon G0FOZ into reminiscing about his old FT-290 and I was thinking back to my Trio TR-2300. They were great rigs and ground-breaking at the time, I still treasure my '2300!

The hobby has always been about development and seeing my Kenwood/Trio TR-2300 and the TM-D710E side-by-side just amazes me. The Kenwood TM-D710E offers a huge amount of potential in one little box – so what will they think of next? I can't wait to find out!

Product information

Product

Kenwood TM-D710E dual band mobile transceiver

Company

Kenwood UK Ltd.

Contact

Tel. (01923) 816444

Fax: (01923) 212477

Pros & Cons

Pros

The TM-D710E is a worthy successor to my beloved TM-D700E....I'm truly amazed at what can be achieved in a mobile rig nowadays!....The Kenwood TM-710E offers a huge amount of potential in one little box.

Cons

Some possible confusion may be caused by Kenwood's use of the term 'Echolink' (see reply panel from Kenwood UK)

Price

(Recommended) £449.95

Supplier

My thanks for the loan of the review transceiver go to

Kenwood UK,

Kenwood House,

Dwight Road,

Watford,

Hertfordshire WD18 9EB.

Telephone: (01923) 816444

Fax: (01923) 212477

Web: www.kenwood-electronics.co.uk



Reply From Kenwood UK

In the "Interested in DX?" section Richard G0RSN stresses that the *EchoLink* memories and *EchoLink* node operation are two different functions, the implication being that we suggest they are one function? Yes he's correct – they are separate and both our Instruction Manuals (the printed basic one and the CD-ROM full-features version) do explain this in detail. I'd also note that all our Instruction Manuals' references to '*EchoLink*' include full acknowledgement to **Synergenics LLC** who own the '*EchoLink*' trademark – the header section of page 1 of the APRS section in the full-feature manual is a good example and there are frequent references to www.echolink.org as a source of more information. Regards to you all.

David Wilkins G5HY

Area Sales Manager - Communications Division
Kenwood Electronics (UK) Ltd



rallies

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

Send all your rally info to:

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

Please note: rally organisers must provide a contact name & telephone number for inclusion in this section.

2008

January 27th

Horncastle Winter Rally

Contact: Tony Nightingale
Tel: (01507) 527835
E-mail: G3ZPU@hotmail.com

The Horncastle Winter Rally will be held at the Horncastle Youth Centre, Willow Row, Horncastle LN9 6DZ. Tables cost £5 and entry for visitors is £1. The venue is all on one level, making access easier for disabled visitors. Usual refreshments will be available, including hot bacon butties. Doors open 10.30am.

February 3rd

RadioActive Rally

Contact: Roger Reeves M0ROJ
Tel: (01829) 771440
E-mail: info@RadioActiveShow.co.uk
Website: www.RadioActiveShow.co.uk

The RadioActive Rally will be held at Civic Hall, Nantwich Town Centre, Cheshire CW5 5DG. Doors will open at 10.30am and admission will be £3 (under 16 free). There will be over 100 trade stands and covered flea market, a Bring & Buy, Special Interest Groups, talks and demonstrations, a licensed bar and restaurant and disabled facilities.



South Essex ARS Rally

Contact: Ken G0BBN
Tel: (01842) 861089
E-mail: Hendryken@aol.com

The South Essex Amateur Radio Society Rally will be held at 'Paddocks', Long Road, Canvey Island, Essex SS8 0JA. There will be free car parking with a disabled persons area at the front. Admission is £2 and doors open at 10.30am. There will be trade and club stands, home made catering and a 'Rent-a-table' option for private sellers (£3.50/hr).

February 8th - 10th

Orlando Hamcation

E-mail: hamcation@oarc.org
Website: www.hamcation.com
Orlando Hamcation takes place in the Central Florida Fairgrounds, Orlando, Florida, USA. They have a mix of traders, boot sale and flea market traders. They also have classes for the ladies in case they don't wish to walk around all the radio bits! Tickets cost \$10 for the three days and parking is free.

February 10th

Harwell Radio & Computer Rally

Contact: Ann Stevens
Tel: (01235) 816379
E-mail: Ann.Stevens@btinternet.com
Website: <http://www.ntay.com/hars/rally.html>

The Harwell Radio & Computer Rally will be held in the Didcot Leisure Centre, Mereland Road, Didcot, Oxon OX11 8AY. This rally has been going for 12 years and they have moved accommodation four times! They now seem settled in the Didcot Leisure Centre where they enjoy warm, comfy accommodation - essential for a rally run in February! Last year the number of people attending was up by 12% on the previous year and they hope that this trend will continue. They have the advantage of running their rally at the beginning of the season and also of being very centrally situated near good road systems - midway between the M4 and M40 and 3 miles off the A34 halfway between Oxford and Newbury. The rally still consists of about 70% radio stalls, which attracts lots of visitors. They also have an RSGB stall, Special Interest Groups, computer stalls, a small selection of craft stalls, a bar and homemade refreshments at very competitive prices - indeed some traders only come if Sarah's homemade chocolate cake is on the menu!

The 17th Northern Cross Rally

Contact: John G7JTH
Tel: (01924) 251822
E-mail: g7jth@wdrs.org.uk
Website: northerncrossrally.org
The Wakefield and District Radio Society are holding their Northern Cross Rally at Thornes Park Athletic Stadium on the A642 Horbury Road, Wakefield WF2 8TY. The dealers are on the ground floor and there is good disabled access. The Bring & Buy has booking-in from 10.15am. Doors open

from 10.30am with disabled access from 10.15am. There will be ample parking on site and admission is £3.

February 24th

Bredhurst R&TS Radio Rally

E-mail: O.wheeler@btpenworld.com
The Bredhurst Receiving & Transmittings Society Radio Rally will be held at Rainham Girls School, Derwent way, Rainham, Kent ME80BX, just off the A2 & M2 J4. There will be car parking, special interest 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 The Aquadrome, Afan Lido, Aberavon Seafront, Port Talbot SA12 6QW. There will be trade stands, a Bring & Buy and special interest groups. Doors open at 10am.

March 1st/2nd

MOVOG Radio Club Rally

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.

Cambridge and District Amateur Radio Club Rally

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 metres 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

8th Junction 28 QRP Rally

Contact: Mark Vardy 2E0IQO
Tel: 07976967721
The 8th Junction 28 QRP Rally will be held at Alfreton Leisure Centre, Church Street, Alfreton, Derbyshire DE55 7BD. Doors open 10am and there will be better on-site car parking. There will be Amateur Radio and electronics traders as well as a Bring & Buy, Special Interest Groups and refreshments.

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
The Lagan Valley Radio Rally will be held at Lagan Valley Hospital, 39 Hillsborough Road, Lisburn, Northern Ireland BT28 1JP. Doors open 11.30am.

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 Euro.

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. It's the largest single day exhibition in the country. Morse tests will be available at the show.

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 NAAFI 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, Bring & Buy, catering and free parking. Doors open at 10.30am (10.15am for disabled). Talk in on 145.550MHz.

...stop press... **Martin Lynch gets D-STAR repeater licence** ...stop press...

For further information on this exciting new D-Star repeater with internet gateway, see the ML&S web site.

The latest D-STAR repeater to be licensed in the UK is GB7ML run by Martin Lynch G4HKS of the Ham Radio company Martin Lynch and Sons Ltd.

The Licence Notice of Variation (NoV) was issued by the UK regulator Ofcom on Thursday 15 November.

The Icom IC-RP4000V repeater will be located at their Chertsey HQ in Surrey.

IARU Locator IO91RJ,
NGR TQ041668,
Lat/Long 51.391144 -
0.504657
Output: 439.9125 MHz
Input: 433.9125 MHz

GB7ML Coverage Map
www.ukrepeater.net/repeaters/gb7ml.htm

UK Repeater Vetting Page
www.ukrepeater.net/vetting.html

Mini VNA PC Controlled Antenna Analyser

The mRS miniVNA is a compact 100kHz to 180MHz antenna analyser interface that is operated via a PC powered by a single USB connection. You can see at a glance where the antenna is resonant, what the SWR and the return loss is. The best (minimal) SWR frequency is automatically found and displayed. An optional internal RS232 connection is also available.



Technical Specifications:

- Frequency coverage 0.1MHz to 180MHz
- DDS Generator with 0 dBm output
- 2 BNC Ports allow Transmission Measurements e.g. filters, traps
- USB 1.1 and USB 2 compatibility
- RS232 optional socket for Pocket PC's or Remote Displays
- Fast Scan (typical 0.6 sec for 500 points)
- Use of an internal Industrial Directional Coupler
- High Reflection Dynamic Range 40dB to 35dB (VSWR 1.06:1 or better)
- Wide Transmission Dynamic Range > 50-55dB
- Measures VSWR, RL, Rs, Z +/-jx, Phase, Cable length, R/L/C
- Finds Minimum VSWR automatically
- New transparent box with LED indicators for the operation status
- In-Circuit-Programming for future firmware onboard CPU upgrades
- Operation from 3.6V Phone Batteries possible (current drawn <150mA)
- Software compatible with Windows and Linux operating systems.
- Save and Load of previous measurements
- Software for Pocket PC available

ML&S Price

£184.95



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This very popular Autotuner from MFJ lets you tune any antenna automatically balanced or unbalanced - ultra fast. It's a comprehensive automatic antenna tuning center complete with SWR/Watt-meter, antenna switch for two antennas and 4:1 current balun for balanced lines. What will it tune? Just about anything! End feds, open wire feeders, beams, dipoles, G5RV's you name it.

Only £189.95

MFJ-974HB 160 Thru 6 Meters Balanced Line Antenna Tuner.



The MFJ-974HB is a fully balanced true balanced line antenna tuner. It gives you superb current balance throughout its very wide matching and frequency range.

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If you want a good reliable All-in-One ATU this is the one for you. Worldwide reputation for being able to match just about anything.

£124.99

MFJ-259B/L



Range: 1.8-170MHz. HF frequency coverage. Keeps your antennas in check. Complete pictures of your antenna's performance. You can read antenna SWR and Complex Impedance 1.8 to 170MHz.

£199.95

MFJ-269 1.8-450MHz version of the above. £239.95 Add an MFJ-29C Carry Case for only £22.95!

MFJ-971

Portable ATU, 1.8-30 MHz 200W cross needle SWR/PWR. An ideal QRP ATU. Easy to use and very compact. QRP Portable ATU

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£59.95 Only £49.95 this month only!

MFJ-16010 Mini Random Wire 100W ATU. Just plug your HF transceiver on one end, throw out some wire out of the window and tune. Nice and compact (only 2 x 3 x 2 inches)

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As featured in CQ magazine in Japan! Yet another new antenna system from WonderWand products. 20-10M Portable dipole for any rig with an SO-239 Socket. 40 Watts PEP. Only £129.95



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WonderWand TCP

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*UK airspace from March 2005 and for all categories of flights in all other airspace from March 2008.

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The NEW Icom IC-7700 HF/6m All Mode Base Transceiver

Remember our information on the Icom X3? We may have got the number wrong but here is a fantastic looking new HF & 6M radio from those very clever guys at Icom Japan. The new Icom IC-7700 is a self-contained, top-performance HF/6m transceiver closely related to its "bigger brother", the IC-7800.



RRP: £3999.95
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Capable**



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HF + 6M + 2M + 70cms
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Just superb on all
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The best selling Kenwood H.F. Can be
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- Two Versions, 100W and 200W
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HF & 6m full DSP



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The Ranger 811H uses four vertically-mounted 811A valves to produce 800W on the Amateur HF bands. As with all our models, the Ranger has a toroidal transformer providing the power into a voltage doubler board. The voltage doubler is used in preference to a bridge rectifier as it keeps the AC volts down.

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Using a single 3CX1500A7 ceramic triode valve due to its rugged construction and high gain. There is a massive 2.2kVA toroidal transformer producing 3200V after the voltage doubler board. The Challenger will cover all the HF bands, 10m - 160m with separate band switch positions for the WARC bands.

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200W and 200 memory channels.


- Tunable frequency: 1.8 - 30 Mhz with long wire antenna from 8 meters
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- Input power: 10 - 200W PEP
- SWR: <2:1
- Power supply voltage: 12V +/- 10%
- Current consumption: <0.8A
- Auto tuning time: Approx. 2 seconds (first time tuning) Less than 1 second (return to memory frequency)
- Memory channels: 200
- Weight: 1.8 KG
- Size: 310 x 240 x 72mm (L - W - H)

As reviewed by Steve White in Radcom

"A real bargain when compared to its obvious USA competitor" "Well built & performs impressively"

Steve White, Radcom November.

CG-3000 shown with optional remote switch.



NEW! Remote control for the CG-3000. £29.95


NEW MYDEL CG-5000

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

Specifications:

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- Input impedance: 45-55 ohms
- Input power: 10 - 600W PEP
- SWR: <2:1
- Power supply voltage: DC 13.8V
- Current consumption: <1.5A
- Memory channels: 800
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Paddy Board Construction

I've noticed that a couple of *PW*'s contributors have mentioned the 'Paddy board' system without giving any details. I have used this method of construction for nearly 20 years and now I am a confirmed paddy board fanatic.

At the age of 85 I'm still building simple rigs and have developed methods, which are not only tolerant of the frailties of old age but also suitable for novices.

The advantages include :-

- 1: No ferric chloride or 'super glue'.
- 2: No drilling.
- 3: Convenient for modular construction of transceivers and test equipment.
- 4: The boards are re-usable, one day being part of a transmitter and the next day being part of a receiver.
- 5: Modifications are very simple, speedy and easily reversible.

6: The components are nearly always re-usable.

7: Work only on the top of the board, no need for clamps or bench vice.

8: The ability to test single units and combinations of units before final assembling into a case.

Double Sided Board

My projects are based on double-sided printed circuit board (p.c.b.) material, cut to 102 x 51mm (4 x 2in), and with the aid of a hacksaw blade and jig, divided into 12mm (half inch) squares on one side only. The boards after tinning (recommended) look like the example in Fig. 1.

I first saw this system used in an American book and got the idea of the jig from a book by **Drew Diamond VK3XU**. I produced a prototype jig in wood and then handed it over to my friend **Eric Hodgson G3RAR** who produced the items below.

The jig takes a piece of circuit board material 102 x 102mm (4 x 4in) – two of my modular units. The cutting tool is engineered with the hacksaw blade protruding just far enough to make the squares without cutting through the board, Fig. 2.

First, the board is slid under the guides one way and after making seven cuts at intervals of 12mm (half an inch), as indicated by the slots in the metal guides. The board is turned 90° and a further seven cuts are made and this produces 64 'islands'. Next, the board is cut down the centre to produce two boards of 32 pads, as shown here.

Designing Lay Out

When designing the layout of a board, I first used pencil and graph paper (with lots of erasing and redrawing!) and later Microsoft Paint but more recently have used a drawing programme produced by Serif called *Draw+4*. This is a free download and I have since advanced to *Draw+6* at the huge cost of £9.99!

There's a library of electronic components on the disk that accompanies the program but I have designed my own. First of all, I import the circuit diagram of interest from a scanned

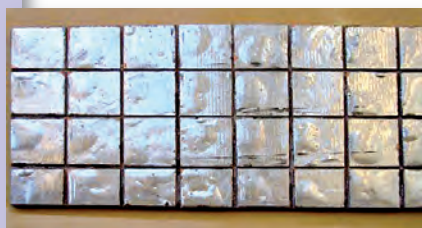


Fig. 1: A regular matrix of 'islands' is the essence of this method of building.



Fig. 2: the metal-sided jig and hacksaw blade (held in two lengths of aluminium for support) for cutting the copper-cladding of the p.c.b. material.

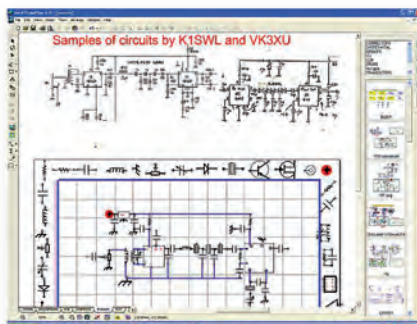


Fig. 3: Using Serif Software's Draw+6 programs for the circuit diagram.

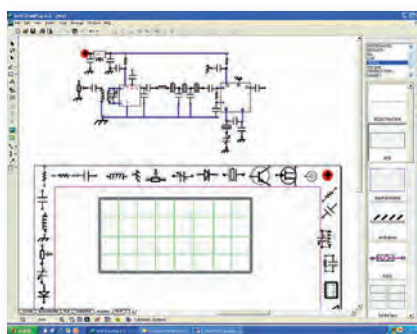


Fig. 4: Starting to do the layout in Draw+6.

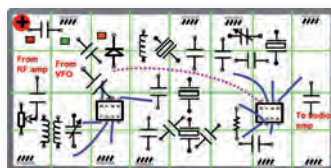


Fig. 5: The finished layout is printed out.

Stan Harle G3MEA is a self-confessed 'paddy board' fanatic. In his article Stan aims to encourage other readers to go 'paddy boarding' and get the most out of the simple but neat constructional technique.

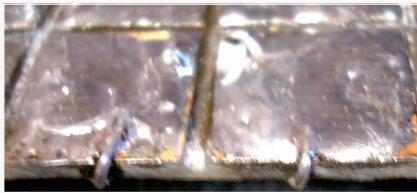


Fig. 6: The uncut side of the double-sided p.c.b. material is used as an 'earth' plane by connected islands to it.

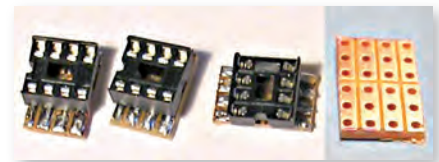
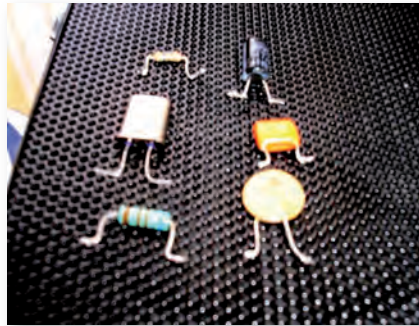


Fig. 8: A small piece of Veroboard serves as a daughter-board to mount 8-pin integrated circuits on.

Fig. 7: All components have their 'legs' formed to the same size and shape.

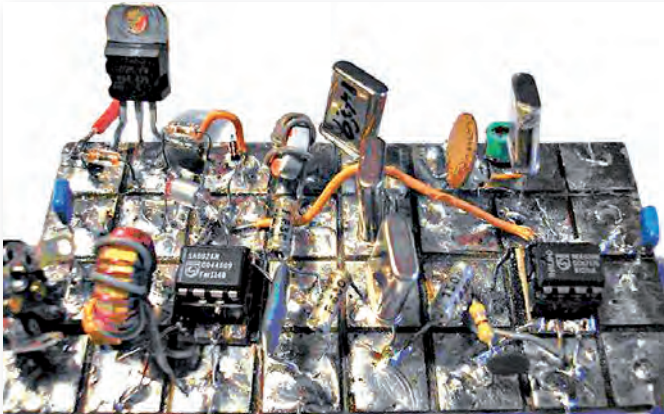


Fig. 9: A closer look at a finished module.

copy of the publication (in this case a mixer, crystal filter and product detector). As a result of experience I've gained, I often modify the circuit and redraw it before starting on the board planning stage.

An example of the programme at this stage, is shown in **Fig. 3**. At the top of the page is the imported information from two sources and below is the redrawn circuit as I intend to build it. Please note – this is not a technical radio lecture, instead it's just a few practical suggestions for a method of construction!

To design the board I delete the imported circuits from the top of the page and move my proposed circuit to take their place. The I would I discard the squared background I was using for placement guidance and replace it with an outline of my 102 x 51mm paddy board, **Fig. 4**.

Next, I would start placing components in the pads.

My finished version is shown in **Fig. 5**. (Time spent fine tuning this planning is never wasted!).

When designing the board, it's important to try and make the earthed squares marked at the edges. This is to avoid drilling through to the ground plane on the back of the board to make a contact or having a long lead introducing instability. Instead, a wire (part of the surplus lead on a resistor or capacitor) is soldered as shown below to join a pad to the ground plane. I usually do the earth points first, **Fig. 6**.

Start Building!

Finally, I could start building! Each resistor, capacitor, crystal and inductor has its leads pre-formed – regardless of its position on the board (some examples are shown in **Fig. 7**).

Any integrated circuits (i.c.s) are mounted on prepared sockets mounted on Veroboard and attached to the board with double-sided tape (see **Fig. 8**).

So what am I aiming for? My finished product is shown in **Fig. 9** and I'm sure you can do a neater job but think before you leap! Making the pads smaller has attractions but remember you could pre-form all the components without any measurements and these components can be moved to another position – or even another board without any adjustment.

The photograph, **Fig. 10**, shows a complete receiver laid out in bread board fashion using this system. There's even a complete transceiver in a case in **Fig. 11**. Note the power amplifier (p.a.) board is not a standard type. Try Paddy board construction yourself and join in the fun!

