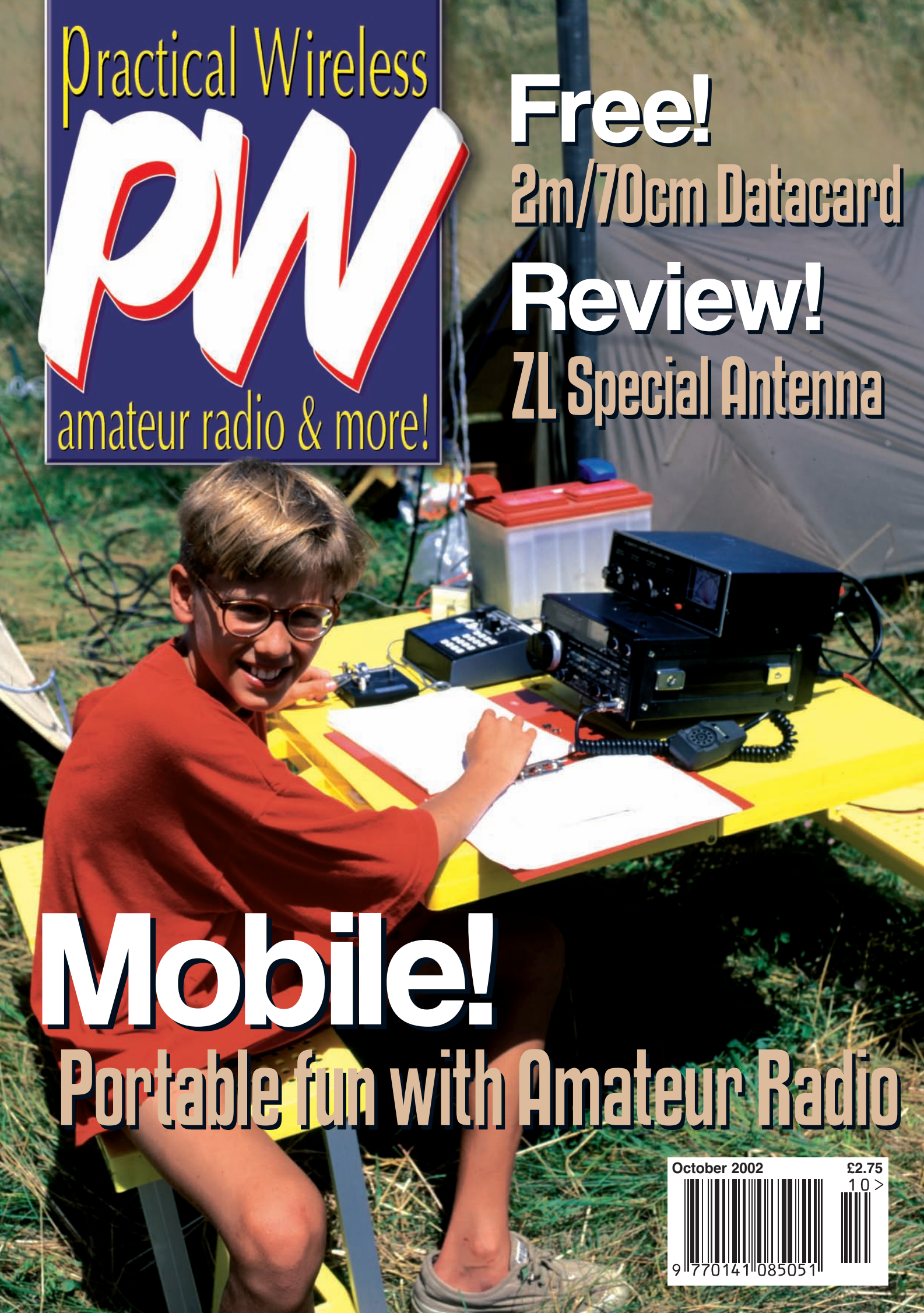
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2m/70cm Datacard
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NEW

NEW 2003 RADIO COMMUNICATIONS GUIDE £2.95 carr. £1.25

336 PAGES

Our Scottish Branch run by Bill at Jaycee Electronics is getting busier by the week.

You'll find all the Waters & Stanton products at the same competitive prices. If you live in Scotland or the Borders, then give Bill a call or pay him a visit (closed Sunday and Monday). It makes sense to be loyal to your local dealer, particularly with our prices!

SCOTTISH BRANCH OPEN DAY 19th OCTOBER

PRICE MATCH

FT-1000MP MKV FIELD £2299

NEW

YAESU **FT-897**

NEW

100W HF 50W 2m and 20W 70cm
Plus 20W on (optional) Internal Battery

Available November

Power Tank

FD-7021 **£24.95 B**

4 Ah supply with built-in 3/6/9V output plus 12V DC. Has built-in lantern and computer controlled battery state. Compact size: 180w x 85d x 210h mm, 3kg. Shoulder strap.

AC chargers included

Great Value! AR-147

2m 50W Output £199.95
Carriage £6.00

AM Airband Receive

The AR-147 offers a top performance 2m FM transceiver plus VHF air-band receiver. You get CTCSS, (auto reading), and DTMF complete with keypad microphone. 12.5 and 25KHz steps plus 1750Hz tone makes it truly universal. Power levels of 10 Watts and 5 Watts are also selectable. Includes mobile mounting hardware and full warranty.

UK's largest Selection of HF Transceivers

We will price match on any currently advertised in-stock items that are of UK origin. **Beware of none UK sourced items.** If the dealer cannot get supplies from the UK distributors, then there may be a reason! All our gear is UK sourced with full manufacturers warranties.

NEW PRODUCTS

29 YEARS in THE BUSINESS
WINNER of KENWOOD 2002 AWARD
YAESU's LARGEST UK DEALER
PLAY SAFE, GO TO W&S

ICOM HF Transceivers

IC-756-PRO	160m - 6m 100W	£1799.95 C

IC-756-PRO II
The flag ship of the ICOM range. Lovely big easy to read display

IC-756-PROII	160m - 6m 100W 12V	£2495.95 C
SP-20	Speaker with filters	£164.95 B
SP-21	Speaker for IC-756	£74.95 B
SM-8	Base microphone	£129.95 B
SM-20	Base microphone	£144.95 B
PS-125	Icom tcvr PSU	£295.95 C
IC-7400	160m - 2m 100W 12V	£1499.95 C
IC-706	160m - 70cm Tcvr with DSP 12V	£849.95 C
IC-718	160m - 10m 100W 12V	£649.95 C

Yaesu HF Transceivers etc.

FT-1000mkV	160m - 10m 200W 230V	£2899.95 C
VL-1000	Quadra HF - 6m 1kW linear	£3999.00 D
FTV-1000	6m transvertor 200W	£799.95 C
FT-1000 Field	160m - 10m 100W 230V	£2199.95 C
MD-200ABX	Desk mic	£249.95 B
MD-100ABX	Desk mic	£110.00 B
FT-920AF	160m - 6m 100W 12V	£1099.95 C
FT-847	160m - 70cm 100W etc 12V	£1149.95 C
FT-817	160m - 70cm 5W Batt.	£595.95 B

FT-817
All bands & All modes gives you a totally portable HF DX or VHF/UHF station. *Ours includes* battery and charger.

FT-840	160m - 10m 100W 12V	£499.95 B

Kenwood HF Transceivers etc.

TS-870S	160m - 10m DSP 100W 12V	£1349.00 C
PS-33	AC power supply	£199.95 C
PS-53	AC power supply	£229.95 C
MC-60A	Desk mic	£117.95 B
MC-80	Desk mic	£72.95 B
MC-90	Desk mic	£187.95 B
TS-570DGE	160m - 10m 100W 12V	£849.00 C
YK-88CN-1	270Hz CW filter	£61.95 B
YK-88SN-1	1.8kHz SSB filter	£61.95 B
TS-50S	160m - 10m 100W 12V	£599.00 C
TS-2000	160m - 70cm <100W	£1695.00 C
TS-2000X	150m - 23cm <100W	£1999.00 C
TSB-2000	Computer controlled	£1549.00 C
RC-2000	Remote head for TS-2000	£199.95 B
ARCP-2000	TS-2000 software	£44.95 B

Waterproof 3-Band Radio 6m - 2m - 70cm
Yaesu VX-7R NEW
The new robust handy from Yaesu
£329.00

NEW 3-Band Radio
Icom E-90
At last, the new Icom handy has arrived for 6m-2m-70cms plus general coverage and TV sound!

HL-50B Amplifier

£265.95

This model has been specifically designed for the FT-817. Enjoy up to 50 Watts output

FT-817 Add-ons

One Plug Power
1.8Ah pack module
80% capacity increase!
£79.95

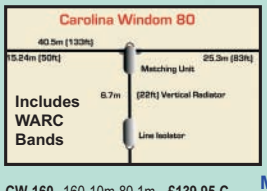
One Big Punch
Speech processor.
Dealer fit
£59.95

One Board Filter
Collins 500Hz & 2.3kHz dual filters fitted by us.

Triple Mag Mounts *Upgraded* **£39.95**
Ideal for HF whips and large VHF whips. Amazing adhesion even at 70mph! SO-239 or 3/8" available

W-300T = 3/8" **W-300S** = SO-239

Carlina Windoms - DX from a wire!



Outperforms G5RVs and "Del-Boy" designs! The only antenna to give both high and low angle radiation even at 20ft above ground. Rated at 1kW, there's a model for you.

CW-160	160-10m 80.1m	£139.95 C
CWS-160	160-10m 40.5m	£134.95 C
CW-80	80m-10m 40.5m	£99.95 C
CWS-80	80m-10m 20.1m	£119.95 C
CW-40	40m-10m 10.3m	£94.95 C

Many more in our 2003 Radio Communications Guide 336 pages! £2.95 plus post

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CARRIAGE CHARGE CODES: A=£2.75, B=£6, C=£9 D=£12

WON'T BE UNDERSOLD DISCOUNT CUSTOMER SERVICE THE ONLY THING WE

YAESU

FT-1500M • 2m FM Mobile £159 C

SPECIAL OFFER SAVE £70

Small, compact yet built like a Battleship! Should last for years. Look at the Price!

KENWOOD

TM-D700E • 2m + 70cm FM £449 C

Large detached screen and APRS, make this a firm favourite. 50W on 2m and 35W on 70cms. Features 200 memos, CTCSS, Band Scope, built-in TNC, DX cluster monitor, alphanumeric etc.

TM-G707E • 2m + 70cm FM £289 C

If you are looking for simplicity and low cost, here's the answer. 2m &70cms with detachable front panel and "Easy operation mode." GREAT!

TM-V7E • 2m + 70cm FM £359 C

A lovely cool blue display, easy with 50/35W output. 50W/35W p;us 280 memos and five storable operating profiles.

ICOM

IC-207H • 2m + 70cm FM £279 C

A great budget class radio for VHF & UHF use.

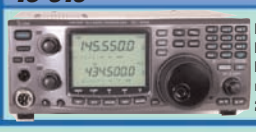
IC-2800H • 2m + 70cm FM £419 C

Large colour display with video input, and airband rx. 50W/35W and remote head unit.

IC-2100H 2m FM Mobile £229 C

Rugged design with switched receive filters 12.5/25kHz

IC-910 2m + 70cm All Mode £1299 C



Icom's new dual band all-mode base station radio with 23cms option.

YAESU

FT-7100 • 2m/70cm Mobile £299 C

SPECIAL OFFER £299

Just arrived is this new dual band radio that has extended rx. Power is 50/35W. Features dual in-band reception and detachable display (requires YSK-7100).

AMAZING VALUE

One of the Best Buys in Dual Bamd Mobile!

KENWOOD

TH-D7E • 2m + 70cm £299 C

DATA COMMUNICATOR

One of the most successful handhelds over the past few years. It has a built-in TNC for Packet use. You can also use it for APRS operation in conjunction with an external GPS unit. Plus NMEA, 200 memos, and up to 5W output.

TH-F7E • 2m + 70cm £249.95 C

NEW

WITH EXTRA WIDE RX COVERAGE

- 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! This is a great radio to have at all times when you are on your travels.

THG-71E £199 B

- 144 - 146MHz FM
- 430 - 440MHz FM
- 3 power levels
- 6W (13.8V) 5.5W (UHF) HI
- 0.5W LO • 50mW EL
- 200 multi-function memories
- Freq. deviation: ±5kHz
- CTCSS tone encoder/decoder
- Illuminated keypad,
- memory name function
- Auto power off • Auto batt. saver
- Time-out timer
- 5.5 - 16V DC (13.8V)

DSP SPEAKER

NES10-2 (includes 12V AC adaptor

Kills noise Brings up Signals.

£99.95 Carriage £6

Just plug it into your speaker or headphone socket and hear the noise drop away. Dip switches offer variable settings. Works with any receiver.

YAESU

YAESU VX5R • BLACK OR SILVER £239 B

Tiny but incredibly rugged, the VX-5R provides transceiver capability on three amateur bands (50/144/430MHz) and almost continuous reception from 500kHz up to 999MHz.

YAESU VX1R • 2m/70cm £149 B

Ultra-wide frequency coverage which includes VHF and UHF TV audio, AM broadcast, FM broadcast and AM airband.

W-25SM 25AMP SWITCH-MODE POWER SUPPLY

THE QUIET ONE

£69.95 carr.£6

Switched 230 / 115V AC input and fixed 13.8V output at 22 Amps continuous and 25 Amps peak. Over voltage and over current protected and fan cooled. Measures 180mm (W), 75mm (H) and 190mm (D)

RIGblaster

IT'S NOT A TNC

PSK31, MFSK, MT63, SSTV, RTTY,AMTOR, CW, PACKET-APRS,HELLSCHREIBER, REMOTE BASE, METEOR SCATTER, CLUB QST'S, REPEATER CONTROLLER, VOICE KEYER.

RIGblaster Plus	£139.95B
RIGblaster M8	£109.95B
RIGblaster M4	£109.95B
RIGblaster RJ	£109.95B
RIGblaster nomic 8p	£62.95 B
RIGblaster nomic 4p	£62.95 B
RIGblaster nomic RJ	£62.95 B

RT-11 REMOTE AUTOTUNER £239 B

NEW

NEW FROM LDG

ASK FOR DETAILS.
ALSO AVAILABLE IN KIT FORM.

GZV-4000 40A 5-15V Switch Mode

- Output voltage 5 - 15V DC
- Output current 40A continuous
- Built-in cooling fan
- Supply 230V AC 50Hz
- Size 210 x 110 x 300mm
- Weight 3.5kg

£159 C

W-CRI PADDLE KEY £44.95 B

- Metal parts brass
- Hardwood base
- Size 145 x 80 x 50mm
- Weight 375g

W-GMP Morse Key £29 A

- Metal parts brass
- Hardwood base
- Miniature size
- Size 100 x 50 x 45mm
- Weight 150g

Kent Morse Practice Oscillator £19.50 A

- Size 160 x 55 x 97mm
- Weight 260g

'Amazing' MP-1 Variable Antenna 7MHz - 430MHz! 150 Watts

Use Portable, Mobile, Home or even balcony!

SLIDE TO CHANGE BANDS!!

It's sweeping America as the most versatile antenna for any location. Kit includes telescopi whip, variable coil, lower mast, base bracket (SO-239), clamp and optional wire radials (3m approx). Total height approx 2m. Will also screw directly into 3/8" mobile mounts. The whole antenna packs down to pocket size, yet puts together in a couple of minutes. And with the high Q coil, you get high efficiency. Take it with your FT-817 as hand luggage!!

£149.95 carr.£9

FT-817 Accessories

W4RT FT-817 Products

One Big Punch

Speech processor to boost your transmit audio. Fitted in rig by us. Price includes fitting by us. **£59.95 B**

One Board Filter

NEW

A Collins SSB 2.3kHz and CW 500Hz mechanical filter on one board. Much steeper curves and flatter response than the original 2.7kHz ceramic filter. Plus improved transmit audio! Price includes installation by us. **£259 B**

MP-1 Options

TRIPOD £19.95 A

Compact tripod for free standing MP1

MP-80M £22.95 A

80m Coil for MP-1 3.4MHz - 4MHz

FT-817 BRACKET

MP1 bracket mounts on side of FT-817

£19.95 A

WATERS & STANTON

PRICE MATCH

WON'T DISCOUNT CUSTOMER SERVICE THE ONLY THING WE

Freephone Orders 08000 73 73 88

Get in Front with HUSTLER

CARRIAGE CHARGE CODES: A=£2.75, B=£6, C=£9, D: £12

5BTV

£209.95
Carr. £9.00

4BTV

£169.95
Carr. £9.00

HUSTLER®

BASE STATION ANTENNAS

Spec	5BTV	4-BTV
Bands	5	4
Coverage	80m-10m	40m-10m
Bandwidth 10-40m	Full	Full
Bandwidth 80m	100kHz	N/A
Resonance	1.15:1	1.15:1
Power	1kW CW	1kW CW
Traps	1" forms	1" forms
Tubing	1.25"	1.25"
Bracket size	1.75"	1.75"
Height	25ft 1" (7.64m)	21ft 5" (6.52m)
Weight	17lbs. (7.7kg)	15lbs (6.8kg)
Wind (112kph)	13kg	-

"I worked my first ZL while actually on the move using a Hustler whip" - Peter Waters G3OJV. Customers are also telling us how pleased they are with the base verticals. Check the prices!

HUSTLER Mobile Antennas

Model	Band	Bandwidth	Price
RM-10	10m	150-250kHz	£19.95 B
RM-11	11m	150-250kHz	£19.95 B
RM-12	12m	90-120kHz	£19.95 B
RM-15	15m	100-150kHz	£19.95 B
RM-17	17m	120-150kHz	£24.95 B
RM-20	20m	80-100kHz	£24.95 B
RM-30	30m	50-60kHz	£26.95 B
RM-40	40m	40-50kHz	£26.95 B
RM-80	80m	25-30kHz	£29.95 B

Model	Band	Bandwidth	Price
RM-10-S	10m	250-400kHz	£24.95 C
RM-15-S	15m	150-200kHz	£26.95 C
RM-20-S	20m	100-150kHz	£31.95 C
RM-40-S	40m	50-80kHz	£37.95 C
RM-80-S	80m	50-60kHz	£51.95 C

Lower mast sections

MO-1	54" (FOLD @ 22")	£33.95 C
MO-2	54" (FOLD @ 27")	£33.95 C
MO-3	54" (NON FOLD)	£26.95 C
MO-4	27" (NON FOLD)	£22.95 C

HF LINEAR AMPLIFIERS

LINEAR AMP UK
Challenger MkII 1.5k Watts £1795 D
Rsnger 811H 800 Watts £895 D

Add punch to your signal and work DX with ease. Give us a call for advice

Yaesu's QUADRA. A full 1kW no-tune amplifier from 160m to 6m! Call for amazing deal!

The world's best solid state base amplifier from Yaesu

SGC SG-500 Mobile amplifier. 500W HF 12V DC £1629

Go mobile with Power! 500W output 1.6 - 30MHz. Ultra rugged!

All available on 24-hour delivery.

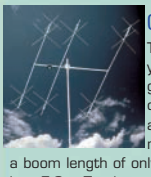
CUSHCRAFT COMMUNICATIONS ANTENNAS

HF HORIZONTAL BEAMS + DIPOLES

When you buy an HF Yagi, you want quality and realistic performance. You also want to know you can get spares. We offer a wide choice with guaranteed spares availability. COUNT ON US!

MA5B	10-20m (5 band) 3 el 2.7m radius 1.2kW	£349.95 C
X-7	10-20m 7 el. 12.5 - 13dBi 2kW 6.09m radius	£669.95 D
X-740	40m add on kit for X-7	£299.95 C
A4-S	10-20m 4 el. 8.9dBi 2kW 5.49m radius	£599.95 D
A-744	Gives 40m or 30m operation from A-4S	£159.95 C
A3-S	10-20m 3 el. 8dBi 2kW 4.72m radius	£499.95 D
A-743	Gives 40m or 30m operation from A3-S	£159.95 C
A3-WS	12 & 17m 3 el. 8dBi 2kW 4.4m radius	£399.95 D
A-103	Gives 30m operation from A3-WS	£159.95 C
D-3	10-20m dipole element 7.86m 2kW	£249.95 C
D-3W	12, 17, 30m 17m dipole element10.37m 2kW	£249.95 C
D-4	10-40m dipole element 10.92m 2kW	£329.95 C
D-40	40m dipole element 12.88m 2kW	£299.95 C
Ten-3	10m 3 el 8dBi 3m radius 2kW	£189.95 C
ASL-2010	13.5-32MHz 8 el. log periodic6.4dBd 5.86m radius	£799.95 D

THE MINI-BEAM FOR SMALL GARDENS



Cushcraft MA5B

The best 3 element mini beam you will ever find. 2 element gain on 10, 15 & 20m, and dipole performance on 12m and 17m. Up to 25dB F/B ratio, it accepts 1.2kW yet has a boom length of only 2.2m and element length of just 5.2m Turning radius is 2.7m. Uses a single feeder, this really works the DX. Get one up before winter! £349.95 C

CUSHCRAFT VERTICALS

R8 (Illustrated), covers 8 bands from 6m - 40m, stands 8.7m high and requires no radials. You can feed it with 1.5kW and typical VSWR is around 1.2:1 £499.95 C

R8-GK Optional guy kit for R8 £49.00 B

R-6000 6 band 6m-20m that requires no radials and handles 1.5kW. Stands just 5.8m high and was chosen for the RSGB GB4FUN vehicle antenna. It works!! £349.95 C

NEW MA5V VERTICAL 20-10m **£229.95 C**

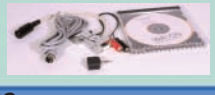
WATSON

WEP-300B • EARPIECES £2.95 A

Over-the-ear earpiece, popular for security and emergency use. Its low cost and firm mounting even in arduous conditions make this a popular item. Fitted with 3.5mm jack plug.

WSA-1 PSK-31 Adaptor £39.95 B

All you need to connect up to your sound card and run PSK-31. Includes CD software.



YS-130 £79.95 B

Ideal for medium sized VHF antenna systems, the YS-150 is a good quality Japanese manufactured product. It is supplied with control box with rotary direction setting, plus upper and lower in-line mast clamps.

REVEX • 15W DUMMY LOAD £19.95 A

- Range DC - 500MHz
- Power 15W/50W
- VSWR 1.15:1
- Connector PL-259
- 50 Ohms impedance
- Size 34 x 72mm
- Weight 70g

MASPRO VHF/UHF YAGIS

These high quality Yagis are made in Japan and superbly engineered. Features folded dipole, balun transformer, waterproof box and SO-239. You won't find anything better on the market.

Take a look at our prices!

144-WH5	2m 5 el. 6.6dBd 0.93m	£26.95 B
144-WH8	2m 8 el. 8.6dBd 1.79m	£37.95 B
144-WH10	2m 10 el 9.7dBd 2.3m	£41.95 B
435-WH8	70cms 8 el. 8.6dBd 0.8m	£29.95 B
435-WH12	70cms 12 el. 12.8dBd 1.51m	£35.95 B
435-WH15	70cms 15 el. 14.2dBd 2.19m	£41.95 B

To compare with dBi figures, add 2.4dB

WATSON

QS-112 • SPEAKER MIC £16.95 A

Combined speaker-mic. with PTT switch. Models for Yaesu, Kenwood, Icom, Alinco and Motorola.

SPM-102 • SPEAKER MIC £9.95 A

Incredible value!
Has 4-way 3.5mm plug for VX-1, VX-5, FT-50 and IC-Q7E Handies

Limited stocks.

WM-308 • BASE MIC £59.95 B

The perfect answer for a high quality base microphone. Built-in pre-amp powered from rig or 2 x AA, electronic PTT and FM/SSB response switch. Includes lead with 8-pin plug. The plug needs to be wired for your radio. We can do this but phone for quote.

WCT-321 • LAPEL TALKER £19.95 A

The elegant way of personal communications.
Earpiece with combined lapel hanging mic and PTT. Models to suit most radios.
State: Kenwood, Yaesu or Icom when ordering

AVAIR VSWR • POWER METERS

Great value and great performance. There's one just right for you.

AV-200 1.8 - 200MHz 5/20/200/400W £49.95 B
AV-400 140 - 525MHz 5/20/200/400W £49.95 B
All fitted with SO-239, PEP/RMS readings, 3W for FSD approx.
Also available AV20 & AV40 compact meters

WATSON

ATX WALKABOUTS

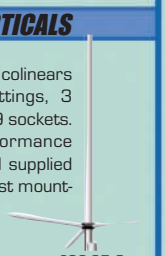
WALKABOUT PORTABLES

Multi & single telescopic whips. Covers 80m to 6m BNC. Ideal for FT-817 and similar QRP radios.

ATX Walkabout 80 - 6m	£69.95B
AT-80 Single band	£24.95B
AT-40 Single band	£24.95B
AT-20 Single band	£19.95A
AT-17 Single band	£19.95A
AT-15 Single band	£19.95A
AT-12 Single band	£19.95A
AT-10 Single band	£19.95A

BASE VHF/UHF VERTICALS

2m / 70cm fibre glass colinears with stainless steel fittings, 3 short radials and SO-239 sockets. These are high performance antennas, pre-tuned and supplied with all hardware for mast mounting.



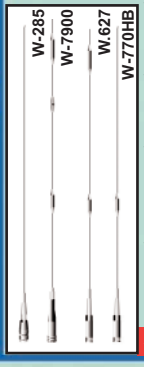
Dual Band 2m/70cms

W-30	3/6dB 1.15m long	£39.95 C
W-50	4.5/7.2dB 1.8m long	£49.95 C
W-300	6.5/9dB 3.1m long	£59.95 C

Triple band 6m/2m/70cms

W-2000	0/6/9dB 2.5m long	£69.95 C

GREAT VALUE MOBILE WHIPS



W-285	2m 5/8th whip with PL-259 base £14.95 B
W-7900	2m/70cm 5 & 7.5dB length 1.58m £32.95 B
W-627	6m / 2m / 70cm 2 / 4.5 7.2dB length 1.6m £34.95 B
W-770HB	2m/70cm whip 3dB / 5.5dB length 1.1m £24.95 B

ALL WITH TILTOVER BASES.

PW

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e.g. rob@pwpublishing.ltd.uk

Cover Subject

The front cover this month shows Gabriel, a 13 year-old young enthusiast learning and discovering the delights of outdoor Amateur Radio operating. If you've ever done any mobile or portable operating you'll know how much fun it can be and if you've yet to try it... then read the article on pages 28 & 29 of this issue for ideas on how to get started. Wherever you set-up your portable 'shack' remember Amateur Radio is a hobby that should be enjoyed and one that can result in world-wide friendship!

Design: **Bob Kemp**
Photograph: **Henryk Kotowski SM0JHF**

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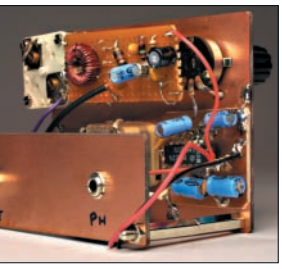

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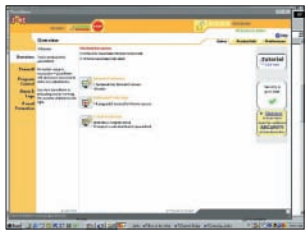

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Please Note
The Radio Basics column is taking a well-deserved break this month as **Rob G3XFD** is busy 'behind the scenes' preparing projects for those autumn days in the shack.

author info

Our Radio Scene reporters' contact details in one easy reference point.

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ANOTHER PACKED ISSUE

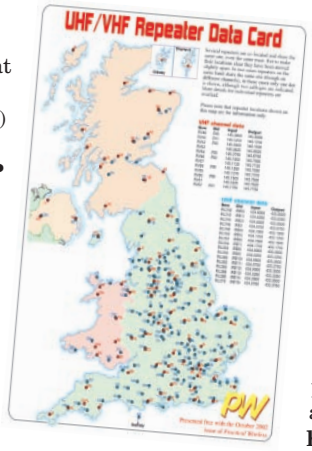
rob mannion's keylines

Welcome to 'Keylines'! Each month Rob introduces topics of interest and comments on current news.

As the 2002 Leicester Show rapidly approaches I'm delighted to say that the entire *PW* editorial team will be present for our special 70th anniversary celebrations, following the publication of the September issue - which it appears readers have enjoyed very much indeed!

Hopefully a large number of our readers will take the opportunity to meet us. However, if you can't get to the Leicester Show, I'll be visiting the following clubs on the forthcoming dates: **Wythall Club** (South of Birmingham) on **Thursday 19 September**, then the **Lincoln Short Wave Club** on **Wednesday 9 October**. And on **Thursday 10 October** I'll be paying a second visit to the **Moorlands & District Amateur Radio Society** (Stoke on Trent). Finally, (what has traditionally become my last '*PW* excursion' of the year) I look forward to meeting old friends at the **Rochdale QRP Convention** on **Saturday 12 October**. See you there? I really hope so!

New Data Card



Everyone on the *PW* team looks forward to readers enjoying using our new Repeater Data Card for 144 and 430MHz. We've decided to adopt a single card for both bands this time, and it's been designed to provide you with the maximum 'instant' information...without cluttering it up with information you'll already have to hand.

This edition of the data card (as up-to-date as possible at time of printing) does not show the motorway networks...as by now we think you'll know where they are! The whole idea of the card is to provide approximate locations of each repeater, channels and the sub-audible tones codes required (indicated by the appropriate code letter). A great deal of planning has gone into the card...and we hope you'll find it really useful!

Blackwood Mobile Rally

Following publication of the September issue of *PW*, where we featured their forthcoming event in a news story - we were quickly contacted by the organisers of the **Blackwood & District Amateur Radio Society's Rally**. It turned out that due to an oversight by the organisers - we'd inadvertently been provided with (**and in good faith**) published the wrong date for the rally. **The correct date is Sunday 20 October**.

I'm sorry if anyone was inconvenienced... but as the wrong date was actually a weekday it's unlikely that visitors turned up! However, as they've got a very special display of radio-controlled model boats this year...why not go along? **But as we always advise - please check with the contact number we publish that all is well with ANY EVENT - because unforeseen problems could arise at any time**.

Antenna Related Articles

Do you enjoy experimenting with antennas? Have you had some success with an idea of your own, or perhaps modified an existing idea? If so...why not write an antenna (or antenna related) article for *PW*?

Because of the tremendous increase in activity on the h.f. bands we're now experiencing due to the Foundation Licence, there's a particular need for simple h.f. antenna articles. So why not have a go?

Additionally, if you're a keen v.h.f./u.h.f. operator with some interesting ideas (techniques/equipment/antennas) for possible publication...why not telephone, write or E-mail us at the office? Either **Donna G7TZB/M3TZB**, **Tex G1TEX/M3NGS** or myself will be please to offer advice and send you a *PW Author's Guide*. **So, let's be hearing from you** - because by working together, you (as an Author) and the production team will provide some more good reading and project!

Maps & Amateur Radio

Who would have thought that a small advert in Bargain Basement section would turn my little corner of the (now) open plan *PW* office here into what looked like a branch of the Ordnance Survey? Well it did...**thanks to the tremendous response from readers** who - so it turns out - also share my interest in cartography generally, radio-related locations, railways and industrial archaeology, etc.

My advert (intended to seek out some difficult-to-find older maps) has brought me many new friends. And far from buying maps...most have arrived as gifts and often with few details or no clue whatsoever to the sender's identity!

