Practical Wireless

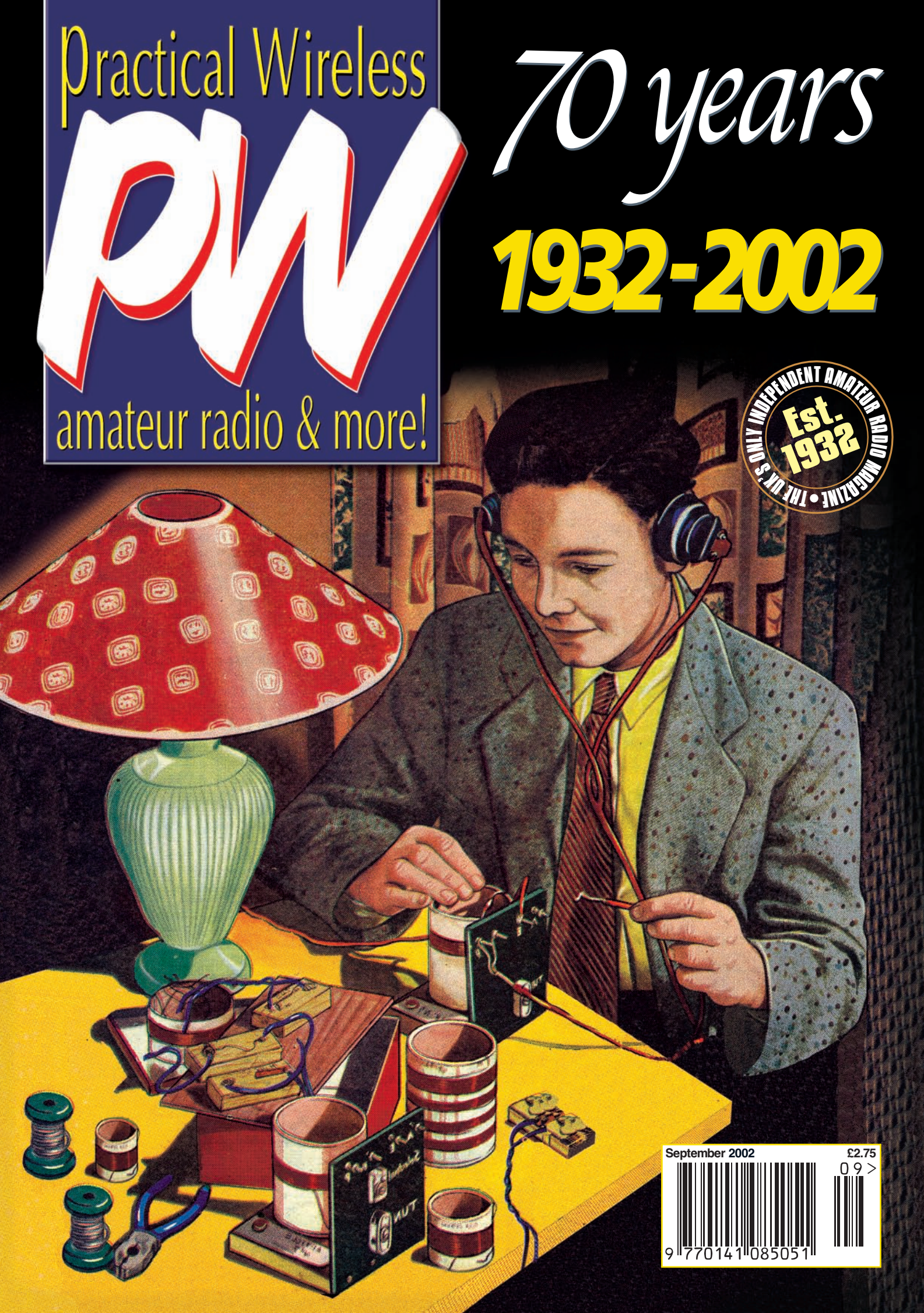
PW

amateur radio & more!

70 years

1932-2002

THE UK'S ONLY INDEPENDENT AMATEUR RADIO MAGAZINE • Est. 1932



September 2002 £2.75

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WATERS & STANTON

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SCOTTISH BRANCH OPEN DAY Sat. 19th October

Opens 9am

Free raffles and lots of SPECIALS!

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

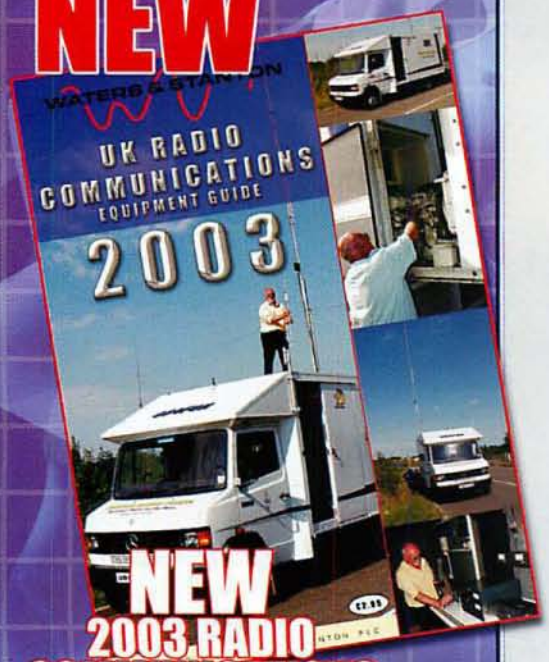
You'll find all the Waters & Stanton products at the same competitive prices. If you live in Scotland or the Borders, then give Bill a call or pay him a visit (closed Sunday and Monday). It makes sense to be loyal to your local dealer, particularly with our prices!

Waters & Stanton @ Jaycee.

Glenrothes Fife.

The chance to do some deals and meet old friends. Trade stands in adjacent hall, with refreshments and easy parking. The biggest Open Day ever held in Scotland. Be there!

NEW



NEW 2003 RADIO COMMUNICATIONS GUIDE £2.95 carr. £1.25

World's largest guide to Amateur Radio equipment.

336 PAGES

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

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.
£259.95

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

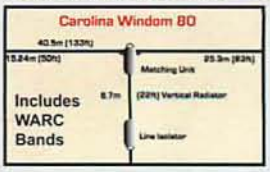
Triple Mag Mounts *Upgraded*

Ideal for HF whips and large VHF whips. Amazing adhesion even at 70mph! SO-239 or 3/8" available

£39.95

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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FIELD RD, MATLOCK, DERBYSHIRE, DE43 5LE

NROTHES, FIFE KY7 5DF
D MONDAYS
r Line: 08000 73 73 88

PRICE MATCH

WON'T DISCOUNT... CUSTOMER SERVICE THE ONLY THING WE

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

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 plus 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 Band 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

DIAMOND ANTENNA

- 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**

NEW

One Board Filter

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

DISCOUNT... CUSTOMER SERVICE THE ONLY THING WE WON'T

PRICE MATCH

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

HEIL

GM-4	Hand Mic	£129.95 B
GM-5	Hand Mic	£129.95 B
HS-706	Single H'phone	£59.95 B
PRO-SET-PLUS	Headset	£199.95 B
Proset-4	H'phone/boom mic	£129.95 B
Proset-5	H'phone/boom mic	£129.95 B
Pro-5-4	Single H'phone/mic	£119.95 B
Pro-5-5	Single H'phone/mic	£119.95 B
AD-1	Cables Y. K. or I.	£16.95 A
HM-10-4	Stick mic	£76.95 B
HM-10-5	Stick mic	£76.96 B
HM-10-Dual	Hand Mic	£126.95 B
CC-1	Cables Y. K. or I.	£29.95 A
HC-4	Spare insert	£32.95 A
HC-5	Spare insert	£32.95 A

You can convert your mic to Heil by simply purchasing HC-4 or HC-5 insert.