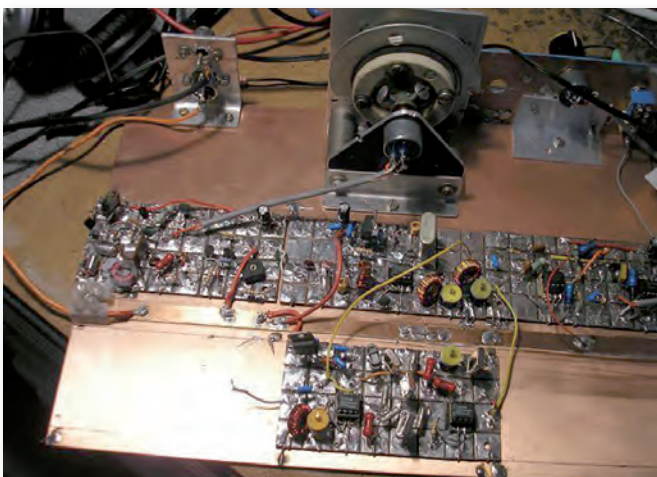


Fig. 10: A complete receiver made using the Paddy board technique.

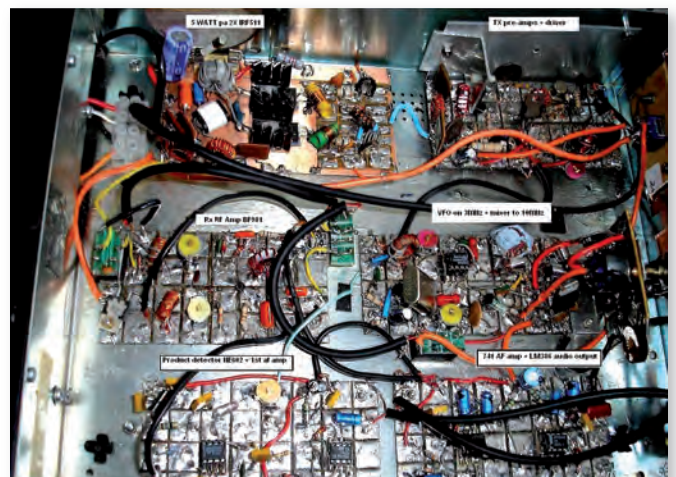


Fig. 11: And a more complex transceiver using this technique.



Colin Redwoods's

what next?

Colin Redwood G6MXL welcomes readers to his new column.

New Series!

Colin says: I aim to cover the multitude of topics that don't appear on examination courses. If you've just got your licence and you're wondering what to do next, or have a question that's puzzled you for years – I'm the man to ask. So, it's next question please!

Welcome to the first *What Next?* column. The series is intended to provide practical ideas and suggestions for those new to Amateur Radio, those who may be returning to the hobby after a gap of a number of years and those already established wishing to explore a different aspect of the hobby.

As you might expect from a magazine with the title *Practical Wireless*, the emphasis will be firmly on practical suggestions, with theory kept to an absolute minimum. Subjects to be covered in the first few issues are likely to include setting up a station, choosing a transceiver, choosing and erecting antennas and getting the feeder from the outside into the house.

Completely New

Perhaps you are completely new to the hobby, and don't know where to start? Well read on, for this is the main topic of this first *What Next* article. We'll look at how to get a Foundation Licence so that you can dip your toes into the Amateur Radio 'waters'.

Having been involved in training, in later articles, I'll also offer some practical suggestions to help you get your Foundation, Intermediate or Advanced Licence.

Later on we can have a look at how to get started on high frequencies (h.f.), very high frequencies (v.h.f.), microwaves, long distance working (DXing), slow scan television (s.s.t.v.), fast scan television (normally referred to as Amateur television or ATV). We'll also look at satellites, various data modes, how to participate and enter a contest and many other aspects of the hobby. Yes, modern Amateur Radio is indeed a hobby of hobbies!

The construction side of the hobby



Fig. 1: Training for the various Radio Amateur licences takes place in many club houses around the country.

won't be forgotten but again this series will be firmly biased towards practical suggestions to help you get on the air, rather than major projects. If you are returning to the hobby after a gap of several years, you'll find that many of the suppliers of components that you used to deal with are no longer in business but the good news is that there are a number that have come along to replace them.

So, as you can see from my plans – this will be a wide-ranging column. Indeed, it's going to be so wide-ranging that it could be difficult to know where to start! However, I've decided it's better that I start at the beginning!

Although you don't need a licence in the UK to listen to the Amateur

Radio bands (the TV licence, which also covers broadcast radio, also permits listening on the Amateur bands), if you want to transmit on the Amateur Radio bands, then you need an Amateur Radio licence. This is issued in the UK by The **Office of Communications** (Ofcom), when you can demonstrate, by way of practical assessment and a multiple choice assessment (exam), that you have acquired some basic skills.

How Do I start?

If you are reading this and you don't yet have an Amateur Radio licence, you'll probably ask, 'How do I start?' In answering I'm pleased to tell you that the way you go about getting an Amateur Radio licence in the UK has been transformed over the last few years.

If you still think that you must go to night-school for months on end and be able to send and receive Morse code at 12 words per minute (w.p.m.) to get a licence to operate on the h.f. amateur bands, then you need to know that things have changed dramatically in the last few years. By the way, we no longer have Class A and B licences either!

In the UK (although they are independent of the UK as such, this also applies to the Isle of Man and the Channel Islands) we now have three types of Amateur Radio Licence. These are the Foundation Licence, the Intermediate Licence and the Advanced Licence.

Training for each of the types of licence is provided by Amateur Radio societies and clubs across the country. For the Foundation and Intermediate Licence there are practical aspects in addition to the more theoretical aspects, which are followed by a multiple-choice assessment test paper.



Fig. 2: Classes tend to be small and friendly, making learning easy for all levels of capability.

As you might expect, the Foundation Licence is the starting point for everyone new to Amateur Radio.

For readers outside the UK, please check with your own National Society and local Amateur Radio clubs for the arrangements in your own country as they do vary around the world. In many countries including Australia for example, a Foundation scheme is now operational, although the syllabus differs in detail from the UK's Foundation Licence.

No Previous Knowledge

You need absolutely no previous radio or electronics knowledge to join a Foundation Course. The good news is that maths is also kept to the absolute minimum. If you can work out that $6 \times 3 = 2$, then you'll be okay! The maths doesn't get any harder than this at Foundation level.

The course covers the absolute basics you need and includes some practical operation on the air. So that when you get your licence you will know what to do and when you need extra help *What Next?* will step in!

Foundation Course Syllabus

The syllabus for the Foundation course comprises:

An Introduction to Amateur Radio Licence Conditions and what you can and can't do.

Technical Basics, a basic understanding of Direct and Alternating Current, Voltage, Resistance and Power.

Transmitters and Receivers, the basic 'building blocks' of transmitters and



Fig. 3: All sessions are very practically based, with lots of 'hands-on' work! Colin demonstrates a piece of test equipment.

receivers and types of radio waves.

Feeders and Antennas (aerials) the 5 main types of aerials (which we call antennas) and the cable (feeder) used to connect them.

Propagation, an introduction into what happens to radio waves after they leave the antenna.

Electromagnetic Compatibility (EMC), the causes and prevention of interference.

Operating Practices and Procedures, this includes actually making some contacts on the air.

Safety, setting up and operating your radio equipment safely.

Morse Code, receiving and sending a short sentence up to 30 characters (using crib sheets if you wish).

Please don't be put off if any of the topics in the syllabus seem a little daunting. The transmitters and receivers section (for example) is about the equivalent of knowing that a car has four wheels, an engine, fuel tank and a steering wheel!

The Assessment Examination

The assessment exam comprises 25 multiple-choice answer questions with a pass mark of 18. To give you an idea of the format of the questions, a typical question from the safety part of the syllabus might be:-

If you find someone who you think has had an accident involving electricity the first thing you should do is:-

A: Apply mouth to mouth resuscitation.

B: Check their pulse.

Colin Redwood G6MXL

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C: Switch off the power.

D: Move them away from the electricity.

The correct answer is **C**! If you did anything else, you risk getting an electric shock yourself, becoming a second victim and thus be unable to help the first victim. By the way, please don't think that amateur radio is a dangerous hobby – it certainly needn't be if you are sensible, and consider possible safety risks.

Morse Code

The Foundation Course also introduces you to Morse code but don't need to learn the code, as you can use what I call a 'crib sheet', see **Fig. 4**. With this method, you can write down the dots and dashes (dits and dahs as well call them) that you hear. You then convert them to letters and numbers using the crib sheet in Fig. 4. The Morse is sent very (**very**) slowly letter-by-letter.

A typical message would be, 'M3ABC de M3XYZ my QTH is London'. Incidentally, this is far as you have to take Morse code. There is no longer any requirement to learn Morse code or to be able to send and receive at a particular speed etc., even for the Intermediate or Advance level*.

*Our new bi-monthly column *The Morse Mode*, written by **Roger Cooke G3LDI**, starts in this issue. It's aimed at encouraging anyone who wants to try, or improve their Morse – the 'extra special ingredient' that can almost guarantee a QSO (a chat) 24-hours per day on the bands! **Editor**.

Weekend Or Evening

Most Foundation Courses are usually run either over a single weekend or one evening a week for several weeks. In addition to the fee to take the exam,

Colin's waiting to hear from You!

I like to solve problems with anything to do with Amateur Radio! 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.

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Fig. 4: The 'official' receiving Morse 'crib-sheet'.

you'll need to get an up-to-date copy of the *Foundation Now* book (available from the *PW* Bookshop) and most clubs will expect you to make a contribution towards the costs of room hire, etc. To find out your nearest Amateur Radio clubs, have a look at the **Radio Society of Great Britain's** (RSGB) web site at www.rsgb.org

The RSGB looks after the interests of the 55,000 Radio Amateurs in the UK. It liaises with OfCom to safeguard the bands allocated in the UK to amateurs. The Society also publishes books to help you prepare for the Foundation, Intermediate and Advanced Licence assessments. Membership is open to anyone interested in Amateur Radio. Not all local clubs run training courses, but they will almost certainly know of others locally that are running them. Whatever you do, please don't let an apparent lack of courses in your area put you off! Keep asking local Amateur Radio clubs and contact the RSGB at **Lambda House, Cranborne Road, Potters Bar EN6 3JE**.

Can You Help?

If you are already an established Radio Amateur, have you thought about helping your local club run training courses? By dividing the work up between several club members, running training courses need not be a burden.

To see what's involved have a look at the Tutor's section of the RSGB web site. Download the Foundation Licence Syllabus and example assessment paper and you'll see what level it's pitched at. Armed with the syllabus, the example paper and an up-to-date copy of *Foundation Now* it will provide a good idea of what's involved. (At my local club, we divide the training between about six people with each person covering two or three of the items on the syllabus with a deputy).

In preparing your training material,

E •	T —	A —•	N —•
I ••	M —	B —••	O —
S •••	O —	C —•••	P —••
H ••••	N —•	D —••	Q —•••
A —•	G —••	E •	R —••
U —••	Z —•••	F —•••	S •••
V —•••	Q —•••	G —••	T —
W —••	D —••	H ••••	U —••
J —•••	B —•••	I ••	V —•••
R —••	K —••	J —•••	W —•••
L —•••	C —•••	K —••	X —•••
F —•••	Y —•••	L —•••	Y —•••
P —•••	X —•••	M —	Z —•••
1 —••••	6 —••••	1 —••••	2 —••••
2 —••••	7 —••••	3 —••••	4 —••••
3 —••••	8 —••••	5 —••••	6 —••••
4 —••••	9 —••••	7 —••••	8 —••••
5 —••••	0 —••••	9 —••••	0 —••••

Fig. 5: The counterpart to Fig. 4, the Morse transmitting 'crib-sheet'.

wave to explain alternating current (a.c.) is actually a graph of voltage against time in fractions of a second and not the logo on a battery!

Tutor's Lesson Plan

When acting as a Tutor and before you prepare the material, you'll need to agree a lesson plan with your fellow tutors.

For example, which topics

will be taught in which sequence and by whom? This is vitally important at Foundation level. You can't expect anyone to understand the purpose of an oscillator in a transmitter if they don't know the difference between a.c. and direct current (d.c.).

At the end of each session, I personally like to give students some example examination questions in multiple-choice format to make sure that they have grasped what I have been covering with them. It also gets students used to the sorts of questions they can expect to find in the exam.

Once I have prepared the training material for my section of the course, I present it to a class of my fellow tutors. I ask one of them to specifically check that every point in the syllabus has been covered. It gives fellow tutors an understanding of what I'm covering, and ensures that my deputy knows what to do if they need to deputise.

Publicising The Course

Once your club is ready to run a course, make sure you put some effort into publicising your efforts! Contact other local clubs, who may have potential candidates who they cannot help at that particular time – perhaps they are not running a course, or some potential candidates cannot attend on the days they run their course.

Contact the RSGB, *Practical Wireless* and other magazines such as *RadioUser*, local newspapers and radio stations with details. If your club has a web site don't forget to use this to publicise your training courses! Cheerio until next month!



Fig. 6: Colin – overshadowed by his beam antenna – presenting one of his recent talks.

make sure that you constantly refer to the Syllabus. It's very easy to either miss something out, or, more likely in my experience, cover a topic in more depth than needed, especially at Foundation level.

At Foundation level, make sure that you don't assume anything. It would, for example, be easy to spend some time talking about propagation, without explaining that propagation is about how radio waves get from the transmitting aerial* to the receiving aerial*.

*By the way you also need to explain that many Radio Amateurs (and *PW*!) refer to antennas and not aerials!

I have found the *PowerPoint* slides, produced by the **Chelmsford ARS**, very helpful in preparing course material (website www.g0mwt.org.uk/). However, whatever you tackle in the preparation of the course, make sure that you label the axis of all graphs. You cannot assume that people will realise that a classic sine-



Tony Nailer's

doing it by design

Tony Nailer G4CFY continues with the description of his design for the 1.8MHz a.m. transmitter-receiver.

Part three of the Top Band project.

The 1.8MHz a.m. transmitter-receiver project started with the DiBD article in the *PW* September 2007 issue, in which I explained the development of the receiver main board, the variable frequency oscillator (v.f.o.) and the pre-selector. The next part in the DiBD article in November 2007 issue of *PW* included the design of the v.f.o. buffer, the final circuit of the pre-selector, and printed circuit board (p.c.b.) layouts for the v.f.o., the buffer, the receiver, and the pre-selector.

It had been my intention to complete the project this month, by providing details of the 455kHz source, the mixer, and the transmit amplifier strip, including a harmonic half wave output filter. A block diagram of this arrangement is shown in **Fig. 1**. However, the completion of the project has not been possible, because of the problems I've encountered trying to work with a power m.o.s.f.e.t. output stage.

Incidentally, I chose a power m.o.s.f.e.t. in the hope that it would be simple to drive with r.f., and be easy to modulate, just like a valve. Unfortunately, driving it has turned out to be just as hard as driving a bipolar output stage. Let's hope that modulating it will be much easier!

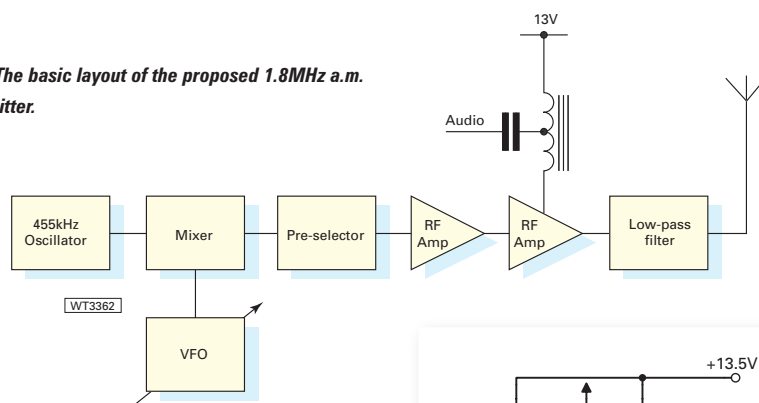
Searching Catalogues

In my spares box I found a VN66AFD and a small quantity of BUZ71As. Searching the major suppliers catalogues showed that they stocked neither of these devices.

Most of the m.o.s.f.e.t.s available these days are rated for power dissipations of 50W or more, with on-resistances between source and drain as low as 0.002Ω. One of the major catalogues has over a 100 entries for this type of device, with supply ratings from 20V to 1500V.

When using a modulation

Fig 1: The basic layout of the proposed 1.8MHz a.m. transmitter.



transformer in the drain circuit, 100% modulation will occur when the positive peaks of audio are equal to the supply rail voltage of 13.5V. The voltage applied to the drain will then be 27V.

Most of the other devices in the table were a quite expensive. I did find a reasonably priced device, the IRFZ34E, with a 60V drain to source rating, an on-resistance of 0.04Ω, and a power rating of 68W. These were in stock with both suppliers, so I ordered a couple.

Another reasonably priced device is the STP16N06 with a 60V drain rating, and on-resistance of 0.08Ω, and a continuous power rating of 48W. (I might give this type a try if the other device doesn't work out!).

Device Characteristics

I'll now describe the tests of the characteristics of the various devices and to start, power m.o.s.f.e.t.s are like bipolar transistors in that they don't conduct unless they are biased on. This is known as enhancement mode.

To determine the V_g/I_d linearity of the m.o.s.f.e.t.s, I tested the VN66AFD, the BUZ71A, and the IRFZ34E, by connecting them in turn on a test jig as shown in **Fig. 2**. The voltage measured across the drain 1kΩ resistor was read on a multimeter set to 25V range. A little work with Ohm's law, will show that this voltage reading represents milliamps (mA).

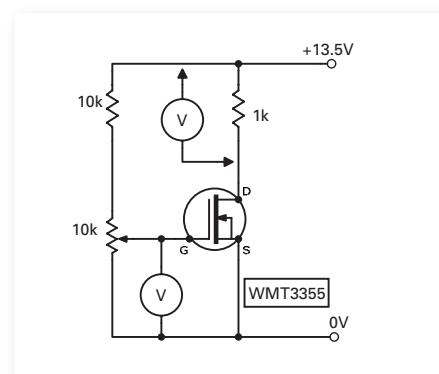


Fig. 2: The test setup for checking m.o.s.f.e.t. linearity and turn-on voltages.

Firstly, I set the control potentiometer with the wiper at the 0V end, so the gate voltage was at zero. I then advanced it slowly and monitored the drain current. Saturation occurred quickly after initial conduction.

The VN66AFD started to conduct at about 1.4V and by 2.2V the drain current was increasing rapidly, then for some reason stopped increasing. (Maybe the device was faulty?). The BUZ71A started to conduct at 2.8V and by 3.4V was rising sharply. Finally, the IRFZ34E started to conduct at 2.8V and was going ballistic at 3.2V! I substituted a 100Ω resistor in the drain of this device and observed a current of 70mA at 3.4V on the gate, and 135mA at 3.5V. The resultant graph is shown in **Fig. 3**.

The Results

The results showed that the devices I tested could not be used in a traditional class AB or class B manner, because the transition from

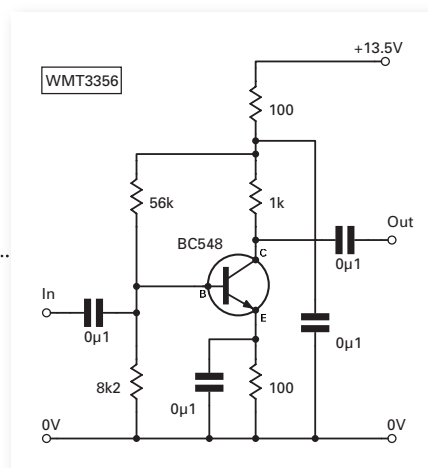
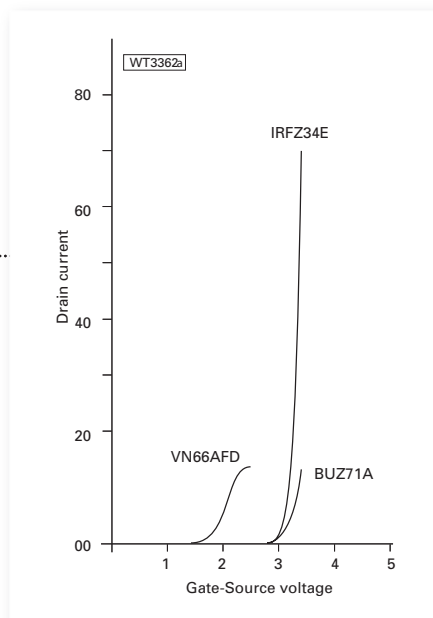


Fig. 3: The V_{gs}/I_d curves of three power f.e.t.s.

With a full supply rail swing, and a peak of 13.5V, and for a power output of 10W, the load resistance required will be $(13.5 \times 13.5) / (2 \times 10) = 9.1\Omega$.

If the m.o.s.f.e.t. operates like a switch and produces a perfect square wave, then the r.m.s. value will be the same as the peak value. The required load R is then V_{pk}^2/P . In this case $13.5 \times 13.5 / 10 = 18.2\Omega$. Now the wave is likely to be something partway between a sine and a square wave, so the true load should be somewhere in between, possibly 14Ω.