Thank you everyone, and those of you who do share my interest will be pleased to know that one reader has decided to sell me his entire collection...195 maps in all! This will ensure I get the most out of each trip I take and on return home as I read them, they'll bring the memories of the varied landscapes of our beautiful group of Islands alive. Thank you again my friends! **Rob G3XFD**

practical wireless services

Just some of the services *Practical Wireless* offers to readers...

Subscriptions

Subscriptions are available at £30 per annum to UK addresses, £38 in Europe and £42 (Airsaver), £49 (Airmail) overseas. Subscription copies are despatched by accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both Practical Wireless and Short Wave Magazine are available at £60 (UK) £73 (Europe) and £81 (rest of world), £85 (airmail).

Components For *PW* Projects

In general all components used in constructing *PW* projects are available from a variety of component suppliers. Where special, or difficult to obtain, components are specified, a supplier will be quoted in the article. The printed circuit boards for *PW* projects are available from the *PW* PCB Service, **Kanga Products, Sandford Works, Cobden Street, Long Eaton, Nottingham NG10 1BL. Tel: 0115 - 967 0918. Fax: 0870 - 056 8608.**

Photocopies & Back Issues

We have a selection of back issues, covering the past three years of *PW*. If you are looking for an article or review that you missed first time around, we can help. If we don't have the whole issue we can always supply a photocopy of the article. Back issues for *PW* are £2.50 each and photocopies are £2.50 per article.

Binders are also available (each binder takes one volume) for £6.50 plus £1 P&P for one binder, £2 P&P for two or more, UK or overseas. Prices include VAT where appropriate.

A complete review listing for *PW/SWM* is also available from the Editorial Offices for £1 inc P&P.

Placing An Order

Orders for back numbers, binders and items from our Book Store should be sent to: **PW Publishing Ltd., Post Sales Department, Arrowsmith Court, Station Approach, Broadstone Dorset BH18 8PW**, with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in Sterling. Credit card orders (Access, Mastercard, Eurocard, AMEX or Visa) are also welcome by telephone to Broadstone **(01202) 659930**. An answering machine will accept your order out of office hours and during busy periods in the office. You can also FAX an order, giving full details to Broadstone **(01202) 659950**.

The E-mail address is **bookstore@pwpublishing.ltd.uk**

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.

amateur radio waves

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

Make your own 'waves' by writing into *PW* with your comments, ideas, opinions and general 'feedback'.

Foundation & First Aid

● **Dear Sir**

After a period of not getting *PW* I bought it recently and I see that there's a big debate going on about the Foundation Licence, so I thought that I would express my opinion.

My first hobby is actually First Aid and having done this for over 25 years I was at the Mildenhall air show with Raynet 'Shadows' for communication. I decided that "I could do that" so the next year I went out to do just that and with the help of **Frank Howe MBE G3FIJ,** I passed and got the callsign **M1ADV.**

I then joined Raynet with **Forest Heath**, run by **John Slater G6EUO**, and have had a great deal of fun over the following years to such an extent that my wife decided that she too would get a licence. Unfortunately she found it too hard and was unsuccessful. I thought that would be the end of it, but then came along the Foundation Licence...providing another chance...and with the help from Frank she passed.

Not to be out done my three eldest children (a boy and two girls) decided to have a go, this time with a course run by **Felixstowe & District Amateur Radio Club**. They too were successful, so we now have five licence holders in the family. (The girls are still a bit microphone shy but are getting braver).

I believe that my family's success will help bring new blood into the hobby. Additionally, there are also those (having seen what can be achieved) who end up wanting to go further. My eldest has already shown an interest in the next level already! Everything has to evolve and there will always be someone who isn't happy...but I really think it's working for the best in the hobby. Sincerely yours.

Ian Owen M1ADV
Stowmarket
Suffolk

Editor's comments: Congratulations to the Owen family! We hope that the £20 *PW* voucher you've won will help towards setting up a family radio library or a subscription!

PW Celebrations & Personal Memories

● **Dear Sir**

The celebration of *PW*'s 70th anniversary this year (well done *PW*!) serves as a reminder of my own experiences in the hobby. I first became interested when I was 12 years old - in 1941. My father bought me a 'Dulcie' microphone from Brown's Wireless in Edinburgh. I then saved up for a pair of Ericsson headphones (17/6d - seventeen shillings and sixpence), also from Brown's.

My first set was a one valver using a 2V filament triode valve. I can well remember my excitement when I inserted the wander plug into the high tension battery and the receiver sprang into life. (So did I!).

After that success I built various sets from F. J. Camm's *50 Tested Circuits* book. The best project from that book was a five valved set - originally published in *PW* during 1947. I also used the 'Blueprint Service'.

The last set I built at that time was a four valved short wave receiver using plug-in coils, using a circuit from *The Practical Wireless Encyclopaedia* (12th Edition, page 90). Because of an eyesight problem (myopia) I suffer from I did not venture into the transistor era...preferring large valve-holders! Those were really happy days. Thanks again to *PW* - here's to the next 70 years!

Charles Jaggar
Reading
Berkshire

Anniversary Issue Front Cover

● **Dear Sir**

Many thanks for the 70th Anniversary edition of *PW* - but why oh why did you print the original front page back to front? It was printed correctly in the October 1957 edition...so why couldn't you print it right in the September 2002 edition?

Incidentally, I enjoy *PW* but I must complain over your miserly subscription offers! Compared to other magazines on the bookstand you offer a miserly reduction for subscribers - even some of the less read commercial magazines offer a higher discount and they have less readers!

The computer magazines offer the best - in some case over 45%! So come on *PW* get your act together and offer a realistic discount to those who would take the subscription - at the rate you offer I only need to ignore one issue if I do not like the content of to recover the difference!

Graham Burton M1EXS
Middleton
Manchester

Editor's reply: Many delighted readers contacted us to say 'Thank you' for the October cover...but I thought Graham's letter needed answering with an explanation in public! Original art work for the 1957 front cover was obviously not available, so Bob Kemp in our Art Department had to re-create it by a combination of scanning in the basic image, and with much colour and development work...taking several days to do so. A marvellous effort! It was reversed to cater for the news trade's requirements for positioning of the logo and the bar-code and because we liked it that way! On the subscription price aspects...I don't agree that our prices aren't reasonable. I read several railway magazines, *New Scientist*, *Scientific American* and other titles...and it's not until you sign (and pay) up for more than three or more years that the price-saving benefits come into force. That's why I buy them at the local newsagent's! My advice is for readers to keep an eye open for our very special 'Three Years For The Price Of Two' subscription offers...either in the magazine or at shows and rallies. Alternatively, when you hear that I'm visiting your local club...come along and take advantage of the special offer I can provide on those occasions. So, perhaps I'll see you at the Rochdale (Next door to Middleton) QRP Convention on 12 October Graham?

Foundation Licence & RAE

● **Dear Sir**

Whilst I mostly agree with much of **Dave MM3DHL**'s comments about new Foundation Licence (August *PW*), I must strongly disagree about his comments about the RAE syllabus as being largely unnecessary.

The current full licence allows of the use of 400W and places no limit of antenna gains allowing a huge effective radiated power (e.r.p.) that can easily cause utter havoc in an urban environment not to mention the potential interference to other radio users.

I personally would advocate that no station (including those of us that already have class A licences) is permitted to use equipment with an e.r.p. more than about 50 to 100W. This would remain in force until such time as they can demonstrate that the have sufficient practical knowledge of solving EMC problems to allow them to operate without causing a nuisance to others.

Len Paget GM0ONX
Kilmarnock
Ayrshire

Arguing & Bickering

● **Dear Sir**

After a lapse of some ten years, I purchased the August issue of *PW*. I had given up Amateur Radio partly because I no longer wished to be associated with a group of people who constantly argue and bicker over something as

trivial as whether one is able to send and receive Morse code.

The hobby is also presided over by a governing body whose policies create and reinforce such arguments and divisions in a so called 'technical and experimental' hobby. Sadly, I see from *PW*'s letters pages that nothing has changed!

As an amateur diver I am able to contrast the governance displayed by two very different amateur organisations, both linked to international bodies; the **British Sub Aqua Club** and the **Radio Society of Great Britain**. The former has tried to ensure that its attitudes to qualifications and training keeps abreast of scientific and technical developments since the 'hard hat' era, whereas the latter seems locked in some sort of 'groundhog day' perpetual loop.

I'm sure that if the RSGB governed diving, we would all be required to wear lead weighted boots instead of fins because the 'effort' required by the early divers in learning how to use them would have become enshrined as a criteria for technical advancement! What's more their members would probably make a virtue out of it too, as a way of discriminating between levels of 'commitment' and 'mystifying' the 'technical knowledge' displayed by novice and advanced divers!

When practising Amateur Radio, I was able to work, by 'phone, amateurs in India, Australia, Japan, Hawaii, North and South America, Africa, and Europe on v.h.f. and u.h.f. through radio satellites. Consequently I had no interest in Morse code as a way of accessing DX, but the 'effort' required in learning how to use satellite communications technology was in no way diminished.

I could never quite figure out the authority's insistence that whilst I was considered technically competent to operate with stations such as JA, KH6, VK, Z2 or even IK through the Oscar 13 satellite, I would never, irrespective of conditions, be permitted to work the same amateurs on any h.f. band. (That is of course unless I could prove my ability to send and receive signals in the same mode that 90 years ago failed to save all the passengers on the RMS *Titanic*).

I have no quarrel with the devotees of any particular mode of radio communication as long as they don't enforce unnecessary divisions amongst what is supposed to be an amateur 'scientific community'. Those of us less attracted to dots and dashes but interested in experimenting with more advanced forms of Amateur Radio should not be 'weighed down' by silly prejudices.

In diving we have a Historical Diving Society which caters for those who are interested in the nostalgia and use of the old style diving dress. So...what about a 'historical radio society'? However, on second thoughts perhaps that's what Radio Amateurs have already? Yours etc

Dr. Graeme Ridgeway
G7FZB
Alsager
Cheshire

So Much Enjoyment

● **Dear Sir**

The hobby of Amateur Radio means so many things to so many people. Listeners as much as transmitting Amateurs obtain much enjoyment from learning the aspects of today's modern skills to aspire to the different types of Amateur Radio licence that are available in the hobby today.

Whatever mode of communication you choose, it's a way of keeping in touch with others, whether they be just down the road or on the other side of the world. The beauty of our hobby is that it brings people harmoniously together, and if there is one thing Amateur Radio has taught me...it's that we can always learn from others!

Perhaps you're wondering what's prompted me to write this letter? Well, just a short time ago I overheard a QSO where one chap said to another: "you know I feel quite sorry for Frank G6TNO (me!)...he's not in good health and has no family in the world whatsoever". **In answer I can tell you categorically... I'm not alone!**

There are countless Amateurs and s.w.l.s living alone, and for many - who may not see one person from one day to the next - **Amateur Radio is a way of life**, a way of keeping in touch with the world outside. Our hobby is a way of joining in, and instils in us a wonderful sense of 'belonging'.

Through this hobby of ours, I'm never left on the outside looking in. And yes...I do have a family, a wonderful caring family, hundreds and hundreds of them and they are all Radio Amateurs and short wave listeners.

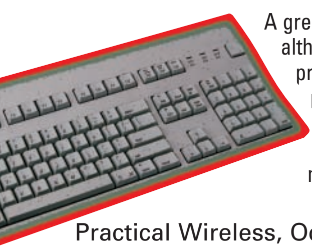
Finally, for countless others, who like me also live alone, I would like to say to the Radio Amateurs who keep us company... **"Thanks for being there, you mean so much to so many...and for us wireless is forever practical"**! Best Wishes.

Francis (Frank) Blakeley
G6TNO
Heywood
Lancashire

Editor's reply: It's good to know you're there too Frank! What a wonderful summary of our hobby. Thank you.

● Keep your letters coming to fill *PW*'s postbag

Letters Received Via E-mail



A great deal of correspondence intended for 'letters' now arrives via E-mail, and although there's no problem in general, many correspondents are forgetting to provide their postal address. I have to remind readers that although we will not publish a full postal address (unless we are asked to do so), we require it if the letter is to be considered. So, please include your full postal address and callsign with your E-Mail. All letters intended for publication must be clearly marked 'For Publication'.

Editor

amateur radio rallies

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

September 15
The Waterside ARS Radio & Computer Rally
Contact: Bill Simmons G0XAZ
Tel: 0238-078 3170
E-mail: bill.simmons@southernwater.co.uk
The Waterside (New Forest) Amateur Radio Society are holding their Radio & Computer Rally at Applemore College, near Hythe, Hampshire, off the A326 Southampton to Fawley Road, at Tesco Superstore (follow the yellow signs from M27 or A35. Doors open 1000 and entrance is just £2. Talk-in on 144MHz, free parking, two indoor halls and field traders, refreshments and special interest groups.

September 20/21
The 31st Leicester Amateur Radio Show
Contact: Geoff Dover G4AFJ
Tel: (01455) 823344
Fax: (01455) 828273.
The Annual Leicester show is being held at Castle Donington International Exhibition Centre, near junction 23A, M1 motorway. Doors open Friday 0930 till 1730 and till 1700 on Saturday.

October 6:
The Great Lumley Rally
Contact: Nancy Bone
Tel: 0191-477 0036 (home) / (07990) 760920 (mobile)
E-mail: nancybone2001@yahoo.Co.Uk
The Great Lumley Amateur Radio And Electronics Society opens at 1030. Billed as the biggest and best rally in The North East it takes please at Great Lumley Community Centre, Front Street, Great Lumley, Nr. Chester le Street, County Durham - just off the A1(m). There will be free parking plus easy access. Good, inexpensive food and drink. Other attractions will include: a flying display by Chester Le Street model aircraft club, radio, hobbies, electronics, computer, satellite, component stalls and Bring & Buy. Admission £1, free of charge to under 14s accompanied by an adult.

October 20
The Blackwood & DARC Rally
Contact: George Kallis/Dave Lewis
Tel: (01495) 724942/(01495) 228516.
The Blackwood club are holding their rally at the Newport Centre, one mile from J25A M4. Features include radio traders, Bring & Buy, model boat traders, free car park, food, bar, novice talk, DXpedition video, raffle and a talk-in on S22. Admission is £1.50. Doors open 1030/1045.

November 2/3
The 16th North Wales Show
Contact: M. Mee GW7NFY
Tel/FAX: (01745) 591704
The 16th North Wales Radio & Electronics Show will be held at the North Wales Conference Centre, Llandudno. The show opens at 1000 both days and the entrance fee is £2 for adults, under 14s go free when accompanied an adult. There will be a club room and an extensive Bring & Buy.

If you're travelling a long distance to a rally, it could be worth 'phoning the contact number to check all is well, before setting off.

amateur radio **news**

A comprehensive look at what's new in our hobby this month.

Jamboree On The Air

Scout Station

It's Jamboree On The Air time again and the Scouts of Chelmsford are joining in the fun!

The Chelmsford Scout Amateur Radio Fellowship will be active on most h.f. bands for Jamboree On The Air during the 19 & 20th October using the callsign **M5CDS**. So far 18 Chelmsford Scouts have got their Intermediate Licence with a further 15 hoping to take the Foundation course in September, so there should be no shortage of operators.

If you work this station it will count towards the Chelmsford Award, full details of which can be found on the website **http://www.g0mwt.org.uk/** Scout groups wishing to arrange a sked should E-mail: **jota@chelmsford-scarf.co.uk** or check out the website at: **http://www.chelmsford-scarf.co.uk/**

Members of SCARF operating M5CDS at last year's JOTA.

Guest Appearance

The Man from Heil Sound

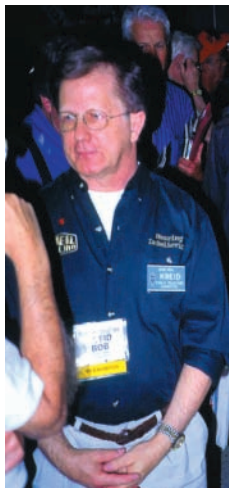
Waters & Stanton Plc will be exhibiting at this year's Leicester Amateur Radio Show over the weekend of 20th/21st September and will have a special guest on their stand - Bob Heil K9EID.

Bob Heil K9EID is the boss of Heil Sound in the USA, the microphone manufacturer and W&S are very pleased to announce that he will be joining them on their stand for the two day show at the Castle Donington Exhibition Centre, Leicester. Bob will be demonstrating his latest range of microphones and headsets as well as presenting an Audio Workshop in the Convention area.

The W&S team will have plenty of other delights on offer to tempt the bargain hunter as well as a selection of products from Yaesu, MFJ, Watson, Hustler and Optoelectronics. Make sure you drop by!

For details on the full range of products available from Waters & Stanton Plc you can contact them at:

Waters & Stanton Plc,
Spa House,
22 Main Road,
Hockley,
Essex
SS5 4QS
Tel: (01702) 206835/204965
FAX: (01702) 205843
E-mail: info@wsplc.com
Website: www.wsplc.com



Bob Heil K9EID pictured at the Dayton Hamvention during one of his audio workshops.

Foundation Call

More M3 Magic!

With Foundation Licence courses now in full swing, Clive G4SLU was delighted when his XYL decided to jump on the Amateur Radio bandwagon!

Clive Hardy G4LSU and newly licenced XYL Chris M3SHE pictured at the recent Flight Refuelling ARS rally.

Clive Hardy G4SLU who works in *PW*'s Book Store was quite surprised when his wife **Chris** announced that she felt the time had come to go for an Amateur Licence! So she duly signed up for a course run by **John G0SKR** at the **Christchurch Amateur Radio Society** (CARS) and the studying began!

Five Saturdays later Chris achieved a score of 100% in the exam and wasted no time, getting her licence application in the post first thing on Monday morning. A week later the licence landed on the mat.

Chris had applied for the call **M3SHE** and to her delight it was issued. The letters of her call are rather special, as they are the initials of her late father, a Royal Signals man who retained his interest in radio for over 50 years after leaving the service.

Chris's new M3 callsign got its first airing the day after the licence arrived as she made contacts on 7MHz with fellow pupil, **Chris M3BDC**, and her husband **Phil G3XBZ.**

Chris is quite keen to keep her M3SHE callsign, so has no plans at the moment to take the intermediate licence exam, but who knows? Well done Chris!

Incidentally, the *PW* team has another M3 too! **Donna G7TZB** finally got around to taking her Morse appreciation on Saturday 10 August under the careful guidance of John G0SKR at CARS. Having successfully completed the 'test' Donna now holds the call **M3TZB**!

All At Sea!

New Skipper for Windermere

The Windermere Steamboat Museum Amateur Radio Society welcomes a new Skipper.

Roy G0TAK has been learning boat handling at 'Foundation Level', under the watchful eye of senior Skipper, **Peter G0XTC**, on the Launch *Water Viper* and has now gained his ticket as a commercial Skipper on Lake Windermere. The next challenge is for Roy to take some 'Intermediate' tuition and learn to handle the steam engines, for the other historic launches.

The **Windermere Steamboat Museum ARS (WSMARS)** takes part in operating sessions on activation days, operating as **GB2WSM** and now that Roy is a skipper inbetween operating he and Peter will both be able to take tourist trips around the lake whilst the crew serve tea and 'ships biscuits'.

The aim of WSMARS is to have the station on the air at least once a month throughout the year. If you hear them on air, give them a call!

G0TAK at the Helm of *Water Viper*

The Radio Man

Radio Man - the remarkable rise and fall of C. O. Stanley, tells the story of the man who turned Pye Radio from a pioneering manufacturer of domestic radio equipment, into an extremely important producer of television, radar and specialised military communications and defence equipment. Read on to find out more....

Radio Man - the remarkable rise and fall of C. O. Stanley is published by the Institution of Electrical Engineers (IEE) as No. 30 in their History of Technology Series. **Rob Mannion G3XFD** has recently read the book and here he reviews it for the Newsdesk.

Any *PW* reader, even with the slightest interest in the history of radio and broadcast technology, Second World War communications, radar and television should read *Radio Man* in my opinion! Additionally - if you've got any Irish blood in your veins - you should feel proud of **C. O. Stanley**...the remarkable Irishman who acquired Pye Radio. He led it to great heights - promoting television to a reluctant BBC - and then (very successfully) adapting pre-war television production lines to make radar equipment - before eventually losing control of the company in a board room clash 40 years later.

Written by **Mark Frankland** - the book has the essential technical support of **Gordon Bussey** as the Consultant. Gordon (the man behind the fascinating book *Marconi's Atlantic Leap*) provides his extensive expertise on photography, and his influence on the inclusion of the essential technical details is very evident.

I would have appreciated seeing some of the historic circuitry...but despite my comments...neither **Tex Swann G1TEX/M3NGS** or I could put the book down...it's a superb radio-based real life's drama! Congratulations IEE - more of the same please...it's an incredible bargain at £25! However, *PW* readers can obtain a copy for a special offer price of for **£20 inc. P&P** (UK, for overseas orders add **£2** in Europe, **£3** outside Europe) direct from the IEE by quoting code PW1002.

IEE Publishing,
Michael Faraday House,
Six Hills Way, Stevenage,
Hertfordshire
SG1 2AY
Tel: (01438) 767328
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Yaesu's Triple Whammy!

New radios have been in short supply this year so the PW Newsdesk is pleased to pass on the news that Yaesu are launching three new models very soon!

The first of new models takes the shape of the **VX-7R**, a tri-band submersible hand-held which has had the case, keypad, speaker and connectors carefully sealed to protect the internal circuitry against water damage. Even the speaker microphone has been built to withstand 30 minutes of submersion at a depth of up to three feet! Offering 5W power on the 50, 144 and 430MHz bands the VX-1R is also capable of four modes of dual receive including simultaneous reception on two v.h.f. frequencies, two u.h.f. frequencies, one v.h.f. and one u.h.f., or one general coverage and one Amateur frequency. Other features include:

- Reception coverage from 500kHz to 999MHz.
- Over 900 memory channels of one kind or another
- Spectrum 'scope display
- Audio wave meter
- Automatic repeater shift

The VX-7R should be availabe from mid-September and will carry a price tag of **£359**.

The second of the three new Yaesu rigs is a multi-band, all-mode portable base station transceiver - the **FT-897**. Covering the h.f. bands as well as 50, 144 and 430MHz with the modes c.w., s.s.b., a.m., narrow f.m., wide f.m., packet and digital all available.

The power output is an impressive 100W for the h.f. bands and 50MHz, 50W on 144MHz and 20W on 430MHz. The FT-897 has an internal AC power supply or from a Ni-MH battery, which is available as an option.

There is a large dot matrix l.c. display and 200 memory channels with alpha numeric tags. The FT-897 also comes with several optional extras these are: a Collins 2.3kHz s.s.b. mechanical filter, a Collins 500Hz 12-pole mechanical filter for c.w. as well as the Ni-MH battery pack.

Other feaures of the FT-897 include a c.w. training feature, a built-in 3-message memory keyer and adjustable pitch control. For those interested in specialist modes there is a CTCSS/DCS encoder/decoder built in, ARTS and Smart Search facilities, as well as a Spectrum Scope. It also has an automatic beacon mode.

Look out for the FT-897 appearing on approved Yaesu dealers shelves this autumn.At the time of going to press the price was still to be confirmed.


Yaesu's FT-897

Last but not least is the **FT-8900R**, a quad-band f.m.transceiver offering dual-band receive and full duplex operation. Covering the 29/50/144 & 430MHz bands, the FT-8900R has plenty to offer.

Features include: cross-band repeater operation, smart search, 800 channel memory capacity, r.f. squelch, 50-tone CTCSS/104-code DCS tone systems and 1200/9600bps packet operation. The FT-8900R has remote head mounting capabilities, 50W of power (30W on 430MHz) and features a heavy duty p.a. design.

Although the FT-8900R will not be available until late autumn (and prices have not been announced yet) it's hoped that a sample will be on show at the Leicester Amateur Radio Show, so look out for it there! Alternatively contact Yaesu UK Ltd. direct:

Yaesu UK Ltd.,
Unit 12, Sun Valley Business Park,
Winnall Close, Winchester,
Hants SO23 0LB.
Tel: (01962) 866667
Website: www.yaesu.co.uk

Icom Launch New Rigs!

With the Leicester Amateur Radio Show looming it's hardly surprising that new radios are starting to appear. Here's the latest from Icom (UK) Ltd ....

Icom (UK) Ltd., have just announced details of their new **IC-2725** v.h.f./u.h.f. f.m. dual-band mobile transceiver. The IC-2725 incorporates many popular features of previous Icom mobiles including v.h.f./u.h.f. u.h.f./u.h.f. or v.h.f./u.h.f simultaneous receive capability, independent tuning and packet communication. This coupled with a colourful backlit l.c.d., stylish design and Icom say you'll looking at one of the most desirable mobiles to hit the market in recent years!

Featuring a controller (and 3.5 metre separation cable) that can be separated from the main unit and installed on a dashboard with the main unit going under a seat or in the boot, the IC-275E should appeal to those Amateurs whose car space is limited.

Using the IC-2725 is said to be very easy, with a simple push of a button quickly changing between the main (transmit) band and sub-band. An independent tuning knob per band provides simple and quick tuning. Volume, squelch and other function switches are symmetrically laid out for ease of use.

Other features of the IC-2725 include:

- HM-133 remote control microphone
- Mini DIN (6-pin) connector for direct packet modem connection at 9600bps
- CTCSS and DTCS
- Selectable squelch attenuator
- 50W in the 145MHz band & 35W in the 430-440MHz band
- 212 memory channels, 200 regular channels, 2 call channels & 10 scan edges.

With a retail price of **£399.95** (inc.VAT) the IC-2725 will be available from all good Icom dealers from November and will come supplied with HM-133 remote control microphone, OPC-889 front panel separator cable, OPC-346 DC power cable and MB-84 controller bracket.

That's not all! The **IC-E90** is a brand new multi-band hand-held to come from the Icom 'stables'. Covering the 50, 144 and 430MHz bands, the IC-E90 is also equipped with a wide-band receiver, covering 0.495-999.990MHz in a.m./f.m./w.f.m. modes. And if that isn't enough, the standard 1300mAH Li-Ion battery makes the IC-E90 ideal for longer periods of operating providing 5W output on all bands!

Billed as being extremely compact (measuring only 58 x 87 x 29mm) and lightweight, the IC-E90 has an aluminium die-cast case and chassis, which has been designed for use in the most rugged of environments. Packed with features such as: 500 alphanumeric memory channels, 50 band edges and 5 call channels, Icom's new Dynamic Memory Scan technology and 14 types of scan for maximum receiver utilisation and ease of use, the IC-E90 offers a backlit ten-key pad and a tuning knob that can be customised for channel selection, or volume control.

The IC-E90 will be sold complete with a charger, Li-ion rechargeable battery, belt clip, user handbook and a two-year warranty. A comprehensive list of accessories is also available. Carrying a retail price tag of **£339.99** inc. VAT, the IC-E90 will hit the dealers shelves this September.

For more information on the new Icom radios look out for the Icom (UK) Ltd. team at the Leicester Show or contact them direct.

Icom (UK) Ltd.,
Sea Street, Herne Bay,
Kent CT6 8LD
Tel: (01227) 741741
Fax: (01227 741742.
E-mail: info@icomuk.co.uk.
Website: www.icomuk.co.uk

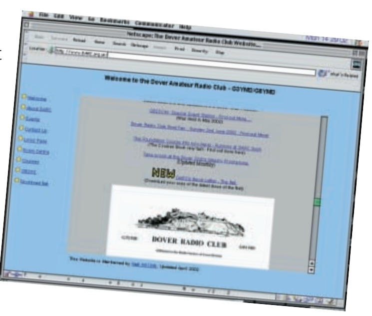
amateur radio clubs

Keep up-to-date with your local club's activities and meet new friends by joining in!

DERBYSHIRE
South Derbyshire & Ashby Woulds ARC
Contact: Pete M0PCA
Tel: (01530) 273070
E-mail: m0pca@supanet.com
The South Derbyshire & Ashby Woulds Amateur Radio Club are running their next Intermediate (Novice) course starting on the 28 September. This will be the club's first Intermediate course with new M3 callsign holders from their Foundation courses attending. The club meet at Moira Replan Centre, Moira, Nr. Ashby de la Zouch, Leicestershire. If you are interested in joining in please contact the club direct.

ESSEX
Braintree & District ARS
Contact: John M5AJB
Tel: (01787) 460947
Website: www.ntsx.co.uk
The Braintree & District Amateur Radio Society meet on the 1st & 3rd Monday of the month at the Clubhouse, Braintree Hockey Club, Church Street, Bocking. Doors open at 1930 for an 2000hours start. A club net is operatated on the 2nd & 4th Mondays (excluding Bank Holidays) under the callsigns G6BRH and G3XG from 2000hours clocktime on 145.375 and 433.575MHz. Future meetings include: **Sept 23**: Club Net and **October 7**: JOTA planning.

KENT
Dover Amateur Radio Club
Contact: Jim Cairns M1BKI/Ian Keyser G3ROO
Tel: (01304) 852773/(01304) 821588
Website: www.DARC.org.uk
The Dover Amateur Radio Club meet every Wednesday at 1930hours during term time at Dover Boy's Grammar School. The Club is a centre for the Foundation Course, Intermediate Training Course as well as the Morse Training and Assessment Centre for the South East. The Club is also the RAE Exam Centre for the local area. Keep an eye on their website for regular updates!



SHROPSHIRE
Telford & DARS
Contact: Mike Street G3JKX
Tel: (01952) 299677
E-mail: mstreet@g3jkx.freeserve.co.uk
The Telford & District Amateur Radio Society meet at the Community Centre, Bank Rd, Dawley, Telford, Shropshire every Wednesday. Meetings commence at 2000hours unless otherwise stated. Forthcoming meetings include **Sept 18:** Pile-ups and Contests. How to do it by **G3UKV/G3JKX** et al; **25th:** 'Silent keys remembered'. Bring photos if possible; **October 2:** Open evening/OTA/Committee and **9th:** Video evening; 16th: '136kHz' **Dave Pick G3YXM** tells all.

Keep those details coming in!

TEX'S TIPS & TOPICS

Hello and welcome to the occasional column that, although it's called Tex's Tips and Topics, its really about your ideas, tips and tricks. So, here are a few suggestions from readers seeking to win book vouchers for every tip published!

This time I have some hot tips for you, with two tips from **Walter Farrar G3ESP**, a heating idea from **Tony Drye G0GJP** and a suggestion from **Steve Mahoney VK5AIM** on how to recycle battery connectors.

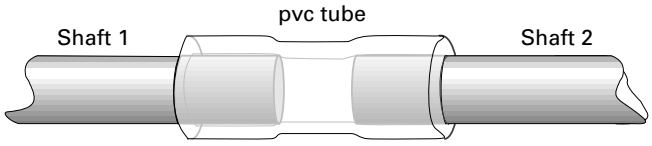
The first, literally, 'hot' tip is from Tony Drye G0GJP who wrote in with a simple but effective idea to prevent the ends of Polypropylene guying ropes from fraying. Tony suggests that each cut end of a rope, is held in a small flame for a few seconds to melt and seal the ends. **Please Note, that the softened plastic material becomes extremely hot and sticks to skin causing horrendous burns, so wait for the end to cool down before touching the rope again**. *G1TEX*

A good tip Tony! I've used something similar except that I have actually used a lighter flame to 'cut' the material, whilst twisting the rope to tighten its twist. This I've found, leaves a slightly tapered end to the rope which is often easier to feed through holes. **Again, please bear in mind, the same 'beware of the burns' warning as above!**

Construction Easier

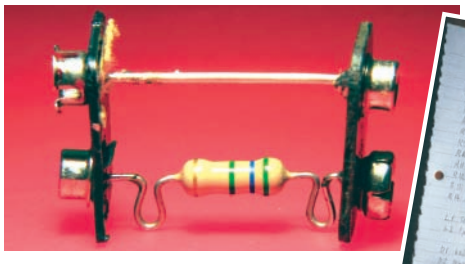
Now let's turn to the two tips from Walter G3ESP to make construction easier. I'll start with the idea to make a cheap and effective extension shaft coupling. Walter's suggestion is to use a short length of thick walled pvc tubing. The tubing is often used in home brewing (beer and wines) activities and has an internal diameter of 5mm and an external diameter of 9mm.