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.

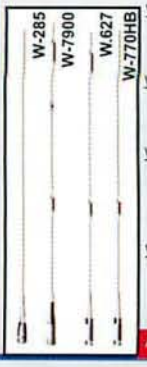
Dual Band 2m/70cms

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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PW's Internet address is:
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You can send mail to anyone at *PW*, just insert their name at the beginning of the address,
e.g. rob@pwpublishing.ltd.uk

Cover Subject

Our rather unusual and nostalgic cover this month has been created by *PW*'s Layout Artist **Bob Kemp**. Bob has taken an original cover from the *PW* October 1957 issue and worked on the colours and imagery to make it suitable for modern day printing. In addition to this Bob has worked on all of the anniversary articles in this issue and we think he's done a great job!

So, sit back, enjoy and join us in pure nostalgic indulgence. Here's to the next 70 years!

Design & Artwork by: **Bob Kemp**

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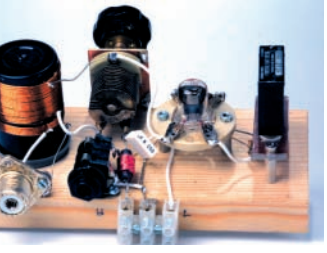

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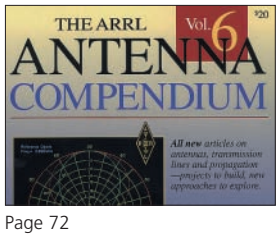

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author info

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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.

To mark the occasion of *PW*'s 70th anniversary year celebrations, 'Keylines' is rather different this month. Instead of serving as the platform for me to launch ideas, provide my opinion, start debates (and attract the occasional tomato and cauliflower) I'm using it to pay tribute to readers, via a special personal tribute to one reader who represents the generation who founded *PW*. In effect it's the Editorial team's way of saying 'Thank you' for your support in an appropriate way.

Additionally, this month I'm linking the Topical Talk section at the tail end of *PW* to 'Keylines' so we can acknowledge both the hobbyists who have spent their lives supporting Amateur Radio and *PW*, along with its predecessors - and the 'new young blood' now so keenly forging its way into our unique pastime.

Tribute To *PW* Readers

Happy birthday dear PW everyone writes,
but the Editorial team could write for many nights,
wasting their time without our readers so faithful,
in fact...their support is magical!
Because of this everyone here in Broadstone,
knows they have to keep up the tone,
of the magazine we all love so dearly,
adding to the issue volumes yearly!
And here's looking to the 75th with your cheers,
because we've valued your support for many years!

Rob Mannion G3XFD

Frank Osborn G2CVO

As promised in *PW*'s Topical Talk in the July issue, I'm delighted to publish some photographs paying tribute to Frank Osborn G2CVO. Frank, **Fig. 1**, is an incredibly alert 94 year-old who demonstrates (**Donna Vincent G7TZB**'s words) that "Amateur Radio obviously keeps you young at heart"! And I can tell you from personal experience...that wicked grin clearly demonstrates an amazing sense of humour waiting to engage your attention!

Frank has been a reader of *Practical Wireless* ever since *Popular Wireless* was absorbed by this magazine in the early 1930s and I think he should now be the focal point of our 'Thank you' to his generation and all our readers. After all...it was Frank and his contemporaries who formed the hobby which we've inherited.

As the letter (See letters pages) from one of his admirers suggests...there's much of interest awaiting us in the planned article from Frank. I've commissioned him to record his story and we look forward to it. To give you a 'taster'...one of his memories is taking shelter from Zeppelin airship raids in the First World War! I'm sure it will be a fascinating story.

So, thank you Frank G2CVO, and on behalf of everyone on the magazine I offer you, as a representative of your generation, and all our other loyal readers a very humble offering of poetry. I'm very much in the same class of the Scottish poet McGonagal...(He of the 'Bridge over the Silvery Tay' fame) but I happen to think he's one of the best poets...unlike many of his countrymen!

● Fig. 1: Despite using what he calls a 'Wheeled Appliance' around the house...94 year-old Frank G2CVO is alert and active. His sense of humour has to be heard to be believed!

Readers' Letters Pages - Important Announcement

As from the October issue of *PW*, only the 'Star' letter will be awarded a voucher. However, to encourage the most interesting topics and opinions the award-winning letter published each month will now attract a £20 voucher. To qualify for acceptance for publication all letters must include the **sender's full name and address** (although the full address won't be published in *PW* unless requested) **together with the statement 'For Publication'**. Letters arriving by post are not normally acknowledged, and those letters sent in **via E-mail without the full postal address** will not be acknowledged or accepted for publication. **No FAXed letters please**.

I reluctantly decided to refuse E-mails without a provided postal address because I spend much time 'chasing' the senders {who are very often also Particulars Withheld in the RSGB *Yearbook* too) for their details. We're also getting a greatly increasing number of hoax attempts (A letter's authenticity is always checked if there's any doubt), although those published are always accepted in 'Good Faith'. So, please help us to help you by following the simple guidelines. Thank you everyone!

Editor.

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 £10 to spend on items from our Book or other services offered by *Practical Wireless*.
All other letters will receive a £5 voucher.

Make your own 'waves' by writing into PW with your comments, ideas, opinions and general 'feedback'... but please see 'Keylines' for an important change coming with the October issue.

First Rate Foundation Course

● **Dear Sir**

I must bring to your attention, the first rate Foundation Course hosted by the **Dover Radio Club**, held at Dover Grammar School for Boys. At short notice the Tutors were able to accommodate my son Peter, aged 12, on the course.

Over two Saturdays, **David Harding G0DQI** and **Brian Joyner G8ZYZ**, both brimming with infectious enthusiasm, covered the Foundation syllabus. There was plenty of time for the practical side of the course and revision of key areas. Even the Morse assessment was good fun and my son Peter left with a desire to try his hand at learning Morse to higher standards. **All in all it was an excellent course**. Well done Dover! Peter passed and now eagerly awaits his licence in the post! Listen out for M3PJS!

This is the second time Dover Radio Club have helped out prospective Amateurs from the other side of our County of Kent. (A few years back Dover were able to allow me a place on their RAE examination when places were few and far between).

While son Peter studied, Dad was in the grounds trying out a new MFJ Cub 14MHz QRP rig with home-brewed antenna (and the Frequency Mite mentioned in the July *PW*). Two Danish stations were worked QRP. A very good day!

Steve Seabrook M0ECS
Sittingbourne
Kent

Editor's comment: Take a bow Dover! Well done to everyone involved. Congratulations to everyone.

New Licence Structure

● **Dear Sir**

There seems to be an idea that the new licensing structure is making it easier (or even too easy!) to come into the hobby. I wonder? When I decided to go for the RAE I bought the necessary books and studied (with just a little previous knowledge) until I felt I could reasonably have a crack at the exam. I then signed up, and passed (quite well too).

I was never a club member (my limited experience of these was that one immediately got into a row about Morse!). Now, if I were to be looking at the project today, it seems in future I would have to go somewhere (where?) and mess about with Foundation assessments, then take an Intermediate exam, then be subjected to Intermediate assessments, before I could sit the RAE at all!

At 75, with my hearing going (so that even with the speech intelligibility enhancer I'm struggling more) I would not have time for all this nonsense. When changes were proposed I'd hoped they would be made to encourage people, not to confuse them! Yours faithfully,

Alex ('Sandy') Dick) GM0IRZ
Dundee
Scotland

The Actions Of A Minority

● **Dear Sir**

I write with reference to the actions of a minority (the Editor's Keylines *PW* July 2002). I heard the most awful display of ignorance on the night of the 17th June when a G6 plus two letter suffix station put out a 'CQ' call and was subject to anonymous on air comments about how there were no G6 'plus two' suffix stations, why didn't he go legitimate M3, and who put up his antenna, etc.