How Much Swing?

I made the assumption that the output of the pre-selector, would be of the order of 60mV p-p. At this time I didn't know how much signal swing would be required at the gate of the m.o.s.f.e.t. to achieve a rail-to-rail voltage swing at its drain.

There have been Top Band transmitters using m.o.s.f.e.t.'s, driven from logic gates. The output swing of TTL devices is usually from about 0.5V to 4.5V, a swing of 4V p-p. So the first step was to design an amplifier with a gain of $4/0.06 = 66.7$.

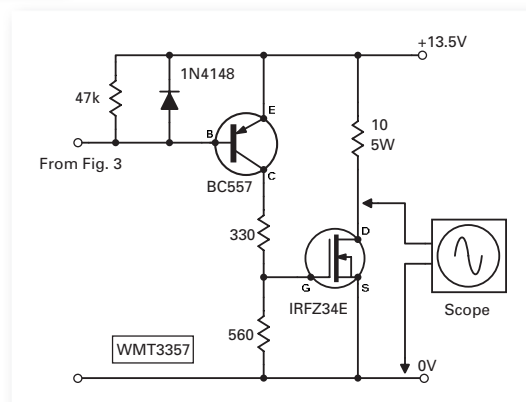
I then built a single stage common emitter amplifier, as shown in Fig. 4 and tested it with no load. The output was nearly 3V p-p for 60mV p-p drive from a signal generator. It showed that more amplification would be needed, with some form of d.c. offset so that the waveform at the gate input of the

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Fig. 4: A single-stage common emitter amplifier.

Fig. 5: One of the p.a. stages that seemed elegant, but wasn't really suitable.



m.o.s.f.e.t. would not alternate about 0V.

Various circuits were tried including that shown in Fig. 5, which intuitively seemed an elegant solution. The diode causes the 3V p-p signal from Fig. 4 to swing from +14.2 to +11.2V. The pnp transistor will switch on when that signal drops to +12.8, and then will move towards saturation, as it swings further down to +11.2V. This should make the gate of the m.o.s.f.e.t. swing positive during the period that the BC557 is switched on.

The result was disappointing! The drain of the m.o.s.f.e.t. would either stubbornly sit at supply volts or at ground level with the device saturated, as the input from the generator was turned up and down.

Darlington Arrangement

A Darlington arrangement of BC557s in the Fig.4 circuit was also tried with no useful improvement. 'Perhaps', I thought, 'more signal swing at the gate might be required?', so a second stage common emitter amplifier was added onto Fig. 3.

The result was a very distorted signal due to too much gain! A 10Ω resistor was then added in the

off-to-on is too abrupt. The only way to use them would be to drive them with a square wave and extract the fundamental frequency via the output filter.

A traditional class B or class AB stage essentially amplifies half a cycle of radio frequency (r.f.) and produces a fundamental together with high levels of even order harmonics. A square wave is made up from the fundamental and high levels of odd harmonics. This is quite useful because the distortion products are three times the fundamental and beyond. It eases the ability of the subsequent harmonic filter to attenuate the unwanted products to the necessary level.

If my memory of Fourier Analysis is correct, the sum of the infinite odd harmonics contained in a square wave is the same power as in the fundamental. The output filter will only pass the fundamental, so the harmonics will be dissipated by the output stage as heat. So the harmonics will be dissipated as heat, which means the efficiency will be less than 50%.

Flywheel Action

In the case of a conventional class B stage operating over exactly a half cycle, together with the flywheel action of the output tuned circuit, the r.m.s. value of the peak voltage (V_{pk}) is $0.707 \times V_{pk}$, or $V_{pk}/1.414$.

Power is V^2/R , so this gives us $V_{pk}^2/(2 \times R)$. Turning this around to make R the subject gives $V_{pk}^2/(2 \times P)$.

emitter circuit of Fig. 3, to cause degenerative feedback and reduce the gain. The resulting circuit – including the m.o.s.f.e.t. – is shown in Fig. 6.

The second stage amplifier produced a relatively undistorted signal of 7V p-p when not connected to the output stage. However, when connected, it swung in a slightly distorted half cycle from -0.7V to +3.2V where it was flat until it dropped again on the successive half cycle.

The output from the m.o.s.f.e.t. could be made to produce what appeared to be a third harmonic signal with a certain fairly critical drive level. At lower drive the drain was at +13.5V, at higher drive level it was at 0V, indicating saturation.

What I surmised from the results was that at levels below the switch-on threshold, the gate was high impedance and perhaps high capacitance? Above the threshold the gate became coupled to the source and drain at low impedance. Measurements I then took of the gate-to-source using a Marconi inductance, capacitance and resistance bridge revealed a capacitance of 870pF!

Maybe the drive to the gate should come from an inductive source? and that the load for the m.o.s.f.e.t. should now include a choke to the positive rail and an output-matching filter?

Drain Supply Choke

In place of the temporary 10Ω resistive load, it's necessary to provide a d.c. path to the positive rail through a choke. This needs to be high impedance in relation to the load impedance and for which purpose the choke is made 10 times the load. I had determined previously that the nominal load should be around 14Ω, so the choke is designed to be 140Ω at the working frequency.

$$\begin{aligned} \text{As } X_L &= 2\pi fL, \\ \text{then } L &= X_L / (2\pi f). \\ L &= 140 / (2\pi \cdot 1.9 \cdot 10^6) \\ &= 11.73\mu\text{H}. \end{aligned}$$

Amongst my stock I have a quantity of ferrite toroids that I use for EMC filtering of d.c. leads. These just happen to be material type 61, which operates well at low radio frequencies.

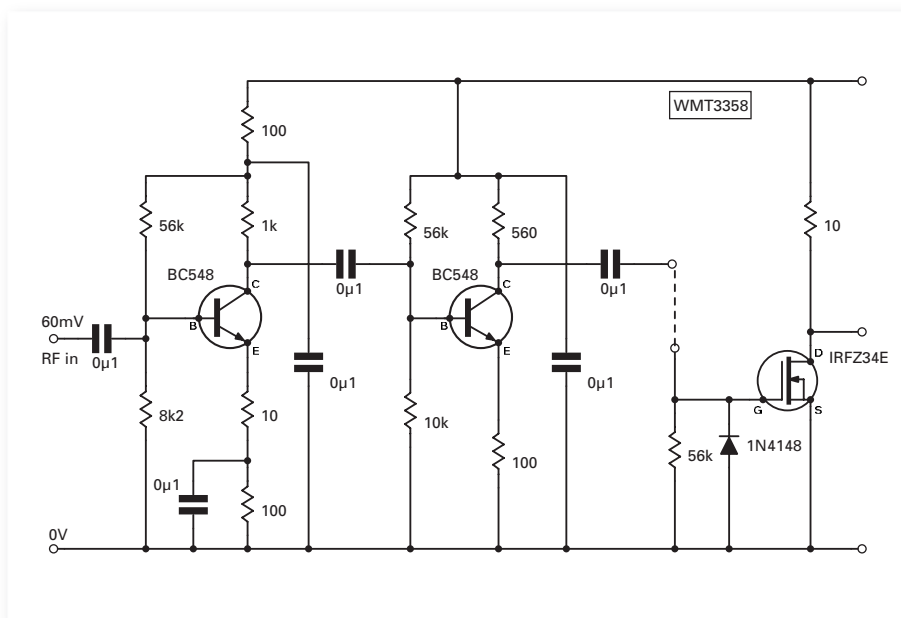


Fig. 6: Using a second amplifier stage with an emitter resistor to reduce gain worked well.

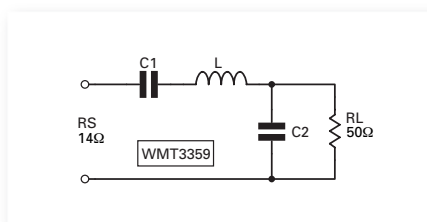


Fig. 7: Beginning the impedance transforming circuit.

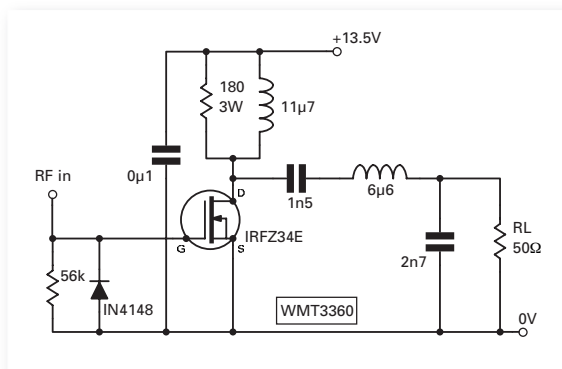


Fig. 8: The basic p.a. stage components.

According to the data in my old Cirket Catalogue (now Abacus) the part 59-61-000301 is a 12.7mm diameter toroid with an inductance factor AL of 65nH. Usually figures of AL are in μH/100turn, or mH/1000turn, so I assume this refers to nH/turn. This would mean the formula is $t = \sqrt{(nH/AL)}$. For 11.73μH, $t = \sqrt{(11730/65)} = 13.4$ turns. (Use 13 turns).

Chatterbox Filter

The Chatterbox Transmitter by the Rev. George Dobbs G3RJV, which appeared in August 1991 PW, used a C-L-C filter network to transform the load required by the m.o.s.f.e.t

up to 50Ω to match the antenna. It worked for the G3RJV, so let's see if it will work for me!

In the absence of any unwanted inductance or capacitance at the drain or at the load, the equations to solve the C-L-C network are as follows; -

$$\begin{aligned} X_1 &= (Q \cdot R_s)\Omega. \\ C_1 &= 10^6 / (2\pi \cdot f \cdot X_1) \text{pF}. \\ X_2 &= R_L \cdot \sqrt{R_s / (R_L - R_s)}\Omega. \\ C_2 &= 10^6 / (2\pi \cdot f \cdot X_2) \text{pF}. \\ L &= (Q \cdot R_s + \sqrt{R_s \cdot (R_L - R_s^2)}) / (2\pi \cdot f) \mu\text{H}. \end{aligned}$$

$$\begin{aligned} \text{If } Q &= 5, R_s = 14\Omega, \\ R_L &= 50\Omega, \text{ and } f \\ &= 1.9(\text{MHz}). \\ X_1 &= 5 \cdot 14 = 70\Omega. \\ C_1 &= 10^6 / (2\pi \cdot 1.9 \cdot 70) \\ &= 1197 \text{pF}. \\ X_2 &= 50 \cdot \sqrt{14 / (50 - 14)} = 31.2\Omega. \end{aligned}$$

$$C_2 = 10^6 / (2\pi \cdot 1.9 \cdot 31.2) = 2685 \text{pF}.$$

$$L = (5 \cdot 14 + \sqrt{14 \cdot 50 - 14^2}) / (2\pi \cdot 1.9) = 7.744 \mu\text{H}$$

I re-ran these calculations with a Q of 4, which gave $C_1 = 1496 \text{pF}$, $C_2 = 2687 \text{pF}$ and $L = 6.57 \mu\text{H}$. Choosing the same toroid as before $t = \sqrt{(nH/AL)}$, $t = \sqrt{(6570/65)} = 10.02$ turns.

The finally calculated output circuit is shown in Fig. 8.

Tests & Developments

I then built the output network and supply choke, adding them to the circuit. Next, I connected a through-line watt meter and dummy load.

No output was observed at all – but the m.o.s.f.e.t. became quite hot. Perhaps the inductor L in the matching network is too lossy when wound on a ferrite core?

Another toroid was found in my spares box, this time a dust iron type T50-2. The 50 represents a diameter of 0.5 inch (in old money) about 12.7mm diameter. This has an inductance factor AL of 49 μ H/100turns. Then $t = 100 \times \sqrt{\mu H / AL}$. $t = 100 \times \sqrt{6.57 / 49} = 36.6$ turns. Try 37 turns.

I have some articles on toroids from August and October 1998 *PW* that indicated I should use 37 turns of 26 s.w.g. could be accommodated on a T50 core. I chose 28 s.w.g., so the winding would not fully occupy the toroid.

The new coil was substituted for the ferrite one and the breadboard tested again. Power was indicated at a low level and a reasonable sine wave was monitored using the oscilloscope.

The 560 Ω resistor, Fig. 6, in the collector of the driver was changed for a 22 μ H axial choke in parallel with a 220 Ω resistor. The power increased further and I changed the base bias resistors as follows – 56k Ω became 39k Ω , 10k Ω became 5.6k Ω , 100 Ω became 33 Ω , similar to those used in the driver circuit of the *Chatterbox*. The 10 Ω resistor was removed from the emitter of the first stage and 2W of clean output was achieved!

Various transistors were tried, including the 2N3866 and 2N4427 in the driver stage but the circuit went horribly unstable. During one of these tests the IRFZ34E got hot with no output and I subsequently found it to be short circuit gate to source and drain.

Driving Devices

The BC184 devices I used in both low power stages were found to drive the IRFZ34E to a stable 4W output and with an excellent sine wave on the oscilloscope. However, although much progress had been made, it looked like another stage of amplification would be required to achieve 10W clean carrier output.

Another stage like the first one was added (but without a decoupled emitter resistor) to lower the gain. The output was less as the whole strip went unstable! At this point it was decided to tidy up the breadboard by moving parts around and reducing lead lengths. On a second occasion as I had done earlier, a simple mistake caused me to blow the second IRFZ34E.

Only having had two IRFZ34Es in stock I now tried using one of my BUZ71Es. The output initially was only 1W using this device but I noticed that the 47 μ F supply decoupling capacitor on the breadboard was getting warm. This suggested that the supply

leads were a bit inductive and resistive, and that the capacitor was supplying peak current. So, I changed it for a 1000 μ F and the power output jumped to 8W.

I also added a 0 μ 1 decoupling capacitor to the top of the output stage supply choke but the amplifier again went unstable. This is a classic case where the choke and decoupling capacitors are resonant at some frequency and cause parasitic oscillation. I fitted a resistor of 10 Ω in series with the 0 μ 1 decoupling capacitor, and the circuit stabilised with 11W output.

The lack of a low frequency reservoir capacitance, together with improper decoupling at 1.9MHz, may have been the cause of instability problems encountered all through the development of this project! The final breadboard circuit is shown in Fig. 9.

It might now be possible to go back and check devices and to optimise biasing. I will now order a few of the STP16N06 devices, to see if they will do the job with good stability and the right level of output.

I hope this lengthy design and development has been of interest to followers of this series. In the next article, in the March 2008 *PW*, I'll bring you any refinements to the transmit strip and hopefully the rest of the circuitry to complete the project!

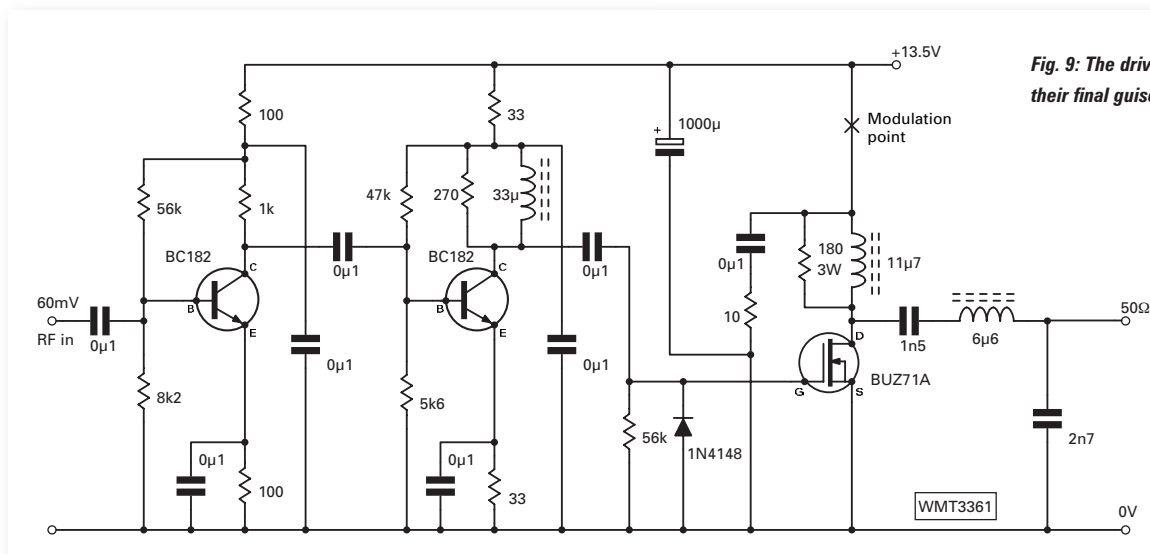


Fig. 9: The driver and p.a. stages in their final guise.

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 email 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.



The Rev. George Dobb's

carrying on the practical way

Making 'radios from odds and ends'. It's something that many of us have done over the years.

"To invent, you need a good imagination and a pile of junk."

Thomas Alva Edison

About this time each year in COTPW I offer a Christmas holiday project. Usually it's something that can be built with, or for, the children of the family. Oddly, or perhaps not, it appears from my mail that many of the adult readers enjoy building these offerings just for their own enjoyment!

I guess there's something therapeutic in building a simple radio project in an hour or so and finding it easy to get working. Not long ago I received a delightful photograph of a crystal radio using computer ribbon cable as a frame antenna – a project I described some years ago. The reader who sent the picture had been building radios since the 1950s. Obviously he still enjoyed building the simplest of circuits and was proud enough to send me the evidence!

Helpful Uncle

The first radio I ever built was with the aid of an uncle – this was in the 1950s and he was one of these people who inspired boys like me. He had a proper garden shed full of tools, and bench tops covered with interesting things.

My uncle's main interest seemed to be building large wall mounting clocks in biscuit tins but he had also built a few radio sets in his time. He allowed



Don't let the label fool you, it's a genuine detector although a little insensitive.

me to take home, only one at a time, copies of his *Practical Mechanics* magazines. They were full of wonderful things to build in a garden shed workshop. I recall building a buzzer with a hand-wound magnetic coil and installing it as a door bell on my bedroom door. It had an inherent flaw as the sound it made was barely audible!

On one of my visits I asked my uncle about building a radio and he said that was no problem because

we could build one from only two parts and he had both of them in a drawer! He opened a drawer which was filled with 'radio bits' and pulled out a ceramic cylinder with metal nuts threaded on posts at either end. I later came to know that this was some kind of surplus diode from the Second World War.

Another rummage in the drawer produced a single headphone. With a few bits of wire he built up the circuit that I have shown in **Fig. 1** and this is

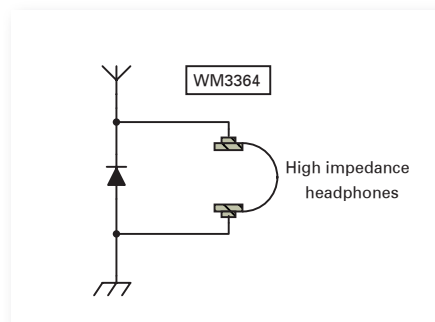


Fig. 1: The simplest untuned 'radio' detects all signals together but only the strongest signal can be heard easily.

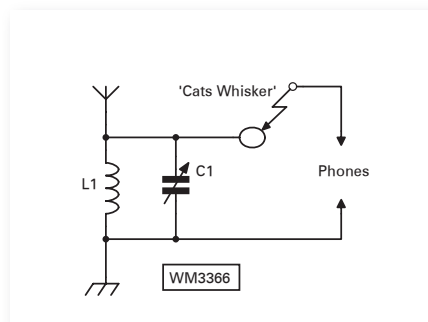


Fig. 2: A tuned radio receiver, using a cat's whisker detector. It works, but may not be very sensitive.

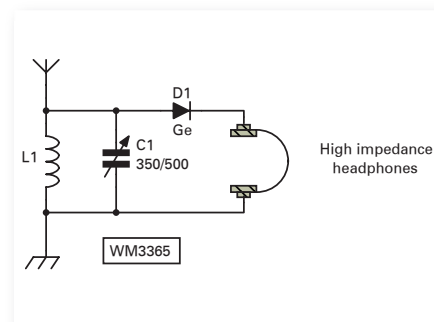


Fig. 3: Replacing the detector of Fig. 2 with a Germanium diode can improve the sensitivity.



Fig. 4: As used in Prisoner-of-war camps, the rusty blade detector.

the simplest way to hear radio signals. He took the antenna and earth from his shed radio, usually tuned to the Home Service, and connected them to the rudimentary receiver. I put the headphone to my ear and could hear radio signals. The fact that I could hear several stations at once did not diminish the wonder of plucking signals out of the air with just two components!

Modern Replica

Just before I sat down to write COTPW I replicated my uncle's circuit again with modern parts – an OA81 germanium diode and a crystal ear piece. Again I heard several stations, the loudest of which was BBC Radio Five with a football commentary.

The simple original experiment led me to building 'real' crystal sets, then radios using valves and, most exciting of all, short wave radios. However, if there's a moral to this story, it's probably not to underestimate the power of a simple demonstration to impress and enthuse the young mind. So, with this in mind, I thought that this year I would turn again to the subject of crystal radios and conjuring signals from the air with simple bits and pieces.