Cut a short, 25-30mm long section of the tube and place it in very hot water for a few seconds until it's rather soft. It can now be pushed over the ends of the two spindles to be connected together and allowed to cool. The technique is shown in **Fig. 1** and makes a very quick...but good coupler.

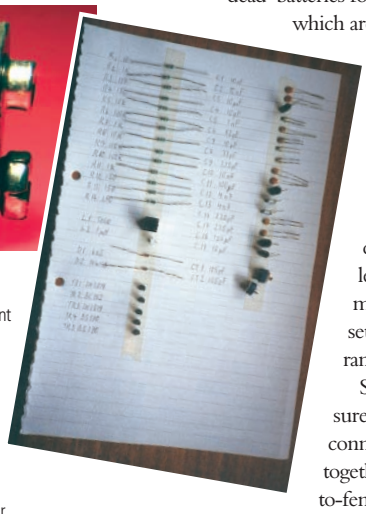


● Fig. 1: Walter Farrar's simple, but effective shaft coupling. Extending the section of tubing makes it into a flexible coupling.

Walter's second tip is, if anything even simpler and requires only a sheet of paper and some double-sided sticky tape. as shown in the picture of **Fig. 2**. Take a sheet of A4 sized paper and in several columns write down the circuit reference and the value of all the components used in the project. Then next to each column, stick a length of double-sided sticky tape.



● Fig. 3: Steve VKAIM, suggests using older battery connectors as an adapter to make measuring current drawn easier.



● Fig. 2: Organising components by circuit reference and value makes identification at assembly time easier.

Alongside each component identification, and on the tape, press the component onto the tape. Now you have a fully identified set of components, as well as a confirmation of each one fitted. Neat and simple!

The last tip I have space for this session is from Steve Mahoney VK5AIM (a *PW* author from 'down under'). As he said in his letter, Steve's tip is to make it easier and safer to measure the current drawn by by a radio, or other device using a 9V battery. For this you'll need two older 'dead' batteries for their connectors. which are assembled as shown in **Fig. 3**.

The resistor, of several megohms, acts as an effective insulator, but its wires allow loops to be formed. To these can be clipped the leads from your multi-meter, which is set to an appropriate range.

Steve says to make sure that the two connectors are assembled together as shown (male-to-female and female-to-male) otherwise you risk damaging an expensive radio or other piece of equipment) with reversed polarity power. Nice One Steve...thank you.

Tex G1TEX/M3NGS

errors & updates

Carrying On The Practical Way

August 2002 p46 and September 2002 p50.

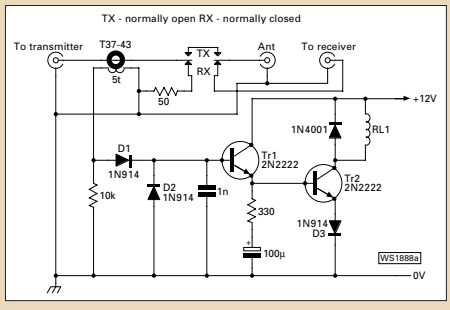
Sadly, the monthly column Carrying On The Practical Way, by **George Dobbs G3RJV** has suffered badly at the hands of gremlins in the August and September issues of *PW*.

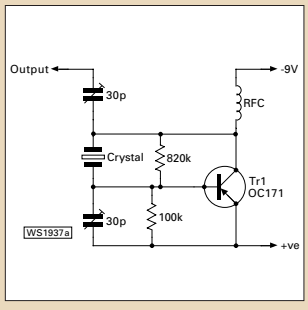
In the August 2002 on page 46, circuit diagram Fig. 3, had a problem, in that the diode, D3, was shown with the wrong polarity. The new drawing shown here as **Fig. 1** now shows D3 with the correct polarity.

On page 50 of the September *PW* there were two errors that crept into the illustration of Fig. 1 on that page. The supply to the circuit was shown with the wrong polarity (the transistor Tr1 is a *pnp* Germanium device - so, it needs a negative supply on the collector).

In the same schematic drawing, there was also an inadvertent short across, both the 30pF output trimmer capacitor and the collector load radio frequency choke (RFC). The new illustration **Fig. 2** here has both of these faults corrected.

Please accept my apologies for these errors. ***Editor.***





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40 Mtr RADIAL KIT FOR ABOVE.....£99.00

HF VERTICALS

VR3000 3 BAND VERTICAL FREQ: 10-15-20 Mtrs GAIN: 3.8 dBd HEIGHT:3.80m POWER:2000 Watts (without radials) POWER: 500 Watts (with optional radials).....£89.95
OPTIONAL 10-15-20mtr radial kit.....£34.95

VR5000 5 BAND VERTICAL FREQ:10-15-20-40-80 Mtrs GAIN:3.5 dBd HEIGHT:4.00m RADIAL LENGTH:2.30m (included). POWER: 500 Watts.....£169.95

EVX4000 4 BAND VERTICAL FREQ:10-15-20-40 Mtrs GAIN:3.5 dBd HEIGHT:6.50m POWER:2000 Watts (without radials) POWER:500 Watts (with optional radials).....£99.95
OPTIONAL 10-15-20mtr radial kit.....£34.95
OPTIONAL 40mtr radial kit.....£12.95

EVX5000 5 BAND VERTICAL FREQ:10-15-20-40-80 Mtrs GAIN:3.5 dBd HEIGHT:7.30m POWER:2000 Watts (without radials) POWER:500 Watts (with optional radials)..... £139.95
OPTIONAL 10-15-20mtr radial kit.....£34.95
OPTIONAL 40mtr radial kit.....£12.95
OPTIONAL 80mtr radial kit.....£14.95

EVX6000 6 BAND VERTICAL FREQ:10-15-20-30-40-80 Mtrs HEIGHT:5.00m RADIAL LENGTH:1.70m(included) POWER:800 Watts.....£249.95

EVX8000 8 BAND VERTICAL FREQ:10-12-15-17-20-30-40 Mtrs (80m optional) HEIGHT: 4.90m RADIAL LENGTH: 1.80m (included) POWER: 2000 Watts.....£269.95
80 MTR RADIAL KIT FOR ABOVE.....£79.00
(All verticals require grounding if optional radials are not purchased to obtain a good VSWR)

TRAPPED WIRE DI-POLE ANTENNAS

(Hi Grade Heavy Duty Commercial Antennas)

UTD160 FREQ:160 Mtrs LENGTH:28m POWER:1000 Watts.....£44.95
MTD-1 (3 BAND) FREQ:10-15-20 Mtrs LENGTH:7.40 Mtrs POWER:1000 Watts.....£39.95
MTD-2 (2 BAND) FREQ:40-80 Mtrs LENGTH: 20Mtrs POWER:1000 Watts.....£44.95
MTD-3 (3 BAND) FREQ:40-80-160 Mtrs LENGTH: 32.5m POWER: 1000 Watts.....£79.95
MTD-4 (3 BAND) FREQ: 12-17-30 Mtrs LENGTH: 10.5m POWER: 1000 Watts.....£44.95
MTD-5 (5 BAND) FREQ: 10-15-20-40-80 Mtrs LENGTH: 20m POWER:1000 Watts.....£69.95
(MTD-5 is a crossed di-pole with 4 legs)

MISCELLANEOUS ITEMS

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

TELESCOPIC MASTS (aluminium & fibreglass options)

TMA3 3" to 1 1/4" heavy duty aluminium telescopic mast set, approx 40ft when erect, 6ft collapsed.....£149.95
TMA2 2 1/2" to 1 1/4" heavy duty aluminium telescopic mast set, approx 30ft when erect, 6ft collapsed.....£129.95
TMA1 2" to 1 1/4" heavy duty aluminium telescopic mast set, approx 20ft when erect, 6ft collapsed.....£99.95
TMAF 2" to 1 1/4" heavy duty fibreglass telescopic mast set, approx 20ft when erect, 6ft collapsed.....£99.95

HAYDON Communications

Mail order: 01708 862524

NEXT DAY DELIVERY TO MOST AREAS, £10.00.

For main product lines see over

PRICES SUBJECT TO CHANGE WITHOUT PRIOR NOTICE. PLEASE VERIFY BEFORE ORDERING. E&OE. NEXT DAY DELIVERY TO MOST AREAS, £10.00.

New MOBILE PENETRATOR

1.8-30MHz (200W PEP) mobile antenna – no ATU required. Length 102" (52" collapsed). Fits 3/8 mount (SO239 feed point)

INTRO PRICE **£129.95** delivery £10

Optional magnetic base £24.95
Optional body mount (hole) £12.99
Roof bar mount requires cable kit.....£9.95
Cable kit £7.99

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).

ONLY **£179.95** delivery £10

SEND SAE FOR LEAFLET

Wire version now available 45ft long end fed. (1.8-60MHz) spec. as above. Price £159.95.

Q-TEK ZL SPECIALS

Delivery £10.00

2m	5ele (boom 45"/9.9dBd)	£49.95
2m	7ele (boom 60"/12.5dBd)	£54.95
2m	12ele (boom 126"/14.5dBd)	£79.95
70cm	7ele (boom 28"/12.5dBd)	£39.95
70cm	12ele (boom 48"/14.5dBd)	£59.95

Q-TEK YAGIS

Delivery £10.00

2m	5ele (boom 63"/10.5dBd)	£49.95
2m	8ele (boom 125"/13dBd)	£64.95
2m	11ele (boom 156"/13.5dBd)	£94.95
2m	5ele crossed (boom 64"/10.5dBd)	£79.95
2m	8ele crossed (boom 126"/13dBd)	£99.95
4m	3ele (boom 45"/8.5dBd)	£56.95
4m	5ele (boom 128"/11.5dBd)	£69.95
6m	3ele (boom 72"/8.5dBd)	£59.95
6m	5ele (boom 142"/11.5dBd)	£79.95
70cm	13ele (boom 76"/14.9dBd)	£46.95
70cm	13ele crossed (boom 83"/14.9dBd)	£79.95

DELUXE G5RV

Multi-stranded heavy duty flexweave wire. All parts replaceable. Stainless steel and galvanised fittings. Full size - 102ft.

ONLY **£42.95**

Half size 51ft. Only **£36.95**

Carriage £6.50.

Choke Balun — Inline balun for G5RV .....£24.95 P&P £3

STANDARD G5RV

Full size 102ft (now includes heavy duty 300Ω ribbon) ....£27.95 P&P £6
Half size 51ft (now includes heavy duty 300Ω ribbon).....£23.95 P&P £6

Q-TEK INDUCTORS

80mtr inductors + wire to convert ½ size G5RV into full size. (Adds 8ft either end) .....£24.95 P&P £2.50 (a pair)

Q-TEK 80-10M TRAP DIPOLE KIT

Complete kit (34 metres long)
Ideal for any use (including M-3) .....£79.95 P&P £10.00

BALUNS & TRAPS

1.1 Balun .....£25.00 P&P £2
4.1 Balun .....£25.00 P&P £2
6.1 Balun .....£25.00 P&P £2

1kw Handling

40 mtrs Traps .....(a pair) £25.00 P&P £4
80 mtrs Traps .....(a pair) £25.00 P&P £4
10 mtrs Traps .....(a pair) £25.00 P&P £4
15 mtrs Traps .....(a pair) £25.00 P&P £4
20 mtrs Traps .....(a pair) £25.00 P&P £4

CUSHCRAFT ANTENNA SALE

MA5V	New vertical 10, 12, 15, 17, 20m	~~£229.95~~	£215.00
MA5B	Mini beam 10, 12, 15, 17, 20m	~~£349.00~~	£299.95
A3S	3 ele beam 10, 15, 20m	~~£499.95~~	£449.95
A4S	4 ele beam (10-20m)	~~£599.95~~	£529.95
R-6000	Vertical 6, 10, 12, 15, 17, 20m	~~£349.95~~	£315.95
R-8E	Vertical (14-10m)	~~£499.95~~	£449.95
X-7	7 ele 10, 15, 20m	~~£699.00~~	£599.95

Q-TEK COLINEARS

P&P £10.00

Glassfibre construction

QT-100 GF 144/70, 3/6dB (1.1m) £39.95
QT-200 GF 144/70, 4.5/7.2dB (1.7m).....£54.95
QT-300 GF 144/70,6.5/9dB (3m).....£69.95
QT-500 GF 144/70, 8.5/11dB (5.4m).....£125.95
QT-627 GF 50/144/70, 2.15/6.2/8.4dBi (2.4m) £69.95

MOBILE ANTENNAS

P&P £7.00

DB-770M 2m/70cm (3.5 - 5.8dB) 1m PL-259 .....£24.95
DB-7900 2m/70cm (5.5 - 7.2dB) 1.6m PL-259 .....£39.95
PL-62M 6m + 2m (1.4m) PL-259 .....£19.99

NEW: MOBILE HF WHIPS THAT REALLY WORK

PLT-20 20m mobile whip (56" long) £24.95
PLT-40 40m mobile whip (64" long) £24.95
PLT-80 80m mobile whip (64" long) £24.95
New, PLT-5MHz 5MHz mobile whip.....£27.95
PLT-259 PL-259 converter for above £5.95

COPPER ANTENNA WIRE

Enamelled (50m roll).....£12.95 P&P £5
Hard drawn (50m roll).....£13.95 P&P £5
Multi-Stranded (Grey PVC) (50m roll).....£9.95 P&P £4
Flexweave (H/duty 50 mtrs) .....£30.00 P&P £5
Flexweave H/duty (20 mtrs) .....£15.95 P&P £5
Flexweave (PVC coated 20 mtrs) .....£18.95 P&P £5
Flexweave (PVC coated 50 mtrs).....£40.00 P&P £6.50
Copper plated earth rod (4ft).....£13.00 P&P £6
Copper plated earth rod (4ft) + earth wire ..£18.99 P&P £6

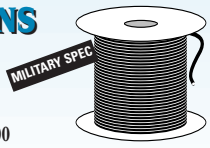
RECHARGEABLE ALKALINE CELLS

Starter kit includes charger & 4 x AA cells. **£14.99** + £2.50 P&P.

Please note that only the special cells can be recharged with this charger.

Extra cells available @ 8 x AA pack £10.99 £1 P&P
4 x AA pack £5.99 £1 P&P 4 x AAA £6.25 £1 P&P. Rechargeable Alkaline. No memory effects. 1.5V cells. 3 x capacity of nicads.

COAX BARGAINS



RG-213 Mil spec x 100m.
ONLY **£69.95** P&P £10
RG-58 Mil spec x 100m.
ONLY **£35.00** P&P £10.00

COAX SWITCHES

(P&P £4.50)

2 way CX-201 (0-1GHz) SO239 .....£18.95
2 way CX-201 'N' (0-1GHz) 'N'.....£24.95
4 way CX-401 (0-500MHz) SO239 .....£54.95
4 way CX-401 'N' (0-500MHz) 'N'.....£59.95

NISSEI PWR/SWR METERS

RS-502 1.8-525MHz (200W) .....£79.95 P&P £5
RS-102 1.8-150MHz (200W) .....£59.95 P&P £5
RS-402 125-525MHz (200W).....£59.95 P&P £5
RS-3000 1.8-60MHz (3kW) Incls mod meter £79.95 P&P £5
RS-40 144/430MHz Pocket PWR/SWR.....£34.95 P&P £2

CAROLINA WINDOM

CW-160S	(160-10m) 40m long	£139.00 P&P £8.50
CW-160	(160-10m) 80m long	£134.95 P&P £8.50
CW-80	(80-10m) 40m long	£99.95 P&P £8.50
CW-80S	(80-10m) 20m long	£119.95 P&P £8.50
CW-40	(40-10m) 20m long	£94.95 P&P £8.50

Wimdoms are ⅓ or end fed.....P&P £8.50

INTERFERENCE STOP IT

Rectangular snap-fixing ferrite cores suitable for :- Radio coax/TV/mains/telephone/PC & data cables. Plastic teeth prevent it from sliding on cable. Simply snap close onto cable and job is done!

2 for £10.00 (P&P £2.50)

FERRITE RINGS

10 for **£10.00** P&P £3.00 *or*
20 for **£15.00** P&P £4.00 *Superb quality*

TELESCOPIC MASTS

6 section telescopic masts. Starting at 2½" in diameter and finishing with a top section of 1¼" diameter we offer a 8 metre and a 12 metre version. Each mast is supplied with guy rings and stainless steel pins for locking the sections when erected. The closed height of the 8 metre mast is just 5 feet and the 12 metre version at 8 feet. All sections are extruded aluminium tube with a 16 gauge wall thickness.

8 mtrs **£99.95** 12 mtrs **£139.95** *Carriage £10.00.*

Telescopic mast lengths are approx.

Tripod for telescopic masts.....£89.95

20ft BARGAIN MAST SET

4 x 5' lengths of approx 2" extruded (16 gauge) heavy duty aluminium, swaged at one end to give a very heavy duty mast set.

OUR LOW PRICE **£39.95** Del £10

2 for £75.00 Del £12.50
3 for £99.00 Del £15.00

BARGAIN MAST SETS

Set A: 5 section 21ft long (1⅛") mast set
£23.95 Del £10.00.

Set B: 5 section 16ft long (1⅛") mast set
£19.95 Del £10.00. (2 sets £35.00)

ALUMINIUM POLES

ALL MEASUREMENTS ARE APPROX.

2" x 1.5m length 2mm wall thickness .....£12.50 P&P £10
2" x 2.5m length 2mm wall thickness .....£19.99 P&P £10
2" x 10ft collection only 2mm wall thickness £24.99
2" x 12ft collection only 2mm wall thickness £29.99
2" x 20ft collection only 2mm wall thickness £39.99

FIBRE GLASS POLES

Del £10.00

	1½"	1¾"	2"
1m	£8.50	£10.50	£12.50
2m	£16.00	£20.00	£24.00

LARGER LENGTHS AVAILABLE

DIPOLE CENTRE PIECES

Open wire.....£5.50
SO-239.....£5.99

300Ω HEAVY DUTY FEEDER

5m length.....£5.00 P&P £3.00
10m length .....£10.00 P&P £3.00

METAL WORK & BITS

MAST HEAD PULLEY

A simple to fit but very handy mast pulley with rope guides to avoid tangling. (Fits up to 2" mast).

£8.95 + P&P £2.50

2"	Mast base plate	£12.95 P&P £5
6"	Stand off	£6.95 P&P £5
9"	Stand off	£8.95 P&P £5
12"	T&K Brackets	£12.00 P&P £8
18"	T&K Brackets	£18.00 P&P £8
24"	T&K Brackets	£20.00 P&P £8

10mm fixing bolts .....£1.40 each
U bolts (1½" or 2").....£1.20 each
8 nut universal clamp (2" - 2") £5.95
2" - 2" cross over plate £10.95
3-way guy ring £3.95
4-way guy ring £4.95
2" mast sleeve.....£9.95
1½" mast sleeve.....£8.95
Standard guy kits (with wire).....£24.95 P&P £6
Heavy duty guy kits (with wire) .....£29.95 P&P £6
Ground fixing spikes (3 set) .....£18.00 P&P £6
30m pack nylon guy 4.4m/B/load 480kg ...£10.00 P&P £2
30m pack (3mm dia) winch wire .....£16.00 P&P £4
Self amalgamating tape (roll).....£6.50
'Nylon' dog bone insulators.....£1.00 each
Chimney lashing kit £12.99

HAYDON Communications

For accessories see over

Mail order: 01708 862524

NEXT DAY DELIVERY TO MOST AREAS, £10.00.

PRICES SUBJECT TO CHANGE WITHOUT PRIOR NOTICE. PLEASE VERIFY BEFORE ORDERING. E&OE.

hf transceivers

KENWOOD TS-870S

TRUE IF DSP TRANSCEIVER When only the best will do!

STILL OUR No1 SELLER!

SALE PRICE **£1249.00**

PS-53 matching powr supply £229.00
MC-60A Desk mic.....£119.95
SP-31 matching speaker £79.95

KENWOOD TS-570DGE

In our opinion, the best HF Tx below £1500.

INCLUDES ATU

OUR PRICE **£799.00**

PS-52 matching power supply.....£229.00
MC-60A Desk mic.....£119.95
SP-23 matching speaker £68.95

KENWOOD TS-50S

★ Superb compact HF transceiver ★ 100 watt
★ 160m-10m transceiver
★ 500kHz-30MHz Gen. cov. receiver

RRP £699.00 OUR PRICE **£549.95**

MC-60A Desk mic.....£119.95
AT-50 Auto ATU.....£299.00

NEW IC-7400

HF+6m+2m, All mode, 32bit DSP for outstanding signal enhancing. ~~£1549.00~~

OUR PRICE **£1399.00**

SP-21 matching speaker £74.99

ICOM IC-706II G

Now on its 3rd generation, this classic all-band transceiver is still our No. 1 best seller. HF + 6m + 2m + 70cm. *2 year warranty.*

LATEST UK MODEL

OUR PRICE **£829.00**

AT-180 Auto A.T.U.....£339.00

ALINCO DX-70TH

100W HF + 6m transceiver.
SSP £699.00
SAVE £100

LATEST UK VERSION

ONLY **£599.00**

EDX-2 Remote ATU ..... OUR PRICE £269.00

power supplies

NISSEI PS-300

Features: ★ Over voltage protection ★ Short circuit current limited ★ Twin illuminated meters ★ Variable voltage (3-15V) latches 13.8V ★ Additional "push clip" DC power sockets at rear ★ Multiple front outlets ★ Detatchable IDC lead (supplied) for mains connection.

Superb 30 amp/12V

A SNIP AT **£119.95** Del £10

NISSEI PS-1020

New 25A. PSU.

- Volts adjust (9-15vdc)
- Light in weight: 2.1kg
- Automatic shutdown on load fault
- Ultra quiet cooling fan
- Over volts protection
- Compact size 190W x 120H x 225D mm. ~~£89.95~~

OUR PRICE **£79.95** Delivery £10.00

NEW NISSEI PS-1225

25A @ 13.8V yet lighter than an IC-706 but about the same size.
Features:
- Ultra quiet fan
- Over voltage/current protection
- Weighs ~ 1.8kgs
- Size: 57 x 177 x 190mm
- Additional sockets at front & rear.

~~£79.95~~. **£59.95** Delivery £10.00

easy hf

YAESU FT-817

100kHz-440MHz (with gaps). All mode transportable. Includes nicads/charger. O/P:- up to 5W. ~~£799.00~~

SPECIAL PRICE **£549.00**

YAESU BARGAINS

FT-100D Bargain price (latest D version) £849.00
FT-847.....£1149.00
FT-1000MP V field.....£PHONE

FT-1000 MP MkV 2nd hand, as new.....£1950.00

New MOBILE PENETRATOR

1.8-30MHz (200W PEP) mobile antenna – no ATU required. Length 102" (52" collapsed). Fits 3/8 mount (SO239 feed point)

INTRO PRICE **£129.95** delivery £10.00

Optional magnetic base £24.95
Optional body mount (hole) £12.99
Roof bar mount requires cable kit.....£9.95
Cable kit £7.99

New WIRE PENETRATOR

0.1-60MHz.
Simply connect coax and go.
NB: No ATU needed. Earth stake required. 100W FM max.

OUR PRICE **£159.95**

Vertical Penetrator.....£179.95
Earth rod + wire.....£18.99

vhf-uhf handies

ALINCO DR-605

SUPERB DUAL BAND MOBILE AT A REALISTIC PRICE

2m/70cm. 50/35W. True dualbaner at a sensible price. (Optional extended Rx).

OUR PRICE **£249.99**

DR-135 2m FM mobile .....our price £179.00

ALINCO DJ-596

2m + 70cm Handie.
Includes: (NIMH) Battery/Charger.
High + Narrow switchable.
High Power (4.5W) OP as standard.
Alpha Numeric Channeling.

OUR PRICE **£179.95**

Optional case £15.00
Dry cell battery box.....£18.99
Cigar lighter lead £19.99

KENWOOD TH-F7E

Transceiver & scanner 2m/70cm Tx (5W). Rx:- 0.1-1300MHz, all mode (incl SSB). Incls:- Lithium ion battery & charger.

+ FREE REMOTE MIC

OUR PRICE **£249.00**

VC-H1 Kenwood camera.....£199.95
TM-G707 2m + 70cms mobile £285.00
TM-D700 2m + 70cms mobile £435.00

shack accs

YAESU G-650C

Extra heavy duty rotator for large HF beams, etc. Supplied with circular display control box and 25mtr of rotator cable.
GC-038 Lower mast clamps £25.00
GC-065 2" Thrust bearing £48.00.

OUR PRICE **£359.00**

G-450C.....£315.00
G-1000DXC.....£499.95
GC-038 Lower mast clamps.....£25.00
GC-065 Thrust bearing (2").....£48.00
G-5500 (azimuth/elevation) rotator £499.99

D-308B BLACK DELUXE DESK MIC

(with up/down). Many amateurs using this mic (over 4000) have expressed extreme pleasure with it's performance.
Includes 8-pin round "Yaesu" mic lead.

£49.95 P&P £6.00

OPTIONAL LEADS (P&P £1.50)

A-08	8 pin "Alinco" round	£9.95
K-08	8 pin "Kenwood" round	£9.95
I-08	8 pin "Icom" round	£9.95
AM-08	Modular phone "Alinco"	£9.95
IM-08	Modular phone "Icom"	£9.95
KM-08	Kenwood modular lead	£9.95

Spare foram wind guard (M.C.) .....£2.00 each

MFJ PRODUCTS

MFJ-259B

HF digital SWR analyser + 1.8-170MHz counter/resistance meter.

ONLY **£249.95** P&P £6

MFJ-269	160-70cm analyser	£315.95
MFJ-949	300W ATU + dummy load	£149.95
MFJ-969	HF + 6m ATU	£179.95
MFJ-962D	1.5kW versa tuna	£249.95
MFJ-784B	DSP filter	£229.95
MFJ-461	Morse reader	£84.95

UK VERSIONS

scanners

ICOM IC-8500

Next generation wideband receiver. 0.1-2GHz. (All mode)

2 YR G'EE *Latest UK version* OUR PRICE **£1149.95**

SP-21 extention speaker £74.99

YAESU VR-5000

0.1-2.6GHz all mode receiver with DSP (optional) plus bandscope/world clock and too much more to print

OUR PRICE **£575.00** (INCL' PSU)

Optional PSU unit £79.99

UBC-780XLT

New comprehensive scanner (25-1300MHz)/slight gaps. Alpha Tag, PC clonning control. Smart scanner + trunk track facilty.

~~£349.00~~ OUR PRICE **£299.99**

Optional software £29.99

NEW ALINCO X-2000

The intelligent scanner! 100kHz-2.15GHz. All mode incl's SSB, "Flash Tune" reads frequency of nearly of nearby signal & tunes the handie for you. Incl's battery, charger & loads more.

Includes 8.33kHz **£449.95**

Optional case £15.00

DJ-X10 .....Sale price £249.00

EDH-16 dry cell case.....£14.99

MVT-7100EU

Wideband hand-held scanner covers 500kHz-1650MHz. (All mode). Includes nicad/car charger/charger/antenna. Extremely user-friendly hand-held reciever with outstanding performance unmatched by its rivals.

OUR PRICE **£199.95**

Soft case for 7100EU/9000 - specify £19.99

MVT-9000 MkII.....sale price £325.00

ALINCO DJ-X3

Micro-handy scanner. 100kHz-1300MHz. 700 memories/stereo FM (earphones)/ attenuator/bug detector/audio descrambler. AM/FM/WFM/ Selectable tuning steps (incl's 8.33kHz).

Optional battery pack and drop in charger £39.99 **£115.00**

Cigar lighter lead £19.99

Optional case.....£15.99

gadgets

REGULAR-GAINER RH-770

BNC 21cm flexible whip that is ideal as replacement.

Rx:- 25MHz-2GHz.
Tx:- 2m/70cm

OUR PRICE **£16.95** P&P £1.50

SUPER-GAINER RH-9000

BNC 40cm flexible whip for the ultimate in gain. (Rx:- 25MHz-2GHz).
Tx:- 2m/70cm

OUR PRICE **£21.95** P&P £1.50

QS-300

A fully adjustable desk top stand for use with all hand-helds. Fitted coxial lead with BNC + SO239 connections.

OUR PRICE **£10.00** P&P £3.00

MICRO MAG ANTENNA MM-1

Micro magnetic base with (19") whip. Rx:- 0.5MHz-2GHz. Ideal for all scanners supplied with minature coax lead & BNC (all fitted). Tx:- 2m/70cm.

OUR PRICE **£24.95** P&P £5.00

short wave receivers

REALISTIC DX-394

★ Superb performance SW receiver ★ 0.2-30MHz (all mode) ★ Selectable tuning steps (down to 100Hz) ★ 240 or 12V ★ Digital S-meter ★ Attenuator ★ Key pad entry ★ 160 memories ★ Noise blanker. Was ~~£299.00~~.

OUR PRICE **£149.95** P&P £10

2 YR G'EE ICOM IC-R75

The short wave receiver for the true enthusiast.
- 0.03-60MHz (all mode)
- Synchronous AM detection
- PC control capability.

★★★★ *WRTH* gave it 4 star rating.

Optional DSP unit £85.00

OUR PRICE **£589.00**

SP-21 extention speaker.....£74.99

JRC NRD-545 DSP

The ultimate short wave receiver with DSP - for the real perfectionist.

OUR PRICE **£1299.00** Del £10.00

NVA-319 Extention speaker £189.00

CHE-199 VHF/UHF converter.....£269.00

SANGEAN ATS-909

A superb performance portable/base synthesized world receiver with true SSB and 40Hz tunning for ultra clean reception. The same radio is sold under the Roberts name at nearly twice the price. Other features include RDS facility, 306 memories and FM stereo through headphones.

OUR PRICE **£139.00** P&P £10

Optional power supply £16.95

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specials

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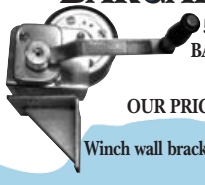

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'Beaming'...

With the Moonraker 12-element ZL-Special

Neil Taylor G4HLX, well known to readers as the originator and organiser of the *PW* 144MHz QRP Contest has been evaluating an interesting antenna which could be very useful for your own portable activities.

I was pleased to have an opportunity to try out the Moonraker 12-element ZL Special, **Fig. 1**, antenna for the 144MHz band. Pleased...both to find out how the ZL-special design performs, and to see the standard of construction of the Moonraker series of antennas.

The ZL-special beam concept is an alternative to the conventional Yagi designs for directional v.h.f. antennas. Moonraker offer a wide range of antennas, including both ZL and Yagi types. I gave this 12-element ZL-special a good trial at a portable site during the *Practical Wireless* 144MHz QRP Contest this year, as well as testing it at my home QTH.

The ZL-Special

The concept of the ZL-special design goes back a long way. Basically a two-element end-fire array, it was adapted for use on v.h.f. by the late **Fred Judd G2BCX**, in articles published in *PW* back in the 1970s.