So I fired up my computer and using the *PW* Callsign CD was soon able to confirm that he was 'legitimate'. An M3 and an MM3 came to the rescue after a few minutes and although the G6 plus two confirmed to them that he had been licensed for many years (and was an instructor within the hobby) he did not receive an apology from those who had wrongly accused him.

Okay...these ignorant Amateurs thought he was an illegal operator, and to talk to one is in itself an offence...so I must assume they did what they thought was best. At the same time I must ask if the Radiocommunications Agency (RA) would chastise us for having a direct QSO with an unlicensed operator if the properly licensed operator was (a) trying to establish his credentials or (b) trying to tell him to go away from the Amateur bands?

If we value these allocated frequencies every one of us should be able to responsibly look after them. By being 'switched on' and by being able to question anyone we were not satisfied with, without fear of retribution, all properly licensed Amateurs could take part in policing the hobby. This could help by making all members of our fraternity feel as they're closer together, and thus make the acceptance of new (stranger) callsigns easier.

Mike Dickinson M0DIV
Hayle
Cornwall

Radio Hobby From A Young Age

● **Dear Sir**

I have always enjoyed radio from a very young age, my first project was a crystal set. Ever since then I have constructed numerous radio receivers including t.r.f., regenerative types, and more recently a superhet, all using transistors.

However, I would to ask your the team at *PW* to include some construction projects using valves for people such as myself. For example how about for a superhet or a regenerative detector project?

I ask this because when a project such as this is built it brings a great deal of satisfaction and enjoyment. Just seeing those heaters glowing in a successful radio provides real joy for the constructor.

Do you have any future plans to include some projects into the magazine? My next project must be a valve superhet...so do you know of any circuit diagrams I could use to build this radio.

Gregory Adrian G7CUF
Moorefields, London

Editor's comment: I'll take a look at some of the projects I've built in the past and write to you directly on this matter. The biggest problem (I don't know what components you have suitable for use with valve projects of course) for most constructors without a good stock of older 'bits and pieces' are components suitable for use with valves. In the meantime it would help tremendously if readers wishing to see more valved projects would write in to me, also providing details on your skill levels, so I can evaluate the level of interest (So, I can decide whether or not to publish something in Radio Basics or to pass it on to Phil Cadman G4JCP for publication in his Valve & Vintage column or perhaps something for both columns.

TW Topmobile Receivers

● **Dear Sir**

Following the letter (from **Terry Lambert G8EZL**, letters July 2002 *PW*) I'm writing to say that my TW 'Topmobile' receiver and 160 Transceiver both use the 'Gorler' 6V i.f. and audio and audio units. They were powered in the transceiver from a tap between the EL84 modulation valve heaters at 6V, the heaters being wired in series across the 12V supply, not efficient but simple!

The Topmobile receiver has double tuned i.f. transformers, but the transceiver has single tuned units. Incidentally, I see from my old back issues here, that there's is an advert in *PW* for December 1960 by Technical Suppliers Ltd for the German modules used by TW (I conclude my units were from early production before the Mullard modules were introduced).

I purchased my TW 160 transceiver second-hand in 1972 and 'modified' it for negative earth by 'floating' the i.f. module on a piece of Perspex (salvaged from an old single channel TV) adding squelch, noise limiter, neon modulation indicator, and rewiring the receiver front-end, inverter and removing bits of track on the audio board.

A transmit/receive change-over switch was then wired in place of the key socket. To save current in receive I added a stabilised 6V rail, the EL84s were heated in transmit mode only. At the time I imagined the older Dutch made EF80s with a longer internal screen were more stable than the later UK production.

In spite of my modifications the rig lasted over 100,000 miles with a Tavasu base-loaded whip, even managing to work the Weston-Super-Mare net from the car park deep in the Cheddar Gorge.

Advanced rust in the air intake box added water cooling on one occasion. And in cold weather the OC170 local oscillator would not! This was because I had tried to starve the mixer/local oscillator stage too much in order to try to improve stability. But TW had got it right in the first place!

The Mullard modules worked well in the Roberts and other radios. However, in the Codar T28 1.8/3.5MHz receiver, the poorly adapted Mullard i.f. module performed badly as the local oscillator was unstable. Fortunately, TW did not fall into this trap as they had a totally separate front-end.

There were also some Mullard modules for home Hi-Fi. construction. Does anyone remember those? Best wishes to everyone.

Graham Bedwell G3XYX
Winnersh
Berkshire

Editor's comment: In those days Graham I thought owning a TW Communicator was the equivalent of having an Amateur Radio Rolls Royce. This was backed up when I actually saw a 144MHz version fitted into such a RR 'Silver Cloud' at a rally! The Editorial team hope that you enjoy the TW story (absolutely fascinating) article this month from Tom Withers G3HGE.

Foundation Debate

● **Dear Sir**

I found the Foundation Debate articles in the July issue of *PW* most stimulating. However, one thing that occurred to me is that the only missing element of 'self-training' in the Foundation Course, is that of **Shortwave Listening**.

I was a s.w.l. for 25 years before going for the RAE, and I have to say that this period of self-training has proved invaluable to me. Over the years I learned **Everything** (!) about how to run a QSO (contests included), h.f. and v.h.f. propagation, antenna construction, log-keeping, operating equipment such as receivers and antenna tuning units (a.t.u.s) and many other topics.

After building or purchasing a simple receiver the listening provides free tuition that can be taken at your own pace. I started with an old Russian portable listening to a.m. on 'Top Band', and I remember the thrill of a Radio Amateur mentioning me on air.

Although the 25 years of mine might be considered a slightly long apprenticeship, surely a mandatory listening period of say six months would not be unreasonable? The tricky matter is how to police such a system, of course. Best wishes.

Jonathan Kempster
M5AEO
Milton Keynes
Buckinghamshire

Back Into The Hobby

● **Dear Sir**

After a few years off, raising children, I have recently got interested in Amateur Radio once more. Currently I'm learning Morse under the expert tutelage of **Frank Howe MBE, G3FIJ**.

In keeping with my renewed interest, the July issue of *PW*, provided quite a pleasant surprise for me on p69, when I saw the Topical Talk article featuring **Frank Osborn G2CVO**. Frank is single-handedly responsible for my interest in Amateur Radio, after spending many hours watching him at Mersea Museum in either 1978 or 79. I wonder if he remembers the annoying 10 year old who spent so much time there?

An article on Frank G2CVO would be fascinating for me to read, particularly as he lives just round the corner from where I used to live (and my parents still live). I remember him as a very friendly gentleman, always willing to explain what he was doing, and particularly remember being in awe as he clipped a mobile antenna onto his car, ran a long length of coaxial cable into the museum, and then almost straight away started talking to someone in, I believe, Italy.

Looking forward to seeing the article in a future issue. Incidentally, Mersea is a very pretty place to live, particularly 'The Lane' area, where the picture was taken!

Gary Cavie G7SJF
Tiptoe
Essex

Editor's comments: I hope you enjoy seeing Frank's photo on the 'Keylines' page this month Gary. We also hope to have an article from this much respected Amateur in a future issue.

Special Jubilee Prefix

● **Dear Sir**

During June I have been using the callsign **GQ0TAK** on h.f., and achieving some decent, if not remarkable results, given the small amount of time I have found available to radio.

I decided to adopt this call, among other reasons, because I thought it might give me a DX 'Edge' and let's face it with 5W or less of c.w., and less than a ton of aluminium in the sky you need all the help you can get.

