

Practical

WIRELESS

Britain's Best Selling Amateur Radio Magazine



Coat Hanger Contesting!

For u.h.f.
Portable
Operating



Reviewed

The Alinco EMS-14

Desk Microphone



Reviewed

The New Alinco DJ-175 144MHz Hand-held Transceiver



Build
A 10MHz
Loop Antenna

WATERS & STANTON

SCOTTISH STORE • W&S @ JAYCEE, 20 WOODSIDE WAY, GLENROTHES, FIFE, KY7 5DF - CLOSED MONDAYS
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 • ENQUIRIES: 01702 204965 FAX: 01702 205843 EMAIL: sales@wspc.com OPENING TIMES: Mon-Sat: 9am - 5.30pm

Hockley D-Star Repeater GB7SS! Rx 430.7375 Tx 439.7375

HALF PRICE OFFER!

FT-2800M



2m 65Watts FM
Mobile Transceiver
List Price: £179.95

W&S £119.95 D

Waters & Stanton First with VX-8E

YAESU

Waters & Stanton were given a sneak preview of this new radio by Yaesu's top designer Mr Fujiki. We will have the first UK stocks and it should be available March. This will be the first truly portable APRS radio, and with Blue Tooth, could easily function as a mobile.



FT-450

NEW



YAESU

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 £549 D

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

FT-450AT with Built-In ATU £619.95 C

FT-950

NEW



YAESU



100W
160 - 6m

W&S £999 D

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

Deal: Get FREE Power-Max-25NF PSU worth £89 when you buy FT-950 from W&S. Offer to PW readers only at time of order.

These Yaesu offers expire 18/04/09

PAY NOTHING FOR 12 MONTHS

BUY NOW PAY LATER AT BOTH 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 - Then 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.

NEW Icom IC-7700

HF Transceiver

• 1.8 - 54MHz up to 200W PEP • SSB CW FM AM



In Stock!

Exclusive - get FREE IC-7000kbd with matching lead for instant RTTY/PSK31

£4999

YAESU

FT-897D+



The FT-897D+ is exclusive to W&S and comes with dual DC leads making it the ideal base portable radio. **STOCKS LIMITED**

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

W&S £599 D

FT-2000

YAESU



1.8-30MHz +6m 100W

£1899 D

FT-2000D 200W

£2399 D

The FT-2000 series has become the DXpedition favourite. With front end preselector and dynamic range, it handles crowded bands with ease. You can dial in selectivity right down to 25Hz. Transmitted audio quality can be adjusted over an enormous range via the built in DSP. And if you opt for the FT-2000D, it is almost having a 2 el. Yagi for FREE.

PART EXCHANGE? We take in almost any ham gear - even old clunkers!! Give us a call TODAY

FT-857D

YAESU



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

W&S £529 D

FT-DX9000D

YAESU



Yaesu's top radio series of transceivers for the ultimate experience!

FT-DX9000Contest Phone!
FT-DX9000MP

FT-817ND

YAESU



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



Deal: bhi DSP fitted £529

W&S £399 D

Special Offer Nearfield FM Monitor

WR-5001 30 -900MHz FM

Hunt out any local FM signal instantly. Just press nudge button to move to next signal. Built-in speaker and rechargeable battery pack. Monitor your own signals.



Normally £79.95

£59.95!

Get Ready For D-Star! (first repeater at Herne Bay)

Log on to GB7SS 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 £384 C

IC-E2820 with D-Star £539 C

IC-E91

Fitted with D-Star

£379.95 C



PW customers can claim an extra DC lead when ordering!

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

TM-V71E

NEW

KENWOOD

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

W&S £259.95 D



FTM-10E

NEW

YAESU



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

W&S £249 D

IC-7800

ICOM



Icom's greatest HF transceiver ever. Invest in the best! 200W HF Built-in PSU. * All amateur bands HF + 50MHz 200W SSB, CW, RTTY, PSK31, FM, AM * Output power (continuously adjustable) SSB, CW, RTTY, PSK31, FM 5-200W, AM 5-50W, 137kHz, CW > -20dBm * General coverage Rx: 0.030-60.000MHz * 7in Colour TFT display

Deal: SP-20 Filter Spkr FREE

W&S £6599 D

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

Orderline



01702 206835

Online Catalogue



www.wsplc.com

UK's Lowest Prices



Zero Deposit
Zero Interest



DV-DONGLE

Work D-Star world-wide from
your PC or Laptop.

£199.95 C

FREE CARRIAGE! Until Apr 18th!

On all orders over £100

This offer is exclusive to PW readers
and applies to UK mainland only



TS-2000E



- *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
£1369 D



TS-480SAT
100W HF+6m **£699 D**

TS-2000X with 23cms **£1624 C**

TS-480HX **£769 D**

IC-756PROIII

ICOM



HF + 6m
100W
All-Mode

W&S £2068 D

Special Deals

We can offer special deals on
most packages and good PX
allowances - call us!

IC-7000

ICOM



HF/VHF/UHF
All-Mode
Transceiver

W&S £939 D

Deal2: With TFT PAL TV Screen £999

Deal3: With TFT + Power-Mite PSU £1049

IC-7400 Deal 1 ICOM

HF - 70cms 100W transceiver plus
SP-21 spkr and SM-20 mic **£1511 D**

IC-718 HF 100W transceiver **£449**

IC-706IIGDSP ICOM



HF/VHF/UHF
100W
Transceiver

Deal: IC-706 + New Power-Mite-NF FREE **W&S £739 D**

IC-703DSP

ICOM



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

W&S £524.95 D

Visit our eBay shop for more bargains!

eBay

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

KENWOOD



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.

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

£88.00 C

bhi DSP Noise Cancelling

NES10-2 MkII



Speaker and
programmable DSP unit.
Offers dramatic noise
reduction.

£97.95 C

ANEM

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

£122.95 C

NEIM-1031

Noise Eliminating
In-Line Module.



£136.95 C

NEW Nissei Cross Needle Meters



This is a new
range of
cross-needle
meters at a very
competitive
price!

This new range is available March 2009

RX-103 1.6 - 60MHz 2kW **£49.95 B**
RX-203 1.8 - 200MHz 200W **£49.95 B**
RX-403 125 - 525MHz 200W **£49.95 B**
RX-503 1.8 - 525MHz 200W **£69.95 B**

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



£254.95 D

IC-910H

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

£1239 D

IC-910HX

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

£1439 D

IC-2200H

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

£199.95 D

IC-2725E

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

£319.95 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



£189 D

FT-1802E Low Price! **£109 D**

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

FT-8800E Low Price! **£269 D**

*2m/70cm Dual band FM Mobile transceiver

FT-8900R Low Price! **£299 D**

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

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-1 G** for VX-7

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

ADMS-2 H for FT-8900 / **ADMS-2 J** for FT-8800

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

ADMS-3 Programming Kit for VR-500

ALL £41.95 with FREE PC Radio Data Lead.

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

FT-857 **BOTH** £32.95 both these items require a

separate CT-62 lead at **£29.95**

IC-E92D

NEW

ICOM

2m/70cm Handheld with
Built-in DSTAR



- * 144-146MHz / 430-440MHz
- * FM FMN WFM AM (Rx) DV
- * 5W/2.5W/0.5W/0.1W
- * 1304 memories
- * 100 scan ranges
- * Rx range 0.495kHz-999.9MHz
- * CTCSS, DTCSS, DTMF
- * Includes antenna, and charger.

A fully fledged digital
radio using D-Star as well
as traditional dualband.

W&S
£369.95 C

Icom VHF/UHF Handhelds

IC-E91 D-Star Ready

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

£269.95 C



IC-E91 with D-Star **£379.95 C**

IC-V82 7W 2m Digital **£172.95 C**

IC-U82 70cms Digital **£172.95 C**

IC-E90 6m/2m/70cm **£219.95 C**

IC-T3H 2m 5W **£144.95 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!

£209.95 C



TH-K2E 2m 5W **£139.95 C**

TH-K2ET 2m 5W FM **£149.95 C**

TH-K4E 79cm 5W FM **£139.95 C**

Yaesu VHF/UHF Handhelds

VX-7R

Black or Silver Available.
Totally waterproof. Wide
frequency coverage
500kHz-900MHz AM/FM.

£239 C



VX-6E 2m/70cm wide rx 5W **£179.95 C**

FT-60E 2m/70cm wide rx 5W **£129.95 C**

VX-3E 2m/70cm **£129.95 C**

VX-170 2m 5W w/16-key pad **£89.95 C**

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



Feels Just Like Being A Controller!



Now with
2009
Software

AirNav RadarBox™

Includes Software,
Receiver,
Antenna & Leads.

Chosen By
BBC
For Aircraft
Monitoring

- Watch the Action Live from Home!
- Real-Time Radar Mode-S & ADS-B Decoder
- Zoom Worldwide to Runway Level
- Network your Station with Others
- Self Powered from USB Port. Plug & Play!
- Centre Map on your Home - Direct Reception
- Everything you Need Apart from PC

Comparisons? RadarBox links you direct to all users so you can track aircraft worldwide. RadarBox gives you NASA photographic map overlays. RadarBox gives you true plug and play operation, and the best graphics. No wonder it outsells the competition!



£389.95 D

WATSON

Official Distributer
UK's Lowest Prices

Power-Mite-NF

NOISE OFFSET POWER SUPPLY

NEW



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

W&S £69.95 C

Power-Max-45NF

POWER SUPPLY

NEW



40 Amp (45A Peak) continuous switch mode PSU with Noise Offset Function (NF). *Output 4-16V DC Variable *Input 100-260V AC *Short Circuit & Over Voltage Protection

W&S £119.95 D

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

£24.95 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 C

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

£119.95 D

W-25SM Output 22A, 13.8V DC, supply 230V/115V AC

£59.95 C

DM-15W 15W DUMMY LOAD



Ideal for testing handhelds and lower powered transceivers. *Range DC-600MHz *Power 15W (20W CW) *VSWR 1:1:1 *Connector PL-259 *50 Ohms Impedance *Size 34x72mm *Weight 76g

W&S £15.95 A

Power-Max-25-NF

NOISE OFFSET POWER SUPPLY

NEW



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

W&S £89.95 C

Bargain Price Antennas



Pre-tuned & Weather Sealed

Fibre-glass encapsulation

W-30 2m/70cms 3/6dB length

1.15m 150W SO-239 £49.95 C

W-50 2m/70cms 4.5/7.2dB length

1.8m 150W SO-239 £54.95 C

W-300 2m/70cms 6.5/9dB length

3/1m 150W SO-239 £74.95 D

W-2000 6m/2m/70cms 2.15/6.2/

8.4dB length 2.5m 150W £85.95 C

Mobile Whips Bargain Prices



Watson mobile antennas are made to a high specification and employ stainless steel whip sections with SO-239 connectors. All models are pre-tuned and will withstand at least 100 Watts RF.

Watson - the name you know!

W-2LE

2m 0dB length 0.48m

£10.95 C

W-285

2m 3.4dB length 1.33m

£14.95 C

W-77LS

2m/70cm 0/2.4dB length 0.43m

£14.95 C

W-770HB

2m/70cm 3/5.5dB length 1.1m

£19.95 C

W-7900

2m/70cm 5/7.5dB length 1.58m

£31.95 C

W-627

6/2/70cm 2/4.5/7.2dB length 1.6m

£34.95 C

Antenna Time - FREE Carriage!

We offer FREE carriage to PW readers who order antennas from this advert until 18th April. This applies to UK mainland only.

For full technical information go to www.wsplc.com and key in the antenna product code.

Hustler Base HF

6-BTV	£255.95 D
5-BTV	£224.95 D
4-BTV	£182.95 D
HF Mobile Lower Mast	
MO-1	£36.95 C
MO-2	£34.95 C
MO-3	£28.95 A
MO-4	£24.95 A

Mobile Resonators

RM-10	£20.95 C
RM-12	£20.95 C
RM-15	£20.95 C
RM-17	£25.95 C
RM-20	£25.95 C
RM-30	£28.95 C
RM-40	£29.95 C
RM-80	£30.95 C



Cushcraft - HF Verticals

MA6V	£329.95 D
MA5V	£279.95 D
MA8040V	£319.95 D
R-8	£559.95 D
R8-GK	£54.95 D

R-6000	£399.95 D
AR-10	£99.95 D
HF Beams	
MA5B	£479.95 D
A4-S	£739.95 D
A3-S	£599.95 D
A3-W5	£499.95 D
D-3	£299.95 D
D-3W	£299.95 D
D-4	£419.95 D
TEN-3	£259.95 D

GAP Antenna Specials!

Challenger-DX 80-2m 2kW	£324.95
Voyager-DX 160-40m	£409.95
	£349.95 D

Eagle-DX 40-10m	£349.95
	£299.95 D

Limited stocks!

Hygain - Verticals

AV-12AVQ	£149.95 D
AV-14AVQ	£189.95 D
AV-18AVQ	£269.95 D
AV-18HT	£1069 D
AV-18HTJR	£399.95 D
AV-18V5	£109.95 D
AV-620	£329.95 D
AV-640	£429.95 D

DX-77A	£479.95 D
DX-88	£409.95 D
Hygain Beams	
TH-2Mk3	£399.95 D
TH-3JRS	£399.95 D
TH-3Mk4	£532.95 D
TH-5Mk2	£799.95 D
TH-7DX	£939.95 D
TH-11DX	£1239 D

Tonna 6m Yagi

20505	£109.95 D
Tonna 2m Yagis	
20804	£59.95 C
20808	£84.95 D
20809	£69.95 D
20809	£70.95 D
20818	£109.95 D
20822	£135.95 D
20811	£104.95 D
20817	£121.95 D

Tonna 70cms Yagis

20909	£56.95 D
20919	£72.95 D
20938	£111.95 D
20921	£89.95 D
20922	£135.95 D
Tonna 23cms Yagis	
20623	£66.95 D
20624	£66.95 D
20635	£79.95 D
20636	£79.95 D

Black - Box Arrives!

The Air Traffic Flight Monitor
That Catches Everything!

No more missed transmissions. No more hunting for frequencies. Even safe inside aircraft cabin. Hear things others miss!

Just switch on, adjust volume and squelch to listen to any VHF airband signal. Great for airshows or where frequencies are not known. Passive non radiating, so safe inside an aircraft cabin. Built-in speaker plus headphone socket. Runs from PP3 battery or external 12V supply. You even get a FREE 12V cigar lead.



Only £79.95 C
Now In Stock!



Practical Wireless April 2009

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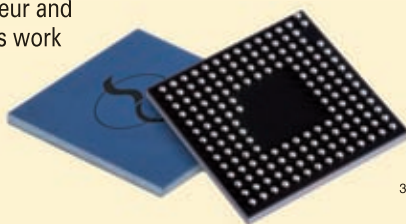
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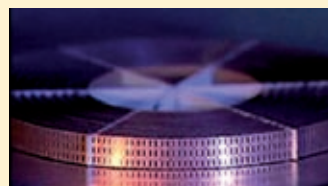
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Rob Mannion G3XFD discusses readers' letters featuring the G5RV antenna, valved equipment and amplitude modulation on v.h.f.



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Rob Mannion's

keylines

Rob G3XFD announces a new PW 70MHz contest and admires keen SOTA operators.

It's with great pleasure – and thanks mainly to **Colin Redwood G6MXL** the organiser and Adjudicator – that

I can announce that the first *Practical Wireless* 70MHz contest will take place on **Saturday June 13th, from 1100 to 1700UTC**. Colin has worked incredibly hard over many months to get the new contest off the ground, closely involving **Tex Swann G1TEX** and I with the plans. The contest sections will include single operator and multiple operators. The Modes will include c.w., a.m., s.s.b. and f.m. (no data modes). Power at the antenna will be 10W maximum. Any stations can be worked, fixed or portable with scoring as per the *PW* 144MHz QRP contest (i.e. one point per contact, with the number of squares as a multiplier).

The date has been chosen to give a chance of some Sporadic E openings and avoiding clashes with the *PW* 144MHz and other contests. The full rules will be published in the May 2009 issue of *Practical Wireless*. Please note that the rules will be reviewed for future years, based on feedback from this year's entrants.

The new contest hasn't come about overnight! Colin, Tex, myself and others have been considering it for a long time. Indeed, I first raised the idea several years ago in discussion with other Amateurs who enjoy working on the 'friendly band'. However, it wasn't until Colin settled into his new job looking after the long established 144MHz QRP contest that we decided it was time to venture further!

We've hopefully come up with a workable formula and Colin has worked hard to encourage everyone who can get on the band to 'have a go'. Most of the contestants taking part in the 144MHz competition use single sideband (s.s.b.), with far fewer using frequency modulation (f.m.). However, on 70MHz far more operators are active on f.m. and amplitude modulation (a.m.). So, we've done our best to encourage anyone who can get on to 4m to join us! I'm planning to be operating during the contest using s.s.b., f.m. and a.m. and I hope I'll work

you from my favourite Dorset hilltop on **Saturday June 13th**. Good luck everyone!

Chilled SOTA Operations!

I've always admired the keen **Summits On The Air** operators who – despite our often unreliable weather – seem never to be discouraged by whatever the 'Clerk of the Weather' throws our way over weekends! Recently however, I was most impressed by the activities of other Amateurs as I sheltered in my nice warm car, munching on fresh ham rolls and enjoying a mug of tea.

Saturday January 31st was a beautifully clear, but bitterly cold day – indeed many areas in the south and west received their first flurries of snow that day. My wife **Carol** and I had left Bournemouth at 0700 to drive to Droitwich Spa in Worcestershire, where she was attending a meeting. Arriving at 0935, I dropped Carol off and headed for the **National Trust** (NT) owned Clent Hills in north of the county. Here I was able to park and operate 144MHz/M static – although keen types could walk further, to approximately 300m (around 1000ft above sea level).

It was my first visit to the Clent Hills. It's such a beautiful area, so close to Dudley, Wolverhampton and other conurbations. However, what struck me most was the level of activity on the bands from SOTA operators! I was pleased to work these brave souls and one, **Rob McKenzie M1XZG** – a Canadian Amateur now living in the Cambridge area – was bravely operating from Shining Tor in Cheshire, despite a fearsome wind-chill factor. I enjoyed our short QSO and was left admiring him and the other SOTA activators operating that day. Who says Amateur Radio is losing its enthusiasm? I'm sure that along with those who are fit and able to join in – there'll be as many others (such as me!) who'll be delighted to support their activities by working them!

Rob Mannion G3XFD/EI5IW

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

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

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Technical Help

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



readers' letters

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

Star Letter

The G5RV Antenna

Dear Rob,

I'm becoming increasingly concerned, when in contact on 3.5MHz with 'newish' operators, ('Newish' that is, when compared with my own 60-ish years on the air as D2II in Germany in 1947, and the G3 call in 1950) over the antennas they're using.

I'm concerned because there seems to be the impression that the G5RV antenna is an 'all band antenna', coaxially fed, fit-it-and-forget-it straight out of the box solution! I also note that there are several commercial versions available, including some from the USA.

Now, it's a long time ago since, the late great **Louis Varney G5RV** designed his famous antenna and the **Radio Society of Great Britain** (RSGB) published articles featuring it in *The Bulletin* (now *Radio Communications*). However, it seems to me that the 'G5RV' antenna the newer operators are using isn't the same G5RV antenna as I know!

Because the G5RV was designed to be fed with a critical length of twin feeder, and tuned at the bottom end with a Z-match, there's no way the coaxially-fed-plus-balun versions can perform like the original design. Because of this I feel that the newcomers (I keep using that word, but perhaps 'the less experienced' would be better) are being conned out of their cash by the suppliers. In fact, I usually advise them to beg, borrow or hire a modern antenna analyser and take a look at their antenna with it. This method can be **very** revealing – showing no resonances anywhere near any of the Amateur bands!

Perhaps the time has come for *PW* to run an article on the subject of the G5RV? Perhaps you would consider republishing the original details, together with all the caveats and help to improve the signal strengths for the antenna users?

Personally, I always recommend the use of an end-fed wire, as long and as high as it can be erected, fed from the shack end through whatever antenna tuner is to hand. In order to tune for 'maximum smoke', I use an old-fashioned thermocouple type radio frequency ammeter (they can still be found at rallies at give away prices). This is the system I use at home and it's been in use for many years and the reports I receive during QSOs on the h.f. bands, particularly on 3.5MHz, attest to its effectiveness.

I'm sure you'll have some competent author available to research and write an article, which will confirm what a wonderful antenna the 'real G5RV' is, while de-bunking the incorrect claims and ideas based on it that seems to be circulating! Sorry to 'go on' about it – but I feel strongly it needed to be said! In closing, I wish everyone on *PW* well and look forward to meeting up with you all at a rally, although at almost 82 I don't attend as many as I used to in my youth! 73.

Dennis Dumbleton G3HCM
Nr. Epworth
North Lincolnshire

Editor's comment: An interesting topic Dennis! Please join me on the Topical Talk pages for further discussion. **Rob G3XFD**.

Help Please!

Dear Rob,

I work with a group of volunteers that run **The Billesdon Good Neighbour Scheme** where we assist people in the neighbourhood with anything from changing a light bulb, to hospital visits. I have enclosed one of our leaflets to provide more information.

We have appointed three Duty Officers who share a mobile 'phone on a rota basis, so that people have only one number to contact for assistance. Our problem is that reception is sometimes poor in certain areas of our village in Leicestershire. In my case reception upstairs is reasonable, with two or three bars on the signal strength display, but downstairs in the living accommodation it's poor, one bar or often none. For economy as we are dependent on voluntary contributions, we have a pay-as-you-go with 02; this give the best coverage in the area but as we don't having a contract with 02, they can't help us.

I can leave the 'phone upstairs and use a baby alarm to hear it ring. But being 73, find the rush upstairs to answer, bad for the heart, plus by the time I get there the 'phone has switched off, though it records the number if not answered, so I can return the call! I am wondering if you can think of a circuit I can stick up in the bedroom or perhaps a repeater to give a reasonable signal throughout the house. We can't be the only people with this problem so someone somewhere must have a cure!

I can remember many years ago when mobiles were the size of a brick; a chap was doing a roaring trade in a market fitting some gizmo into phones which he guaranteed would improve reception. At that time with a wife, five children, a dog, two cats and a mortgage, mobiles were outside my price range. Incidentally, as our domestic 'phone is one of these modern type, about the size of two fingers, with a sliding

front, the possibility of any internal modifications would be impossible for me to contemplate!

Should you come up with a possible solution I can be contacted by E-mail via **tommarzipan@aol.com**

As the cat assisted me with typing this (walking over the keys as I typed!) I hope there are not too many glitches!

Sorry for the deal in replying to your 'phone call Rob – I had to print this out on one computer, then copy it into another computer as the computers aren't talking to each other at present and only one is connecting to the Internet! You also asked about my 'Marzipan' nickname – the simple answer is that it came about as my wife and I made confections as a hobby, anything from wedding cakes to fudge and Belgian chocolates! Thanks for your help, it's much appreciated.

Tom (Marzipan) Hall M3MRZ
Billesdon
Leicester

Editor's comment: During my 'phone

call to Tom I suggested that they might try using 'Licence Free' PMR hand-held transceivers in conjunction with someone as 'central control' in a good mobile 'phone signal strength area. However, this isn't an option due to costs as they are all pensioners. Can readers help Tom and his friends out with ideas? Rob G3XFD.

Mature Amateurs & The Small Print

Dear Rob,

I read with interest the comments in your February 2009 *PW Topical Talk* about mature adults. A related sentiment is also expressed by **Kevin Luxford VK3DAP**, in his letter on page 7 of the same issue.

I'm an 'old timer' and my eyes are those of an old timer! However, with my excellent varifocal lenses I can read the small print at the foot of page 5 (contents page) of each issue.

However, I **cannot read** the the figures on the screen-shots on page 25 of February's issue, the G-Whip antenna article. I've noticed this before

in *PW* and also, incidentally, *Radio Communications* magazine.

Is there, I wonder, some technical printing difficulty that prevents such screen-shots from being reproduced in a fully legible form (i.e. **larger!**). My 73 to everyone on *PW* and all good wishes for 2009.

Bryan Harris G3GTF
Burwash
East Sussex

Editor's comment: My apologies for the mistake Bryan! As I'm at the bifocal stage myself, with other eye problems, I try to ensure that everything on reproduced diagram, circuits and photographs are clear and easy to read for as many readers as possible. On this occasion – when I passed the issue for press using the PDFs – I was satisfied I could read them in good lighting. However, on seeing them in the printed magazine I agree that they aren't as clear as we prefer them to be and they were used smaller than they should have been. In future I'll be more careful when we use screen shots to ensure maximum clarity – especially

Old Valve Gear Is Not Rubbish!

Dear Rob,

Pottering around in the shack recently, with my rig burbling away at the top end of 3.5MHz, I was listening to a QSO where one of the operators was sounding forth about the number of Amateurs still using old valved gear. At one point he said, "Why don't they scrap this old rubbish and get a modern rig?" He then bemoaned the fact that he wasn't working very much DX with his new equipment. His monologue continued in this vein for some time, becoming increasingly grumpy in tone.

Had a microphone been handy, perhaps I would have given him a call and suggested that the reason why he wasn't getting much in the way of DX might be that his stated 400W was spluttering about 15kHz either side of his frequency. Perhaps it was a case of 'Physician heal thyself'?

Back in the early 1950s, when I was an operator at ZB2A, I was planning to build a 100W c.w. transmitter. My Flight Sergeant's comments, on hearing my plans, were to the effect that a circuit using an EF50, a 6L6 and an 807 would give me enough r.f. power (about 30W) to work the world, given a decent antenna and a fair bit of patience. A few days later he presented me with a cardboard box containing all the components I would need – plus a handful of crystals. Being 'rockbound' was common in those days!

A week or two later, I had the transmitter on the air alongside my old HRO receiver and was working into

Europe, the USA, and South Africa – all on around 25W of c.w. Of course, in those day the bands weren't as crowded as they are now, so contacts were more readily made with basic gear than they might be today.

However, my FT-101E (yes, it's a valved rig) together with a G3PDD 'Insect Filter' (both very elderly) and my bent, centre-fed Zepp at 12ft (4m) above grounds, still lets me work into Europe, the USA the Far East and even New Zealand (once!) running between five and 50W of c.w. on 3.5 and 7MHz. And, the '101E does not have pre-selectors for each band, roofing filters and DSP, but I (and many others like me) **are using older equipment**, work some DX and have a lot of fun on the bands without spoiling things for other Amateurs.

So, let's hear it for well maintained older rigs and the owners who cherish them and who possibly get more fun out of the hobby than some of those who the latest all-singing, all dancing rigs, who may not have taken the trouble to learn how to use them correctly. 73 to you Rob and everyone on the *PW* team.

Tony Tuite GW0NSR
Morfa
Conwy
North Wales

Editor's comment: Thanks for your interesting letter Tony. I hear and work many Amateurs who still use their faithful FT-101Es and they always seem to have truly excellent radio frequency and audio qualities. Please join me on the Topical Talk pages for further comment. Rob G3XFD.

Excellent Binding & Presentation of *PW*

Dear Rob,

It was good to talk to you on the 'phone recently, even though it was to share the news of the passing of an old friend. Despite the original reason for my call to you, it was especially good to chat to you as we didn't meet as we usually do at the Knock Rally in County Mayo last year. Everyone missed the annual *PW* presence and the chat to your good self – and the (hastily arranged by the **Mayo Radio Experimenters' Network**) replacement venue at the **Welcome Inn Hotel** in Castlebar – worked very well (congratulations to everyone involved).

As a regular reader of *PW* I was pleased during our telephone QSO to mention how good *PW* is now it's bound – I think it's called 'Perfect bound' – and the hardy cover. My *PW* gets read cover-to-cover and referred to many times over and the old style stapled pages could easily start to disintegrate over a few months or so.

I thought it was a good idea to write to you after our chat to give some feedback on just how much this 'old time' *PW* reader thinks of a magazine he's been reading and enjoying since his Dublin school days and his time on British Railway's Signal & Telegraph department! Before I retired, and when I was regularly driving minibuses to supplement my pension, my mags often had to get folded up and generally ill-treated – but now, despite being even busier in retirement – *PW* holds up, whatever I do to it in my shack or in the car or minibus. Thanks for a good, very readable, very tough and good looking magazine!

I thought of you last year when I drove by a 'Mannion's Bar' – on my way to Castlebar from Knock (I went to Knock first, of course!) on the way to the rally from Ballemote. Hope to see you soon in EI. Very best wishes to everyone on *PW*.

Bernard Murphy
Ballemote
County Sligo
Ireland

*Editor's comments: It was good to chat to you Bernard, even though we had lost a good friend from our days working on British Railways – we certainly always have a lot to chat about with our interests in railways and radio whenever we meet! I immediately passed on your comments to **Steve Hunt** our Art Editor, along with some more feedback from readers. Everyone here has been delighted by the very positive feedback from our readers all over the world. I hope to see you again whenever I get a chance to bring the car over to Mayo and Sligo! **Rob G3XFD/EI5IW**.*

as we pride ourselves in the excellent quality of our illustrations, photographs and circuits. **Rob G3XFD**.

More AM On VHF Please!

Dear Rob,

as a keen listener – rather long in the tooth nowadays – I was very pleased indeed to hear your voice during your few hours operating on the Clent Hills in North Worcestershire on Saturday 31st of January. Nobody could have been more surprised to hear G3XFD/M calling "QRZ Two metres" on that very cold Saturday morning and to hear you'd actually passed through Droitwich Spa before driving up to the Clent Hills!

As I'm now almost 75, I'm quite happy listening to others operating on the bands and it was a very pleasant surprise to hear you working a SOTA station (who I couldn't hear because we're badly screened from the north by the very hills you were working from). It was interesting to hear you discussing the *PW* 144MHz QRP Contest and then chatting about 70MHz with other operators.

During the QSO when you were mainly discussing 70MHz – the other station was over in the Alcester area and I couldn't copy him – you were mentioning a 'Special Announcement' you were planning for *PW* soon. Knowing how keen you are on

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'friendly four' I wouldn't be surprised if it was to do with 70MHz!

If you are to announce more *PW* 'activity days', I would really like to hear more a.m. because there's nothing to beat a good quality a.m. transmission on the v.h.f. bands. In fact, I remember when I was working in the PMR industry years ago – I had an old Pye Reporter (a set you've mentioned several times) which I converted to cover 2m. As a bench engineer I had become fascinated by the reports of co-channel interference taxi firms were reporting both on their low and high band radiotelephone equipment – DX for us but a nuisance for them!

I sometime had to go out to base stations to repair commercial repeaters (mid 1960s and early 1970s) and during meal breaks I would listen on the 2m band – it was much less busy during the daytime then – and one station I often heard was **G3FAN** at Ryde on the Isle of Wight. This station had absolutely superb audio and there were several other stations who had equally good transmissions on v.h.f..

So, I hope that if you are planning to get more activity, especially on 70MHz, I hope you're intending to encourage more a.m. activity at the same time Rob!

John Harrison
Droitwich Spa
Worcestershire

*Editor's comment: Thanks for writing John! I even had time to watch several trains at Droitwich Spa station after my 144MHz operations, as my wife Carol's meeting in the town over-ran. I've yet to try the famous spa bath though – next time perhaps – especially as they're good for arthritis! The announcement you've been waiting for is in Keylines this month. Please join me on the Topical Talk pages for further comment on a.m. operations. **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 call sign with your E-Mail. All letters intended for publication must be clearly marked 'For Publication'. **Editor**



news & products

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

The 'CQ Parrot'!

Deodora Fonseca, works as a water-taxi driver in the large riverside town of Manaus, Northern Brazil. Manaus is the capital of Amazonas state and is situated at the confluence of the Negro and Solimões rivers. It's the most populous city of Amazonas (according to the statistics of Brazilian Institute of Geography and Statistics) and is a popular 'eco-tourism' destination and is located in northern Brazil, 932km from the federal capital Brasília.

With over a million inhabitants, Manaus is the Amazon's largest city. City life revolves around the floating dock, which was built by the British in the 19th century to export rubber and this is where **Deodora Fonseca** works, ferrying passengers to and from the boats plying the rivers.

In the *Tempos de Amazônia* newspaper * **Deodora Fonseca** was interviewed by the regional correspondent, **Baptiste Debrer**, who was obviously intrigued by the story of what they referred to as the 'Radio Parrot'.

Deodora Fonseca said, "It all started when we got our parrot and he – although it later turned out to be a she – had to be left alone in our house when we were at work. My neighbours then complained that our parrot – we called it Orador* as it talked so much – was screeching a lot out of boredom. So, I spoke to the Parrot Man in town and he suggested we leave a radio on during the day, so Orador could listen to it and enjoy the programmes. It worked! Our neighbours said that the screeching stopped and Orador was happy – but then something really strange happened!"

Baptiste Debre: "So, what happened next? You said that the programmes stopped the problems as Orador had something to listen to!"

Deodora Fonseca: "Well, no it helped at first – then we then ended up with a real mystery! I came home first as it was getting dark and Orador was babbling something none of us could understand, it was 'Qualidade de cópia vinte medidores twnty da qualidade de cópia dos medidores'* over and over again, sometimes ending with the words 'k por

favor'. It was driving us mad – and I was seriously thinking of selling the parrot!"

Baptiste Debre: "Then what?"

Deodora: "I was taken ill and had to have a few days off and left the radio on so Orador and I could hear some music. That's when the "Qualidade de cópia vinte medidores twnty da qualidade de cópia dos medidores" voice started up – with long pauses in between, often ending up finally with, "os melhores 73 agradáveis para trabalhá-lo na faixa e na esperança trabalhá-lo outra ve"* before falling silent for the day. But, during the time I was ill, our TV stopped working and I had to call the repair man in – and that was when the mystery was finally solved!"

Baptiste Debre: "How was that Deodora?"

Deodora Fonseca: "I suddenly realised that the TV man might know what was wrong with our radio as it had been making faint whistling noises when it started off, even without the mystery voice. I managed to get Orador to start talking and the TV man was convulsed with laughter – telling me the parrot has been listening to a short wave ham radio enthusiast in action. Several of



Orador.



Deodora Fonseca.

his customers had TV interference with 'mystery voices', but the radio voice was a new one on him! He explained that the parrot was repeating the call the Ham was making to talk to people. So, perhaps I can now find the Ham and sell him a parrot to call 'Qualidade de cópia vinte medidores twnty da qualidade de cópia dos medidores' to save his voice – and have an unusual and ideal friend!"

Baptiste Debre: So, perhaps it's a case of "qualidade de cópia o amador de rádio dentro Manaus" (CQ Radio Amateur in Manaus) Deodora?

Deodora Fonseca: Certainly Baptiste – 'tenha a bolsa ter o papagaio' (rough translation is, 'have purse – have parrot'!).

***Editor**: This news story originated from various newspapers and sources, including the *Tempos de Amazônia* (Amazonia Times) newspaper. The name Orador means 'Talker' in English. 'Qualidade de cópia vinte medidores twnty da qualidade de cópia dos medidores' means "CQ twenty metres, CQ twenty metres" and "os melhores 73 agradáveis para trabalhá-lo na faixa e na esperança trabalhá-lo outra ve" means, "best 73, nice to work you" (rough translation). The original news item story – written in Portuguese – has been translated with the help of the <http://babelfish.yahoo.com/> website, and is a literal translation, without (hopefully) losing any of the nuances of the spoken language. **G3XFD**.



Newshound says: "If you have photographs for your news item – make sure everyone is clearly identified!"

New Ofcom Chair Confirmed

The UK Government have confirmed the appointment of **Colette Bowe** as Ofcom's new Chairman. She will take up the position on March 11th 2009. The confirmed appointment follows a public scrutiny hearing by the Business and Culture, Media and Sport Select Committees which took place on 13 January 2009, in line with Parliamentary procedures for public appointments. Dr Bowe will replace David Currie, who is stepping down later in 2009.

Dr. Bowe began her career as an economist at the Department of Trade and Industry and subsequently worked at the Independent Broadcasting Authority, the Securities and Investment Board, as Chief Executive of the Personal Investment Authority and as Executive Chairman of the Fleming Funds Management. Dr. Bowe was the founding chairman of the Telecoms Ombudsman Council and chaired Ofcom's Consumer Panel from its inception in 2003 to December 2007. She is also a current Ofcom Board member.



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Isle Of Man Airfields On The Air With GB0AOA

Mike Dunning GD0HYM writes: Hi PW! I will be operating again this year from our three Second World War airfields here and the first one will be hopefully on the last Sunday of March, being the 29th. We will be basically running the same format as last year, being Ronaldsway on the last Sunday of March. followed by Jurby (in the Control Tower) probably sometime in May and hopefully this time, Andreas, (in the Mobile Control Tower as per wartime) around August time.

We will also have a RAFARS stand at our Tynwald Day (the famous IOM open air parliament) event, as we did last year, which went down very well as it was the 90th Birthday of the RAF and also the 70th birthday of RAFARS.

As you may have gathered, we have three ex-service airfields here on the Isle of Man, **RAF Andreas, RAF Jurby** and **RAF/RNAS Ronaldsway**, so we are well subscribed!

All the airfields are within easy reach from any part of the Island. If you check out www.control-towers.uk/ you will find all the info you would need on all ex service airfields in the UK. It's a very interesting site!

The supplied photo is of me operating **GB0AOA** on April 1st at Ronaldsway and the control tower is at Jurby. As you may notice from the photo, the tower is complete apart from the internal equipment and is in good order, as it has a preservation order on it.

Unfortunately, although the tower at Andreas is basically complete as a structure, it's fairly derelict with no windows, doors and rather overgrown. Being on private land now, it is not something that much could be done about it, unless of course you had a decent volunteer workforce. lots of cash and the time to do it. None of which are forthcoming! I hope to work many *PW* readers, so we can remember together the work done on our behalf from these sites. 73. Mike.

**Mike Dunning GD0HYM/GD0MAN/
RAFARS-2553/GB0AOA, E-mail**



Newsound says, "Don't forget to send your news in by the 12th of each month for the next month's issue"

Icom's New IC-7600 HF+50MHz Transceiver

Icom announces the forthcoming launch of the **IC-7600 HF+50MHz** transceiver. The IC-7600 is the successor to the very successful IC-756PRO3. **Ian Lockyer M3INL, Marketing Manager of Icom UK Ltd** says, "There has been a lot of excitement about the IC-7600 since we showcased it at the Leicester show last year. I'm sure that this model will be greatly received by Amateur Radio operators with its improved digital, software, receiver performance, functionality and user-friendliness."