The principle is based on two driven elements, spaced one-eighth wavelength apart, and fed 135° out of phase. This leads to addition of the waves from the two elements in one direction, and cancellation in the other.

What G2BCX did was to add a series of directors, rather like a Yagi but with the two-element ZL in place of the usual dipole and reflector. The result is a beam antenna a little more complex than the Yagi, because of the feeding arrangements for the two driven elements, but providing a higher gain than a Yagi of similar length. Well, that's the theory, anyway, and I was keen to find out how it worked in practice!

The Moonraker construction of the 12-element version is substantial and sturdy. Tubular aluminium elements are held on to the 3.2m long square-section boom with large black plastic mounts and stainless-steel bolts.

The antenna has a chunky, robust feel about it, and it weighs 3.6kg. Not an antenna for backpacking! A mast clamp is included, suitable for fixing to a pole up to 55mm in diameter. The photo **Fig.2**, shows the parts as the antenna is supplied, and the basic assembly is straightforward. The instruction sheet is rather minimal though, and I would have liked to see more explanation of the feed arrangement in particular, which could be puzzling to a beginner.

Each director element is labelled with a number, and of course care must be taken to get them in the right order. This isn't quite as obvious as you might think because, unlike a Yagi, they do not just get progressively shorter towards the front.

For example, **Director No. 2** is shorter than any of the first five. So, if the antenna is ever taken apart again, it would be wise to first check that the labelling is still legible (it seems to have been done with a felt-tip pen).

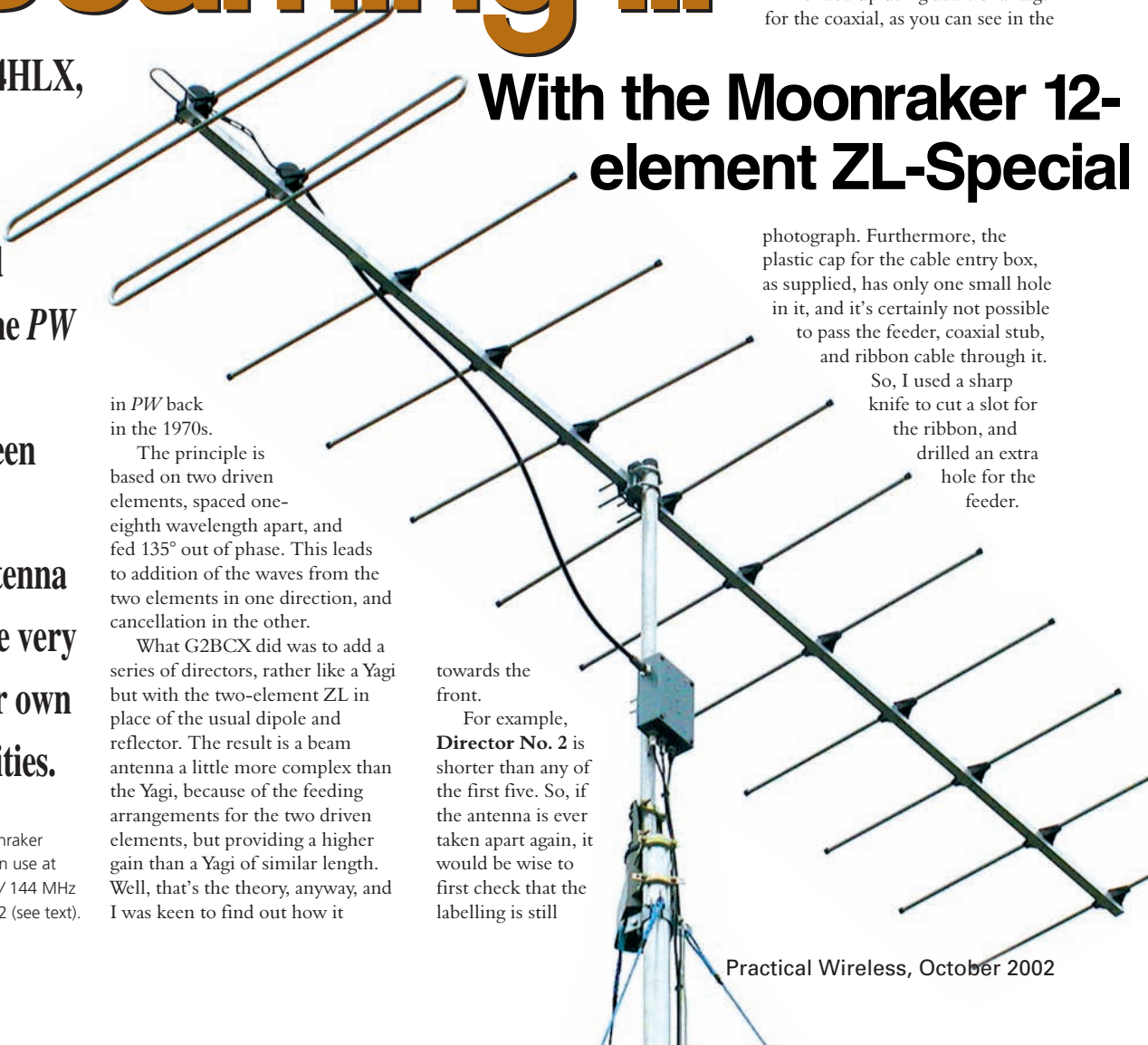
An 8mm spanner is needed to secure the directors, and a 10mm size is required for the driven elements. The boom is divided near the middle, the two halves being held together by one of the element mounting bolts. For ease of assembly at a portable site, I would like to have a wing-nut on this but since the bolts seem to be standard M5 size, one could be obtained from a hardware store.

Phase Reversal

A piece of 300Ω ribbon cable is also provided, which must be cut to the specified length and connected between the two driven elements, with a 180° twist in it to give a phase reversal. The connections onto the elements are achieved with two small solder tags.

At the front driven element feed point, the coaxial able feeder is connected, as well as a short RG58 coax stub in addition to the 300Ω ribbon. All this is rather cramped in the small cable entry box (see **Fig. 3**), and not really feasible using just the small solder tags provided.

I ended up using additional tags for the coaxial, as you can see in the photograph. Furthermore, the plastic cap for the cable entry box, as supplied, has only one small hole in it, and it's certainly not possible to pass the feeder, coaxial stub, and ribbon cable through it. So, I used a sharp knife to cut a slot for the ribbon, and drilled an extra hole for the feeder.



● Fig. 1: (Right) The Moonraker 12-element ZL-Special in use at G4HLX/P during the *PW* 144 MHz QRP Contest, June 2002 (see text).

This wasn't difficult, but needed some thought and I felt that the instruction sheet could really have provided some guidance.

The instruction for the coaxial stub, which is to be connected in parallel with the feed-point says "RG58 coax stub, start @ 128mm, cut for best SWR". It wasn't clear if this should be an open or closed

Fig. 2: The antenna as it arrives from Moonraker, ready for assembly (see text).

stub, **but experimentation showed that it must be an open**.

Incidentally, the original G2BCX article describes the stub as a coaxial capacitor. To trim it, you'll need to have the antenna set up in the clear and connected to a 144MHz transmitter through an s.w.r. meter. However, so that I could see what was going on, I used an MFJ Antenna Analyser to look at the match over a wider range of frequencies.

Initially the antenna was rather sharply resonant at about 157MHz, and the s.w.r. on the 144MHz band was over 3:1. As I trimmed more and more off the coaxial stub, the resonance dropped in frequency, but only slowly, while the bandwidth opened out.

I reached a point where the s.w.r. was acceptable in the 144 - 146MHz range (less than 1.5:1), although the resonant frequency (1:1 v.s.w.r.) was still well over 150MHz. So I carried on trimming. It got better and better until eventually I had cut off the coaxial stub completely! At this point the match was excellent - less than 1.1:1 across the entire band 144 - 146MHz (and well above this, too).

I found it curious that the optimum length of the coaxial stub was zero, and of course a little annoyed that I had struggled to get it installed in the small cable entry box, and drilled an extra hole in the cap which was now not needed! **But presumably the stub is needed in some cases, maybe depending on the type of feeder used** - I had a short length of URM67.

My experience suggests that **it is worthwhile** going on cutting pieces off the coaxial stub in the search for an optimum match, even if this means going past the optimum and having to replace the coaxial stub again with a longer piece to start again. In my case the outcome was very satisfactory. **I just wish I'd checked the s.w.r. before bothering to connect the coax stub in the first place!**

Up The Hill!

Having set up the antenna, it was time to take it up the hill and try it out in real operation. I operated the first few hours of the QRP Contest with my trusty 13-element Yagi that I have used for many years. This gave me a point of reference when I later lowered the mast and replaced the yagi with the 12-element ZL-Special, Fig. 1.

Just before and after the change I checked the strength of several beacons. Within the margins of error of this measurement, I could see no difference in the signal strengths between the two antennas. **This impressed me, because the ZL-special is significantly shorter than the Yagi**.

Of course, I wouldn't have noticed a difference of a decibel or two, but I expect that the Moonraker antenna probably gets close to the theoretical 14dB gain over a dipole for this design. (The 3dB beam width should be about 36°).

I used the antenna for a couple of hours, and had some good contacts. Towards the end of the contest I heard a few EA stations, probably via sporadic-E propagation, so the antenna was certainly doing its stuff. Overall I would say that it performed at least as well as I expected.

Permanent Installation

If I was using the Moonraker beam in a permanent installation, I would want to be careful about weather-proofing the cable entry. A good coating of varnish on the solder connections would be a good idea, to avoid corrosion.

I also believe in providing a small drain hole to let water escape when it gets in. This is more realistic than trying to provide a completely sealed enclosure, as experience shows that some water ingress is inevitable. (This is another area where some advice would be useful in the instruction sheet).

In conclusion, my only reservation about the construction of this antenna is the cable entry arrangement, although with care, this can be done well enough. An improvement in the assembly and set-up instructions is certainly called for, especially in the light of my experience with trimming the coaxial stub.

Fig. 3: The cable entry box, before Neill G4HLX had discovered that the optimum match appeared to be with the coaxial stub removed! (See text).

Otherwise, I think that the Moonraker antenna is a sturdily built type which performs well, probably better than a conventional yagi of similar length. My thanks go to Moonraker for the loan of the review antenna.

pw

Product

Moonraker 12-element 144MHz ZL-Special

Company

Moonraker

Contact

Tel: (01908) 281705
FAX: (01908) 281706.

Pros and Cons

Pros: A sturdily built type which performs well, probably better than a conventional Yagi of similar length....I expect that the Moonraker antenna probably gets close to the theoretical 14dB gain over a dipole for this design. (The 3dB beam width should be about 36°).

Cons: My only reservation about the construction of this antenna is the cable entry arrangement although with care, this can be done well enough. An improvement in the assembly and set-up instructions is certainly called for, especially in the light of my experience with trimming the coaxial stub

Price

£74.95 + P&P

Summary

I used the antenna for a couple of hours, and had some good contacts. Towards the end of the contest I heard a few EA stations, probably via sporadic-E propagation, so the antenna was certainly doing its stuff!

Supplier

The review antenna was loaned by **Moonraker (UK) Ltd., Unit 12, Cranfield Road Units, Cranfield Road, Woburn Sands, Buckinghamshire MK17 8UR.**

Mr Project-

The F.G. Rayer G3OG

For very many years the name 'F. G. Rayer G3OGR' was to be seen in many radio, Amateur Radio and electronics magazines. But who was the man behind the anonymous initials? To help...his son William unravels some of the mystery behind this enigmatic, but prolific author.

Editor's introduction
For very many years indeed the initials and name 'F. G. Rayer' together with the callsign G3OGR accompanied project after project in *PW* and many other magazines and books. And because of the formal style of his heyday - the man behind the articles remained virtually anonymous - although there can't be many Radio Amateurs over the age of 50 who haven't read or come across one of his many projects.

Have you ever wondered who F. G.Rayer G3OGR was? I have! In fact for almost as long as I've been Editor of *PW* it's been my wish to find out more about the writer who helped me into the hobby with helpful projects, and whose connections with *PW* seem to go back to 1939 when a letter of his was published...followed by a suggestion (by the illustrious F. J. Camm himself) that he (Mr Rayer) follow it up with an article. Which he did!

On many occasions over the past 13 years or so I've mentioned G3OGR - with no response. However, eventually we struck lucky...as **William Rayer** (formerly G8PWR) on his way home to Guernsey in the Channel Islands spotted my appeal in the magazine. Several - very helpful - telephone calls later, led to the story you're now about to read. Thank you William, without your help this article would have been impossible!

Rob Mannion G3XFD

The man himself...Frank Rayer G3OGR operating his Amateur Radio station in 1962. This self-portrait was used in several books ands articles and is one of the very few examples featuring the well-known author. (All photographs courtesy of William Rayer).

Frank George Rayer, my late Father, was born on the 6 June 1921 and grew up near the village of Longdon, on the Worcestershire/Gloucestershire border. His father, Harry Rayer, had a farm there, and there were other relations who were farmers around Longdon at that time.

Dad grew up in a large farmhouse which (in the 1920s and 1930s) had no mains water, no electricity, no gas, no bathrooms and outside toilets. Water was obtained from a long-handled pump, which reached down into a well and lighting was by Aladdin lamps which gave a good light and scented the rooms with the pleasant odour many of us will remember from 'pressure' lamps.

One of these lights, which used a hand pump to pressurise the paraffin in the base, survived until recently. It easily gave off as much light as a 40W bulb, hissing away gently and providing quite a bit of heat with the illumination.

The toilet was reached by a path running behind some bushes alongside the farmhouse. There was a long wooden seat with various sized holes (for the various sized users!) mounted above a trench. I imagine the trench would contain lime, and the 'seating area' would have been hygienic because everything was scrubbed clean and kept tidy.

Water Power

There was a stream running through the farm and during his schooldays my father and his brother installed a water-powered dynamo to generate electricity, although I don't know how long this lasted. Home-brewed hydro-electric power!

My father was interested in how things worked and in building things from an early age. This was partly because of growing up on a farm, and also due to his natural curiosity.

Dad also had a Meccano set which he enjoyed using. He would occasionally buy 'unloved' Meccano sets when he was much older, and just recently we found some of his *Meccano Magazines* from the early 1930s.

My father learnt to drive before licences were necessary and I understand that he used his father's car which was a Morris Ten. He also had a sort of motorbike which was really a bicycle with a tiny engine, similar to those which can still be seen in France.

Incidentally, according to family legend, my grandfather bough a model T Ford, learnt to 'drive' on the way home, and crashed it in the ditch on the road to the farmhouse. He had it repaired and then repeated the exercise!

Interested In Radio

Dad became interested in radio sometime in the 1930s. I remember him saying radio valves were very

GR Story

expensive at that time, something like £1 each. (That would have been a large part of the average weekly income).

Special circuits were used to get the most out of a valve, such as regenerative and reflex circuits, where the same valve works as both an r.f. and a.f. amplifier. Headphones avoided the need for an expensive audio frequency (a.f.) output stage and even more expensive loudspeaker. Huge antennas would then help by providing a stronger signal.

My father would have subscribed to *PW* around this time, and I still have his *Osram Valve Guide and book of Circuits* from 1934, which is a small pocked sized book. The earliest Amateur Radio manual I have is *The Radio Handbook* from the USA in 1938.

War Work

After the Second World War started, my father and uncle were exempt from call-up because of working on the farm. They cut down the orchards to make room for grain crops, wheat and oats were cut and bundled by the combine harvester and were built into ricks.

Transport was by heavy horses pulling carts, and this method was also used to collect grass for silage from the fields. Around this time my father suffered an attack or rheumatic fever which nearly killed him and kept him in bed for six months.

After he recovered from the rheumatic fever Dad was not fit enough to join the Army, although I think he was in the Home Guard. I think they used to keep watch on the local hill for German paratroops. (It's probably just as well that none came!)

After recovering from his illness, my father became more interested in radio. He had no formal education beyond the local school, so he learnt the basics from self-study and correspondence courses. (I found details of the correspondence course many years later, when tidying his workshop). Dad also taught himself to speak Esperanto and professional writing techniques in the same way.

Science Fiction

After the war, there was a lot of interest in science fiction and my father and his cousin E. R. James had many stories published. My family still has some science fiction magazines from this time. (One of them - *Nova* - has colour pictures on the front, with futuristic rocket ships and space cities).

Many new science fiction magazines started up, and my father also started his radio articles. He and his cousin also ran a course for other writers, but even when the clients were successful they became dissatisfied when they were not immediately rich!

Wonderful Valves

My father also used to have some wonderful looking early valves with the British 4 and 5-pin bases. There were also early coils and an early receiver in a mahogany cabinet with square section un-insulated wire running at right angles in the circuitry, I think this had a Mullard PM2 valve.

He also had coils with wave band charts printed on them and the famous logo *What are the wild waves saying?* Also there was an early 'Cathedral type' radio used by my father's Aunt Maisie. This would break down now and again and he would take it home and repair it.

Unfortunately, all these items were sold when we moved almost 20 years ago. Recently however, I saw an identical radio on a website which had been sold for £650 and I realised my Great-Aunt's receiver was a Philco model from the early 1930s.

The Reddings

In the 1950s before my Father had married **Elizabeth**, who was to become mother to two sons - my father bought 'The Reddings'. From what I've been told it was in a terrible state apparently! This is were I William Francis, and my brother **Quintin George Rayer** were to grow up and where my father would spend the rest of his life. Dad had bought the house from my grandfather, who was apparently surprised my father had earned and save enough money!

My father gradually restored the house, putting in wiring and I also remember saying he had to pay the electricity company to run the power down the lane next to the house. This was about half a mile!

Heating, a bathroom and an indoor toilet were also installed. My father did much of the work himself, although a local builder added a new 'wing', which was a light and airy room on one side of the house. I remember my father saying he had to pay the electricity company to run the power down the lane next to the house, which was about half a mile.

Another memory is of an old barn that was part of the farm buildings. When I grew up it was still full of rusty bits of farm machinery and scrap parts, because no-one threw anything away. The barn roof was a source of terror since it was covered in heavy pantiles, and it was gradually leaning over and threatening to collapse. (Cross-beams were added on the inside to prevent this happening).

The Reddings was at the top of a slope and on one side was an apple orchard with very large old trees, and there were many elms at the bottom of the slope. Some of these were conveniently situated about 40 yards or so from the house and made excellent supports for an L-shaped dipole on 'Top Band'.

I remember many of the elms being felled because of Dutch Elm disease, which was a pity because they were the largest trees in that part of the county. One of my Worcestershire childhood memories is the sound of chain saws and the sight of giant dead elms in the centre of the fields.

On a happier note, we had more luck with the apple trees. These had vast amounts of mistletoe which we sometimes sold around Christmas. Also, my mother arranged for cuttings from the apple trees to be grown and we filled a small field with new ripe apple trees.

Amateur Licence

My father would have got his Amateur Licence and his callsign G3OGR sometime in the very late 1950s*. His workroom was on the ground floor of The Reddings and he had an old Imperial Typewriter which he had repaired as war surplus and other gear collected over a lifetime.

By this time Dad had a mixture of home constructed and commercial equipment. (I think his favourite receiver was an Eddystone 730/4).

I remember one large amplitude modulated (a.m.) transmitter in its own rack. This used 813s valves as the p.a. tubes and mercury rectifiers for the power supply. After it was sold, there were still some 813s, 805s and 866 and 872 rectifiers in the attic. This unit **was extremely heavy** and I still have some paperwork relating to its circuits and its sale, which would have been in the early 1970s.

After the heavyweight transmitter, Dad had the relatively lightweight KW2000 transmitter and later on an FT-101 transceiver. For top band, he had a neat looking home-constructed unit using small 9-pin valves. I also remember a double sideband (d.s.b.) transmitter he built for 3.5 and 7MHz using two 807s. (I think s.s.b. made home-construction more difficult, transmitters beyond the skill of most constructors).

Dad also had a 144MHz f.m. transmitter using a QQV03/20 which he built. He only became interested in v.h.f. after I got my Class B licence (as G8PWR), but that's getting ahead a bit!

***Editorial note: George Fare G3OGQ**, a friend of mine from the Warrington Club in Cheshire has proved very helpful indeed on this point. (Thanks George). He's fairly certain that he and G3OGR were licensed on the same day - 4 July 1960 - following the May RAE that year. George G3OGQ worked G3OGR on numerous occasions (the last being on 29 April 1979 -and they also corresponded, but he says all the letters have now been lost. **Editor**.*

Main Occupation

During all this time, my father's main occupation was writing, and developing circuits for future articles. His main source of income was from books and science fiction and from the radio articles and books on building and construction.

Dad also wrote some articles for the *Readers Digest* and had some income from his interest in the farm, which was run by my uncle after my grandfather's death. My mother was working as a teacher and together this provided enough income for a family. Up until the mid 1970s, expenses were a lot less, even allowing for inflation and many of today's 'essentials' did not exist.

After he'd married, my father concentrated on the radio books and construction projects and less on the science fiction. I think they paid more, or at least provided a regular income! Perhaps he would

William (aged about one year) with his parents Elizabeth and Frank at 'The Reddings'.

have preferred to spend more time writing novels. I suggest this as I think his two main gifts were a lively imagination when writing novels and designing circuits that were easy to understand and build, yet capable of good performance.

Around 1970 he became a writer for Babani Ltd., and wrote many books for them. These books were very practically orientated and my father made sure he built everything he wrote about, and made sure it worked. The Babani books were quite cheap and sold a considerable number of copies.

The 1960s to the early 1980s were the time when Dad wrote most of his articles. As well as the books I listed in the previous letter, he contributed to *PW*, *Practical Television*, the *Radio Constructor* and *Practical Electronics*. I also have a copy of Newnes *Practical Wireless Circuits* 1957 (ed. F.J. Camm)) for which he wrote about 50 pages.

During the 1970s Dad joined the move towards semiconductors, which were then cheaper and more efficient than valves. He was always interested in miniaturisation, constructing small receivers in Tic-Tac mint boxes and making small crystal-controlled 144MHz receivers and transmitters. Also he was interested in radio control, and I remember a large wooden model boat he would bring out every few years to test new circuits in.

William & Wireless

In the mid-1970s I also became interested in radio and electronics. This was partly from studying physics at school, but also curiosity about what Dad was doing in the workroom.

Before understanding any electronics, I remember looking at a circuit diagram with maybe 20 or 30 components that he was building, and thinking it was so complex.

I also remember asking "what would stop a part here (in the bottom right hand corner) interfering with something else here" (randomly pointing my finger in the middle)? Patiently, Dad explained it didn't work like that, the currents ran from top to bottom and the signal made its way across the page, being amplified on the way.

After my curiosity was aroused, Dad helped me build simple transistor circuits using one or two BC108s. We put up a big antenna and made an earth by buying a spike. He then fixed up components with solder tags and loops so I could make things without soldering.

Next he made a kind of baseboard, which was formed from a sheet of clear acrylic with holes for nuts and bolts and feet down the side. Some of these ideas made their way into a Babani's beginners projects book. I would also try and design my own circuits, which never worked...and then Dad would explain what was wrong and help fix them up.

From the mid-1970s onwards, Dad wrote many constructional books. About half were radio and the remainder were electronics and digital i.c. projects. Generally, Newnes published the radio books and Babani published the other projects.

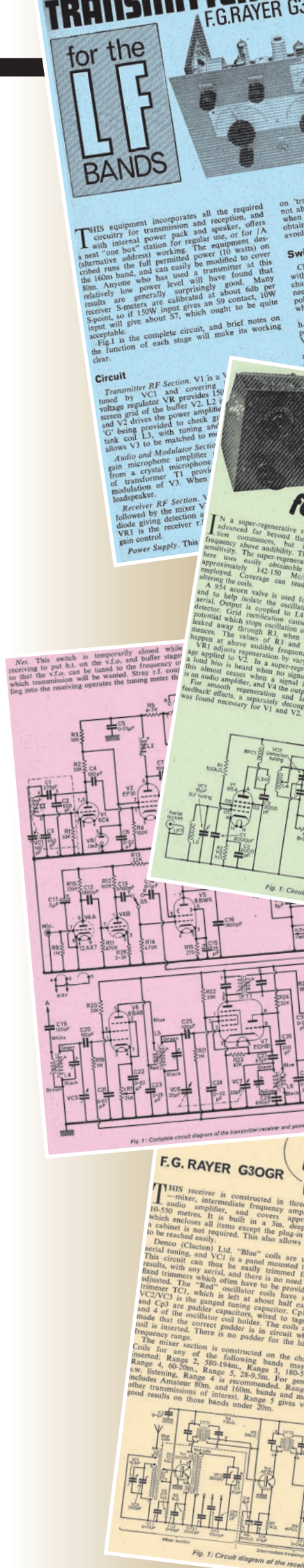
The Newnes books were better quality (glossy covers, better paper, etc.), but I think the Babani books paid quite well. Dad always tested the projects, drew the diagrams and proof-read the books. This was a time when publishers would refer technical problems to the author for an answer, so you had to make sure things worked!

During this time (1975-1981) I remember two projects Dad made using valves. This was the d.s.b. twin 807 transmitter and the 144MHz transmitter I've already mentioned. But if you wanted to be published, you had to stay up-to-date with the technology!

Sometime in the 1970s, Dad became an Associate of the Institute of Electronic and Radio Engineers, and would receive a monthly delivery of a large and complex journal produced by the Institute. He was also interested in computers (this was pre-PC) and wrote books on digital electronics using the 74XX series chips.

When I started learning electronics, the valve gear had already been exiled. The attic was full of large old dusty valves, variable capacitors, dangerous high voltage transformers and coils that looked like something from a Frankenstein movie.

Additionally, there were hundreds of copies of *PW*, *PT* and *QST* magazines from the 1940s onwards, which explained how all of this old stuff worked. I was an explorer in a world of lost technology, but now I had the key...and my interest grew in the early circuits and techniques.



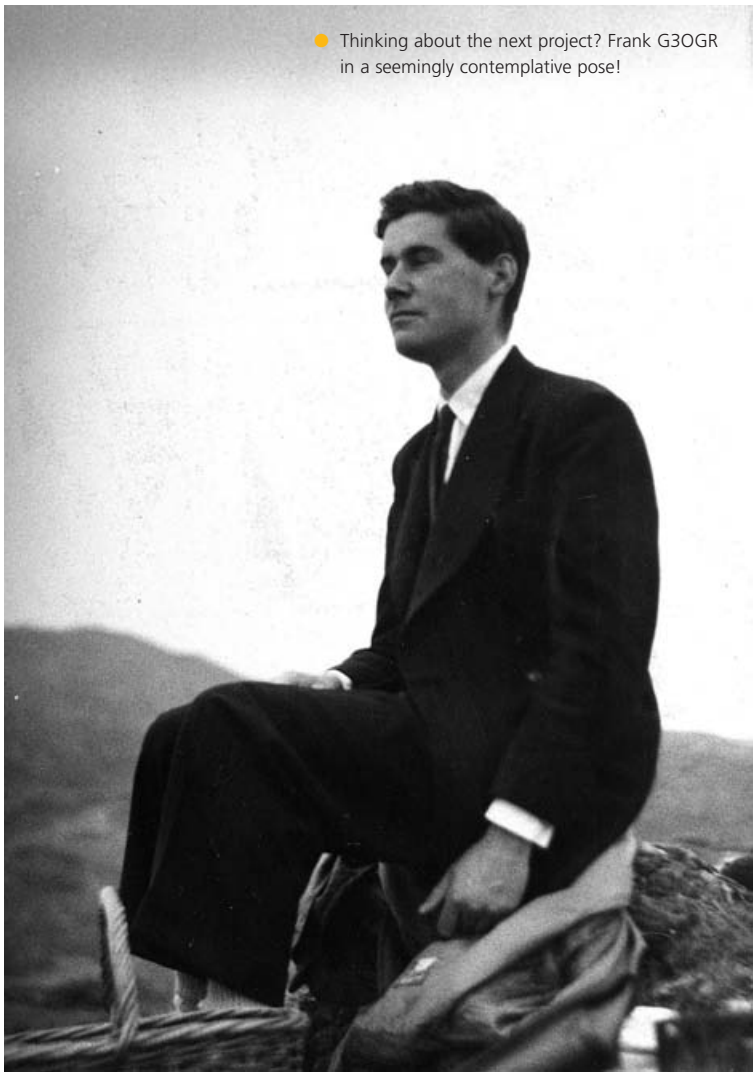

receiver
or 144 Mc/s
F.G. RAYER G3OGR
Chassis layout
diagram of the receiver section.
COVER SUBJECT
Audio amplifier

Also around this time (1978) I obtained a class B licence and the callsign G8PWR. I was then studying O and A level physics and the radio theory needed for the RAE was not far beyond this.

I found the Morse difficult and never got beyond about 4 or 5w.p.m. But I was interested in v.h.f. and Dad also became interested in this area. (I don't think he operated on 144MHz before I became licensed).

We both built transmitters (mine used a QQV03/10 as a p.a. valve) and used crystal-controlled converters. Eventually, Dad got a small Icom 144MHz transceiver, which he would sometimes use in his car. Mum also gave me a 144MHz yagi for Christmas, which was a great improvement on the dipole I used previously.

Dad helped me a lot with circuits at that time...I couldn't have built my 144MHz transmitter without his help. I also wanted to build a valve audio amplifier, so he sketched out a really simple and effective circuit based round an EL34 pentode.



Thinking about the next project? Frank G3OGR in a seemingly contemplative pose!

Annual Rally

There was an annual Amateur Radio rally near Upton-upon-Severn, which we would always go to. It was only about two miles from home, so we could make several trips and fill up the car with junk (I mean radio treasures!).

Dad was quite selective about what he would buy, and usually it would be a few small components for a project, or very occasionally, a receiver. But at that time I was very much into 'lost technology' and would collect strange valves, high voltage paper block capacitors and anything else that looked as if it might end up in the skip, uncared for!

However, an instinct for self preservation (or probably Dad!) prevented me buying a 10kV 10mA extra high tension (e.h.t.) transformer I saw there one year. A lucky escape perhaps?

Top Band Favourite

I think Dad's favourite was 1.8MHz -or Top Band...he really was an h.f. man at heart. The 1.8MHz dipole would have been ideal, and the 10W power limit and lower frequency made home-constructed equipment ideal for this band. In the 1960s he had been very interested in DX work and had a large collection of QSL cards.

Towards the end of his life, Dad suffered from diabetes. He died in July 1981, only a month or so after his 60th birthday from complications caused by this disease, almost a year after I went to University.

We kept some of the equipment after he died, but gradually sold off most of the h.f. gear and cleared the workshop. In 1986 my mother remarried and moved to Guernsey here in the Channel Islands.

There was not much room in the new house so many more things had to be sold or scrapped. In some cases, this was necessary, but I do miss those early valves, the 'Cathedral style' Philco radio that Great Aunt Maisie left to Dad when she died and the coils with the logo '*What are the wild waves saying*'!

Two years after graduating, (1986), I moved to Australia and eventually became a Citizen there. I moved back to Guernsey in 1996 and I'm currently a self-employed programmer.