With the aid of my faltering PC I have produced a passable imitation of a special QSL card and I propose to QSL 100% for the month's work.

What has surprised me is the paltry number of G stations using the GQ prefix! and the manner in which I have been treated by some G stations whilst using GQ. (I did manage to bust the pile up for a number of 'special' callsigns associated with the Jubilee celebrations - and thanks for listening that hard chaps).

I have however, only found a handful of 'ordinary' stations on the bands using the prefix.

Among those stations I have called, who have not gladly worked me, I have had two sorts of "adverse comment" the first is the chappie who throughout the QSO used my callsign G0TAK, completely ignoring the special prefix. Now my c.w. is

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.

August 9

Cockenzie & Port Seton ARC Annual Junk Night

Contact: Bob Glasgow GM4UYZ
Tel: (01875) 811723
E-mail: bob.gm4uyz@btinternet.com or bob.glasgow@icl.com

The Cockenzie & Port Seton Amateur Radio Club are holding their 9th Annual Junk Night from 1830-2130hrs at the Cockenzie & Port Seton Community Centre, South Seton Park, Port Seton, East Lothian. Bring along your own 'junk' and sell it yourself. There will be a raffle at 2100 approx. Refreshments will be available and there will be disabled access. £1 entrance fee, all money donated to the British Heart Foundation.

August 11

Flight Refuelling A.R.S. Hamfest

Contact: Keith G1VHG
Tel: (01202) 577937
E-mail: keith@g1vhg.freeserve.co.uk
Website: www.frars.org.uk

The annual Hamfest takes place at Merley nr. Wimborne, Dorset. Entry £2, under 14s free. (Please have correct entry money ready at gate!).

August 25

The MKARS 16th Rally

Contact: Dave
Tel: (01908) 501310
E-mail: rally@bletchley.net
Website www.qsl.net/g3hiu/rally.html

The MKARS 16th Rally is to be held at St Paul's School, Pheonix Drive, Leaden Hall, Mllton Keynes. Doors open at 0700 for traders, 0900 for buyers. Talk-in on 145.550MHz.

August 25

Coleraine & District ARS Radio & Computer Rally

Contact: Peter MI0CIB/Jim GI4ORI
Tel: (02870) 351335/(02870) 352393

The Coleraine & District Amateur Radio Society are holding their annual radio & computer rally at the Bohill Hotel, Cloyfin Road, Coleraine, Northern Ireland. Doors open at 1200, 1130 for disabled visitors.

August 26

Huntingdonshire ARS Bank Holiday Monday Rally

Contact: Peter Herbert M5ABN
Tel: (01480) 457347 (between 1800 and 2200)
E-Mail: peteherbert@aol.com

The Huntingdonshire Amateur Radio Society are holding their annual Bank Holiday Monday Rally at Ernulf Community School, St. Neots, Cambridgeshire (near Tesco Superstore on A428). Doors open from 1000-1400 and admission is £1.50. Hot and cold refreshments will be available. There will also be a hall and car boot on hard standing. Talk-in on S22.

not **that bad**. Years ago HM the Queen spent a lot of money and 15 months of my time getting me up to a high standard of operating skills, so I can only assume that the other chap was being just plain awkward.

The other response, or lack of it, is hard to prove. I am after all a QRP and proud of it station, but when a station is blasting in with a 'true' 599 I refuse to believe that all the propagation is one way **all** the time. (This is reinforced when I answer a QRZ only to hear him call CQ again!) The station was ignoring me!

I find this attitude very strange, especially when put against, for instance, the number of stations using the OS prefix at the same time. Is it a British allergy? or Rampant Republicanism? If anyone has any idea what the reason for this attitude is, I would be glad to hear it, or shall I change my personal deodorant?

Roy Walker G0TAK
Old Hutton
Cumbria

Baldock Photographs....April Fool?

Dear Sir

I feel the article concerning Baldock..Inside The Listening Ear should have been promoted to the April issue. At first sight the photograph on the front cover of the July 2002 issue, purporting to be a mobile laboratory (repeated on pages 6 and 31), did not immediately become recognised by the short term memory register of my brain. Age is a problem and this is not helped as April Fools articles has already figured in *PW* for this year! Incidentally the April 2002 issue (with its Euro Spoof article) was well thought out - congratulations, I thoroughly enjoyed the joke!

Back-dated compliments over...it's back to the July issue now...It was only after I had looked at the photograph several times did it dawn upon me that **I am currently (Late June 2002) driving this vehicle around Northern Ireland** and taking it to Schools and Youth Groups as part of the RSGB initiative to introduce young people to the wonderful hobby of Amateur Radio. I feel I should congratulate your artwork department for the superb way they have 'brushed out' the **GB4FUN** callsign from the front of the vehicle and all references to RSGB from the sides. However, you must take them to task for failing to alter the vehicle registration number. That was a dead give away and has spoiled an otherwise excellent presentation.

My Club, the **Bangor and District Amateur Radio Society**, are considering fixing a plate somewhere on the vehicle which might read 'As seen in *Practical Wireless*' or maybe 'The Real Story behind The Story Behind the Movie'!

Jeff Smith MI0AEX
Kirkistown
Northern Ireland

Editor's reply: Jeff's good natured leg-pull letter is referring to the fact that our front cover photograph (a montage of those provided by the RA) shows what is now the vehicle which provides accommodation for GB4FUN - taken some years ago after the RA had 'laid it up' after retirement and before it was passed on to the RSGB for a (vigorous) new life promoting Amateur Radio. However, the photographs were chosen with care (and I knew which vehicle it was!) because of their interest value. And if the RSGB can use an old RA vehicle (and put it to excellent use)...surely we can do the same with old - but appropriate interest photographs? Joking apart...I can claim the Bangor is also 'my club' as I'm an Honorary member - Jeff is also an excellent host when I visit. Keep up the good work with GB4FUN everyone!

Australian V&V Enthusiast

Dear Sir

During the past 20 years I've been buying and reading *PW* out here in Australia. I've always enjoyed the articles, especially those on older Valved & Vintage types. I'd also like to say "Happy 70th birthday" to *PW* - well to our favourite magazine and the Editorial team!

Being a mad keen valve man, I collect and restore the **Yaesu FT-DX400** series of sets from the late 1960s to the early 1970s and I was wondering is *PW* has ever received any of the following sets: **FR-DX400 and FL-DX400 twins, FT-DX400, FT-400, FT-DX401, FT-401B, FT-200, and FT-60**.

I'd dearly love to know if you can help...and perhaps readers who have memories (or information) on any of these rigs. I know you're very busy at *PW*, but I would love to hear from you when you can manage it...and also from other readers. Best wishes to everyone.

Michael Charteris VK4IQ
No 12 Trumpy Street
Silkstone, Ipswich
Queensland 4304
Australia
E-mail
empire1963@hotmail.com

Editor's comment: Thanks Michael - we appreciate your wishes and I'll be in contact with as much help as possible. Readers who can help are asked to contact Michael directly. 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 (No address...No publication!). 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 1
The Telford Rally
Tel: (01952) 299677
E-Mail: mstreet@g3jkx.freeserve.co.uk
The Telford Rally takes place at the Aerospace Museum RAF Cosford, Nr. Wolverhampton. On A41, one mile south Junction 3 - M54. There will be all the usual traders, big boot sale and a flea market. Telephone or E-mail: for details.