When I wrote the Ladybird book *Making a Transistor Radio* in the 1970s, I devoted a page to 'prisoner of war radios' describing the building of simple radio sets by prisoners using available materials. These are sometimes called 'foxhole radios' from the similar radios built by American 'GIs' * on the Italian front during the Second World War.

Again, the soldiers used whatever they could find at hand to build their radios. The instructions usually

began, "Look for an unattended tank and steal a pair of headphones". This was because headphones were very difficult to make from everyday materials and very often one of the 'phones would be used for listening and the other would provide wire for a tuning coil and the antenna.

Tuning capacitors could be made by interleaving metal and insulated material plates. However, some of the radios were tuned by sliding a wiper over bared turns in the coil to vary the inductance.

**American friends have explained that the term 'GI' stands for 'Government Issue'. Despite our very different cultures – it seems that military humour has a definite transatlantic link! Editor.*

Interesting Improvisation!

Perhaps the most interesting improvisations occurred when prisoners or GIs were making a detector for the radio. It's rare to find the odd diode laying around in a prison camp or foxhole! The radio builders turned to the ideas used in the old 1920s crystal radios.

The earliest common radio receivers were real 'crystal sets' in that a small piece of crystal, usually Galena, the common sulphide ore of lead, was used as the detector. It was used in conjunction with a 'cat's whisker', a springy piece of thin wire, mounted in an insulated holder and used to probe the surface of the crystal for a sensitive spot. The old radio builders called this the 'sweet spot'. This was often very fiddly to find and the slightest knock of the radio could cause complete loss of signal.

I thought it might be interesting to

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experiment with simple cat's whisker type detectors, so I began by building a typical crystal radio as shown in Fig. 2. The tuned circuit (L1 and C1) is designed for the medium wave (amplitude modulation or a.m. band) as this should offer the strongest radio signals.

The capacitor, C1, is a variable capacitor with a maximum value of some 350 to 500pF. This could be from a scrap broadcast radio or one of the surplus polyvaricon capacitors that are still available. I entered into the spirit of the project by using a solid dielectric variable capacitor with Bakelite end cheeks, of the sort used in crystal radios of yesteryear.

The inductor, L1, probably requires about 200 μ H of inductance and in the classic school boy radios it was usually wound on a toilet roll former. My slightly more modern version is 60 turns of 26s.w.g. enamelled wire wound on a 50mm length of 20mm diameter conduit tubing.

The turns are held in place with bees wax – perhaps an authentic vintage touch! The diode D1 is a germanium type and a pair of high impedance headphones completes the radio. Unfortunately, high impedance headphones are no easy to find but a piezo-electric 'crystal' earpiece will do the job or even an LT700 audio output transformer driving a pair of portable cassette player type headphones.

In my prototype I just clipped in the diode so that I could replace it with experimental detectors. The home made detector can be added to the radio as shown in Fig. 3. Now very few of us have a piece of Galena laying around the house – but I thought I did have some.

Galena & Iron Pyrites

Some years ago visiting a radio convention in Arkansas with Roy Lewallen W7EL, we both bought some Galena* at one of the many crystal shops in that mineral rich state. Then, rather predictably, after searching high and low, I failed to find any! I had heard that 'fool's gold' (iron

IC-7700

It's What Every Discerning Amateur Wants For Christmas

By sparing no expense throughout the signal chain, ICOM has developed an Amateur rig to challenge the performance of any HF transceiver. Just like it's 'Big Brother' the IC-7800, HF bands on the IC-7700 boast +40dBm, a 3rd order intercept point and ultra-wide dynamic range. The IC-7700 incorporates many outstanding

features of the top-of-the-range IC-7800 including: strong receiver performance, bandscope functions, 200W RF output and DSP. Add ICOM's stylish, straightforward design and you have an ideal rig for Amateurs searching for a highly-sophisticated radio with top performance and an appealing price tag!



- +40dBm ultra-high intercept point
- 3kHz roofing filter
- Two 32-bit floating point units
- Automatic tracking pre-selector
- 200W output power at full duty
- Ultra high frequency stability
- 7-inch wide colour TFT LCD
- Multi-function spectrum scope
- RTTY/PSK31 operation without PC connection
- IF notch filter with adjustable notch filter characteristics
- Professional 6m receiver
- Digital voice recorder
- Two USB ports in the front panel
- Soft and sharp IF filter shapes for receiver

Everyone at Icom UK wishes you a Happy Christmas and Communicative New Year!



Fig. 5: Using a piece of coke as the 'crystal' with a cat's whisker.

pyrites), is also usable and a local crystal and smelly (perfumed) candle shop sells it for a few pence.

My first detector was very simple, all it required a holder for a small crystal of fool's gold and some sort of cat's whisker. One common method of improvising the cat's whisker is to use a safety pin bent into shape so that the point just touches the crystal. Then I read some constructors had found greater success by adding a sharp pencil lead to the end.

For my crystal holder I used a small crocodile clip of the type used for clip-leads. This was fastened to the wooden base of my radio using a brass screw and screw-cup. May I add a small appreciation of one American word? ** I am suspicious of any language that could call a radio 'valve', a "tube" (pronounced 'tooob') but the American word for a screw-cup is a "finishing washer". A rare example of American English eloquence!

** Readers who require Galena are invited to contact me regarding a source Editor. **Go ahead George! Editor.*

Sharpened Pencil

I sharpened an HB pencil and cut off about 20mm of the sharp end and pushed the point of the safety pin between the lead and the wood. (This can be tricky and the continuity between the pin and the pencil tip is

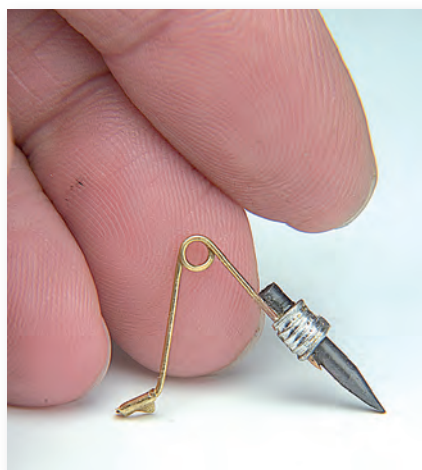


Fig. 6: making a pencil-lead contact for the detector.

best tested with a meter).

Another method that could be better is to remove the lead from the pencil and to solder it to a brass plated safety pin. Obviously, the pencil 'lead' (in reality it's based on graphite) does not take solder so this involves binding the lead to the pin with thin tinned copper wire and melting plenty of solder into the wire.

In either method the safety pin is secured to the base with a screw and screw-cup. Moving the point of the pencil lead lightly on the crystal did yield radio signals – I suspect not as good as Galena but it certainly does work. Once again Radio Five triumphed at my location near Manchester.

The classic descriptions of foxhole radios speak of using a blued steel razor blade and a safety pin. Now I am no expert on razor blades having not used one for over 40 years (see heading photograph! but I suspect the old blued steel ones are now impossible to obtain. But lurking on a shelf in my workshop was an old and rusty disposable modelling knife. So I attached the blade to a small piece of wood and mounted a brass-plated safety pin as a cat's whisker and tried this in place of the fool's gold detector. To my surprise it worked even better – still Radio Five as the main station but much louder.

In the Ladybird book I had described using a small piece of washed coke (the bi-product of heating coal – not the fizzy drink!) with a spring made from steel wire. I had discarded this idea because I thought I could not find any coke without buying a large sack of solid fuel.

Then I remembered my barbecue. So I so broke off a small piece of barbecue type coke and mounted in wood with a screw and screw-cup. My steel spring was culled from the spring of a defunct G QRP Club retractable ball point pen. This was pulled out to make an open coil; cut to about 20mm and straightened at both ends. One end was attached to the wood and the other bent to lightly meet the coke. This detector was fiddly but when set at the 'sweet spot' it was quite effective.

So, it's quite possible to extract radio signals using everyday scrap materials. Readers may like to try other combinations and even impress a few of the younger members of the family with radio signals from junk.

Further information

The Editor writes: George G3RJV seems to have offered a Christmas Challenge! To help, I contacted **United Kingdom Geologists Equipment (UKGE) Ltd**, who are based in Suffolk. This company is very helpful and has a selection of various minerals suitable for use in simple 'crystal detectors'. Their telephone number is **0800 0336 002**, their website is **www.ukge.co.uk/UK/about.asp** and the postal address is **UKGE Ltd., Unit 10 Fountain Way, Reydon Business Park, Reydon, Southwold, Suffolk IP18 6DH.**

Rob G3XFD.



Amateur Radio clubs

in focus

The World Association of Christian Radio Amateurs and Listeners (WACRAL)

Victor Brand G3NJB tells us that "Christian Radio Amateurs are celebrating 50 years of fellowship and fun". He aims to share the celebration of WACRAL with *PW* readers in the In Focus pages!

Welcome to the In Focus, where **The World Association of Christian Radio Amateurs and Listeners** (WACRAL) is sharing the celebration of its Golden Jubilee year. A special version of our annual conference was held in October last, a series of high frequency (h.f.) and very high frequency (v.h.f.) activity days are to be held during 2008. Additionally, a unique **WACRAL Jubilee Award** is about to be launched.

In 1957 a keen radio enthusiast and Methodist Minister, the **Rev. Arthur Shepherd**, decided to organise a modest group of fellow Christians as the **Huddersfield South Methodist Radio Club**. Gaining his full licence **G3NGF** in 1959, Arthur became a very keen h.f. operator and had an impressive station at the manse (vicarage).

The first club call was issued as **G3LQK**, also later **G3NJB**, and membership grew rapidly until the numbers had spread to Methodist congregations around the world, becoming a truly international organisation. Clergy and lay operators joined together to enjoy the hobby

and to maintain good operating standards and the values of a Christian way of doing things.

So successful was Arthur in building his concept, it was decided in 1958 to develop it into a new and, at the time, unique concept. The **World Association of Methodist Radio Clubs** (WAMRAC) was launched and quite simply it took off!

Then M1CRA Arrives!

In 1968, the interest shown by other denominations enabled the committee to open up membership to all committed Christians, regardless of denomination. Accordingly, in 1978 the name was changed once again to that which has survived to this day – The World Association of Christian Radio Amateurs and Listeners (WACRAL) with the most apt call sign **M1CRA** – 'Mike One Christian Radio Amateurs'.

Today, the early members of WAMRAC active on the h.f. bands are few but they include such well known calls as **Arthur Kettlely G8HTN**, **Harold Turner G4YRH**, **John Corbett G3TWS** and **Alan G3WQL**. The many



Rev. Arthur Shepherd G3NGF at his fine a.m. station.



Original Huddersfield South Methodist Club with G3NGF.

international calls include DL, EA, EI, ES, HB9, VP8, OE, OH, OK, ON, LA, PA, PY, VU, SM, SP, UA, W and ZB and ZS. Membership numbers are currently approximately 500 active calls and Christian s.w.l.s. Numbers have varied over the generations and



Photo call for the WACRAL Jubilee Conference.

501

"God be with you till we meet again!"

Most people have heard of radio amateurs and are also aware that they frequently use what is termed 'jargon'. The greater part of this dates from the early days of the telegraph, when all private and company messages through post and telegraph offices, were by means of Morse code. In order to save time, well known phrases which were in frequent use, were given special numbers or a three-letter abbreviation, one version of which became the international the 'Q' code.

In Amateur Radio, '73' is a general greeting normally used at the end of a conversation (a 'QSO'). If greeting a lady the message may say '88' which means 'love and kisses'. To wish to someone 'good health', we might say '99' and if we wish to them 'God Bless you', we can say '100'.

A now departed 'ham', known to Amateurs as a 'Silent Key', told of a Scots lad who was dying. With his last breath, he whispered to his friend '141'. His friend wondered what this unknown code could mean. The next time the friend was in church, he began thumbing through the pages of the hymn book. On reaching 141, he realised the message his friend was trying to convey to him. The hymn was 'God be with you, 'till we meet again'. Later, a WACRAL member added these and other significant numbers together – and totalled 501.

Since that time, '501' has been used as both a greeting and a blessing in Christian amateur radio nets.

This account has been handed down the WACRAL membership from the very beginning.

Send all your club info to

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



Proud G4YJW and G6ULN with the 'Big Five-O Cake'

at present, as is often found at in such groups, the new recruits are roughly covering the losses as, sadly, G2s and G3s go 'silent key'.

Every WACRAL station and s.w.l. is allocated a unique station or CSWL number. These numbers are convenient when running competitions and awards. They are given over the air and usually are to be found on QSL cards, circulating through WACRAL's own QSL Bureau and via national society bureaux.

Special Jubilee Conference

The 2007 UK Jubilee Conference took place in October last at St. Briavels near Monmouth in Wales and 50 British members and partners attended a delightful weekend of fellowship and services. There was, of course, much rag-chewing, a 'Silly Price Surplus Sale' and two entertaining presentations by senior members.

Richard Paul VP8DIZ/G7KMZ described vividly the life style and harsh environment of the Falklands and of his experiences as a lone communications engineer on the Islands. The tiny population and consequent lack of QRN generators enabled him to enjoy spectacular DXing during his stay and to get into low power digital working with PSK31.

David Palmer G4PFX, gave an



David Palmer G4PFX speaking on 'Mission as a Christian Radio Engineer'

entertaining review of a decade of 'Mission as a Christian Radio Engineer'. Travelling extensively throughout Africa and South America, G4PFX is much in demand by the international aid agencies, world church organisations and missionary groups. Following his Ph.D and time on the space team at Surrey University under **Prof. Martin Sweeting**, David developed his own concept of a very low cost, lightweight and solar powered, digital satellite transceiver that is usable by unskilled operators. These units and clever adaptations of every day items and technology, enable remote communities, aid workers and missionaries to keep in constant touch with their 'head office', no matter where in the world that may be located.

The WACRAL 'Jubilee Dinner' took place on the Saturday night.

of the weekend An excellent four course dinner was followed by a speech congratulating the principal 'movers and shakers' who shoulder the Association's administration organisational work year in year out.

Retiring Conference organisers **Geoff Grundy G4YJW** and his XYL **Jan G7ULN** received a presentation and the enduring thanks of the members for their many years of dedication.

The *Practical Wireless* 75th Anniversary was applauded and the President was instructed to send a formal letter of congratulation to the Editor, **Rob Mannion G3XFD**.

The normally routine '60 minute AGM' became a veritable marathon as the officers and members present planned the reorganisation of the Association for the digital age. The WACRAL web site (www.wacral.org), is now carrying a temporary display of pages and pictures pending a new format. The first 2008 edition of the four monthly *WACRAL Newsletter* will be produced as a Jubilee Celebration issue, incorporating historic pictures and articles, together with a new WACRAL Call Book for 2008-2009.

Following generations of successful UK conferences, many attended by overseas members, it was agreed that an entirely new programme was needed for the future enjoyment of

members. Accordingly, the 2008 event is to be a non-residential event, incorporating the AGM and some light-hearted activities over a weekend next autumn, to be organised by **Keith Taylor GW3WWH** and John Corbett G3TWS.

New President appointed

The Association President for 2008 is to be Keith Taylor GW3WWH, taking over from the **Rev. Phyl Fanning G6UFI** who has served with distinction since 2004. Keith is a keen h.f. operator and enjoys a blessedly 'quiet' QTH in Wales where he is a bee keeper!

Throughout the conference, the special event station GB5OCA was on air and operated on h.f. by members. At 8am on the Sunday, the regular 8 o'clock Net took place using this call, with greetings being passed by those assembled on-air and the delegates who were eagerly awaiting their bacon and eggs!

The WACRAL Identity

The distinctive WACRAL logo carries a special significance to Christian operators around the world, as do the numbers '501'. The logo itself has the familiar diamond shape with central motif depicting a stylised fish, itself a code signal in the days of Roman religious persecution. Often just drawn in the sand with a sandal, the sign of the fish identified a fellow Christian. It can be seen today in the rear window or on the boot of a passing car and adorning the jerseys and tee shirts of the members, usually to be seen at the rallies.

The '501' is a long established sign-off signal exchanged by many Christian Amateurs. It declares the simple message "May God be with you 'till we meet again!" – and the origins go back to the land-line telegraph days.

National Nets

United Kingdom and overseas stations endeavour to work each other as often as possible with nets and international activity days. Here in the UK, there are h.f. and v.h.f. nets throughout the week, the most popular of which is the already mentioned and long running 3.5MHz (80m) single sideband (s.s.b.) net held every Sunday morning throughout the year on or near 3.747MHz at 8am local time.

WACRAL NETS for UK /EU

UTC FREQUENCY \pm MODE. CONTROL STATIONS LISTED

All subject to propagation conditions and QRM.

Sunday

08.00 loc (G) 3.747MHz SSB - G3JNB, G4YJW, GØPPQ, MØCIW
08.30 loc (G) I/P 145.050MHz O/P 145.650MHz FM - via GB3MN
14.00 loc (G) 7.047MHz alt QRG: 3.747 SSB - G4YRH, GI4FUM
15.00 loc (G) 144.205MHz SSB - MWØRHD

Monday

08.00 14.163MHz SSB - VK4FA to G & EU etc (\pm QRM: QSY +10,+20)

Wednesday

07.30 loc (G) 3.747MHz SSB 'Dressing Gown Net' - G4YJW
10.00 loc (G) 3.747MHz (7.047MHz alt QRG) SSB - G4YR
21.30 loc (G) 3.747MHz SSB - G4YRH

Saturday

14.00 28.747MHz SSB Connect to K3PCS (#78474) for Echolink)

14.05, 24.947MHz SSB Weekend DX Net, \pm QRM
14.15, 21.295MHz SSB Weekend DX Net, \pm QRM
14.30, 14.320MHz SSB Weekend DX Net, \pm QRM
14.45, 18.147MHz SSB Weekend DX Net, \pm QRM

18.00, 28.747MHz SSB Connect to K3PCS (#78474) for Echolink)

18.05, 24.947MHz SSB Weekend DX Net, \pm QRM
18.15, 21.295MHz SSB Weekend DX Net, \pm QRM
18.30, 14.320MHz SSB Weekend DX Net, \pm QRM
18.45, 18.147MHz SSB Weekend DX Net, \pm QRM

Experimental Saturday Nets (from November 2007)

14.50	50.247MHz	SSB	Weekend DX Net, \pm QRM
14.55	7.130MHz	SSB	Weekend DX Net, \pm QRM

18.50	50.247MHz	SSB	Weekend DX Net, \pm QRM
18.55	7.130MHz	SSB	Weekend DX Net, \pm QRM

QSL card GB5OCA
(Oscar Charlie Alpha).

Hint:

Winter: UTC = loc (G)

Summer: UTC = loc (G) -1



Keith Taylor GW3WWH, President 2008.

Net controllers welcome all comers and news on amateur radio activities together with that from parishes and families is aired. An unusual feature is the weekly 'Prayer Slot' delivered by **Harold G4YRH** at around 8.15am. Harold gathers news from members all over the world on their success stories, family health problems, church activities and all matters that may require the prayers and support of fellow WACRAL members. An overview of the most regular nets, times and frequencies is available, along with forthcoming activity periods on our web site www.wacral.org



Want To Know More?

Do you want to know more? Whether you are a regular church member or, perhaps, would just enjoy the company of fellow Christians, as a Radio Amateur or s.w.l. you can find fellowship and friendship in the ranks of WACRAL.

For a brochure and more information, why not contact our Membership Secretary? He is **Derek Chivers G3XNX**, at **51 Alma Road, Brixham, Devon TQ5 8QR** or at derekg3xnx@talktalk.net Alternatively, here in the UK, just call in on Sunday morning at eight o'clock on the 80 metre net and ask for the details. You will be most welcome. 501! ●

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The DM330MW Power Supply was designed especially for the UK market. It is ideal for communications equipment with its low noise, light weight and reliability. A patented Noise Offset Circuit allows you to change the switching frequency through a front panel control. This neat control lets you move the switching frequency to eliminate interference should it occur on a spot frequency. The Power supply provides a 5-15V DC variable output voltage and delivers up to 25amps, (30A peak). The DM330MW is the sensible choice for Dxpeditons, travel, holiday or just space saving home shack use.

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- Output voltage (5 - 15) VDC variable
- Output voltage variation less than 2%
- Triple Protection:
 - Short-circuit,
 - Automatic current
 - Over-temperature
- Output current 30A (max), 25A (continuous)
- Size: 190(W) - 69(H) - 181(D)mm
- Weight: Approx 2.5kg with UK Mains cord

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- Large Multi Colour display
- Full duplex with 2 receivers gives true VHF/VHF and UHF/UHF reception plus VHF/UHF and UHF/VHF
- 200 Memory Channels
- Power VHF: 50/20/5 Watts, UHF 35/20/5Watts
- Optional - 1200/9600 packet (with EJ-50U)
- Optional - Digital Voice Comms (with EJ-47U)
- Optional - DTMF Microphone (EM5-57)
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- CTCSS and DCS scan
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Amateur

radio personality

Mike Devereux G3SED

Rob G3XFD: Welcome to our first Radio Personality' feature Mike! Having known you for very many years I've always wondered how you got into the hobby?