(It's expected that the IC-7600 will be in stock by the end of March 2009). Pricing is still to be confirmed.

The new IC-7600 has been enhanced with some of the main features of Icom's flagship models IC-7700/7800. It features the same level of receiver performance as the top of the range IC-7700/7800 transceivers. Its three first i.f. roofing filters (3, 6 and 15kHz) allow the operator to pull out a weak signal while blocking strong adjacent signals.

The double superheterodyne receiving design improves the in-band intermodulation distortion (IMD) significantly over the IC-756PRO3. In addition, the performance of the spectrum 'scope is first class thanks to the specially dedicated DSP.

The Icom promotional literature mentions the following:

- Dual DSP for transmit/receive and spectrum scope
- 104dB dynamic range, +30dBm 3rd order intercept point in h.f. bands
- Double conversion superheterodyne design
- Two 32-bit floating point DSP units (One for the transmit/receiver, one for the spectrum 'scope)
- Three 1st i.f. (roofing) filters (3, 6, and 15kHz)
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Further details from
**Icom UK Ltd.,
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Kent CT6 8LD.
Tel: (01227) 741741.
E-mail: sales@icomuk.co.uk
Website: www.icomuk.co.uk**



Peter (right) hands over to Johnathan.

New Chairman For The Lincoln Short Wave Club

After five years in the job as Lincoln Short Wave Club (LSWC) Chairman **Peter Kendall M0EJL** has stood down and **Jonathan Whiting G6JUT** was voted in as his replacement at their AGM last month.

During Peter's watch, the club successfully relocated their HQ to Aisthorpe near Lincoln including building a new radio workshop and 'Shack'. The 'Shack' was opened by the **Bishop of Lincoln**, the **Rt. Rev. Dr John Saxbee**, in the presence of

RSGB President **Colin Thomas G3PSM**, **Ken Jones G3RRN**, President of the Radio Amateurs Old Timers Association (RAOTA) and **John Lockwood**, the High Sheriff of Lincolnshire.

In the same period, club members also designed and built a Radio Room (permanent call sign **GB2CWP**) and established a Second World War Radio Museum at the Lincolnshire Aviation Heritage Centre at East Kirkby, Near Spilsby, which was kindly opened by the

actor **Richard Todd OBE**, who takes a keen interest in activities at the centre

In his final AGM report Peter M0EJL, paid tribute to club members for their unfailing support, ingenuity, consistent hard work and 'esprit de corps' over the last five years and wished Jonathan the new Chairman, the new committee and all members every success for the future.

For further information on the LSWC, contact **Pam Rose G4STO** on (01427) 788356. Club website: www.lrs.org.uk



The Bishop of Lincoln and the RSGB President officially open the shack.



Richard Todd (second from right) opened the radio room.



Newshound says: "Don't forget to provide the given name, surname and callsign when you are preparing news stories on Radio Amateurs".

International SOTA Weekend In May

Tom Read M1EYP writes: Following a proposal from **Sean Amesbury M0GIA**, an **International Summits On The Air (SOTA) Weekend** is to be held on May 2nd and 3rd 2009. Of course, every weekend sees increased levels of SOTA activity throughout Europe, but it is hoped that this event will see many summit-to-summit contacts between different SOTA associations, and give just as keen 'chasers' the chance to work activators from several different DXCC entities.

It's also hoped that some of the rarer SOTA associations – such as GD (Isle of Man), OD (Lebanon), GI (Northern Ireland), SV (Greece), W2 (USA), HB0 (Liechtenstein), ZS (South Africa) and EI (Ireland) – may have SOTA activity on this weekend, as well as the newer associations like TK (Corsica), SP (Poland), OH (Finland) and PA (Netherlands).

High levels of activity are anticipated from the well-established SOTA associations in G (England), GW (Wales), GM (Scotland), DM (Germany Low Mountains), F (France), HB (Switzerland), DL (German Alps), OK (Czech Republic), S5 (Slovenia), SM (Sweden), LA (Norway), HA (Hungary), ON (Belgium) and OE (Austria).

The SOTA Alerts URL

The SOTA alerts page <http://sotawatch.org/alerts.php> will be used, as normal, for activators to advise what hills they propose to operate from. Activity is expected on most h.f. and v.h.f. bands, but the following band/mode combinations are almost guaranteed to enjoy lots of SOTA traffic: 3.5MHz c.w./s.s.b., 5MHz s.s.b., 7MHz c.w./s.s.b., 10MHz c.w., 14MHz c.w./s.s.b., 144MHz s.s.b./f.m.

Live spots of current activity will be shown during the event, on <http://sotawatch.org/spots.php> There is also good possibility of another International SOTA Weekend in August - the SOTAwatch website <http://sotawatch.org> will have all the latest news – so make sure you take a look!

The SOTA scheme is an awards programme for Radio Amateurs who enjoy operating portable from mountain summits and hilltops. For more details, lists of qualifying summits, rules and guidance, please visit <http://www.sota.org.uk>

Further information from **Tom Read M1EYP**, Head of Mathematics, Brownhills Maths & Computing College, Brownhills Road, Tunstall, Stoke-on-Trent, Staffordshire ST6 4LD, E-mail tread@sgfl.org.uk



Kenwood Korrection

Kenwood UK would like to remind readers that the transceiver featured in the **AvMap GeoSat5 Blu-e** review – published in the March issue of *PW* – was in fact the **TM-D710E** and not the 'TS-TMD-710e' (as featured in the front cover wording).

Further information from **David Wilkins G5HY, Kenwood Electronics (UK) Ltd**, Tel: **(01923) 655284**. Website **www.kenwood-electronics.co.uk**

Radio Communications Foundation *In Focus*

Following the article about the Radio Communications Foundation and its Charitable work on behalf of Amateur Radio that appeared in the January 2009 *PW*, readers might like to know the website address for donations, which is

www.commsfoundation.org.uk

Editor's comment: My apologies to the RCF for not publishing the website URL – I must have inadvertently deleted it during the editing process. Rob G3XFD.

'Transmission 2008' Winners Presentation Cancelled!

Radio Amateurs from around the UK, who were due to gather at the new Maidstone, Kent, headquarters of the **British Wireless for the Blind Fund (BWBF)** at 2.30pm on Sunday February 8th for the presentation of Trophies from the charity's annual 'Transmission' competition, faced heavy snow. So the organisers decide to cancel it for this year and send the trophies to the winners.

Transmission is an annual event that engages Radio Amateurs in a friendly contest against each other, to raise money to provide specially adapted audio equipment for blind and partially sighted people in need. The annual 48-hour event organised by BWBF involves Radio Amateurs from across the UK making as many contacts (QSLs) with other stations as possible.

Trophies are presented for the most contacts made and the most money raised and there are separate prizes for clubs and individuals. This year there is a new award for special achievement by under 18 year olds.

Competition Results 2008:

Most money raised: (Club) **The Bittern DX Group from North Norfolk**

Most contacts made: (Club) **The Cray Valley Radio Society from North Kent**

Most contacts made: (Individual) **Maurice Wiggins, Shustoke, Warwickshire**

Most money raised: (Individual) **Dr Roger Bloor, Newcastle Under Lyme**

Young person's trophy for special achievement – Priory LSST School Radio Club, Lincoln.

The BWBF news report pinpointed the keen school club in Lincoln: Pupils from the **Priory Academy LSST** in Lincoln have scooped a special award after taking part in a national radio competition.

Youngsters from the school's Amateur Radio club joined the Transmission event organised by the BWBF. They won the Fund's new Under 18s award for making an outstanding contribution to the competition. Students made direct communication via a microphone with other Amateur Radio enthusiasts in seven countries, including Kazakhstan, Russia and Poland.

It was the fourth year that pupils, aged 12 to 17, have taken part in the annual 48-hour competition using their call sign **MX0PSL**.

Teacher **David Mackinder**, who runs the Amateur Radio club, said he was delighted at his team's success. "The BWBF is a very worthy cause that provides a vital service to people who are visually impaired. "The Radio Club members were very excited to be able to combine fund raising for such a worthy cause with their radio activities. David summed up their time on the air with, "It was a great experience for the students."

Note: *PW* readers who interested in joining this year's event are invited to contact BWBF at the address below. **Editor.**

Further information from:

British Wireless for the Blind Fund, 10 Albion Place, Maidstone, Kent ME14 5DZ.

Tel: **(01622) 754757**, Fax: **(01622) 751725**.

E-mail: **info@blind.org.uk** Website: **www.blind.org.uk/**



Newshound says: "If you've just been appointed as **PRO** for your club, or need help in preparing news items – just ask **Rob G3XFD** and **Tex G1TEX** at *PW* for help and advice!"

The MX0PSL team.



Silent Key

John Sketch GW3DDY
Pioneering *PW* Author

Rob Mannion G3XFD writes:

Although we work closely with our present day authors and know most of them very well indeed, it's a fact of life that the majority of *PW* authors who wrote in the 1950s, 1940s and the pre-Second World days were mostly unknown to us – with the important exception of **John Sketch GW3DDY!**

Sadly, John – an author who first wrote for *PW* in the early 1930s – died on February 10th 2009 at his Cardiff home in his 94th year. John's son, **Edward**, telephoned the *PW* office to pass on the news that he visited his father's home to find that John had died, had left a printed circuit board (p.c.b.) project on his workshop bench with his reading glasses close by, with the workbench light on, obviously intending to return to finish the job.

Ever the keen radio enthusiast John was active to the last and obviously his death came quickly. Speaking for myself I think 'going quickly' – while you're enjoying a lifetime's hobby – is the way to go!

During the many telephone conversations John and I had since we made contact with him, I once commented – in admiration – on his long and productive life. In replying – he was always a cheerful chap – John said that the only problem he'd had to face up to during an otherwise wonderful life, "was seeing two wonderful wives suffer and die from cancer, while I could do nothing for them myself."

I'm pleased John was able to enjoy his hobby right until the end of his life and the *PW* team feel honoured to have known and worked with such a truly remarkable man. Farewell friend! And, of course, our condolences go to John's extended family. **G3XFD.**

Moonraker New Shop Open For Business



Asked for a group shot of the 'Moonraker team' Justin (centre) provided mugshots suitable for use in the BBC Crimewatch programme! Dad Charles – famous for his salty repartee – and Mum Elaine (who bales both husband and son out of trouble) are keen to serve PW readers in their new shop, just inside Buckinghamshire and very close to the large Milton Keynes conurbation.

Further information from
Justin Godfrey, Moonraker Ltd.,
Unit 12, Cranfield Road Units,
Cranfield Road,
Woburn Sands,
Buckingham MK17 8UR.
Tel: (01908) 281705,
E-mail sales@moonrakerukltd.com Website
<http://www.amateurantennas.com/>



The new Moonraker shop interior is light and airy and is at ground floor level. It's also well equipped for every Amateur Radio need!

Rob Mannion G3XFD describes a visit he made to the Woburn Sands (Buckinghamshire) based Moonraker company in late 2008, where he visited the factory and offices and saw the work under way on their new shop – which is now open for business!

In September 2008, I was able to visit Moonraker Ltd at their headquarters in Woburn Sands – not far from Milton Keynes and conveniently close to the village railway station. The station – on the Marston Vale line, carries local trains between Bedford and Milton Keynes.

It was my first visit to Moonraker and I was most impressed at the engineering and production facilities. Up until then I had thought of Moonraker as being antenna suppliers – but quickly realised that they have some excellent engineering and production expertise on hand!

I was taken on a tour by **Justin Godfrey** and I was – quite frankly – very surprised at the extent of their facilities and how busy the business was. Despite this the whole family team – Dad **Charles**, Mum **Elaine** and Justin – have found enough time to work towards their Foundation Licences and they should be on the air very soon!

Although it was before the recession really set in – it was still very obvious to me that Moonraker are certainly a company capable of manufacturing a wide variety of light metal engineering – let alone antennas! Working our way around piles of new antennas being prepared for delivery all over Europe – the company can be seen to be heavily involved in the CB Radio antenna market and I've no doubt most of those spring-based 27MHz antennas seen on heavy lorries originate from Moonraker! Their incredibly busy mail order service – the demands of which meant Justin had to cut my visit shorter than we both wanted – provided ample evidence to back up Moonraker's website claim that, "We are the largest manufacturer of Amateur, CB, and scanner antennas and accessories in the UK. We also import our own brand CB radios, coaxial switches, duplexers, pre-amplifiers, microphones, triplexers, as well as 12V mobile and 24V truck products to compliment the range. We supply goods to customers all around the world."

At the end of my tour I was shown the new shop – which was well under way at the time and planned for a new year opening in February or March 2009. That shop is now open for business and the Moonraker team look forward to meeting PW readers and they're ready and willing to serve up all your antenna and accessory needs. (Don't forget to ask about the special visitor's competition when you visit the shop!). Additionally – if you've got any ideas for antennas and require engineering expertise and advice – why not discuss them with the Moonraker team? (Opening hours 9 to 6pm Monday to Friday, weekend opening coming soon).



Newshound says: "The PW Authors Guide – available as a PDF via E-mail, is packed with information to help you prepare articles and new items for the magazine. Ask for your copy today!"

Yaesu Frequency Displays

Our resident Yaesu expert – **Harry Leeming G3LLL** – suggests that an alternative headline could be, "Or – for keen older Yaesu equipment owners – and now for some really good news!"

Harry writes: "Like many Amateur Radio equipment of that era, early Yaesu h.f. rigs were fitted with a frequency counter that was crammed full of separate integrated circuits (i.c.s) on two separate boards. This was satisfactory until something went wrong – as trying to find a fault logically proved very difficult due to the inaccessibility of the lower circuit board. It was often a case of dismantling, re-soldering every joint in sight, reassembling, and hoping the fault had been cleared!

When Yaesu incorporated the new **World Amateur Radio Conference (WARC)** bands (10, 18, and 24MHz) in the FT-101ZD, the

FT-902, FT-107 and FT-707, the frequency display was completely redesigned by incorporating the **MSM9520RS** 40-pin chip. This very much simplified the circuit and provided a faultless and accurate readout. Unfortunately, age is catching up with the i.c. and some are failing, resulting in the display not reading out correctly.

Replacing the chip would be quite simple – if it were not for the fact that production has ceased, and supplies have dried up! I have had many requests for this chip in the past year or so, but have not been able to help. It seems a shame to have to scrap such excellent rigs for



the lack of just one part, and so I was delighted to hear from PW reader and author **Ross Bradshaw G4DTD**, that **Klaus Hain DL8NAT** has come to the rescue.

If readers care to look at www.hed-tafelmeyer.de and follow the UK flag, they will find full details of the direct replacement chip Klaus now manufactures. Interestingly, Klaus is not content just to make the chip, but the distributor's website has advice as to how you can check your old chip, just to be sure that it is really faulty, before buying a new one! The price is approximately €34 (Euro) plus €10 Euro postage. However, please look on the web site, or check with him at info@hed-tafelmeyer.de regarding the method of payment first. Now I only need someone to come up with low priced replacement mains transformers for the FT-101ZD, and we'll all be happy, any offers?

Harry G3LLL,
The Cedars, 3a Wilson Grove, Heysham,
Morecambe, Lancashire LA3 2PQ.
Tel: (07901) 932763.
E-mail: G3LLL@talktalk.net

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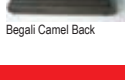
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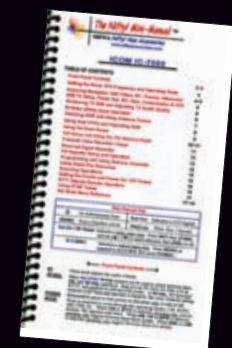
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2m FM Mobile. 5-50W out. Very similar to the FT-2800.

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New
Product!

KENWOOD

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AvMap Geosat 5 Blu APRS

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- High RF Power Output
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Flagship Base Transceiver

Just superb on all bands 160m-70cm with optional 23cm (X-Version) RRP: £1699 ML&S: £1369.95



Kenwood TS-2000X

As above but with 23cm fitted. RRP: £1624.95

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2/70 Handie With Gen Cov RX.

The only dual-bander with proper SSB receive capability!

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Kenwood TS-480SAT

This best selling Kenwood H.F. Can be used mobile or base. Includes ATU. ML&S: £699.95

Kenwood TS-480HX

As TS-480SAT but

200 Watts, no ATU.

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LDG Tuners & Accessories

NEW! AT-200Pro

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MyDEL CG-3000

MyDEL

With 200W and 200 memory channels. Tunable frequency: 1.8 - 30 Mhz with long wire antenna from 8 meters Input impedance: 50 ohms 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) **ML&S Only £269.95**



CG-3000 shown with optional remote switch.

NEW! Remote control for the CG-3000 and CG-5000. £32.95

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.**

MyDEL CG-5000 NEW MkII Version!

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

Tuneable frequency: 1.8 - 30Mhz with long wire antenna from 8 meters 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 Auto tuning time: 0.5-6 seconds (first time tuning), less than 0.2 second (return to memory frequency) Weight: 3 Kg. Size: 385mm x 280mm x 110mm (L - W - H)



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NEW: MyDEL SPS-8250 latest 25 Amps continuous, Fully metered. 2 years Warranty (of course!) **Only £79.95!**

2 Year Warranty!

The MyDEL MP-9626 is known as "The Brick"! The MyDEL MP-9626 is a 120A 13.8V DC power supply has been designed for professional applications which require quality high current for equipments. The output voltage has Over Voltage Protection at about 17V to ensure very high protection against power supply failure, thus offering full protection to the powered equipment. **Price: £299.94**



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Another model to the MyDEL PSU range, 13.8V DC, 6 Amps with front facing binding posts. Ideal for FT-817, handies etc.



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MFJ-16010 Mini Random Wire 100W ATU	£69.95
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Don't forget ML&S stock one of the largest displays of MFJ in the country!

The New Alinco DJ-175

144MHz Hand-held transceiver

With talk of the credit crunch on everyone's lips we're all looking for good value-for-money. It's a time to get back to basics, an ideal time for a no frills, good quality rig to come along, so when *PW* asked me to look at the DJ-175 144 MHz hand-held radio from Alinco – it seemed ideal timing.

The Alinco DJ-175 is a single-band 'handie', its transmit coverage is 144 to 145.995MHz and the review model had an extended receive range, from 136 to 173MHz. The rig measures 58(w) x 107.5(h) x 36.3mm(d) (2.28 x 4.2 x 1.4in) and weighs in at 245g (8.64oz) This gives the rig a great feel, not too light to be insignificant but not so heavy to be cumbersome and I feel that the size and weight are just right.

The transceiver is well presented in black high impact plastic casing, this is lightly textured and the moulding design suits either left or right-handed operators.

First Impressions?

I have to say that first impressions of this hand-held transceiver were really good and I was hoping that the good looks would be backed up with good performance. The rig is supplied with a typical helical antenna, but with an SMA type fitting, a hand strap and belt clip and a Ni-MH 7.2V 700mAh battery and a comprehensive instruction manual and an

excellent 'sit in' type battery charger.

The 'DJ-175 has a rotary control on the top panel, this is primarily the tuning dial – but if you press a button on the front keypad this temporarily becomes the volume control. The top panel also sports the speaker/microphone sockets and the SMA connector for the helical antenna.

The transceiver comes as quite a package for the price tag, as it offers full CTCSS and DCS tone squelch capabilities. There's a time-out timer for protecting the rig (and the airwaves from 'waffle gas bags' like yours truly) and an alphanumeric display. It also has four different tone bursts, either 1750, 2100, 100 or 1450Hz – selectable for whichever country you're operating in. Added to this it also has 200 memories, plus a call channel and three selectable output power levels, of 500mW, 2W and 5W.

The Alinco DJ-175 also has a dual-tone multiple-frequency (DTMF) keypad that can be used to control functions on the rig, to direct enter frequencies and programme memories. This keypad is actually well laid out and the buttons are all clearly labelled.

I've been operating radios for a good few years now – both as a professional user and an Amateur –and I have a little test I use, especially for use in review articles. I like to

test them by trying to find out if I can do simple operations such as tune, turn on a back-light and programme a memory **without looking at the user manual**. This 'out of the box' test is normally a good way to see how user friendly the design of the rig is! The 'DJ-175 did quite well, however, I did have to resort to the manual for programming the memories. The sequence of button operations ('presses') wasn't quite the same as I would have normally expected, but having read the manual I was soon up and running!

Although the task was a bit more contrived than normal, it was still easy to programme memories on the transceiver, once I had looked it up in the book. However, I have to admit that the way in which Alinco has designed the rig, it would be difficult to inadvertently overwrite a memory, so there's a plus side to this sequence!

All other functions on the rig were pretty well as much I would want. I was particularly impressed with how easy it was to set a memory to 'skip' while scanning, so there was no looking that one up in the book!

The Alinco DJ-175 has a small display compared to some hand-held radios but the figures are large in the display window and easy-to-see. There are also easy-to-recognise icons to indicate to the operator the status of the rig, such as battery life,

memory selection and output power.

The display and key pad can be back-lit by a green illumination. However, I was a bit disappointed that switching on the the back-lighting is a two-button operation, by definition you probably will want to use back-lighting because operating conditions will often dictate that you're finding it difficult to see in the first place! So, why then make that difficult to do making it a secondary function on a key? I definitely would have liked that to be an easy-to-find, one button press. Despite this, the back-lit display is very effective indeed.

Incidentally (and importantly) the back-light also illuminates the DTMF keys. However, the labels are printed on the radio's casing and aren't back-lit, so unless you have memorised the primary and secondary functions of the keys, the key illumination is pretty, but beyond that I did not find it much of a help I'm afraid.

Richard Impressed!

The things that impressed me about this little rig were the actual DTMF keyboard itself, which I felt made it a great little companion. Especially so, in relation to the ever-increasing number of Internet gateways that will respond to DTMF tones, that control functions such as connecting to predetermined nodes. Being able to transmit DTMF tones is very useful for

Richard Newton G0RSN tries out a very new 'no frills' single-band lightweight hand-held transceiver from the Alinco stables.

operators these days.

The fact that you can assign memories name tags is also a great function. Indeed, the simple uncluttered alpha numeric display was just the ticket!

The extended receive coverage also interested me. Being brought up by the sea, I love to listen to Marine Band radio operations. In my late teens I was proud to serve on an inshore lifeboat crew, my dear Dad, **John G8EAM** (a Silent Key) served with the **Royal National Lifeboat Institution** (RNLI) for many years, in fact those visiting Minehead (Somerset) Inshore Lifeboat station, might like to look out for the seat dedicated to his memory on top of the lifeboat slipway. So, listening to the local Coastguard and local shipping communications brings back some very fond memories for me.

On The Air

For my first on the air test I thought I'd put the 'DJ-175 through, was to hook it up to my base station antenna and see what I could hear. I programmed in my favourite marine frequencies and set the rig to scan. I wasn't disappointed! Indeed, what a wonderful audio output the DJ-175 has! And, despite now living some 17km (just over 10 miles) from Poole harbour and the sea, I heard both sides of harbour traffic with the harbour control booming in, as was Portland Coastguard.

The DJ-175 showed no hint whatsoever of being overloaded by being attached to a high gain external base antenna. I've tried this test with some hand-held rigs and they just haven't coped, although this transceiver took it all in its stride – and gave me a wonderful Sunday afternoon's entertainment.

The next test was on air as a 'handie',

the convenient portable radio companion. So I took it to work and in a coffee break I had a tune round to see what I could hear. Thanks to the local internet gateway, **MB7IBH** the hand-held's range was slightly extended. I was only a couple of kilometres away from the gateway, so I thought it would be fun to have a go. I set the operating frequency and correct CTCSS tone and called through.

My first QSO was with **Roger**

2E0EHR/M in Exeter, Devon. We had a very enjoyable chat and the rig seemed to be doing okay – although I think that I was suffering from trying to operate in modern metal-framed building. I was on the third floor but on the wrong side of the building for the gateway site and my poor 2W had a lot of metal and concrete to get through.

Next was a super contact with **Rudy DL3KAN/M** – on his bicycle in Dueren, Germany! Rudy was using an old Icom hand-held and described his bike and trailer set-up so vividly that, with the road noise I could hear on the radio, I had this wonderful mental picture of him weaving through the morning traffic in his home town chatting to me, while I sat at my desk in Southern England. What a great hobby!

The next contact was closer to home, although we first contacted via the link **Lou Dalby G1ULZ** was so close to my location we decided to go simplex and I could get a good report on what the rig sounded like. Lou has figured in many of my reviews over the years,

he only lives in the next village to me, and from my work place I could almost see his antennas on a clear day. Well not quite, but almost!

Lou reported my audio as being very good but said the signal was a bit up and down. I decided to walk out to a veranda we have at work, this is open to the elements but it was a lovely day, bitterly cold but wonderful blue sky and sunshine, one of those perfect winter days.

Sounds Great!

On the veranda I was able to switch the DJ-175 down onto the lowest transmitting power setting and I was still getting an "end-stopping plus signal" report from Lou. He said the rig, "sounds great" and we had a extremely enjoyable chat before I thought I had better get back to some work!

In conclusion, I do have some very minor niggles about the ease of operation but to be honest these are really small in comparison to what this little rig offers in build quality, features and on air performance. All in all, my verdict is, fantastic! The Alinco DJ-175 is a great little performer, with a credit crunch busting price tag, yet another example of great value for money from Alinco!

My thanks for the loan of the review transceiver (price £149.95 plus £6 p&p) goes to **Nevada Radio, Unit 1, Fitzherbert Spur, Farlington, Portsmouth, Hampshire PO6 1TT.**

Tel: 023 9231 3090, FAX 023 9231 3091.

E-mail sales@nevada.co.uk
Website <http://www.nevadaradio.uk/>

For the full Alinco technical specifications

see <http://www.alinco.com/>



Gordon Rolland G3USR and Chris

Duckling G3SVL put their very active and internationally known club in focus for

PW readers.

Chasing contacts with far off or rare and exotic countries is a much enjoyed part of the Amateur Radio hobby. The DXers, as they are called, will try to make contacts with all of the active entities on as many bands as possible, some chasing the DXCC certificates awarded by the **American Radio Relay League** (ARRL).

The Chiltern DX Club (CDXC) is the UK's premier DX Foundation dedicated to promoting high frequency (h.f.) operating in Amateur Radio and encouraging excellence, particularly in DXing and contest operating generally.

The club was formed in the 1980s by a small group of keen DXers and today has over 700 members who share a common interest in h.f. DXing and contesting. They are drawn together by their shared values of high standards of operating and DXing skills. The CDXC is an influential organisation in UK Amateur Radio, which develops and enriches the world of h.f. interests for its members and for DXers worldwide. Within our membership we have many overseas members including some in North America, South America and Japan. It's also a National, as well as an International Radio Club, with members all over the world.

Major Club Activities

There are five major areas of club activity that our members enjoy. The CDXC Magazine *The CDXC Digest* is an outstanding bi-monthly publication, packed with news and articles on subjects of interest to DXers. As a traditional paper-based publication, the *CDXC Digest* offers a welcome break from the computer and members receive it six times a year.

The Digest is an A5-sized magazine, usually around 60 pages, focused on the core topic of DX, with many interesting reports from recent DXpeditions, both by members and others, many of which receive financial help from the club. Pages are packed with the latest news of recent and forthcoming activations, details of technological developments, colour photograph pages and first-hand reviews of equipment.

Focus on HF DX & Contesting

Generally speaking, the CDXC Members' main interests in radio are on h.f. and working DX – rare or distant countries – or in competitive radio sport. Our members are often extremely active in contests and can often be heard working or running pile-ups on the bands! Indeed, many members have been on a significant number of DXpeditions to far-flung DX entities and many have 'worked' a large number of DXCC entities.

The CDXC has strong ties with the

Five Star DX Association (FSDXA) – the group that executed the record-breaking D68C (Comoros) and the recent 3B7C (St Brandon) DXpeditions. The experiences of CDXC members on these and similar trips have contributed to the publication of a book entitled *"DXpeditioning Behind The Scenes"* which is widely considered to be a definitive reference work on executing complex DXpeditions.

Additionally, a number of our members contribute regularly to the main UK and other Amateur Radio publications as well as publishing books on radio related subjects. This work is another aspect of how the CDXC actively fosters a supportive and helpful environment to encourage anyone, at any level, to enjoy the thrill of DXing and the achievements available through contesting, with an emphasis on involvement and participation.

Social Events

Each year, CDXC organises a dinner at a central location in the UK, to which all members are invited. A significant proportion of the members attends and enjoys socialising over an excellent meal, with an after-dinner presentation by a prominent DXer being a highlight. The dinner is always held at a suitable hotel, ensuring that on-site accommodation, if required, is available.

In the summer, club members meet, holding the AGM and a barbecue. This is an excellent opportunity to meet up in friendly and informal surroundings, to socialise and to catch up on the latest news from friends, old and new. A raffle is traditionally held at the summer social and regularly has a brand-new h.f. transceiver as the top prize.

Awards and Recognition:

DXing and contesting thrive on friendly competition and rivalry and many members achieve world-class scores in major international contests. CDXC runs a number of



Fig 1: Antennas used for the St Brandon, 3B7C, 2007 DXpedition which CDXC supported.

(Photo courtesy of Pete Arninge SM5GMZ)



Fig. 2: Fig 2: The Club AGM attracts a very enthusiastic attendance.

(Photo courtesy of Nigel Cawthorne G3TXF)

award schemes and also bestows a prestigious Award of Merit. This is one of the highest accolades in HF radio and is awarded to organisations or individuals who have made an outstanding and unselfish contribution to h.f. amateur radio and DXing.

Membership of CDXC encourages recognition of and celebrates achievement at the highest standards. CDXC also supports amateur radio through the actions on the air of all its members, many of whom are leaders in their specialist fields - and all of whom share the highest standards of operating.

Online Community

As well as meeting face-to-face, CDXC members participate in a friendly and vibrant online community, where the latest DX news and operating experience are discussed. Members find that an unparalleled breadth of experiences is close at hand with questions raised on the CDXC reflector (electronic notice board), frequently receiving a prompt and informed response.

In addition to the reflector, members receive a password to access members-only content on the CDXC website (see later). They are also able to post notices, wanted ads and web links on the website as well as having access to the CDXC members' DX cluster.

Our DXpedition Support:

Every year, many Amateur Radio DXpeditions add significant enjoyment to the hobby by activating distant or

rare DXCC entities. The CDXC helps many of these DXpeditions, by making financial contributions. Support is particularly given to those making the considerable effort needed to mount large-scale events.

The Club typically supports between 15 and 20 DXpeditions per year. As a result, Amateurs often receive a QSL card bearing the CDXC logo as a sponsor. The CDXC also has an equipment pool, from which any amateurs may borrow for their own DXpedition use, fostering greater participation in DXing activities.

Active Membership

CDXC is the major Amateur Radio organisation in the UK that specifically caters for the interests of HF DX enthusiasts. By having a strong voice and an active membership, the club

Send all your club info to

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Arrowsmith Court,
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Fig 3: Members of the CDXC committee review the weight of one set of the loan equipment available.

(Photo courtesy of Nigel G3TXF)

can represent the interests of its members with other organisations such as the RSGB, those mounting DXpeditions, award sponsors, equipment manufacturers and dealers.

Whether you are new to the hobby, new to DXing or an old hand with every DXCC country confirmed, membership of CDXC could enrich your DX and HF operating activities – and you can be assured of a warm welcome.

If you are interested and you would like to know more then log on to www.cdxc.org.uk/ where you will find more details of the Club's activities and how to apply for membership. Alternatively, E-mail the CDXC Secretary, **Chris G3SVL** via E-mail: sec@cdxc.org.uk or telephone him on **01424 845384**.



Fig 4: An example set of the loan equipment available from the CDXC. (Photo courtesy of Gordon, G3USR)

Log Periodic

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



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AM-PRO 6 metre (Length 4.6' approx).....	£17.95
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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 MB6 Multi band 6/10/15/20/40/80m can use 4 Bands at anyone time (Length 250cm).....	£69.95

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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
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MR 777 2 Metre 70 cm 2.8 & 4.8 dBd Gain (5/8 & 2x5/8 wave) (Length 60") (3/8 fitting).....	£17.95
MR0525 2m/70cm, 1/4 wave & 5/8, Gain 2m 0.5dB/3.2dB 70cm Length 17" PL259 fitting commercial quality.....	£19.95
MR0500 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-3 10/15/20mtrs length 7.40m.....	£169.95
RDP-4 12/17/30mtrs length 10.50m.....	£169.95
RDP-40M 40mtrs length 11.20m.....	£189.95
RDP-6B 10/12/15/17/20/30mtrs boom length 1.00m.....	£279.95

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.....	£9.95
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
MR614 6 Metre loaded 1/4 wave (Length 56") (3/8 fitting).....	£14.95
MR625 6 Metre base loaded (1/4 wave) (Length: 50") commercial quality.....	£19.95

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2 metre 1/2 wave (Length 52") (Gain 2.5dB) (Radial free).....	£29.95
4 metre 1/2 wave (Length 80") (Gain 2.5dB) (Radial free).....	£44.95
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6 metre 1/4 wave (Length 150") (Gain 4.5dB) (3 x 28" radials).....	£59.95

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New co-linear antennas with specially designed tubular vertical coils that now include wide band receive!
Remember, all our co-linears come with high quality, N-type connections.

SQBM105 Mk.2 Dual Bander Radial FREE!.....	£39.95
(2m 2.0dBd) (70cm 4.5dBd) (RX:25-2000 MHz) (Length 28")	
SQBM100 Mk.2 Dual Bander.....	£44.95
(2m 3dBd) (70cm 6dBd) (RX:25-2000 MHz) (Length 39")	
SQBM110 Mk.2 Dual Bander (Radial FREE!).....	£59.95
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SQBM200 Mk.2 Dual Bander.....	£54.95
(2m 4.5dBd) (70cm 7.5dBd) (RX:25-2000 MHz) (Length 62")	
SQBM223Mk.2 Tri Bander.....	£69.95
(2m 4.5dBd) (70cm 7.5dBd) (23cm 12.5dBd) (RX 25-2000MHz) Length: 62"	
SQBM500 Mk.2 Dual Bander Super Gainer.....	£69.95
(2m 6.8dBd) (70cm 9.2dBd) (RX:25-2000 MHz) (Length 100")	
SQBM800 Mk.2 Dual Bander Ultimate Gainer.....	£129.95
(2m 8.5dBd) (70cm 12.5dBd) (RX:25-2000 MHz) (Length 5.2m)	
SQBM1000 Mk.2 Tri Bander.....	£79.95
(6m 3.0dBd) (2m 6.2dBd) (70cm 8.4dBd) (RX:25-2000 MHz) (Length 100")	



Single Band Vertical Colinear Base Antenna

BM33 70 cm 2 X 5/8 wave Length 39" 7.0 dBd Gain.....	£44.95
BM45 70cm 3 X 5/8 wave Length 62" 8.5 dBd Gain.....	£54.95
BM55 70cm 4 X 5/8 wave Length 100" 10 dBd Gain.....	£79.95
BM60 2m 5/8 Wave, Length 62", 5.5dBd Gain.....	£54.95
BM65 2m 2 X 5/8 Wave, Length 100", 8.0dBd Gain.....	£79.95
BM75 2m 2 X 5/8 Wave, Length 175", 9.5dBd Gain.....	£99.95

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See our website for full details.