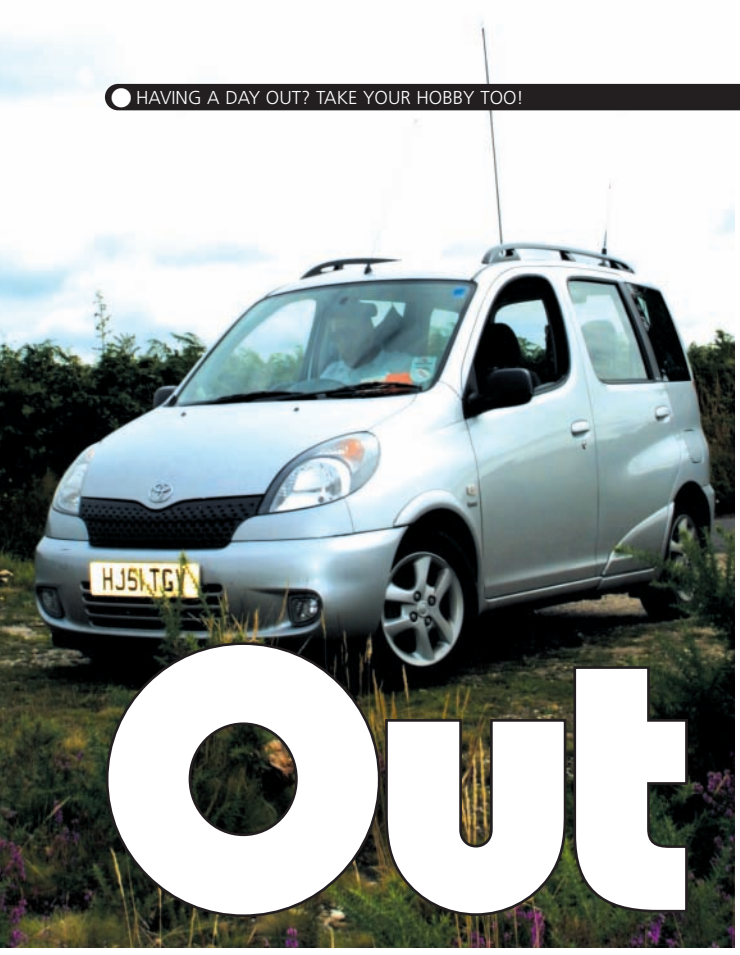
I still enjoy building things using 'lost technology' and my current project is an early oscillograph. Although my G8 licence lapsed, I would eventually like an h.f. licence, but only if they relax the Morse requirement and if I have room for the necessary antenna!

Finally, I must thank my late father's cousin **Ernie James** (fondly known as 'Uncle Ernie') for his help. Now in his late 80s he was able to tell me things about The Reddings I either didn't know, took place before I was born...or couldn't remember. Thank you Uncle! *PW*

Books produced by Frank Rayer G3OGR

Frank Rayer G3OGR wrote over 30 technical books (produced by a number of different publishers)published, mostly dealing with electricity, electronics, computing. radio and Amateur Radio. Additionally (and I didn't know of this until William passed on the information) G3OGR also published four science fiction titles! There's not enough space to provide the full list-however, interested readers can contact me for further details.

Editor.



Out & Abo

Having Mobile & Po

Rob Mannion G3XFD has a few suggestions and tips to try and encourage you to enjoy the hobby away from home. New to the h.f. bands? - if so you might like to join G3XFD/P on the air too!

Much of my Amateur Radio operating time is done from my car and I find 'getting on the air', as a break from a long trip to visit a club...to be very relaxing. Indeed, working 'portable' means that I can combine our extraordinary flexible hobby with many other interests.

Using relatively simple antennas, and moderately low power in conjunction with one of my Alinco DX-70s and other rigs - I manage to work a lot of DX...**without really trying**. One of the reasons for this of course...is that I can often choose some of the best h.f. sites before parking up, brewing a pot of tea and **getting on the air using c.w. (Morse)** - although s.s.b. ('phone) at around 25W has also proved remarkably successful and even using 10W and less can bring excellent results.

What about choosing h.f sites? A few words of advice might be a good idea - to help those of you who've just joined us on h.f., before I describe the techniques I use for my 'Out & About' work.

Careful Parking

Careful parking really comes into its own for portable Amateur radio operations on h.f. With care, you should be able to overcome what on the face of it seems to be the disadvantages of operating with relatively low power together with less than ideal antennas.

Even though you may not be able to get to the sea on an every day basis...you can take advantage of it when on holiday. Very often, if you don't mind not getting a good sea view yourself from the car, you'll be able to find a spot in a seaside car park where the all-important antenna gets a good view. That's the approach you need...enabling the excellent over-water propagation to take effect.

I've also found that it often helps a QSO even if you can only glimpse the sea in the distance as is the situation with my favourite site (heading photograph). At this site, if I get out of the car and look into the distance I can just glimpse the sea off the Needles, together with the downlands on the south-western tip of the Isle of Wight. It provides an excellent take-off for DX, especially on 18MHz.

Travelling inland...far from the sea? Don't despair...there are many locations which you can use to advantage. Lakes, large reservoirs and river estuaries can help. And if you can get a temporary earth wire or even a trailing radial wire down **(take care if you're in a public place - ensure you don't compromise your, or other people's safety)** you can improve the chances of good DX.

To illustrate what I've just mentioned regarding inland 'wet' and lakeside sites...I should (with the risk of losing my parking place) say that **Staunton Harold Reservoir** - a large totally man-made lake - between Melbourne, Derbyshire and Ashby-de-la-Zouch near the Leicester Show venue is an excellent site for h.f. working. It also provides a delightful picnic spot.

There are many lakes in England and Wales, and many lochs and lochans in Scotland and Irish Radio Amateurs **are spoilt for choice** (just look at the map of EI/GI to see what I mean!). There are also many sites where the ground is wet - which will help ground reflection and provides a better earth.

Try to avoid parking under trees...use them with care to support antenna halyards perhaps...**but don't park underneath**. This isn't a good radio technique and it can be dangerous in bad weather.

Remember also (when using long

Fig. 2: If there's any 'Secret' to the flexibility of the mobile/portable antenna system used by G3XFD...he says it's thanks to this little unit. The MFJ-945E has proved itself to be extremely useful indeed (see text).

Rob Mannion G3XFD parked at his favourite h.f. 'portable' location at Holt Heath near Wimborne in Dorset. From this location he's managed to work stations as far away as Australia and New Zealand using simple antennas and less than 20W. Find out how you can also join in and have fun!

h.f. whips and portable masts) that power lines - the seemingly ever present 33 and 11kV three phase power lines, **can be exceptionally low over farmland and above or near roads in the countryside.** Several years ago a Radio Amateur was tragically killed whilst erecting a temporary mast when he accidentally made contact with an overhead power line. So please do be very careful!

Finally on this topic, if you're intending to operate your Amateur Radio from a public car park, be prepared to ask permission from the attendant. At these locations it's best to find a place away from other vehicles because your transmitted r.f. might set off badly designed car alarms or effect radio operated key system - so be aware of potential problems.

Antennas & Earths

Simple antennas can prove surprising results when operating portable on h.f. For many years I carried a 40 metre length of pvc covered 7/0.22mm (seven strand of 0.22mm diameter copper) wire as a convenient portable 'long wire' antenna, stored on a small cardboard cable drum. Available from any hardware outlet this wire makes a good 'rough & ready' antenna, in conjunction with an antenna tuning unit (a.t.u.).

A push-in earth point is a good idea too...a long bladed thin crosshead screwdriver is excellent for this job. Being flat-sided it will penetrate the ground easily and my experience suggests it's best to connect the earth directly to your a.t.u.

Nowadays I favour another approach, as shown in **Fig. 1**. The antenna on the right-hand rear side of my car is the 7MHz version of the Pro-AM mobile whip and it's one of the easiest to set-up and use antennas I've ever had.

Although the mag-mount antenna base isn't visible in the photograph, it's one of the triple-magnet types which are freely available from literally any Amateur Radio dealer. It provides an excellent base for my collection of Pro-AM h.f. antennas (I've got a set of them for the 3.5, 7, 14, 18 and 21MHz bands).

Because the magnetic mount does not provide an earth to the vehicle chassis, when I'm on the air I link it to the rig in the car with a crocodile clip 'flying lead'. I also carry a roll-out length of wire to provide a radial system which is laid out above the ground - taking care that neither passers-by or myself can trip over it!

Antenna Tuning

As supplied, the American made Pro-AM mobile whips are tuned to cover the high ends of the bands they cover. This of course reflects the fact that the antennas are really aimed at the very busy h.f. mobile market in the USA. However, in practice even though the whip for 7MHz was designed to tune-up effectively **above 7.1MHz** (the USA band extends above 7.1MHz) it's extremely easy to adjust it to the European allocation (just a 'tweak' is needed).

I then required some method of tuning to save me the effort to get in and out of the vehicle (something which is increasingly difficult for me to do). Fortunately, following a very successful trial the MFJ-945E Mobile Antenna Tuner, **Fig. 2**, proved ideal for the purpose (The review appeared in the April 1999 issue of *PW*).

The little a.t.u. has proved to be truly excellent for portable working. It provides a useful in-line s.w.r. meter and also allows me to tune the antenna anywhere on 7MHz without getting out of the car...until I want to change bands! It's an exceptionally easy system to use and the newer model (contact **Waters & Stanton Plc** on **(01702) 206835** for price and availability) now also covers h.f. and 50MHz.

So...why don't you take your hobby with you on a day out? Many Amateurs are used to parking up on hill-tops or other good v.h.f. take-off points and getting busy on their radios. But why not try it on h.f. too...it's great fun...I've enjoyed it for many years!

PW

Fig. 3: Some of the items G3XFD considers to be essential when operating 'portable! Firstly there's the kettle of course! Secondly, the trusty Trio 9000 multi-mode 144MHz rig, and Rob's 7MHz Pro-AM antenna, and a smaller h.f. whip. The sturdy metal unit in the background is the well-known Tennamast Tenna-Tourer drive-on mast base. This will support a lightweight metal mast up to 10m high, or one of the fibreglass 'fishing rod' type 10m masts available from *PW* advertisers Sycom. (A photograph of the Tenna-Tourer base in use with the Sycom mast was published in G3XFD's article - Delta Loop Portable on page 54 of the September issue).

out...

ortable Fun!

Fig. 1: Rear view of the G3XFD 'travelling Amateur Radio station', showing the 144MHz whip (left) and the 7MHz Pro-AM h.f. whip (removed when travelling). The Toyota Yaris MPV is equipped for h.f. and v.h.f. operations. The internal lay-out of vehicle provides many 'nooks and crannies' for stowing equipment. The Yaris is fitted with air conditioning and is also provided with picnicking and tea & coffee making facilities (Well he does spend a lot of time driving!). And yes, the 'TGV' of the number plate was especially chosen...even though he doesn't try to race real TGV trains when in France! (See text).

Carrying On The Practical Way

The Rev. George Dobbs G3RJV says "Credit where credit is due" while he looks at the RA3AAE mixer from Russia. And although he's not offering a splash of Vodka to join 'the mixer' ...there is an appropriate quotation!

"There is no limit to what a man can do or how far he can go if he dosen't mind who gets the credit "

Robert Woodruff

● This month's project...a neat little 7MHz receiver based on the pioneering work of RA3AAE.

Sometimes I hear Radio Amateurs saying that "Modern electronics are too sophisticated for there to be much future in home construction". However, I simply disagree with the word "sophisticated" in that context.

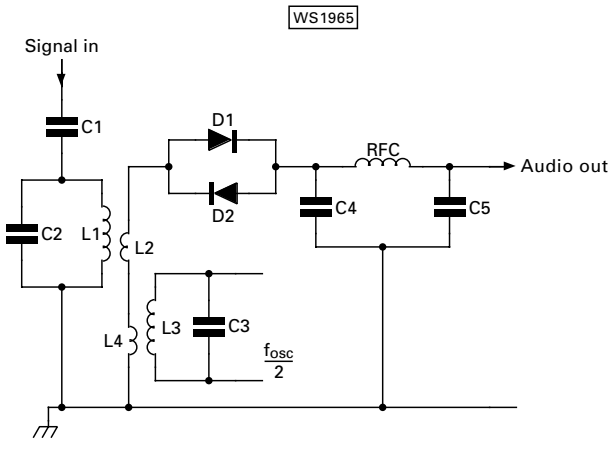
I agree that some modern electronics are perhaps too complicated for us to replicate. However, my idea of sophistication is something simple and elegant that fits the role beautifully.

For me a sophisticated circuit could be a very simple circuit that does the required task without any frills or needless extras. Home constructors can embrace such sophistication...and let's now look at a good example of Amateur Radio sophistication!

Delightfully Simple

In the March edition of this column, I described a delightfully simple little circuit idea for a two-band direct conversion receiver originally sent to me by **Rudi Burse DK2RS**. Following that article, **Bozidar Pasaric 9A2HL**, wrote to me from Croatia pointing out that the two diode, mixer-doubler circuit was an original idea from **Vladimir Polyakov RA3AAE**.

It appears that the idea has been re-worked in several articles and projects, usually without due credit to RA3AAE. Incidentally, Vladimir was kind enough to send me reprints on no less that 10 articles, from around the world using the circuit. So I begin here by crediting RA3AAE with an excellent little idea, which has borne much fruit.



● Fig. 1: The original circuit suggested by RA3AAE in 1976 (see text).

The RA3AAE mixer circuit first appeared in the December issue of 1976 in the Soviet magazine *Radio*. In fact my correspondent, 9A2HL, translated the article in 1977 for the Yugoslav magazine *Radioamateur* and it was later quoted in The *CQ* magazine in the USA and the *QRP Report* journal in Germany and several articles from Eastern Europe. (So the idea has certainly spread itself around). Some UK readers may also recall the mention of the circuit by **Pat Hawker G3VA**, in July 1977, as part of his Technical Topics series in the RSGB's *Radio Communications*.

The letter from 9A2HL prompted me to think I ought to look even further into the usefulness of what has become a very popular circuit. My earlier treatment was really based on a simple bench lash-up to see how it worked and the original circuit suggested by RA3AAE in 1976, is shown in **Fig. 1**.

The r.f. input from the antenna is fed to a tuned circuit, L1 and C2, at the desired frequency for reception. A link winding, L2, couples the signal to a pair of anti-parallel ('back-to-back') diodes, D1 and D2.

The tuned circuit formed by L3 and C3 is the frequency determining section of a local oscillator. This oscillator runs at half the desired reception frequency (f/2). Output from the local oscillator is linked coupled via L4, through L2 to the pair of diodes. The diodes not only act as a product detector (mixer) for the input and oscillator signals, but also as a doubler for the local oscillator signal.

Some of the products available from the two diode mixer are shown in the diagram, **Fig. 2**. The two input signals f_{in} (input frequency from the antenna) and f_{osc} (the frequency of the local oscillator) will appear at the output as will various products and harmonics.

Because the two diodes act as a doubler, the products that we are interested in are $2xf_{osc}$ minus f_{in} and $2xf_{osc}$ plus f_{in}. These produce audio side bands at either side of the input signal. The output therefore contains audio signals from the desired input signals...the circuit is then acting as a direct conversion receiver.

The method of product detection used in the RA3AEE has several advantages. Firstly...the oscillator operates at half the desired signal frequency so the receiver input circuit does not tend to 'pull' the oscillator. Secondly it's also easier to generate a stable signal at lower frequencies. The stability of the oscillator can also be enhanced by the use of a larger tuning capacitance, which should improve the note of received c.w. signals.

Simple 7MHz Receiver

Encouraged by the possibilities and armed with a whole array of practical applications of the RA3AAE circuit, I decided to attempt a simple (but hopefully viable) 7MHz receiver. The circuit of the complete unit is shown in **Fig. 3**.

The outline circuit around the mixer comes from a later article by RA3AAE published in 1977. In this circuit the signal from the local oscillator is applied via a capacitor in one side of D1 and D2. The signal

from the input tuned circuit is applied to the other side of D1 and D2.

A 1mH axial choke and a 47nF capacitor form a simple r.f. decoupling circuit prior to the single stage audio preamplifier. The audio amplifier is a standard LM380 arrangement.

For the local oscillator, I used a ready-built circuit from a previous project in this column. It uses a ceramic resonator on 3.58MHz in a variable crystal oscillator (VXO) Colpitts circuit.

The variation in frequency is achieved with a series connected variable capacitor. I use a surplus polyvaricon capacitor of the type used in cheap medium and long wave a.m. radios. Mine had a nominal value of 350pF, which gave a frequency range of 3.49 to 3.62MHz. When doubled in the mixer, this becomes 6.98 to 7.24MHz for coverage of whole of the 7MHz band.

The input tuned circuit is arranged to cover both 3.5 and 7MHz for reasons explained later. Inductor L1 is 40 turns of 28 (or 30) s.w.g. enamelled wire on a T50-2 core (9.1µH). The antenna feed-point is four turns up from the ground end of L1. Inductor L2 is five turns of the same type of wire wound over the centre of L1. Again the variable capacitor is a polyvaricon type.

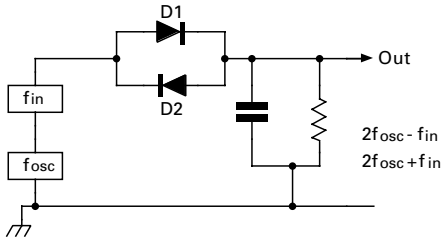
A variant of the mixer circuit is shown in **Fig. 4.**, to allow for two band operation. When the switch (SW1) is open, the single diode becomes the mixer element and the doubling of the local oscillator frequency does not occur. This enables the receiver to be used on 3.5MHz (Incidentally, the input tuning has been arranged to cover both bands).

Mixture Of Styles

I built a complete version of the receiver using a mixture of construction styles and mounting the boards behind a front panel fashioned from scrap printed circuit board (p.c.b.) material. The results from the little receiver were gratifying.

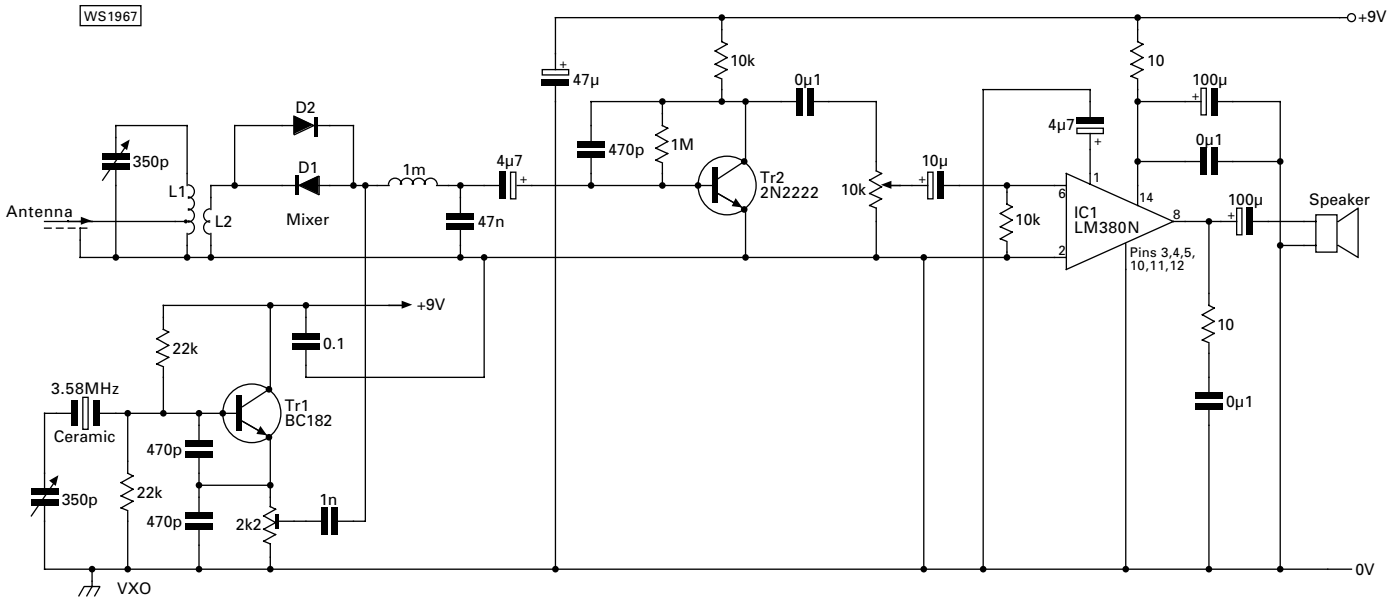
On 7MHz it performed surprising well and would make a more than useful standby receiver. However, on 3.5MHz the results were a little more 'iffy' but it's still usable as a receiver. The RA3AAE circuit is elegant Amateur Radio sophistication and gives good results from very few parts. *PW*

WS1966



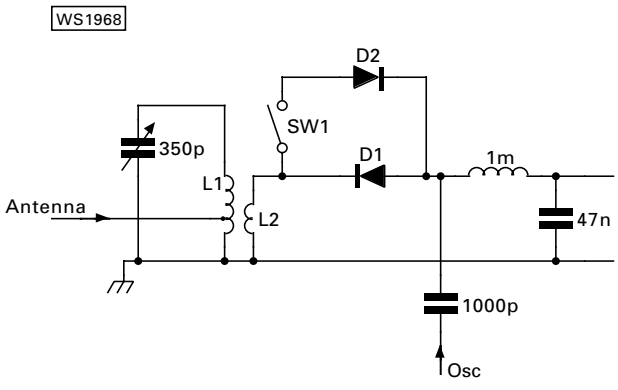
● Fig. 2: Some of the products available from the two diode mixer are shown in the diagram. The two input signals Fin (input frequency from the antenna) and Fosc (the frequency of the local oscillator) will appear at the output as will various products and harmonics (see text).

WS1967

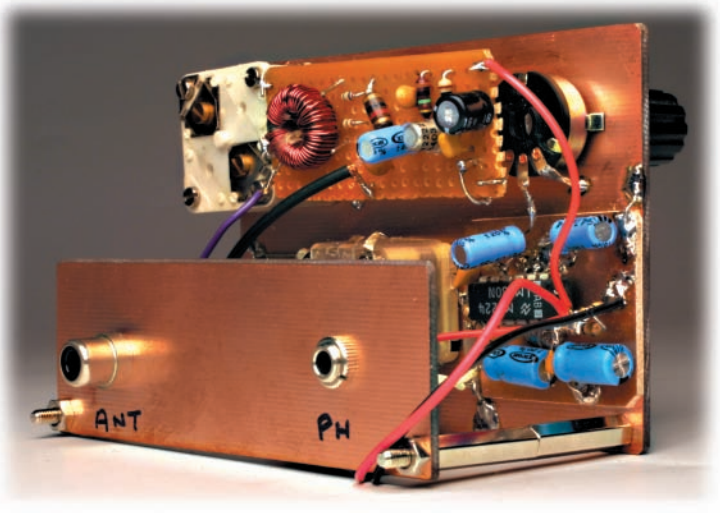


● Fig. 3: Armed with a whole array of practical applications of the RA3AAE circuit, George built a simple 7MHz receiver. The final circuit of the complete receiver is shown here.

WS1968



● Fig. 4: A variant of the mixer circuit is shown in to allow for two band operation (see text).



● Fig. 5: (Right) The receiver prototype as completed by G3RJV.

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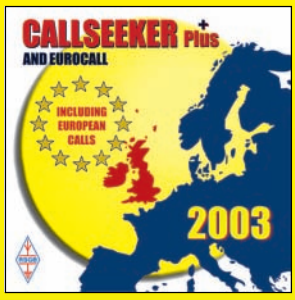

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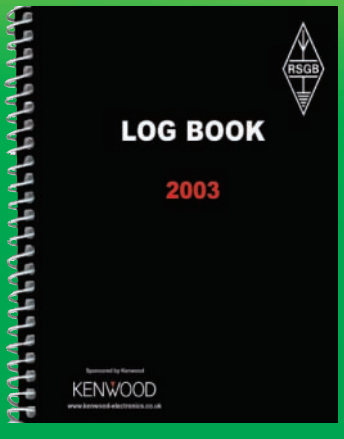

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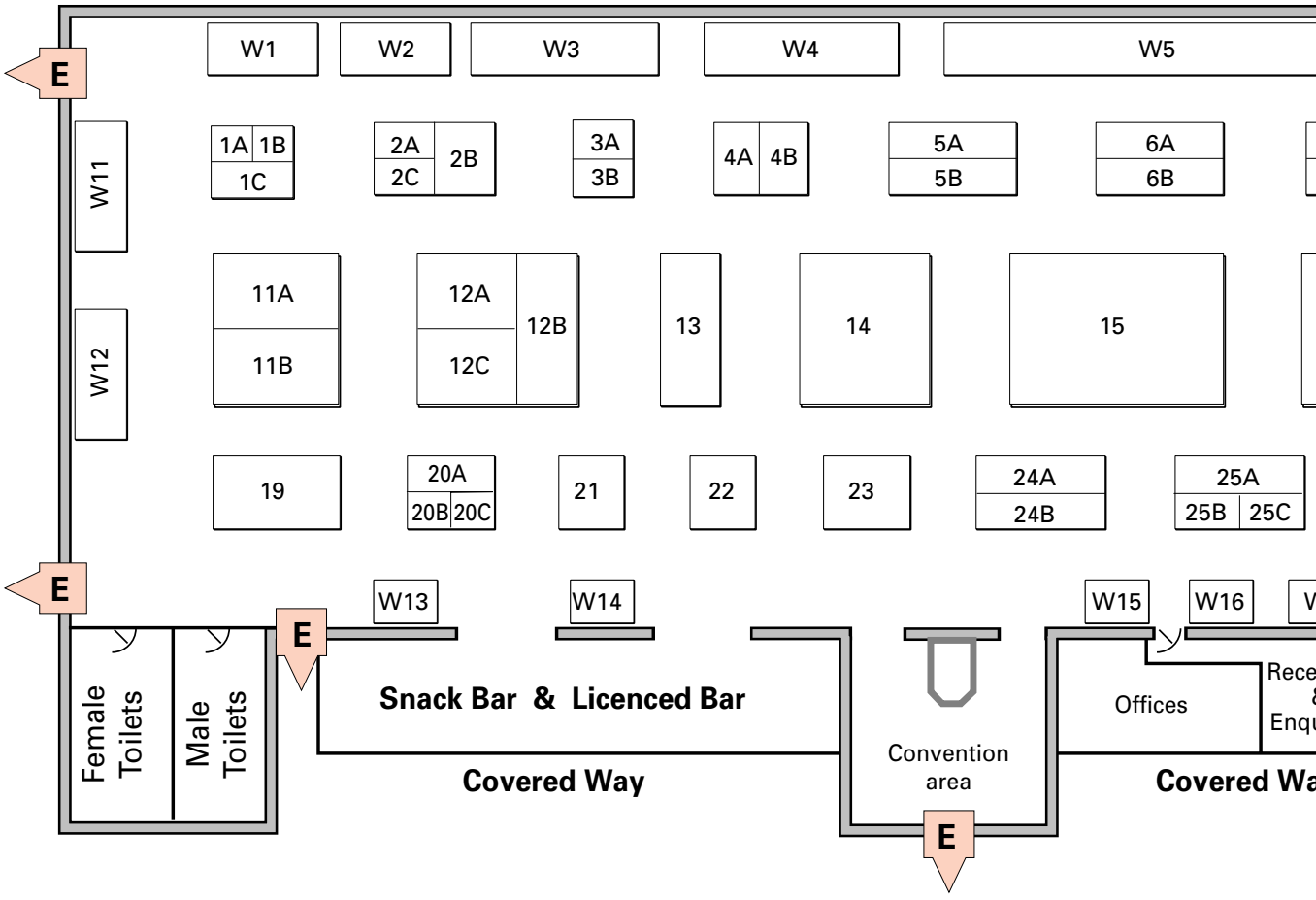

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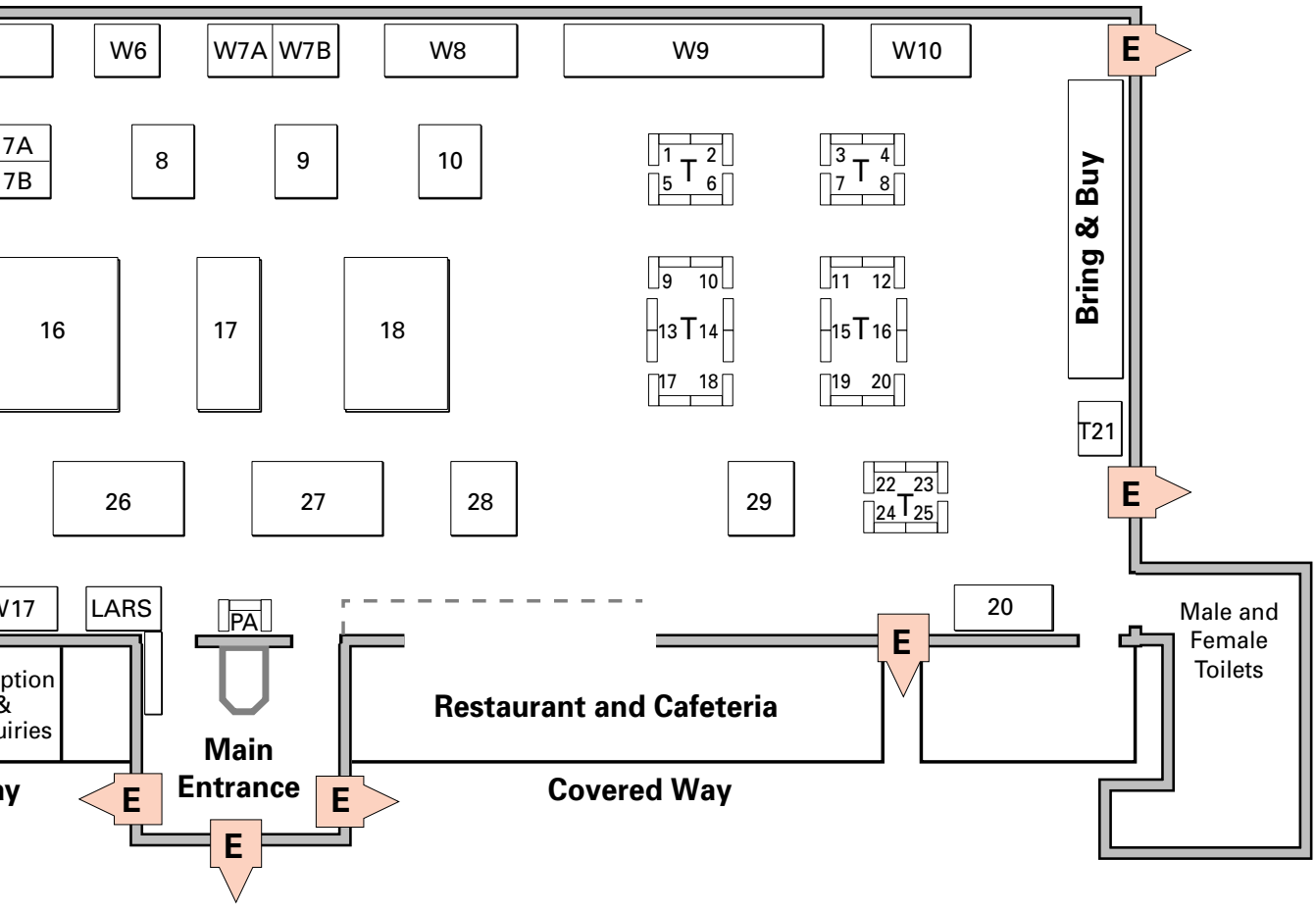

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W7b	Terry Milman
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W18	Bring & Buy
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3b	Maplin
4a	GH Engineering
4b	AOR (UK) Ltd
5a	Northampton Comms
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11b	Martyn Lynch
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17	RSGB
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20b	Mary Molineaux
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21	Festival
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23	Radiocommunications Agency
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28	Rich Electronics
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Please note all details were correct at time of going to press.