Mike G3SED: "Thanks for inviting me Rob, I'm delighted to be *PW*'s first 'guest'. But I'm wondering, are you going to offer me a choice of records for my Desert DX Island too?"

The *Desert Island Discs* joke apart, my interest in radio was kindled at the early age of 12 years old, when I happened across my father's old Morse Key and headphones buried in a cupboard. My late father Bob had been a navigator/radio operator flying in *Lancaster* Bombers in the Second World War. Talking to him about their use he showed me the short wave bands on our old Bush Valved radio.

It was not long before I had put up a long wire antenna to improve reception and a lifelong addiction to Amateur Radio began! I was soon listening to 'locals **Harry G3ORR** and **Barry G3OSK** on 160-metres and intrigued with their conversations I set out to meet them. Both were very

welcoming, considering my tender age and it was not long before they introduced me to the **Portsmouth & District Amateur Radio club**.

Being so young, I found my maths was insufficient to fully understand many parts of the RAE at the level it was in those days and so I set about first learning Morse code with **Mort G3JZV**. I quickly grasped it and passed my Morse exam first go. But I then had only one year to gain the RAE, otherwise I would need to re-sit the Morse test. However, with the help of the Portsmouth Club I obtained my licence in July 1963.

My father had been forced to leave the RAF shortly after the war as he had contracted Tuberculosis and we ended up, like so many other people at that time, being re-located to a council housing estate on the outskirts of Portsmouth. As it happened for my radio hobby, this turned out to be a blessing in disguise!

The houses were pre-fabricated with a corrugated sheet aluminium upper body. It didn't take me long to discover that my 160-metre a.m. signal could be enhanced by a good



S-point or two if I connected to the metal of the house and tuned it as a counterpoise. With our proximity to the sea and sloping ground I was soon working the world on Top Band. That QTH was a fantastic 160-metre location, something I only realised after leaving home and trying to repeat the performance from elsewhere! I would start to work the East coast USA from as early as 8pm, a good hour before most other UK stations could hear them, which only served to fuel my enthusiasm to improve the antennas, reception and country score on 160-metres!

Rob G3XFD: Yes, I often heard you working the DX stations Mike – but I could never hear the stations you were working! When at home visiting my parents and operating G3XFD from their home in Sholing, Southampton only 12 miles or so from you, I just couldn't understand why G3SED had such a strong signal. I remember working you and hearing about your 'half mile square earth mat' and envying you your obvious rural life (I thought you were using a field!).

It wasn't until some years later I understood what you had done when I saw that your parent's council house was the same type as my parent's! All the aluminium cladding (made from scrap aircraft metal after the war) on the upper stories were linked with earthed catenary wire carrying the old Rediffusion radio services. If



Marcia, Marianne and Mike G3SED relaxing at their 'camp site' in the woodland area of our garden. We have about one acre of woodland here so, its fun to do in the summer



Apart from his Amateur Radio related business activities as Managing Director of Portsmouth-based Nevada Communications and Nevada Music, Mike Devereux G3SED is a well known 'DX chaser' and DXpeditioner. Here Mike chats to Rob Mannion G3XFD and tells the story of what's a near half century in the radio hobby.

Mike sitting at the operating chair in his shack.

only I'd known what you were doing I could have tried the same, although we were several miles from the sea and not on a steep hillside like your Paulsgrove Estate QTH!

Mike G3SED: Looking back to those days Rob, on 160 we still used our transmit antennas for receiving, so I self trained myself to 'hear' through static and S9 noise with ease, something that has held me in good stead on the many DXpeditions I have subsequently been on.

As a teenager I would "sneak out of bed" in the middle of the night to spend countless hours chasing DX on 160-metres, trying desperately not to wake my parents. On one occasion, I had inadvertently run my latest big antenna system across the loft mains wiring. The result was that as I sat calling "CQ" in the early hours, I was blissfully unaware that the light in my parent's bedroom was flashing on and off to my c.w. keying! Needless to say my father was not amused and my "CQ" was interrupted by a sharp tap on the shoulder from my father in pyjamas and I quickly went QRT! But Dad eventually caught the bug himself and became **G4PYS**.

Life Long Addiction

"Amateur radio for me has been a life long addiction and brought so much to my life. I started my own Amateur Radio business in 1969, I've travelled the world operating from exotic

locations and have met so many interesting people along the way. I cannot think of a single hobby that still has so much to offer and desperately hope it survives for the younger generation.

I've had my call for over 44 years now and yet I'm still addicted to Amateur Radio! Over those years I have specialised in the l.f. bands and 6-metres, working more than 250 Countries on 160 and 148 on 6-metres with a total country score on all bands of 340 worked. I love pushing the limits of propagation, designing building and air testing new antennas to give that extra dB or so, that will allow me to work some marginal opening to a far flung part of the world.

I'm fascinated with propagation and have found the 6-metre band to be a real eye opener to the way that the sun drives our ionosphere. My biggest

thrill was working **W7GJ** via moon bounce on this band.

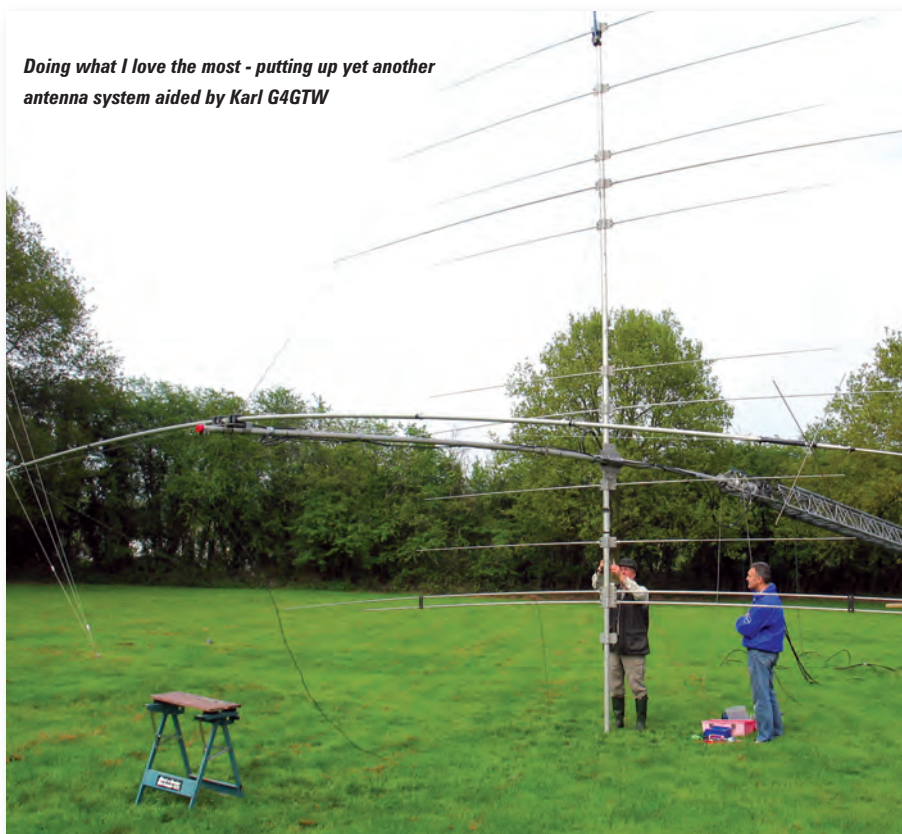
I'm a member of the **First Class Operator's Club** with my love of c.w. and a member of the **Chiltern DX Club** (The CDXC sponsor DXpeditions and promote interest in all forms of DXing and the **UK DX Foundation**. Over the past 10 years I've been lucky enough to travel to remote and exotic parts of the world to play Amateur Radio.

Camel Trophy

"I was one of the team members that provided communications for the **Camel Trophy Expedition** from remote parts of the world, including Sabah Malaysia, Argentina, Paraguay, Chile, Belize and El-Salvador. In this expedition, 20 teams from around the world compete, driving through jungle and desert terrain for the coveted **Camel Trophy**.

Besides the teams, there are a

Doing what I love the most - putting up yet another antenna system aided by Karl G4GTW



fleet of support crews in another 20 vehicles all followed by some 250 or so radio and television journalists. Our job was to provide the local and global communications for these people – quite a task. Amateur Radio was not forgotten either – we always took an 85 foot portable tower and selection of beam and wire antennas! Over the five years I was involved, we've operated as **G4SMC/8R1**, **G4SMC/9M6**, **G4SMC/LU**, **G4SMC/CE1** and **V31RD**.

In 1994 I was invited to join the team of **JY7SIX** a DXpedition to put Jordan on 6-metres for the first time. Whilst there I also found time to operate under my own call on h.f. as **JY8ED**.

The **9M0C** event: I was proud to be involved in the organising of this UK operation. We made over 65,000 QSOs in just 12 days from Palau Layang Layang in the Spratly Islands. My main operating responsibility was the 160 and 80-metre bands. We gave many people their first ever 160-metre QSO, struggling through S9 plus QRN while on the Island.

The **D68C** event: I am one of the five founder members of the **5 Star DXpeditioners Group**, who organised the February 2001 **D68C** DXpedition. Our first expedition had been the 9M0C Spratly Island event. For D68C I was elected 'Antenna King' with responsibilities for the choice, design and layout of the antenna systems. We took 30 operators and seven tons of equipment in a 20ft container! The aim was to give everyone the chance to work D68C on all bands from 160 to 6-metres – even the little pistols. The DXpedition was an outstanding success and set a world record for number of QSOs achieved on a DXpedition - in excess of 168,000!

The **3B9C**, Rodrigues Island DXpedition took place in March 2004. We made more than 153,000 QSOs. I was pleased to once again take on the responsibility of 'Antenna King' for this DXpedition. Quite a job when you realise we had 16 stations on air at the same time with arrays for 6-metre EME through to 160-metre I.f.

The 3B7C event – I was delighted to support the 2007 DXpedition to **St Brandon Island**, in the Indian ocean. The expedition took place – as *PW* readers will remember – in September 2007. It was a great success!

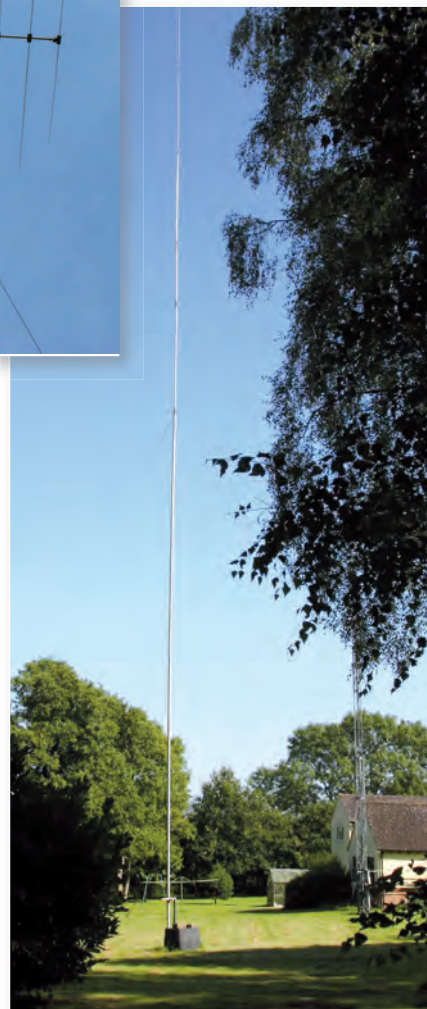
I live a busy working life running



The G3SED Beams – C31XR plus Trident 3-element 17-metre beam above.



Photo shows (L-R) G3SED, K3NA, G3XTT 160-metre operators on the 3B9C Dxpediton, pictured at the base of the Titanex 160-metre vertical.



The Titanex V160 vertical antenna for 160-metres, standing among the trees in G3SED's garden.



The extensive 6-metre beams at the G3SED QTH.

my own companies, Nevada Communications and Nevada Music but I still find plenty of time to be a family man and stay fully involved with in the hobby! Thank you for the chance to share my love of Amateur Radio with you Rob. Best wishes from the Devereux family to everyone on *PW* and also to its readers!

Rob Mannion: Thanks for your time and sharing it with us Mike! I'll now sit back and enjoy looking at the wonderful photographs of antennas in the garden at your home near Botley in Hampshire!

COMET

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H 422 4 Band Rotary Dipole

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- Maximum wind speed 35m/sec
- Length 10.4m (straight), 7.4m (V)
- Weight 5.4kg
- Suitable mast dia 38-62mm

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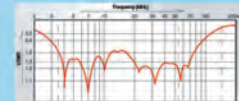
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Antenna Thoughts

This article is primarily aimed at the newcomer, or relative newcomer to our hobby. It may also provide some thoughts for others who have, or consider they have 'problems'. In it, I want to keep things fairly basic, and at the same time try to prove that you do not need to spend an exorbitant amount of money in order to enjoy yourself.

A little time, care and patience, and perhaps a little lateral thinking, plus a little construction as well will help you get a more efficient set-up, or perhaps overcome some of the problems, which you think you, have.

Notice I use the word 'think'! Many newcomers are probably put off to a certain degree due to lack of finances or more often space. And in the latter context I refer to space for that wondrous antenna farm which thousands of us still dream about. Most ideas will be based on the use of QRP power levels, for the benefit of the M3s, but this does not mean they are unusable at either the 50W level, or even higher.

So, how do we get our signals from A to B? Simple. When it comes to DX - They're propagated through the atmosphere, bounced or reflected off one of the many layers in the ionosphere, and thence back to earth so, there we are! How's that for being simplistic? Yes, I know – too simple, perhaps, but I'll let you read up on which layers exist at which times of day, and whether they will reflect, or absorb our precious signals.

This article will look at what is often, and quite rightly, in my opinion, called – "the most important part of an Amateur Radio Station" – the antenna or aerial, if you wish. There are probably more types of antenna commercially available today than items on the menu of your local Chinese takeaway, with as many devotees of differing kinds.

Start Simply

I'll start simply, by assuming that you don't all have the space, or neighbours who don't mind if you erect a large tower, with an huge beam on top. Many live on estates,



Spot the h.f. antenna running around the garden. It's not so easy it it?

with possibly restrictions, so we have to 'gan canny', as a Geordie might say, in order to pursue our hobby.

Let me assume for example that there's not have the space to even put up a small pole or at the bottom of the garden. Or even if you could, you'd only have a run of some 10m or so. One general rule is to get an antenna in the clear and as high as possible. While this makes sense, as you learn more, you will find that what may be an optimum height for low angle radiation on one band, will probably not be optimum for any other band.

The textbooks will all tell you that an antenna should be at least a quarter wave above ground in order to work efficiently, so most situations will inevitably be a compromise. As an example, a 7MHz dipole some 6m above ground will work, but I would expect your average QSO distance to be around 400km. If you can live with that, all well and good. Of course, outdoor antennas for many may be almost an impossibility, but more on that later.

So, where does one start when perhaps, you haven't room for even a half size G5RV? Well, perhaps, there is if you let the ends 'dangle', and there's no mast to support the far end, anyway. And perhaps the shack is at the

Graham Ridgeway M5AAV offers some some ideas, and practical solutions for those situations where large antennas are impractical. You may think you have a problem but Graham says it can be overcome!

front of the house, on the first floor. Let me describe then, my own solution to this problem.

To start, the house is semi-detached and the shack is the small bedroom at the front. The garden is some six metres deep, and eight metres wide at the back with a driveway at the side.

Wooden Fence

I am perhaps fortunate in that there's a 2m high wooden fence enclosing the whole garden. So, three lengths of timber, each around two metres long after treating, were screwed to three of the main fence support posts. There was one at each bottom corner of the garden, and one on the driveway side. At the top of each was fitted an 80x6mm roofing bolt, which very handily fits the hole on a standard plastic 'dog-bone' insulator.

Another short length of timber is fitted on the front of the house, so it sticks out beyond the corner, this too has an insulator attached. The piece of wood is simply attached to the wall with two screws and plastic plugs. Originally this was only some three metres above ground – so we are not talking of requiring a long ladder even.

The output from the transmitter is fed, via an s.w.r. bridge, and a.t.u. (see my article in February 2004 *PW*) along a short length of coaxial cable, the centre core of which joins the main antenna wire. So, I have a wire, no higher than three metres, some 20m long, and it only took the next door but one neighbour four months to see it!

Yes it's certainly a compromise antenna, but it loads on all bands, 'Top-to-Ten', and although I am fully aware of its limitations, it does occasionally seem to 'break the rules', probably more due to good conditions. Last winter, I have used it successfully to contact most of Europe on 7MHz during the evenings and in daylight it certainly works for QSOs within the UK.

Of course, when using an end-fed wire (it's not a 'long wire', which is one in excess of four wavelengths at the operating frequency) - to get the best from it, requires an r.f. earth. All the 'good books' say that the earth connection should firstly be as short as possible, and secondly consist of more earthing stakes than will fit on the back of a 16 tonne lorry. While I wholeheartedly agree that the more 'metal' in contact with the ground the better, most of us have to compromise.

A stout cable run down from the coaxial cable outer, to an earth stake is better than nothing, assuming that you can get a real 'ground'. So, my solution was to run the cable itself, after stripping off the plastic covering, down and out under the front lawn, where it's terminated onto a one metre length of copper water pipe.

A couple of handy hints here wouldn't go amiss. If you're using a length of piping – always use a wooden block to help protect the end you are hitting, and slip the Jubilee clip (if you use one) onto the pipe first. There's nothing worse than trying to get a small jubilee clip over the mangled end of a soft copper pipe. I've found that by pouring water down the inside of the pipe occasionally helps to soften the ground at the point of impact.

Central Heating

An alternative, **frowned on by many**, is to utilise the central heating system as an earth. Clean one of the



One of the wooden posts at the bottom of the garden. It tends to disappear against the background of the foliage.



A closer look at the support bolt and the fitted 'dog-bone' insulator.

radiator feed pipes, and clamp the r.f. earth to it, again with a jubilee clip.

Some have success with a counterpoise, perhaps a wire, ideally half a wavelength long at the lowest frequency of interest, running round the shack under the carpet. I have to say, that I've found this less successful.

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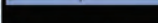
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“But does your system work?” – you may ask. In reply, I can confirm that my ‘bit of wire’, loads on all bands 1.8–28MHz. The bandwidth tends to be on the narrow side, so judicious tweaking of the a.t.u. is called for when moving around within a band, especially at 28MHz. On 1.8MHz, the s.w.r. tends to be at 2:1, but I put that down to the poor earth.

So, that was running a wire outside, but are there any alternatives for those who cannot get even a modest wire outside for various reasons. The answer is still yes!

Let’s now consider another antenna, which I’ve used both as a fixed station and also when out portable. And that antenna is a mobile whip. The cheaper versions have one slight disadvantage, that they tend to be single-band only, but that shouldn’t stop you using one (or more).

Most mobile antennas come with a standard thread which screws into a vehicle mount. It’s easy enough to fix one of these mounts to a fencing post. The whip screws in the top, and fed via coaxial cable.

The one thing a fence-post hasn’t got of course is a ton of metal, to act as a ground plane. So, either an earthing spike (or spikes) must be put under the mount, or, as I have done, used quarter wave (if possible) counterpoises (the only occasion I find that they work) tacked along the aforementioned fence.

Wire Fence

If you should have a wire fence around the property – even better, a short jumper to the fence and you’re in business. I have used mobile whips on all bands from 1.8–28MHz just one metre above ground on a wire fence, and they work.

The bandwidth tends to be narrow, so an a.t.u. such as mentioned previously might help. In a fixed location the whip can be removed very simply when not in use, and does not become an ‘eyesore’ for any fussy neighbours.

It’s possible to obtain a version of the mounts for these whips which have a second SO-239 ‘type’ socket on what I will call the earthy side which then allow the use of a pair of whips as a form of shortened tuned dipole. Unless you can mount this version more than two metres above ground – to allow for clearance, these work best used horizontally. I have used one on 14MHz and found the results quite acceptable.

When using two whips as a dipole antenna, it can be slightly fiddley to tune up, as you have two whip sections to adjust, and my findings were that they needed to be of different lengths. Perhaps my two whips came from different batches!

Of course one way round the whole problem of an earth is to use a dipole – and why shouldn’t it be in the loft space? It is, perhaps, a bit much to try and get a 3.5MHz



A short run of coaxial cable, from the shack window to the start-point of the antenna wire. The cable’s screen connection is taken to a wire that’s buried under the front lawn.

version in the roof space of a normal house, and even a 14MHz version may be too big. But in my loft at the moment are dipoles, for 14, 21 and 28MHz.

The 28MHz version is in the shape of an inverted ‘V’ – dropping the ends like this lowers the radiation resistance from the normal 75Ω of a dipole to something approaching the 50Ω required.

The 21MHz version is more of an inverted ‘U’, and that also tends to reduce the radiation resistance at the feed-point, which aids matching. The 14MHz version is slightly different, and many would call it a loop. Fed at the top centre, the ends at the bottom are only about 300mm apart, yet even without a tuner in line it only shows an s.w.r. of 1.8:1 at the band edges.