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MFJ-929 Compact with Random Wire Option 1.8-30MHz 200W.....	£219.95
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MFJ-993B 1.8-30MHz 300W SSB/150W CW ATU.....	£259.95
MFJ-994B 1.8-30MHz 600W SSB/300W CW ATU.....	£349.95
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MFJ-941E 1.8-30MHz 300W Versa tuner 2.....	£144.95
MFJ-948 1.8-30MHz 300W deluxe Versa tuner.....	£164.95
MFJ-949E 1.8-30MHz 300W deluxe Versa tuner with DL.....	£184.95
MFJ-934 1.8-30MHz 300W tuner complete with artificial GND.....	£209.95
MFJ-974B 3.6-54MHz 300W tuner with X-needle SWR/WATT.....	£194.95
MFJ-969 1.8-54MHz 300W all band tuner.....	£219.95
MFJ-962D 1.8-30MHz 1500W high power tuner.....	£299.95
MFJ-986 1.8-30MHz 300W high power differential tuner.....	£349.95
MFJ-989D 1.8-30MHz 1500W high power roller tuner.....	£389.95
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MFJ Analyser	
MFJ-229 UHF Digital Analyser 270-480MHz.....	£209.95
MFJ-249B Digital Analyser 1.8-170MHz.....	£264.95
MFJ-259B Digital Analyser 1.8-170MHz.....	£297.95
MFJ-269 Digital Analyser 1.8-450MHz.....	£349.95
MFJ-269PRO Digital Analyser 1.8-170/415-450MHz.....	£399.95

G5RV Inductors

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

G5RV-IND	£24.95
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Crossed Yagi Beams (fittings stainless steel)

XYG5-2 2 metre 5 Element (Boom 64") (Gain 7.5dBd).....	£89.95
XYG8-2 2 metre 8 Element (Boom 126") (Gain 11.5dBd).....	£109.95
XYG13-70 70 cm 13 Element (Boom 83") (Gain 12.5dBd).....	£79.95



Yagi Beams (fittings stainless steel)

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



ZL Special Yagi Beams (Fittings stainless steel)

2 metre 5 Element (Boom 38") (Gain 9.5dBd).....	£49.95
2 metre 7 Element (Boom 60") (Gain 12dBd).....	£59.95
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70 cm 7 Element (Boom 28") (Gain 11.5dBd).....	£39.95
70 cm 12 Element (Boom 48") (Gain 14dBd).....	£49.95

The biggest advantage with a ZL-special is that you get massive gain for such a small boom length, making it our most popular beam antenna

G5RV Wire Antenna (10-40/80m) (Fittings stainless steel)

	HALF	FULL
Standard (enamelled).....	£19.95	£24.95
Hard Drawn (pre-stretched).....	£24.95	£29.95
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Double size standard (204ft).....	£49.95	
TS1 Stainless Steel Tension Springs (pair) for G5RV.....	£19.95	



Reinforced Hardened Fibreglass Masts (GRP)

GRP-125 ★ Length: 2m ★ Size: 30mm OD Grade: 2mm.....	£14.95
GRP-150 ★ Length: 2m ★ Size: 37mm OD Grade: 2mm.....	£19.95
GRP-175 ★ Length: 2m ★ Size: 44mm OD Grade: 2mm.....	£24.95
GRP-200 ★ Length: 2m ★ Size: 51mm OD Grade: 2mm.....	£29.95

Portable Telescopic Masts

LMA-S Length 17.6ft open 4ft closed 2-1" diameter.....	£79.95
LMA-M Length 26ft open 5.5ft closed 2-1" diameter.....	£89.95
LMA-L Length 33ft open 7.2ft closed 2-1" diameter.....	£99.95
TRIPOD-P Lightweight aluminium tripod for all above.....	£44.95

5ft Poles Heavy Duty (Swaged)

20ft Heavy Duty Swaged Pole Set These heavy duty aluminium (1.8mm wall) have a lovely push fit finish to give a very strong mast set	
1.25" set of four 5ft sections.....	£29.95
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1.75" set of four 5ft sections.....	£49.95
2.00" set of four 5ft sections.....	£59.95



Mini HF Dipoles (Length 11' approx)

MD020 20mt version approx only 11ft.....	£49.95
MD040 40mt version approx only 11ft.....	£54.95
MD080 80mt version approx only 11ft.....	£59.95



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Connectors & Adapters

PL259/9 plug (Large entry)	£0.75
PL259/9C (Large entry) compression type fit	£1.95
PL259 Reducer (For PL259/9 to conv to PL259/6)	£0.50
PL259/6 plug (Small entry)	£0.75
PL259/6C (Small entry) compression type fit	£1.95
PL259/7 plug (For mini 8 cable)	£1.00
BNC Screw type plug (Small entry)	£1.50
BNC Solder type plug (Small entry)	£1.50
BNC Solder type plug (Large entry)	£3.50
N-Type plug (Small entry)	£3.50
N-Type plug (Large entry)	£3.50
PL259 Chassis socket (Round)	£2.00
PL259 Chassis socket (Square)	£2.00
N-Type Chassis socket (Round)	£3.50
N-Type Chassis socket (Square)	£3.50
PL259 Double female adapter	£1.50
PL259 Double male adapter	£1.50
N-Type Double female	£3.00
PL259 to BNC adapter	£2.00
PL259 to N-Type adapter	£3.00
SO239 to PL259 adapter (Right angle)	£2.50
PL259 T-Piece adapter (2xPL 1XS0)	£3.00
N-Type to PL259 adapter (Female to male)	£3.50
BNC to PL259 adapter (Female to male)	£2.00
BNC to N-Type adapter (Female to male)	£3.50
BNC to N-Type adapter (Male to female)	£3.50
SMA to BNC adapter (Male to female)	£3.95
SMA to PL259 adapter (Male to PL259)	£3.95
PL259 to 3/8 adapter (For antennas)	£3.95
3/8 Whip stud (For 2.5mm whips)	£2.95

Please add just £2.00 P&P for connector only orders

PLEASE PHONE FOR LARGE CONNECTOR ORDER DISCOUNTS

Mounting Hardware (All galvanised)

Tripod-15L free standing tripod for use with 1.5" diameter poles	£54.95
Tripod-20L free standing tripod for use with 2" diameter poles	£59.95
6" Stand Off Bracket (complete with U Bolts)	£6.00
9" Stand off bracket (complete with U Bolts)	£9.00
12" Stand off bracket (complete with U Bolts)	£12.00
18" Stand off bracket (complete with U Bolts)	£18.00
12" T & K Bracket (complete with U Bolts)	£17.95
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Double chimney lashing kit (suitable up to 2 mast)	£19.95
3-Way Pole Spider for Guy Rope/wire	£3.95
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Mast Sleeve/Joiner (for 1" pole)	£6.95
Mast Sleeve/Joiner (for 1.25" pole)	£7.95
Mast Sleeve/Joiner (for 1.5" pole)	£14.95
Mast Sleeve/Joiner (for 2" pole)	£16.95
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CAR PLATE (drive on plate to suit 1.5 to 2" mast/pole)	£19.95
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RG58 best quality standard per metre	35p
RG58 best quality military spec per metre	60p
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7-core rotator cable per metre	£1.00
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20 amp red/black cable 20 amp per metre	75p
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Please phone for special 100 metre discounted price

Baluns

MB-1 1:1 Balun 400 watts power	£29.95
MB-4 4:1 Balun 400 watts power	£29.95
MB-6 6:1 Balun 400 watts power	£29.95
MB-1X 1:1 Balun 1000 watts power	£39.95
MB-4X 4:1 Balun 1000 watts power	£39.95
MB-6X 6:1 Balun 1000 watts power	£39.95
MB-Y2 Yagi Balun 1.5 to 50MHz 1kW	£39.95

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	£24.95
MX-72 Duplexer *Same spec as DX-720D but with PL259 fly leads	£34.95
MX-627 HF/VHF/UHF internal Tri-plexer (1.6-60MHz) (110-170MHz) (300-950MHz)	£49.95
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	£49.95
CS401N Same spec as CS401 but with N-type fittings	£59.95

Antenna Rotators

AR-35X Light duty UHFVHF	£109.95
AR26 Alignment Bearing for the AR35X	£24.95
RC5-1 Heavy duty HF	£559.95
RC5-3 Heavy Duty HF inc pre set control box	£679.95
RC26 Alignment Bearing for RC5-1/3	£49.95
RC5A-3 Serious heavy duty HF	£929.95

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	£9.95
3.5" Pigmy magnetic PL259 fitting	£12.95
5" Limpet magnetic 3/8 fitting	£12.95
5" Limpet magnetic PL259 fitting	£14.95
7" Turbo magnetic 3/8 fitting	£14.95
7" Turbo magnetic PL259 fitting	£16.95
Tri-Mag magnetic 3 x 5" 3/8 fitting	£34.95
Tri-Mag magnetic 3 x 5" PL259 fitting	£34.95
HKITHD-38 Heavy duty adjustable 3/8 hatch back mount	£29.95
HKITHD-SO Heavy duty adjustable SO hatch back mount	£29.95
RKIT-38 Aluminium 3/8 rail mount to suit 1" roof bar or pole	£12.95
RKIT-SO Aluminium SO rail mount to suit 1" roof bar or pole	£14.95
RKIT-PR Stainless PL259 rail kit to suit 1" roof bar or pole	£24.95
PBKIT-SO Right angle PL259 pole kit with 10m cable/PL259 (ideal for mounting mobile antennas to a 1.25" pole)	£19.95

Antenna Wire & Ribbon

Enamelled copper wire 16 gauge (50mtrs)	£19.95
Hard Drawn copper wire 16 gauge (50mtrs)	£24.95
Equipment wire Multi Stranded (50mtrs)	£14.95
Flexweave high quality (50mtrs)	£29.95
PVC Coated Flexweave high quality (50mtrs)	£39.95
300Ω Ladder Ribbon heavy duty USA imported (20mtrs)	£14.95
450Ω Ladder Ribbon heavy duty USA imported (20mtrs)	£17.95

(Other lengths available, please phone for details)

Miscellaneous Items

CDX Lightning arrester 500 watts	£19.95
MDX Lightning arrester 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	£129.95
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	£199.95

Halo Loops

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

These very popular antennas square folded di-pole type antennas

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	£39.95
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Trapped Wire Di-Pole Antennas (Hi grade heavy duty Commercial Antennas)

MDT-6 FREQ:40 & 160m LENGTH: 28m POWER:1000 Watts	£79.95
MTD-1 (3 BAND) FREQ:10-15-20 Mtrs LENGTH:7.40 Mtrs POWER:1000 Watts	£69.95
MTD-2 (2 BAND) FREQ:40-80 Mtrs LENGTH: 20Mtrs POWER:1000 Watts	£79.95
MTD-3 (3 BAND) FREQ:40-80-160 Mtrs LENGTH: 32.5m POWER: 1000 Watts	£129.95
MTD-4 (3 BAND) FREQ: 12-17-30 Mtrs LENGTH: 10.5m POWER: 1000 Watts	£49.95
MTD-5 (5 BAND) FREQ: 10-15-20-40-80 Mtrs LENGTH: 20m POWER:1000 Watts	£119.95

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

HB9CV 2 Element Beam 3.5dBd

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

SWR & SWR Power Meters

SWR-100 (26-30MHz)	£8.95
SWR-125 (26-30MHz) (Power to 100W)	£12.95
AV-20 (3.5-150MHz) (Power to 300W)	£34.95
AV-40 (144-470MHz) (Power to 150W)	£34.95
AV-201 (1.8-160MHz) (Power to 1000W)	£49.95
AV-400 (14-525MHz) (Power to 400W)	£49.95
AV-601 (1.8-160/430-450/800-930/1240-1300MHz) (Power to 400W)	£69.95
AV-1000 (1.8-160/430-450/800-930/1240-1300MHz) (Power to 400W)	£79.95

Power Supplies

PSU-2 (small high quality 2amp)	£19.95
PSU-5 (5amp over volt protected)	£22.95
PSU-50 (High quality switching 50amp)	£99.00
POWER-MITE-NF (22amp switch mode with noise offset)	£69.95
POWER-MAX-25-NF (22amp switch mode with noise offset & cig socket)	£89.95
POWER-MAX-45-NF (38amp switch mode with noise offset & cig socket)	£119.95

Motorised Mobile

Little Tarheel II 3.5 to 54MHz (no gaps) 200 watts p.e.p VSWR 1.5 or less	£349.95
● Type: Little Tarheel II ● Freq: 3.5 to 54MHz continuous ● Power rating: 200 watts P.E.P ● VSWR: Typically 1.5 or less ● Weight: 850g ● Mast size: 1.5" diameter ● Mast length: 16 inches ● Whip length: 32 inches ● Total length in 54 MHz position 48 inches ● Total length in 3.5 MHz position 54 inches ● Includes 20ft of plug and play control box, ferrite decoupling core and 3/8 stud.	

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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)
.....**£149.95**
OPTIONAL 10-15-20mtr radial kit.....**£59.95**

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).....**£159.95**
OPTIONAL 10-15-20mtr radial kit.....**£59.95**
OPTIONAL 40mtr radial kit.....**£19.95**

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).....**£199.95**
OPTIONAL 10-15-20mtr radial kit.....**£59.95**
OPTIONAL 40mtr radial kit.....**£19.95**
OPTIONAL 80mtr radial kit.....**£24.95**

EVX6000 6 BAND VERTICAL FREQ: 10-15-20-30-40-80 Mtrs
GAIN: 3.5dBi HEIGHT: 5.00m RADIAL LENGTH: 1.70m(included) POWER: 800 Watts.....**£349.95**

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.....**£349.95**
80 MTR RADIAL KIT FOR ABOVE.....**£129.00**

(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**
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★ Gain:3dB over SSS-1.....**£49.95**

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★ Connection: SMA.....**£12.95**
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★ Connection: SMA ★ Gain: 2.15dBi.....**£19.95**
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★ Connection: BNC.....**£19.95**
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★ Fitting: 3/8.....**£24.95**
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★ Fitting: 3/8.....**£27.95**
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★ Fitting: PL259.....**£29.95**

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The Alinco EMS-14 Desk Microphone

During the time GB75PW was on the air – from different locations throughout the UK – I was privileged to have the use of the Icom IC-756PROIII, loaned by **Icom UK**, which came complete with an excellent desk microphone. Additionally, on the occasion I flew up to Scotland for the GB75PW operations from the **Kilamarnock & Loudon Amateur Radio Club, PW** author **Len Paget GM00NX** provided his Yaesu FT-1000MP and the desk microphone MD-100 for the two-day operation – to save me the job of carrying heavy equipment on the aircraft.

Desk Microphones

Until we had GB75PW on the air I hadn't used a desk type microphone since the late 1960s, when I was on air with a KW Vanguard 50W amplitude modulated (a.m.) transmitter. In those days I modified an old candlestick type microphone unit – I think it originally contained a carbon granule type insert and had been made for the RAF – to take a microphone insert suitable for the Vanguard.

I timed the microphone conversion just right because after spending a couple of hours re-wiring it and cutting out a circle of perforated zinc as a

microphone cover, the 28MHz band 'opened' for the rest of the day. I spent over six hours at the microphone **working all continents** with great ease. I've not experienced propagation conditions like it since!

Those were the days on a.m. – all achieved with a simple long wire antenna and with slightly less than 50W. However, after using the home converted microphone I rarely used desk microphones on my own equipment. But the GB75PW experience changed my opinion radically!

The Alinco EMS-14

The Alinco desk microphone is specifically made for the Alinco DX-70 transceivers and is – in common with all Alinco products – well designed and built, and reasonably priced. My good friend **Phil Ciotti G3XBZ** is an excellent engineer and electronics wireman had kindly made me a microphone extension lead, so that I didn't have to detach the DX-70s' panel (I have a DX70TH

and the original DX70 rigs) to change from the microphone to the PSK31 interface I mentioned in the *March Keylines*.

The extension lead means I could also change microphones easily, without disturbing the not-so-robust flying leads between the detachable control head and DX-70s' main chassis.

I had already purchased a selection of Alinco microphone plugs and sockets from Nevada and they soon sent me a desk microphone to try.

On The Air

When the microphone arrived I was most impressed as it's very neat looking, extremely well made

and has a decent length of flexible 'goose necking'. It's also very reasonably priced despite the falling value of the £ Sterling!

After the usual **Poole Radio Society's** weekly Wednesday net on 144MHz, **Phil G3XBZ** (who lives on the opposite side of Bournemouth) and I had a crossband contact. I was on 3.5MHz single

sideband (s.s.b.) while **Phil** was listening for me, and replying on 144MHz. **Phil** reported my audio as "Excellent" and despite the noisy conditions – he said it was 'very much' my voice – and I've had many other similar reports. This was in contrast to reports I received when using the handheld microphone – supplied with the rig when friends hadn't recognised my voice. Despite this, I've often recognised other Amateurs' voices immediately – including **Peters Waters G3OJV of Waters & Stanton** with excellent audio from the supplied microphone – while he was operating his own DX-70TH when operating mobile in Scotland.

Further Details

I liked the microphone so much I unhesitatingly purchased one! My thanks go to Nevada, for the loan of the review unit which costs £69.95 plus £4.75 p&p. Further details from: **Nevada, Unit 1 Fitzherbert Spur, Farlington, Portsmouth, Hampshire PO6 1TT, Tel: 023 9231 3090, Fax: 023 9231 3091 E-mail: sales@nevada.co.uk Website: www.nevadaradio.co.uk/**

Rob Mannion G3XFD enjoyed using a desk microphone during the GB75PW operations and decided to try the Alinco EMS-14.

UHF 'Coat Hanger' Contesting



Fig. 1: Plastic support pole, jammed in the car door, and Roger's hunting DX on u.h.f.



Roger Lapthorn G3XBM takes a coat hanger out for u.h.f. portable operating – perhaps hoping to hang on to signals?

It was raining on Saturday so our planned trip out was cancelled. However, the RSGB 432MHz Low Power contest was on the next day, so my thoughts turned to the better weather forecast for Sunday and the possibility of getting out portable to take part. The problem was I didn't have a yagi for 432MHz just a vertical collinear firmly fixed to the house. I had no material to build anything sensible in the time available – so I turned to the internet for ideas and inspiration.

Years back, I recalled seeing a design for a compact two element beam by **Les Moxon G6XN**. This was a clever yet simple design that offered a useful amount of forward gain but with quite a broad forward lobe, broad bandwidth and it's easy to match to 50Ω but in much less space than a conventional two-element antenna. A search turned up several references including one for a 430MHz version using a wire **coat hanger**!

Great, my wife, **Lis**, had (too) many of these wire coat hangers, and one wouldn't be missed. A quick search between her blouses, skirts and coats and a suitable candidate was soon found, so it was out to the back of the garage for a bit of straightening, sawing and re-bending!

The article I found (see references) gave quite clear dimensions. The three main parts needed - the two parts of the driven element plus the reflector - were easy to shape and cut. The next issue was how to hold the two elements the correct distance apart, how to connect the coaxial cable to the driven element and how to mount the antenna on a pole. Again, it was a case of improvising with materials to hand. Two small lengths of *pvc* covered cable were stripped back to give a tube which was just right to hold the two ends of the elements the correct distance apart, albeit rather floppily.

Terminal Block

A small terminal block was used to secure the two parts of the feed point and the inner and outer of the coaxial cable to these terminals. A further left-over part of the coat hanger was used to make a small support bracket allowing the whole antenna to be supported horizontally on the top of a 2m long plastic conduit pipe – to be used as the mast.

A quick check with the FT-817 showed the s.w.r., though not perfect, wasn't too bad. The local GB3PY

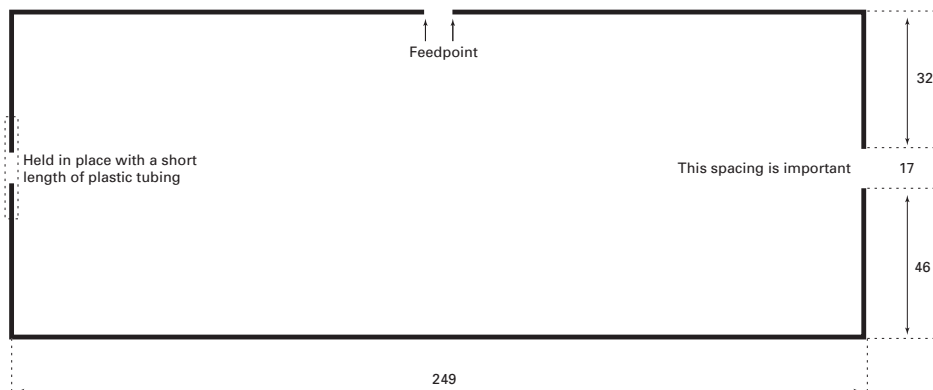


Fig. 2: The layout and dimensions of the u.h.f. Moxon Rectangle antenna.

Links

www.moxonantennaproject.com
www.i1wqlinkradio.com/antype/ch29/chiave1622.htm
www.g3xbm.co.uk

Fig. 3: A closer look at the finished antenna. Dimensions were from the internet source and the assembled antenna isn't pretty!

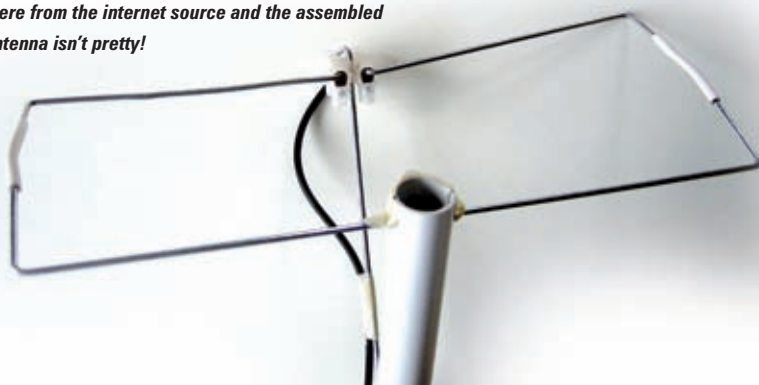


Fig. 4: The Morse key had to come out to complete the QSO with F8BRK, 326km away.

repeater could be worked if the antenna was mounted vertically and the design seemed to have a reasonable front-to-back ratio. Although just how much front-to-back ratio was hard to determine indoors! Everything was ready, so all that was needed, was some sunshine on Sunday morning and some decent u.h.f. conditions.

Sunday morning wasn't as the forecast had promised – there were showers and cloud and no sign whatever of the 24° and sun. Nonetheless, I packed the FT-817, microphone, Morse key and gel cell battery together with the coat hanger antenna and conduit pole mast into the car and 'made for the hills'. Well, in East Anglia readers should be aware that hills are in very short supply so, I had to make do with the bump just behind Newmarket, known as 'The Heath' where the racehorses exercise. This has a good take-off to the west and around to the north, but it's poor in all other directions. But I thought, that if there weren't many stations to work, at least I could look at the horses!

Arriving on site just as the contest started I extracted the antenna and pole then held the whole assembly in place by trapping the pole in the car door and window – no complex guy ropes here! This was fine until it rained heavily and the seat and operator got soaked by the water running down the pole into the car. (It soon stopped though.)

Connecting up the transceiver and battery I switched on and listened eagerly. At first I was greeted with near silence until I remembered to switch the antenna to the correct antenna connector on the FT-817. Then, almost

immediately G4SIV was heard and worked. A signal report 55 was not too bad. In the following couple of hours (until the gel cell died), a total of 10 QSOs were made in eight locator squares from as far apart as Bristol, Birmingham, Lincolnshire and Oxfordshire.

Conditions Average

Conditions were very average and certainly not 'up' for any length of time. Also, the forecast was completely wrong with heavy rain again as the morning progressed. The unsealed antenna connector was soon soaked. Despite the wet weather, the best QSO of the morning was the very last one, **F8BRK**, at 326km away, was weak but I could hear him calling "CQ" on s.s.b.

My attempts at calling F8BRK on s.s.b. failed to get me noticed so, it was time to get out the Morse key and try calling on c.w. After a few 'QRZ' calls he soon had all my details and gave me a report of 519 from IN99VF. As you can imagine, I was well pleased!

In summary, no more than 30 minutes in the garage on a wet Saturday had transformed my wife's coat hanger into a u.h.f. DX-grabbing machine. So, if you are at a loss for a 430MHz antenna I recommend you pay a visit to your wife or girlfriend's wardrobe!

Finally, I am not sure what the stable lads and jockeys out exercising the horses thought. 'What is that bloke doing with a bent coat hanger on the end of a plastic conduit pipe standing in the rain? Is he a spy for another racing stable or just another nut case?' You must decide! Happy u.h.f. DXing!

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W-2000 6/2/70 Base... £85.95.
WBV-70 4m 1/2 Wave Base... £44.95.



BENCHNER, INC.

Butternut HF-2V 40/80m... £299.95.
Butternut HF-6V 80-10m... £399.95.
Butternut HF-9V 80-6m... £466.95.
Butternut HF-5B 20-10m... £472.95.
30-MRK 30m ad for HF2V... £139.95.
A-17-12 17&12 ad for HF6V... £71.95.
A-6 6m ad for HF6V-X... £23.95.
TBR-160S 160m HF2/6/9V... £169.95.

HUSTLER

Hustler 5-BTV... £224.95.
Hustler 4-BTV... £182.95.
Hustler 6-BTV... £255.95.
Hustler RM-10 10m resonator... £20.95.

PALSTAR

AT-1KP Digital Display... £359.95.
AT-1500DT 1500w ATU... £449.00.
AT-2K 2000W ATU... £399.95.
AT4K 2500 Watt ATU... £809.95.
AT5K 3500 Watt ATU... £1079.95.

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Miracle Ducker IL... £109.95.
Miracle Ducker PL... £109.95.
Miracle Whip TL... £129.95.

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Tune - Approx SWR Rating of 10:1
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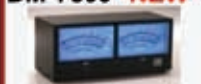
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Tonna 20919 70cm 19el	£72.95
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RIGblaster Plus Serial	£149.95
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M4-CBL RG45/4Pin lead	£18.95
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HF80FX 80m Mobile	£44.95
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X50 Base 2/70	£72.95
X200N Base 2/70	£114.95
X300 Base 2/70	£139.95
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AL-811HXCE 10-160m 800w	£1099.95
ALS800X Solid State 10-160m 600w	£1629.95
AL-1500XCE 10-160m 1.5KW	£3679.95
AL-1200XCE 10-160m 1.5KW	£3639.95
AL-82XCE 10-160m 1.5KW	£2799.95

RADIO HOOKS

CW-160 160-10m (252ft)	£164.95
CW-160 160-10m (133ft)	£159.95
CW-80 80-10m (133ft)	£129.95
CW-80 80-10m (66ft)	£149.95
CW-40 40-10m (66ft)	£119.95
CW-40+ 40-10m (66ft)	£139.95
CW-20 20-10m (34ft)	£99.95
G5RV+ 80-10m	£79.95
G5RV Fullsize	£34.95
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SGC-230 200Watts	£499.95
SGC-230 HF	£499.95
SGC-500 HF	£159.95
SGC-235 HF-500w	£1329.95
SGC-237 HF+6m	£334.95
SGC-237 Porta	£614.95
SGC-237 PCB	£319.95
SGC-239 HF	£219.95
MAC-200	£309.95

Rotators



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G-450C Rotator	£299.00
G-550C Rotator	£334.00
G-650C Rotator	£349.00
G-1000DXC Rotator	£399.00
G-5500C Rotator	£499.00
AR-35X Hy-Gain rotator	£109.95
G-250 - Rotator	£149.95

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RG58U	£0.70 per Metre
RG8 Super	£0.90 per Metre
RG213	£1.30 per Metre
W103 Westflex	£1.95 per Metre
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Flexweave-PVC-50 50m	£39.95
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7 core	£1.00 per Metre
8 core	£1.50 per Metre

DC Connecting Cable	
5A DC Cable	£0.50 per Metre
10A DC Cable	£0.75 per Metre
20A DC Cable	£1.00 per Metre
25A DC Cable	£1.10 per Metre

TGM Antennas Mini Beams

MQ-24SR 6-20m 2el	£469.95
MQ-34SR 6-20m 3el	£589.95
MQ-1 6-20m 2el	£399.95
MQ-26 6-20m 2el	£509.95
MQ-26SR 6-20m 2el + EH	£549.95
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X-7 - 20/15/10 7EL Yagi	£1199.95
A3S - 20/15/10 3EL Yagi	£599.95
A4S - 20/15/10 Yagi	£739.95
A3WS - 12/17 3EL Yagi	£499.95
ASL-2010 13-32MHz Log	£899.95
MA5B - Mini Beam	£479.95
D-3 - 20/15/10 Dipole	£299.95
R-6000 - 6Band Vertical	£399.95
R-8 - 40-6m Vertical	£559.95
MA5V - 10/20m Vertical	£279.95

Second Hand List

Amplifiers	
Mirage B-108 2m Linear Amplifier	£129.00
Tokyo HY-Power HL-37VSX RF Power Amplifier with FET	£69.00
Alinco ELH-730G 30W output linear amplifier	£59.00
Yaesu FL-2050 amp	£99.00
Nietzsche NB-30W - RF Amplifier	£59.00
Analyzers + SWR meters	
Comet CD-270D Meter	£49.00
Daiwa SW-110A 1.8-150MHz 20W and 200W Power Meter	£40.00
Antenna Tuners	
Yaesu FC-30 Antenna Tuner Unit	£169.00
Books	
11 Issues of "Radio Bygones" magazine	£15.00
CB	
Midland ALAN 42 Multi 80ch Handheld	£79.00
DAB Radio	
Gemini 49 Digital Radio	£40.00
Data Comms	
Kamtronics KAM Multimode TNC	£140.00
AEA PK-12 Packet Terminal	£69.00
AEA PK-232MBX	£120.00
Frequency Counter/finder	
SCOUT Optoelectronics Frequency Counter/finder	£175.00
Handheld Transceivers	
Kenwood TH-G71E Dualband Handie	£129.00
Kenwood TH-K2ET 2m Handie with keypad	£99.00
Yaesu FT-41R Handheld Transceiver	£120.00
Icom IC-T8E	£159.00
TH-K4ET Kenwood FM 5W 70cm Handy - with keypad	£99.00
DJ-596EMKil Alinco 2m/70cm FM Handy with Digital Opt	£99.00
HF Transceivers	
Kenwood TS-120V 10W HF Mobile	£220.00
Yaesu FT-920AF HF / 6M Base	£899.00
Kenwood TS-50S	£399.00
Kenwood TS-570D HF Transceiver	£525.00
Yaesu FT-920	£799.00
Icom IC-706mk1	£299.00
SGC SG-2020 Transceiver	£375.00
Kenwood TS-950SD HF Transceiver	£1,099.00
Kenwood TS-850S /AT	£699.00
Icom IC-740 HF Transceiver	£389.00
Yaesu FT-100D Multiband Transceiver	£425.00
Yaesu FT-767GX HF, 6m & 2m & 70cms transceiver	£699.00
Yaesu FT-990 /AC	£799.00
Kenwood TS-690S HF -6m Transceiver	£449.00
Alinco DX-77E HF Transceiver	£379.00
Kenwood TS-870S HF Transceiver	£899.00
Yaesu FT-1000MP Mark -V Field	£1,199.00
Icom IC-7400 HF, 6m & 2m Transceiver	£899.00
Yaesu FT-107M HF Base Transceiver	£299.00
Kenwood TS-570DG/E	£549.00
Yaesu FT-1000 "CLASSIC" HF Transceiver	£1,399.00
Yaesu FT-900/AT HF Transceiver	£475.00
Kenwood TS-450S /AT HF Transceiver	£425.00
Icom IC-718 HF All Band Transceiver	£389.00
Icom IC-746 HF/6m Transceiver	£589.00
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Yaesu FT-1000MP / AC HF Transceiver	£799.00
Kenwood TS-430S HF Transceiver 100W output	£275.00
IC-7400 HF, 6m & 2m transceiver	£899.00
Kenwood TS-870S HF Transceiver	£799.00
Kenwood TS-850S /AT	£699.00
Kenwood TS-570DG/E	£549.00
Alinco DX-77E HF Transceiver	£379.00
Icom IC-746 HF/6m Transceiver	£589.00
Kenwood TS-570D HF Transceiver	£525.00
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SP-23 Kenwood Base Speaker	£50.00
Kenwood MC-85 Base Mic	£99.00
Yaesu MW-1 Remote Control Mic	£60.00
Yaesu MD-100 Desktop Microphone	£79.00
MFJ-382 Deluxe Amplified ClearTone Speaker	£30.00
SMC-34 Speaker/Microphone with Volume Control	£20.38
HM-133 Remote Control Microphone for IC-E208	£53.00
MC-90 Desk Mic for DSP	£149.00
Other	
AKD 6001 6m FM Trx	£115.00
Heil BM-10-5 Headset	£50.00
Kenwood MB-201	£20.00
Standard C-156E 2m Handheld	£125.00
Yaesu NC70 Battery Charger	£60.00
Daiwa CNA-1001	£149.00
M/Mods 144/100	£119.00
Snooper S5-R Safety Alert System	£119.95
MML432-30L	£89.00
FRT-7700	£69.00
Comet CF-BPF6	£25.00
EDC-16B adapter	£9.99
SMC 150PL Dummy Load	£29.00
Trio (Kenwood) YK-88C IF Filter	£40.00
Timewave DSP-59+ Filter	£129.00
Kenwood VS-1 Voice Synthesiser	£39.00
OptoElectronics X Sweeper	£1,199.00
EB-9 Under Dash Bracket for DX-70TH-DX-701 - No Scr	£18.00
Yaesu FV-101DM Digital Memory VFO	£199.00
MFJ-781 DSP filter	£89.00
AOR ARD9000 Digital Voice Interface	£129.00
Revox W540 140 - 525MHz 200W	£40.00
Kenwood TH-47E 430-440 MHz	£79.00
DRU-2 Digital recording unit	£80.00
Icom PS-85 Icom 20A 13.8V Switch Mode	£130.00
KSC-14 Fast Charger for TH-22E	£76.55
MB-62 Mobile Mounting Bracket (Main) for IC-706, IC-14.74	
EM-8200 External Memory Card for AR-8200-8200-S2	£40.00
TOKYO VHF-HF-TRANSVERTER	£199.00
FT-290/790MKI Carry Case	£15.00
SC-8200 Soft Case for AR-8200-8200-S2	£10.00
Kenwood YG-455C-1 - CW Crystal Filter	£80.00
Kenwood YG-455CN-1 - CW Crystal filter	£100.00
Kenwood / Trio BPF-2A HF filter	£25.00
PMR446	
Challenge PMR160 - 2 x 446Mhz handheld transceivers	£25.00

Power supplies	
PS-33T Kenwood 13.8V 20.5A PSU	£159.00
Microset PT 135 PSU	£120.00
Yaesu FP-757HD Power Supply	£139.00
Kenwood BO-9 Base Unit	£39.00
Yaesu FP-757HD Power Supply	£139.00
PT-50A Microset 50A 13.5V PSU	£272.13
PT-1012 Microset 12A 13.5V PSU	£108.65
Receivers	
Fujion F-2000A Finder	£99.00
Icom IC-R72 Receiver	£399.00
Icom IC-PCR1000 Receiver	£189.00
AOR AR-8600MK1 Wide Band Receiver	£499.00
AOR AR-8600MkII	£499.00
Kenwood R-5000 Communications Receiver HF	£450.00
Scanners	
Bearcat UBC-278 CLT Scanner	£99.00
Icom IC-R10 Hand held Scanner	£179.00
Yupiter MVT-7000	£129.00
Yupiter MVT-225	£159.00
Bearcat UBC-3300XLT Scanner	£129.00
AOR AR-8000	£189.00
Yupiter MVT-7100 Scanner	£179.00
Realistic Pro-43 Scanner	£89.00
Yaesu VR-500 100kHz-1300MHz Scanner	£119.00
UNIDEN UBC-3000 Hand Scanner	£129.00
PSR-282 GRE Handheld Scanner	£60.83
AOR 8200 Mk I	£220.00
Albrecht AE105H - "Sport scan" scanner	£99.00
Uniden UBC-180XLT scanning receiver	£99.00
VHF/UHF Transceivers	
Kenwood TM-255E 2m Mobile	£329.00
Icom IC-490E 70cms Mobile	£250.00
Kenwood TR-9000 2m Multi mode	£220.00
Kenwood TS-271E	£165.00
FT-290RMKII 2m Multi mode	£150.00
Trio TR-9130 2m multi mode	£220.00
Yaesu FT-847 HF-6-2-70 Base	£899.00
Yaesu FTV-1000 200 W Transverter	£450.00
Yaesu FT-790	£159.00
IC-7400 HF, 6m & 2m transceiver	£899.00
Kenwood TR-751E 2m Multi-mode transceiver	£275.00
Yaesu FT-290MKII 2m Multi-mode transceiver	£250.00
Yaesu FT-690R II 6m transceiver	£275.00
Yaesu FT-480R 2m Transceiver	£220.00
Yaesu FT-1500M 2m FM transceiver	£109.00
Kenwood TS-790E Dual-Band Base / Mobile Transceiver	£799.00
Kenwood TR-251E 144-146 MHz	£120.00
Icom IC-229H 144-146 MHz	£119.00
Icom IC-7000 1.8 - 70cms Mobile Transceiver - IC7000	£699.00
The TINY-2 MK-II - With Open Squelch Board	£109.00
Yaesu FT-2500M Amateur VHF transceiver	£99.00
AKD 2001 Amateur VHF FM transceiver	£69.00
Yaesu FTM-10E Transceiver	£199.00
Kenwood TR-751E VHF Transceiver	£275.00
The TINY-2 MK-II versatile platform - Basic	£89.00
FT-90R - Transceiver	£199.00
ICOM IC-2SET - Amateur VHF Transceiver	£79.00

ANEM amplified module	£122.49
1042 6-way switch box	£19.95
NEDSP-1061-KBD DSP module	£99.95
NEDSP-1062-KBD Noise Module	£104.95
NEIM1031 Noise Module	£129.95
NES10-2 MK II speaker	£99.95
1090 Radiomate Keypad	£89.95



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Amateur Radio at School Part 1

Introduction: *Tom Read M1EYP is one of the UK's top Summits On The Air (SOTA) activators, as well as serving on the SOTA Management Team. Tom is Head of Mathematics at Brownhills Maths & Computing College, Stoke-on-Trent and in the first of two special articles, describes how he's been able to introduce radio into the school syllabus. Part 2 will appear later in 2009. Editor.*

Introducing Amateur Radio in schools is not a new concept. The **Radio Society of Great Britain's** (RSGB) GB4FUN travelling demonstrator excels and some schools are fortunate to have help from volunteer Amateurs. Well-known courses and clubs include those at **Rishworth School**, Lancashire, and **Harrogate Ladies' College**.

Another huge success was achieved at **Christleton High School** in Chester by my friend and leading SOTA activator **Shirley Smith MW0YLS** (now sadly a Silent Key). Some of her students actually started going out on SOTA activations themselves!

However, the schools I've mentioned are not the only examples – there are many others.

How It Started

So, how did my Amateur Radio in the syllabus all start? This, I had been seeking opportunities to introduce radio at Brownhills since completing the 2001 the **Science and Technology through Educational Links with Amateur Radio (STELAR) Teachers' Crash Course Radio Amateurs Examination** in Harrogate. However, unlike my two previous teaching posts in Cheshire, hobby-based extra-curricular activities at lunchtimes or after-school did not attract the interest of students. In fact, the whole dynamics of an inner-city school was markedly different.

Rather concerned, I discussed this issue with RSGB Board member **Dave Wilson M0OBW**. I already knew Dave from his representation of RSGB at rallies, and from contacts on the GB3MR 430MHz (70cm) repeater.

We reached the conclusion, that to progress and get Amateur Radio into schools and to allow the young people to be aware of the hobby, it needed to become part of the timetable – and not just an extra-curricular activity. Indeed, Amateur Radio needed to carry currency – in terms of school league table points – for it to be taken

seriously enough to receive an allocation of the timetable from an already overloaded curriculum.

So, the status quo remained although I did get two students interested and put them onto local radio clubs who provided Foundation courses. They were successful and got themselves on air – but this did not match the scale of my ambition to introduce radio communications to my students.

However, unbeknown to me, progress was being made on important fronts as the RSGB had been in dialogue with the **Qualifications and Curriculum Authority (QCA)**, and this included the matter of a curriculum points value for the Advanced Licence qualification. This has yet to be finalised, but the very fact that the conversation was taking place was a powerful alibi in my mission!

New Curriculum

The QCA was introducing a new curriculum for the Year 7 cohort in September 2008. The basis was a supportive approach to ease transition between primary and secondary phase education. The idea was to partly reduce the burden of the prescriptive Year 7 curriculum – allowing schools the flexibility in restructuring delivery, and the opportunity to build-in 'enrichment' activities.

The full official statement from QCA can be found at http://www.qca.org.uk/qca_15792.aspx but the main flavour is captured in the following extracts:

"Why do we need a new secondary curriculum?"

Children and young people growing up in the 21st century belong to a very different world from the one their parents knew at the same age. Advances in technology mean that the ways in which we live and work are constantly changing. Today's learners will have a wider variety of jobs to choose from, and those jobs will be more closely connected to the rest of the world than ever before. They need to be flexible, responsive to change and have the ability to apply the skills they learn in a wide range of situations. We need to have a curriculum that is ahead of these changes, a curriculum that gives learners the ability to thrive in this new world. To achieve this, the new secondary curriculum will create a more holistic approach to learning – something that develops both students' skills and the personal qualities that employers have said are essential tools in today's workplace.

Tom Read M1EYP is a professional teacher and keen Radio Amateur – and has successfully combined his work and hobby.