Get The Power... With the HY3003-2!

Rob Mannion G3XFD looks at a reasonably priced bench top power supply which could prove very useful in your workshop. In particular, Rob thinks that this unit should appeal to the newcomer or someone who is equipping, or expanding their own workshop activities.

The HY3003-2 dual output power supply.

It's rather strange that even though radio enthusiasts (particularly Radio Amateurs) are often prepared to pay a great deal of money for a transceiver or other transmitting/receiving equipment...when it comes to equipping their workshops...the purse or wallet often slams shut! And before I get E-mails and letters decrying the previous statement...I know it's true because in the past my own purse has also barred entry or exit to trapped or passing moths!

Seriously though, when it comes to equipping our workshops - with even a minimum of test equipment - there does seem to be a reluctance to part with money. That's why test equipment can be the most difficult thing to sell at Bring & Buy stands at rallies.

Again, I can quote my own personal careful control of finances when it comes to buying an oscilloscope in recent years. Not willing to pay 'shop prices' I advertised in *PW*'s Bargain Basement' for a suitable 'scope...and got one for around the £100 mark. So, you can see I write from the viewpoint of a Radio Amateur who has "Been there...done that"!

Personally speaking I recommend to all those readers who follow my Radio Basics series of articles to seriously considering the following short list of equipment for their own 'workshop' (even though it may only be the proverbial table top). The minimum I recommend would be: Some form of regulated power supply for equipment, a decent analogue multimeter/test meter and a digital multimeter (but not a digital meter alone).

I suggest you have an analogue meter and digital meter because the first is excellent for general use - you can 'read it' in the same way you do with an ordinary clock face - interpreting the results and getting an overall impression of voltage, current and resistance parameters. The digital meter comes into its own - in my opinion - for more precise voltage measurements and for modern resistance measurements.

The other basic requirement is a power supply to run your equipment. It can be in the form of a regulated supply originally intended for CB radio use (they tend to be very cheap nowadays and are usually of good quality) or you can also use a trickle-charged car battery. The latter suggestion is not recommended for use indoors - it's better for use in an outside workshop because unless it's a sealed type (requiring a special charger to minimise 'gassing') a fine mist of electrolyte can cause havoc with curtains etc!

In reality though, you can do no better than make a wise investment- by looking around for a dedicated, versatile bench power supply. Once you've chosen what you want...with care it will last for many years.

So, when I was offered the opportunity to look at a bench power supply I immediately thought "How useful" - because any review could be best aimed at the many Radio Basics readers who are just getting under way with their own workshop installations and developments.

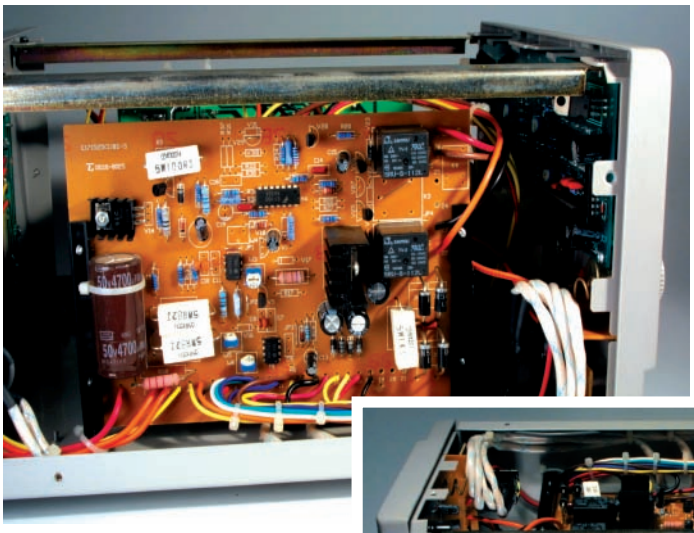
The HY3003-2

The HY3003-2, is manufactured by a company called *digimess* (their registered name which is printed in italics and also in all lower case), who produce what they call a 'concept' of five power supply designs - and the unit I've had on review is one above the basic entry level models.

The manufacturer's state that "The HY series is a comprehensive range of relatively low cost general purpose power supply units containing single, dual and triple output models. All models can operate in either constant voltage or constant current modes and feature large red l.e.d. displays for ease of viewing. The dual and triple output types also include external switching

Manufacturer's Specifications

Power supply outputs:	Dual
Mains input voltage:	110/220V a.c. (±10%
Output voltage:	2 x 0-30V
Output current:	2 x 0 - 3A
Line regulation:	<0.02% + 1mV
Load Regulation:	<0.01% + 5mV
Ripple and noise:	<1mVrms
Display type:	2 x 3.5 digit l.e.d.
Display accuracy:	Voltage - 1% + 2 digits
	Current 1 - 1.5% + 2 digits
Dimensions:	365 x 265 x 164mm
Weight:	10kg



● Inside view of the power supply unit.

for independent, tracking, series and parallel modes of operation".

On Rob's Bench

Although I'm not sure whether or not the matt white finish (for any equipment!) for a mucky type like myself is a good idea...it was nice to have something on my bench which wasn't black! I think if I had an HY3003-2 for some while somehow I don't think it remain looking so neat and tidy! But as I've said...it was an attractive sight in white.

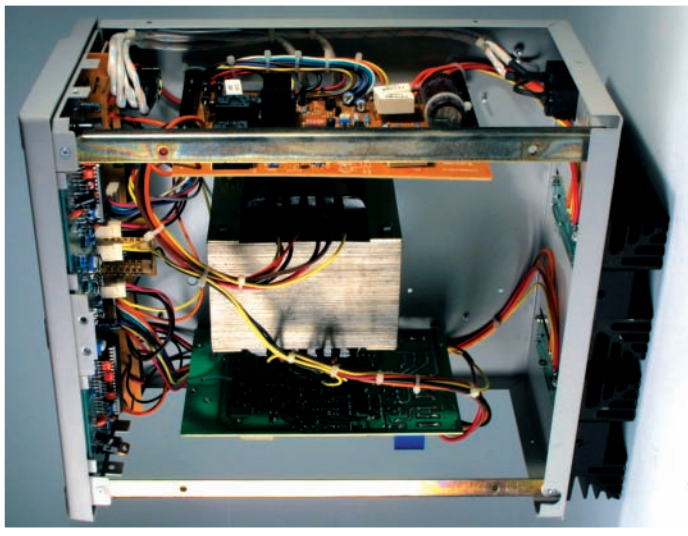
The l.e.d. displays are reasonably bright for use in the workshop/bench use. At the moment I use my bedroom/study/office as my own workplace and the lighting is arranged to be bright - the display l.e.d.s coped well with this level of illumination.

At first I though that the maximum output current - 3A - would limit the use of the p.s.u. in my activities. Despite this, I did not find the 3A maximum cramped my style. When I needed a higher current I just used my 20A p.s.u. which is used together with my transceiver.

Some transmitting Amateurs may actually - if they're QRP enthusiasts - only need the 3A. However, even though I did need higher currents for some projects/activities -the HY3003-2 suited most purposes.

One of the projects I used it to power was the Wurzel receiver featured in Radio Basics in the July issue of *PW*. Using it to power the little receiver I found that the excellent electronic 'smoothing' (as we used to call it) was very good. This was very helpful because any form of ripple on the supply to a regenerative type receiver can make the reaction (regeneration) raspy and unpleasant to use on the air

In fact, I was so impressed with the lack of hum and ripple I tried to measure it on my bench oscilloscope. But when the ripple was seen on the 'scope screen I had great difficulty in observing it...unless the instrument was set to measure very low levels. Very impressive indeed!



● The substantial transformer used in the power supply.

Setting & Operation

Setting the dual output power supply to what's required is a piece of the proverbial cake. The rotary controls are smooth in operation and clearly labelled and setting the voltages is easily achieved.

The l.e.d. displays are easy to follow - although I think that in really bright light (with the unit backing on to an outside window) the user would have to screen some of the daylight...perhaps by placing a piece of card between the unit and the daylight. However, this should not be taken as a criticism of the HY3003-2, it's just that l.e.d.s (particular red types) can be overwhelmed by natural sunlight. In practice though, I didn't find it any bother...it's something to bear in mind.

Because the unit is white, the various coloured connector terminals (all are colour tipped with either black, green or red) are extremely easy to see. In fact, the whole front panel is a delight to operate and in my opinion, makes the unit ideal for the less-experienced and those of us with older eyes!

It's fortunate that this extremely attractive and easy-to-use power supply is so easy to use...because the so-called manual is in fact not particularly good! Indeed it's thinly prepared and is extremely basic... just providing the user with the plain facts. Added to this, the 'manual' (it's really more of an information leaflet) shows every sign of being translated by an Oriental speaker into English using a dictionary! Despite this...it does provide information (plus a little amusement) and I would not want it to put you off buying an HY3003-2.

A Good Buy?

Personally speaking I was more than satisfied with the production quality and finish of the HY3003-2. It's a good buy and a delight to use. Perhaps the manufacturers might improve the 'manual' - but they certainly don't have a problem with the main unit.

I like it very much and I think (for those marooned indoors) that there won't be many objections at seeing the power supply indoors. It's one of the few items of electronics equipment I've comes across that fit into that category!

PW

Product

The *digimess* Concept®HY3003-2

Company

Vann Draper Electronics Ltd

Contact

Tel: (01283) 704706

Pros and Cons

Pros: Very neat and easy-to-use unit.

Cons: Very basic instruction 'manual'.(following criticism in reviewthe manufacturers are to prepare an improved manual).

Price

£169 plus VAT & P&P

Summary

"...a delight to operate and in my opinion, makes the unit ideal for the less-experienced..."

Supplier

Vann Draper Electronics Ltd, Stenson House, Stenson, Derby DE73 1HL.

Special Offer For *PW* Readers

Following the review of the HY3003-2 power supply in *PW*, the importers to UK agents for the manufacturer-Vann Draper Electronics, based in Derby, have extended a Special Offer for readers. The normal price for the HY3003-2 is £169, plus VAT & P&P. However, until 9 October the power supply will be available for £169 inc. VAT and free delivery. For further information on this offer - please contact Tim Coates of Vann Draper Electronics on Tel: (01283) 704706, FAX: (01283) 704707 or via E-mail: sales@vanndraper.co.uk

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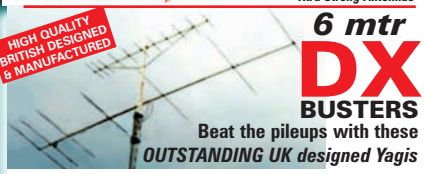

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Valve & Vintage

An almost tangible humorous atmosphere lingers amongst the polished wooden cabinets in the *PW* vintage 'wireless shop' as Charles Miller continues the 'Further Adventures at RAF High Street'. This time he shares the story behind guard duty and special maintenance techniques.

Another strange facet of life at RAF High Street was revealed to Derek and I when that periodical nuisance found on all stations, night guard duty, fell to our lot. Accordingly, on the appointed evening we set off for 'R' Block (the receiver block) prepared for a sleepless night. When we told the SP on duty at the guardroom, where we were going, he looked puzzled. "But where are your blankets"? he asked.

We looked at each other blankly. **"We need blankets"?**

"Of course, how are you going to sleep, otherwise"? he replied.

Clearly, the interpretation of guard duty at High Street was as relaxed as for the rest of the regulations. We never made that mistake again! In any case, had we remained on the alert all night it is hard to see how we might have been expected to deal with any determined intruder since we were unarmed and inclined to the *sauve qui peut* school of military conduct (*Translation: "Every man for himself". **Editor***).

Not that our attitude would have mattered much! I say this with the benefit of hindsight as I imagine that at that time the Russian's KGB organisation knew quite enough about British radar equipment to keep them happy and an incursion in High Street was probably of low priority.

I think the Russians had the technical knowledge but not the practical experience of a station such as High Street. I suggest this because no amount of book learning could possibly prepare anyone for the constant improvisation needed to keep the transmitters on the air.

Mathematics No Assistance

Unfortunately total familiarity with the mathematics of radar was of no assistance whatsoever at High Street, especially when the pumping system for the water-cooled valve anodes had to be primed – somehow or other – before circulation could be commenced. The main pump was electrically driven, whilst the priming pump was wall-mounted and of exactly the same design as those that used to be found in cow houses on farms far from mains water. The priming pump had a long wooden handle and the trick was to pour in the priming water and then to waggle the handle like mad before it had time to run away again.

Actually, I never could quite understand how the very high voltages applied to the anodes of the demountable CATs (copper anode triodes) didn't short to earth via the water, although it was supposed to be of the distilled variety. The r.f. energy was taken care of by having the hoses feeding the CATs wound into the form of gigantic radio frequency chokes (r.f.c.s)!

Another feature of the CATs was that they were continuously evacuated by a small vacuum pump which was kept running all the time the transmitter was in operation. We had to be certain that the correct depression (vacuum) had been attained before applying the anode voltage, especially if we had had one of the CATs apart for repairs.

Being a Chain Home (CH) radar system, the check was carried out with equipment dating back to Victorian times. Included in the piping to the vacuum pump was a sight gauge (a bulbous extension tube fitted with a hermetically sealed window).

Disposed near the window was a pair of electrodes brought out to insulated terminals. Let's now suppose, for example, that the filament had gone open circuit in a CAT. This was a mighty device made of thick tungsten wire that looked unbreakable, but as it ran at around 140A at 12V it dissipated many watts and eventually would fail.

To replace the CAT's filament meant that the anode had to be removed, and it was far too heavy to be lifted by hand. Because of this a lifting device was installed, and this consisted of a steel rope passing over a pulley, with a hook at one end and a massive counter-balance weight at the other. Once the vacuum in the CAT had collapsed the steel rope was hooked onto the anode, which could then be lifted clear of the body of the valve with a minimum of effort, assisted by the flexibility of the hosepipe r.f. chokes.

After the filament had been renewed the anode was lowered back into place and the vacuum pump was switched on. Now came the clever bit...when a whacking great device popularly known as a 'shocking coil' (an induction coil) had its business end connected to the terminals on the sight gauge and then was set running.

Vital Ether

The other vital bit of kit was a bottle of ether, which had to be applied around the anode-to-body joint with a piece of cloth. If the joint were less than perfect some of the ether would be drawn into the valve and thence to the vacuum pump via the sight gauge.

In the sight gauge, the mighty voltage generated by the shocking coil would cause the ether to produce a striated glow. And by counting the number of striations we could make an educated guess as to whether or not the point of sufficient depression had been reached. This was a leisurely process as far as we were concerned but it must have been a very different proposition during the war, especially at the time of the Battle of Britain.

My admiration is unbounded for the mechanics who kept the gear in running order

in those difficult days. Maybe, with it then being only two or three years old, it might have been less prone to breakdowns...one certainly hopes so.

Twelve years on from the transmitter's introduction to service, mechanical wear in the controls was evident and this brought problems in its train. I've already mentioned in an earlier episode that certain electrical relays in the early stages of the transmitter could only be persuaded to operate with the aid of an ordinary hair comb applied to the contacts!

Even then it was not all plain sailing when 'operation comb' had been carried out. This was because once the r.f. drive was being applied to the output stage the extra high tension (e.h.t.) voltage had to be wound up gradually by means of a hand wheel operated stepped switch which had definitely seen better days.

It was all too easy for the selector arm ending up bridging two contacts at once, thereby causing an overload which tripped out the entire transmitter. This in turn meant going through the whole long-winded running-up process again. So in self-defence we had devised a special technique to avoid this happening. It was all strictly in defiance of the officially laid-down operating procedures...but what the heck – **it did the trick!**

Staggered On

In its own inimitable way RAF High Street staggered on from day to day until a new arrival came on the scene. The newcomer arrived because around this time the RAF had invented some new ranks for airman engaged in radio and radar works, one of these being known as Junior Technician.

It was one of the new Junior Technicians who descended on the transmitter block and, due to the eccentric auto-promotion system at High Street, he immediately claimed seniority over Derek and I. This was something we were quite willing to concede, bearing in mind that the gear inevitably must break down altogether in the not too distant future and that if someone else wanted to carry the can...so much the better!

The new 'Senior' Junior's introduction to commanding the transmitter block was not auspicious. On his first day our new colleague espied us ready to use the comb-and-relay technique whilst running-up the transmitter and summarily banned it as against regulations.

We simply shrugged and invited him to carry on in his own way. Half an hour later he had to admit defeat and let us do the job our own way. Then he took exception to our h.t. 'winding-up' method and delivered a little lecture on the subject.

Once again we made no protest, for it was time for us to go to lunch and we knew to the second how long it would take for the transmitter to trip out after two switch segments were bridged. After noting that this had indeed taken place we strolled out.

Total Shut Down

We had just passed through the air-lock into the open air when we heard the clatter of a dozen relays opening which signified a total shut-down. When we returned an hour later our new colleague was still trying unsuccessfully to get the transmitter back on the air...!

● "Clearly, the interpretation of guard duty at High Street was as relaxed as for the rest of the regulations.....In any case, had we remained on the alert all night it is hard to see how we might have been expected to deal with any determined intruder".

Not very long afterwards the poor chap managed somehow to get himself into one the power supply cabinets without the safety interlocks coming into action and switching off the mains. It was a supreme irony that this stickler for correct procedures should have contrived to do this and fortunately he lived to regret it.

Just how it happened is unclear, but the back of his hand came into contact with the three-phase input terminals and he received a 440V shock which threw him out of the cabinet. His hand was badly burned and it took a long time for it to heal properly...we saw or heard little of him after that.

However, we had some new adventures just round the corner....and next time I'll be sharing the memories of the time when RAF High Street tracked a real Unidentified Flying Object (No kidding...it was a real UFO!). See you next time.

PW

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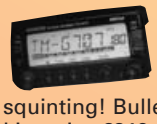

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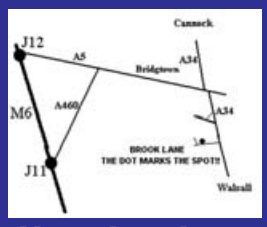

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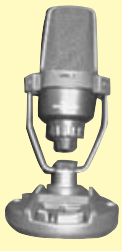

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IN STOCK

Antenna Workshop

A mast for all reasons - Ian White G3SEK suggests that you should spend a little more time and money on your mast...and then reap the benefits!

The antenna is the most important single part of your radio station, and it's held up by your mast. Strangely though...many Radio Amateurs spend large amounts on rigs and commercial antennas, but use very poorly-engineered masts.

Home-made masts can be such a trial to put up and take down that many Amateurs leave them up once erected and settle for poor antenna performance due to the difficulties. In contrast, a telescopic, tilt-over mast such as I'm suggesting, can make life much easier!

Most Amateurs don't realise how easy or effective a small mast can be. In this article I'm aiming to show how you can put up a very effective telescopic mast...probably for much less than the price of another transceiver.

● Fig. 1: The author needed to take advantage of the reduced visual impact of a mast close to the house, but with little space or adequate supporting brickwork. Tennamast's solution was a 'gallows post', secured both to the wall and to a block of concrete beneath the patio...ideal for the 7.6/4.2m lightweight Adapt-a-Mast.

● Fig. 2: The Tennamast Standard tilt-over mast (10.7/6.4m) fits on a ground post. When retracted, the antennas are well below roof level, but can be raised well clear for operating. The ground post stands in a steel sleeve set in a cubic metre of concrete enabling the post to be easily removed...

Planning Permission

Let's get the planning permission part out of the way first, as this can discourage many Amateurs from even considering erecting a mast of any kind (a big mistake!). Additionally...if your plans aren't over-ambitious, you've a very good chance of obtaining planning permission - or even avoiding the need of the process.

It's true that the planning regulations say that almost any new structure over 3m high requires planning permission. **However, there's a potential loophole:** If the proposed development is 'small' **(and 'smallness') isn't measured by height alone**...District Council planning officers have the discretion to waive an application.

Radio Pleasure

There's a lot of Amateur Radio pleasure to be had using a relatively small tubular mast, carrying v.h.f./u.h.f. antennas or a small h.f. beam. The important thing for good radio performance is to get the antennas clear of the roof and it also makes good sense to retract the antennas below the roof line when they're not in use.

Lowering the antennas reduces the risk of wind damage and also (from a planning officer's point of view) greatly reduces the visual impact. I normally 'park' my antennas well below roof height, but lift them well above the chimneys when in use.

With the limitations discussed, and a two-storey house, you can quite possibly convince the planning officer that the 'development' will be too small to need planning permission. **This is especially true if the mast is attached to the house** and using this approach I successfully avoided the need for planning permission for the mast shown in **Fig. 1**.

Avoiding Applying

The other way to avoid applying for planning permission is to 'just do it', and erect the mast and antennas up without asking or telling anyone. Most small Amateur Radio masts are put up this way, and if there are no objections within four years they'll have earned the legal right to remain. **But it's a risky approach!**

You must keep evidence of the date the mast was erected and you must not make significant changes in those four years. Within that period you could be forced at any time to apply for retrospective permission - something that planning officers strongly dislike. You'll then get a much less sympathetic

hearing than if you'd talked to them in the first place.

A free-standing mast is almost certain to require a planning application (not difficult if you go about it the right way). The key is to keep everything as informal, friendly and low-key as possible, **all the time.**

Firstly, visit the local Planning Office and collect a set of application forms for a 'private development', **but don't discuss anything at this stage**. Before you talk to anyone, contact the **RSGB Planning Panel**, and get their planning booklet from RSGB HQ (see information panel).

Specialist Experiences

The Planning Panel consists of Radio Amateurs with specialist experience of the planning process. Their knowledge is important...as you can't rely on your local planning officers to be familiar with all the regulations and precedents in this specialist area. Help from the RSGB can also include a letter of support, explaining what Amateur Radio is, and gently reminding planning officers about the regulations that apply.

Work your way through the RSGB booklet and get your ideas together. Then make a photocopy of the blank form and try filling it in, to make sure you have everything you need. Then - **and this is very important** - talk to your neighbours and explain exactly what you want to do. You could also check with any local Amateurs who own masts or towers, to see how they successfully dealt with the district planning authorities.

Potential Problems

The planning stage is also the time to sort out potential EMC problems. Although not strictly a planning matter, any unresolved interference problem is sure to trigger an objection!

Make an appointment with the planning officer for an informal discussion about a proposed mast. They're usually prepared to do this, because a pre-negotiated application makes life easier for them too.

Often neighbours, and officials, imagine an installation to be larger than you're proposing. Be ready to convince them that your mast and antennas will be a lot smaller than they think! The best possible visual aid is a series of photographs of the house illustrating the proposed mast and antennas.

Reasonably Accurate

Try to make your sketches reasonably accurate, particularly the height, using viewpoints of the front and rear views of your property. **Don't forget to include a second set of sketches with the mast retracted**.

Be prepared to concede to keeping the mast retracted when not in use - which will be most of the time. This is a strong point for visual amenity, so the images with the system retracted are very important. **But on no account mention that the mast can be tilted right down to ground level,** or else someone may want you to do that whenever you're not on the air!

Finally, don't fall into the trap of applying only for one specific type of antenna, because you are bound to want to change antennas from time-to-time. The RSGB booklet will help you to avoid this pitfall!

A well-prepared and low-key approach will reduce the difficulties in securing agreement from your neighbours and obtaining planning permission. You could possibly avoid the need for planning permission at all!

Designing & Building

Designing and building a tubular, retractable tilt-over mast is really for professionals and presently the only UK supplier of these masts is **Tennamast Scotland Ltd**. They have an excellent, well-built range of masts, starting from the lightweight Adapt-a-mast, Fig. 1, the Standard mast, **Fig. 2**, with the largest ...the Standard Plus mast shown in **Fig. 3**.

All Tennamast models come in a variety of sizes and are galvanised to marine standards and are substantially constructed. I have a mast that's 12 years old and still in prime condition.

Often the same winch can be used for both tilting the mast over and extension, or you can have a separate winch for each function. A ratchet brake is supplied, but optional auto-braked winches are available for all models.

Increase Height

When deciding your mast's height...remember that the rotator cage and stub mast will extend it by a further one to two metres. Remember also that tubular masts are less strong than lattice towers, and require guying in windy conditions.

Even the smaller visual impact tubular mast still needs a substantial base. But if you don't have space for a hole full of concrete, don't despair...this is where Tennamast's 'special services' come in!

The Brown family's Tennamast business philosophy is that they build things to last, and this includes customer relationships. All Tennamast owners (including *PW*'s own Editor) agree: **you'll not get better service anywhere!**

Fig. 3: Extending to 12.2m (7.3m lowered), this Tennamast Standard Plus mast was originally attached by a strong bracket at bedroom-window level, tilting from the base (see text).

The managing director...**Norrie Brown GM4VHZ**, well understands the practicalities of mast installation. He designed a special side-mounting bracket so the mast pivots at the base, and is then raised using a winch fixed to the wall at a convenient height.

Once the mast is vertical, a fixing bolt is inserted...taking the strain off the cable. A second winch fixed to the mast takes care of the telescoping function.

So...are you ready to move up to a real mast? If so, and your needs are fairly standard, or you just want some literature...contact Tennamast directly. However, if you think you need a special mast support, talk to the ever-helpful Norrie GM4VHZ and he'll be pleased to help and you'll be on your way to getting a mast suited to your needs! *PW*

Contact Details
Tennamast Scotland Ltd.
Tel: (01505) 503824
Website: **http://www.tennamast.com**

RSGB Planning Panel, via RSGB HQ
Tel: 0870 904 7373
Website: **http://www.rsgb.org**

RadioSport NEWS

A New "Picketts Lock"

London Show finds new home


Nestling in the Hertfordshire countryside, Wodson Park Leisure Centre.

With the closure of Lee Valley Leisure Centre, the traditional home of the **London Communication & Computer Show**, the organisers were presented with the challenge of finding a new venue that would suit all parties. After a long and exhaustive search, they came across a place which not only met all the criteria but is conveniently located off junction 25 of the M25, the motorway junction that many visitors to London Shows have been using for years.

Their efforts have already been rewarded, with exhibitor bookings practically filling the venue several months before the event.

THE NEW VENUE

Wodson Park is a leisure centre that is similar in many ways to 'Picketts Lock', except that it is located a few miles outside the M25. Getting there is every bit as easy, indeed the journey time from the M25 is practically the same as it is to Picketts Lock. Talk-in stations will be operational on 2m & 70cm, and when you arrive you will find plenty of free parking. Full travel details can be seen on www.radiosport.co.uk

Wodson Park is quite new, so it has all the facilities you would expect - brightly-lit halls, a good sized catering outlet, two bars, a passenger lift and facilities for the disabled.

REASONS TO GO

Apart from meeting friends new and old, there will be major retailers, computer systems, software and upgrades, on-demand Morse Tests and Assessments, and Special Interest Groups. Southgate ARC's Bring & Buy completes the list.

All-in-all it should be well worth visiting.

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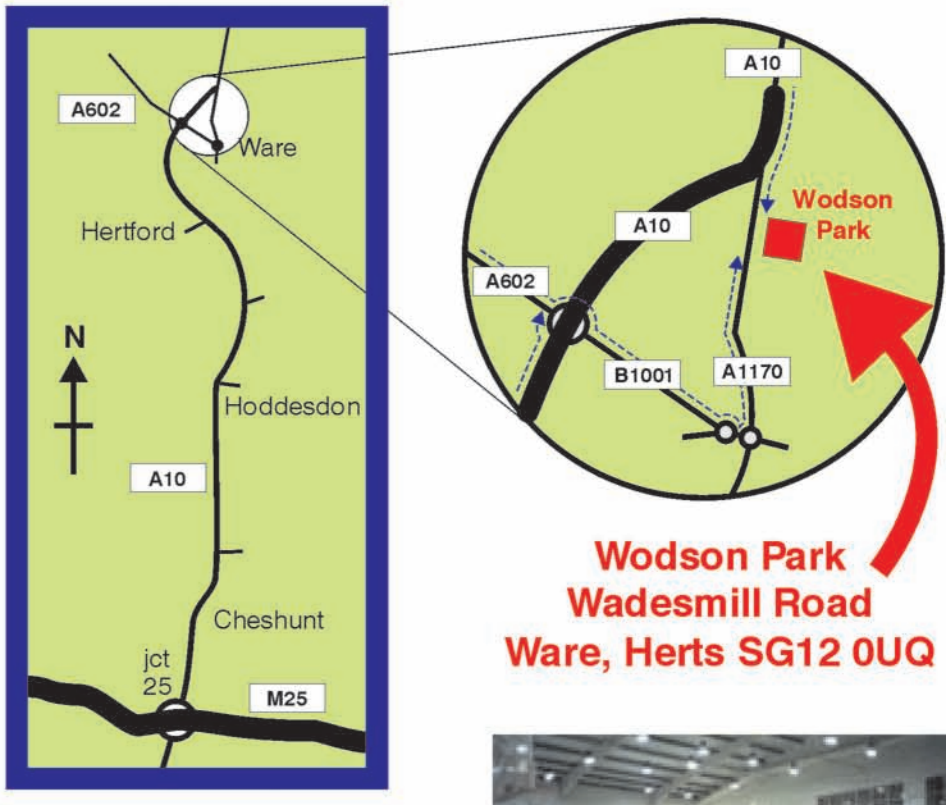

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One of Wodson Park's halls.

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REPORTS & INFORMATION BY THE LAST SATURDAY OF EACH MONTH.

THIS MONTH DAVID BUTLER G4ASR HAS REPORTS OF A DISAPPOINTING SPORADIC-E SEASON ON THE VHF BANDS

For many v.h.f. DX operators the band conditions during July were very disappointing. The Summer peak in Sporadic-E propagation was virtually non-existent with no extensive openings on the 50MHz band and only two brief events reaching the 144MHz band.

Tropospheric openings on the 144MHz band and higher frequencies were few and far between with openings only lasting for a few hours at a time. The microwave enthusiasts however were kept happy with some very good rainscatter contacts being made on the 10GHz band.

Never in all the considerable number of years that I have been active on the v.h.f. bands can I recall a Sporadic-E season that has been so lack lustre in performance. Although Sp-E openings occurred on the 50MHz band every day during July (from somewhere in the UK) the events were generally very brief, rather weak and quite unexceptional.

My theory as to why Sp-E propagation was so poor this summer lies some 150,000,000 kilometres away. Although the relationship between the formation of temperate-zone Sp-E and solar geophysical conditions are still being debated some research has suggested that high solar activity (whether measured as solar flux, sunspot number or short-term geomagnetic field conditions) are unfavourable for the formation of intense Sp-E ionisation layers. Certainly the Sun was very active during July with many coronal mass ejections (most not squarely Earth directed) and coronal holes bathing the Earth in magnetised gases.

By the last weekend of July the Sun was peppered with spots and the Boulder sunspot number had soared to its highest value since March 2001. At the time of writing the face of the Sun was blemished by three large active regions. This tight-knit sunspot group stretched more than 30 Earth diameters from end to end and posed a constant threat for X-class flares.

● The portable microwave station of G4ZXO looking for 10GHz rainscatter contacts.

THE 50MHz BAND

All was not doom and gloom though. Your reports show that the 50MHz band **was** open to many European countries during July including such rarities as HB0/DM2AYO (Liechtenstein), HV5PUL (Vatican City), JX7DFA (Jan Mayen Island), OH0FP (Aland Island), TF3A and TF3FK (Iceland) and 3A2MW (Monaco).