There will undoubtedly be some attenuation as the signals have to pass through bricks, slates, tiles or whatever, but better that than no antenna at all. I always feed the dipoles through an a.t.u., just to help the transmitter see a good match, and keep the p.a. stages happy.

As an aside, I have in the past used loft mounted beams on both 144 and 430MHz with quite acceptable results, obtaining an *RSGB Four Metres and Down* certificate on both these bands with indoor beams and never running more than 30W p.e.p.

Whatever type of antenna is used, the most important thing is to ensure that the maximum available r.f. is reaching the feed-point of it. To this end, some method of measuring the r.f. output is required, as well as ensuring that the standing wave ratio is as low as possible. While there are many very good commercial meters around, a power meter is one of the simplest items to build, and can also double as a dummy load.

Out of interest, how many of you have ever put a power meter/dummy load at the antenna end of your coaxial cable run and measured what comes out?

Hopefully this article has at least given you food for thought. The real joy is in experimentation, something we should all not be afraid to try.

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Harry Leeming's

in the shop

This month Harry Leeming G3LLL talks about the economics of repairs, dip meters and the care needed when handling devices that are sensitive to static voltage damage.

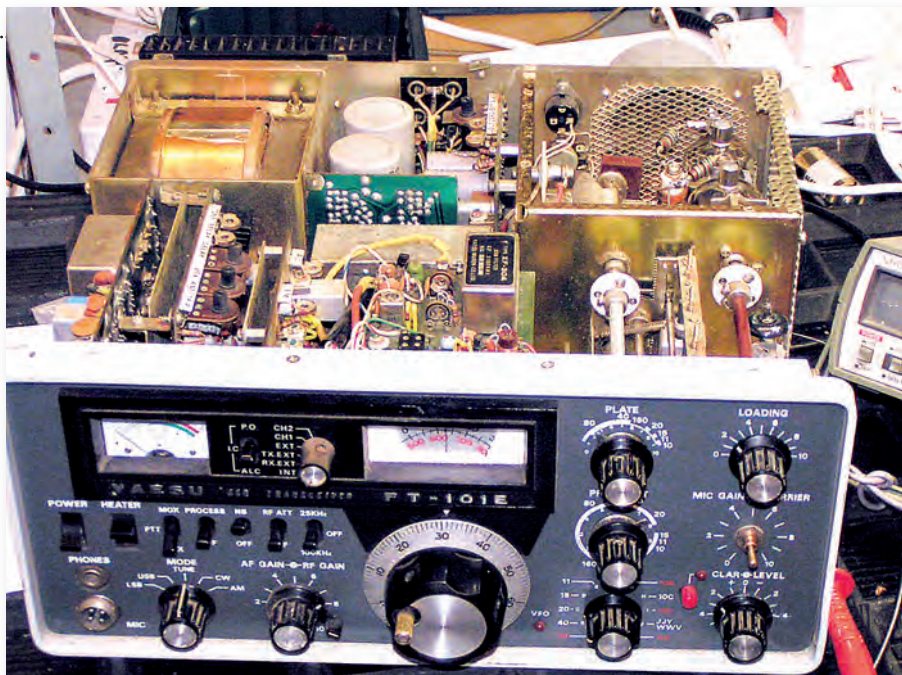
I like to hear about problems with older equipment, particularly pre-1990 Yaesu rigs and readers can E-mail me. If you do, please add some radio related term in the subject heading to differentiate against spam, or you can write and enclose a stamped addressed envelope.

If you are going inside a rig – 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!

The economics of repairs can be difficult at times. For example, I remember when an FT-101E came with the complaint that occasionally it suffered from interference that sounded like static, the difference being that the interference did not go away if the antenna was disconnected. The interference was very intermittent and I had to run the rig for some time before it started crackling.

As soon as I tried to make any tests the fault disappeared; it carried on like this for a few days. Luckily I had a few spare plug-in circuit boards available. I fitted these, and then as the crackling re-occurred after a few hours, I knew that it must be caused by something on the main chassis.

Sometimes, noises can be caused by valves – even those that are not in circuit in the receive mode – and so I removed the 12BY7A driver. This seemed to stop the noise, but after a couple of days it was back. I then noticed that the fizzing was temporally cured if I removed and then re-fitted the driver valve whilst the rig was operating. So I started poking, prodding and substituting parts



Looking into the inside top of a nice clean-looking FT-101E.

around the driver stage.

I eventually traced the fault to a 200pF capacitor in the neutralising circuit, see **Fig 1**, I replaced it and all was well. It took me in excess of 20 hours over several weeks to fix the trouble. The bill could have read "To replacing one 200pF capacitor at 10pence, labour £500" – you can just see the customers face if I had tried that!

When I was in business I always considered that repairs should be charged on the basis of what the job was worth – rather than strictly on time. Sometimes I lost out, sometimes I won.

Fortunately, since the incident in question, I have had the same intermittent fault (with the same capacitor in the same position) on other FT101s FT401s and FT200s and so have been able to make up for the lost time as subsequent customers paid for my experience. A free tip for lucky readers!

Incidentally, my in-car SatNav unit kept 'crashing' and had to be sent back three times within the first few months of operation. Sony turned up trumps by replacing it (free) with a later more up-market unit. However,

I couldn't help noticing that the paper work that came with it quoted a 'flat rate' of £189 for repairs out of guarantee, more than the brand new price from Amazon!

A Dip Meter

You'll not find a dip meter in many modern electronic workshops, as these seem to be used almost exclusively by the older generation of Radio Amateurs. Originally, these meters had a valved oscillator with a meter that read the valve's grid current, hence they were known as 'Grid Dip Meters'.

I had a very good Heathkit 'dipper' for many years. My Tech transistorised dip meter is shown in **Fig. 2**, and covers from 440kHz to 280MHz by means of plug-in coils. The circuit consists of a transistor oscillator stage, the output of which is rectified, and fed to the meter.

The variable control on the front panel is used to set the strength of oscillation until the meter reads about three-quarters scale. If the coil of a resonant tuned circuit is placed near to the dip meter's coil, it will absorb energy out of the oscillator when the two frequencies coincide and the

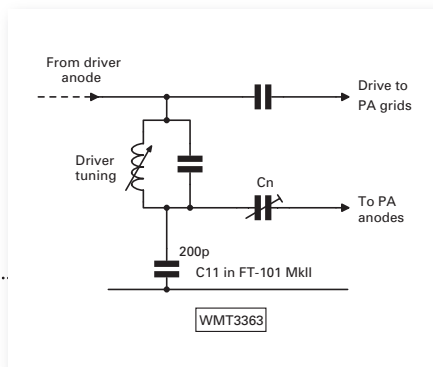


Fig. 1: The skeleton circuit of the neutralising circuit to be found in the MkII series of the FT-101.

Harry Leeming G3LLL

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meter reading will fall – or ‘dip’, hence the name.

A dip meter can be used when necessary to check the resonant frequency of a tuned circuit when power is not applied or, as we saw last month, the resonant frequency of a wire dipole or reflector. If for example, you have a rig with a fault in the power amplifier (p.a.) tuning, you can hardly make tests around the p.a. coil when the unit is operating. (Unless you want to risk killing yourself). So a Dip Meter provides a way of making tests when the power is off.

If the p.a. doesn’t seem to be tuning up on – let’s say 14MHz – simply set the dip meter and rig at 14MHz, place the dip meter’s coil near to the p.a. coil and the meter should dip if you tune through 14MHz with the rig’s tuning capacitor. If it doesn’t, perhaps the circuit is being damped by short circuit turns on the p.a. choke, so disconnect the choke and try again.

Dip meters are not inherently accurate instruments and they are usually only calibrated to within 5 or 10% and can be pulled off frequency by the circuits that they are testing. Some have been made with a built-in frequency counter but this is perhaps ‘over the top, as their actual frequency can easily be checked on a nearby receiver. Look out for them on the Bring & Buy at rallies or you can borrow one from a friend!

Sensitive Components

Sensitive electronic components won’t be a new problem to many *PW* readers, as insulated gate field effect transistors started appearing in ham



Fig. 2: The transistorised Tech dip meter, still doing sterling service after many years.

than a workshop! Fortunately, today’s devices are equipped with built-in gate protection diodes. Despite this, as I have proved several times, they can still be destroyed by carelessness.

The advent of the computer did much to raise awareness in the computer magazines of the damage that can be caused to electronic circuits by static electricity. Unfortunately, those magazines tended to use writers who appeared to know a lot about computers but very little about electrical safety! Even worse their knowledge seemed to come mainly from the USA, where the 115V mains supply voltage tends to promote a less cautious attitude.

I’m sure many readers will have read instructions on the lines of ‘Switch off at the wall socket and leave the computer plugged in, to ensure it is earthed’ and ‘Next make sure you are earthed before trying to replace any parts’. These instructions go against long established UK health and safety rules, which are second nature to technicians like myself.

The first rule when working on mains operated equipment is, ‘Make sure that you are not touching, holding, or standing on anything which is conductive and earthed’. The second rule is ‘Do not replace parts when the equipment is connected to the mains supply, even if it is switched off.’ Ignoring these basic rules could prove fatal but when I wrote to the editors of several computer magazines it didn’t have any effect.

In the end I contacted the Government’s Health and Safety Executive, who officially advised

radio equipment in the 1970s. Dire warnings were issued as to the care needed by those of us who had to replace them!

The first of the sensitive devices had gates that were insulated to the tune of thousands of millions of ohms ($G\Omega$), by a layer of silicon that was thin in comparison to a fly’s wing. The slightest friction would generate enough voltage to break this insulation down and the device was then useless.

The early dual gate f.e.t.s arrived with their ‘legs’ twisted together and instructions that sounded more applicable to an operating theatre

Harry’s waiting to hear from You!

As I am now retired, I like to hear about problems with older equipment, particularly pre-1990 Yaesu rigs. If you want a direct reply please remember to send me your E-mail address or enclose a stamped addressed envelope. Send your letters to the address above.

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.

various computer magazines that the practice they sometimes recommended was potentially dangerous and that they should not carry on printing it. Of course *PW* tries very hard not print any advice that can be in any way hazardous, so how do you swap static-damage prone parts?

Any workshop that is used to repair sensitive electronic equipment must be as static free as possible. No nylon carpets or rubber soled shoes and try to see that the air is not too dry, even if you have to let a kettle boil for a few minutes.

The first point to note when soldering any sensitive device into equipment, is that the equipment must be disconnected **from the mains and any other equipment**. Even a 'scope, or other test equipment that is switched off, is likely to leak enough mains voltage to cause damage. It is essential that yourself, the equipment, the device you are fitting, and your soldering iron must all be at the same potential.

The easiest way to ensure this is,

and the way recommended by many computer books, is to strap everything (including yourself) to earth. If you value your life however, count yourself out on the last one, as any mistake, such as accidentally grabbing something that you thought wasn't live, could be very dangerous.

One way out of this predicament is to wear a safety static discharge strap. These have a lead to earth but incorporate a 1M Ω safety resistor.

Note: If you do buy such a device don't trust it unless it has the CE safety stamp on it, as units made for sale in 115V areas, are not necessarily safe in the UK.

Extra precaution

My approach is roll my sleeves up, earth everything and then (to ensure that I am at the same potential) to touch my bare arm on the metal of whatever I am repairing. In the case of dual gate field effect transistors (f.e.t.s) that aren't gate protected, one recommended extra precaution is to wet a small piece of cotton wool

and stuff it between the device's legs. Once the device has been soldered in place, remove the cotton wool and dry the circuit board. This approach, as well as leaking away any voltage, also helps to stop the f.e.t. becoming overheated during soldering and if you want to be extra safe is recommended with any f.e.t., especially when it's your only spare and you just can't risk blowing it.

Static precaution

When fitting memory or a new processor to a computer take a similar approach, remember the static precautions and make sure that you keep touching the computer's metal work with your bare arm. Also, be doubly sure to unplug the telephone line, and anything that has its own mains unit. Remember that it's not just static that causes damage and that the capacity between the primary and secondary of (let's say a printer's mains adaptor) can couple more than enough voltage to 'zap' your £200 processor.

J. BIRKETT

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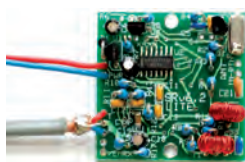
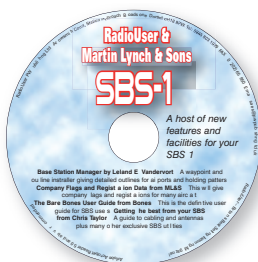
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David Butler's

vhf dxe

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 news of Sporadic-E openings on the 50 and 70MHz bands and tropo openings on even higher frequencies.

Operators in the UK reported a large number of Sporadic-E (Sp-E) openings on the 50MHz band during October. A reasonable amount of DX activity was reported on the 70MHz band with five Sp-E openings being reported during the period. One good Auroral (Au) opening was reported towards the end of October with backscatter contacts being made mainly on the 144MHz band.

An increase in meteor scatter (m.s.) and Earth-Moon-Earth (e.m.e.) contacts were achieved on all v.h.f. bands during October made possible because of the Orionids meteor shower and the ARRL e.m.e. contest. The dominant mode during the month was tropospheric propagation with numerous contacts being made on the 144 and 430MHz bands and on microwave frequencies right up as high as the 10GHz band.

The 50MHz Band

Although it is relatively unusual to detect Sporadic-E openings on the 50MHz band during October, similar events of this nature were also reported during the same month in 2006. Indeed the similarity with last year is quite marked. In 2006 there were 17 days of Sp-E that occurred on October 1st-2nd, 15th-18th & 21st-31st. This year your reports show there were 16 days of Sp-E openings occurring on October 5th, 7th, 13th-14th, 18th-21st, 23rd-24th & 26th-31st.

Many of the openings, especially those made in the period from October 18th through to the end of the month were very strong and lasted for many hours. My records show that c.w. and s.s.b. contacts were

made with operators in 28 countries and included the stations of AO6VQ (Balearic Islands), CN8IG (Morocco), CT1FFU (Portugal), DG7MHR (Germany), E7/YT2ED (Bosnia & Hercegovina), EA5/G0KOM (Spain), ES1CW (Estonia), F1MOZ (France), HA1XY (Hungary), I8MPO (Italy), IS0AWZ (Sardinia), IT9BLB (Sicily), LZ4KK (Bulgaria), OE1SMC (Austria), OH5LK (Finland), OK1XFJ (Czech Republic), OM5KM (Slovakia), S57RR (Slovenia), SP9EVP (Poland), UT3UA (Ukraine), YO5PCX (Romania), YU1EO (Serbia), ZB2EO (Gibraltar), 1A4A (The Sovereign Military Order of Malta), 4Z4TL (Israel), 5B4FL (Cyprus), 9A2ZH (Croatia) and 9H1AW (Malta).

Some stations were confused with the call signs of the stations AO6VQ, E7/YT2ED and 1A4A as they didn't know where they were located. The station of **Gabriel Sampol EA6VQ** located on Palma de Mallorca, Balearic Islands is using the call sign AO6VQ on the 50MHz and 144MHz bands until December 2007. The special prefix is to commemorate the International Telegraphic Union (ITU) conference held in Spain some 75 years ago.

On August 8th, the ITU replaced the T9 prefix block of Bosnia & Hercegovina (B&H) with the prefix **E7**. until such time that a new E7 call sign is issued, **Zoran Grubescic YT2ED** is temporarily using the call sign E7/YT2ED. It's hoped that all Amateurs within the borders of Bosnia and Hercegovina will eventually use the correct prefix.

The call sign **1A4A** is the amateur radio station of the **Sovereign Military Order of Malta (SMOM)** located in Rome, Italy. Although it does not have any territory, SMOM is a sovereign entity according to international law and counts as a DXCC country. This rare call sign was active on the 50MHz, 70MHz and 144MHz bands for a 3-day period from October 25th. Unfortunately auroral activity on October 25th knocked out any chances of Sp-E contacts into the UK on that day but s.s.b. QSOs on the 50MHz band were made with G, GM

and GW stations on October 26th and 27th.

Stations in Scotland reported Auroral (Au) and Auroral-Es (Au-Es) openings during the month. These were not caused by sun spot activity but by coronal holes on the surface of the Sun spraying out ionised material.

The 50MHz station of **David Gillies MM0AMW** (Argyll IO75) reports hearing the beacons LA7SIX (Norway JP99) and OH9SIX (Finland KP36) via Au-Es between 2100-2300UTC on October 19 and TF3SIX (Iceland HP84) via Aurora at 1825UTC on October 25. On the following evening at 2205UTC the Icelandic beacon was heard again, this time via Au-Es with signals peaking 539.

A few minutes later the VE8BY beacon (Canada FP53) was also heard at the same signal strength. Another Au-Es event on the 50MHz band was detected at 2050UTC on October 29 with reception of the OY6BEC beacon (Faroe Islands IP62).

As I mentioned earlier it's quite unusual to report Sp-E openings on the 50MHz band so late in the season and maybe it has something to do with very low solar activity. If the Sun continues to be quiet with very low geomagnetic activity it may give rise to an increase in Sp-E openings throughout the winter period.

Generally the winter openings are quite weak and the maximum usable frequency (m.u.f.) doesn't get much above 60MHz or so. However it's always worthwhile checking out the 70MHz band to see if propagation has reached this frequency. It is unlikely that it will reach the 144MHz band but it can never be totally ruled out. The 11-year solar cycle seems to be on track and the current spate of quiet is consistent with the approach of solar minimum that is expected around March 2008.

The 70MHz Band

Surprisingly, I've received reports of five Sp-E openings that reached as high as the 70MHz band during October. The first of these, to Italy (I),



Colchester Contest Group's impressive antenna array for the VHF National Field Day.

David Butler G4ASR

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were made with a number of c.w. stations that included G4CKH (JO02) at 730km, EI5FK (IO52) 740km, LA8NK (JO48) 776km, OZ5AGJ (JO47) 796km, G7RAU (IO90) 834km, DL2LAH (JO44) 918km, DG9YIH (JO32) 945km, OZ1BNN (JO55) 977km, DK5YA (JN49) 1251km, OH6KTL (KP02) 1483km and for best DX of the event OH6QU (KP03) at 1512km. Possibly the best DX of the opening was made between the stations of G4DEZ (JO03) and OH6QU (KP03) at 1664km and G4KWQ (IO92) and OH1ND (KP00) at 1688km.

Tropospheric Openings

During the autumn period it is normal to expect periods of enhanced tropospheric propagation on the v.h.f., u.h.f. and microwave bands. Autumnal openings are often caused by temperature inversions that occur under still, clear conditions when the land cools rapidly, thus cooling the air close to the surface but leaving the higher levels relatively unaffected.

The conditions occur most often in anti-cyclonic weather systems, an anti-cyclone being an area of high pressure. Although they can appear at any time of the year, anticyclones are more common in late summer and early autumn, when one or two big tropo openings are very likely. True to form, the first of the really good autumnal openings were reported by UK stations from October 5th and later in the month around October 12th–14th & 19th–21th.

Actually the bands were in pretty good shape for much of October – it just got even better at other times! Between October 5th–11th propagation was very good on the 144MHz band with G, GJ, GM and GW operators making s.s.b. contacts with stations such as HB9RDE (Switzerland), HB0/DK5EW (Liechtenstein), LA4YGA (Norway), OK1AGE/P (Czech Republic), OZ1BEF (Denmark) and SK7MW (Sweden).

During the afternoon of October 12th, a few well sited stations in Wales reported hearing the CU8DUB beacon in the Azores over 2500km away.

commenced at 1230UTC on October 18th and lasted for around 30 minutes. An opening to Portugal (CT) was reported between 1310–1340UTC on October 23rd. Unfortunately Portuguese Radio Amateurs do not have any access to the band now so all contacts were made via cross-band to 50MHz.

The station of IOJX (Italy JN61) was heard for a few minutes around 1030UTC on October 26 but events were much better in the days that followed. The 70MHz band was open on two separate occasions on October 27th, the first between 1045–1115UTC to Slovenia and the second event between 1220–1330UTC to Italy.

At the station of **Dave Edwards G7RAU** (Isle of Wight IO90) signals were heard at 1045UTC from a Belarus f.m. broadcast station transmitting on 70.100MHz. At the same time the station of **Ivan Dobnik S51DI** (Slovenia JN76) reported hearing the UK beacons of GB3ANG (Angus IO86) and GB3CFG (Co. Antrim IO74).

A few minutes later S51DI went on to work a number of G-stations on 70.2MHz single sideband. The afternoon opening to Italy favoured stations located in Scotland with GM3NKG (Lanarkshire IO85) and MM5AJW (Wick IO88) reporting QSOs with IK0IXI (JN52), IW0FFK (JN61), IK1EGC (JN35), I3VWK (JN55), IK4ICZ (JN64) and IK4MPB (JN54). At 1317UTC the station of G7RAU heard 1A4A (JN61) on the key peaking 539

but it doesn't appear that any contacts were being made into the UK at the time.

Another opening to Italy and Slovenia was reported by stations in England and Wales between 1050–1140UTC on October 28th. Contacts were made on s.s.b. between 70.2–70.21MHz with the stations of IOJX, IK0NOJ, IW0FFK, IZ0CKM and S51DI.