“What are the main changes? The curriculum will still include the statutory requirements for learners to gain strong foundations in English and mathematics and to be able to see the importance of subjects and their applications to the real world.”

An interesting ‘taster’ from the QCA! However, the new curriculum will encourage schools to plan events, out-of-school learning, daily routines and involvement in the local community in ways that enrich the learning that takes place in the classroom. Learners will gain valuable life skills through this sort of learning experience, such as managing money and engaging in debate.

Here at Brownhills Maths & Computing College, an 11-16 years secondary school in Stoke-on-Trent, we developed a model with the following key points:

Core subjects (Mathematics, English, Science, ICT) would continue being taught in separate subject areas.

Foundation subjects will be taught in themed project areas:

Global citizenship: (Languages, Citizenship, RE, Geography, History)

Health and well-being: (PE, Biology, Food technology)

Two hours per week, were given to the **Enrichment** component of the curriculum, and staff were asked to submit proposals. Most of them – including things like Critical Thinking, Guitar Tuition, Keep Fit, etc., would run in small blocks of six or seven weeks, with students then rotating to another activity.

This was where I found my ‘way in’! I proposed a radio course, to run for the full year. In this, I would have around 70 hours of curriculum time with a small cohort of interested students.

The Plan

I planned to begin with work on tuning, modes and different uses of radio, through hands-on short-wave listening. I would then cover the tasks on the Foundation practical record of achievement forms (I am registered as an instructor with the RSGB as well as being a qualified teacher!).

By the Spring Term, I hoped to have started the tuition for the Foundation examination, and hopefully get the students through – leaving sufficient time for them to operate under their own call signs, gaining fulfilment and confidence. After all, that’s what curriculum enrichment is really about!

The existence of a published and potentially accredited course, with textbooks, records of achievement and examinations ready to run, ensured my proposal was looked upon favourably by the school’s Senior Leadership Team. I had achieved my ambition – to get Amateur Radio into school!



Looking a little spartan at present because the benches are new, the pupils will no doubt have suggestions of a better layout soon.



Pupils helped to assemble the new dual-band v.h.f./u.h.f. antenna that now adorns the end of their building.

Unique Opportunity

I hoped that others in Amateur Radio would share my excitement at the unique opportunity. They did, seeing my efforts as a step forward, some even suggesting my model could be rolled out in other schools. But it was the practicality of resourcing the project that now became the priority. We needed radios – but without a sufficiently large allocation from the budget.

Dave Wilson M0OBW suggested I get in touch with **Dave Evans GW4GTE**. Dave Evans, like myself was a good friend of Shirley Smith MW0YLS before she became silent key in late 2007. The equipment from Shirley’s home shack, and her SOTA gear was stored by Dave GW4GTE on behalf of her estate. He sought an opportunity to support a worthy project, working with young people.

I made contact with Dave, who in turn contacted Shirley’s son Neil, and a free loan agreement was drawn up. I was grateful to Neil and Dave for their generosity and efficiency, and all three of us shared the conviction that this was a highly appropriate use of Shirley’s equipment and was indeed a fitting tribute.

Shirley’s equipment comprised an Icom IC-7400, Yaesu FT-1500, Yaesu FT-817 and a Yaesu VX-150. Accessories included a power supply, antenna tuning unit (a.t.u.), s.w.r.

meter, microphones, dummy load and a Morse key. To configure this excellent array as a station early in the Autumn Term, I needed to acquire very high frequency (v.h.f.) and high frequency (h.f.) antennas, plus coaxial cable and connectors. This was then ordered from a dealer, while I liaised with the school's site manager about some custom-built benching for the back corner of my mathematics classroom.

Enrichment was timetabled for every Friday afternoon. I knew my pupils would be starting from a low knowledge base about radio, unlike the typical youngster attending his/her local radio club and studying the Foundation Licence.

I made contact with my friend **Phil Archer G6AKK**, who tutored my own son **Jimmy M3EYP**, through the Foundation course at **Macclesfield & District Radio Society**. Phil kindly supplied copies of his Powerpoint presentations, as well as the 'bitesize' personalised schedule he used with Jimmy.

Dave and Kath Wilson GOBW/M1CNY generously offered to supply the *Foundation Licence Now* textbooks, and suggested ideas for obtaining sponsorship for the course fees. I was concerned about the prospect of asking parents for money for books and exam fees – especially for something they had probably never heard of – and just after they had been hit by the cost of new uniforms, bags and stationery!

Back in school, I finalised the design for the benching, to include lockable units in which to store the radios, and identified positions for the v.h.f. and h.f. antenna.

So, with everything clear in my mind, it was time to disappear for that greatest perk of the teaching profession – the long summer holiday!

September Return

Upon returning in September, I was impressed with the new workbenches and storage units in my classroom. I also brought in a box of short-wave receivers accumulated while running short wave listening (s.w.l.) clubs in my previous schools. Incidentally, my first article for a PW Publishing Ltd. title was *Ashton-on-Mersey School DX Club*, which was published in *Short Wave Magazine*, May 1997).

The new Year 7s arrived that week, and waited excitedly to be informed of their group for the enrichment programme. Back in July, they had visited the school for a 'taster day' and were briefly introduced to Amateur Radio. I was pleased that several of them recognised me and asked if they had got a place on my radio course!

The first session began with me presenting the big box of old receivers, and other items like earphones and connectors. Their job was to carefully take out the items and give them a good wipe with a cloth. Gradually, the relics came back to life visually, but would they do so when turning the on/off switches? They did and children had a go at tuning, and results were pleasing with the English services of Polish Radio and Radio Russia International being heard.

	A	B	C	D	E	F	G	H
	Date	Time	Frequency	Waveband	Mode	Report	Station	Name
1	12/9/08	1300	88.3MHz	3m	FM	59	BBC Radio 2 - news, Madonna songs	Lewis
2	12/9/08	1323	102.6MHz	3m	FM	59	Signal 1 - songs	Andy
3	12/9/08	1335	93.3MHz	3m	FM	59	BBC Radio 4 - A Tiger For Malgudi	Charlotte P
4	26/9/08	1255	9.525MHz	31m	AM	59	Polish Radio - music	Humayun
5	26/9/08	1320	100.1MHz	3m	FM	59	Classic FM - adverts	Charlotte P
6	26/9/08	1322	15.450MHz	19m	AM	47	Voice of Turkey - end of English px	Dean
7	26/9/08	1326	104.3MHz	3m	FM	59	BBC Radio Cymru - Welsh language	Henna
8	26/9/08	1330	693kHz	MW	AM	58	BBC Radio 5 Live - talk about McDonalds	Humayun
9	26/9/08	1340	1503kHz	MW	AM	59	BBC Radio Stoke - Marvin Gaye music	Lewis
10	26/9/08	1345	94.6MHz	3m	FM	59	BBC Radio Stoke - celebrities	Henna
11	26/9/08	1350	145.725MHz	2m	FM	59	GOISWM - Keele - Philip	Charlotte P
12	3/10/08	1255	145.725MHz	2m	FM	59+	2E0DDD/M - A500 - Robert	Dean
13	3/10/08	1335	7.027MHz	40m	CW	599	DL0GH - Hessen	Sir
14	10/10/08	1315	145.725MHz	2m	FM	59	M0UCK/M - Adrian	Andy

An extract from our early 'logbook', a mixture of the students' broadcast band logs, and greetings messages passed to licensed amateurs (under the supervision of M1EYP).

I was pleased with the pupils' ability to anticipate and fall silent just before the announcement of a station ID, a skill more associated with a seasoned DXer! The pupils also enjoyed tuning over Band II v.h.f and identifying their local stations, such as BBC Stoke, and Signal 1.

In week two, the s.w.l. operations continued, with the pupils splitting into pairs and seeing what stations they could find and identify. It was soon apparent that the youngsters had hardly any previous experience of tuning an analogue radio, but they soon got the hang of it.

Displayed on the interactive whiteboard was a class logbook. Each identified station was entered, as well as the successful student's name in the final column. All standard logbook columns were there including date, time, frequency, waveband, mode, report, station name, programme details. I was careful to introduce these gradually to avoid overloading the pupils.

There was a surprising amount of teaching to be done. The students had to be comfortable with 24 hour clock format – and then convert it to UTC or 'Z time'. I used the expression "radio time" which aided understanding. Although reports of broadcasters are usually in SINPO or SIO forms, I figured that it would be helpful to use RS reports straightaway. The most involved teaching element in this section was the relationship between frequency and wavelength, and that between kHz and MHz.

By week three, the order arrived from the supplier. The first part of the session had the pupils identifying each item, and ticking it off on the invoice. These were RG213 coaxial cable, antenna wire, insulators, PL259 and BNC connectors, a PL259 to N-type adaptor and a 144/430MHz antenna.

I explained the purpose of each item to the students and outlined how it would fit into our classroom station. The pupils were fascinated with the make-up of the RG213 cable, especially when I peeled back some layers!

I invited the pupils to collaborate in assembling the v.h.f.

collinear antenna, while keeping a watchful eye! This was a simple task of course, but there was a teaching opportunity to explain each component.

With tasks complete, and time remaining, I was delighted to hear a girl student ask "Can we get the radios out for the last twenty minutes?"

On week four, I demonstrated how short wave reception is enhanced with a wire antenna. We took about 30m of wire and looped it around the classroom walls at a height of 2.5 metres. When the pupils saw how this simple addition brought the Radio Shack DX-394 receiver bursting into life, they were queuing up to use this set!

I was pleased that there was no shortage of English programmes on shortwave at this hour. Voice of Turkey, and Polish Radio were heard broadcasting in English. However, one that confused the students was the discovery of a 'foreign' language programming, loud and clear on the Band II v.h.f. It turned out to be the Welsh language service BBC Radio Cymru, which puts an excellent signal into Staffordshire!

On The Air

The Yaesu VX-150 hand-portable was brought into the classroom for the last 15 minutes so we could go on the air. I set the appropriate CTCSS tones on the rig and called via the GB3VT repeater. **Philip Lancaster G0ISW/M** on the M6, responded and accepted greetings messages from my students.

Students **Henna** and **Charlotte** were keen to try, with the former doing a fine job of using the phonetic alphabet to spell her name. I hadn't even taught that yet!

During the following week, the rest of the pupils had taken it upon themselves to learn the phonetic alphabet. Now that genuinely was a rarity – children doing voluntary homework!

A major development was local antenna rigger **Alan Pollitt** coming to mount the v.h.f. collinear, as well as hang the long wire. He told me he enjoyed jobs for Radio Amateurs as a contrast to the usual television, satellite and Freeview jobs!

The next session had a treat in store, with the installation of Shirley MW0YLS's main Icom IC-7400 in the classroom, and the opportunity to use it with the desk microphone to chat with Radio Amateurs.

The Amateur fraternity did not let us down, and each one I spoke to was agreeable to receiving greetings messages from my students and there were plenty of them with their hands up, queuing to get on the air! All wanted to spell their names with the newly learned phonetic alphabet.

The effect of this simple but powerful technique really appealed to the youngsters. Suddenly, they were in a situation where no-one ever asked "What was that?" when they said their names. The smiles of success upon hearing a Radio Amateur say their names back correctly, suggested to me the same warm feeling generated by a correct and confirmed exchange of reports with a DX station.

We were underway! The task ahead would be to work towards the Foundation practicals, and slowly but surely build up the students' knowledge and experience of Amateur Radio. I'll update you on our progress in the final article later this year.

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Emerging Technology

Radio-based Invisibility Cloak

No, I'm not referring to Harry Potter here, although the end result is in fact the same! In March this year, **Professor Sir John Pendry** of the Imperial College, London, will be presenting the one hundredth Kelvin Lecture, at venues in London and Glasgow. Sir John is one of the foremost experts on 'metamaterials' and is noted for his work on the interaction of electrons and photons with surfaces. His work has now given rise to the potential for invisibility and a perfect lens, where the resolution is unlimited by the wavelength of light, and this will be the subject of the annual lecture.

In collaboration with scientists at The Marconi Company, Sir John has designed a series of metamaterials whose properties owed more to their micro-structure than to the constituent materials. These are completely novel materials with properties not found in nature. In fact, a team of scientists have now successfully created and successfully tested a 'cloak of invisibility' in the laboratory. With the device, they managed to 'hide' a small copper cylinder from microwaves.

The device worked by deflecting the microwaves around the object and restoring them on the other side, exactly as if they had passed through empty space. The cloak device consisted of a metamaterial of ten fibreglass rings covered with copper elements. This created an artificial composite, which could be engineered to produce the required change in the direction of electromagnetic waves.

As we know, microwaves are like visible light rays and are reflected off objects, making them apparent and creating a shadow. But at microwave frequencies, the detection has to be made by instruments rather than the naked eye, and we've been using microwaves for radar purposes for many years to seek out the presence of objects in the distance.

In the experiment, the scientists first measured microwaves travelling across a plane of view with no obstacles. Then they placed a copper cylinder in the same plane and measured the disturbance, or scattering, in the microwaves. Next, the researchers placed the invisibility cloak over the copper

cylinder. Admittedly, the cloak didn't completely mask out the object, but it greatly reduced the microwaves being blocked or deflected.

Dr David Schurig from Duke University (Duke University is a private research university located in Durham, North Carolina, United States and was founded by Methodists and Quakers) explained that "This cloak guides electromagnetic waves around a central region so that any object at all can be placed in that region and will not disturb the electromagnetic fields," and "There's reduced reflection from the object, and there is also reduced shadow."

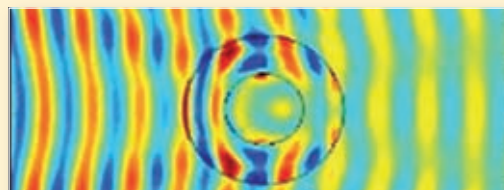
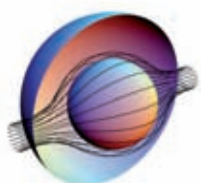
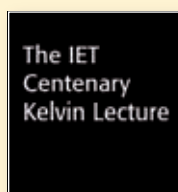
To explain how it works, think of flowing water, like a river where the water flows around a rock. Here, the water divides and joins up again at the other side of the rock. But someone looking down the river wouldn't be able to know it's passed around the rock. This is how the metamaterial cloak works, by channelling the microwaves around the object just like water flowing around the rock.

Sir John has said, "These metamaterials have opened a new chapter in electromagnetism. We've opened the door into the secret garden."

Now, if an object can be hidden from microwaves, this means it can also be hidden from radar. I'm very sure – in the same way *PW* readers will be! – that the military are already very interested in this! An entire aircraft could thus be hidden, as well as ground-based vehicles, with a metamaterial cloak around them.

In principle, theoretically the same effect can be used to cloak objects from visible light. But this would require much more intricate and tiny metamaterial structures, which scientists have yet to devise. So, making an object vanish to the human eye is still currently in the future. But not for long, as an estimate of between five and ten years has been given for this using nanotechnology.

Now, where did I put my cup of coffee? Oh yes, it's in the metamaterial holder on my shack bench!



Chris Lorek G4HCL looks at recent radio and electronic developments, including a 'Cloak of Invisibility' based on radio techniques.

Flexible Solar Cells

Power for portable devices has often been a stumbling block, with batteries often being a substantial part of the volume of the device they're powering, especially if a reasonably long 'power up' time is needed such as continuous use. Re-chargeable batteries are typically used here, and in past columns I've detailed work currently being carried out on flexible radios and biological power sources which we'll be seeing in the future.

One obvious way of keeping a portable battery 'topped up' is by the use of solar cells. These have usually been stiff and brittle, often being made of glass, and thus fairly fragile, in other words they're easily broken in a moving portable environment. Radios with built-in solar cells are available right now, but these are usually of a table-top size.

Of course a tiny radio means a tiny space that's available for a solar cell, and it's not usually of much use if it spends most of its life being carried around in an inside pocket! So an external solar cell is usually needed, but again here there are limitations on where one can be placed, and where it can catch the light from as many angles as possible. That's difficult if you don't wear a cap and don't want solar



cell 'epaulettes' on your shirt or jacket!

But how about if a solar panel could be sprayed onto a low-cost flexible plastic substrate, which can be used to make clothing and even items such as curtains? These items can then incorporate built-in solar cells to power your portable electronic equipment, which in turn – as we've seen in past *Emerging Technology* columns – could also be built into the clothing.

Enter the organic solar cell! Although the possibilities of photovoltaic devices (i.e. devices which convert light into electricity) have been made for a long time, wafer-based silicon cells have normally been used, but non-organic thin-film solar cells have started to take over. Organic cells have been in the offing for some time, but they've yet to gain anything like the popularity of the other types of photocells.

With different portable operating

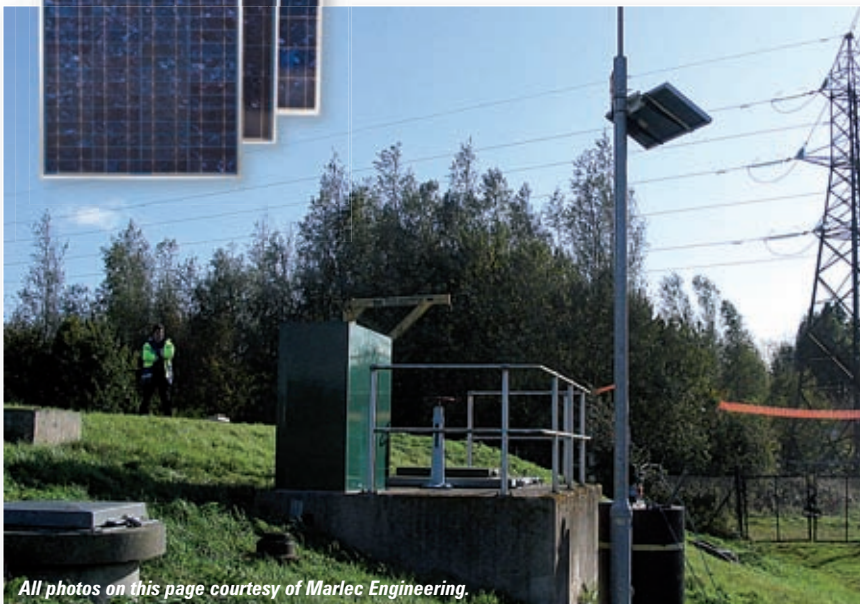
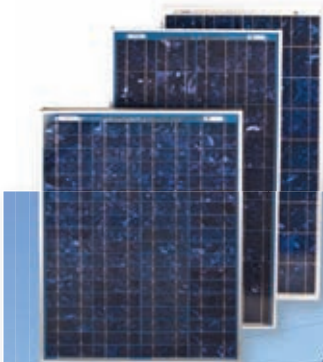


trends, organic photo-cells are now starting to become more interesting. That's because that, unlike earlier types, they can offer a combination of different methods of being mounted as well as the benefit of low cost.

The actual solar cell materials used are Poly 3-hexylthiophene (or P3HT for short), Phthalocyanine (Pc) compounds, and other materials which can be applied by methods such as low-cost spray coating onto a variety of surfaces, including flexible materials.

The big 'but' is the efficiency of the organic cells. Currently, normal thin-film silicon types of solar cells are around 7-10% efficient. Although the potential of organic cells has been around for some time, the efficiencies of these have only been around 2-3%. This means that you currently need a rather larger size, i.e. about three to four times the area, of an organic solar cell for a given output from other non-organic types. This possibly hasn't been helped by 'over enthusiastic' reports of the expectations these cells were hoping to meet – but haven't up to now.

However, the researchers are now making real progress – to the point where one company's target for high-grade cells is 10%, which it's planning to make available in three years time. The efficiency of average organic solar cells at this time is also likely to be around 7%, in other words the same as some non-organic solar cells are and with an operational life of five years which is typically longer than most portable consumer electronic equipment is used over its lifetime before being replaced. This would then mean that organic materials would be a viable choice and a low-cost alternative to traditional types.



All photos on this page courtesy of Marlec Engineering.

Transceiver Powered By Car's Exhaust?

It's been stated that around two-thirds of the fuel that your car consumes while you're driving along is emitted just as heat rather than used to power the vehicle. Around 30% of this is lost through the engine block and another 30-35% as the engine's exhaust. So, if you consider that an average sized family car consumes a staggering equivalent of 5kW of electrical energy while driving, with a small compact car consuming around 1kW, that's a lot of energy being wasted!

Well, now researchers at the Fraunhofer Institute in Germany are developing a thermoelectric generator to convert the heat from your car's exhaust fumes into electricity. The temperature of your car's exhaust pipe can reach over 700°C, and the temperature difference between this and – let's say a pipe carrying engine cooling fluid – can be several hundred degrees. The difference is suitable for a thermoelectric converter to use, with the flow of exhaust fumes on one side of its surface and the cooler side of a coolant pipe on the other, with semiconductors generating charge carriers through them – producing an electrical current, just like using a battery.

Thermoelectric effects were first recorded back in the 1800s, but the materials needed for efficient conversion didn't really improve until around the

1950s. But during the last ten years, with new developments in nanotechnology, as I've mentioned in past columns, the conversion efficiency has begun to improve significantly.

It's been this past lack of efficiency that's limited the use of such converters in cars, but that's now no longer the case. Don't get too excited yet though, as commercial systems won't be ready for another four or five years! Right now we use alternators to generate electrical power in our cars, and the long term goal is to reduce the dependence on alternators although the converters aren't likely to replace them altogether.

However, the researchers do hope to produce a generator capable of generating 1kW of power, which will be plenty to power your mobile transceiver as well as much of the car's electrical system. The other benefit is fuel saving, by not needing to use as much mechanical energy for an alternator the car's fuel consumption should be reduced by 5-7%. This means more money in our pockets as well as less pollution through the use of electronic technology.

The 60GHz Band

We've primary Amateur Radio allocations at 47GHz (6mm band) and 76GHz (4mm band), and in between these is a licence exempt public allocation at 60GHz (5mm),

which is not only Europe-wide but also licence-exempt in most other countries around the world. Amateurs have, of course, been doing pioneering work on all Amateur Radio bands and now this particular microwave region has been identified as being very promising for short range communications around the home, as an alternative to 2.4GHz. The 60GHz allocation suffers from attenuation by oxygen molecules, which means it's not suitable for long-range communications, so it hasn't been popular with satellite users and the military.

Recently though, experiments have shown it's not attenuated very much more than 2.4GHz by plasterboard walls, even less by glass. Communication can easily be made indoors through three walls at wide bandwidth Gigabit data speeds, at distances of up to around 50m. The advantage here, of course, is of the very wide bandwidth available, whereas 2.4GHz has a lot less and is used by a great deal of wireless devices – including video senders with their constant transmissions on several channels across the entire available band.

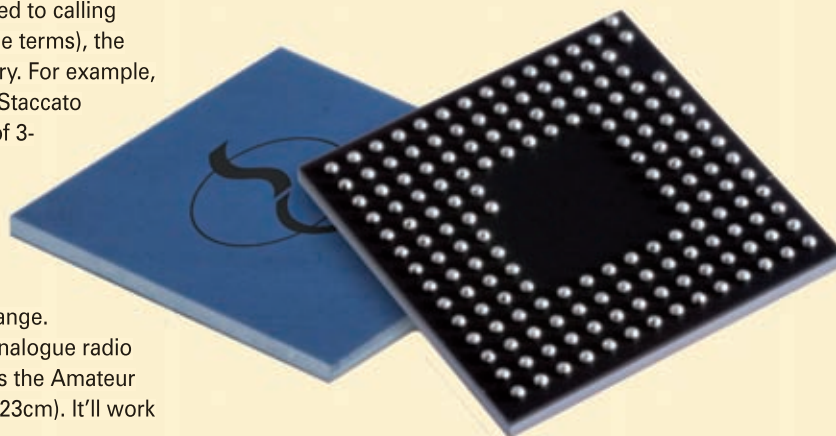
Even in Australia, which has the smallest 60GHz allocation, there's a 3.5GHz bandwidth available. So guess which band, pioneered by Radio Amateur experiments on adjacent bands, is likely to be used in your home in the forthcoming years?

Single Chip Devices

I've mentioned first-generation single-chip radios in past columns, and the second generation is now a reality. The ultra-wideband i.c.s are available which integrate the radio frequency (r.f.) stages, the digital baseband (which we're used to calling an intermediate frequency and mixers in analogue terms), the Media Access Controller, and input/output circuitry. For example, the Ripcord2 is an all-CMOS i.c. from the firm of Staccato Communications and covers a frequency range of 3-9GHz, supports wireless audio, wireless video, wireless IP and high-speed Bluetooth.

Another, from the firm of Elonics, is currently getting ready for production of its E4000 multi-band CMOS tuner i.c. for multimode operation over the 64MHz to 1.7GHz frequency range. As well as commercial uses such as digital and analogue radio and TV broadcast reception, this of course covers the Amateur bands of 70, 144, 430MHz (70cm) and 1296MHz (23cm). It'll work

from a single 1.5V cell with a power consumption of only around 100mW as well. So, it looks like amateur handhelds are about to get even smaller!



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



Charles Riley's

antenna workshop

A small transmitting loop for 10MHz – and the adventures behind it!

Charles Riley G4JQX describes the ideas behind a small transmitting loop for 10MHz – a WARC band that shouldn't be ignored!

Let's take a look at the project's concept – electrically small loops, that's to say a loop that is less than 0.1 wavelength long, have been around for many years – but not many people build them. The usual reason for not doing so, is that loops are "difficult" and have high voltage potentials making construction very specialised. This is unfortunate, as with some ingenuity small loops can be excellent performers on the short wave bands.

The main problem is trying to find solutions to some of the constructional problems that loops present without getting involved in complex engineering challenges and needing to make considerable financial outlays.

Electrically small loop antennas are very simple and very effective – the loop is essentially a parallel tuned circuit – with an inductor (the loop) acting as a radiator and a capacitor is used to tune the loop. The best known version is the 'Army Loop' originally designed for US Army deployment and introduced to the Amateur Radio world by **Lew McCoy W1ICP** in 1968. Various versions have also been introduced through the years – the **Ted Hart W5QJR**, "high efficiency" loop in 1986 amongst others – and there's a portable version available today from a commercial supplier.

Electrically small loops work by increasing the magnetic field component of the radiated signal, rather than the electric field utilised by a more conventional antenna. The theory is complex – but doesn't really matter – the fact is, magnetic loops work very well indeed and are used throughout the world, especially in rugged military applications where small size is paramount.

The key concept to grasp is that

in order to utilise the magnetic field we need to concentrate the radiated magnetic field by forming a loop. As this is done the inductance of the loop is increased and must be tuned by some form of capacitor as in a normal tuned circuit. If the magnetic field is not formed in this way, then the electric field dominates and the antenna will behave more like a dipole (or more correctly, a doublet).

My ex-colleague and great friend, who is now retired, **Chris Clarke G0AQL**, has a real knack of making something out of nothing. His experience as a Royal Navy submariner probably has a lot to do with it – you don't find many shops on a submarine and when something breaks its down to your ingenuity and practical resourcefulness! Years ago, when we worked together, Chris was always the first person to find practical solutions to engineering problems – and so it turned out to be with the challenge of a loop antenna.

On our regular 70MHz (4m) and E-mail chats, we had been discussing antennas for the 10MHz (30m) band. In fact, due to its limited frequency span, the band always seemed to be an ideal choice for an equally limited bandwidth loop antenna and with the band always being full of surprises, it was a good band to experiment with!

Biggest Problem

The biggest problem with loop antennas is that at the tuning point very high voltages occur (perhaps 10kV or more at 100W) and large circulating currents occur in the inductor itself. These parameters frightens people away from constructing loops, which is a shame and Chris was determined to find a way of creating a 10MHz pocket-sized loop design that was accessible to anyone, with everyday resources.

Finding a simple practical way of insulating the antenna construction, was a topic under discussion one night during our regular chat on 70MHz. However, the discovery by Chris of a high voltage insulating

material whilst doing the food shopping the next day – in the form of a nylon chopping board at the local Sainsbury's supermarket for £1.99 (!) – led to a practical loop construction project coming to life. Within a couple of weeks some significant constructional challenges were overcome and reduced to simple solutions.

The loop antenna was soon on the air at full maximum legal power. This article describes Chris's solutions in the same way that they evolved during our nightly QSOs and follow up E-mails – and we hope they will inspire others to build one of these remarkable antennas from simple components available around us.

The Loop

Early discussion between us about the loop material itself didn't reveal anything particularly new. Loop antennas are typically characterised by low radiation resistance, so losses have to be kept as low as possible. Electrically small dipole configuration antennas are usually brought to resonance by loading coils – and these have inherent losses in their usage. Loops avoid this problem by not having traps, but do feature an adjustable capacitor for tuning the inductor (loop).

Low loss loop material inevitably means using relatively heavy material – so whatever material was chosen for the loop it had to be physically connected to the variable capacitor somehow. And our discussion centred around this issue.

Chris did what many loop builders have done in the past – and headed for the plumbers' section of the local building equipment suppliers. Fortunately, 22mm diameter copper tube is easy to get hold of, and is relatively inexpensive (although commodity prices have increased recently). He then used a very modern plastic coupling for the insulator at the top of the loop where the variable capacitor would be connected across. The rest of the fittings were the



Fig. 1: General arrangement of the loop – with the balun acting as weight for stability.

conventional 'soldered on' type of water pipe couplers.

The loop can be of any size – it's a tuned circuit so the only variables are the loop inductor and the capacitor, the ratio of which varies with the usual tuned circuit formula. Chris made his loop about two metres in diameter – simply by finding which standard copper pipe stock lengths meant the least waste – it's cheaper this way. Incidentally, all the information associated with loop antennas – for those wanting to do the maths – are contained in the *ARRL*

Antenna Handbook (available from the **PW Book Store**) but nothing is critical.

Copper straps were then soldered on to the pipes to connect to the variable capacitor as shown in the photo illustrations. The Sainsbury's chopping board is the main constructional support item as it has a very high dielectric withstand!

The 22mm pipe size is the best to use – it keeps losses low in the loop and 135° couplers are easily available. The 15mm size tubing could be used but with a loss of *Q* and probably less physical strength in the finished loop.

Charles Riley G4JQX

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The support plates (chopping boards!) from the local Sainsbury's store are remarkably good insulators and can be cut to virtually any shape with a jigsaw. They are made from some form of nylon material – but are excellent for this job and easy to use.

Chris rapidly built the loop – and with his usual constructional far sight, developed a balun which later became a counterweight for the loop stand. I then received an E-mail from Chris, where he updated me and said that we were 'almost there' and just needed the vacuum capacitor, which he'd be getting soon.

The Vacuum Capacitor

Vacuum capacitors can be difficult to obtain, although they do appear at rallies and surplus stores. The key is to maintain a good look out. They do appear on eBay – although prices can be high if the seller knows what he has got (many don't so look at photographs carefully). They can also be obtained by buying scrap/surplus equipment for a few pounds that may have one buried within it. The key is to keep looking – one will appear from somewhere!

Some good Russian devices have also been appearing on the surplus market and it's also possible to get them directly from Russia as well. A search on the Internet may yield some good results. As its name suggests, the vacuum variable capacitor consists of two copper concentric sleeves in an evacuated valve type enclosure.

The vacuum then acts as the dielectric and enables much higher voltages to be tolerated between the two sleeves. One sleeve (there are other designs as well) is then moved away from the other by rotating a coupler which drives an internal screw thread mechanism. I've never understood how the vacuum seal integrity is maintained – it's some form of metal seal similar to a valve base – but they do work well. If you are buying one check the integrity of the unit carefully – and if at all possible, see if it can be flash tested

at several thousand volts. (A vacuum variable capacitor is incredibly stable under high power).

Note: It's possible to use open frame capacitors in this application, but you will need to restrict power levels if it's a small capacitor – this will not be much of an issue at QRP power levels. The best versions are probably split stator or butterfly types, which are often found in ex PMR equipment.

Chris had already promised me that he'll turn his hand to making a suitable capacitor in the next few months he just needs a bit of inspiration again from the local shops and we will make the design available. He always collects things – and had managed to obtain a couple of vacuum variable capacitors from various rallies over the years and one was soon sorted out and fitted – the value was believed to be around 10,000pf. This is rather excessive, but would allow the loop to be tuned over other bands as well – so it was fitted.

Chris sent me a photo and we discussed the merits of the nylon insulator on the capacitor adjustment thread. Although probably adequate at low power, neither of us fancied adjusting this at high power when the voltages in this area might be considerable! So, Chris started to set his mind to working out how to motorise it and was in two minds about doing it as it would bring a lot of complexity into the loop.

Loop Antenna Matching

To make the loop antenna complete, a radio frequency (r.f.) feed system is required and this must match the output of the transceiver directly to the antenna. A conventional a.t.u. cannot be used as this would bring the transceiver coaxial cable and a.t.u. into the 'loop' circuit and it would not function correctly (it might tune, but not much would be radiated!).

We had a good discussion about matching the feed to the loop. I'm not a fan of delta matching and could not see how to apply it to a loop. Even if we could find a way, Chris and I struggled to see how this could be adjusted sensibly with the large voltages and circulating currents in the loop.

We opted for the Faraday loop match (more correctly known as a 'Faraday shield loop'), which is simply a single turn loop, used to couple

energy into the loop. There's plenty in the usual antenna books on designing a match – but it's simply a loop made out of coaxial cable. The basic theory and practice says that the feed loop has a diameter 1/5 that of the larger loop and can be constructed using coaxial cable, but has to be physically strong enough to support itself. The coupling loop is formed in the following way: from the coaxial cable that will connect the antenna to the

transceiver, a loop of approximately 1/5 diameter of the main transmitting loop, needs to be created. Dimensions are not at all critical and 1/5 diameter is just a guide. From the end of the loop, 200mm or so of the coaxial cable's sleeve is removed to expose the shield. Where the loop starts, 30mm or so of the sleeve jacket is removed to also expose the shield and the shield at the end of the coaxial cable is soldered to the exposed

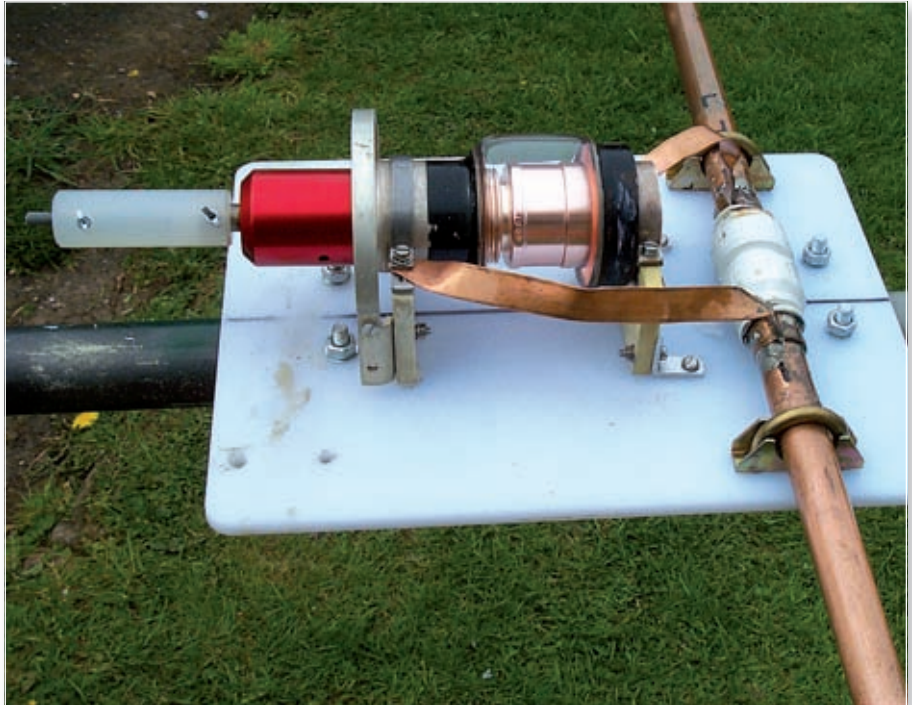


Fig. 2: Note especially the thick copper strapping from the loop to variable capacitor.



Fig. 3: The Faraday coupling loop (top right) – this should be positioned opposite the vacuum variable capacitor but it is not unduly critical.

shield at the start of the loop – the loop is then created.

Half-way round from the start of the loop, the coaxial cable is cut completely through. 20mm or so of the inner conductor is exposed and the shield cut away. On the other part of the cut cable, only the shield is exposed. The exposed shield is then soldered to the exposed inner conductor formed earlier. The coupling loop is then completed. All the joints are then sealed with self amalgamating tape.

The loop is now rigid it is fitted into the main transmitting loop. Chris used a short piece of wood to hold the loop rigid and also to fasten it into the main transmitting loop. He fitted it into the transmitting loop 'corner' - but anywhere on the loop opposite the vacuum tuning capacitor seems to work well.

Motorising The Capacitor

It then became clear to both of us that the loop could be made to work on other bands, so the capacitor had to be motorised. It wasn't good enough to adjust the loop at low power on 10MHz alone – what was needed was a tuning mechanism for the other bands.

A look on the internet came up with a Meccano circuit site <http://www.internationalmeccanomen.org.uk> and this had some circuits dedicated to motor switching – and also gave some advice on circuit topics. Chris soon finished the drive with the help of some Meccano gears and some metal work bits raided from an old bench clamp vice.

Chris E-mailed me the following evening to tell me he'd made good progress with the loop but had to play around with the motor drive but had got it going okay in the end. He told me the loop was complete and commissioned successfully. He had problems at first but soon resolved, as he had the centre core and screen transposed in the wrong halves of the loop (*PW* readers can bear this in mind!).

Next, Chris conducted trials up to 400W with no problem and also achieved a very low s.w.r. without an antenna tuning unit – so he was very pleased, especially as there was no flash-over but this wasn't really surprising as we had used the vacuum capacitor (there was nearly 10kV at

the capacitor). He also reported that signals over to Japan and towards East over to USA were significantly stronger than when using a dipole – with a good reduction in noise.

Interestingly, Chris also mentioned that, "We'll probably not need to motorise it for 30m use only and body capacitance does not seem to be a problem. The analyser results should that 1.2:1 s.w.r. was achievable!"

Chris had also waterproofed the



Fig 4: The 10MHz loop came about due to the active help of my very capable friend and co-writer Chris Clarke G0AQL, pictured here in a brief moment away from his workbench!

unit with a flowerpot! He then tested the loop on 3.5, 5, 7, 10 and 14MHz with good s.w.r. readings on all bands. The next job Chris had to do was to drill holes in his shack wall to take the control cable!

The loop became known as the 'beast' in our conversations and following Chris's salvaging in a neighbour's skip, now had a stand made from a old halogen lamp. The balun became ballast for the tripod stand!