September 8
The Anglian 5 Esses Rally
Contact: Peter G8HUE
Tel: (01473) 631313
Website: www.antrina.net/hamradio/sdg-rally-2002-info.htm
The Anglian 5 Esses Rally - The Suffolk Data Group are holding their Rally & Surplus Sale on the Raceway Centre Green at the Foxhall Stadium, near to Ipswich, Suffolk. There will be Amateur Radio, Computer, Electronics, Computer Jumble and Surplus Equipment, Car Boot and lots more. There will be a huge (free) car park and mouth watering refreshments. Traders and Booters admission from 0800 at £5. Visitors admission from 0930 and it's still only £1. Everybody welcome, no need to book, just turn up on the day. Talk-in on S22.

September 8
Lincoln Short Wave Club Hamfest
Contact: Dave
Tel: (01522) 878481/(07961) 961494
Lincoln Short Wave Club Hamfest takes place at the Lincolnshire Showground situated on the A15 five miles North of Lincoln. Doors open 1030, admission is £2, under 14s free. There will be free parking, Bring & Buy, trade stands, flea market and catering.

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.

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.

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Convert your half size g5rv into a full size with just 8ft either side. Ideal for the small garden.....**£19.95**

SHORT WAVE RECEIVING ANTENNA

MD37 SKY WIRE (Receives 0-40Mhz).....**£39.95**
Complete with 25 mts of enamelled wire, insulator and choke Balun Matches any long wire to 50 Ohms. All mode no A.T.U. required. 2 "S" points greater than other Baluns.
MWA-H.F. (Receives 0-30Mhz).....**£29.95**
Adjustable to any length up to 60 metres. Comes complete with 50 mts of enamelled wire, guy rope, dog bones & connecting box.

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Chimney lashing kit.....**£24.95**
Double chimney lashing kit.....**£12.95**
3-Way Pole Spider for Guy Rope/ wire.....**£3.95**
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1 1/2" Mast Sleeve/Joiner.....**£8.95**
2" Mast Sleeve/Joiner.....**£9.95**
Solid copper earth rod 4'.....**£9.95**
Pole to pole clamp 2"-1.5".....**£4.95**
Di-pole centre (for wire).....**£4.95**
Di-pole centre (for aluminium rod).....**£4.95**
Dog bone insulator.....**£1.00**
Dog bone insulator heavy duty.....**£2.00**

POLES H/DUTY (SWAGED)

Heavy Duty Ali (1.2mm wall)
1 1/4" single ali pole.....**£7.00**
1 1/4" set of four.....**£24.95**
1 1/2" single ali pole.....**£10.00**
1 1/2" set of four.....**£34.95**
2" single ali pole.....**£15.00**
2" set of four.....**£49.95**

REINFORCED HARDENED FIBRE GLASS MASTS (GRP)

1 1/2" Diameter 2 metres long.....**£16.00**
1 3/4" Diameter 2 metres long.....**£20.00**
2" Diameter 2 metres long.....**£24.00**

GUY ROPE 30 METRES

MGR-3 3mm (maximum load 15 kgs).....**£6.95**
MGR-4 4mm (maximum load 50 kgs).....**£14.95**
MGR-6 6mm (maximum load 140 kgs).....**£29.95**

COAX

RG58 best quality standard per mt.....**35p**
RG58 best quality military spec per mt.....**60p**
Mini 8 best quality military spec best quality per mt.....**70p**
RG213 best quality military spec per mt.....**85p**
H200 best quality military coax cable per mt.....**£1.10**
PHONE FOR 100 METRE DISCOUNT PRICE.

CONNECTORS & ADAPTERS

PL259/9.....**£0.75 each**
PL259/6.....**£0.75 each**
PL259/7 for mini 8.....**£1.00 each**
BNC (Screw Type).....**£1.00 each**
BNC (Solder Type).....**£1.00 each**
BNC for 9mm (RG213).....**£2.50**
N TYPE for RG58.....**£2.50 each**
N TYPE for RG213.....**£2.50 each**
SO239 to BNC.....**£1.50 each**
PL259 to BNC.....**£2.00 each**
N TYPE to SO239.....**£3.00 each**
BNC to N-type.....**£2.50**
SMA to BNC.....**£3.95**
SMA to SO239.....**£3.95**
SMA to PL259.....**£3.95**
SMA to BNC (male).....**£3.95**
SO239 chasis socket round.....**£1.00**
N-type chasis socket round.....**£2.50**
SO239 double female.....**£1.00**
N-type double female.....**£2.50**
SO239 double female.....**£1.00**

YAGI COUPLERS

YC-6m For 2 x 50MHz Yagi.....**£29.95**
YC-2m For 2 x 144MHz Yagi.....**£24.95**
YC-7m For 2 x 70cm Yagi.....**£19.95**

10/11 METRE VERTICALS

G.A.P.12 1/2 wave alumimum (length 18' approx).....**£19.95**
G.A.P.58 5/8 wave aluminium (length 21' approx).....**£24.95**

BALUNS

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

RIBBON LADDER USA IMPORTED

300Ω 20 metre pack.....**£15.00**
450Ω 20 metre pack.....**£15.00**
(Other lengths available please phone for details)

TRI/DUPLEXER & ANTENNA SWITCHES

MD-24 (2 Way Internal Duplexer) (1.3-35 Mhz 500w) (50-225 Mhz 300w) (350-540 Mhz 300w) insert loss 0.2dBd SO239 fittings.....**£22.95**
MD-24N same spec as MD-24 "N-type" fitting.....**£24.95**
MD-25 (2 Way external/Internal Duplexer) (1.3-35 Mhz 500w) (50-225 Mhz 300w) (350-540 Mhz 300w) insert loss 0.2dBd.....**£24.95**
MX2000 Tri-plexer 1.6-60Mhz (800w) 110-170Mhz (800w) 300-950Mhz (500w) SO239 fitting.....**£49.95**
CS201-N same spec as CS201 "N-type" fitting.....**£28.95**
CS401 4-way antenna switch.....**£29.95**

ANTENNA ROTATORS

AR-31050 Very light duty TV/UHF.....**£24.95**
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3 Core.....**0.45p** per metre
7 Core.....**1.00** per metre
(Please phone for 100 metre discount price)

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Turbo mag mount 7" 4mtrs coax/PL259 3/8 or SO239.....**£14.95**
Tri-mag mount 3 x 5" 4mtrs coax/PL259 3/8 or SO239.....**£39.95**
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80 metre trap 400W.....**£23.95**

HF BALCONY ANTENNA

BAHF-4 FREQ:10-15-20-40 Mtrs LENGTH: 1.70m HEIGHT: 1.20m POWER: 300 Watts.....**£129.95**

HF YAGI

HBV-2 2 BAND 2 ELEMENT TRAPPED BEAM FREQ:20-40 Mtrs GAIN:4dBd BOOM:5.00m LONGEST ELEMENT:13.00m POWER:1600 Watts.....**£329.95**

ADEX-3300 3 BAND 3 ELEMENT TRAPPED BEAM FREQ:10-15-20 Mtrs GAIN:8 dBd BOOM:4.42m LONGEST ELE:8.46m POWER:2000 Watts.....**£269.95**

ADEX-6400 6 BAND 4 ELEMENT TRAPPED BEAM FREQ:10-12-15-17-20-30 Mtrs GAIN:7.5 dBd BOOM:4.27m LONGEST ELE:10.00m POWER:2000 Watts.....**£499.95**
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**

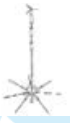
VR5000 5 BAND VERTICAL FREQ:10-15-20-40-80 Mtrs GAIN:3.5 dBd HEIGHT:4.00m RADIAL LENGTH:2.30m (included). POWER: 500 Watts.....**£169.95**

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**

amateur radio news

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

Advance Notice

WACRAL 2002

If you are interested in the work of the World Association of Christian Radio Amateurs & Listeners (WACRAL) then you'd better make a note in your diary of their 2002 conference.