Northern Lights

A solar wind stream hit the Earth on October 25th sparking auroras so bright they pierced the glare of the year's brightest Moon. The solar wind flowed from a coronal hole pointing towards Earth and buffeted our magnetic field so hard that it caused an auroral back-scatter event on all of the v.h.f. bands.

Strangely it appeared to have been missed by most operators except those who are enthusiastic about working DX on the 144MHz band. The radio event commenced around 1700UTC and continued for about two hours before disappearing.

As is often the case, the opening favoured stations in Scotland, Ireland and the north of England although well-equipped stations in the south were heard making a few contacts. All QSOs reported on the 144MHz band were made using c.w. as this is the most efficient mode for this type of propagation.

At the station of **Clive O'Hennessey GM4VVX** (Inverness IO78) contacts

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Fig. 1: Peter Graaf in the Netherlands Antilles is currently active on the 50 and 144MHz bands with the temporary callsign PJ4/PA3CNX.

The band was also open to France, Germany, Switzerland and Spain at the same time.

The period between October 13th and 14th was truly excellent with numerous contacts being made on the 144MHz band into DL, EA, F, HB9, LA, OE, OK, OZ, SM and SP. Activity on the 430MHz band was also very high with s.s.b. contacts being made into Scandinavia (LA, OZ, SM), central Europe (HB9, OE) and southern Europe (EA, F).

There was a similar state of affairs on the 1.3GHz and 2.3GHz bands with contacts being made to the same areas of Europe that have these allocations. The other microwave bands were also wide open with the beacon OZ7IGY (Denmark) being heard on the 3.4GHz band and stations such as SK7MW (Sweden) being worked on the 5.7GHz band and EA2/F2CT (Spain), HB9AMH/P (Switzerland) and OK1JKT/P (Czech Republic) being contacted on the 10GHz band.

Propagation was very good on the 144 and 430MHz bands to Spain during the period October 19th–21st

with UK stations reporting contacts with EA1DAX (IN53), EA1DDU (IN73), EA1FBF (IN73), EA1MX (IN73) and EA1UU (IN83). During the evening of October 21st the path extended to the Canary Islands with the station of **Tim Fern G4LOH** (Cornwall IO70) reporting 144MHz contacts with EA8CCG (IL18) at 2578km, EA8AVI (IL28) 2598km and EB8BRZ (IL27) over a path of 2709km.

Real DX!

Now here's news of some real DX, 5000km on 144MHz! In March 2007 **Peter Graaf PA3CNX** moved permanently to the island of Bonaire (FK52) in the Netherlands Antilles. Using the temporary call sign PJ4/PA3CNX he is currently active on the 50 and 144MHz bands as shown in the photograph, **Fig. 1**. Recently he experienced his first trans-equatorial propagation (t.e.p.) opening on the 144MHz band.

On October 8th he contacted the s.s.b. station of LU1FDQ (Argentina) over a path of 5000km and on October 10th he made his second 144MHz t.e.p. QSO with the station of PY4AQA

(Brazil) at 4581km. Conditions over the equatorial path were even better on October 19th with s.s.b. contacts being made with LU5FCI 4933km, LU8EEM 5230km and LU3EE over a whopping 5283km path.

Deadlines

That's it for this month. Ionospheric propagation during December/January is generally fairly quiet at this point of the Solar Cycle. However there may always be some weak Sporadic-E openings interspersed with auroral activity to liven up the 50MHz or 70MHz bands.

My records also show that tropospheric openings on 144MHz and above now occur more often during the month of December to areas directly east of the UK, such as Germany and Poland. There might even be one right now! If you hear anything or have any other news then please send the details to me before the last Saturday of each month.



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 month's happenings and DX stations to be found on the h.f. bands.

Thailand has finally gained some new bands, which became effective on October 12th. Intermediate and Advanced class Amateur Radio operators have now gained access to the 1.8, 3.5, 10, 18 and 24MHz bands on a permanent basis operating within the following frequencies:- 1.800-1.825, 3.500-3.540, 10.100-10.150, 18.068-18.168 and 24.890-24.990MHz.

Authorisation for the new bands, was granted in a new 'Act' governing the use and operation of Amateur Radio in Thailand by the National Telecommunications Commission or NTC and follows years of lobbying by the Radio Amateur Society of Thailand (RAST). You can view an 'unofficial' translation of the new act at www.qsl.net/rast

DX News

Russian operator **Mikhail Fokin RW1AI**, is now active as **R35NP** from the drifting station 'North Pole 35' until next summer. Mike is running 100W on 7, 10 and 14MHz using both s.s.b. and c.w. and a QSL card can be had via RW1AI, through the bureau or direct to Mikhail N. Fokin, POB 13, St. Petersburg, 193312 Russia. Logbooks that include his Antarctic operations as R1AND, R1ANP, R1ANT and RW1AI/ANT are available at www.qsl.net/ua1ake/logs

In Senegal, Western Africa for the next two years is **Jovica Todorovic T98A** who has received his Amateur Radio licence **6W1SJ**. He is expected to spend his operating time mostly 'on the key' but will use some s.s.b. and digital modes at times. You will be able to QSL via T93Y either via the bureau or direct to Jovica Todorovic, **POB 59, Sarajevo, 71000, Bosnia-Herzegovina** and E-mail requests for bureau cards can be sent via



E-mail to: t93y@lol.ba Jovica has also operated with the calls 9K2/T94FC, STORM, ST2A, T94FC.

In Mozambique, South Eastern Africa, **Tony Ferreira CT1BXT** will be using the call **C91R** until August 2008 and his preferred mode is RTTY on 14MHz.

The callsign that has been issued to **Philippe Schlegel F8EFU**, who is now stationed on Martinique NA-107 in the Eastern Caribbean Sea is **FM5LD**. At the moment he operates mainly c.w. on 10MHz using 50W into a wire antenna which he hopes to replace shortly. If you work Philippe, a QSL card is okay through the bureau or direct to **11E 2, Rue du Professeur Oberling, 57070 Metz, France**.

Unfortunately, **Kunio Saito JA8VE** who has been mentioned in a previous column and had been operating in Bhutan as **A52VE** went QRT on the 3rd September to return to Japan because of health problems. Kunio had originally expected to remain in Bhutan until March 2009.

The 2007 Market Reef operation **OJ0B** went QRT on 23rd September at 1400UTC after making a total of over 30,000 QSOs. If you are a stamp collector or wish to receive your QSL card with unique Market Reef stamp you can send an SASE with 7 Euro or

\$10 as your postage and donation to the **Finnish Lighthouse Society** via QSL manager **Martti Laine OH2BH, Savasundintie 4C, Espoo Finland 02380, Finland**. Check out the website at www.lighthousesociety.fi/eng/

Manager Update

Swedish operator **John Hallenberg SM5DJZ** has now replaced the late **SM5DQC** as QSL manager for both **9Q1TB** and **9Q1EK in Zaire**. Direct cards should be sent to Jan Hallenberg, Vassunda Andersberg, SE-741 91Knivsta, Sweden and logbooks will be available on www.logsearch.de and will eventually be uploaded to LoTW.

If you are looking for QSL cards from the following callsigns T93J, T96C, T98G, T98T, T99W, T90A, T90HQ, T960A and T960ARA you can get them via **Robert Babec T98U** preferably via the bureau or you can also request a card via e-mail using t98u@teol.net The direct address is **Plitvicka 7, 78000 Banja Luka, Bosnia-Herzegovina**.

New Websites

If you get the chance take a look at the website for October's **3C7Y** DXpedition to Bioko Island, Equatorial Guinea AF-010 can be found at <http://>



personal.telefonica.terra.es/web/ea5yn/3c7y.htm The team ran three stations for both s.s.b. and c.w together with RTTY using various antennas and the QSL route was via Elmo Coll EA5BYP, Apartado 3097, Alicante 03080, Spain.

Italian operators Luigi Cervasio IK8OZZ, Antonio Bosso IK8VRH, Maurizio Zampa IK8YTA and Salvatore Santucci IZ8GGF were all active from Santo Janni EU-144, IIA PZ-001 at various times between June 1st and the October 15th making around 5,000 c.w. QSOs. Their Logs are now available at <http://dx.qsl.net/> and <http://logsearch.de/> They are also expected to be uploaded to LoTW shortly. If you worked any of the operators you can QSL via IK8VRH.

Finally, the online logs and some great photographs from the recent **OX/PA3EXX/P** operation to Rathbone Island NA-243 can be found at <http://home.quicknet.nl/mw/prive/willemsen/>

The 3B7C Logbooks

I am sure many of you will have worked the very successful DXpedition **3B7C** from the Indian Ocean which finally closed down at 0331UTC on the 25th September a day later than the team had originally planned. The on-line log has now been updated to include all QSOs and there are now 135,718 contacts in the log 50,888 s.s.b., 78,411 c.w., 6,419 RTTY. The number of calls per band work out as 1.8MHz - 2919, 3.5MHz - 13227, 7MHz - 19613, 10MHz - 13385, 14MHz - 30887, 18MHz - 20605, 21MHz - 18773, 24MHz - 8810 and 28MHz - 7499 contacts.



Antarctic Cruise

If any of you have ever fancied a DXpedition that's slightly unusual you may be interested in a proposed cruise in the Antarctic Ocean. French operator **Mehdi Escoffier F5PFP** has suggested a four week cruise could be organised to take place in January 2009 with the itinerary including a number of islands such as King George, Nelson, Greenwich, Livingston and Deception in the South Shetland Islands AN-010. At this stage Mehdi is only looking for five participants and if you are interested you can send him and E-mail to f5pfp@aliceadsl.fr for further details.

Carl Mason GW0VSW

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Your Reports

On to your reports now and 7MHz where **Martin Addison 2E0MCA** in East Finchley, North London used his Yaesu FT-2000 and 10W to a folded half-size G5RV logging s.s.b. calls EA5JO (Spain) 0505, TM8RWC (France) a special call for the Rugby World Cup at 0725, HB9SPACE (Switzerland) a special call for World Space Week at 1156 and PD9JP (Netherlands) at 2108UTC.

Another reporter on the band was **Lee Carberry M0HOK** in Stockton-on-Tees who coupled his Yaesu FT-817's QRP level power to a half-size G5RV 9m (30ft) up a tree and sloping antenna tuned with an MFJ-941E. Using the BPSK31 mode, he managed HZ1IK (Saudi Arabia), EA4CJI (Spain) and ES1ABT (Estonia) all around 0830UTC.

In Gosberton, Spalding **Peter Leng G0SVO** used s.s.b. to work OZ/DL1EBR (Denmark) 0812, DL0SY (Germany) 0951, TN200T (France) 1042, UA6HBO (European Russia) 1521, LZ2ZF (Bulgaria) 1540, UT4UO (Ukraine) 1548, 9H3YM (Malta) EU-023 at 1603, LX2007G (Luxembourg) 2110, 3B7C (Agalega & St Brandon) AF-001 at 2034, ON47FOUGA (Belgium) 2035 and 7X2EB (Algeria) at 2058 while c.w. found SM4YPG (Sweden)



at 1935 followed later by IK1MOP (Italy) at 2117 and SV6CZQ (Greece) at 2119UTC.

The 14MHz Band

On to the 14MHz band now and the log of **Owen Williams G0PHT** in Biggleswade, Bedfordshire who used s.s.b. at 100W to log HV50VR (Vatican) 1344, 3B7C (St Brandon) 1603, 9U0A (Burundi) 1711 and XE3/AB3Y (Mexico) at 1813UTC with a Yaesu FT-747 linked up to a dipole antenna.

Also using s.s.b. was Martin 2E0MCA who lists IQ1IM/P (Italy) on Gallinara Island EU-083 at 0835 followed by 9H2O (Malta) EU-023 at 1035, 3V8SS (Tunisia) Sousse Scout Station at 1433, Z36A (Macedonia) 1549, NP2/AK2P (Virgin Islands) NA-106 at 1603, TF3ZA (Iceland) EU-021 at 1745 and CT3MD (Madeira Island) AF-014 at 1926UTC.

The 18 & 21MHz Bands

The 18MHz band provided a few contacts for our reporters. Martin 2E0MCA found EA1ABT (Spain) at 0920UTC on what was described as a "pretty poor Band" while Peter G0SVO, who also spent some time on the band, found KG9N (U.S.A.) 1434, 9H1KZ (Malta) 1454, CT2ISZ (Portugal) 1737 and ZD7X (St. Helena) AF-022 at 2033UTC using a Yaesu FT-857 and 100 watts.

In Worcester Park, Surrey **Eric Masters G0KRT** logged 3B7C using c.w. at 1231UTC using a Kenwood TS-570DG at 100W. I'm unsure of Eric's antenna system, but with he was able to hear



some of the 3B7C 'pile-ups' on several other bands including 24 and 28MHz but was unfortunately unable to work them.

Meanwhile Owen G0PHY worked 3B7C once again at 0820 before changing to 21MHz and despite a good deal of "static noise" managed to work 9U0A again at 2101UTC before closing down.

Signing Off

Well that's it for another month and my thanks go to all our reporters for their logbooks. The bands have been unpredictable most of the time but openings have occurred throughout the day even on 24 and 28MHz. It really does pay to listen out for a while, even on what sounds like a quiet or noisy band to see just what is around!

I can only offer my apologies if I have missed anyone out this time. Mail problems and poor Internet access have caused me major headaches over the past few months. However, my new address should be fine now and I will shortly be back on-line at home even though my visits to the Internet cafés have been fun! Please remember to include your name, callsign and contact number or E-mail address on any correspondence as not all my records are available just yet.

As usual, my thanks must also go to **Mauro Pregliasco I1JQJ/KB2TJM** editor of the *425 DX Newsletter* for the DX information. Until next time have a good DX-filled month and I wish you all a very Happy Christmas.

73, Carl GWOVSW

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Amateur Radio A Beginner's Guide

(reprinted by Lindsay Publications Inc.)

Rob Mannion G3XFD writes: This 158-page soft back book is a re-print (facsimile) of the original edition that first appeared in the 1940s and I first saw it in use in the United States Navy (USN) as a text book for radio technicians. Although it's not as comprehensive as the Second World War version of the **Radio Society of Great Britain's Amateur Radio Handbook** (used extensively in the armed services for

training) the American publication also became a favourite.

Reading the book for me was like entering a time warp! The various chapters take you through basic receivers (with projects) and small transmitters (again with useful projects) using the rather idiosyncratic American schematic style circuits.

If you are someone who is still immersed in filaments (heaters), cathodes, grids and screened grids, this book is just for you! Even those of us who struggle with coil windings are helped by a good old fashioned coil turn chart for each band (for the 160 to 10m bands only). Most of the circuits are presented in a large,

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clear style, although several are rather small for those of us at the bi-focal stage, despite this, even the smaller diagrams are clearly printed and are readable with a hand magnifier. This book brought back many memories for me and I'm tempted to build a valved receiver with its help! **Recommended reading.**

See the bookstore on page 76 for ordering information

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and matching carrier crystal for USB generation. **PCB and component kit £82.50 including P&P.** Optional extras mic gain pot, volume control pot, £1.75 each, signal meter £9.00, 8ohm loudspeaker £2.00, P&P £1.50.



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David Butler's

antenna workshop

David Butler G4ASR describes a Moxon Tri-Band Beam Antenna for the 50, 70 and 144MHz Bands.

Operating on the v.h.f. bands from a local hilltop is a great way to experience making contacts over reasonably long distances. There's even an exciting award scheme, **Summits on the Air** (SOTA) that encourages lightweight portable operating in hilly and wilderness areas. All you need is a transceiver and a small antenna. Sometimes though, you may want the flexibility of operating on a number of different v.h.f. bands, especially as nowadays many transceivers cover a multitude of bands.

You could use a small whip antenna but this will only provide you with local v.h.f. contacts on one solitary band. If you've spent some time getting to the top of a hill you might as well get some reward for your effort by using a directional antenna that is lightweight, possesses a small amount of gain and covers a number of v.h.f. bands. A directional antenna that meets all these criteria is the Moxon beam.

The Moxon Beam

The Moxon beam antenna is fairly well known in Amateur Radio circles and is a derivative of the VK2ABQ square (a quad loop antenna, cut the loop at each side in the centre and then they're insulated from each other). Originally, VK2ABQ found that his beam antenna possessed some



directivity and gain in the direction of the feed point. **Les Moxon G6XN** then looked at this design and made two very significant discoveries about the VK2ABQ square.

Les Moxon's experiments showed that a rectangular shape improved the forward gain and that the spacing between the ends of the wires had to be much greater than in the VK2ABQ. It became, a two-element beam but smaller than a 2-element Yagi. The version that I'm describing is essentially a set of wire beams with a common feed-point nested within each other to cover the 50, 70 and 144MHz bands.

Characteristics

No antenna does everything well but the Moxon design has a number of useful characteristics. It possesses a modest but useful gain of about 4dBd,

it has a wide front lobe of around 100° beamwidth (between -3dB points) and none of the side-lobe notches associated with most other antennas. It has an excellent front/back ratio of up to -35dB and it requires little or no matching, connecting directly to a 50Ω feed line.

The antenna covers three popular v.h.f. bands, it's very lightweight and can be turned with a very small rotator if you're going to use it from a semi-permanent location. Finally, it's a compact and simple design that's inexpensive and easy to build with minimal tools and skills,

Tri-Band

Take a look at the layout of the tri-band Moxon antenna as shown in diagram **Fig. 1**. It consists of a centre aluminium spider, into which four fibreglass tubes are inserted. Plastic wire retainers, on the fibreglass spreaders allow the elements to be fixed. Wires form both driven and reflector elements for each of the three v.h.f. bands. The ends of the wire elements are kept apart by plastic insulator strips.

The centre spider also facilitates connection for another short length of fibreglass tube onto which is attached a coaxial connector **Fig. 2**, to form the common feed-point **Fig. 3**. The feed arrangement shown in the diagram, **Fig. 1**, was developed to provide isolation between the 50MHz and 144MHz elements.

A short section of aluminium tubing is also connected to the centre spider

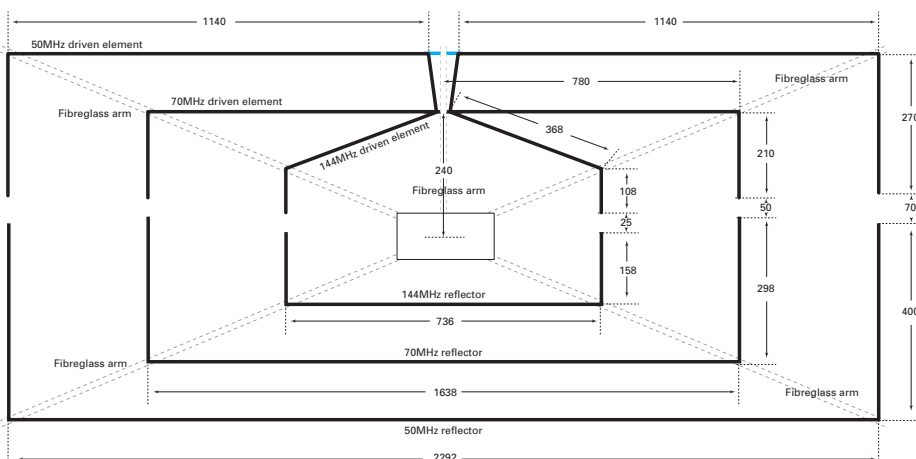


Fig. 1: An overall view of the triple-band Moxon rectangle for 50, 70 and 144MHz.



David Butler G4ASR

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Fig. 2: The 'spider' in the centre of the antenna is of simple design. The vertical running pole (vertical in the picture but horizontal in Fig. 1) goes out to become the support point for the common feed-point, as shown in Fig. 3.

to allow attachment to a main mast. Normally the antenna is mounted horizontally but it can be mounted vertically if you need to use it to access repeaters or other stations using vertical polarisation.

Materials & Construction

The materials for this antenna are easily obtained for construction, more so because I've arranged that you can get all the hardware such as the centre spider, plastic wire retainers, insulator strips and feed connection from **Sandpiper Antenna Technology** (see separate panel).

The beam elements are made from 2mm diameter 16-strand plastic coated wire. You should add an extra 80mm to each end of the elements for adjustment. The end 80mm of each wire element is passed through the plastic insulator and twisted back to secure it.

The layout of the 144MHz driven element is quite critical so follow the diagram exactly as shown. That's all there is to constructing the tri-band beam and now you're ready to check out the antenna.

Checking the Antenna

To start checking the antenna, temporarily connect a v.s.w.r. meter to the feed-point connector (use a 50Ω patch lead about a metre long) and then attach your 50Ω feed line to the other side of the v.s.w.r. meter back to the transceiver. The dimensions given should produce a minimum v.s.w.r.

around the bottom of each band.

Check the v.s.w.r. on the 50MHz band first. It should be much less than 2:1. If not then shorten the driven element a small amount to move the v.s.w.r. curve up the band, or lengthen the wire to move it down.