Chris is an ex-military man, so most of his equipment ends up with a coat of Nato standard paint and always gets a serial number! So, after tidying up the control systems and completing the waterproofing – we were ready to go!

Tuning Easy!

Tuning the loop is easy – the *Q* of the loop is very high, so even if a MFJ or similar antenna analyser is not available – it can be done by listening

to the noise peak when tuning the capacitor. The peak is **very sharp**, and it's not easily missed as you pass through it when tuning the capacitor, but it does takes a bit of finding exactly – so a slow speed reduction drive is required whether or not it's being tuned manually or electrically.

When transmitting, the s.w.r. is adjusted for minimum in the usual manner. However, for this antenna the coupling loop is adjusted to give the best results. The Faraday coupling loop can be adjusted either by rotation or by physically adjusting its position with the loop (it is, after all, just a large one turn inductor coupling to another inductor and the usual approach of stretching/squeezing a p.c.b. mounted inductor works the same way).

Note: The Faraday loop is matching the 50Ω unbalanced transceiver output to the loop and the loop itself is tuned using the variable capacitor.

Varnishing Recommended

For best results to loop should be varnished to preserve its *Q* in different weather conditions. But please be aware that varnish will 'creep' over time – so keep it well away from any capacitors or non soldered/brazed connections, as it will creep and become an excellent insulator at a critical point. Really excellent protection can be obtained by using a clear twin-pack epoxy resin (pop into your local chandlers or wood working store and you'll find some).

The loop gives fantastic service from Chris's suburban QTH and he has literally worked the world with it sitting on the patio as shown in the photographs. Height is not important to a loop, and it has an exceptional ability to reject local interference due to its narrow bandwidth and immunity to electric field radiated noise. They work very well in lofts!

However, a word of warning is required if you build one yourself – be very careful where you site it. The voltages on parts of the loop are very high and it ideally needs to be fenced off if there is any possibility of accidental contact – but don't let this put you off – some simple materials and good constructional practise can give you an excellent antenna where space or height is limited.

KITS, MODULES & AERIALS

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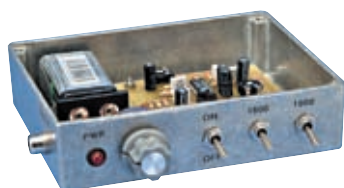
LCR BRIDGE with 5 resistance ranges 100, 1K, 10K, 100K & 1M. 3 capacitance ranges, 100pF, 1nF, 10nF and 3 inductance ranges, 1mH, 10mH & 100mH, plus external reference. Scale calibrated 0.01 to 10 times reference value. Optional drilled and labelled plastic or painted diecast box. PCB

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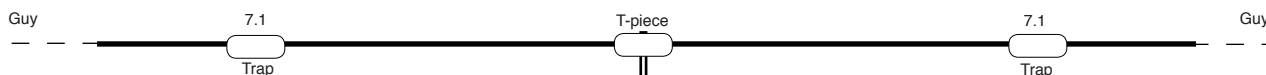
MASTHEAD PREAMPS, for 2 or 4 or 6metres. 20dB gain 1dB NF. 100W through handling. RF switched & DC fed via the coax. Heavy duty waterproof masthead box, and a DC to RF station box with SO239 connectors. **RP2SM**, **RP4SM**, **RP6SM**, PCB & hardware kit £41.00, Ready Built £65.00. Masthead fitting kit £6.00.

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The Rev. George Dobbs'

carrying on the practical way

The Rev. George Dobbs G3RJV had a 'Sudden' shock recently. Why? – It's 20 years since the project first appeared!

Twenty years from now you will be more disappointed by the things you didn't do than by the ones you did do.

Mark Twain

At the G QRP Club Mini-Convention last October, I was approached by a thankful stranger. He was a Radio Amateur who I had never met before and on introducing himself – thanked me profusely for getting him started in radio construction. It appeared that he had attempted to build several projects (I suspect perhaps too difficult for a beginner) but finally achieved success when he built the Sudden receiver.

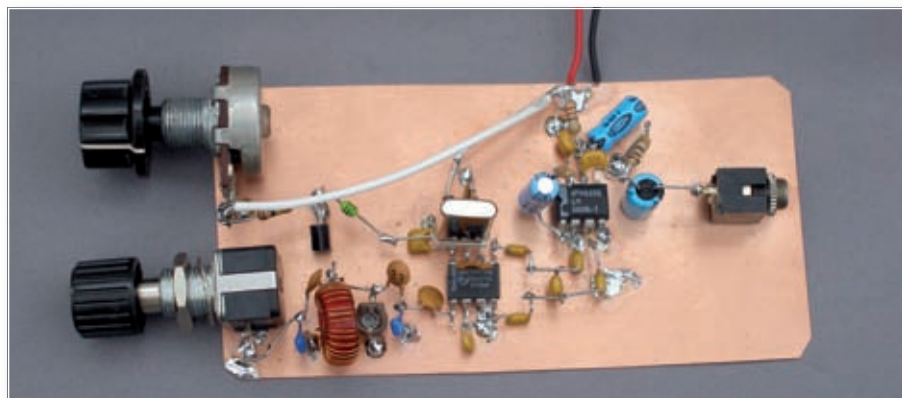
My new friend told me that from that successful outcome, he had gone on to enjoy 20 years of Amateur Radio construction. Obviously I was very pleased, and flattered, but was it really 20 years since I had produced the Sudden receiver? Intrigued, I checked **and it was** exactly 20 years! Since then however, several versions and modifications to the Sudden receiver have been written up – although very few of them were written by me.

Several kit versions have also been produced since the original Sudden began life as a kit from the now defunct **Kanga Products**. The kit proved very popular with beginners and several groups used it as a training project with young people. There was even a surface mount (SMD) version; produced for a while by **Blue Rose Electronics**.

In more recent times a version of the receiver was packaged in a tuna tin on a circular printed circuit board (p.c.b.) and was called 'The Sudden Storm'. This interpretation is one of a whole series of tuna tin mounted kits offered by **Rex Harper W1REX** at <http://www.qrpme.com/> (I briefly described the W1REX version in the October 2006 edition of this column).

The Original Name?

The original naming of the 'Sudden' had nothing to do with "rapidity" or "hastiness" but was taken from where I lived and worked. For 24 years I was



Vicar of the parish of Sudden on the southern edge of Rochdale in the north west of England. It took that name from "south dene"; a term that I think derives from a valley.

Twenty years have passed by and I no longer live in Sudden. So, following the wise words of Mark Twain, I decided to look back on some of the things that can be done with the receiver and suggest a few experiments for *PW* readers.

Like many of my projects, the Sudden is one for which I can claim little originality or merit. I once commented, "Throw an NE602 chip and an LM386 chip in the air, and they will land as a Sudden receiver!"

The project was designed around the manufacturer's data sheets and the circuit diagram of the original Sudden receiver is shown in **Fig. 1**. It's built around two integrated circuit (i.c.) chips; the NE602 and the LM386. Both lend themselves to simple receiver construction; although neither has particularly high performance in that application. Having said that, the Sudden is a remarkable receiver for what it contains!

Direct Conversion

The Sudden is a direct conversion (DC) receiver. Most receivers are of the superheterodyne (superhet) design in which the received signal is converted to an intermediate frequency (i.f.) for amplifying and filtering, and then converted into the audio frequencies that we can hear. The DC receiver, as the name implies, directly converts the

radio frequency (r.f.) signal to the audio frequency (a.f.) we listen to.

The signals from the antenna are fed via input tuned circuits to a mixer; sometimes called a product detector. Here the radio signals are converted into audio signals, by mixing them with a local oscillator. If the frequency difference between the radio signal and the local oscillator is within the audio frequency range, an audio signal will appear at the output of the mixer where both signals are present. This audio signal can then be amplified to provide a comfortable listening level.

So, if it's that simple, why bother with the two conversions of frequency in the superhet? The answer to the question lies in the use of the intermediate frequency (i.f.). The received signals are converted to a fixed frequency where the two essential properties of a short wave receiver, sensitivity and selectivity, can be facilitated. Sensitivity is the ability of the receiver to hear weak signals and in a superhet most of the amplification of the signal is done within the i.f. section.

Selectivity is the ability of the receiver to separate adjacent signals, so that only one of them is heard. The i.f. portion of a superhet is where the filtering of signals can occur to give greater selectivity.

The DC receiver is a simpler beast. Often the only filtering of the signal, to aid selectivity, occurs in the input tuning filter, although some DC receivers do use a.f. filtering. Also, in the DC receiver, the amplification of the signal usually takes place in the

Fig. 1.

Most mixer circuits offer little amplification of the signal and indeed, some actually attenuate (reduce) the signal level. A superhet receiver is desirable for the short wave reception but a direct conversion receiver is easier to build and has a lower component count. It's also capable of viable results on the h.f. Amateur bands.

An NE602 integrated circuit (i.c.) as used in the Sudden has both the mixer and the local oscillator within it. The NE602 was an early product of the cellular 'phone industry and it soon occurred to amateur radio constructors that it was a useful device in the constructor's armory. It does three jobs within a small 8-pin d.i.l. (dual in-line) package; a mixer, an oscillator and a voltage regulator. That's two-thirds of a direct conversion receiver in one small package!

Nowadays, the NE602 is a rather old device and is less easily available these days – but the NE612, essentially the same chip, is readily available. Sometimes, the devices are branded as the SA602A or the SA612A. Any of the above work well in the Sudden circuit. After more than 20 years these chips remain in popular use amongst Amateur Radio constructors.

The LM386 is a versatile audio amplifier chip with a long history of Amateur Radio use. It is capable of providing excellent audio gain and uses very few external components to produce a very useful audio amplifier. Although I have heard the LM386 described as the “cockroach” of audio amplifiers, it performs well in simple receivers. It is available in several versions usually designated as the LM386N followed by a number, which designates its output power.

The LM386N-1 is the commonest and usually very inexpensive and adequate for a Sudden receiver to drive a pair of portable cassette player type headphones. The voltage gain of the LM386 is internally set 20 to keep the parts count low but the addition of an external capacitor across pins 1 and 8 can increase the voltage gain up to 200.

Referring to **Fig. 1**, let's now follow the signal path through the Sudden receiver. The radio signals from the antenna pass through a band-pass filter (L1, C1, 3, 2 and L2) to select the desired radio frequencies. There are two tuned circuits (L1/C1 and L2/C3) and these are loosely top-coupled with a small value capacitor (C3). The inductors L1 and L2 both have link windings to match the impedance of the antenna and the input of the NE602.

longer made but a simple substitute will be described later. The NE602/612 offers a balanced input across pins 1 and 2 but here a single ended input is used to pin 1. Pin 2 is connected to ground at r.f. via a 10nF capacitor.

The oscillator is wired around pins 6 and 7 and is a version of the Colpitts oscillator the frequency being controlled by the tuned circuit L3/VC1. Again, in the original receiver, this was a Toko 10K inductor. Pins 4 and 5 may be used as a balanced output but in this case a single ended output is taken from pin 4 via a coupling capacitor to a volume control.

The audio output is fed via a $100\mu\text{F}$ capacitor to stereo socket wired to produce mono output in both sides of a pair of portable cassette player style stereo headphones. A simple Zobel filter (10Ω resistor and 100nF capacitor) acts as a roll-off filter to maintain stability as the output impedance varies.

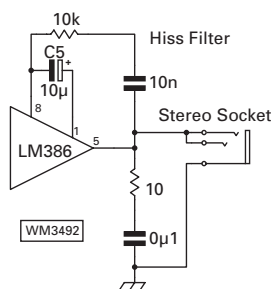


Fig. 2.

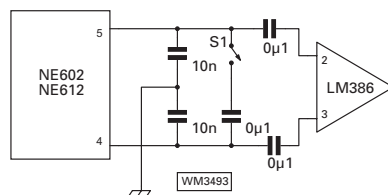


Fig. 3.

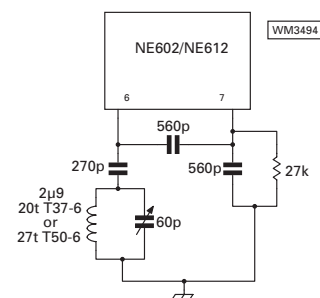


Fig. 4.

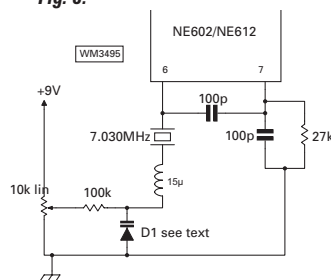


Fig. 5.

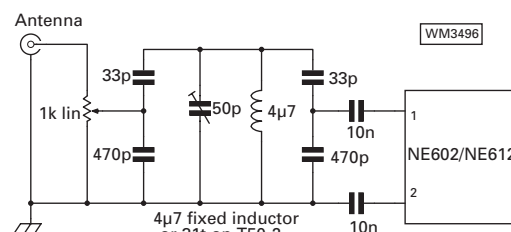


Fig. 6.

Simple Alternatives

Next, let's have a look at a few simple alternatives for the receiver and to start, Fig. 2 shows a very simple hiss filter for the LM386. The LM386 is well known for being rather noisy – a standard test for a newly built LM386 amplifier is "turn on and listen for the hiss!" On noisy Amateur bands this may not be much of a problem but it can be very annoying when listening for weak signals on a quiet band.

I first saw the following simple addition, which was quoted by Don Kelly KA5UOS, in the G QRP Club journal *Sprat*. A portion of the audio output on pin 5 is fed back into pin 8 to cancel the hiss. All that is required is a 10kΩ resistor and a 10nF capacitor. The improvement is useful and certainly worth the addition of two components!

The circuit, Fig. 3, shows another worthwhile improvement to the basic receiver. As mentioned above, the mixer from the NE602/612 does offer a balanced output across pins 4 and 5. Similarly, the LM386 can accept a balanced input between pins 2 and 3. The Fig. 3 circuit shows how to utilise this balanced configuration and, at the same time, provide some basic audio filtering. I've borrowed this useful circuitry from the late Bill Currie VK1AWC. Bill was an avid radio constructor and experimenter and over the years we exchanged several notes on NE602 based receivers.

The NE602/612 is coupled to the LM386 via what amounts to a very simple capacitive audio filter. Here I've shown a switch above the 100nF capacitor, as suggested by VK3AWC,

to allow for **Wide** selectivity with the switch open – and **Filtered** with the switch closed. An even better arrangement is to use a change-over switch to switch between a 100nF capacitor and a 330nF capacitor. The 330nF capacitor offers a narrower filter and the switch could even be labelled **SSB** and **CW**. **Note:** Fig. 3 doesn't allow for a volume control between the NE602/612 and the LM386 – but this can be replaced by a variable attenuator on the receiver input.

Toko Inductors

As I mentioned earlier, the Toko 10K inductors used in the original receiver are now difficult to obtain. As an alternative, Fig. 4, I offer a set of values to run the local oscillator on the 7MHz, 40 metre band. The values given should tune from about 7 to 7.2MHz.

The tuned circuit is a home-wound coil on a toroidal former. I offer two choices and the 60pF variable capacitor is one section of a polyvaricon variable capacitor – although any decent variable capacitor in the 50 to 60pF range would probably do the job. Obviously, hand-wound coils can vary a little in inductance, so readers may have to experiment to get the correct frequency.

Small values of capacitance may have to be added in series or in parallel with the 60pF variable capacitors to get the desired frequency range.

Note: Temperature stable capacitors are required for all the capacitors in Fig. 4.

A Suitable VXO

For those who hesitate in using a home built variable frequency oscillator, Fig. 5

shows a variable crystal oscillator (VXO) configuration for the local oscillator.

This is based on the circuit I used for the Sudden Storm receiver. Several QRP operators I know have used this approach alongside a small crystal controlled transmitter. Crystal control is easier to build and get working and the receiver has only to track the available frequency range of the transmitter.

The example I've presented uses a 7.030MHz crystal for the 40 metre QRP calling frequency. The diode D1 should be a varicap diode although some types of varicap diode are not always easy to obtain. A common 1N4005 diode works in this circuit. The amount of frequency shift depends on individual examples of the diode but it will be enough to use in conjunction with a crystal controlled transmitter on 7MHz.

Finally, Fig. 6, I've shown a possible input filter for the 40 metre band. This includes the variable input attenuator mentioned above. Controlling the gain of a simple receiver at the input is an excellent method of gain control as it reduces the input to the mixer. The potentiometer can be 1 or 5kΩ, but must have a linear track.

Capacitive dividers can also allow a lower impedance input and output. The inductor can either be a small commercial choke or hand-wound to the values given. The 50pF trimmer shown in the circuit peaks the input at the desired frequency.

I bread-boarded a receiver using the VXO technique and the circuitry described this month and it made a very useful receiver for the 7MHz band. So, try it and have fun!



Tony Nailer's

technical for the terrified

This time round Tony Nailer G4CFY takes a look at some practical aspects of mixers.

I apologise to readers of Technical for the Terrified as there was no article in the February issue of *PW*. This was due to lack of publishing space caused by the five page *What Next?* article by Colin Redwood G6MXL, about the PSK31 Interface unit.

In the last article in this series, in the December issue *PW*, I dealt with all the different sorts of filters required in a superheterodyne (superhet) receiver, or transmitter. In this article I will consider various types of mixers found in both receivers and transmitters.

Mixers are used whenever it's necessary to translate a signal from one frequency to another, or to impress one signal on another so as to modulate it, or to convert a modulated signal back into its component parts. Even a phase or frequency modulator can be described as a form of mixer, where multiple sidebands are created

in phase or frequency relation to the modulating signal.

So really, mixers used in communications work fall into three basic categories, modulators, frequency changers, and demodulators.

In all amplitude modulation (a.m.), continuous wave (c.w.) or single sideband (s.s.b.) superhet receivers there are at least two mixers. The first one is a frequency changer from the incoming radio frequency down to an intermediate frequency (i.f.), the other a demodulator to extract the intelligence converting part of the i.f. signal back to audio.

Conversely in a superhet transmitter there are also at least two mixers. The first being the modulator and the second a frequency converter.

Mixing occurs whenever two or more signals are fed through a device that has an input to output relationship,

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which is not linear. A linear device is one that amplifies a wide range of signal amplitudes by a fixed gain-factor. As a result the waveform at the output will be merely a larger version of the signal, or signals at the input. A non-linear device gives radically different gains at high and low signal levels.

Cramped Characteristics

Diodes have a very cramped characteristic around the point of conduction, and almost linear slopes at high conduction levels. See the conduction graph in Fig. 1.

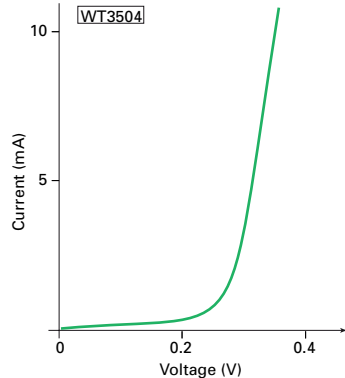


Fig. 1: The conduction and voltage curves of a typical Germanium diode show a sharp change of direction that allows mixing of signals to occur.

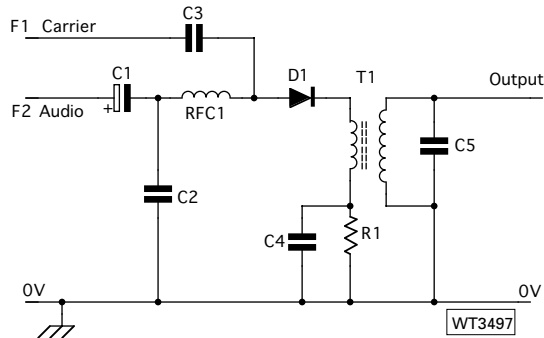


Fig. 2: The simplest unbalanced diode modulator is actually a diode mixer.

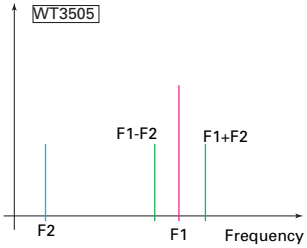


Fig. 3: Mixing products for the simple modulator/mixer of Fig. 2.

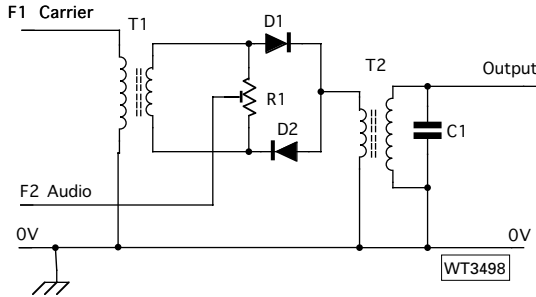


Fig. 4a: One form of a singly-balanced diode mixer using a resistor balance.

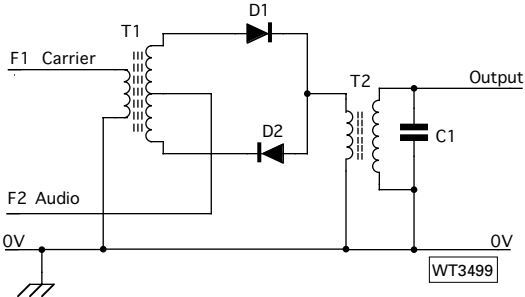


Fig. 4b: Using a balancing transformer for a singly-balanced diode mixer.

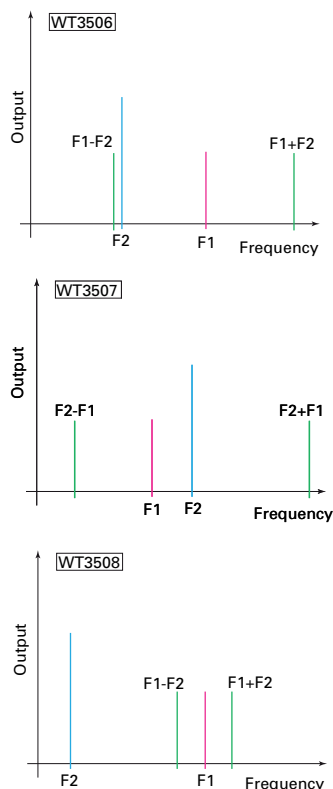


Fig. 5: Mixer products of the singly-balanced diode mixers of Fig. 4 (see text for more details).

By applying a large enough signal to a diode to switch it on, it becomes like a gate, opening and closing at the signal frequency. If a second smaller signal is applied to the diode it will pass through during the on-times only. The second signal has then been **modulated** by the larger signal.

A circuit to achieve this is shown in **Fig. 2**. The diode is switched using the large level radio frequency (r.f.) carrier voltage. This causes r.f. current to flow through C3, D1, the link winding of T1 and, through C4. The choke, RFC1, appears as a high impedance to the r.f. signal.

During the conduction cycle, the low level audio passes through C1, ignores C2 RFC1 & C3, passes through the diode and the link winding of T1 then through R1. Transformer T1 is resonant at the carrier frequency and so, will not pass the the audio signal through it. The signals that will be coming from it, will be the carrier plus the sum and difference of the two signals.

In mathematical terms this is $F1 + (F1+F2) + (F1-F2)$. The graphical form of this is shown in **Fig. 3**. This is actually amplitude modulation (a.m.).

Singly Balanced Mixer

The singly balanced mixer module

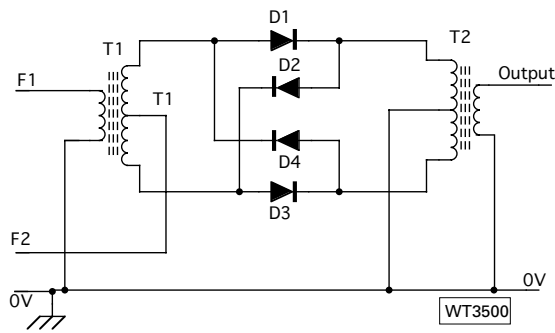


Fig. 6: The Doubly-balanced diode 'ring' mixer.

Note: It looks like a bridge rectifier but it isn't one!

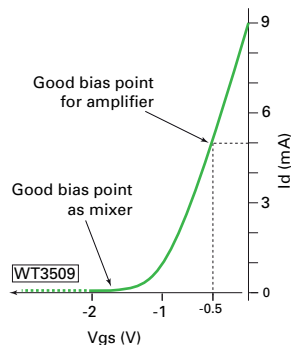


Fig. 7: The drain and gate biasing condition of a simple junction f.e.t. (j.f.e.t.).

requires two diodes and is better suited to mixing two r.f. signals together, although it can also be used as a modulator. Two variants are shown in **Fig. 4** and both work the same way.

The signal F1 is made large enough to cause the diodes to conduct. It appears anti-phase at the secondary of T1. During one half cycle both diodes conduct so the common connection of them doesn't move. During the next half cycle neither diode conducts, so the common connection still doesn't move. The circuit is balanced with respect to the F1 signal and no output of F1 will appear at the output of T2.

The F2 signal is usually set to about one tenth of the amplitude of the F1 signal level. When F2 swings positive then D1 conducts, and when it swings negative D2 conducts. This means that F2 will be applied to T2 through each complete cycle of the waveform. The F2 signal actually unbalances the diodes and allows the product of the two signals to be applied to T2.

In the case the product of the two signals output will be $F2 + (F1+F2) + (F1-F2)$. The signal output description will depend upon the relationship of the two signals. If, for example, F2 is two-thirds of the frequency of F1, then the spectrum will be as shown in

Fig. 5a (top). It could be described as double sideband (d.s.b.) suppressed carrier (d.s.b.s.c.) but with an unwanted F2 in the way.

If the frequency F1 was two-thirds the frequency of F2, then the resulting output signal is again amplitude modulation, as shown in **Fig. 5b** (centre). If however, F2 is a lot lower in frequency than F1, then the output is definitely d.s.b., this time with F2 feed-through signal well out of the way.

With only slight changes to the output transformer, this mixer can be tailored for use as a modulator, frequency-changer, or demodulator. This arrangement is used in the Poundbury 9MHz i.f. and s.s.s generator board, as described in June 2006 *PW*, and in the February 2009 issue of *PW* as the Poundbury Receive main board.

Double Balanced Modulator

The double balanced modulator module uses an arrangement of four diodes along similar principles as that of the singly balanced mixer. The circuit is shown in **Fig. 6**. For obvious reasons it's often described as a 'diode ring' mixer.

The signal frequency F1 will appear across the secondary of T1 in anti-phase. When the top of that secondary is positive going, and the bottom negative going, diodes D1 and D2 will conduct equally and their junction with T2 will not move. At the same time diodes D3 and D4 will be reverse biased and will not conduct. No difference signal for F1 will appear across the primary of T2.

During the next half cycle of F1 a similar situation to above occurs. This time D1 & D2 do not conduct, but D3 and D4 equally conduct. And still no F1 signal appears across T2.

The signal F2 is connected to the centre of the secondary of T1. When it swings positive, both ends of T1 swing positive and diodes D1 and D3 conduct. An equal signal of F1 appears at each end of the primary of

T2 so there is no potential difference and hence no output of F2. Diodes D2 and D4 are reverse biased so do not conduct.

During the next half cycle of signal F2, when that and both ends of T1 swing negative, diodes D2 and D4 conduct equally and D1 and D3 are reverse biased. Again there's still no output from T2.

Same Time

Next let's consider, both F1 and F2 signals applied at the same time. There will be periods where D1 carries F1 and F2 signals whilst D2 carries only F1 signal, at the same time D3 is carrying F1 and F2 signal and D4 carries only F1 signal. Hence the ring is unbalanced with respect to these combinations.

I will not describe the other three states, which will occur at other times one of the signals reverses phase, but it follows the same pattern. In a perfectly balanced mixer of this type the only output will be products of the signals applied.

The diode ring mixer can be used as a modulator, frequency changer and demodulator.

Unbalanced FET Mixer

A junction field effect transistor (j.f.e.t.) is very useful as an unbalanced mixer, particularly serving as a receive first mixer (or frequency changer). A characteristic of a typical f.e.t. is shown in Fig. 7, where the scales shown are gate voltage with respect to source on the horizontal axis, and drain current on the vertical axis.

The graph shows that for the particular j.f.e.t. device, when there's no voltage difference between source and gate, then the drain current is about 9mA. The current in this condition is given the symbol I_{dss} . The graph also shows that when the gate is more than 1.5 volt negative with respect to the source, that the drain current stops flowing completely. This is referred to as 'pinch-off'. Both I_{dss} and pinch-off values will be different for different device types, and perhaps even between devices of the same type number.

The most usual way of making the gate negative with respect to source, is by making the source positive with respect to (w.r.t.) the gate. As gate current (in this reverse biased mode) is exceedingly low, the gate is usually tied to the 0V rail using a high value resistor.

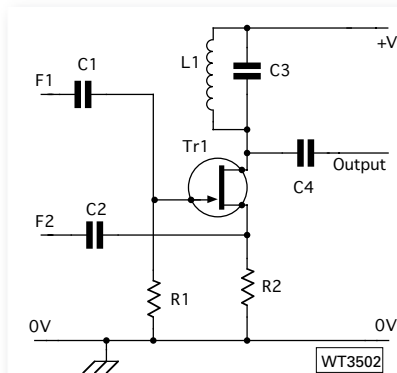


Fig. 8: A single j.f.e.t. mixer.

In a j.f.e.t. in 'normal' operation, the source carries the same current as the drain, and for this device it will be between 0–9mA. In a normal amplifier configuration, this device would be set with the source at +0.5V (w.r.t. the gate) with drain current at 6mA. This could be achieved using a source resistor of about 82Ω. ($R = 0.5V/0.006A$). The signal swing at the gate could then drive the device down to 3mA and up to 9mA on a virtually straight part of the graph to produce linear amplification.

Now consider if the source was set to be about +1.8V, close to pinch-off with a drain current of say 0.25mA, a resistor of 7.2kΩ would be required. It wouldn't make a lot of difference if you were to use either a 6.8 or an 8.2kΩ resistor here.

Now by applying a signal with a peak swing of say 1V peak-to-peak (p-p) to the source via a d.c. blocking capacitor, the j.f.e.t. can be driven around the curve of its characteristic. Any signal at a frequency F1 applied to the drain during conduction periods due to the applied signal of F2. As the device is never fully off there will always be a small amount of F1 at the output together with large amounts of F2 and also (F1+F2) and (F1-F2).

This circuit can also work as a demodulator for d.s.b. or s.s.b., where the signal injected to the source re-inserts the previously suppressed carrier. The coil in the drain can then be an audio driver transformer.

Unbalanced MOSFET Mixer

We could use a similar arrangement to the j.f.e.t. mixer using a dual gate metal oxide field effect transistor (m.o.s.f.e.t.). Normally gate 2 of the m.o.s.f.e.t. will

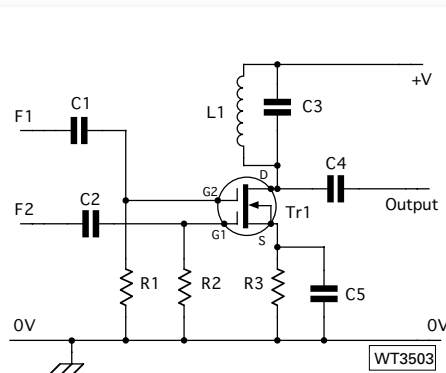


Fig. 9: The dual-gate m.o.s.f.e.t. form of mixer.

be biased about 4V positive with respect to the source. The drain current under these conditions would then be about 10mA. By removing the positive bias from gate 2, the drain current drops to less than 0.5mA.

Next applying a local oscillator signal of say 2V p-p to gate 2 will cause the device to move around the characteristic curve, switching into a conducting and amplifying state at the frequency of the gate 2 signal. A signal applied to gate 1 will be passed to the drain circuit the same as with the j.f.e.t. mixer.

The impedance of gate 2 of a m.o.s.f.e.t. is very high, so the local oscillator drive power is very low. In the case of the j.f.e.t. mixer the drive to the device's source must be at quite low impedance to enable the device to achieve a reasonable conversion gain.

The dual gate m.o.s.f.e.t. can also be used as a product detector, like the j.f.e.t., where the drain tuned circuit is replaced with an audio driver transformer. Such an arrangement was employed in the Off-air Frequency Standard, which appeared in the July and September 2008 issues of PW.

There's still more to be said about mixers, and I will return to this subject in a future article.

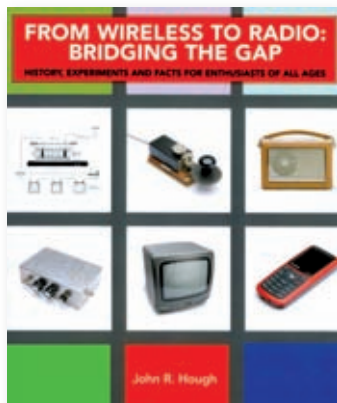
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Book Review

***From Wireless To Radio – Bridging The Gap
History, Experiments And Facts For
Enthusiasts Of All Ages***



By John Hough G0KRR
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The book can be ordered from any bookseller by quoting the ISBN number or direct from the publishers. Contact details:
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Rob Mannion G3XFD writes: Having chatted to John Hough G0KRR by telephone and via E-mail, I discovered he's a man after my own heart – dedicated to encouraging anyone with the slightest interest in science by sharing his own years of experience via an eclectic collections of ideas and circuits. In fact, the book has many parallels with *PW* as he provides a mixture of working projects and experiments and articles covering the history of radio communications from Marconi to microwaves.

John's approach within the 350 pages of his soft-backed, self-published book is very similar to my long running *Radio Basics* series, with the addition of some fascinating history. It's a quirky, very enjoyable and eminently readable book for any radio enthusiast. Indeed, I was most impressed that John had not overlooked the humble sound-powered dynamic earpiece as a simple telephone, which helped many of my young school radio club members to discover electronics. All in all, it's a fascinating read and the projects and experiments have been designed to be performed by anyone from around 12 years and upwards. However, I think many of them will really delight those of us over 50 years old with keen grandchildren! Incidentally and importantly, the author assures us that the projects are safe, are low voltage, and that the only test equipment needed is a simple multi-meter. The projects are also inexpensive (essential!) and easy to 'get going' (again essential to encourage young builders).

Launching a specialist interest book – with a limited 'niche' market – is extremely difficult nowadays and John Hough has not only written the book – he's also paid 'up front' via (the rather inappropriately named) 'Vanity Publishing' system, which I think should really be called 'Special Interest Publishing'. Indeed, reflecting my own interests, the same system enables extremely specialised railway historical books to be published. However, despite this, although John's text, illustrations and photographs are very reasonable for a self-published book, the typographical design and presentation (not the author's choice!) is – in all honesty – non professional. However, I urge that our readers to look past the book's poor typographical design and enjoy a great collection of ideas and experiments. **An excellent author - highly recommended.**

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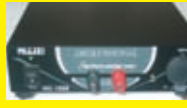
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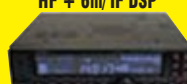
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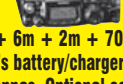
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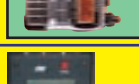
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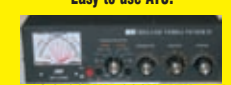


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CUSHCRAFT BARGAINS Delivery £15.00

MA5B Mini beam 10, 12, 15, 17, 20m..... **WOW** £399.99
A4S 4 ele beam (10 - 20m)..... £619.99
A3S 3 ele beam (10-20m)..... **WOW** £525.99
R-8E Vertical (40 - 6m) "special"..... **SPECIAL** £499.99

Q-TEK PENETRATOR
"We've sold 100s all over Europe"

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

SEND SAE FOR LEAFLET **£199.99**

W-8010 DIAMOND SHORTEND DIPOLE

80-10m & only 19.2m long! (Up to 1.2kW) Includes 1:1 Balun. Bargain. Superb Japanese quality antenna system.