A few double-hop Sp-E openings produced contacts into northern Africa and the Middle-East. The stations reported included CN8KD, CN8LI and 5C2MI (Morocco), EH9AI and EH7HZ/EA9 (Ceuta and Melilla), OD5/OK1MU (Lebanon), YI9OM (Iraq), 4Z5FC (Israel) and 5B/G1JJE (Cyprus).

Normally during July you can expect at least half a dozen multi-hop openings to North America. However, this year it was very poor with no Canadian (VE) or USA (W) stations being worked on the 50MHz band from the UK. There were some extremely transitory openings to the expedition station FS/W6JKV (French St. Martin) and one lasting only a few seconds to the CY9DH expedition group operating from St.Paul Island.

Being a flat dweller **Tim Kirby G4VXE** (Berkshire IO91) is forced to use a small antenna. Space is at a premium but a DXer will always work DX somehow!

On the 50MHz band Tim is using a 5/8λ vertical antenna which seems to work quite well during Sp-E openings. That's probably because most of the single-hop signals come in at a fairly high angle thus suiting the radiation pattern of the vertical antenna. So far the results are encouraging.

First stations worked were OH7PI (Finland) and OY9JD (Faroe Islands) followed by a good number of Polish, German and Yugoslav stations. Other c.w. contacts have included the stations of CN8NK (Morocco), DF0FTG/MM (IM56), EH2LU and EH5FX (Spain), ES7NY/6 and ES6/RW1AW (Estonia), HB9QQ (Switzerland) and UT1YV (Ukraine).

Tim mentions missing out on JX7DFA who was operating on 'phone but pretty much everything he has heard on c.w. he has worked. His most interesting c.w. contact was probably one with S51DI (Slovenia) on the 70MHz band. Tim was only running 8W to the 50MHz vertical antenna at the time.

Another station who mentions working S51DI is **Philip G0ISW** (Cumbria IO84). He made an s.s.b. contact at 1943UTC on June 29 and following the QSO he was amazed to hear the Slovenian station calling CQ for over an hour without any other stations replying.

Philip uses a Yaesu FT-847 transceiver running 50W into a broadband Create Log-Periodic Yagi antenna. This set-up can conveniently be used on both the 50 and 70MHz bands. He reports making his first 50MHz Sp-E contact this year on May 22 when contacts were made with the stations of

LY3AX and LY3MR (Lithuania). Other s.s.b. contacts have included DL3WG (Germany), OE3MWS (Austria), OK1FRG (Czech Republic), SP8AWL (Poland) and 8S6FRO (Sweden).

Simon Falconer G7GUO recalls comments from a previous column that stations with low power and a bit of wet string for an antenna can successfully make contacts via Sp-E propagation. He has recently been operating from a local high spot on the Chiltern Hills (IO91) with a Yaesu FT-817 transceiver running 3W output into a omni-directional Halo antenna.

On June 4 Simon G7GUO was very surprised to contact the station of GM4ODA/P on the Shetland Islands at 59 both-ways. Later in the month on June 15 he made s.s.b. QSOs with the stations of EH3DHR and EH7EYX (Spain) before having to close down due to heavy rain. Simon hopes this will encourage other operators to have a go even with seemingly unlikely odds.

David Dodds GM4WLL reports that he was recently active in the RSGB 50MHz Trophy Contest. He operated from Lauder Common (IO85) in the single operator section of the contest. As this was his first attempt at contesting on the 50MHz band he couldn't say whether conditions were particularly good or bad. He does mention however, that it seemed a bit like shooting fish in a barrel compared to chasing contacts on the 1.3GHz band!

David used a Trio TR-9130 transceiver driving an RN Electronics transverter to 25W output into a 3-element Yagi at 5M above ground. With this simple set-up he accomplished 133 QSOs in 6-hours with stations in 20 European countries. The furthest distance contacts included the stations of Z36W (Macedonia) at 2387km, LZ5QD (Bulgaria) 2370km, YU1YM (Yugoslavia) 2277km, IK7LMX (Italy) 2262km and YO6OBK (Romania) at 2201km. Hill-topping with low power and a simple antenna on any v.h.f. band is a really good way to make long distance contacts. Why don't you try it sometime?

Jim Rabbitts GM8LFB (Wick IO88) comments that July was not a particularly good month for Sp-E propagation. Using a Yaesu FT-736R transceiver running 10W output into a 3-element Trident Yagi contacts on s.s.b. were made with JX7DFA (IQ50) and stations in EA, ES, LY, LZ, OH, SM, SP and YO.

Jim mentions that he very much enjoyed making short-skip contacts into England. From his QTH in northern Scotland these occurred on July 8 between 1245-1350UTC to stations on the south coast, on July 15 between 1320-1440UTC to stations in Guernsey and Jersey and on July 22 to G4HFO and M3ISM both located in Cornwall.

Throughout June I used the special Jubilee callsign **GQ4ASR** from my QTH in Herefordshire. Working exclusively on 50MHz c.w. I contacted stations in 35 countries and five continents. My QSOs included the stations of JX7DFA, LW3EX (Argentina) and PP5JD (Brazil) on June 5, CN2DX, 4X1FC and 5B4AGN on June 7 and FP/NA1CW (St.Pierre and Miquelon) on June 19.

During July I reverted to my more familiar callsign **G4ASR** making further DX contacts with the stations of YI9OM (Iraq) at 4295km, OD5/OK1MU and 4Z5FC, all of these during an early morning opening on July 3. My best contact of the month though occurred on the following day.

At 0913UTC I heard the Canadian beacon VO1ZA (50.039MHz) peaking 579 for a few minutes. This is unusually early so I decided to keep the 6-element beams pointing to the west to see what would happen later.

I also wanted to catch the expedition station CY9DH operating from the rare DXCC country of St. Paul Island (FN97). Leaving my receiver tuned to 50.157MHz (their nominated frequency) I commenced writing last month's VHF DXer column. Exactly three hours later at 1213UTC up popped CY9DH and as luck would have it, they were calling CQ!

With the Morse keyer already for action I gave my callsign twice, they responded immediately "G4ASR CY9DH 599 BK". Then it was my turn "CY9DH G4ASR QSL UR 559". And that was it. The only UK station to work CY9DH on the 50MHz band and I only heard them for less than one minute. Magic!

To complete the round-up of 50MHz I've some reports of Trans-Equatorial propagation (t.e.p.) openings to South America. These occurred on July 1 between 1900-1915UTC when the station of PY5CC (Brazil) made contact with the stations of G4HBA and M0AEP and on July 10 between 1945-2045UTC when stations in central England and Wales reported making QSOs with the stations of PP1BG, PP1CZ, PY1RO and PY5CC.

Finally, one snippet of DX news that I omitted last month. On June 1 at 1144UTC **Conrad Farlow G0RUZ** (Yorkshire IO93) spotted the station of VK8MS (Australia) peaking 429 on 50.103MHz. The propagation mechanism was most likely a mixed mode with multi-hop Sp-E at the European end of the path linking into a trans-equatorial opening in the Far East. By the way, if you didn't hear much of the DX I've mentioned then you really must brush up on your Morse!

THE 70MHz BAND

Despite the rather poor Sp-E conditions on lower frequencies the maximum usable frequency (m.u.f.) occasionally reached up to the 70MHz band. At times signals were quite strong and it's a pity that Cyprus (5B and ZC), Gibraltar (ZB) and Slovenia (S5) are the only countries within Sp-E range of the UK with authorisation to use the band.

There are currently no active operators in Gibraltar and 5B/G1JJE is infrequently active from Cyprus during the summer. The only other station previously active from Cyprus is 5B4AZ who now appears to be QRT on the band.

There has, as yet, been no operation this year from the station of ZC4ATC although another station ZC4ODW is known to have 70MHz equipment. This only leaves the 14 active stations in Slovenia and once you've contacted them on all modes ten times over there's very little else to find on the band!

However, all is not lost as it is possible to make cross-band contacts with stations who have a receive capability. There are many such operators throughout Europe and beyond who can monitor the 70MHz band listening for UK stations.

The appropriate centres of activity for crossband operation are 28.885, 50.185 and 70.185MHz. Typically though you will hear a European operator somewhere in the s.s.b. section of the 50MHz band calling for crossband contacts and asking for replies around 70.200MHz.

THE 144MHz BAND

It was a real surprise that the m.u.f. made it as high as the 144MHz band during July. It shouldn't really be a surprise but this year the Sp-E propagation really was dire! Two openings were reported, the first occurring between 1240-1400UTC on July 3.

Operators located in central and southern England reported making s.s.b. contacts with stations in Crete (SV9), Italy (I), Sicily (IT9) and Malta (9H). The opening at my QTH was fleeting, lasting only a few minutes but enough time to make s.s.b. contacts with IC8FAX (JN70) at 1870km and IT9NGN (JM78) at 2078km.

The station of **Dave Edwards G7RAU** (Isle of Wight IO90) mentions working IC8FAX, IK8ETN, IW8DWL, I8MPO and I8YZO. Further to the north the station of **G4KWQ** (Staffordshire IO92) made a contact with 9H1XT (JM75) over a 2270km path.

A second Sp-E opening on the 144MHz band was noted between 0850-0920UTC on July 28. This was more extensive with UK stations from the south coast (IO90), up to Lancashire (IO83) and across into Wales (IO73) making s.s.b. contacts into Portugal (CT) and Spain (EA).

Regrettably most QSOs were either on or within a few kilohertz of the s.s.b. calling frequency (144.300MHz) thus causing much mutual interference. Some of the DX worked included the stations of EA7AIL (IM77), CT1DRB (IM57), CT1HZE (IM57) and CT2HBZ (IM58).

DEADLINES

That's it again for another month. Please forward any news, views, comments or photographs to the address and by the date given at the top of the column. Next month I'm devoting the entire column to meteor scatter techniques and how to work DX during the up and coming Leonids meteor shower in November.

Thanks for your letters and good luck with the DX. See you again next month.

73, David G4ASR

HF HIGHLIGHTS

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REPORTS, INFORMATION AND PHOTOGRAPHS TO ME PLEASE BY THE 15TH OF EACH MONTH.

CARL GW0VSW, WITH THE HELP OF YOUR REPORTS, ROUNDS UP THE NEWS FROM THE HF BANDS

Dennis Egan GW4XKE and **John Densem G4KJV** used the callsign **GB2SHF** to celebrate a change of role for the **Royal Signals Helicopter Force** during a recent open day at 21 Signal Regiment (Air Support) Colerne in Wiltshire. Historically the regiment evolved from units formed by the War Office in 1924/5 to cover the signal commitments of the Royal Flying Corps by members of the Royal Corps of Signals (RCS).

The independent units were manned by the Supplementary Reserve of the RCS and by the early 1930s there were 20 such units who were now called the Royal Air Force Signals RCS. Their title was changed to Air Contingent Signals in June 1935 and again to the Air Formation Signals in 1937. Their task in the field was to provide manning and maintenance of communications to RAF Squadrons and provide a Despatch Rider Letter Service to all units.

At their peak during the Second World War over 21,000 men and woman of all ranks served throughout the world. After the war their title and role has changed several times. Today they are known as the **S**upport **H**elicopter **F**orce and still work very closely with the RAF. In the limited time available to them Dennis and John made 89 contacts using both c.w. and s.s.b.

Dennis Egan GW4XKE and John Densem G4KJV went on air with the callsign GB2SHF to celebrate a change of role for the Royal Signals Helicopter Force.

CLUB NEWS

Those of you who are keen QRP operators may be interested in the **9A QRP Club**. The club was founded April 1994 and is for Amateur Radio operators whose power output does not exceed 5W (c.w.) or 10W (s.s.b.). The club sponsors several awards for QRPers.

There is also a **Croatian Telegraphy Club,** which was founded in December 2001 and currently has members from all over Europe plus South Africa, Argentina, Brazil, USA and Japan. For further information on either the **9A QRP Club** or the **Croatian Telegraphy Club** you can contact **Miaden Buzic 9A3FO, Franjevacka 5, 42220 Novi Marof, Croatia** or **E-mail: 9a3fo@hi.hinet.hr**

REQUESTING QSL INFO

I have had several more requests for QSL information and as the column has now gone up to two pages each month I will do my best to include some each month. Here are just a few to keep you going starting with 5C2MI via I2JSB direct only, 9M6A via N2OO, 9Q1A and 9Q1YL via F2YT, C6AJR via W8GEX, DS0DX/2 via HL1XP, IY9MM via IT9MRM, J28GR via F5IUE, J30A via WA4WTG direct only, J41RKE via SV1EYQ, J68GS via KI6T , J79MM via NA2U, JT1R via JT1BL, K1B via RZ3AA, KD4DX and KG4PK via W4WX, KG4JC via KF4OCR, MJ0AWR via K2WR, SP6CZ/1 via SP6ECA and SW8L via SV1EML.

YOUR REPORTS

On to your reports now and most of you have complained of poor band conditions, especially on the higher bands. This has not stopped many of you finding some nice DX to work!

Staring us off this month is the log of **John Thexton G3URE** who has managed to operate /P from Bath while baby-sitting at his daughter's home. John used a FT-817 and Z11 auto tuner to a 7MHz dipole and despite a noisy band worked ON4SK (Belgium), F2MA (France) and MM3JWF (Scotland) as well as several other UK stations with 5W QRP s.s.b. All contacts were made between 1012 and 1340UTC.

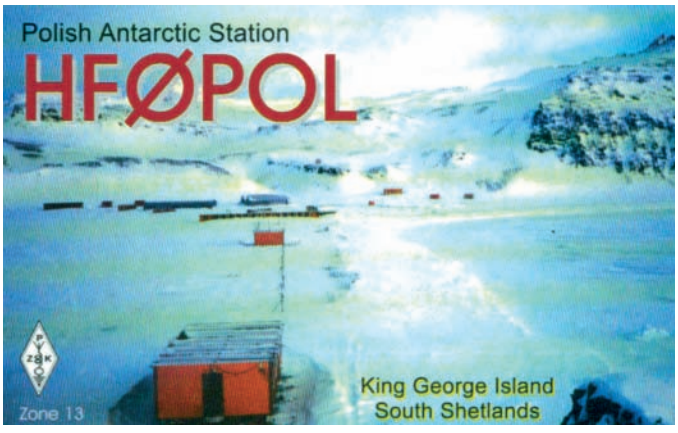
Roy Walker operated as GQ0TAK (a special Golden Jubilee prefix) to mark Her Majesty The Queen's Golden Jubilee.

Also on 7MHz was **Roy Walker** who operated using the special Golden Jubilee prefix as **GQ0TAK** from his home in Kendal, Cumbria. His 5 Watt c.w. contacts include DL6UEF/P (Germany), OR5ZZ (Belgium),

OK1PDQ (Czech Republic), PA7RA (Netherlands), SP8DYM (Poland) and GB50 (England) the special event station operating from Windsor Castle to mark Her Majesty The Queens Golden Jubilee. All contacts were made between 1810 and 1918UTC using an Index QRP Plus, Alinco EDX tuner and 80m long wire loop.

THE 14 & 18MHz BANDS

On to 14MHz now and welcome to new reporter **Rob Hastings M3AHH** who lives in Chelmsford, Essex. Rob has just completed the Foundation course and has equipped himself with a Kenwood TS-50S, MFJ-945E tuner and installed a inverted Carolina Windom 80 Special which just fits in to his garden. Using just 10W Rob's s.s.b. broke the pile-ups of special event station IQ0AZI (Italy) and P4/N9LAH (Aruba).



● New reporter Rob Hastings M3AHH has been busy on the bands as these QSL cards show.

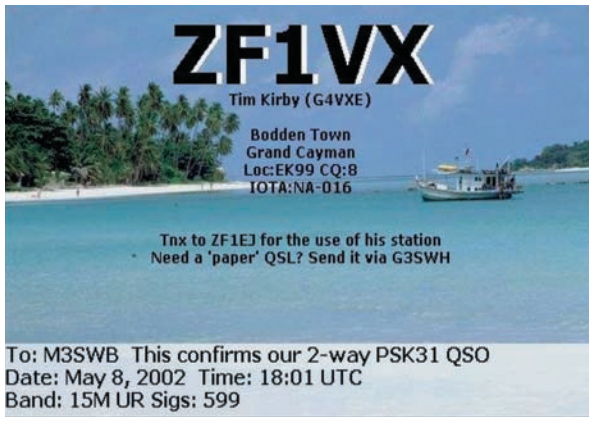
Also operating here with s.s.b. was **Mike Baker G3SUK** in Stowmarket who managed to send in a report before heading off to London to attend a Garden Party at Buckingham Palace! Mike used his IC-746 with 80W to a Carolina Windom to work SV8/I2YYO (Greece) at 0840UTC followed later by TK/HB9DPO (Corsica), CU7AAK (Azores), ZB3C (Gibraltar), PT7BZ (Brazil), OH9AR/P (Finland) on Hailuoto Island EU-126, OH0/OE2VEL (Aland Island), DL5CX/P (Germany) on Griefswalder Island EU-057, R3HQ (European Russia), OD5/OK1MU (Lebanon), JA7NVF (Japan), 3V8KO (Tunisia) and 4X1VF (Israel) between 1705 and 2141UTC.

Martyn Medcalf M3VAM in Chelmsford, Essex also favoured 14MHz this month. 10W s.s.b. contacts included EA8URL (Canary Islands) 1131, EA6TC (Balearic Islands) 1141, TF/VE7RKK (Iceland) 1457, IK8WEJ/P (Italy) on EU-172 at 1545, F5BOY/M (France) 1729, W1/GI0MPT (USA) 1839 and YU1JW (Yugoslavia) 2159 using a IC-746 and SGC-237 tuner with 8.2m of wire.

Having read the Antenna Workshop article in *PW* August describing the use of an A99 CB antenna, **Ian Bainbridge M1SWB/M3SWB** from Liverpool wrote in to say, "I have been using this antenna for sometime now with great success. It's mounted in my garden and has a few radial wires attached which I buried in the ground and with a MFJ-986 tuner I can use it on several bands! At a cost of just £17 it was a real bargain!"

Ian sent in some copies of the QSL cards that he has received for countries worked using his antenna. They are very impressive and include HF0POL in the Antarctic and several stations in Argentina. Ian is also a keen PSK operator and this month worked RK2FXG (Kaliningradsk) 1510 and LY750CT (Lithuania) at 2138UTC as well as many stations in Europe. (Thanks for the information Ian and keep the reports coming).

Owen Williams G0PHY in Biggleswade, Bedfordshire has had a quiet month listing just one s.s.b. contact on the band, ZA/UT7DW (Albania) at 2110UTC using 100W to a dipole antenna.



All c.w. man **Ted Trowell G2HKU** on the Isle of Sheppy in Kent said "Static noise has been a big problem this month with 18MHz the best band". Contacts here using a Ten-Tec Omni V and G5RV or HF6 vertical antenna included XV9DT (Vietnam), HH2/DL1DA (Haiti), C6AIE (Bahamas), CX1SI (Uruguay), JA9BGO (Japan), PY2XB (Brazil), HK4CZE (Columbia), V73ZF (Marshall Islands), and DU3NXE (Philippines) between 1800 and 2100UTC.

THE 21 & 24MHz BANDS

On 21MHz, around 2050UTC, Ted found HL1/WX8C (South Korea), p43JB (Aruba), VP2E (Anguilla), ZP6CW (Paraguay) and YN8/TI3TLS (Nicaragua). Mike G3SUK found two new countries on the band in the evening, 9U5A (Burundi) 2041 and DU1BP (Philippines) at 2105. Other DX to make it in to Mike's log include JA8FCG (Japan), EK6TA (Armenia) and PQ2Q (Brazil).

Just one s.s.b. contact on this band for Owen G0PHY who worked TT8FC (Chad) at 1650UTC. Rob M3AHH was also pleased to work 4Z5AD (Israel) around the same time.

On to 24MHz now where Roy GQ0TAK worked with 100W to contact OK1AWJ (Czech Republic) and club station DL0GF (Germany) located in Griesbach at 0928UTC.

THE 28MHz BAND

Not many contacts were made on 28MHz as band conditions were described as very poor indeed. **Paul Burgess M0CCQ** in Ellesmere, Cheshire used 100W and a G5RV on s.s.b. to work TI5/N0KE (Costa Rica), CA0YAM (Easter Island), VQ9FW (Chagos) and ZP8VAO (Paraguay) during a brief opening.

Two other operators also managed to work some DX here with the c.w. of Ted G2HKU finding J75KG (Dominica) at 2000UTC and the s.s.b. of Mike G3SUK working ZP6DYA (Paraguay) at 2115UTC.

SIGNING OFF

In the June issue of *PW* **Nigel Booth M0CVO** suggested that a monthly list of radio Nets might be of interest to readers. Let me know what you think. Send details of any Nets you know are running and I will include all information received in a future column.

Finally, the ***PW* Listening and Operating Watch** needs updating. If you would like to be included or change your details please let me know as soon as possible so that I can amend the list.

All the static noise on the bands this month did not put off our reporters and it's especially nice to see the low power operators working their share of the DX. Don't forget that all reports are welcome, no matter how large or small your log is. Just include the time, band and callsign of the stations you worked or heard and a little about the equipment you used.

Thanks to you all for supporting the column and until next time, have a good DX filled month. ***73, Carl GW0VSW***

Don McLean G3NOF - Silent Key

As this issue was going to press we learned of the passing of Yeovil-based **Don McLean G3NOF.** Many readers will remember his enthusiastic and helpful monthly propagation summary in HF Highlights. We intend to pay full tribute to Don in a future issue. A great DX chaser...he'll be missed by everyone.

Editor.

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ROGER COOKE G3LDI HAS SOME HINTS ON STAYING SAFE ON-LINE AND LOOKS AT DIGITAL SERVICE LINES

Hi, welcome to the world of the Keyboard where we start with a look at *ZoneAlarm*, which does a good job at stopping outside servers from contacting your PC while you are on-line. But what if you use *Norton AntiVirus 2001*, *ICQ*, or *NetMeeting*? Although these programs rely on outside connections, there's a way to stay safe on-line and still enjoy them.

One simple solution is to give each program 'allow server' permissions for your Local Zone. To do this click programs in *ZoneAlarm*, then check the allow server box for each program that requires access to the Internet.

But what about Virtual Private Networks? ZoneLabs recommends the following: A: Add the VPN server to your Local Zone by selecting Security > Advanced > Add or B: Lower your security settings during the initiation and authentication periods. Then raise security to its former level once you are connected.

It's also tempting to use the internet 'lock' feature all the time, however, this may lead to local network problems. According to ZoneLabs, the internet lock is intended for emergency stops, halting all local and internet traffic. It also serves as an automatic lock for when you leave your computer unattended.

Pass lock, on the other hand, allows programs such as your E-mail client or antivirus signature file up-dates to run unattended. It might seem that imposing the internet lock and then the pass lock might be ideal. However, internet lock will prevent you from using a local or networked printer, and cause other 'unforeseen difficulties if you try to access the network'.

So, what if you want to block 'net access automatically after you've been away from your PC for a given time? To do this from the main *ZoneAlarm* window, select 'lock', then click the 'enable radio' button. Next, choose how many minutes of inactivity must elapse before *ZoneAlarm* blocks internet access.

If you want to allow certain programs to access the 'net when the internet lock is activated, just select the 'pass lock' program's 'may access the internet radio' button. Then click the programs button and select the programs that should be allowed to access the net.

LOSING CONNECTION

If you have a dial-up modem, some ISPs routinely check to see if you are still connected. If *ZoneAlarm*, is set to 'high', this can block the query from your ISP and result in a loss of connection. The same can happen with DSL connections, where ISPs will routinely query for 'lease renewal'.

One method is to set your internet security to medium, not high. This allows 'ping' requests (for dial-up) and DHCP broadcasts (for DSL), but continues to block file-level access to your PC.

A second method is to identify which ISP servers you're connected to and add them to your Local Zone. This method has the advantage of protecting you should your ISP use a different method of querying your PC, while allowing you to keep your internet security level set on high.

To add an ISP site or address, click Security > Advanced > Add. If you know the name of the site, click Host/Site and enter the domain name. To save, click 'next', 'finish', 'Ok'. If you know the IP address, select IP Address and enter the string of numbers (with appropriate periods). After adding one site or address, you can add others until you're satisfied the necessary connections will remain open.

NOTES ON JT44

A full technical description of the JT44 protocol will be available soon, so keep an eye on the website. In the meantime, here's some notes on the essentials. Some familiarity with the WSJT program will be necessary for a full understanding.

1 Transmit and receive periods are nominally 30 sec each, starting on UTC half-minutes. JT44 is a time-synchronised communication mode and in WSJT the only way to transmit or receive it is to set the program to 'Auto Mode ON'.

2 Transmit audio starts 1 second into the TX interval and lasts for 135 * 2048 samples at the 11025Hz soundcard sampling rate, or about 25.08 seconds.

3 The last 3.9 seconds (minus necessary relay switching time, etc.) of the transmit period will probably be used for a fast c.w. ID. (This function is not yet implemented in WSJT v1.9.4). The idle time also serves to accommodate EME propagation delays.

4 The message format involves 135 intervals of data transmission, each 2048 samples long. Of these, 69 intervals carry a synchronising tone at frequency 118*11025/1024=1270.5Hz (approximately).

5 The remaining 66 intervals carry tones at frequencies (120+N)*11025/1024, with 1 <= N <= 43. The value of N conveys the character code. Permissible characters include the digits 0-9, letters A-Z, and special characters ./#?$ and <space>. The 66 character intervals carry a 22-character message, repeated three times.

6 The 69 sync-tone intervals and 66 character-tone intervals are interleaved according to a pseudo-random pattern having the desirable property that its auto-correlation function has a single spike at lag zero and falls to low values everywhere else. Detecting and aligning with this sync-tone pattern is one of the main 'secrets' of JT44, allowing the software to accommodate large frequency and clock errors.

7 At present the program synchronises reliably with frequency errors in the range +/-600Hz and clock offsets from -2 to +4 seconds. The time range was made asymmetrical so as to accommodate EME delays.

8 The cost of using about half of the transmission time for the sync tone is approximately 1.5dB. This seems to be a very good compromise in practice. It means that transmissions will 'sync up' reliably at the receive end even when the S/N is -25dB relative to the system noise in a 2500Hz bandwidth. Note that by comparison, the minimum c.w. signal strength that can be copied is about -11dB relative to same noise level. JT44 can get through with solid copy when you cannot even hear the other station's signals.

9 Single letters in the 22-character message will have worse signal-to-noise ratios than that of the sync tone by a factor equal to the square root of 69/3, or 6.8dB. However, that loss can be made up by averaging the received character-tone spectra over many 30-second reception periods. For such incoherent averaging, each doubling of the number of periods buys you 1.5dB in S/N. Four periods gets you 3dB improvement, 16 periods gets 6dB, and so on. If the signal strength remains fairly steady, these numbers mean that good copy of any reliably synchronisable message can be achieved in about 15-20 minutes.

VERSIONS OF DSL

Digital Subscriber Line (DSL) is a high-speed data service that uses a different part of the frequency spectrum than analog voice signals. This allows DSL to work in conjunction with your existing telephone service lines without costly installation of higher-grade cable. You can even use the analog portion of your 'phone line for a modem or FAX line, while simultaneously using the data portion for your DSL access.

There are a host of versions of DSL, which has led to the common designation of 'xDSL'. Asymmetric Digital Subscriber Line (ADSL) is the most common service and the one you'll be looking at if you're considering home DSL internet access.

The ADSL can support downstream bandwidths of up to 8mbps and upstream bandwidths of 1.5mbps. By comparison, a T-1 connection also provides 1.5mbps. As the most common form of DSL, the 'A' is often dropped and when someone is just talking DSL, it's probably ADSL.

Some of the other variations include High-bit-rate DSL (HDSL), Symmetric DSL (SDSL) and Very-high-bit-rate DSL (VDSL). The SDSL, sometimes called HDSL-2, is an enhanced version of HDSL that allows it to work with only one pair of wires. The VDSL, sometimes called BDSL, is targeted at high-access demanding companies and can support speeds of 52mbps downstream and 13mbps upstream.

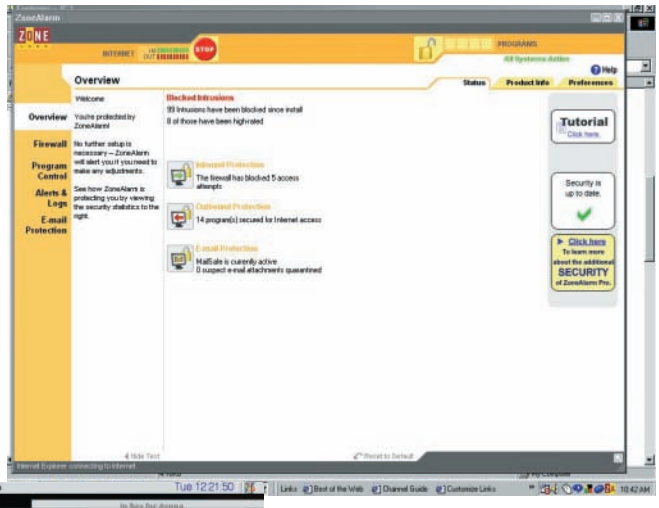
A cheaper, lower bandwidth version of ADSL service is known as G.Lite ADSL and was devloped so that it could be turned on without a visit from a telephone technician. Companies such as Microsoft, Compaq and Intel have been involved with G.Lite, hoping to establish a high-speed data service that's as easy for consumers to install as today's analog modems.

At 1.5mbps downstream and 386kbps upstream, G.Lite DSL is eight to 10 times faster than the ISDN services offered today for Internet access and more than 25 times faster than 56k modems. A competing ADSL standard called G.dmt, also known as full-rate ADSL, supports speeds up to 8mbps downstream and 1mbps upstream.

MAKE THE CONNECTION

The basic requirements for a system to work with today's ADSL modems is either a PC with at least a 66MHz 486 processor or a Macintosh with at least a 68030 processor and 16Mb of memory. Of course performance will improve with faster processors and more RAM.

Unfortunately for 'tweakers', most service providers insist that you leave the DSL modem installation to the pros. This is accomplished by connecting an ADSL modem, which is a significantly different beast than your traditional analog modem, to an Ethernet network (NIC) card in your PC.



The DSL modem is generally provided by the DSL service provider, as is the cost and installation of the NIC. They may charge you for the devices, discount them heavily, or even throw them in for signing-up. At this time, you must use the brand and model of DSL modem specified by your provider.

Whatever the specific arrangements your DSL provider makes with you, it's a much more involved process than just setting-up a standard dial-up connection. If you're not dealing with your local telephone company, you will most likely need two separate installation visits to get it all going.

With traditional ADSL services, the ISP will first arrange for the telephone company to turn on the DSL line, and then a technician will install a splitter at your telephone line's point-of-presence. This device splits out the standard analog voice line from the data line. Then a technician comes and installs your DSL modem on the data line, and possibly a network card in your computer.

With G.Lite ADSL, there's no need for an installation visit. You simply order the service, install the ADSL modem and plug it into your regular telephone line. To check for DSL availability in your area, visit CNET Internet Services.

DOWNFALLS

While the speeds and costs associated with DSL access seem almost too good to be true, there are potential drawbacks. For example:

* DSL circuits can only operate within fairly strict distance limitations. To receive G.Lite ADSL, a customer typically has to be within 18,000 feet of the central office. DSL services that provide greater than 1.5 mbps require even shorter distances to the central office, usually 10,000 to 12,000 feet.

* The quality of the wiring is an issue as well. Even if you live within the distance requirement of a central office equipped for DSL, it still may not work if your neighbourhood or building has deteriorating telephone cables. In these cases, the local phone company may be able to provide a 'cleaned' or 'conditioned' line for you, but you will pay dearly for this.