Simply untwist the ends of the wire, adjust the length and then twisting the surplus back again. There is negligible interaction between the three bands so carry out the same procedure for the 70MHz band and finally the 144MHz band. If you've built the antenna to the dimensions given then normally any v.s.w.r. problems are associated with the proximity of the antenna to other objects and to a lesser extent the height of the antenna above ground.

Other Bands

Let's now look to making a Moxon rectangle for other bands. There's a program that calculates the

dimensions of a Moxon rectangle. It's been written by **Dan Maguire AC6LA** and you can find this on his website at www.ac6la.com/ Just input the design frequency and diameter of the wire or tubing and the program will provide all the dimensions.

Note that if you want to build a Moxon rectangle with different size wire or tubing then altering the element diameter will result in slight changes for the required spacing of the element tips. Different size tubing changes the coupling between the tips.

To achieve the same coupling with larger tubing the tails will need to be further apart but without significantly changing the overall final design length of the reflector element. Anything more than small changes in element diameter may require juggling all of the dimensions to maintain performance and still have a near 50Ω feed-point impedance.

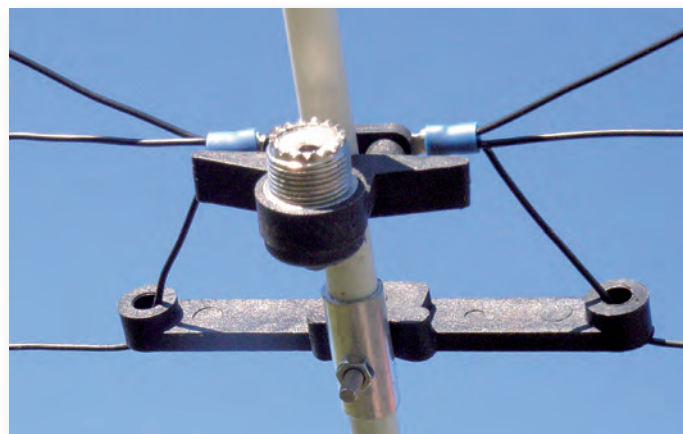


Fig. 3: The common feed-point. Note the tapering feed out to the 50MHz driven element.

A complete kit of parts to make this Moxon 50MHz, 70MHz, 144MHz tri-band beam antenna can be obtained from **Sandpiper Aerial Technology, Unit 5, Enterprise House, Cwmbach Industrial Estate, Aberdare, CF44 0AE** for an introductory price of £55. Postage & Packing is £10. Telephone Sandpiper for further details: **01685 870425** or via their website at: www.sandpiperaerials.co.uk



John Sketch's

valve & vintage

This month the Valve & Vintage slot is rather unusual and features John Sketch GW3DDY.

A recent *PW* Topical Talk mentioned John Sketch GW3DDY, an avid *PW* reader and author who first wrote for the magazine in 1933. John is still enjoying the magazine today and we are proud to share some of his radio memories.

In the 1920s, when I was aged seven, I read in our daily paper about Marconi and his experiments with a wonderful system of wireless. I read for the first time about wavelengths and stations or transmitters that could be heard on a mystery box called 'a crystal set' that had to be connected to an aerial and an earth spike.

Pocket money was meagre at this time but I managed to get some second-hand Brandes headphones, some copper wire, an old copper poker (which would do as an earth spike) and a piece of galena from a local chemist. They were some of the first people to sell wireless parts – believe it or not!

After winding a coil, constructing a holder for the galena and cat's whisker. I made a fixed condenser from sheets of silver paper from cigarette packets and paper held together with paper clips! Soon, I had made my first crystal set and with my aerial and earth spike connected and endless searching with the cat's whisker I heard a voice and music for the first time!

The chemist who I had bought the wireless parts from, told me I would have to tune the circuit with a condenser, which he then went on to show me how to do. As I could not afford to buy this luxury item, I made one from plates of tin from a meat can, with both fixed and movable plates held together with brass rods and nuts fixed to a piece of wood. The tuning knob was a large button from a coat, glued to the rod.

Everything Worked

To my surprise, everything worked and, at times, I was able to listen to the Eiffel Tower, Hilversum, and BBC stations after it was set up in 1922. In 1926, I was 10 and was in hospital for months.

Later, in April 1926, my mother

sent me on holiday to my Aunt in Stalybridge near Manchester. And it was while I was there that my cousin, **Jack** who worked for Metropolitan Vickers and was a keen builder of wireless circuits, who was kind enough to explain to me how each one worked.

The photograph, **Fig. 1**, is of Jack adjusting the horn loudspeaker as he broadcast news of the National Strike to people walking in the road. (The photograph is now 81 years old so it's got an excuse for being rather 'tatty'!) and I'm in the picture holding a pair of pliers! This new-found interest in wireless made me determined to learn all I could, so I begged and borrowed any book or magazine that had any details of wireless.

From 1930 To 1939

From 1930 to 1939, I worked in a four-shop business as a wireless and electrical mechanic and later as a service engineer. In 1933, when I was 17, I wrote an article entitled *Forms and Methods of Volume Control* and sent it to *Practical Wireless* and I was delighted when it was published!

In 1938, *Wireless World* published an advertisement from the Air Ministry that a Civilian Wireless Reserve was being set up in case of an emergency and called on anyone with knowledge of wireless and the like to volunteer. So, I volunteered and was sent a travel warrant to travel to London (on a Sunday!) to be interviewed at the Air Ministry by **Squadron Leader Gillan** and a Flying Officer. After a technical examination, I was told I would be sent for when I was required.

In November 1939, after the Second World War had broken out, I was sent a travel warrant and told to report to the GPO transmitting station at Leafield in Oxfordshire. Here, I was told I had been sent to receive instruction on the huge Metropolitan Vickers Company's

demountable valves. I was to learn how to remove the anode (which sat on an optically flat surface) unscrew and replace grids or filaments, which had been damaged. Then I had to re-assemble and start up the pumping plant at the base of the valve to produce a vacuum.

During my time at Leafield, it was interesting to listen to the clatter of the ticker tape containing coded Morse information being transmitted by the powerful transmitters to the British fleet.

After two interesting weeks, I was posted to the Air Ministry Experimental Station (AMES) RYE, where I was issued with an Air Ministry badge and rated – in RAF terms – as a Wireless and Electrical Mechanic (WEM), to work on Radar.

The operation of the Chain Home radar stations has been well documented but the terms Radio Location or Radar were never used. The civilian members were encouraged to volunteer for the RAF, which I did and went to East Croydon – but was rejected on medical grounds!

Some time later, I received call-up papers and went to Brighton but again was rejected on medical grounds, so I remained a civilian during the war. As a Wireless and Electrical Mechanic my duties included the maintenance of equipment on the station including the transmitting aerials. These were supported on the four steel towers 360ft high, which had to be climbed while holding on to an AVO meter and binoculars! The meter was needed to test the feeders and the binoculars to watch for enemy aircraft – if you were sighted, you had to get down quick!

Later, I was posted to The Radio School at Yatesbury as a civilian instructor to train RAF personnel on radio location. After some years at Yatesbury, I was transferred to the Ministry of Information at Cardiff

Fig. 1: John's cousin Jack adjusting the horn loudspeaker as he broadcast news of the strike, John can be seen on the left in short trousers!



as a service engineer and travelling inspector with responsibility for mobile film units and cars fitted with loudspeakers and amplifiers to warn the population in case of an invasion! After the war, this department was changed to the Central Office of Information where I remained until 1952, when it was closed down by the Conservative Government who had won the recent election.

Amateur Radio Licence

In 1948, I obtained my Amateur Radio licence and callsign of **GW3DDY**. Looking back it's interesting to see that back then it was the responsibility of the Chief Engineer of the General Post Office to issue the Amateur licence.

I built many of my own transmitters and receivers until I obtained one of the early commercial transceivers. It was a Sommerkamp (In reality a Yaesu rig!) FT-100, covering 3.5 – 28MHz without Top Band' 160 metres, which was a pity, as this band was very popular especially on Sunday mornings. I made up a circuit to operate on Top Band, which worked well after some effort and thought it might be of interest to other Amateurs.

I wrote an article entitled *Top band with Sommerkamp FT-100*, which was published in *The Short Wave Magazine* in July 1969, Vol XXVII Number 5 page 276. It was the first article in the magazine and occupied three pages, so it must have been of interest to the then editor **Austin Forsyth G6FQ**.

Television Experiments

Until 1952/3, I was living in a valley in South Wales, the village was called Maesycwmmwr, which was about 24km (15 miles) from Cardiff. I had been helping a friend with his experiments with the mechanical mirror drum of the Baird system of television. This had awoken in me a strong interest in television and soon the ex-Government equipment on sale after the war provided me with a green cathode ray tube, timebase, power supply and v.h.f. receiver.

After many, many hours of

experiments, the system seemed to be working with a v.h.f. signal supplied by my signal generator. The BBC at Alexandria Palace had started transmitting television signals, sound and vision. I didn't expect to receive a signal, as we were over

240km (150 miles) from London and our house was in a hollow surrounded at a distance by three different railway lines and screened by a large viaduct!

One evening I set my television equipment working and was able to rotate a quarter-wave television aerial through the window of the shed. After much effort there was still no signal but a few times I noticed a squiggle, which gave me hope that it might be a tiny weak bit of signal.

The next day, I constructed my new aerial, which was now a full-wave version, made up of wires hung from bamboo poles that were attached to a rope strung between the chimney of the house and a tree in the garden

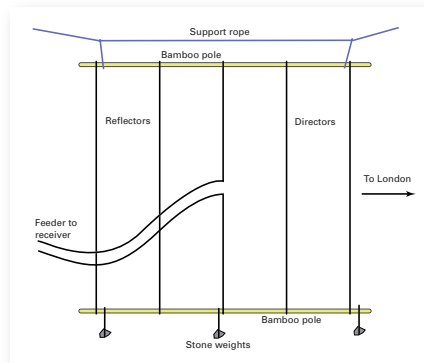


Fig. 2: A representation of John GW3DDY's experimental television aerial, constructed in the 1950s.

pointing in the direction of London. A representation of this arrangement is shown in **Fig. 2**.

After some successful tests, with much excitement the family gathered around the green cathode tube to watch the horses charge around the ring in Bertram Mills Circus! Although the television picture was not perfect, at least I was thrilled that the full-wave aerial had produced the first television pictures in a valley of South Wales 240km miles from London.

Still Going Strong

In 1952, I joined Philips Electronics as a representative in the video division with responsibility for sales in South Wales and parts of England. During this time, I had lost two lovely wives from cancer and I now live alone. In 1980, I retired having reached 65 and took up writing for magazines as a change from electronics.

My last writing contribution for *Practical Wireless* was in February 2005, when I submitted an article called *Looking at Two Metre History*, in which Marconi described his experiments with the v.h.f. band. Now, at 93, I still enjoy building Amateur Radio designs, a little writing and Amateur Radio operating.

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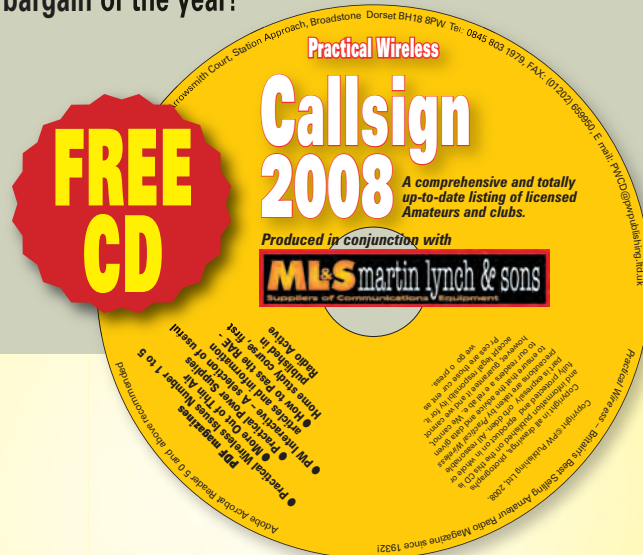
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If you enjoy Morse or would like to enjoy the using the mode that can get you a QSO at any time of the day, even in poor conditions – this is the page for you!

Welcome to the Morse Mode! I hope you'll enjoy meeting up with me every-other-month from now on!

Note: Newington Connecticut December 19, 2006 – In an historic move, the FCC has acted to drop the Morse code requirement for all Amateur Radio license classes. The Commission adopted the long-awaited Report and Order (R&O) in WT Docket 05-235, the "Morse code" proceeding, and released it December 19.

Notices such as that I've included above, have appeared over and over again from countries around the world and appeared to sound the death knell of c.w. (Morse telegraphy) on our Amateur Bands. Well, I am happy to report that nothing could be further from the truth!

Interest in c.w. as it is generally known, has never been greater. This column is especially for those who are interested in c.w., or who would like to take up 'the key', or even for the died-in-the-wool old-timers like me who have been using the mode for half a century or more!

I intend to include something for everybody but those 'somethings' will depend to a large extent on input from you – yes **YOU!** I would like to hear what you or your Club is doing with c.w., how you are encouraging the newcomer, or what the Luddite G3s (and others!) are up to.

Wrinkly History

In order to kick things off, a potted history of the wrinkly G3LDI! I was licensed in 1956, have been an RSGB member all that time and have also been on c.w. since that year.

In fact, c.w. was the first mode for most Amateurs then, as most of us had to make our own equipment, because little commercial gear was available and what was on sale was expensive! Most of the DX chasing

was on c.w., a much better mode to use then – and even now.

Speed naturally increased and operating in the National Field Day (NFD) and similar contests all served to improve our skills. I then started teaching Morse to other short wave listeners (s.w.l.s) in our club. These sessions took place in my shack, an 8ft x 6ft shed in my parent's garden. I then taught for a number of years at evening classes in schools and now I'm now back in my shack again.

The interest has been variable over the years but I have never been short of students. The only problem is that when they find out that they have to practice every night, the numbers usually drop slightly!

I gave a talk at the **Radio Society of Great Britain's (RSGB) HF Convention** in October 2007, which was very well attended and there seems to be a real revival of interest. The RSGB are planning to instigate an incentive which will help, with a Morse Proficiency Certificate. Some Clubs are already producing their own Certificates, so the RSGB Certificate will be an additional, attractive piece of paper.

The proposal is to start with a basic 5 words per minute (w.p.m.) Certificate and then progress upwards with no ceiling! It will be a matter of pride to have this piece of paper on the wall of the shack!

I have already mentioned DX working around 50 years ago. Well, not much has changed, especially if you look at the statistics of D68C for example where the majority of contacts were on c.w., with a total of 84,482.

Morse still remains the most popular mode for Radio Amateurs. Whether contesting, DX-ing or generally chatting to friends, Morse is the mode that you can become involved in completely!



Fig 1. Typical c.w. contest station.

Evolution has played its part however. In my first NFD in 1957 I used a National HRO receiver, a home-brewed transmitter with a variable frequency oscillator (v.f.o.) and a straight key. In this computer age, although we always have a paddle on the desk for chatting, the contesting and logging is all now via the keyboard. (I'll enlarge on this in a later column). As you see from the picture in **Fig. 1**, the operator has both keyboard and paddle in front of him, with the screen at eye height.

Cracking The Pile-Up!

Another thrill of chasing DX is cracking the pile-up. Thinking back 50 years, we had to work the DX station on their transmit frequency. Actually, this was not that bad because then there were not as many stations active, and not only that, it mandated a certain amount of discipline.

Nowadays, it's quite common, especially for EU stations – mostly southern EU – to call all the time regardless of instructions from the DX station. Working split causes this to happen, even when the DX station says: "The HB9R? **ONLY** please."

Listening on the split frequency there are the usual southern Europeans, etc., calling with total disregard. It's not that they don't understand, it's just pure arrogance and bad manners. Despite that DXing on c.w. is great fun!

I hope this has whetted your appetite for More Morse, so until next time, 73 and "May the Morse be with you!"

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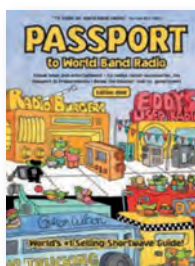
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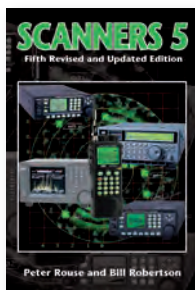


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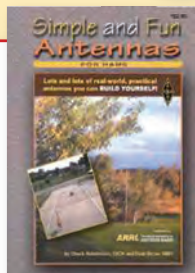
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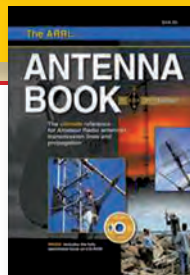
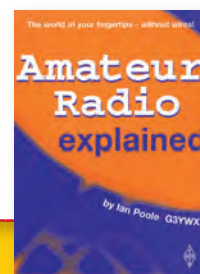
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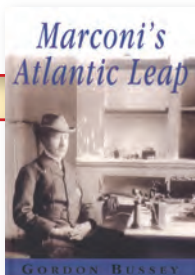
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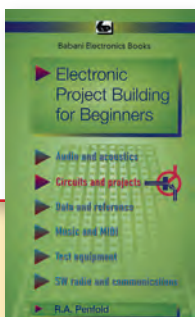
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Rob Mannion's

topical talk

Rob Mannion G3XFD discusses the letters and E-mails received regarding the debate on DXpeditions and contests.

Achieving a good 'balance' of opinions in the letters pages can be difficult. However, **you** can help the balance by sending us your opinion! The letters we publish are an attempt to accurately reflect the balance of opinion from the letters and E-mails arriving at the *PW* offices.

The feedback we've published this month has provided some interesting opinions and at this stage of the debate I must mention that my opinion has changed somewhat recently!

Dead Band Pre-Contest!

I've modified my opinion somewhat on 'high pressure' contests and contest operating, due to the seemingly lifeless higher h.f. bands before the weekend of the CQ World Wide Contest in October. The change is because, on the weekend of the contest 28MHz – in particular – was absolutely alive as far as I was concerned in Bournemouth. The effect of the contest was stupendous – I could hear stations from all over Europe and beyond, over the whole band.

Of course, I fully realise that 28MHz band conditions play a vital part – but for point-to-point propagation to be tested **there has to be activity**. And activity there was!

Although I'm not a contest operator I provided some points to other stations and managed to work some unusual (for me anyway!) areas of southern Europe. Operating standards on (28MHz especially) the bands were high and I enjoyed a few hours operating.

As a result I now think that provided the majority of contesters and adjudicators can control poor behaviour (perhaps by disqualifying the ill-mannered operators) we can all live happily together. I found the experience to be exhilarating, especially as all I could hear the on the day before the contest was the occasional beacon on 28.200MHz!

Home Brew Transistors

The letter from **Bob Harry G3NRT**, commenting on the original letter from **Jonathan Walker** and my own in Topical Talk, is the tip of an iceberg of feedback from readers! I'm always delighted when

there's such a reaction, especially when it seems that my grandfather (**2FD** in the 1930s), along with many others, may well have – perhaps inadvertently – managed to construct active semiconductor amplifiers many years before it was thought possible.

Such is the level of interest in the historical home brewing of transistors I have commissioned a reader – I hope he doesn't regret asking for the article photocopy that led to the suggestion that he write an article – to produce a modern replica of the techniques featured in *The Short Wave Magazine* in the mid 1950s that was written by his Physics Master.

The article will appear in the Valve & Vintage slot sometime in the latter half of 2008. I have no doubt we'll all be intrigued to read it, although I am somewhat concerned that over zealous health and safety rules might make the process a legal nightmare due to the chemicals used. We'll just have to wait and see but whatever happens I'm confident it will provide very interesting reading!

Editorial Apology

I was most embarrassed when I discovered that **Stef Niewiadomski's** feature, *Francis George Rayer G3OGR*, published on pages 71 – 75 in the December issue of *PW*, was not mentioned on the contents page. I offer my apologies for the unfortunate mistake.

The error was highlighted because I received some excellent feedback on Stef's article at the **Mayo Radio Experimenters Network (MREN)** Rally in Knock, County Mayo in Ireland on Sunday 18th November. A number of readers – from as far afield as County Cork and Fermanagh – came up to the *PW* stand to mention G3OGR's influence on their own enjoyment of the radio hobby and to express their thanks to Stef.

We value the input from all our authors and now I have to wear the proverbial sack clothes and ashes. The only problem is finding a big enough sack! Thanks for a great article Stef!

Finally, I'm confident that readers will enjoy our new major features and articles and that they will offset the modest 15p cover price increase as we strive to bring you an ever-improving magazine.

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Reviewed: Rob Mannion G3XFD takes a look at the latest model of the **Watson Power-Mite switched mode power supply** from Waters & Stanton.

Reviewed: Tex Swann G1TEX takes time off from his work as *PW's* Technical Editor and tries a novel folding loop antenna.

The St. Brandon Diary: Don Field G3XTT shares the 'behind the scenes' adventures from the extremely successful St. Brandon 3B7C DXpedition.

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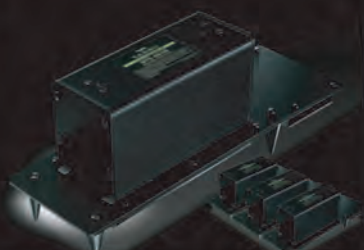
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