£149.99

NEW DIAMOND WD-330

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

Japanese quality made product **WOW** **£199.99**

CAROLINA WINDOW

CW-160S (160-10m) 40m long..... £139.99 P&P £10.00
CW-160 (160-10m) 80m long..... £139.99 P&P £10.00
CW-80 (80-10m) 40m long..... £129.99 P&P £10.00
CW-80S (80-10m) 20m long..... £134.99 P&P £10.00
CW-40 (40-10m) 20m long..... £109.99 P&P £10.00

Standard & Deluxe G5RV P&P on either full/half size £7.50
Half size 51ft (now includes heavy duty 300Ω ribbon)..... £24.95
Full size - 102ft (now includes heavy duty 300Ω ribbon)..... £28.95
Half size (Deluxe) - 51ft (40-10m)..... £36.95
Full size (Deluxe) - 102ft (80-10m)..... £42.95
In-line choke balun..... **£39.99**

Q-TEK INDUCTORS
80mtr inductors + wire to convert 1/2 size G5RV into full size. (Adds 8ft either end)..... £29.99 P&P £4.00 (a pair)

BALUNS & TRAPS
Baluns 1:1 or 4:1 or 6:1..... £34.99 each P&P £4
Traps 80m or 40m or 20m or 15m..... £39.99 pair P&P £5

DOUBLE THICK FERRITE RINGS
A superb quality ferrite ring with incredible properties. Ideal for "R.F.I.". Width 12mm/OD35mm. 6 for £12.00 P&P £4.00
12 for £20.00 P&P £5.00
50 for £40.00 P&P £10.00

COAX SWITCHES (P&P £6.00)
2 way CX-201 (0-1GHz) S0239..... £19.95
2 way CX-201 'N' (0-1GHz) 'N'..... £24.95
4 way CX-401 (0-500MHz) S0239..... £69.95
4 way CX-401 'N' (0-500MHz) 'N'..... £79.95

REPLACEMENT POWER LEADS
DC-1 Standard 6-pin/20A fits most HF..... £22.00
DC-2 Standard 2-pin/15A fits most VHF/UHF..... £10.00
DC-3 Fits Yaesu FT-7800/88/8900, etc..... £17.50

YAESU REPLACEMENT MICS
MH-IC8 8 pin Yaesu mic (8-pin round)..... £34.99
MH-4 4 pin fits older HF, etc. (4-pin round)..... £29.99
MH-31A8 8 pin modular..... £34.99

COAX BARGAINS
RG-213 Military spec x 100m (10mm dia). **£99.99** or 2 for **£170.00**
RG-58 Military spec x 100m. **£35** or 2 for **£60.00**
Coax stripping tool (for RG-58)..... £4.00

Q-TEK TRI-MAGMOUNT
Very heavy duty. Available:- S0-259 or 3/8 - specify. **£44.99**

HEAVY DUTY SWAGED MAST SET
New extra heavy duty 2" mast set. 4 sections x 5 1/2 foot slot together. **£64.99** each. **TWO FOR £125.00** Del £15.00

NEW 20' SLEEVED MAST SET
A heavy duty-sleeved, mast set that will tightly slot together. 4 x 5' (2" dia) 16 gauge heavy duty aluminium tubes. (Dimensions approx). **£69.99** Del £12.50. **TWO FOR £125.00** Del £12.50

NEW SWAGED MAST SETS
20 foot mast. 1 1/2" - 4 x 5 foot sections. (Swaged) **£39.99**
20 foot mast. 1 1/4" - 4 x 5 foot sections. (Swaged) **£36.99**

NEW CAR BOOT MAST SET
Superb 18 foot (6 x 3 foot sections) that slot together. Dia: 1 1/4" ideal to take anywhere. **£34.99**
2 for £65.99 del £12.50

ALLUMINIUM POLES
20 foot (collection only) 2"..... £49.99
10 foot (collection only) 2"..... £29.99
2.4m (2") Ally pole..... £24.99
5 foot (2") Ally pole..... £12.50

NEW NOISE FILTER!
A superb TDK 'snap fix' ferrite clamp for use in Radio/TV/ Mains/PC/Phone etc. Simply close shut over cables and notice the difference! Will fit cables up to 13mm diameter. Ideal on power supply leads/mic leads/audio leads/phone leads. **2 for £16.00 or 5 for £32.50 (P&P £3.50)**

MAST HEAD PULLEY
A simple to fit but very handy mast pulley with rope guides to avoid tangling. (Fits up to 2" mast) **£12.99** + P&P £4.50
30m pack (4.4mm) nylon guy rope **£12.50**
132m roll 4.4m nylon guy (480Kg b/f)..... £40.00 Del £7.50

NEW EASY FIT WALL PULLEY
Pulley will hang freely and take most rope up to 6mm. (Wall bracket not supplied). **£12.99** + P&P £4.50
Wall bracket, screws not supplied. Simply screw to outside wall and hang pulley on WALL BRACKET £2.99 P&P £1.00
30m pack (4.4mm) nylon guy (480kg)..... £12.50
132m (4.4mm) nylon guy (480Kg)..... £40.00

BARGAIN WINCH
500kg brake winch. BARGAIN PRICE **£74.99** Del £10.00
(Now includes cable grip)
Winch wall bracket..... £22.99

MFJ-1117
DC High current distribution unit..... £59.99
MFJ-1118 metered
High current distribution unit..... £99.99

LOW LOSS PATCH LEADS
Connectors Length Price
PL-259 - PL-259 0.6m P&P
PL-259 - PL-259 1m £9.99
PL-259 - PL-259 4m £11.99
PL-259 - PL-259 20m £14.99
BNC - BNC 1m £49.99
BNC - BNC 1m £9.99

QS-300
A fully adjustable deluxe desktop stand for hand-helds. Includes BNC to S0-239 lead. **£19.99** P&P £4
QS-200
A superb, no mess, quick fit in-car holder (fits airvent) for hand-helds. **£6.99** P&P £3

MT-3302
Heavy duty universal mount. Includes 5m cable **£29.99**
MT-6601
Adjustable roof rack/window bar mount **£19.99**

YAESU G-450C
Heavy duty rotator for HF beams, etc. Supplied with circular display control box and 25m of rotator cable. **WOW** **£275.00**
G-650C..... **WOW** £329.99
G-1000DXC..... **WOW** £369.99
G-5500 (azimuth/elevation) rotator..... our price £425.00
GC-065 thrust bearing..... £50.00
GC-038 lower mast clamps..... £29.00
G-250 lightweight rotator..... £95.00

AR788
Quality rotator for VHF/UHF. Superb for most VHF-UHF yagis, 3 core cable required. 3 core cable 50p per mtr. **OUR PRICE** **£79.99**
AE-201 thrust bearing..... £24.99

DIAMOND YAGIS No tuning required
2m/5 element No tuning required S0-239 feed..... £39.99
2m/10 element No tuning required S0-239 feed..... £72.99
70cms/10 element No tuning required S0-239 feed..... £44.99
70cms/15 element No tuning required S0-239 feed..... £59.99

MOBILE ANTENNAS Del £10.00
DB-7900 2m/70cm (5.5/7.2dB) 1.6m (PL-259)..... £39.99
DB-770M 2m/70cm (3.5/5.5dB) 1m (PL-259)..... £24.99
PL-62M 6m/2m 1.4m (PL-259)..... £23.99
PL-627 6m/2m/70cm (1.7m) up to 7.2dB (PL-259)..... £44.99

Q-TEK COLINEARS (VHF/UHF) Del £12.50
X-30 GF 144/70, 3/6dB (1.1m)..... £39.95
X-50 GF 144/70, 4.5/7.2dB (1.7m)..... £54.95
X-300 GF 144/70, 6.5/9dB (3m)..... £69.95
X-510H GF 144/70, 8.5/11dB (5.4m)..... £120.00
X-627 GF 50/144/70, 2.15/6.2/8.4dBi (2.4m)..... £79.95

LIGHTNING ARRESTOR Replacement fuses £5.00
SP-350V
DC-1000MHz (400W through power). S0-239 fitting. **£22.95** P&P £3.00

NISSEI PWR/SWR METERS
RS-502 1.8-525MHz (200W)..... £79.95 P&P £6.50
RS-102 1.8-150MHz (200W)..... £49.95 P&P £6.50
RS-402 125-525MHz (200W)..... £49.95 P&P £6.50
RS-3000 1.8-60MHz (3kW) Incls mod meter..... £59.95 P&P £6.50
RS-40 144/430MHz Pocket PWR/SWR..... £29.95 P&P £4
DL-30 diamond dummy load (100W max)..... £26.99 P&P £4

FIBRE GLASS POLES Del £10.00
1m 1 3/4" £12.50 2" £15.00 Longer lengths available - phone
2m 1 3/4" £25.00 2" £30.00

COPPER ANTENNA WIRE ETC
Enamelled (50m roll)..... £16.95 P&P £7.50
Hard drawn (50m roll)..... £16.95 P&P £7.50
Multi-Stranded (Grey PVC) (50m roll)..... £13.95 P&P £7.50
Flexweave (H/duty 50 mtrs)..... £39.99 P&P £7.50
Flexweave H/duty (18 mtrs)..... £18.95 P&P £7.50
Flexweave (PVC coated 18 mtrs)..... £19.95 P&P £7.50
Flexweave (PVC coated 50 mtrs)..... £50.00 P&P £7.50
Special 200mtr roll PVC coated flexweave..... £150.00 P&P £10.00
Copper plated earth rod (4ft)..... £14.99 P&P £8.00
Copper plated earth rod (4ft) + earth wire..... £24.99 P&P £8.00
New RF grounding wire (10m pack) PVC coated..... £14.99 P&P £5
20mm ribbed circular conduit..... 70p/mtr

METALWORK & BITS (Del Phone)
2" mast-floor base plate..... £14.99
6" stand off brackets (no U-bolts)..... £8.99
9" stand off brackets (no U-bolts)..... £10.99
12" T & K brackets (pair)..... £18.99
18" T & K brackets (pair)..... £22.99
24" T & K brackets (pair)..... £26.99
U-bolts (1.5" or 2") each..... £1.50
8mm screw bolt wall fixings..... £1.70
8-nut universal clamp (2" to 2")..... £7.99
2" extra long U-bolt/clamp..... £5.50
2" crossover plate with U-bolts..... £14.99
15" long (2") sleeve joiner..... £18.99
3-way guy ring..... £5.99
4-way guy ring..... £6.99
Heavy duty guy kit (wire clamp, etc.)..... £39.99
Set of 3 powder coated heavy duty fixing spikes (~0.7m long)..... £29.99
30m pack (4.4m) 480kg B/F nylon guy..... £12.50
Roll of self-amalgamating tape..... £7.99
Nylon dog bone insulators..... £1.00
Very large nylon insulators..... £2.00
PL-259 (small of large entry)..... £1.50
N-type plugs (high quality)..... £4.50
1 1/4" 6 foot ally poles..... £13.00
1 1/4" 6 foot "cranked" ally pole..... £14.99



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 looks at your reports and has news of more countries looking to join the 70MHz band.

Two Sporadic-E (Sp-E) openings that reached up to the 50MHz band were reported during January. Although that month is at the peak of the Winter Sp-E season, the openings were particularly poor this year. The Quadrantid meteor shower that occurred at the beginning of January was however quite good with much activity being reported on the 50MHz, 70MHz and 144MHz bands. A short period of enhanced tropospheric propagation was reported during the second week of January with some long distance contacts being made on the 430MHz and higher frequency bands.

Sporadic-E Openings

Let's turn first to the Sporadic-E activity over the month of January 2009. The Sp-E season during this winter period has been rather poor, with only one 50MHz opening being reported in December and only two in January. The opening on December 6th lasted for one-hour with s.s.b. contacts being made from southern England to stations in Italy (I), Spain (EA) and Malta (9H).

The first opening in January was reported on the 11th between 1115-1315UTC to stations in the Balearic Islands, Portugal, Sardinia and Spain. The January opening was quite widespread, with operators such as **MM5AJW** (Wick IO88) in northern Scotland reporting a QSO with EA1XT (IN53) and G0CHE (West Sussex IO90) on the south coast making a contact with EC7AMY (IM77).

Other DX stations worked from the UK during this opening included CT1ANO (Portugal IN51), EB1EHO (Spain IN73), EA5DWS (IM98), EA5EH (IM99), EA7AGX (IM76), EA6BB (Balearic Islands JM19), EA6SA (JM19) and IS0AWZ (Sardinia JM49). The

beacons CT0SIX (50.032MHz) and EA3RCC (50.008MHz) were also heard very strongly as was, quite bizarrely, the Hungarian beacon HG1BVB (50.007MHz).

Ian Hogan G6TGO (Manchester IO83) reports that the opening at his QTH started exactly at 1020UTC when he worked IW4BET (JN54), followed by the stations of IK0NOJ (JN61), IK1TXM (JN64) and IOJX (JN61).

The band opened up again at 1304UTC with the station of IZ5EME (JN52) getting in the log before signals faded out a few minutes later. A very much quieter Sp-E event was reported on January 12th between 1635-1810UTC with stations in southern England reporting a solitary s.s.b. contact with IS0GQX (JM49). Other signals heard during the opening included the beacon stations of IOJX (50.004MHz) and IK5ZUL (50.020MHz).

Quadrantid Meteors

Normally, the peak of the Quadrantid meteor shower usually lasts only for a few hours so can easily be missed. However, according to your reports a strong, unusually protracted, Quadrantid maximum seems to have occurred between 1100-1500UTC on January 3rd. Activity was reported on the 50, 70 and 144MHz bands, this type of ionospheric propagation effectively stopping well short of the 430MHz band. Two-way contacts have been made on this band – but it really does need a pair of dedicated and capable stations and a large amount of luck to achieve QSOs on such a high frequency

Meteor scatter (m.s.) contacts can easily be made on the 50MHz band during any major shower even if running as little as 10W into an indoor dipole. It's very similar to making Sp-E contacts during the summer when ionospheric propagation is very intense. However the use of high power and a larger antenna will always increase your chances of success.

Your reports show that m.s. contacts were made with many

stations during the Quadrantids that included CT1FJC, DK1MAX, EA3LL, F8BBL, HA2RD, HB9BIN, IK4WMA, IS0AWZ, LA8NK, LZ1UQ, OE1SMC, OK1DO, OY3JE, OZ8ZS, S57RR, SM0CMV, SP9HWY and YT1AR. Ionisation was so intense at times that some stations incorrectly reported that a Sp-E opening was in progress. That's because signals could often be heard for some considerable time, with bursts lengths of up to five-minutes at times, fooling the more inexperienced operators.

The 70MHz band is not that much removed from 50MHz, so operators here can enjoy similar propagation conditions to that experienced on the 'Magic Band'. Of course not every country within IARU Region-1 has access to the 70MHz band and those that do, probably don't have many active m.s. enthusiasts.

Nevertheless, there was still a reasonable amount of activity during the daytime peak on Saturday January 3rd. Contacts were reported with the stations of 9A1Z (Croatia), 9A5CW, DL6BF (Germany), EA1YV (Spain), EA5EF, EA6FB (Balearic Islands), LX1FX (Luxembourg), OK1DFC (Czech Republic), OK1DO, OY3JE (Faroe Islands), OZ1BNN (Denmark), OZ1DJJ and OZ3ZW.

Although it's much higher in frequency, the 144MHz band always generates a considerable amount of meteor scatter activity. On this band an output power of 100W and a single long Yagi will enable you to make contacts up to 2000km away. Many m.s. operators use FSK441 although during this shower some bursts were so long that s.s.b. was also very effective. Your reports indicate that contacts were made with stations such as DK1CO (Germany JO63), EA7AJ (Spain IM87), F1EIT (France JN25), HA5CRX (Hungary JN97), I8MPO (Italy JN70), LA4YGA (Norway JO48), OE3REC (Austria JN88), OH6KTL (Finland KP02), OK2PMS (Czech Republic JN89), OY4TN (Faroe Islands IP62), OZ3TT (Denmark JO66), S51AT (Slovenia JN75), SM5DIC



Fig. 1: LM9K75Y, Celebrating 75-years of the Kristiansands Radio Club, Norway.

(Sweden JO89), SQ9QU (Poland JO90) and TK5JJ (Corsica JN41).

Other DX stations worked from the UK included those of CN8LI (Morocco IM68), ES3RF (Estonia, KO29), ES6DO (KO27), SW4LRJ/2 (Greece KN10) UR5TW (Ukraine KN39), YL3HA (Latvia KO26), YU1EV (Serbia KN04) and YU2DX (KN04).

At the end of the month, on January 31st, **Russ Stewart G4PBP** (West Midlands IO82) reported making an m.s. QSO with the station of **LM9K75Y**. This call sign stumped many operators but it turned out to be the club station LA9K (Norway JO48) celebrating its 75th anniversary. This Kristiansand club of the Norwegian Radio Relay League was founded on June 29th 1934 and now has approximately 80 members of all ages. They meet in an old communications bunker with a wonderful take-off, as shown on the QSL card **Fig. 1**. The group is very active on 144MHz meteor scatter and can often be heard on the air during major showers. It also has its own v.h.f. repeater and packet nodes and they are currently working on setting up an APRS network.

Tropospheric Openings

Stations reported that in the period January 9th - 11th there was a lift in tropo conditions. Although some long-distance stations were worked on the 144MHz band the opening seemed much better on the 430MHz band and higher frequencies. This is not unusual as strongly ducted signals can often be noted at u.h.f. or microwave

frequencies during times when ducting on 144MHz is considerably weaker or even absent. The only problem is that activity is much less at u.h.f. and many openings often go unnoticed. Stations located in central England reported making 144MHz contacts into northern Germany and with the Danish stations of OZ1ALS (JO45) and OZ6TY (JO55). Up on the 430MHz band the station of G16ATZ (IO74) heard the Norwegian beacon LA5UHF (JO28) on 432.442MHz peaking 529 over an 853km path.

On January 11th, the best of the propagation was to the south of the UK with s.s.b. contacts being made on the 430MHz band with the stations of F1AZJ/P (JN28), F1EZQ (JN27), F5APQ (JO00), F5HGO (JN05), F8BRK (IN99), F8DLS (JN19) and F8KHO/P (JN29). Tropospheric propagation was also very good on the 10GHz band, although up there you are more likely to hear a beacon station rather than an active Radio Amateur.

Of course, two-way 10GHz contacts are regularly made on a daily basis but beacons signals seem more prolific. Some of the beacons reports included F5ZTR (JN09) to G4EAT (JO01) at 222km, PI7EHG (JO22) to G4BAO (JO02) at 302km, GB3MHX (JO02) to F6DKW (JN18) at 372km, GB3MHX (JO02) to F5HRY (JN18) at 383km, DK2MN (JO32) to G4XDY (JO02) at 416km, ON0RUG (JO11) to G0EWN (IO93) at 444km and DB0JO (JO31) to G4EAT (JO01) at 478km.

The 70MHz Band

Hardly a month seems to go by

David Butler G4ASR

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without news of yet another country gaining access to the 70MHz band. In the past many IARU Region One societies had difficulty in persuading their national authorities to grant permission to use the 70MHz amateur band, as it wasn't recognised in any official radio regulation documentation. However, in March 1995 the European Conference of Postal and Telecommunications Administrations (CEPT) carried out a Detailed Spectrum Investigation (DSI) in the frequency range between 29.7 - 960MHz.

The outcome of the DSI, was a recommendation that at least 100kHz be allocated to the Amateur Radio Service centred around 70.200MHz. Despite this, it wasn't until late last year (October 2008) that a more important reference was made regarding the 70MHz Amateur band. This was when the Frequency Management Working Group (WGFM) of CEPT approved a footnote within the European Common Allocation Table (ECA).

The footnote (EU9) denoted against the bands 68.00-70.45MHz and 70.45-70.80MHz reads "In a growing number of CEPT countries, parts of the band 70.0-70.5MHz is also allocated to the Amateur Service on a secondary basis." Now European societies can approach their authorities with much more confidence thanks to 'Footnote EU9'.

From January 1st 2009 a German station **DL6BF** (JO32) received temporary permission to operate on 69.950MHz with a power of 10W e.r.p. and maximum bandwidth of 2.7kHz. His initial contacts, which he made using split-frequency operation, included the stations of G3SHK, G4DEZ, G8HVV and GM3NKG.

In 2008 a total of 20 Czech Amateurs obtained temporary access to the 70MHz band for a six-month period. This experiment finished in December 2008 but I'm glad to report that from January 1st 2009 a total of 50 OK stations have received individual licenses that last

for a 12 month period. Operators are authorised to use the band 70.100-70.300MHz with a power limit of 10W e.r.p. although this is reduced for stations situated close to the Czech border. One of the most active stations is **OK1DFC** (JN79) who is often on the air during most meteor showers and Sporadic-E openings. In the Quadrantid meteor shower he made FSK441 and JT6M contacts with the stations of G0CHE, G3SHK, G3VYF, G4DEZ, G4FUF, G4MQL, G4PBP, G6HIE, G8HVY, GM3NKG, GM6VXB, GW8ASD and GW8IZR.

The Norwegian Radio Relay League (NRRL) has announced that it has applied for access to the band 70.0 – 70.500MHz with a power limit of 100W output. The NRRL have advised that these proposals need to go for public consultation and this process can take up to three months. So, hopefully by spring 2009 we will hear, not only LA stations, but also stations from JW (Svalbard), JX (Jan Mayen) and 3Y (Bouvet and Peter-1 Island)

on the band. This brings a total of five additional DXCC countries and it's also the first time the continent of Antarctica has had access to the 70MHz band.

This isn't the first time that Norway has been granted permission for 70MHz activity, as some of you may recall that a few years ago the station **LC0VHF** was active on the band. The organisers of the Nordic v.h.f. meeting had obtained a temporary permit for operation on 70.150MHz for the duration of the meeting held on June 8-10th 2007.

Running 25W output into a 9-element Yagi (shown in the photograph, **Fig. 2**) the LC0VHF group contacted the stations of G0CHE, G0GMB, G1OAR, G4DEZ, G4FUF, G4IGO, G4RGK, G4YTL and G7CNF. Other contacts included GD0TEP, G14KSO, GM4AFF, GM4ISM, MM0DQP, MM5AJW, 2M0BAE, GW8ASD, GW8IZR and MW0HMY. Contacts were also made with EI2IP, EI3IO, OZ1DJJ, OZ3ZW and S51DI.

The Nordic v.h.f. meeting certainly seems to be a hotbed of 70MHz thinking. At the 2008 meeting a demonstration was made of a Finnish 70MHz beacon running 20W into a dummy-load. Although a licence could not be obtained on that occasion the Finnish v.h.f. Manager openly stated that talks with their authorities had been very successful. He was hopeful that OH stations would get some form of limited access to the 70MHz band during 2009. This year the Nordic meeting is being held in Karlsborg, Sweden, from June 12-14th. Full details can be found at www.lwdxg.se/Program.htm.

Deadlines

That's it again for this month. If you do hear or work any DX stations on the v.h.f., u.h.f. or microwave bands then please send me your reports – or any other news – to reach me before the last Saturday of the month.

73 David G4ASR



Fig. 2: Still showing its new 'sparkle', the 9-element Yagi at the 70MHz station of LC0VHF, Norway used throughout the duration of a meeting back in June 2007.



Carl Mason's

hf highlights

Share your news, views and reports with fellow readers. Reports to Carl by the 15th of each month please.

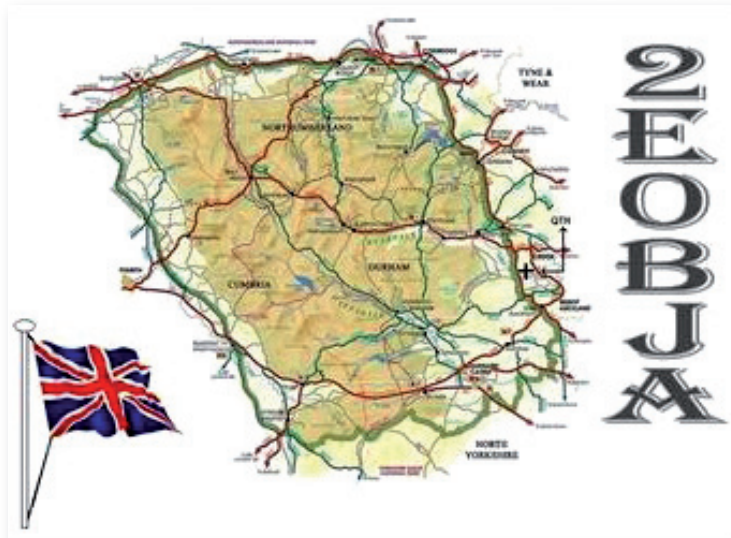
Carl Mason GWOVSW looks at the DX possibilities to come and at your logs for the month.

I know there are many readers who enjoy chasing awards and one highly recommended book is the *K1BV DX Awards Directory*, which has now been updated. Included in its 324 pages are listings and rules for well over 3300 different awards from more than 100 countries. This year over 150 new awards have been added to this latest edition and all 'dead' awards have been removed while hundreds of changes have been made to rules, addresses and fees. The latest craze apparently is contacting stations in different Nature Parks or Reserves!

The directory is available as either a book priced at US\$39 or via the internet with password access for just US\$6 a year. Further information can be found at www.dxawards.com/2009edition.htm

The DX News

Now over to some DX news now and to Azerbaijan where **Axel Schernikau DL6KVA** will be active as **4K0CW** from the home of Vlad Shishco 4K9W between March 19th and 25th. He will operate on all h.f. bands in the evening 'local time' which is UTC+4 hours



and around mid-day on the 25th. This activity will be c.w. only at 100W and the antenna will be an 84m long wire. The QSL is good via the homecall through the bureau or direct to **Kurt-Schumacher-Ring 187, 18146 Rostock, Germany.**

A group of South African Amateurs will participate in the CQWW SSB WPX contest which runs over the weekend of March 28th and 29th. The group based in the East Cape Province will use the call **ZT2V** and the QSL is via **William Loeschman NI5DX, 717 Milton, Angleton, TX 77515, USA.**

Incidentally, the WPX contest is a great way of increasing your s.s.b. DXCC total. Give it a try this year. You will be amazed at what you can work especially when the DX station needs the points and you may be pleasantly surprised.

Closer to home **Jim Martin MM0BQI** will be active as **MM0BQI/P** from Lunga Island EU-108 in the Treshnish Islands from April 24th

to 27th. Jim will run 100W to vertical antennas down on the seashore and will operate on the 3.5, 7 and 14MHz bands using c.w. and s.s.b. and possibly some digital modes if time allows.

Carl Mason GWOVSW

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SA10 6SP
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Logbooks will be uploaded to Logbook Of The World (LoTW) and a QSL is fine via the bureau.

Your Reports

On to your reports now and this month there's a lot to get through. The first log is from new reporter **Roger Laphthorn G3XBM** in Burwell Cambridgeshire who is very keen on operating QRP. His equipment includes an Elecraft K1, an Icom IC-703 and a Yaesu FT-817 with a wire 'Homebase 10' antenna featured in *PW* a short time ago and a 15m end-fed wire matched with an auto atu. His 500kHz listening log includes G14DPE (Northern Ireland) EU-115, SM6BHZ (Sweden) and the radio beacon SK6RUD mentioned in last month's column and DI2AM (Germany) between 2100 and 2300UTC. Roger says "this is a band worth listening on and it can be surprising just what you can hear! I use just my FT-817 and wire antenna, which seems to work well." A move to 1.8MHz found UA6MF (Ukraine), EY8MM (Tajikistan) and 3X5A (Guinea) which were all

logged around 1900UTC.

Over to the Isle of Sheppey in Kent, where **Ted Trowell G2HKU** was trying to contact a good friend **Winfried Besancon ON7BW** on Top Band and said "very rarely have we failed to keep our 'sked' but on the night of January 7th at 2100, our usual time, I heard nothing. No trace of a signal could be heard from Belgium, but a phone call from Winfried a short time later, confirmed he was there and had been calling me. This was odd as slightly lower down the band, both of us had copied several DX stations calling including several from Japan and a new one for me HL3IUA (South Korea) AS-105 at 2130 who had a S4 signal. We have experienced 'one way transmissions' between ourselves but not complete failure". Ted did manage two contacts in the end, working c.w. stations TF/LX1NO (Iceland) EU-021 and LX/SP5UAF (Luxembourg) around 2100UTC using a Ten Tec Omni V at 70W into a G5RV antenna.

The 3.5MHz log of Roger G3BXM, shows s.s.b. calls EC8AXS (Canary Islands) AF-004, EK6TA (Armenia) QSL via DJ0MCZ direct only, JA5AQC (Japan), UA9UKM (Asiatic Russia) ZS1JX (South Africa) and 4Z5FL/M (Israel). They were all copied between 1900 and 2000 and K1DG (USA) in Windham, New Hampshire and 3X5A (Guinea) were heard using c.w. at 2300UTC.

Also on the band was **Dave Cousins G4WBB** near Barnsley, South Yorkshire who used a Yaesu FT-2000 and 250W s.s.b. to work OM3CAQ (Slovakia) 1729, CT1IZU (Portugal) 1749, TF3SG (Iceland) 1754, DL2UQ (Germany) 1804. Also worked were SP9FUU (Poland) 2212, SM7RYO (Sweden) 2220, EI3GZ (Ireland) EU-

115 at 2306 and 9A3LE (Croatia) at 2253UTC.

The PSK31 signals from **Panos Dadis SV1GRN** in Athens, Greece, found RA4PPM (European Russia) 1722, SQ1MNL (Poland) 1929, RK3SWS (European Russia) 1949, ON4GB (Belgium) 1957, HA1BF (Hungary) 2001, DD0VA (Germany) 2016, 2E0BJA Brian Johnson in County Durham at 2020. Then came 9A2009ST (Croatia) in Split at 2028, one of several calls marking this years Men's World Handball Championships, LY/ES2DY (Lithuania) 2029, UT0TV (Ukraine) 2037 and OM7AX (Slovakia) at 2100UTC using an Icom IC-756 PROIII and 50W to a Hustler 6-BTV vertical antenna.

The 7MHz Band

The 7MHz band proved to be in "good shape" around 2000UTC for Ted G2HKU as A71BX (Qatar), KG9N (U.S.A.) in Congerville, Illinois, JA3EGZ (Japan) AS-117, J43J (Greece) the contest call of SV0XAO QSL via DJ5JH and 7X4AN (Algeria) all made it into his log.

In East Finchley, North London **Martin Addison 2E0MCA** decided to update the software on his Kenwood TS-2000 and says "the rig just gets better and better even though I was

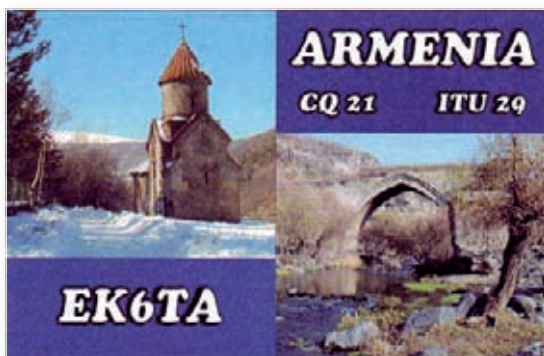
more than happy with it straight out of the box! There have been some real changes to the way the noise reduction and contours work in both the audio and digital display of the Kenwood rig. The jury is out on the contour changes – but the **DNR** function is now brilliant and a significant improvement on the way it was originally set up. However, the h.f. bands were not so good this month and I'm looking forward to better conditions so, I can try out some of the additional updates".

Using s.s.b. Martin worked YU7AS (Serbia) 0922, HE8AF/P (Switzerland) 0927, DR09ANT (Germany) a special call for International Polar Year 2009 at 0946, F5FCH (France) 1002, MI0RTM (Northern Ireland) Bob in Coleraine at 1250, LA0HK (Norway) 1426UTC using an FT-2000 and 50W to a G5RV antenna.

Also active on the 7MHz band, was Dave G4WBB, who managed YB4IR (Indonesia) 1510, SV7HVI (Greece) 2150 and UK9AA (Uzbekistan) 2236 using s.s.b. again while Roger G3XBM heard c.w. station XU7XXX (Cambodia) at 1500 and later s.s.b. calls YC5SY (Indonesia) and 9M6DXX (East Malaysia) around 1600UTC.

Back in Greece, Panos SV1GRN stayed with PSK31 and his long log

included contacts with UT9LB (Ukraine) 0834, ON3CYV (Belgium) 1738, OM3KWZ (Slovakia) 1751, PA1APW (Netherlands) 1808, EA4BZ (Spain) 1824, IK5FKB (Italy). Then at 1857, S57OWA (Slovenia) 1912, EC5VC (Spain) 1930, RU3EJ (European Russia) 2001, HB9BUJ (Switzerland) 2012, SP9EBQ (Poland) 2130,



CU2AO (Azores) EU-003 at 2039, DL4GBF (Germany) 2103, G4ONP the call of the Loughton & Epping Forest ARS at 2110 and finally, HZ1SK (Saudi Arabia) at 2121UTC.

The 14MHz Band

On to 14MHz now and the log of new reporter **Carl Millar M6CMR** who lives in Ilkeston, Derbyshire. Carl only set up his station in December last year after a report from **Martyn Medcalf M3VAM**, who gave an example of what can be achieved with small antennas. Thus encouraged, Carl began h.f. operating and he now uses an Icom IC-7400 and half size G5RV.

Carl normally operates around lunchtime between shifts and his first log included 10W QRP s.s.b. contacts with LZ1BJ (Bulgaria), YO9HP (Romania), IZ6BXV (Italy), HA800NAR (Hungary) which was a special prefix to celebrate the 80 years of the Hungarian Radio Amateur Society (MRASZ). He also worked OH6JJ (Finland), UA1AQA (European Russia), 9A2009OS (Croatia) another special call for the Men's World Handball championships from the host city of Osijek, LY1CX (Lithuania), ES7FQ (Estonia) and S51BX (Slovenia) between 1045 and 1415UTC. Carl says "I hope that my report shows what can be achieved with a modest set up and encourages those with Foundation Licences or anyone thinking of coming into the hobby". I am sure there will be many more calls in Carl's log as the h.f. conditions begin to improve.

In Biggleswade, Bedfordshire **Owen Williams G0PHY** worked s.s.b. stations ZD8UW (Ascension Island) AF-003 at 0834, EK6TA (Armenia) 1356 and N6ML (U.S.A.) in Brentwood, California at 1551UTC using a Yaesu FT-747 and 100W to a dipole. Owen added "I also heard a couple of interesting stations including ZL1BD (New Zealand) in Hamilton, North Island OC-036 at 0900 with a consistently strong signal and KC4AAA AN-016, The Amundsen-Scott base at the South Pole (QSL via K1IED), whose signal 'popped up' out of the noise for a short while, before disappearing again a few minutes later. Previously I'd only worked or heard stations in this region during

the late afternoon or early evening".

Back in London Martin 2E0MCA found IZ6GSQ (Italy) 1044, TS7C (Tunisia) AF-073 at 1107, LZ09BR (Bulgaria) at 1254. The suffix, BR, stands for Bulgaria-Russia and celebrates the 'Year of Bulgaria in Russia-2009' and is being organized by the Balkan Contest Club,



LZ1KZA. An award is available so check out the **St. Teodosii Tyrnovski Award** at www.balkanclub.org/awards.htm

Also making it into Martin's log were YT1ET (Serbia) 1338, OM5DP (Slovakia) 1427, Z309KNV (Macedonia) at 1455 celebrating the 1400 year old Carnival of Vevcani QSL via Z35W and 7X5RS (Algeria) at 1555UTC. In his report Martin mentioned how difficult it was to get a contact with the TS7C DXpedition saying "I heard the DXpedition using c.w. in a huge pile up on 14MHz one afternoon with an S9 signal."

"I called a few times with 5W to hear "NA only" repeated several times and at regular intervals. So I like many others waited patiently for other areas to be allowed to call. Unfortunately for us the operator concerned concentrated on North America for well over three hours and ignored repeated calls by those outside of America for a contact. I finally gave up in frustration as their signal dropped steadily into the noise".

I wonder how many of you have experienced the same, or similar problems, trying to get a contact with this and other similar DXpeditions and what your thoughts are regarding this style of operating? Drop me a line and let me know.



There was a change of antenna for Dave G4WBB as he tried his Cushcraft X7 to work s.s.b. again finding the path open to Australia around 1040. He managed QSOs with VK3CR in Victoria and VK2ZQ in New South Wales followed by several American stations including W2AJI in Tryon, North Carolina at 1417 and W9GL in Oregon, Wisconsin at 1448. Meanwhile the c.w. of Ted G2HKU also found the States working K9EU in Naperville, Illinois, N4TB in Avon Park, Florida and WA1HMMW in Bolton, Massachusetts and K8CW in Mansfield, Ohio around 1500UTC.

The 18, 21 & 28MHz Bands

On 18MHz the s.s.b. of Martin 2E0MCA found K1GUN (U.S.A.) Woolwich, Maine at 1609 while Panos SV1GRN worked EK1KE (Armenia) at 0934 using PSK before changing to s.s.b. and working Alan Barnes M3AFF in Beaworthy, Devon at 1116, CN89NY (Morocco) 1120 and EA5LC at 1203.

Finally, the 21MHz listening log of Roger G3XBM lists CX6VM (Uruguay) using c.w. at 1500 and XE2WWW (Mexico) on s.s.b. at 1600 before he changed to operating and on 28MHz with just 10W QRP and his Halo antenna, worked 9A2009ST (Croatia) with s.s.b. at 1000. Then with 5W, he worked 3X5A (Guinea) on c.w. at 1200UTC.

Signing Off

Well that is it for this month and it is good to see that there have been openings on most bands if you're prepared to keep a keen ear open and hopefully will get longer as summer approaches. My thanks to all our reporters for their logs and to **Mauro Pregliasco I1JQJ/KB2TJM** editor of the 425 DX Newsletter for all the DX information. Until next time I wish you all good DX. **73, Carl GW0VSW**



Colin Redwood's

what next?

Colin Redwood G6MXL considers Radio Teletype (RTTY) in his look at operating with digital modes.

In the last three months I have looked at PSK31 and SSTV. The main topic for this month is Radio Teletype (RTTY). I also have a cautionary tale for readers!

After Morse code, Radioteletype is probably the oldest data mode used by Radio Amateurs. In fact RTTY uses a data code that pre-dates even radio! In Amateur Radio circles RTTY was initially transmitted and received with radios linked to mechanical teleprinter machines, **Fig. 1**.

The output method for RTTY was via a Teletype printer onto continuous paper, fed from a roll, and with the possibility of input from the Teletype printer's keyboard, or from a punched paper tape. But these days computers have replaced all but the most die-hard teleprinter fanatics' noisy clanking machines that often smelled of hot oil and grease.

Before going any further, I should explain RTTY— what is it? Unlike modern computers that use eight or more 'bits' (each bit being either 0 or 1) to represent each character (each character group of eight bits is known as a byte), the Baudot code, used for RTTY, has just five bits plus a 'start' and 'stop' bit to represent each character. With just five active bits, the Baudot code is only able to represent 32 characters (2^5). This is fine for the 26 letters of the alphabet, but it doesn't even leave enough characters over to cover the numbers from 0 to 9.

Two of the other remaining



Fig. 1: Teleprinter with cover removed.

Photo by courtesy of Roger Cooke G3LDI.

characters were defined as 'control' characters, to control the action of the receiving teletype. The characters being 'Carriage Return' (CR) and 'Line Feed' to control the position of the printer head and to feed paper upwards one line. To overcome the problem of no unique number characters, one of the remaining four characters is designated as a 'Figures-Shift' control character, and yet another as the reverse operation of 'Letters-Shift' control character.

So, after a Figures-Shift character is sent, all the following characters represent numbers, and once a Letters-shift character is sent, all the following characters represent letters once more. For example after a Figures-Shift character is sent, the bits '10111' will be interpreted at the receiving end as the '1' character. But if a Letters-Shift character has just been sent, then the same '10111' stream of bits will then be interpreted as the letter 'Q'.

Mark & Space

The audio signals that represent the RTTY characters are fed into the microphone socket of the transceiver. And they consist of two audio frequency (a.f.) tones known as the Mark and Space. These are the RTTY equivalents of the Morse 'key-down' and 'key-up' respectively.

Available Software

Now to look at the computer software that's available to send and receive RTTY, of which there are many available. I suggest that *W/N?* readers try *MMTTY*. The *MMTTY* program is 'freeware' and is well established, and runs under most recent versions of *Windows* including 98, XP and Vista.

All the available software requires a data interface of some sort between the computer sound card and transceiver. One data interface is the one I described in the February 2008 *What Next?* Anyone who hasn't seen this interface, can get a back issue of *Practical Wireless* from the PW offices in Broadstone.

Colin Redwood G6MXL

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Fig. 2: Downloading MMTTY from <http://mmhamsoft.amateur-radio.ca/>

Downloading MMTTY

To start downloading the *MMTTY* program, start from <http://mmhamsoft.amateur-radio.ca/> which is the same site as *MMSSSTV*. It is quite straightforward, see **Fig. 2**, just click on 'Download MMTTY'. If you're still using a dial-up internet connection, the download will take a few minutes as it is about 2.7Mb in size. Even at 'dial-up' speed the download is well worth the effort. Having downloaded the actual software, the next step is to install it.