A beautiful manor house overlooking the bay at Torquay, Devon is the location for this year's WACRAL Conference and Annual General Meeting over the weekend of 4-6th October. A full programme of both Christian and radio activities are planned and include a presentation on behalf of the Fishermen's Mission, M3JFM on the history of WACRAL, a simple construction competition, a junk sale and, for the first time, an official Morse testing session..

Non-members are welcome to attend by prior arrangement with the organiser **Geoff Grundy G4YJW**.
Geoff G4YJW
Tel: (01323) 721352
E-mail: geoff@g4yjw.freeserve.co.uk

On Air

Orkney Wireless Museum

Listen out for GB2OWM on the air during this year's Orkney Science Festival.

Operators of the Orkney Wireless Museum Amateur Radio Station will take to air with **GB2OWN** between 30 August and 5 September. The station will be set-up at Kiln Corner, Kirkwall, Orkney during the 12th Orkney Science Festival.

The GB2OWN station will be on air weekdays and on Sunday afternoon between 2.30 & 4.30pm, as well as on Saturday 31 August between 10am & 1230pm. Operation will be primarily on h.f. s.s.b.
For more information on GB2OWN contact **Bill GM3IBU, QTHR** or **E-mail: gm3ibu@argonet.co.uk.**

News From Chelmsford

Home Construction - Alive & Well!

Keeping the home-brew bug a part of Amateur Radio is something that the Chelmsford ARS are very keen to encourage.

The Chelmsford Amateur Radio Society had a record number of entries for their recent construction competition proving that home construction isn't dead. The winner was **Geoff Lovegrove G7KLV** with his LC Bridge. The photo featured here pictures Geoff being presented with his certificate by CARS President **Harry Heap G5HF, Chelmsford ARS David Bradley M0BQC. Tel: (01245) 602838 E-mail: cars@g0mwt.org.uk Website: http://www.g0mwt.org.uk/**

Get Studying!

RAE Course News

It's that time of year again folks when RAE courses are starting up. So, if you've been thinking about enrolling here are just a few courses we've been told about.

An RAE course will be held in Orpington, Kent at **Newstead Wood Girls School, Avebury Road, Orpington** on Monday evenings from 1930 to 2130hours commencing on **16 September** and leading to the May 2003 City & Guilds exam which will be held on site. Enrolment is through **Bromley Adult Education College, Widmore Centre, Widmore Road, Bromley Tel: 0208-460 0020** who will also be able to answer any queries.

The **Widnes and Runcorn ARC** will be holding RAE and Novice Courses starting in September. They will be held at **The Beacons Simons Lane Frodsham Cheshire** on Friday evenings at 1900hrs. The first meeting will be on **Friday 6 September** at 1900hrs for enrolment. For further details contact Dave on **(01270) 761608** or **(01928) 591401.**

City College Coventry, Tile Hill Centre, Tile Hill Lane, Coventry, West Midlands will be running Amateur Radio classes, from **September 2002** for the following: Foundation Licence, Intermediate (Novice) Licence, Full Licence (RAE), Morse classes – for 5 and 12w.p.m. and Amateur Radio constructional classes. Details are available from the course Tutor, **Michael G4GHJ**, **E-mail: m.dixon@staff.covcollege.ac.uk** or from the **Course Enquiry Team** on (**02476) 791000**.

Muckleburgh Military Collection

Helen Discovers Amateur Radio

Helen McDermott presenter of Anglia TV's A Date with Helen recently had a taste of Amateur Radio when she visited the home of the Muckleburgh Military Collection and the North Norfolk Amateur Radio Group.

A Date with Helen was aired on 10 July 2002 and centred on the North Norfolk coast featuring Weybourne, Sheringham and Holt. For her introduction to Amateur Radio Helen visited the display at the Muckleburgh Collection and toured the shack of **GB2MC**, which is operated by members of the North Norfolk Amateur Radio Group.

Helen also interviewed **Dick Gallop G0KNQ**, Chairman of the Norfolk club as she was shown around the vintage collection of military radios. During her visit Helen listened to a Potato radio, claiming to be able to hear the tennis!, before moving onto to take her Morse test and duly receiving her certificate.

Helen receiving her NNARG Morse certificate and her honorary membership badge from Dick Gallop G0KNQ, she was actually a natural on the 'key', sending her name correctly first time!

News From Bangor

Honorary Member

Radio clubs certainly seem to have been busy this month and those in Northern Ireland are no exception!

After a very successful rally day on 23 June the Bangor and District Amateur Radio Society rounded off the event with a very special presentation. Honorary membership of the Society was awarded to **Terry Barnes GI3USS** by the Society Chairman **Mike Stevenson GI4XSF**.

Terry is a founder member of the society in 1967. He went on to become Society Treasurer in September 1969, a position which he still holds today, he was also President of the Radio Society of Great Britain in 1992.

Congratulations Terry from everyone!

A Rally with a Difference

Radio & Model Boats

If you want something slightly different from a radio rally why not go along to the Blackwood & District ARS Rally? Read on to find out more...

The Blackwood & District ARS rally takes place on 20 August and will bring together enthusiasts from the Amateur Radio, Model Boat and Computers & Electronics hobbies. The rally is being held at the Leisure Centre, Newport, Gwent from 1030 until 1730hours.

The idea of opening up the rally to model boat builders is so that they can chat with Amateur Radio enthusiasts and hopefully iron out any electronics related problems they have with their boats. There will be plenty for visitors to see and lots of opportunity to find out more about the benefits of both hobbies.

To book a table or find out more please contact the rally organiser, **Mr G Kallis** direct. **Mr Kallis, 44 Gwent Way, Tredegar, Gwent NP22 3HS. Tel: (01495) 724942**

New Licensee News

Oldest & Youngest M3!

Whitehaven Amateur Radio Club welcomes two newly qualified M3s.

Over the weekend of June 11/12th The Whitehaven Amateur Radio Club ran their first M3 course. Twelve candidates took part in total and all were successfully qualified by the Sunday afternoon and those who already had the RAE under their belts just took the Morse test. The courses were run under the careful supervision of Club Secretary, **Norman Williams M0CRM** with advice and support being offered by **Dave Wilson G7OBH** (Regional Chief Instructor) and his XYL **Kath M1CNY**.

The oldest participant on the course was **Tom Baggley** (at 78 years) and the youngest at 8 years was **Niall Topping** They now hold the callsigns M3OMT and M3NWT respectively. Well done to Tom & Niall and the *PW* team hope they enjoy Amateur Radio for many years to come!.

From left - right: Tom Baggley M3OMT, Niall Topping M3NWT, Steve Topping G0MTD, Frank Mifflin M0FWM (Club Chairman) and Norman Williams M0CRM (Club Secretary and Lead Instructor).

New Alliance

Ten-Tec Direct UK

American manufacturer Ten-Tec has formed an alliance with AOR to provide a renewed commitment to the UK market with the formation of a sales office known as Ten-Tec DIRECT.

Following the realease of the new RX-320 and RX-350 short wave receivers, Ten-Tec DIRECT in the UK, supported by the USA factory will be able to offer advanced products (CE approved) at attractive prices. This will be backed-up by pre and after-sales support from their factory in the USA.

Ten-Tec is a USA manufacturing company originally founded in 1968 and has always been on the leading edge of technology in the design and manufacture of Amateur and commercial radio products. However, despite this many of their products, other than their kit range are little known in the UK but all that is about to change.

Ten-Tec is confident of success in the UK and hope that AOR UK Ltd's excellent reputation, support and product line will compliment the Ten-Tec range. So, for low price, high performance and feature rich receivers, it could be well worth you finding out what Ten-Tec have to offer. For further information, contact the UK sales office direct at:

...America's Best!
TEN-TEC

Ten-Tec DIRECT UK,
4E East Mill, Bridgefoot, Belper,
Derbyshire DE56 2UA
Tel: (01773) 880788. FAX: 01773 880780
E-mail: tentec@aoruk.com
Website: www.aoruk.com/tentec

Satellite News

Risen From the Dead!