* In some instances, interference from telephone handsets or poorly functioning telephones can cause DSL circuits to suffer. It may be necessary to install bypass filters at offending telephone jacks or replace some telephone instruments. To prepare yourself for more potential downfalls, see The Straight Dope About DSL from CNET Internet. Also, check out TeleChoice xDSL.com or EverythingDSL.com for more DSL info on the Web.

That's all for this month so until next time 'happy keyboarding'!

RogerG3LDI

DX DESTINATION

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GOING ON A DX HOLIDAY? WHAT CALLSIGN DO YOU USE? ED, G3SQX, EXPLAINS.

Previous DX Destination articles have told you a lot about taking equipment on trips, and putting up antennas. But there are other essential components of any DX Holiday and these include questions like: What callsign do I use? Should I apply for a foreign licence? How do I know the rules when I'm abroad?

Things are not as simple as they seem, because the answers to the questions depend on several factors. The situation is different for each country you are visiting, but you may not realise that your class of licence also has a bearing on the matter. Sometimes your callsign depends on the region as well as the country.

OPERATING IN THE UK

Operating in the UK is fairly straightforward. The UK (including the Isle of Man and the Channel Islands for licensing purposes) has a common set of regulations, set out by the Radiocommunications Agency (RA). You would have learnt about them when you studied for your licence, and you can still recall every word, I'm sure! The RA document, BR68, lists the fine print.

Remember that the UK consists of several 'countries', each with what the licence calls a Regional Secondary Locator. These are listed in **Fig. 1** and you use them as the second character of your callsign.

For an example, if you are usually M3QTH and you go to Scotland, you become MM3QTH. When in England, you omit the Secondary Locator, apart from Intermediate Licensees, who use the letter E. So in England, 2W1QSL would be 2E1QSL, and GU8QLF becomes G8QLF.

In the normal course of events, you also add the suffix portable, or /P to your callsign when away from your home station. Of course, if you are in a vehicle this becomes mobile, (/M) and on the high seas it will be maritime mobile (/MM).

When you are operating portable, you have to observe the rules about stating your location on the air from time-to-time. In theory an RA official could track you down if there is an interference problem. This is not required when mobile on land or sea and I suppose the idea is that you will be far away from the party being interfered with by the time anyone catches up with you, so there's no point in knowing where you are!

On a trip to a fixed location, which will last a few days or more, you can obviate the need to continually sign portable by informing the appropriate office of the RA about your operation. This also removes the necessity to mention where you are. The address to write to can be found on the RA website, see **Fig. 2**

● Fig. 1: When operating in the different countries of the UK, your callsign changes as shown.

Fig.1

Country	Locator	Examples
Isle of Man	D	MD3QTC, G4QTH
England	E *	2E1QRM, M0QRZ
Northern Ireland	I	GI7QSP, 2I0QRN
Jersey	J	MJ1QSB, GJ6QNH
Scotland	M	MM1QRS, GM8QAC
Guernsey	U	GU2QUI, 2U0QRQ
Wales	W	GW3QSE, MW3QUA

* The Locator E is only used with Intermediate callsigns

THE CEPT AGREEMENT

In recent years, the CEPT agreement has allowed Radio Amateurs from all over the world to operate in each other's countries without having to apply for a reciprocal licence. Simply put, you can go abroad and just start operating, like using a driving licence which is internationally recognised.

Not every country has signed up for CEPT. In fact, the original idea was that it would be an agreement between European administrations. The abbreviation stands for **Conférence Européenne des administrations des Postes et des Télécommunications.** In plain English this is the European Conference of Postal and Telecommunications Administrations.

However, there are now many participants from outside Europe, and the list includes countries such as the USA and Canada, as well as those you might expect such as France and Germany. If you want to know who is included, there is a list included with your licence. For the latest information, refer to the RA because new countries are added from time-to-time.

Your callsign when operating under CEPT is generally formed in a standard way. Take the prefix for the country where you are operating, add 'stroke' or 'slash', which is the character / in Morse or data, and then your own callsign. For example, if G9DX operates in France, he becomes F/G9DX. Add the suffix /M or /P as appropriate.

As in the UK, a Class A licensee has access to all bands, whereas Class Bs are allowed to operate only above 30MHz. Sometimes the prefix indicates this, and you have to find out beforehand. Also some countries have several prefixes and the administration in the country concerned will specify which one is to be used. To illustrate, ON8KO would be M/ON8KO when operating in England (rather than G/ON8KO).

Occasionally, a country will have a regional variation on the prefix, usually indicated by a number. Greece has this scheme, so you sign SV4/G9DX, SV6/G9DX and so on, depending on your exact location. There is a good source of useful information, including regional prefixes, maintained by OH2MCN, and his website is listed in Fig. 2.

There is a snag which not everyone knows about, you have to have a Full UK licence, Class A or B, in order to use the CEPT scheme. **Foundation and Intermediate licensees are not eligible**, because

Fig.2

Website Address	Description
www.qsl.net/oh2mcn/license.htm	Licence requirements world-wide and tips DX operating.
www.dxholiday.com	QTHs that can be used for a DX Holiday, with other useful articles.
www.ng3k.com/Misc/adxo.html	Continually updated list of DX operations. inform NG3K about your trip so that others know to look out for you.
www.radio.gov.uk	Website of the UK's Radiocommunications Agency

● Fig. 2: Web resources for DX Destination readers

of international treaty obligations. It sometimes comes as a surprise, particularly to former Novices, that they are not allowed to operate abroad.

OUTSIDE CEPT

Some commonly-visited countries are outside the CEPT scheme, but nevertheless present few obstacles to foreign Amateurs wishing to operate. For example, if you go to Gibraltar, which I'll talk about later, you have to apply for a Reciprocal Licence.

Reciprocal simply means that the administration in question has come to an agreement with the UK that licences will be

Telecommunications Ordinance 2000 Telecommunications Ordinance 2000 Telecommunications

Licence No. 128/01

Wireless Telegraphy Ordinance,

Amateur Radio Reciprocal Licence
CLASS A

(This licence is valid from 5th June to 17th June 2002)

To be produced on demand - Not transferable

In accordance with the provisions of section 5 of the Wireless Telegraphy Ordinance, licence is hereby granted to:

Licensee's Name: **Mr Edwin Taylor**

Call Sign: **ZB2 / G3SQX**

Mailing Address:

Main Station Address: The Rock Hotel Gibraltar

to establish, install and use sending and receiving apparatus for wireless telegraphy.

The Licensee shall comply with -
a) the relevant provisions of the Telecommunications Convention and the Radio Regulations; and
b) the relevant statutes and regulations made thereunder including (without limiting the generality of the foregoing) the Wireless Telegraphy Ordinance.
c) The frequency, power and types of emission, shall be directed by the Wireless Officer.
d) The apparatus must in all cases be operated by or under the direct supervision of the Licensee.

The apparatus shall be designed, constructed, maintained and used in such manner that the use of the station does not cause or contribute to any undue interference to any wireless telegraphy. The apparatus shall not be used on the Upper Rock, close to the airfield or near existing wireless telegraphy installations.

Licence Fee: N/A

Gibraltar 16th April 2002

gra

Telecommunications Ordinance 2000 Telecommunications Ordinance 2000 Telecommunications

● Fig. 3: Example of a Reciprocal Licence, this one was issued in Gibraltar

issued for a temporary period on production of a UK licence. The reverse applies to nationals of the country when they visit the UK.

So, how do you apply for a Reciprocal Licence? This varies, depending on the country. Some require a form to be submitted by mail, some accept faxes, some are happy with e-mails, and some will even issue the licence if you ask by telephone.

The best plan is to look at OH2MCN's website (Fig. 2), and follow up on whatever he recommends. Be aware that there is sometimes a considerable delay before licences are issued and a local Amateur may be able to speed things up.

Generally speaking, smaller states rely on local Amateurs to inform the administration as to which foreigners are entitled to particular types of licence. After all, the officials are likely to be dealing with many different types of post and telecommunications matters, with only the occasional Amateur licence to issue.

In fact, local Amateurs may be able to tell you which official to talk to, or actually obtain the licence for you. This is the case for Gibraltar and the document you get as a reciprocal licence in shown in **Fig. 3**.

There are administrations, in countries where Amateur Radio is theoretically possible, that do not normally issue licences. In some cases, they will only allow local people to operate and in others they don't usually allow Amateur Radio operation at all. It can happen that there may not be any official licences as such, and visiting Amateurs are allowed to operate on the strength of a latter of authorisation, or similar document.

Wherever you are, be careful to investigate the local rules, to make sure you do not inadvertently go astray. Local Amateurs are the best source of this type of information.

The pitfalls generally relate to frequency bands and power limits. For example it's best to find out before you go that 50MHz is unavailable rather then when you get there.

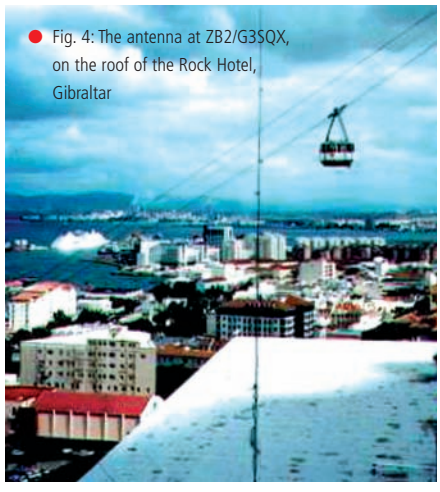
You should also make sure that you have all documentation relating to your operation available for inspection. Local officials may challenge the fact that you are legally allowed to be on the air, but should be completely satisfied when you show them the appropriate paperwork.

ON THE ROCK

Earlier this year, I visited the Rock of Gibraltar, and operated in the RSGB's Jubilee Contest. Getting a reciprocal licence is straightforward, as these are issued on request, by sending a FAX of your UK licence to the appropriate authorities. My callsign was ZB2/G3SQX.

The local Amateurs are knowledgeable about licensing and places to operate. If you want to go, they will help you considerably.

The main problem with Gibraltar is finding a place to operate from, because the Rock itself



● Fig. 4: The antenna at ZB2/G3SQX, on the roof of the Rock Hotel, Gibraltar

dominates everything. This means that there is really no open land that you could use for antennas.

The only practicable solution for visitors' antennas is to use the roof of a hotel. This is fairly straightforward, as there are two hotels in Gibraltar that have previously accommodated Radio Amateurs. One is on the east of the Rock and one is on the west.

You have to decide which part of the world you want to talk to, because the Rock rises so steeply. If you are on one side, your signal is shielded to the other and vice versa. I decided to go to the west, and stayed at the Rock Hotel.

It was easy enough to get permission to put up an antenna on the roof, and when I arrived I found that they had allocated me a room on the top floor as promised.

The maintenance manager took me on to the roof and warned me that from then on I was "at my own risk". I could see why he said that, because the roof had no railing and a false step would mean a terminal fall of six storeys to the ground below!

However, there was plenty of room for my 9-band vertical and its assorted radials, that I had carefully carried from London. Here's a travel tip: I discovered that many airlines have a free, additional baggage allowance for sports equipment, which includes golf clubs, so my dismantled antenna, and a few other things travelled in a carrying case intended for a golf bag! No questions were asked as I checked in several kilos above the usual allowance. I suppose the airline staff weren't to know that there are no golf courses in Gibraltar!

ON THE ROOF

You can see what my antenna looked like in **Fig. 4**. The hotel was close to a cable car that carries visitors to the top of the Rock and there was also a good view into Spain, to the north.

As you would imagine, take-off is excellent to the west, including North and South America. The east is pretty effectively shielded by the Rock, so working into Europe and Japan is difficult, with weak signals both ways.

It's surprising how much demand there is for Gibraltar on the h.f. bands. I had pile-ups on both 10 and 18MHz, lasting for several hours. In the Jubilee contest, there were a lot of callers and this one-off event was very popular throughout the world.

Many British Amateurs were also attracting interest because of their GQ prefix. Conditions seem to be deteriorating steadily as we move off the peak of the sunspot cycle, but there will still be plenty of DX available as long as the activity levels I experienced are maintained.

If you want a few days in a fascinating location, with Amateur Radio added, I recommend Gibraltar. It's not too far from the parts of Spain where many people go for their holidays.

You'll be very popular on the air, particularly if you operate on the less-used bands or modes. And if the family are more interested in taking in the sun while you 'play' radio, you can try the Caleta Hotel on the east of the Rock, which is next to a very pleasant beach.

SIGN-OFF

I appreciate hearing your stories about DX Holidays and how you fared. Please keep writing. The deadline for the January column is the middle of October. *73, Ed G3SQX*

IN VISION

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GRAHAM G8EMX PROVIDES A ROUND UP OF THE RECENT BATC 2002 CONVENTION

The **British Amateur TV Club** (BATC) returned to Old Warden, a village south of Bedford, for its 2002 Convention and General Meeting, held on Sunday June 16. Visitors were greeted by secretary **Paul Marshall G8MJW** showing his Outside Broadcast scanner, which was working and open for walk-through. This is a refurbished Southern TV vehicle, which Paul is still building up.

Inside the hall was the BATC stand where visitors could join or renew their Club membership before exploring the many traders and displays exclusively for ATV. It was great to see **Viv & Ivor Green** again (Severnside Group), **Stuart Marshall** (aerials, Tamworth) and **Tony Hornby G1HBD** of Masthead Antennas (**www.mastheadantennas.com**).

Dominating the stage was **Brian Summers G8GQS** with an array of ex-broadcast cameras from years past and not so past, plus other fascinating pieces of broadcast television kit. Oh and I must not forget the radio controlled helicopter complete with camera and transmitter in its nose!

There seems to be a resurgence of interest in 70cm ATV. In the Lecture Theatre **Ian Waters G3KKD** showed the development of his narrow band 70cm ATV transmitter and the hardware was available for all to inspect. All the lectures were recorded by various ex-broadcast cameras, with BATC Chairman **Trevor Brown G8CJS** at the computer video editing suite.

Meanwhile, down in the traders, **G1MFG** was showing his wares, including a ready-built 70cm ATV transmitter. I was disappointed that this was not available as a kit; using conventional components plus a few surface mounted ones and straightforward double sideband a.m., I might have been (marginally) interested in building.

GENERAL MEETING

At 3pm the General Meeting was called, the committee gathered to learn its fate at the vote of the membership. Trevor Brown thanked the committee for its work, Brian Summers presented the accounts which showed a reasonable surplus thanks mainly to a cheaper printer for the club magazine *CQ-TV*. Then the elections and, somehow, we all survived, there were even some new faces elected onto the committee!

The first issue to be addressed by the new BATC committee was the relocation of nearly 2,000 back issues of *CQ-TV*. **Brian Kelly**, who had for many years took delivery of the printed magazine, then addressed and posted them via Royal Mail PressStream, was moving from Risca, in South Wales, to a more remote location in mid-Wales.

So, a volunteer was found (yes, guess who!) to remove 30 boxes of the magazines to a good home in Birmingham before the next issue, *CQ-TV* 199, arrived for posting! The plan is that many of them will be 'bundled' for distribution at rallies that are coming up – the BATC plans to be at Telford, Leicester and London.

If the next *CQ-TV* is number 199, then counting to base ten would have it that in three months time it will be *CQ-TV* 200, so a 'Project 200' is being actively considered by the BATC committee. Past projects have been very constructional – I think a sync' pulse generator was Project 100 – so a 24cm ATV receiver, or transmitter, have been suggested. Another idea is a DVD of the Shuttleworth lecture stream.

Ex-broadcast studio cameras on display at the BATC Convention, Shuttleworth.

Chris Williams G7NBP, has an idea that might be of interest to *Practical Wireless* and In Vision readers. Writing to editor Rob Mannion, Chris explains: "Hi Rob, I've been running a small project for our Linux user group - data linking PCs over a range of about 5 - 10km at 11MB per second using inexpensive wireless networking cards on the Industrial, Scientific and Medical (ISM) 2.4GHz band. It occurs to me that with a minor re-work the antenna design we are using, which has proved very good and giving repeatable results over a wide range of construction skill levels, is probably going to be reasonable for 2.4GHz ATV and other microwave projects".

Chris continues: "Currently a number of the user group have built these antenna systems and although four or five of the group are Amateurs, 90% of the group are not and have done no r.f. work previously. Hence the very simple and easily repeatable design which is distributed in kit form in the group. Recent tests of the antenna at a commercial microwave lab confirm that it is a good match into 50Ω throughout the used section of the band and that as a bonus, some r.f. does definitely come out of the front"!

Concluding Chris says: "A basic overview of the project in general can be found in both the 'projects' and 'resources' section of our website at h**ttp://www.shropshire.lug.org.uk** and there is a pdf file download at **http://www.shropshire.lug.org.uk/downloads/2.4/wantenna.pdf** which is the documentation (assembly guide) I currently have in the antenna kits". Thanks Chris for that information, keep us posted on future developments. (And the Editor says if enough interest is shown - we could publish the idea).

LEICESTER REPEATER

Now, some news of the Leicester ATV repeater **GB3GV**, which has been off-air recently. Group chairman **John Senior G7RXS** writes: "Hello Graham, **Dave Payne** the NoV holder has been under too much pressure at work and we appealed for help. We have now obtained some assistance from **G4BBS** and **G4MVL**, both TV enthusiasts from the Nuneaton/Bedworth area. They had a meeting on site with Dave Payne and took away 'GV for examination.

Then G4BBS spent a whole day working on it and then returned it to site. I believe it is now working in colour and repeating but personally have no ATV kit. Dave Payne remains the NoV holder and is now working on the computer generated test card side of things".

John adds: "Funds are not a problem at this point in time, what is the problem is having people with the technical knowledge who are prepared to travel to Markfield at their own expense and who have the spare time to do so. Nuneaton to Markfield is a long way after a day at work"!

Finally, I must get around to powering up and testing the G8SUY 24cm ATV transmitter! I promise a performance report next time!

73 & PS Graham G8EMX

TUNE-IN

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TOM WALTERS REPORTS ON THE LATEST NEWS FROM AROUND THE BROADCAST BANDS

I've received an E-mail from **Jonathan Kempster M5AEO**, who writes: "Re: the *WRTH Shortwave Guide*, as mentioned in your column in *PW* September. I was very disappointed with it and find the blue pages of *Passport* much better, and it seems equally up to date. I would recommend *Passport* over WRTH anytime"!

Well, there's a thing! I really don't like having to make a criticism about such a deeply-researched and well-produced book as the new *Shortwave Guide* from the *WRTH*. It tells you which stations are on the frequency to which you are currently tuned and does that extremely well. But it doesn't help if you want to find a particular **station**. I suppose they want you to buy the *Shortwave Guide* as well. But that's very expensive, and does not get over the difficulty of the twice-a-year frequency changes.

I also had another E-mail, from **Charlotte Delisle** who writes: "I hope you can help. I am trying (in vain) to find a radio for my father which picks up Hungarian radio stations (it doesn't really matter which ones). After having been into various dealers I have been told that if we can find out the specific wavebands etc (I am sure that it is shortwave) that they will be able to find a radio which will pick it up. So far all I have found is the specific wavebands in Hungary which is obviously no use to me"!

Charlotte's is a very typical appeal from a bemused non-technical person. We really do need to stop from time-to-time and recognise what an obscure business international short wave is.

The general public are totally nonplussed. The stations pump out radio programmes in complex schedules and hope that the public will somehow find out the details.

Keen hobbyists and Amateurs will ferret out the information, but the for the public it's a guessing game – scanning the bands until something turns up. Unless they happen to come across guides such as the *WRTH* or the *Global Broadcasting Guide* from the AIB (both available from the *PW* Bookstore).

Well, Charlotte has obviously seen this column, so for her and any others with a limited technical background and hoping for clues, here's an answer: Hungary broadcasts internationally via **Radio Budapest**, on short wave. The current times and frequencies for English are at: 0300-0330 on 9.560 kiloHertz (kHz); 0430-0500 on 9.570; 2100-2130 on 6.025, 7.130; 2130-2200 on 3.975 and 2300-2330 on 6.025. The times given are UTC (GMT). For British Summer Time add 1 hour.

As Charlotte's father may well be Hungarian, he can hear Radio Budapest in his own language at **1**000-1200 on 6.025kHz; 1200-1300 on 6025; 1300-1630 on 6.025; 1300-1400 on 6025; 2000 - 2100 on 3.975, 6.025 and 2200 - 2300 on 3.975, 6.025kHz. For further information you can write to **Radio Budapest, Brody Sandor u. 5-7, H-1800 Hungary**, or E-mail **vanyolai@radio.hu** Website **www.kaf.radio.hu/index.html**

As to which radio, Charlotte, you are in the hands of the dealers **and beware their lack of knowledge** in some cases. You need a short wave radio with **digital tuning** to be sure of getting the exact frequencies, but make sure that you and your father understand the technology.

A good radio will cost you at least £100. Perhaps you should ring up some of the advertisers in *Practical Wireless* or *Short Wave Magazine*, as they will have much more knowledge than the local shops. And make sure you get an up-to-date frequency guide each spring and autumn.

Just consider some of the difficulties in the above: What is a waveband? What are kilohertz? How do you find them?

What will the father do when the frequencies change, very soon? Will he be able to work the radio on his own? (many older people have huge trouble with this). Have they got E-mail and internet access to find out more? Will Radio Budapest reply to them by mail? It's amazing that international stations have any audiences at all!

Things won't be all that much simpler when **DRM (Digital Radio Mondiale)** is with us. Here's DRM chairman **Peter Senger's** latest pronouncement: "When the DRM on-air system for short-wave, medium-wave and long-wave launches next year, it will revitalise a.m. radio markets world-wide. DRM's clear, near-f.m. quality sound will give international, national and local broadcasters new opportunities to increase listener loyalty and reach new audiences".

Stations will still use the same pattern of frequencies, but if the system works and

current trials suggest that it will, there may well be a greater public interest not only in short wave, but in medium and long wave as well. But there will still be a huge need for frequency and time information, because the competition will increase.

TRANSMITTER SITE

Finally, I've got further news about the move of the **HCJB** transmitter site (see Tune-In *PW* May). The transmitters have to move from near Quito, where they might interfere with a new airport, to a coastal site 200 miles away at Santa Elena near Guayaquil.

Project SERVE (Santa Elena: Renew the Voice from Ecuador), costing 4.6m US dollars, has been set up and will take four years to move the international transmitter site to Santa Elena. Engineers plan to install 11 short-wave transmitters and 17 antennas at the site. The new site, it is claimed, will provide an improved short-wave signal to HCJB World Radio's target audiences.

The current short wave English schedule for HCJB is**:** 0100-0400 America 9.745; 0100-0330 America on 11.960; 0100-0600; Europe, Pacific 21.455; 0200-0330 India 21.470; 0330-0600 America 11.960; 0600-0800 Europe 11680; 0630-1430 Europe, Pacific 21.455; 0700-1100 Pacific 11.755; 1100-1430 America 12.005, 15.115 and 2000-2200 Europe on 17.660MHz.

That's all for this month, so until next time and happy broadcast band listening.

Bye for now, Tom

Trader's Table

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AOR AR8000 scanning receiver, computer controlled, mint condition, bargain at £185 + any carriage. 500kHz - 1900MHz cub frequency finder, £40 - both together and case, £200. E-mail for photos and specifications. Tel: (01228) 674921 or E-mail: braemar@clara.co.uk

Collectors: 'Wave-Wing' super expanding antenna, never used, original box, Harlie anti-microphonic 4-pin valve adapter, new, original boxes, (four), vintage h.t. fuse, spade and screw terminals, original box, any offers? Denzil G3KXF, QTHR. Tel: Worthing (01903) 764599 or E-mail: denzil-roden@lineone.net

Cushcraft Ten-3 10m (28MHz) monoband 3-element Yagi, assembly instructions, buyer collects or pays carriage, original box, would suit new licensee, £50 o.n.o. Mike G3TMB on (01704) 214012.

Eddystone S740, £75. Eddystone S750, HR100, £100. Racal RA17/2, v.g.c., £100. Grundig Satellite 2100, £65. Grundig Satellite 6001, £80. Sony SW77, £150. TS-830 spares/repair, £80. Universal M900 decoder, £200. Tel: Essex (01279) 815020.

FT-101ZD MkIII f.m., pre-amp fitted, WARC, spare pair 6146B, handbook and service manual, g.w.o., £320 o.n.o. FV-101DM digital memory v.f.o., g.w.o., manual, £175. TF-144H c.w./a.m. sign/gen, £35 - buyer collects, pays carriage. Dave on 0208-504 8187 after 1800/weekends, E-mail: davidka@btinternet.com

FT-50R dual-band, £150. MFJ 931, £30. Hanson SWR-3 s.w.r., £10. MFJ-900 Econo, £10. Oskar SWR200 power, £20. YN-3 power s.w.r., £10. SEM Easitune, £5. John G4KJV, QTHR. Tel: (01249) 720456 or g4kjv99sqn@supanet.com

Heathkit HW9 h.f. QRP TX/RX, works on RX, no TX, £65. HFT-9 a.t.u., £45. HM-9 s.w.r. meter, £45 - matches HW9, MFJ c.w. filter, tatty, £5. AEA PK232MBX terminal, £60. Pete, Bristol. Tel: (01454) 882465.

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Kenwood TS-450S h.f. all-band transceiver, matching speaker SP23, hand mic., Kenwood desk mic. MC-60, 35A p.s.u., all good condition, with manuals, no split, £500 - no offers. David Johnson, Blackpool. Tel: (01253) 401707.

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Racal RA17L in g.w.o. with photocopy handbook and s.s.b. adapter by Racal, £150 o.n.o. George G3NIR on (01227) 741830 or E-mail: g3nir@btinternet.com

Radio Valve Guide Book, *Radio Valve Guide Book 3*, *Shortwave Radio Handbook*, *Marine Radio Manual* (1966), *Radio Vol 1*, offers. A. Coleman, Glasgow. Tel: 0141-944 3865.

Silent key sale: Icom IC-735 h.f. transceiver with manual, £350. Yaesu FT-290II v.h.f. plus manual, £150. Pac-com Tiny 2 plus manual, £50. Raycom 13.8V 20A regulated P5, £35. All plus carriage. Tel: Swindon (01793) 740355.

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Trio TS-530S transceiver, 10-160m (18-30MHz), in good condition, with MC-35S hand mic., manual and box, £200. Tel: North Kent (01322) 664969.

Wayne Kerr audio measuring set/osc, 44C, 20Hz-200kHz, £40. Tech TE65 VTVM, 1.5-1500V a.c./d.c. + ohms, £25 with handbooks, buyer collects or pays carriage. Dave on 0208-504 8187 after 1800/weekends, E-mail: davidka@btinternet.com

Yaesu FT-290, 2m (144MHz) multi-mode, new NiCads, (2.2A), speaker mic., carry case, internal MuTek pre-amp, £175. TS-700GII 2m (144MHx) 10W multi-mode ?/12V, £185. Dave M0EQD, Rotherham. Tel: (01709) 556864.

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Yaesu VX5R tri-band hand-held, complete, boxed and in mint condition, hardly used since purchase, £230 o.n.o. Black Star Meteor 600 frequency counter, range 5Hz to 600MHz, mint condition, no instructions or box, £60 o.n.o. Yaesu FT-290 MkI, complete with FL2010 linear amp in reasonable condition, £135 o.n.o., no splits on this. ERA Mk II Microreader, c.w. and RTTY decoder, complete with instructions, but no box, £55 o.n.o. Keith M0WAC on (01332) 733810 before 2200. Willing to meet up within 50 miles of Derby.

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Codar CR45 mains t.r.f. receiver handbook, or copy, also No. 2 coil, also Sony SW15 SW1E receiver. Gordon on (01442) 842584 or E-mail: gordon@cherrybeam.freeserve.co.uk

Eddystone 1650/2 or a Harris RF590A, must be in mint condition. Tel: Dublin 00353-01-4536 452.

George (Wirral) - expresses thanks to readers and new friends who replies to his advert, Advance VVM, also *Practical Wireless* for printing the advert. (C18 was the culprit, it leaked - thank you). Tel: 0151-339 7098.

Manual to buy or borrow for Hunts capacitor analyser and resistance bridge type CRB3. Phil G3ZJH, Bristol. Tel: 0117-969 1025.

Outbacker antenna, split or tri-split, preferred. Would buy any of the Perth range, good price paid. Tom on 02920 256724.

Radio Constructor - vintage radio magazines urgently required (with editor as F. Baldwin). Tel: 0208-954 1750.

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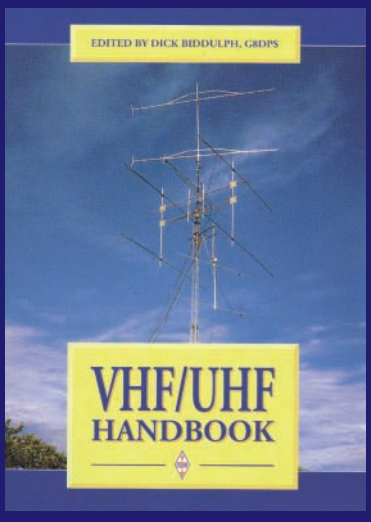

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topical talk

Thoughts on Top Band

Following the article in this month's issue where the Editor provided some ideas and suggestions on his 'Out & About' activities working portable, the Editorial team look back at the time when much 'mobile' work was on 'Top Band'.

As we work here in the *PW* office there's a continual conversational 'chit-chat' regarding particular articles and topics. Very often of course the mainstays of these discussions are (because of their 'experience..."a polite euphemism for age" says the Editor!) are our large Editor himself, **Tex Swann G1TEX** and **Kevin Nice G7TZC** because they've been active in the hobby for a long time.

While researching his Out & About article our Editor fell into a reminiscing mood - recalling the days when "All you could see was a forest of gigantic Top Band mobile antennas". In particular Rob remembered the RSGB's long established (and much missed) Woburn Abbey Rally in Bedfordshire.

"That was the place" said Rob, "...where you could see literally hundreds of Top Band mobiles...and most of the antennas were home-brewed". And although he was looking as far back as the 1960s, where the rigs were mostly using a.m., he also had memories of the rally in the last ten years or so when keen mobile operators made their presence known...by the immensely impressive antennas for 1.8MHz.

The Bug Catcher

The original conversation started when our Editor (researching material for his article) came across the photograph, **Fig. 1**, showing the Texas Bug Catcher h.f. mobile antenna which he reviewed several years ago. This was what brought back memories of the 'old days' of a.m. 1.8MHz mobile working.

Fig. 1: The Texas Bugcatcher h.f. mobile antenna, photographed on G3XFD's car, sparked off a discussion on the merits of 'Top Band' mobile operations because it reminded PW's Editor of the fun he had with his own home-brewed rigs for 1.8MHz. (See text).

Rob enjoyed recalling his long treks to rallies in the late 1960s and early 1970s with **Chris G8DXF** and the late **Richard G8CEH** "We often worked other mobiles and fixed stations for several hours...sometimes at a range of 70 miles or so".

More Compact

Of course nowadays things have changed tremendously...the 1.8MHz a.m. transmitters being replaced by modern more compact units. But the 'mobileers' of the day had great fun!

As the discussion drew to a close...we realised that readers might have some memories of Top Band mobile operations... both using a.m. and s.s.b. We know that there's still much interest in this aspect of mobile operating...and the *PW* letters pages are there for your memories and recent activities. So let's be hearing from you...it's a fascinating band, and no doubt you'll have some equally fascinating memories!

PW

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