Installing MMTTY

If you have previously installed *MMTTY* and want to install the latest version, you will need first of all, to remove the existing version of *MMTTY*. Note that the *MMTTY166G.exe* file does not have a valid digital signature to verify its publisher. Provided that you understand and accept the risks, press 'Run' and the installation will continue in the same way as any other application software.

When at this early stage of installation, you can choose where to put the program in its working location. I created an *MMTTY* folder within my Amateur Radio program folder, and then followed the usual *Windows* installation prompts.

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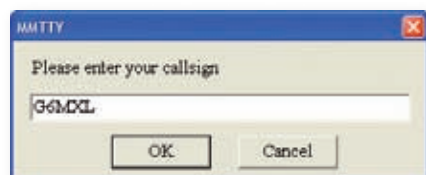


Fig. 3: Entering your callsign when first installing MMTTY.

Other Application

Starting *MMTTY* is just like starting any other application while running *Windows*. The first time you run it, you will be asked for your callsign, Fig. 3. Thereafter the screen that greets you is a typical windows application graphical user interface with the usual sorts of menus and buttons etc. as shown in Fig. 4.

What's On Screen?

So, what should you see on the screen, Well working from the bottom up, there's an area where you can type your text for sending. The big area in the middle of the screen is where the text that has been received is found. Above this area are a number of 'buttons', 'drop-downs' and graphical displays which we'll now take a look at.

On screen within the *MMTTY* window at the left and near the top, are two buttons marked **TX** and **TXOFF**. As might be expected, these two buttons switch between transmit and receive. The column of drop-downs to the right of these buttons is used to select the Mark and Space frequencies. Being a dual-tone transmission, there are two audio frequencies that make up a RTTY signal Mark or Space. The setting of these two tones is critical, both in actual tones and the shift (or distance) between them.

Commercial users of RTTY have different tones and shift settings to the RTTY used by Amateurs. Set the Mark to 1445Hz and the Shift to 170Hz for Amateur Radio use. Initially I found it helpful to turn off the **AFC** function in *MMTTY* to prevent the Mark frequency from being moved during operation.

Near the top centre of the *MMTTY* screen is a series of buttons under the **Macro** heading. These buttons can be configured to send useful things like your callsign or QSL information etc.

Over on the right-hand side of the screen at the top are the various graphical aids for tuning in the RTTY signal.

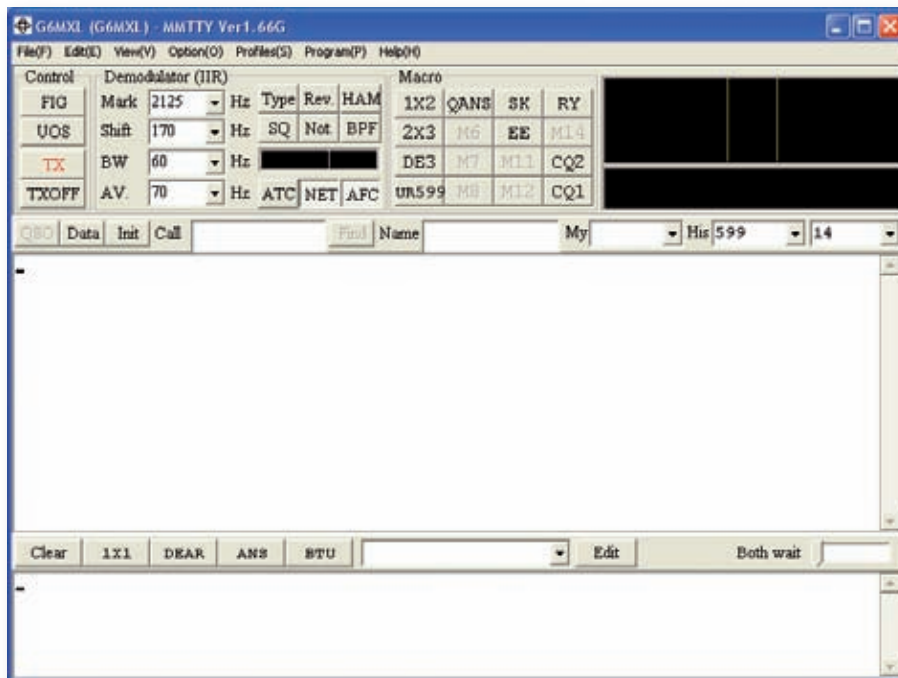


Fig. 4: The main screen before any configuration has been carried out.

The Configuration

There's just a little bit more configuration that needs to be done before you can start to receive and decode RTTY signals. From the menu bar at the top of the screen select **Options>Set Up MMTTY**. From this setup screen there are six tabs. Firstly select the **Decode** Tab, and at the very least set the macro for your callsign. Now select the **Misc.** Tab. Here the 'TX Port' should be set to **Sound**.

Finding Signals

Having set *MMTTY* up we can now start to look for signals on air. And RTTY signals can be found on many Amateur bands. Probably most commonly, the mode is to be found in use between 14.080 and 14.099MHz using **lower sideband (l.s.b.)**, and more usually towards the lower end of this frequency range. Be careful not to operate above 14.099 MHz as the group of **International Beacons** for propagation evaluation, are to be found on **14.100MHz**.

Another good place to look for RTTY signals is around 7.040 to 7.050MHz, again using l.s.b. There is certainly is plenty of RTTY activity to be found on the bands. In fact perhaps, more than you might expect.

Correct Sideband

It's important to note that, by convention, RTTY is transmitted and received using l.s.b. and **not u.s.b.**

(even on bands above 10MHz) so, you must operate on the correct sideband mode. Forgetting to set your transceiver to the correct sideband in operation, will result in random letters and numbers appearing on-screen.

Tuning In

Just as with SSTV, RTTY signals need a little bit of care when tuning in the signal. Above the waterfall display there will be two lines representing the two tones. Clicking on one of these lines will help to finely tune the signal.

To further assist in the fine tuning, I'd suggest that readers turn on the 'XY scope' (by selecting **Option>XY Scope**), which will appear to the right of the graphical display. With a mis-tuned signal or with noise the display what looks like a series of random dots. When correctly tuned in, the display will show both vertical and horizontal ellipses, Fig. 5.

To use the XY Scope function, if the ellipses are not quite 'square' (vertical and horizontal) fine-tuning the transceiver will bring them vertical and horizontal. You should now see RTTY being decoded in the main central part of the screen. I found this way of tuning in a RTTY signal to be quick and very effective.

Filters

I would expect *W/N?* readers may wish to experiment with various filter settings on their receivers when

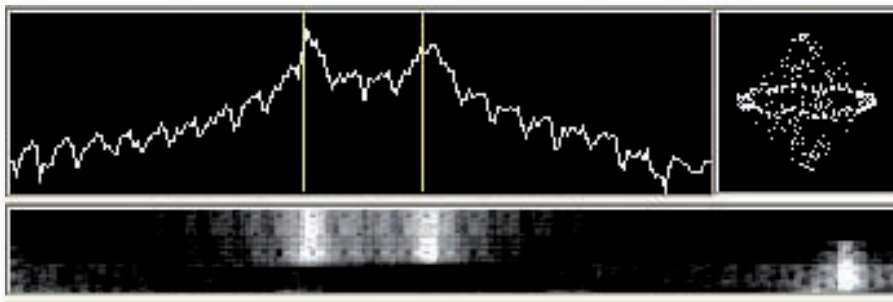


Fig. 5: The various tuning aids for MMTTY. The crossed ellipses (top right) are particularly useful and clear.

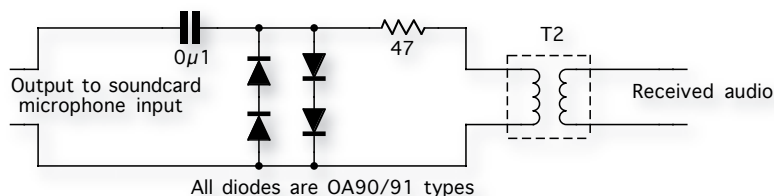


Fig. 6: Changes to the Data Interface circuit published in the February What Next? proposed by Rodney Byne G7OEL.

receiving RTTY. Many RTTY operators recommend using wide c.w. filters (250 or 500Hz) when receiving RTTY on sideband. But please feel free to experiment in this area to find out which suits your situation best.

Audio Levels

As with PSK31 and SSTV, it's important to get the audio levels correct when receiving and in particular transmitting RTTY. For receiving, tune in a strong RTTY signal, select **Option>Soundcard** and adjust the *Windows Mixer* control so that the sound takes the audio bar in the main window just past the white line. If you aren't getting any signals, check the leads are all plugged in and that the sliders are not disabled etc.

On transmit, send a 'diddle' (the letters RYRYRY... continuously), and adjust the output level until no further increase in output occurs with increasing audio input and then slightly 'back-off' the audio output slider.

Operating Tips

If some QRM wipes out a Letters-Shift character or a Figures-Shift character, then until a new Letters or Figures-shift character is received, the following characters will not appear correctly. So for example if you are receiving a signal report of 599, but a burst of static wipes out the Figures-Shift character, then instead of showing 599 you will receive TOO. TOO is exactly

the same as 599, without the Figures-Shift character. Within MMTTY, it's possible to 'right-click' on a string of characters and instantly change the shift of those characters.

Before you begin transmitting, I'd strongly suggest that you make sure that you're reliably decoding signals and that you're getting to understand the normal operating conventions of the mode. You'll find c.w.-like report abbreviations (such as PSE K) are the norm, so RTTY could be a good introduction to digital modes for the keen c.w. operator. Remember also that due to the limitations of the Baudot code, **only upper case letters** are sent and received.

When beginning to transmit, type in your text that's to be transmitted (it appears at the bottom of the screen initially in a black typeface). When you press the **TX** button, the transmit text will change, letter by letter, from black to red as it is transmitted. I'd also suggest that readers explore the various macros that are set up in MMTTY. These are excellent for calling in a pre-defined and well-accepted manner, such as your 'CQ' calls etc.

Duty Cycle

Like SSTV, RTTY is also a 100% duty cycle mode. So the same comments apply to RTTY as apply to SSTV operation on transmit. It's an idea to turn the power down a bit. If you normally operate your transmitter at

the 100W level, it would be an idea to try running it at about 50W for these modes. Replacing them is expensive, so look after your output transistors!

Cautionary Tale

Finally this month I just have space to include a cautionary tale from **Rodney Byne G7OEL**. Rodney says that about four years ago he bought a new laptop PC and in an audio test experiment which went horribly wrong, he accidentally applied a very high amplitude audio spike to the very sensitive mike input. The result was an irreparably damaged sound module on the mother board, which necessitated the mother board having to be replaced.

To prevent the damage happening again, Rodney added some additional components to the computer side of the isolating transformer of the interface that he was using at the time. Rodney proposes making similar changes (**Fig. 6**) to the data interface circuit that was published in February issue. The six additional components can be clearly seen on the amended circuit for the receive part of the circuit.

The input capacitor doubles to isolate the diode limiter from the mike input, but also in some computers, acts to block a 'phantom supply voltage' coming **out** of the socket (normally used to supply any electret module used in the microphone). The four diodes are germanium, so the audio starts to saturate and then clips, at around 1V(p-p). A 47Ω surge-limiter feeds the diodes.

Having used a soundcard for data modes for a number of years on several computers, I've not encountered the problem that Rodney described. However, I have tended to use line input rather than microphone input sockets. If readers want to try Rodney's changes, I suggest building them on a small piece of Veroboard and mounting it on one of the p.c.b. mounting screws (see February 2009 *What Next?*).

Next month

Having spent the last four issues looking at some digital modes, it's time to move on! So next month I'll be looking at Amateur Radio Awards, incidentally including some for digital modes. In the meantime, please let me know how you have been getting on with the PSK31, SSTV and RTTY. ●



Harry Leeming's

in the shop

Harry Leeming G3LLL, continues with the camera shutter tester, r.f. and Hi-Fi incompatibilities and simple test equipment.

In a recent *In The Shop* visit I discussed the uneasy peace between Amateur radio equipment and domestic Hi-Fi, and how manufacturers and some importers washed their hands of interference problems. I suggested a few 'fixes' that could be applied, mainly in filtering leads going into or out of the units.

The simplest method of filtering leads is to convert them into r.f. chokes using ferrite cores or rods. The wanted signals can then flow unimpeded inside the lead, but any r.f. on the outside of the lead is 'choked-off'. In this case a picture really is worth a thousand words, and I hope **Fig. 1** will be self-explanatory. Difficulties arise when the lead is very thick, or is fitted with large plugs.

If the lead is thick, a short extension lead can be made up of thinner wire, complete with plug and socket, provided of course that the wire is not too thin for the current being carried. Remember that wire that's wound round a core will get warmer than when it's laid out in a straight line, and so this must be allowed for in any power circuit.

When it's necessary to fit a core onto an existing cable that has large plugs attached, you can use a special core that clamps round the lead as the MFJ-701 Clamp Filter shown. You will find a selection of ferrite cores like this on **Waters and Stanton's** web site www.wsplc.com

Alternatively, if the problem's not too bad, considerable attenuation can be achieved on speaker leads by simply making the

surplus length into a coil on a former such as the cardboard centre from a toilet roll. In all cases the coil or choke must be fitted as near to the equipment as possible.

A Diode Probe

I frequently get E-mails about some obscure fault or other on a piece of Amateur Radio equipment. I find it surprising that many owners have little in the way of test equipment, often with no means of measuring an r.f. voltage either. This oversight is a pity, as whilst I can sometimes tell them for instance, that whistling into the microphone should produce a certain voltage, say on the grid pin of a valve. But without a means of checking this voltage they're no nearer a solution.

Admittedly, checking r.f. voltages is not quite as easy as checking a battery, but really it's not that difficult, and you don't have to have the resources of the National Physical Laboratory at your disposal? For the purpose of fault finding it's usually only necessary to measure r.f. voltages within about $\pm 20\%$, and the simplest way of doing this is to use a diode probe.

A diode probe can be made quite easily and one that will read the nominal or root-mean-square (r.m.s.)

value of the signal is shown in **Fig. 2**. The values that I've shown are on the presumption that it's to be used with a valve or solid-state voltmeter that has an input impedance of about $11M\Omega$. This figure seems to be a pretty standard value for many modern digital multi-meters (d.m.m.) too!

Mind you, if you want to use the probe during an alignment procedure to maximise a voltage, using a d.m.m. is difficult, as your brain has to sort out as to whether or not the whirling digits indicate that the voltage is going up or down! If you cannot obtain an analogue high impedance input voltmeter, there are some digital units that incorporate a bar graph, and this helps enormously when you wish to use them to adjust for a maximum or minimum reading.

Depending on the diode used in the probe, its response will be somewhat non-linear at low voltages, as the diode needs a fraction of a volt before it will conduct at all, and thereafter there's a voltage drop across it. Typically with an OA91 Germanium diode, for voltages below 1V, it will read about 0.1V low. If you try to measure a voltage between 10 and 100mV, the meter will just about indicate, enabling you to peak a circuit for maximum, although the actual reading itself will be pretty meaningless. **Warning:** Don't try and measure voltages above about 10V, or the diode may blow.

Typical Voltages

Now let's look at some typical voltages to be found with your new diode probe. Presuming your equipment is in good working order, it's always very good insurance to take a few measurements whilst it still is working properly. Turn off the power amplifier (p.a.), whistle into the microphone, and see what the maximum r.f. voltages you can achieve as you follow the s.s.b. signal from the balanced modulator, through the i.f. stages.

Start by measuring and recording the voltage levels at the mixers and

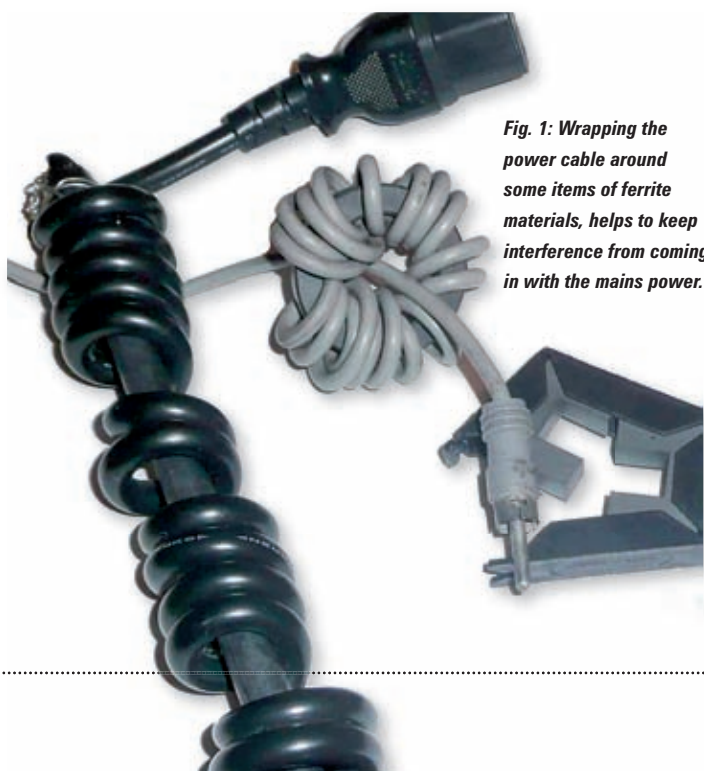


Fig. 1: Wrapping the power cable around some items of ferrite materials, helps to keep interference from coming in with the mains power.

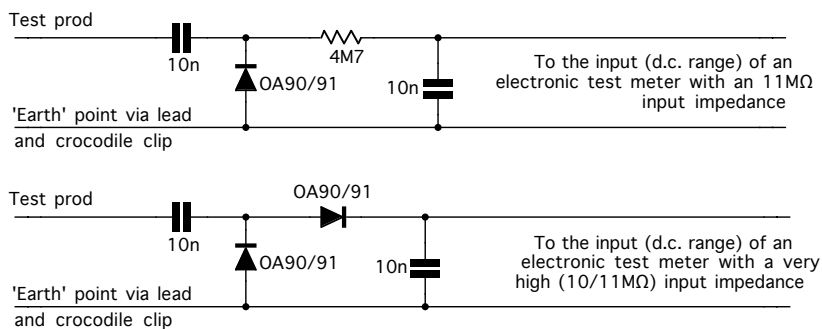


Fig. 2: The upper circuit is a simple diode probe that can be used with most high-impedance (11M Ω) input meters to read r.m.s. levels of r.f. The lower circuit will display the peak-to-peak value of the r.f. signal on a similar meter. There are occasions when knowing the latter value is useful.

into the driver stage. These readings will be absolutely invaluable if, at some future date, things go 'pear shaped'. If this advice is too late I'll have a look in my files, and hopefully by next time I'll be able to include a few readings from typical rigs

Earth Loops & Interface Units

In the last couple of months I have discussed the problems that earth loops can cause inside equipment, but how about the difficulties they cause when connecting external equipment?

You may have wondered why some upmarket digital computer interface adapters for RTTY, AMTOR or Slow Scan TV, advertise the fact that they incorporate an opto isolator? This is done to break the earth connection between the input and output of the device, to avoid the problems that can be caused, when normal non-isolated equipment is used.

A computer attached to the RTTY unit will be earthed, as will be the transceiver, and so all sorts of hum noise and oscillation can be caused by multiple loops, if the input and output side of an interface unit is connected to the same earth as the transceiver.

Many operators have had problems with a speech processor connected to the microphone socket of a transceiver, when both the transceiver and the processor unit are powered from the same p.s.u. If you do this, a loop is formed as the processor is connected to earth via the mic socket on the transceiver, and also via the p.s.u. This loop can pick up hum and noise, and that is not all; if the transmitter is modulated the current it draws will vary, and this variation will cause the output of the p.s.u. and the

voltage drop on the connecting leads to alter slightly. This variation will be fed into the processor, and can result in the whole installation going into oscillation as the microphone gain is advanced.

To avoid this kind of trouble, make sure that any add on unit connected to the audio input of your rig, is fed from a separate p.s.u. that's doubly insulated, and hence does not need a safety earth connection. If you have real problems with feedback or hum involving any add on units, and cannot solve them, the simplest cure may be to forget the mains supply, and then to run the processor or digital unit from re-chargeable batteries. Likewise when a computer is involved, a laptop fed from its internal battery can solve quite a few problems.

Camera Shutter Tester

In the last few issues of *PW*, I've been describing how colleagues and I came to design a camera shutter tester, and in the February issue (page 66) I gave the circuit. If you are experienced at d.i.y. electronics, and want to have a go at building your own, there's not that much more you need to know.

The 2.2 μ F capacitor C1 needs to have very good insulation, and should be a high quality polyester type of 100V working or more. The capacitor is charged via the range resistors, which are controlled by a 12-way single pole switch, and are in series with the 5k Ω resistor in the collector circuit of Tr1. Their total value, including Tr1's collector resistor, varies from 5M Ω on the one-second range, to 5k Ω on the 1/1000th second range, and they are made up with the nearest available values as per the chart.

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Readers who care to do a little mathematics will find that some of the values seem wrong. This is actually due to the way in which the international standard for camera shutter speeds does not quite follow the speeds marked on cameras. Manufacturers tried to ensure that each speed has a two to one relationship with those on either side of the selected speed. A camera that is 'spot on' when set at a 60th of a second for instance, will actually be exposing the film for nearer 1/64 of a second.

Most of the fixed resistors we used were Radio Spares (RS) 2% tolerance types, and on checking the only tester I still have, I found them mostly still within 1% even after over 30 years, which is pretty good!

The transistors are the high gain BC109c types tested out at 40V as described in the December issue, but almost any other low noise audio types with a gain of over 500 or more should work. The p.s.u. works okay, but is pretty crude, and you may like to re-design it using a more efficient series regulator. A three core earthed mains lead should be used, as quite apart from safety this helps to stop the unit responding to local noise and hum.

Testing

Once everything is wired, set the three pre-set potentiometers to around half-value, switch to 'Set B', shield the photo head from light, and plug in. It should now be possible to zero the meter pointer to the 'A' mark by adjusting the course adjustment VR2. Once this is set VR3 becomes the user adjustable fine set zero control. If there are any problems check the voltages against those shown on the circuit.

Next, shine a bright light on the photo diode and the meter should move to the right, set VR5 so that it saturates just beyond the 'B' mark at about the 80% slow on the scale.

Then you'll be ready to go through the test procedure, as described in last

month's *PW*, preferably with a camera that you know to be in good condition. If the speed reading obtained falls, and does not hold steady for at least 10 seconds, try a different pair of transistors as the Darlington Pair Tr2/3, or inter change them. If the reading continues to creep upwards, you are possibly picking up hum, light or noise, so try screening the photo head, or resetting VR1 to reduce the light sensitivity.

Accurate Calibration

Quality Japanese, or western European cameras in good condition, are usually fairly accurate on the lower speeds, so you can approximately set the calibration control VR4 by taking an average of a few cameras, on the $\frac{1}{4}$ or $\frac{1}{2}$ second settings. Try, if possible, to borrow a late model Leica camera, as these seem to have the most accurate mechanical shutters.

For some odd reason, the back doesn't open on early Leica's and these cannot be tested. Alternatively, you can fit a combination of resistors to make up 50M Ω on the spare position of the switch, you then have a 10-second range, which can be calibrated using a camera shutter on the 'time' setting and a stop watch. If correct calibration is outside the range of VR4, the value of C1 can be altered a few percent, or VR5 adjusted slightly. Once the unit has been calibrated correctly on one range, it should be just as accurate on all the others.

The Readings

The readings given on the meter are the 'effective exposure' and show how much light will fall onto a film. A shutter supposedly running at 1/500th second, which reads 50% fast, is actually running at 1/1000, and so only allows half of the intended pulse of light through. If it showed 100% slow, it would be letting double the required amount of light to pass, and would actually be running at 1/250th of a second. The meter is fairly linear up to the $\pm 40\%$ points, beyond this the actual speed will be indicated more accurately by switching to the next range.



Fig. 3: The production units of the camera shutter tester designed by Harry G3LLL looked rather professional.

Even when roughly calibrated, the unit will be much more accurate than most cameras at the higher speeds. Expect the highest speeds to be somewhat slow on all except the very best cameras. The fact that your camera is consistently 30% slow does not matter very much, provided you are aware of this, and make an allowance for it when working out the exposure.

Sensitivity To light

The sensitivity of the sensing head to light can be altered by VR1, but setting this too high will make the unit respond to room light, noise, and hand capacity effects. When VR1 is adjusted it will be necessary to re-zero the meter with VR2.

Any Questions?

At this point in a 'talk', it's usual to ask if there are 'any question', but please remember that this was not intended to be a 'blow-by-blow' d.i.y. article, and that as it is around 30 years since I built the last unit, I don't have a list of part suppliers. I'll try to help those really interested with a copy of the original operating instructions, and of the meter scale free-of-charge via

E-mail, (or upon receipt of a stamped addressed envelope plus two first class stamps to cover printing costs).

I must also emphasise, that I'm not much of a photographer, I would however, be very interested to hear from those who manage to construct a working unit. But please don't expect me to know a lot about photography!

Charge Resistor Values

These should be made up with nearest preferred values to within $\pm 1\%$ of calculated value. Remember they each have Tr1's 5k Ω collector resistor in series.

Range 1	5x1M Ω in series
Range 2	(3x750k Ω) + 240k Ω in series
Range 4	2x620k Ω in series
Range 8	620k Ω
Range 15	330k Ω
Range 30	160 + 1.5k Ω in series
Range 60	68k Ω + 10k Ω in series
Range 125	35k Ω
Range 250	15k Ω
Range 500	10 + 10k Ω in parallel
Range 1000	Switch Shorted
Test and calibration 10 second range if used. Total 50M Ω (5x10M Ω)	

Harry's waiting to hear from You!

I like to hear about problems with older equipment, particularly pre 1990 Yaesu rigs. Please E-mail me, (add some radio related term in the subject heading, to differentiate against spam), or write and enclose a stamped addressed envelope. Remember that electricity is dangerous, if you are not familiar with safety precautions you must never work on your equipment whilst it is plugged into the mains. (Switching off at the wall socket does not necessarily make equipment safe)

J. BIRKETT

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E-mail: hunts.hams@yahoo.co.uk
www.hunts-hams.co.uk

Huntingdonshire ARS meets at the Medway Centre, Medway Road, Huntingdon PE29 1SF. Meetings are from 7.30pm until 10pm on the 2nd & 4th Thursday of the month.

CHESTER

Chester & DRS
Barbara Green. Tel: 07957 870770
E-mail: barbara@rutland.go-plus.net
www.chesterdars.org.uk

The Chester & District Radio Society meets on Tuesday evenings at the Burley Memorial Hall, Common Lane, Waverton, Chester CH3 7QN.

HALTON

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

MACCLESFIELD & DRS

Adie Dodd. Tel: 0795 7765511
www.gx4mws.com
The Macclesfield & District Radio Society meets every Monday at the Pack Horse Bowling Club, Westminster Road, Macclesfield SK10 3AT at 8pm.

STOCKPORT RS

David Simcock. Tel: 0161 456 7832
E-mail: secretary@gx4mws.com
www.stockportradiosociety.co.uk
The Stockport Radio Society meets on the first and third Tuesdays at the Bramhall Air Scouts HQ, Leewood Hall, Benja Fold off Ack Lane East, Bramhall, Stockport SK7 2BX.

WARRINGTON AMATEUR RADIO CLUB

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

CORNWALL

Cornish ARC
Ian Williams. Tel: (01872) 561058
E-mail: ianporsche964@aol.com
www.cornishradioamateurclub.org.uk
The Cornish Radio Amateur Club meets at the Church Hall, Church Road, Perranarworthal, Truro TR3 7QE on the first Wednesday of every month at 7.30pm. There is also a Computer Section that meets at the same venue and time on the second Monday of every month, except December.

NEWQUAY AND DISTRICT ARS

Joe Bell. Tel: 01726 891557
E-mail: joe_bell@btinternet.com

Club & Society Newsletters

The regular newsletters that many clubs and societies send in to *Club News* here at PW, show the hard work that someone in each club puts into creating the club magazine or newsletter. We think it's a fair chance that in many cases, it's just one person in each club who has taken on the job of producing the newsletter for that society or club.

So, how about trying to make your club magazine Editor's life a little bit easier each time?

Have you considered writing an article for your club magazine? If not - why not?

Find out if your Editor, he or she, wants an article, I doubt it will be refused! Better still if you can manage to write a regular column in your club's newsletter. Find a topic that interests you and explain that to other club members.

Go on make the Editor's life easier and have some more fun with the hobby at the same time!

www.btinternet.com/~kevin.francks/index.html

The Newquay and District ARS meets every other Thursday at Treviglas Community College, Bradley Road, Newquay. TR7 3JA with either arranged talks on the evening or just a general chat amongst members. Also the club offers training towards the Foundation Exam on club nights and then the opportunity to take the Foundation Exam.

Poldhu ARC

Keith Matthew. Tel: (01326) 574441
E-mail: g0wvys@yahoo.co.uk
www.gb2gm.org

The Poldhu Amateur Radio Club meets at The Marconi Centre, Poldhu Cove, Nr Mullion, Cornwall TR12 7JB. Tel: 01326 241656.

COUNTY DOWN

Bangor and District ARS
Mike. Tel: 028 4277 2383
<http://www.bdars.com>

The Bangor and District Amateur Radio Society meets on the first Thursday of every month in 'The Boathouse', Harbour Car Park, Groomsport BT19 6JP at 8pm. Our 2009 rally is to be held on Sunday June 14th (a new date, we have had to move it from 21st), At 12 Noon in 'The Country Club', Crawfordsburn. Admission £2 including two raffle tickets! Trade Stands, Bring and Buy, Ballot and a good selection of radio and computer traders will be in attendance. Special interest groups will have their own stands. The ever popular FREE bring and buy will be running as normal

COUNTY DURHAM

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

Great Lumley AR&ES

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

DERBYSHIRE

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

DEVON

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

Exeter ARS

Paul Cheshire. Tel: 01392 660246
E-mail: pchesh-29@hotmail.co.uk

The Exeter Amateur Radio Society meets on the 2nd and the 4th Monday at 7.30pm in the Moose Centre, Spinning Path Lane, Blackboy Road, Exeter EX2 5RP. Tuition for Foundation, Intermediate and Advanced licence is available. The club is registered as an RSGB examination centre.

Torbay ARS

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

The Torbay Amateur Radio Society meets Fridays at 7.30pm in the Teignbridge District Scout Headquarters, Wolborough Street, Newton Abbot, Devon TQ12 1JR.

DORSET

Blackmore Vale ARS (BVARS)
Nick Perrin. Tel: (01747) 838936
E-Mail: bnperrin@theiet.org
www.radioclubs.net/bvars/
BVARS meets in The Youth Club, Coppice Street, Shaftesbury Dorset SP7 8PF each Tuesday evening at 7.30pm. The Club callsign is G4RBV. The main meeting is the second Tuesday of the month and details of events and full details of the Club can be found on the website. April 14th: It's the BVARS AGM. at 7.30 p.m.

Bournemouth RS

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

Poole Radio Society G4PRS

'Tex' G1TEX. Tel: 07966 460 552
www.g4prs.org.uk
Meetings are every Friday at 19:30 for 20:00 at the The Old Chapel Hall, Cabot Lane, Creekmoor, Poole BH17 7BX, the second Friday meeting of each month is the formal evening, all others are basically shack and Natter nights. The Intermediate class is presently fully booked and well underway!

Dumfries & Galloway (Scotland)

The Wigtownshire Amateur Radio Club
Ellis Gaston. Tel: 01776 820413
Web: www.gm4riv.co.uk
The club meets every Thursday from 19:00 Hrs at the The Aird Unit, Stranraer Academy, Stranraer, DG9 8BQ, South West Scotland. Mar 12th Shack PSK Natter Night, 19th Shining a light on Darkest Borneo by Tam Wylie GM4FDM a DXpedition nd on the 26th, it's a Shack PSK Natter Night.

EAST SUSSEX

Brighton RC
Reg Moores. Tel: (01273) 503869
The Brighton Radio Club meets on the second and fourth Tuesdays of each month at the Vallance Community Centre, Conway Court, Sackville Road, Hove BN2 3WR at 7.30pm. Anyone wishing to know

more are welcome to come along to a meeting, entrance is free.

Hastings E&RC

Gordon Sweet. Tel: (01424) 431909
E-mail: gordon@gsweet.fsnet.co.uk
www.herc.uk.net or <http://g4cus.mysite.wanadoo-members.co.uk/>
The Hastings Electronics & Radio Club meets on the third Wednesday at the Taplin Centre, Upper Maze Hill, St Leonards on Sea TN38 0LQ at 7pm.

ESSEX

Braintree & DARC

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

Colchester RA

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

Chelmsford ARS

Martyn Medcalf. Tel: (01245) 469008
E-mail: info2007@g0mwvt.org.uk
www.g0mwvt.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. - All welcome. Saturday 25th April CARS will be operating from Sandford Mill for International Marconi Day.

Loughton & Epping Forest ARS

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

South Essex Amateur Radio Society

Contact: Dave (G4UVJ) 01268 697978
E-mail: southessex.ars@btinternet.com
www.southessex.ars.btinternet.co.uk
Local Network: 145.225MHz
Meet second wednesdays of each month at South Benfleet Primary School, High Rd, South Benfleet, Essex SS7 5HA. (Entrance: 51°33'10.45N 0°33'39.65 E), (Opp. Smiths Wood Yard). All welcome.

FIFE (Scotland)

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

GLOUCESTERSHIRE

Cheltenham ARC G5BK (CARA)
Alan Errock, G3HC. Tel: 01452 813
E-mail: alan@errock.co.uk
www.caranet.co.uk
The club meetings are held on the first Friday of each month, starting at 8pm. at Prestbury Library, The Burgage, Cheltenham, Gloucestershire, GL52 3DN.

Gloucester

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

10pm except for Bank Holidays when we operate from a local escarpment.

Gwnedd (Mid-Wales)

Merion ARS

Tel: John 07824 562656

Email: tawelfan@talk21.com

<http://meirionars.multiply.com/>

Meirion amateur radio society meet on the first Thursday of each month at The Royal Ship Hotel in Dolgellau Gwynedd LL40 1AR at 19.30. Visitors and new members are very welcome. Regular talks are organized and all the details for meetings and special events can be seen on the club website.

HAMPSHIRE

Andover Radio Amateur Club.

Martin MOMWS. Tel: 01980 612070

E-mail: martinsmith@kukltd.co.uk

www.arac.co.uk

The Andover Radio Amateur Club meets on the first and third Tuesdays in the month at the Club venue in The Village Hall at Wildhern, SP11 0JE. Map Ref SU305010 at 19:30 hours.

Fareham & District ARC

Alastair Sinclair Tel: 01329 235397

E-mail: secretary@fareham-darc.co.uk

www.fareham-darc.co.uk/

The Fareham & District Amateur Radio Club meets on Wednesdays evenings from 7.30pm in the Fareham Sailing & Motor Boat Club, The Boathouse, Lower Quay, Fareham. PO16 0RA

Farnborough & District Radio Society (FDRS)

Derek G30FA E-mail: mail@fdrs.org.uk

www.fdrs.org.uk

Meets every 2nd and 4th Wednesday in the month at 7:30 for 8:00 pm in the Farnborough Community Centre, Meudon Avenue, Farnborough, Hampshire, GU14 7LE Visitors and new members are always most welcome. On April 8th there's a talk on Model radio controlled aeroplanes by Colin G8BCO.

Hordean & District ARC

Stuart Swain. Tel: (02392) 472846

E-mail: g0fyx@msn.com www.hdarc.co.uk

The Hordean & 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. Their Bring-and-buy sale which was to take place on that earlier this year will now take place on Tuesday May 26th.

Isle Of Wight Radio Society

Tony Pegg Tel: 01983 868 978

e-mail tony.pegg1@btinternet.com

www.g3sky

The IWRS meets every Friday evening 7.00pm-10.15pm at Haylands Farm, Salters Rd. Ryde PO33 3HU. Visitors very welcome. The club runs courses for Foundation, Intermediate and advanced licenses. The club is registered as an RSGB exam centre

Lymington Community Association Radio Club

Keith G8MZF Tel: (01590) 672337 (work)

(02380) 849395 (evenings)

Email: lymcomass@aol.com

The club meets at Lymington Community Centre, New Street/Cannon Street, Lymington SO41 9BQ, on Friday nights. Talk-in on the night on or near 145.550 club call M0LCC. All are welcome. Start time hopefully 7.30pm bar open from 7.00pm. Plenty of free parking nearby.

HERTFORDSHIRE

Verulam Amateur Radio Club (St Albans)

Norman. Tel: 07773 628912

E-mail: g1bsz@aol.com (sec)

www.radioclubs.net/verulam

The club normally meets every 3rd Tuesday of the month 800pm at Aboyne Lodge School, Etna Road, St Albans, AL3 5NL. New members and visitors are always very welcome. Regular talks, events, Foundation, Intermediate courses exams are held. Club nets also take place every Sunday 12.00noon 40m (7.150MHz), then 14.00pm 2m (145.375) and on Tuesday 19.45pm 160m (1.975) then 20.00pm 2m (145.375). For further information about the club and events please see the website.

HUMBERSIDE

Hull & District ARS

Raymond Penny. Tel: (01482) 504618

St Brandon - 3B7C presentation

On Wednesday 29th of April 2009, the Dudley and District Amateur Radio Society (DADARS) will be hosting a presentation by Don Beatie G3BJ, on the record-breaking DXpedition to St Brandon Islands using the callsign 3B7C. Simon Billingham m0vky, who has organised this event for the Dudley has thrown an open invitation to all the local clubs or individuals to attend. Simon says, "The presentation to be given by Don G3BJ is, as you are probably aware, a record breaking DXpedition at a sunspot low.

"The indication from Don G3BJ is that the presentation should last for just under two hours.

The presentation will include power point presentation, slide shows and video footage of the DXpedition. So, you'll see the people and operation and of course Don himself talking you through it all."

Although DADARS normally meet at the Old Ruiton Windmill, more commonly known locally as just 'Ruiton Mill', in Vale Street, Upper Gornal, West Midlands DY3 3XF, this one-off event is organised to be held at: Trysull Village Hall, Feishall Lane, Trysull, West, Midlands. WV5 7HW.

Doors will be open at 1900p.m. for a 1945p.m. start. If you'd like to attend, or have any questions, contact Simon via E-mail: m0vky@hotmail.co.uk or via telephone on (07810) 183369.