Telemetry signals from the AMSAT Oscar 7 satellite have been reported as being heard after an absence of over 20 years!

The American Radio Relay League (ARRL) has reported that **Pat Gowen G3IOR** (long standing *PW* readers may recall that Pat was our satellite columnist for many years) heard telemetry from Oscar 7 on the 21 June. Launched in 1974, Oscar 7 fell dormant more than 20 years ago in 1981 when it suffered a battery failure and since then it has been monitored and used by other Amateurs

AMSAT says it seems certain the satellite is running only off its solar panels and not from the on-board batteries, so it will only be operational while it's in sunlight! If you want to try to use Oscar 7, Mode A - with a 145.850 to 145.950MHz uplink and 29.400 to 29.500MHz downlink - is the way to go. However, Mode B - 430MHz up and 144MHz down - should **not** be used, as changes to the international Radio Regulations since Oscar 7's heyday mean that the uplink frequency is no longer allocated to the Amateur Satellite service.

amateur radio clubs

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

BRISTOL

South Bristol ARC
Contact: Len Baker
Tel: (01275) 834282
Website: www.sbarc.co.uk

The South Bristol Amateur Radio Club meet on Wednesday's at the Whitchurch Folkhouse, East Dundry Road, Whitchurch, Bristol. The club offer a varied programme of events which includes: **Aug 14:** Amateur Radio Shareware with **Len G4RZY**, **21st:** Display of Old Domestic Radios organised by **Sam M3SWS**, **28th:** Choosing the best cables and connectors, Len G4RZY and Sep 4: How to construct a wavemeter with **Frank G0CEN.** If you want to know more then why not go along?

LANCASHIRE

Fylde ARS
Contact: Ken Randall G3RFH
Tel: (01253) 407952

Fylde Amateur Radio Society meet at the ANT Flying Clubhouse at Blackpool Airport on the 2nd & 4th Thursdays of the month. Meetings are varied, ranging from Natter nights to talks and construction competitions. If you fancy joining in then why not go along to one of the following meetings? **Aug 22:** Visit from Morecambe ARS for social evening; **Sep 12:** Evening meal out and **26th:** Visit & Talk by **Peter Kirby G0TWW**, General Manager RSGB.

MERSEYSIDE

Southport & District ARC
Contact: Don Atkins M1BUL (Hon Secretary)
Tel: (01704) 227726.
E-mail: donatkins@lineone.net
Website: www.southportarc.org.uk

The Southport & District Amateur Radio Club meet at 2000 hours on the third Monday in each month at St. Mark's Parish Church Hall located on the A570 between Ormskirk and Southport. The next three meetings include: **16 Sep:** Changes in Radio over the past 30 years or so by **Mike Nolan**; **21 Oct:** The work of the Amateur Radio Observation Service by **Barry Scarisbrick** and **18 Nov:** North West Air Ambulance Service. Non club members are welcome at all events including the club's regular 144MHz Monday night commencing at 2000 hours.

WILTSHIRE

Trowbridge & District ARC
Contact: The Secretary
Tel: (01225) 864698
E-mail: g0gri@btinternet.com
Website: www.gertdarc.fsnet.co.uk

The Trowbridge & District Amateur Radio Club meets at the Southwick Village Hall, Southwick, unless stated otherwise. Main meetings commence at 2000hrs unless otherwise stated. All main meetings may be subject to change depending on availability of a guest speaker – please watch for updates via the club website, *GB2RS* or on the club 144MHz Net on Monday evenings between 1930 and 2000hrs. Meetings to look out in forthcoming months include: **Sep 4:** The Ubiquitous PIC a talk by Des Howlett G8FIF; **18th:** Natter night; **Oct 2:** Table Top DF Hunt with **Ian Carter G0GRI** and **16th:** Natter night. Visitors are always welcome to any and all meetings.

Keep those details coming in!

NES10-2

NOISE ELIMINATING SPEAKER

Troubled by the noisy background on your radio during a QSO? Can't afford full DSP for your mobile set-up? If that's the case...Rob Mannion G3XFD has tried a neat little idea which could help!

When the NES10-2 Noise Eliminating loudspeaker arrived in the *PW* offices...I was just about to install a dash-board extension speaker in my car, to work with the Alinco DX-70 I use for mobile work. The DX-70's built-in speaker is okay for general use, but during a long operating session - I become tired of the sound emanating from way down near the gear selector lever!

The NES-10 is manufactured by **bhi** Ltd., based in East Sussex. The promotional literature on the company says "bhi Ltd. are specialists in the design, development and manufacture of noise cancelling products and other specialist electronics". They also describe themselves in the accompanying leaflet with the words "Sound Engineering Solutions". Well, I was soon to find out that as far as I was concerned...the little unit did provide solutions to some problems.

● A neat solution to background noise problems - the NES10-2 Noise Eliminating Speaker.

Digital Signal Processing

Of course, as you would expect nowadays - the NES10-2 is built around Digital Signal Processing (DSP) technology. The idea behind this truly neat little unit is to provide improved audio clarity and intelligibility of speech in radio communications whether it be for fixed or portable use.

The manufacturers intend it to be suitable for use where there are high background noises, and where interference leads to the operator not hearing clearly what is said. "Sounds like an evening on 3.5MHz s.s.b. to me"...I thought when I read that!

The internal DSP circuitry is fully adaptive to changes in noise levels and interference and it requires no adjustment in operation. In use the noise cancelling can be switched on or off, and there are eight levels of noise cancellation which can be selected by the operator.

For convenience (and it really is convenient as it's so small) the unit mounts in the same way as any small standard loudspeaker. Power can be provided by any external 12 to 28V d.c un-regulated source. (Yes, that 12-28V is correct...so it can be used on vehicles and boats using 24V - very useful!).

The NES10-2 is supplied with a 2m length of audio lead terminated with a 3.5mm, jack plug ready for immediate use. There's also an optional (supplied with the review unit) external 13A plug type ('Wall Wart') adapter which provides 12V at 500mA.

● Rear panel view of the NES10-2 unit. The DIP switch (just above the CE mark - provides eight levels of adjustment (see text).

On The Air

Once I'd fitted the unit in my car, it was a matter of moments to provide a power lead from the vehicle to the back of the NES 10-2. The supplied 3.5mm jack plug permitted immediate connection to my DX-70.

Once switched on I then adjusted the unit's volume - setting it to a comfortable output level...and then left it alone, using the transceiver's audio out control.

Although I played around with the DIP switch settings - I returned to the 'default' (as supplied) because it seemed to be operating perfectly on those).

Firstly I tried it out on the 49 Metre broadcast band - listening to my favourite station - Radio Netherlands from Holland. The speaker performed well and what little ignition noise arising from the petrol engined car...was remarkably reduced. So much so I couldn't hear it! Excellent results.

On 7MHz s.s.b. I found the noise reduction to be superb. Static 'crashes & bang's (there were some thunderstorms nearby in France...next stop from me in Bournemouth). The reduction in noise levels makes listening and operating a pleasure...especially when the bands are busy.

Using the unit with c.w. in my opinion proves not to be so effective. Very careful adjustment of the c.w. pitch is required. But in all honesty...this unit is mean for 'phone use. and it does it extremely well! My thanks go to bhi Ltd., for the loan of the review unit. *PW*

Mini Specifications

Number of attenuation levels:	8
Noise attenuation: (typical)	20dB
Audio input power:	5W r.m.s. max.
Power:	12-28V d.c.
Size:	110 x 65 x 55mm
Weight:	200gm

Product

NES10-2

Company

bhi Ltd.