E-mail: sirraymond@sirraymond.karoo.co.uk

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

JERSEY

Jersey Amateur Radio Society - GJ3DVC

Rob Luscombe (secretary) 2J0RZD Tel: 07797

923916

E-mail: gj3dvc@gj3dvc.org.je

<http://www.radioclubs.net/gj3dvc/>

The Jersey Amateur Radio Society meets every Friday at 7.30pm at The German Signal Station, Rue Baal, La Moye, St. Brelade, Jersey, JE3 8HQ, also on a Wednesday evening from time to time to maintain, alter and improve the shack, antennas etc. and also for club training. Coffee and car parking available, visitors are always welcome, shack rental available. See our website for further information.

KENT

Bredhurst RATS

www.the-brats.co.uk

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

Hilderstone Radio & Electronics Club

Mike Howland E-mail: g4mix@waitrose.com

www.g0hrs.org.uk

Meetings now at The Science Block, Chatham House School, Chatham Street, Ramsgate, CT11 7PP on 2nd and 4th Friday of the month at 7.30pm.

Bromley & DARS

Graham

E-mail: bdars@grahamc.net

www.bdars.org

The Bromley & District Amateur Radio Society meets in The Victory Social Club, Kechill Gardens, Hayes, Kent BR2 7NH (off B265, Hayes Lane, Bromley) on the third Tuesday of the month at 7.30pm.

LANARKSHIRE (Scotland)

Mid-Lanark ARS

Dennis: Tel 07505529335

Email: mm0dnx@yahoo.co.uk

www.mlars.org.uk/

The Mid-Lanark ARS meets on Friday evenings at the Newarthill Community Education Centre, 288 High Street, Newarthill, Motherwell ML1 5JU. Visitors and new members are very welcome. The club has HF and VHF shacks for use on club evenings. Courses for foundation, intermediate and full licences are also run at the club. See web site for details of our upcoming meetings.

LANCASHIRE

Oldham RC

Christopher Cunliffe. Tel: 07749347142

E-mail: secretaryoarc@btinternet.com

www.oarc.org.uk

The Oldham Radio Club meets on Thursdays at Royton Air Training Corps, Hillside Avenue, Royton, Oldham OL2 6RF at 7.30pm.

Ellenroad RC

David. Tel: (01706) 358650

E-mail: info@ellenroadradioclub.org.uk

<http://www.ellenroadradioclub.org.uk/info.htm>

The Ellenroad Radio Club (ERC) meets every Monday evening from 7 to 9pm at the Ellenroad Steam Museum, Elizabethan Way, Newhey, Rochdale OL16 4LG. The museum houses the UK's only fully-working cotton mill engine, complete with its 220ft high chimney. Newcomers are always welcome and made to feel at home.

Thornton Cleveleys ARS (G4ATH, & G6GMW)

John Tel: 01253/399377,

E-mail: m3waz@hotmail.co.uk

www.tcars.org.uk

Meet Monday evenings at the Frank Townend Center, Kensington road, Cleveleys, Lancashire FY5 1ER. April meetings are: 6th Natter Night. 13th Tech night Slow scan TV, Ted G3WBB, on the 20th it's Video of Old Radios and on the 27th there's an Auction organised(?) by Mick G4EZM.

LINCOLNSHIRE

Spalding & DARS

Graham Boor. Tel: 07947764481

E-mail: secretary@sdars.org.uk

www.sdars.org.uk

The Spalding & District Amateur Radio Society meets at the Castle Sports Swimming Complex, Spalding PE11 1QF on Fridays at 7.30pm.

Stenigot "Chainhome" Amateur Radio Club

Steve Burke M5ZZZ Tel: 01507 600202

E-mail: m5zzz@btinternet.com

www.stenigotchainhomearc.co.uk

Meetings are held on the third Friday of the month commencing 19.30 at Gayton le Marsh Village Hall, Gayton le Marsh, Lincolnshire. LN130NW. March 20th Auction and Table Top sale Go home with more than you bargained for: Doors open 18.30 Lots must be booked in by 19.30. Tables Free (Limited number) Auction starts 20.00.

LONDON

Cray Valley Radio Society

Bob Treacher. Tel: 020 8265 7735

www.cvrss.org

The Cray Valley Radio Society meets on the first and third Thursdays of the month at the Progress Hall, Admiral Seymour Road, Eltham, London SE9 1SL at 7.30pm for 8pm.

Radio Society Harrow

Linda Casey. Tel: 020 8386 8586

Email: lcasey@imperial.ac.uk

www.g3efx.org.uk

The Society meets on Friday at 20.00 on the 2nd and 4th weeks of every month, at The Elsie Fisher Room, St Lawrence Centre, St. Lawrence Church, 2, Bridle Road, Eastcote, Pinner HA5 2SJ. All welcome! We also run exam courses - see website for details

Southgate ARC

David Sharp. Tel: 01992 422622

E-mail: david.sharp1@tesco.net

The Southgate Amateur Radio Club meets on the second Wednesday of the month at Hazelwood Lawn Tennis and Squash Club, Ridge Avenue, Winchmore Hill, London N21 2AJ at 7.30 for 8 pm.

Wimbledon and District ARS

Jim Bell MOCON

Tel: 020 8874 7456

E-Mail: jamesm0con@o2.co.uk

<http://www.gx3wim.org.uk>

The Wimbledon & District Amateur Radio Society welcomes new comers to our meetings whether they are licensed or not. We hold our meetings the second and last Friday of each month at Martin Way Methodist Church, Buckleigh Avenue, Merton Park, London SW19 9JZ. The church is on the corner of Martin Way and Buckleigh Avenue.

THE LOTHIAN (Scotland)

Cockenzie & Port Seton ARC

Bob Glasgow. Tel: (01875) 811723

E-mail: gm4uyz@cpsarc.com

www.cpsarc.com/news.php

The Cockenzie & Port Seton Amateur Radio Club meets in the Thorntree Inn (Lounge Bar), High Street, Cockenzie, East Lothian EH32 0HP from 7pm till late. Organised talks are held in the Port Seton Community Centre, South Seton Park, Port Seton, East Lothian EH32 0EE. Timings 18:30 to 21:30hrs. Feb 20th Radio Check Night by John MM0JXL. Mar 6th Normal club evening, 20th Talk by Malcolm Gibson "Databases and their Uses" in Port Seton Community Centre Resource Room 2, at 19:30 to 21:30

Lothians Radio Society

Tony Sigouin. Tel: 07739742367

E-mail: enquiries@lothiansradiosociety.com

www.lothiansradiosociety.com

The Lothians Radio Society meets on the second and fourth Mondays of the month in the Royal Ettrick Hotel, 13 Ettrick Road, Edinburgh EH10 5BJ from 7pm. Membership costs £12 per year and includes a free BBQ every June!

MERSEYSIDE

Wirral & District ARC

Tom. Tel: 07050 291850

E-mail: secretary@wadarc.com

www.wadarc.com

The Wirral & District Amateur Radio Club meets at the Irby Cricket Club, Mill Lane, Irby CH61 4XQ on the second and fourth Wednesdays of each month. Other Wednesdays are informal (D&W) meetings at a local hostelry.

NORFOLK

King's Lynn ARC

Ray Dowsett, MBE.

Tel: (01553) 671307

E-mail: ray.g3rsv@supanet.com <http://www.klarc.org.uk>

www.klarc.org.uk

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

Norfolk ARC

Mark Taylor. Tel: (01362) 691099

E-mail: narc@g0lgj.co.uk

www.norfolkamateurradio.org

The Norfolk Amateur Radio Club meets every Wednesday at the Eaton CNS School, Eaton Road, Norwich, NR4 6PP, where it meets weekly from 7-10pm, usually in 6th form centre at front of school, every Wednesday from 7-10pm. 1st April Construction Competition Judging / Annual General Meeting, 8th April "The Joy of Six" with Robin M1DUD/OZ3RE, 15th April an Informal / Construction / Workshop (RSGB CC), 22nd April Getting your first HF award - in just 24 hours Steve G0KYA, 29th April Table Top Sale / Construction / Workshop / Bright Sparks

North Norfolk ARS

Tony Smith. Tel: (01263) 821936.

E-mail: g4fai@btinternet.com

www.radioclubs.net/narg/

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

NORTHAMPTONSHIRE

Kettering & District Radio Society

Lorna Froggatt. Tel: 0153 676 2523

E-mail: LornaSteveLorna@aol.com

The Kettering & District Radio Society meets each Tuesday from 7 to 9pm in the winter at The Lilacs Pub, Church Street, Isham, Northants NN14 1HD and in the summer at the Carpetbagger Aviation Museum, Sunnyvale Farm Nursery, Harrington NN6 9PF. Foundation, Intermediate and Advanced courses are held regularly.

SHROPSHIRE

Salop ARS

Richard Golding. Tel: 01743 356195

The Salop Amateur Radio Society meets in The Telepost Club, Railway Lane, Abbey Foregate, Shrewsbury SY26BT on Thursday between 8 and 10.30pm.

Telford & District ARS

Mike Street. Tel: (01952) 299677

E-mail: mjestreetg3jxx@blueyonder.co.uk

www.tdars.org

The Telford & District Amateur Radio Society meets on Wednesdays at the Little Wenlock Village Hall, Malthouse Bank, Little Wenlock. Telford TF6 5BG at 8pm. February 4th Open House/On the air/ Committee. (Away venue), 11th Video evening with MOTA, 18th Under £5 construction competition, 25th Society project.

NOTINGHAMSHIRE

Workshop Amateur Radio Society (W.A.R.S.)

'Daz' Spence 01623 747314

E-mail: g3rcw@qsl.net

www.qsl.net/g3rcw/

Meets every Tuesday at 7:00 pm. Our clubhouse is located at 59 - 61 West Street, Workshop, Nottinghamshire. S80 1JP. Exams and courses run frequently for all licence levels. Licensed bar & hot food available on club meet nights. Membership fee for the year is £10.

SOMERSET

North Bristol ARC

Dick Eford Tel: (01454) 218362

E-mail: g0xay@aol.com

www.nbarc.org.uk

North Bristol ARC meet Fridays at 7.30pm at SHE7, Braemar Crescent, Northville, Filton Bristol BS7 0TD. We carry out training for all the Radio Amateurs examination, and our next training course is to be for Intermediate exams.

South Bristol ARC

Len Baker. Tel: (01275) 834282

E-mail: g4rzy@msn.com

www.sbarc.co.uk

The South Bristol Amateur Radio Club meets every Wednesday evening at the Whitchurch Folkhouse Association, Bridge Farm House, East Dundry Road, Whitchurch, Bristol BS14 0LN. March 18th is a club open night, 25th an 'On The Air' evening.

Yeovil ARC

Gary.

E-mail: g.swain@tesco.net

www.yeovil-arc.com/

The Yeovil Amateur Radio Club meets at the Red Cross Centre, Grove Avenue, Yeovil BA20 2BE (on the corner where Grove Avenue meets Preston Road).

SOUTH GLOUCESTERSHIRE

Thornbury and South Gloucestershire ARC

Tony. Tel: (01454) 417048

E-mail: tonysgarc@sky.com

The Thornbury and South Gloucestershire Amateur Radio Club meets in the United Reformed Church Hall, on the corner of Chapel Street and Rock Street, Thornbury BS35 2BA at 7.30 - 9.30pm. Meetings during April are: On the 1st it's the AGM, 8th - On Air Night, 15th - Video Night, 22th - On Air Night, 29th - On Air Night

Money For Training!

The **Hordean & District Amateur Radio Club** is very pleased to announce that it has been successful in its application for lottery funding. We have been awarded £2145, by the National Lottery Awards For All scheme, for our project to update and modernise our training course equipment, the main items being a laptop computer plus software, a data projector, a projector screen and a whiteboard.

The club is planning to run further foundation licence courses at regular intervals, and the club has exam centres registered by the Radio Society of Great Britain for the purposes of holding foundation, intermediate and advanced licence examinations.

The Hordean & District Amateur Radio Club meets on the first and fourth Tuesdays of each month at Lovedean Village Hall, Lovedean Lane, Lovedean, starting at 7.30pm. And visitors are always welcome.

For further information about licence classes, and the club, please see our website www.hdarc.co.uk or contact myself as club secretary, on 023 9247 2846.

Stuart Swain GØFYX

SOUTH WALES

Barry ARS

Glyn Jones. Tel: (01446) 774522

E-mail: glyndxis@talktalk.net

www.bars.btik.com

The Barry Amateur Radio Society meets on Tuesdays from 7.30 to 10.30pm in the Sully Sports & Social Club, South Road, Sully CF64 9TG.

SOUTH YORKSHIRE

Axholme Radio Club

John Fennell. Tel: (01427) 872522

E-mail: g4hoy@tiscali.co.uk

The Axholme Radio Club meets at Hollytree Farm, Westend Road, Sandtoft, Epworth DN9 1LB on Wednesdays at 10am to 4pm, Thursdays at 7 - 9pm and Saturdays from 10am - 4pm (other times by arrangement).

Sheffield ARC

Trevor Wood. Tel: 0114 2216947

E-mail: trevorwood6@yahoo.co.uk

www.sheffieldarc.org.uk

The Sheffield Amateur Radio Club meets at the SYPT Social Club, Greenhill Main Road, Sheffield S8 7RH every Monday at 7.15pm. All three types of classes are held for the Foundation, Intermediate and Advance levels of licensing.

STAFFORDSHIRE

Tamworth Amateur Radio Society

Colin Marks. Tel: (01827) 700893

E-mail: colin.marks2@ntlworld.com

The Tamworth Amateur Radio Society meets every Thursday at 7.30pm at St Francis Church, Masefield Road, Leyfields, Tamworth B77 8JB.

SUFFOLK

Bury St Edmund's ARS

George Woods G3LPT Tel: 01359 259518

Darren Coe G7SDC Tel: 01284 701732

stomo@yahoo.co.uk

www.radioclubs.net/bsears/

The Club meets on the third Wednesday of the month (except August and December) at the Culford school, Culford, Bury St Edmunds, Suffolk IP28 6TX at 7.30PM. Visitors are welcome. Please see our web site for further details.

SURREY

Coulsden Amateur Transmitting Society

Steve Conway G7SYO 01737 353517

E-mail: steve.conway@landg.com

www.sthst.co.uk/webpage/cats/

Regular meetings are held on the second Monday in each month at: St Swithun's Church Hall, Grovelands Road, Purley, Surrey CR8 4LA at 20:00 to 22:00hrs. On the first Saturday of month at 1715 Crescenta Valley / CATS Net on Echolink Normally via MB7IPL node on 145.2875 MHz. Monday 6th April (NB latest date) - Talk on DAB and DRM by the BBC.

Sutton & Cheam RS

John Puttock. Tel: 020 8644 9945

E-mail: info@scrs.org.uk

www.scrs.org.uk

The Sutton & Cheam Radio Society meets on the third Thursday of the month at 7.30pm in Sutton United Football Club, The Borough Sports Ground, Gander Green Lane, Sutton, Surrey SM1 2EY. In addition to monthly meetings, licence training courses are held at regular intervals in Banstead Surrey.

TYNE & WEAR

Angel of the North RARC

Nancy Bone. Tel: 0191 477 0036

E-mail: nancybe2001@yahoo.co.uk

www.anarc.net

The Angel of the North Radio Amateur Radio Club meets every Monday 7 to 9pm at Whitehall Road Methodist Church Hall at the corner of Whitehall Road and Coatsworth Road, Bensham, Gateshead NE8 4LH. The entrance to radio club room is through door at the side of building next to the car park. The car park entrance is on Whitehall Road. Meetings for April: Monday 6th come and talk and take to the air, 13th No Meeting! 20th Geoff Darby will give a talk about the Worked All Britain awards. and on the 27th it's come in and talk and take to the air. All are welcome.

Tynemouth ARC

Tony Regnart G8YFA. Tel: 0191 280 1981

E-mail: mail@g0nwm.com

www.g0nwm.co.uk

The Tynemouth Amateur Radio Club meets each Friday from 7 to 9pm at St. Hilda's Church, Stanton Rd, North Shields, Tyne & Wear NE29 9QB. It's known locally as 'the church near the fire station'. April meetings include "on the 3rd - Annual General Meeting, 10th Operating Night & Morse, 17th Satellite Imaging G8YFA. And on the 24th Operating Night & Morse

WEST MIDLANDS

Aldridge & Barr Beacon ARC

Roy Horton. Tel: (01922) 691646

E-mail: leslie137@btinternet.com

www.g0neq.co.uk

The Aldridge & Barr Beacon Amateur Radio Club is a daytime club and meets at the Aldridge Community Centre, Middlemore Lane, Aldridge, Walsall WS9 8AN on the first and third Monday of every month at 2pm to 4pm. They have a long wire and a v.h.f. antenna for radio operation using the club call sign G0NEQ.

Midland AX25 Packet Radio Users Group

Miles. Tel: 01384 254199

www.maxpak.org.uk

The Midland AX25 Packet Radio Users Group, MaxPak, meets on the first Monday of the month at The Sir Robert Peel, 104 Bell Lane, Bloxwich, Walsall WS3 2JS.

South Midlands RS

Don Tel: (0121 458 1603)

South Midlands RS meet in the West Heath Community Centre, Condoval Rd., West Heath Birmingham B31 3QY. March 13th and 20th are construction evenings. 223rd is a 'ragchewing' evening.

Stourbridge and District ARS

John. Tel: (01562 700513)

www.g6oi.org.uk

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

Sutton Coldfield RS

Andy Sherman. Tel: (01827) 875155

E-mail: peugeotnut@hotmail.com

www.hamradio.pico.com

The Sutton Coldfield Radio Society Meets on the second and fourth Monday of the month at 7.30pm (no meeting on bank holiday Mondays) in the Sutton Coldfield Rugby Club, 160 Walmley Road, Sutton Coldfield, West Midlands B762QA.

Wythall Radio Club

Chris Pettitt. Tel: (07710) 412 819

E-mail: g0eyo@wythallradioclub.co.uk

www.wythallradioclub.co.uk

The Wythall Radio Club is based at Wythall House, Silver Street, Wythall, near Birmingham B47 6LZ. They meet every Tuesday at 8pm and meetings are informal and friendly.

WEST SUSSEX

Horsham ARC

Andrew Vine. Tel: (01483) 272456

http://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.

Worthing & DARC

Roy or Joyce. Tel: (01903) 753893

www.wadarc.org.uk

The Worthing & District Amateur Radio Club meets every Wednesday at 8pm in the Lancing Parish Hall, South Street, Lancing, BN15 8AJ. There's a free car park at the rear and full disabled access. Visitors are always welcome.

WEST YORKSHIRE

Denby Dale Amateur Radio Club

Gerald. G3SDY.

Tel: 01484 602905.

www.g4cdd.net/

The Denby Dale club meet at Pie Hall, Denby Dale, Huddersfield HD8 8RX. On Wednesday April 1st the club holds its spring mini-rally and grand auction of surplus items. Doors open at 7pm. And on April 15th there's a talk and demonstration on multi-band antennas starting at 8pm.

Pontefract & District Radio Club

Colin. Tel: (01977) 677006

E-mail: info@pontefractradioclub.org

www.pdars.com

The Pontefract & District Radio Club meets every Tuesday from 7pm and Thursday from 8pm at the Carleton Centre, Carleton Grange, Carleton Road, Pontefract, West Yorkshire WF8 3RJ. Meetings for April include: on the 7th Construction project: Mystery Kit wrap-up, 14th On-The-Air with G3FYQ & G1FYQ calling "CQ-FISTS".

WIGTOWNSHIRE (s.w. Scotland)

Ellis Gaston 01776 820413

www.gm4riv.co.uk

Wigtownshire ARC meet weekly at The Aird Unit, Stranraer Academy, Stranraer DG9 8BQ. Meetings for April: on the 2nd On Air PSK31, 12th On Air PSK31, 16th On Air PSK31, 23rd Stean Garden Railways by Ian Macdonald, and on the 30th On Air with PSK31. Visitors always welcome

WILTSHIRE

Trowbridge & District AR

Ian Carter. Tel: (01225) 864698

E-mail: ian.l.carter@btinternet.com

http://uk.geocities.com/ttdarc@btinternet.com

The Trowbridge & District Amateur Radio Club meets at Southwick Village Hall, Southwick (nearest postcode is BA14 9QN). April 1st there's a talk on VP8-YL's First All Ladies Expedition to the Falklands (2009) - by Nicky Marriott M5YLO. 15th April it's a natter night

WORCESTERSHIRE

Worcester RAA

Martin Carter. Tel: 07976 917987

E-mail: secretary@m0zoo.co.uk

www.wraa.co.uk

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

Club Secretaries

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

rallies

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

Send all your rally info to

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

March

March 14th

The Lagan Valley ARS Rally

The Lagan Valley Amateur Radio Society Rally will be held in The Village Centre, 7 Ballynahinch Road, Hillsborough, Ulster BT26 6AR. Doors will open at 11.30am and there will be parking, trade stands and catering.

Jim GI0DV

Tel: 02892 662270

E-mail: jim.henry@ntlworld.com

March 29th

The Caradon Hill RG & Callington ARS Rally*

The Caradon Hill Repeater Group & Callington Amateur Radio Society Rally will be held at the Callington Community College, Callington, Cornwall PL7 7DR. Doors will open at 10.30am (10.00am for disabled and 7.30am for traders). Admission will be £2.00.

Jamie 2E0JLH

Tel: 0779 554 60374

E-mail: caradonhillrepeatergroup@hotmail.co.uk

March 29th

The Spring Hangar Sale

The Spring Militaria, Electronics and Radio Amateur Hangar Sale will take place at the Hack Green Secret Nuclear Bunker, French Lane, Nantwich, Cheshire CW5 8AL. The Bunker is situated just off the A530 Whitchurch Road, a few miles outside Nantwich, 30 minutes from Chester. From Junction 16 on the M6 motorway, follow the signs to Nantwich, then Whitchurch on the A530 (follow the brown Secret Bunker signs). The doors will open at 10.00am and admission will be £2.50.

Rod Siebert

Tel: 01270 623353

E-mail: coldwar@hackgreen.co.uk
www.hackgreen.co.uk

March 29th

The South Gloucestershire Rally

The South Gloucestershire Rally will be held at the Avon Scouts Activity Centre, Woodhouse Park, Almondsbury, South Gloucestershire BS32 4LX (1.5 miles from the junction the M4 and the M5). Doors will open at 10.00am (7.30am for traders)

and admission will be £2.00. There will be talk-in, parking, trade stands, catering, a car boot sale, family attractions and facilities for the disabled.

Peter Cabban G4OST

Tel: 01454 612689

E-mail: peter.cabban@btinternet.com

www.avonscouts.org.uk/woodhousepark/location.htm

March 29th

The Enniskillen Amateur Radio Show

The Lough Erne Amateur Radio Club will hold the 28th Enniskillen Amateur Radio Show at The Share Centre, Lisnaskea, Co. Fermanagh, Ulster. Doors will open at 12 noon and there will be a Bring & Buy, catering and on-site parking.

Ian

Tel: 02866 326693

E-mail: Gibbjgbb@aol.com

www.lougherneradioclub.co.uk

April

April 5th

The NARSA Rally*

The Northwest Amateur Radio Societies Association Rally will be held at the Norbreck Castle Exhibition Centre, Queen's Promenade, North Shore, Blackpool FY2 9AA. There will be over 100 trade & club stands, a Bring & Buy, a construction competition, free parking and access for the disabled.

Peter G6CGF

Tel: 0151 6305790

E-mail: g6cgf.peter@ntlworld.com

April 5th

The Northern Mobile Rally

The Northern Mobile Rally will be held at the Richmond School, Darlington Road, Richmond, N. Yorkshire DL10 7BQ. Doors will open at 10.30am (10.00am for disabled) and there will be parking, trade stands and catering.

E-mail: rsars@hotmail.co.uk

www.rsars.co.nr

April 19th

The Andover Club Boot Sale

The Andover Radio Amateur Club will be holding their Boot Sale at the Wildhern Village Hall and Playing Field SP11 0JE (this is off the A343 north of Andover). Admission will be £1.50 and there will

be talk-in on S22, parking, catering and facilities for the disabled.

Martin M0MWS

Tel: 01980 612070

www.arac.co.uk

April 19th

The West London Radio & Electronics Show*

The West London Radio & Electronics Show will take place at Kempton Park Racecourse, Sunbury-on-Thames, Surrey.

Paul

Tel: 0845 1650351

E-mail: paul@radiofairs.co.uk

www.radiofairs.co.uk

April 26th

The Yeovil QRP Convention

The Yeovil QRP Convention will be held at Digby Hall, Hound St, Sherborne, Dorset DT9 3AA. (Digby Hall adjoins the central shopping car park). The doors will open at 10.00am and there will be talk-in on S22 and V44, car parking, lectures, trade stands, a Bring & Buy, catering and facilities for the disabled.

Derek

Tel: 01935 414452.

E-mail: yarc-contact@tiscali.co.uk

www.yeovil-arc.com

May

May 3rd

The Dambusters Radio Rally

The Dambusters Radio Rally will take place at the Thorpe Camp Visitor Centre, Thorpe, near Coningsby, Lincolnshire LN4 4PE (on the B1192 at Tattershal). Doors will open at 10.30am (10.00am for disabled, 8.00am for traders). Admission will be £2 (accompanied children free) – this includes admission to the Visitor Centre. There will be free car parking and free camping spaces will be available on the site.

Tony G3ZPU

Tel: 01507 527835

E-mail: g3zpu@yahoo.co.uk

<http://beam.to/tcrm>

May 4th

The Dartmoor Radio Rally

The Dartmoor Radio Rally will be held at Tavistock College, Crowndale Rd, Tavistock, Devon PL19 8DD. Doors will open at

10.30am (10.15am for disabled) and there will be talk-in on S22 and V44, car parking, family attractions, trade stands, a Bring & Buy, catering and facilities for the disabled.

Peter M1AYI

Tel: 01822 860277

May 15th – 17th

The Dayton Hamvention

The world's largest radio show, the Dayton Hamvention, will be held in the Hara Arena, Shiloh Springs Road, Dayton Ohio. It will be open from 9.00am to 6.00pm (8.00am to 6.00pm for the flea market) on the Friday, 9.00am to 5.00pm (8.00am to 5.00pm flea market) on the Saturday and 9.00am to 1.00pm (8.00am to 1.00pm flea market) on the Sunday. There will be talk-in on the local repeater on 146.94 and 146.64MHz and frequencies 223.94 and 442.10MHz will also be monitored. Talk-in will start on Wednesday at noon and run through to Sunday at 5.00pm and it will only be off the air nightly between 11.00pm and 5.00am. In addition, travel assistance will be available on 7.258MHz. <http://hamvention.org>

June

June 7th

The Red Rose QRP Festival

The Red Rose QRP Festival will take place at the Formby Hall, Alder Street, Atherton M46 9EY. Doors will open at 10.00am, admission will be £1.50 and there will be talk-in on S22 and V44, free car parking, special interest groups, trade stands and a Bring & Buy.

Les G4HZJ

Tel: 01942 870364

E-mail: g4hzj@ntlworld.com

June 7th

The Spalding & DARS Annual Rally

The Spalding & District Amateur Radio Society will be holding their Annual Rally at the St John Glead Technology School, Halmer Gardens, Spalding, Lincolnshire PE11 2EF. Doors will open at 10.00am and there will be talk-in on S22 and V44, free car parking, trade stands, catering and a car boot sale.

John G4NBR

Tel: 07946 302815

Graham G8NWC

Tel: 07947 764481

E-mail: rally-secretary@sdars.org.uk

www.sdars.org.uk



Graham Hankin's

in vision

Alford Slot antennas and testcard generators come under Graham Hankins G8EMX's scrutiny this time.

Graham Hankins G8EMX

84 Shirley Road
Acocks Green
Birmingham B27 7NA
E-mail: g8emx@tiscali.co.uk

Good news – I now have, thanks to **Stuart Marshall G6NHG**, some Alford Slot antennas! Stuart used to attend rallies with his microwave slot and horn antennas but I had lost contact with him, having to research his contact details (see separate panel).

So, I now have three Alford Slot antennas. But before anyone says that it's just being greedy, one pair are intended for a 1.3GHz (24cm) ATV repeater, to be located somewhere, in the Cotswolds area perhaps. The third one, for 2.4GHz, is intended for Birmingham, either as a Beacon or, with any luck, an ATV repeater. Let's hope they don't just sit in a carrier bag for ever!

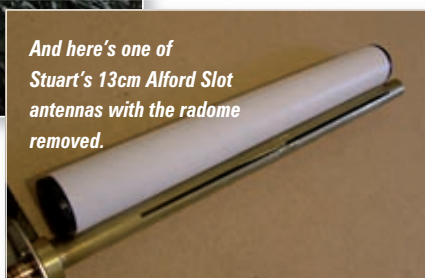
Of course, readers may take the view that I could have constructed one myself. Some websites and publications carry plenty of advice and drawings to 'build your own antennas'. 'A simple plate', 'a simple Yagi' etc – so why not 'simply' build a Slot? From my memory of comments about the Alford Slot over many years, it may well appear to be mechanically simple – it's a hollow metal tube with a narrow slot along part of its length. But, reputedly, it's not simple to get right electrically!

Assuming you have the tools and the skill (and the temperament?) to cut a neat, straight, long, narrow slot in metal, then correctly terminate a co-axial feeder and check how well it performs when fed with 1.3GHz? Assuming the radiation pattern is reasonably circular, what about the standing wave ratio (s.w.r.)?

Past reports and comments over years would suggest that a good polar diagram and a low s.w.r are **not** easy to achieve together. I've heard of some Amateurs who had to build several 'slots' before creating a 'good' one. I've not yet tested the Stuart's slots and probably never will. He has produced enough of them to have got it right by now!



Stuart Marshall G6NHG produces these 24cm Alford Slot antenna among his other products.



And here's one of Stuart's 13cm Alford Slot antennas with the radome removed.

Stuart Marshall G6NHG,
25 Carlcroft, Stonydelph,
Tamworth, B77 4DL.
E-mail: sales@g6nhg.com and
website: www.g6nhg.com.
Mobile: 07810 384515.

Bob Williams G1BCZ E-mailed me to say that Stuart is also regularly on the Tamworth 70cm repeater GB3TH.

because an essential component was becoming scarce. Fortunately, following a phone call from the distributor, I'm assured that they "currently still have large stocks of all items".

I continue to seek in vain for a nice for a simple Test Card and callsign generator though. Some of you may remember the Cropredy kit, which came with a p.c.b., assorted components and an EPROM to generate your callsign within one of the standard broadcast test card patterns.

There have been callsign generators published since, some with fewer

More Good News

I've some more good news, as I've learned that some other essential pieces of ATV hardware is still available too. The Comtech range of 1.2 and 2.4GHz ATV modules has probably helped many a Radio Amateur to get started in ATV, but website www.13cm.co.uk has been indicating that these may be withdrawn by the manufacturer after November last year

components but with bits salvaged from satellite receivers. Such projects are in my opinion, not really buildable. What we need is a new design, with current components sourced from Maplin, or Farnell etc. So, how about it, someone?

The BATC Streamer

It's always nice to hear from *Practical Wireless* readers. In an E-mail **Ian Abel G3ZHI** in Maltby, Yorkshire said: "Hi Graham. Would it be possible to ring you to talk about the British Amateur Television Club's streamer and a contact with Don KE6BXT in California. The Amateur Television Network (ATN) over there has 10 repeaters linked up covering southern California."

I've not really used the ATV streaming service. It was demonstrated at the BATC's meeting back in October, with a linked-up with an ATV station in America. Readers may remember that I was less than enthusiastic back in the December issue. Since then, of course, use of the service seems to have expanded, with lots of archive 'footage' added and recordings of more recent Amateur Radio events. Although there are many who have signed up to stream, many are shown as 'not streaming' when I have looked at the list.

Anyway, Ian eventually phoned me and we had a long chat and he's clearly a big and very keen user of the streaming website www.BATC.TV. So, our conversation continued for about half an hour – yes I have got broadband. I don't have, but could get a webcam and could provide speakers and a microphone for the computer. Ian then suggested, how would I like to use *EchoLink* and the BATC streamer to 'interview' Don about the Amateur Television Network?

I was a little fuzzy about *EchoLink*, but it links Amateur Radio stations anywhere via computers and the Internet. Funny – I thought that was what h.f. radio communication did? Anyway, I think the idea is to send audio via *EchoLink* and vision via BATC.TV. Okay, I could give it a try I suppose – we'll see!

PW PCB SERVICE

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7MHz DSB RX		Jan 07	£4.50
160m VFO & Buffer	WT3341&2	Nov 07	£3.25
160m Receiver	WT3343	Nov 07	£4.30
160m Preselector	WT3344a	Mar 08	£3.50
Clara DC Receiver	WT3434	July 08	£5.00
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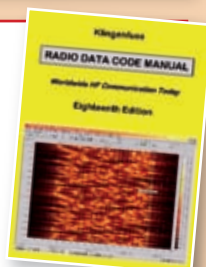
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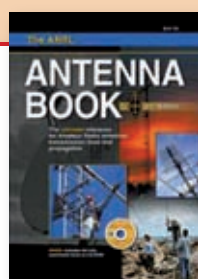
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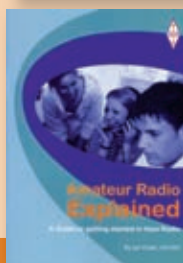
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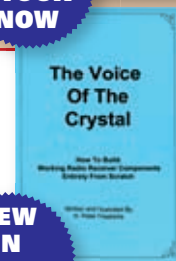


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Rob Mannion's

topical talk

Rob G3XFD discusses readers' letters featuring the G5RV antenna, valved equipment and amplitude modulation on v.h.f.

The letter (letters pages this issue) from **Dennis Dumbleton G3HCM**, featuring the G5RV antenna amused me very much! However, as I explained to Dennis during our telephone chat, I found it amusing – not because of Dennis' frustration – but because it brought back happy memories of my very last meeting with **Louis Varney G5RV**, during a *PW* club visit at the **Mid Sussex Amateur Radio Society** – not long before he became a Silent Key.

During the mid-evening break, Louis and I discussed the same idea that Dennis has suggested because Louis was (even then) getting 'hot under the collar' regarding some strange versions of 'his' antenna! In fact, Louis was obviously very unhappy when the subject of the 'half-sized' G5RV was raised! "No such thing Rob" he said, as the embarrassed owner of the 'half-sized G5RV' – among the group chatting to Louis and I – beat a hasty retreat from Louis' very obvious frustration. Louis and I then chatted about his idea for an article on the 'real G5RV', before we had to resume the meeting.

Several clubs had joined up for the very successful evening and there was a huge raffle to match the number of visitors – and literally everyone seemed to win a prize. Even Louis – sitting right in the front row as he was getting very deaf by then – won a prize. The quizzical look on his face as he was presented with a large box of chocolate finger biscuits as his prize – prepared the ground for one of the very few 'quick fire' jokes I've ever been able to perform!

Louis said – holding the finger biscuits aloft, – "What shall I do with these Rob?"

Unusually for me I had a very quick answer!

"You could use them as open wire feeder spreaders for a real G5RV antenna Louis!"

Everyone present in the crowded room laughed – and Louis also very much enjoyed the joke (and the biscuits later).

After enjoying the evening and agreeing with Louis to discuss the article idea further, I headed for home. We were planning to try and find an article length

acceptable to both of us, although – as it turned out – it was the last time I would meet Louis. So, the idea of the up-date article from the 'man himself' died with him. However, I can promise Dennis G3HCM that the article idea still seems just as relevant as it was almost 10 years ago – so watch this space!

Valved Equipment & AM Transmissions

I found the letters this month from **John Harrison** and **Tony Tuite GW0NSR**, very interesting as they are both very much on a theme because amplitude modulation (a.m.) and the subject of older valved equipment, raised by Tony GW0NSR, are much entwined. John's memory of **G3FAN** is particularly apt, because I remember the beautiful quality signal that was radiated from the Ryde, Isle of Wight QTH of this very keen and active Amateur. Although I never met him during my time on the Island (I think his first name was Tony and he worked as an Estate Agent, and is no longer operational) the superbly high quality a.m. transmissions were from valved equipment.

Tony GW0NSR's comments are – in my opinion – 100% valid because I've never heard a poor quality single sideband (s.s.b.) from an older item of valved equipment running 'barefoot' (without a linear amplifier). Although, I must say that quite a few Amateurs based in southern Europe seemed to have problems with valved rigs driving linears!

When the band is open – 28MHz is where we can hear some truly superb older valved transmitters from the USA using both a.m. and s.s.b. In particular, the a.m. from some of the classic Heathkit transmitters has to be heard to be appreciated!

Finally, I'd like to assure John Harrison that whenever I'm on 70MHz during (see *Keylines* for more information) our new *PW* contest or for special 'activity days, I'm planning to be on a.m., along with f.m. and s.s.b. (with perhaps some c.w.).

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- Wire-cloning capability
- 3 levels of output power (5 / 2 / 0.5W)
- Clean, crisp and powerful 500mW Audio
- Dimensions: 58(W) 107.5(H) 36.3(D) mm
- Weight: 245g with EBP-72 & antenna

Accessories included

- EBP-72 Ni-MH 7.2V 700mAh Battery
- EDC-165 Trickle Charger
- EA-141 Flexible Whip Antenna

Optional Accessories

- EBP-71 Li-ion 7.4V 1200mAh Battery Pack
- EDC-164 Li-ion Charger
- EME-12A Speaker Headset with VOX
- EME-13A Earphone Headset with VOX
- EMS-59, EMS-47 Speaker/Microphone
- EME-15A Tie Pin Microphone with VOX
- EME-21A Heavy Duty Earphone Microphone
- EME-23A Earphone Microphone
- EME-6 Earphone
- ESC-49 Soft Case
- ERW-4C Serial Computer Interface Cable
- ERW-7 USB Computer Interface Cable

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* APRS® is a registered trademark of Bob Bruninga WB4APR.

*1 With optional accessories

*2 Assuming a duty cycle of 6-second transmit, 6-second receive, and 48-second standby (50 MHz 5 W)

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- A large LCD backlit display in a compact case!
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• The optional GPS Antenna Unit FGPS-2 attached to the optional Speaker/Microphone MH-74A7A

• Attached to the radio (microphone input) using the optional GPS Adapter CT-136



The optional GPS Antenna Unit FGPS-2



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Specifications subject to change without notice. Some accessories and/or options may be standard in some areas. Frequency coverage may differ in some countries. Check with your local Yaesu dealer for specific details.

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