Contact

Sales: (01293) 530147

Website

www.bhinstrumentation.co.uk

Pros and Cons

Pros: Ideal for mobile use using 'phone and for systems where full DSP is not warranted because of cost. Very effective.

Cons: Not really suitable for c.w. use.

Price

£99.95 (special price, normally priced at £118.45) inc. VAT & P&P valid until 11 Sep 2002.

Summary

A nice, neat little unit. Takes up less room than a normal small speaker extension speaker and provides DSP noise reduction! Absolutely ideal for mobile operation.

Suppliers

For details of local dealers in your area who can supply the NES10-2 take a look at the bhi website.

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 .....£24.00 P&P £6
Half size 51ft .....£21.00 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
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

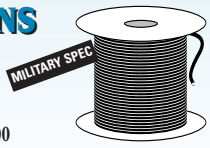
RECHARGEABLE ALKALINE CELLS

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 ½ 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!

Bulk purchase hence **2 for £7.95** (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

hf transceivers

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

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

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

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

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

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

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 as new.....£1950.00
FT-7100.....£299.00

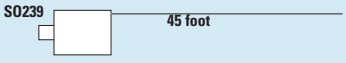
New MOBILE PENETRATOR

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 VALUE

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

NEW

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

TRUE DUALBANDER

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.....£269.00
TM-D700 2m + 70cms mobile.....£425.00

power supplies

NISSEI PS-300

ULTRA QUIET FAN

OUR BEST SELLER

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

NEW NISSEI PS-1225

ULTRA QUIET FAN

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

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

shack accs

YAESU G-650C

SAVE £'s

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

UK VERSION

MFJ-259B
HF digital SWR analyser + 1.8-170MHz counter/resistance meter.

ONLY **£249.95** P&P £6

UK VERSIONS

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

Looking At...

The One Valve Transmitter

Continuing with his series Gordon King G4VFV looks at single valve transmitters.

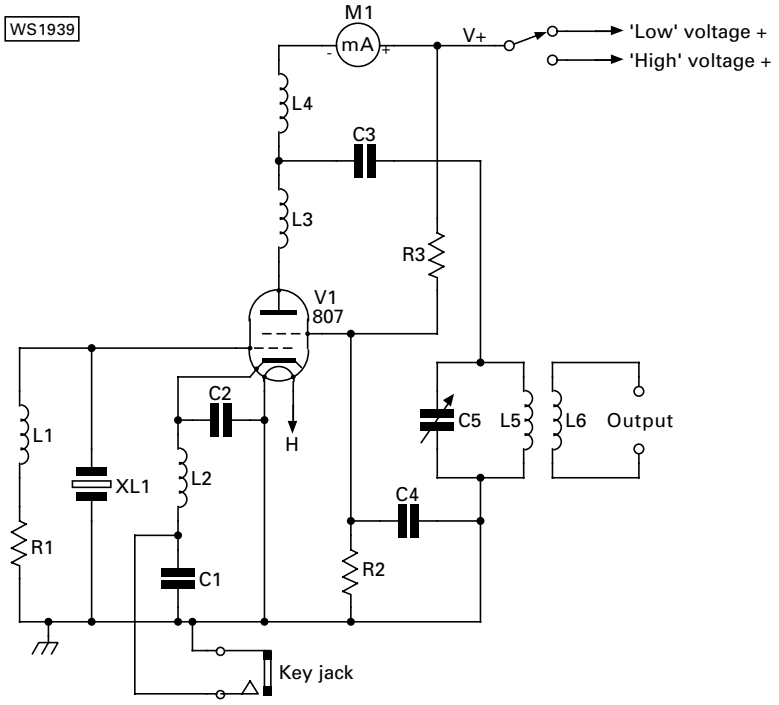


Fig. 1 Circuit of single-valve c.w. transmitter using a beam-power tetrode. V1 807. R1 27kΩ 0.5W. R2 42kΩ 10W. R3 22kΩ 10W. C1 1nF. C2 500pF. C3 and C4 1nF 1,200V. VC1 100pF variable air-spaced. L1, L2 and L4 1mH chokes. L3 1.8 microhenry inductor. L5 air-spaced tank inductor wound to resonate at the required frequency in conjunction with VC1. L6 air-spaced inductor coupled to L5 to provide an L5/L6 turns ratio around 5:1, but subject to experimentation for the best s.w.r. into the chosen antenna and feeder impedance at the operating frequency.

In my very early years, many moons ago, a great friend and I ventured into the delights of transmitting to each other between our parent's houses over a distance of little more than 250 metres. For transmitting we each used a single Mullard PM2 triode valve with a 2V accumulator for the filament and a 120V high-tension (h.t.) battery for the anode.

I doubt whether the effective radiated power (ERP) from our simple wire antennas amounted to any more than 0.1W (100mW), but in those far off days even such small power required a Transmitting Licence, it was a factor which we conveniently overlooked! Today low power radio transmission comes as licence free radio with the advent of Private Mobile Radio (PMR).

A few years later I was still building and using single valve transmitters but using the more powerful 807 valve. By this time, I was operating legally and under wartime conditions in South-East Asia, sometimes with the adoption of a tree as the antenna! Therefore I have a somewhat soft spot for the single-valve transmitter, and make no apologies for crafting it as a starter in this part of my Looking At... series dealing with transmitters.

Complete Circuit

A complete circuit of a single 807 valve Morse (c.w.) transmitter is shown in **Fig. 1**. This is not too dissimilar to the kind of arrangement I was using all those years back.

As the single 807 valve has four electrodes plus the heater, the valve is known as a tetrode. The power rating of the heater is 5.67W (6.3V at 0.9A), and when used as a class C amplifier (e.g., where anode current flows for less than half a signal cycle) the anode potential can be as high as 750V and the anode current 100mA (0.1A).

Resistor R3 sets the screen (grid two) voltage to around 250V maximum. To facilitate tuning, the h.t. supply is switchable down to 200V or less from 500V or more for maximum carrier output power, which for the 807 is about 50W.

Grid-Anode Oscillator

The transmitter is based upon a simple grid-anode crystal oscillator circuit, where the crystal (xtal) lies in the control grid (g1) circuit and the output tuning in the anode circuit. This is the equivalent of the tuned-grid tuned-anode oscillator arrangement using inductors, with the crystal replacing the tuned grid circuit.

The tuned anode, or tank circuit as it is known, consists of inductor L5 which is tuned to resonance by the variable capacitor VC1. Oscillatory energy developed across L5 is coupled to the antenna by inductor L6.

The crystal is cut to the required operating frequency and the circuit goes into a state of strong oscillation when the tank circuit is resonated to the same frequency. This condition is revealed by a sharp dip in the anode current as monitored by the milliammeter (mA meter) connected in the h.t. supply circuit.

To prevent the 807 suffering unduly from excessively high off-tune anode current (yes, 807 anodes have been known to glow red hot during tuning-up!), the h.t. supply voltage is reduced by the low/high switch shown in the circuit.

Tuning Up

As r.f. energy is abstracted from the tank inductor L5, so the anode current rises above its maximum dip value. The idea is then to tune the tank and the antenna in turn until the optimum condition obtains. This is very much like the tuning-up process still required by some of the more modern Amateur rigs designed around valve power amplifiers.

Power is held within the capabilities of the valve and circuit by the screen grid (g2) voltage, which is set by the potential-divider R2/R3. Decreasing this voltage reduces the input and hence output power. It wasn't uncommon in

the heyday of self-build Amateur Radio equipment for a 6V 200mA bulb to be included in place of the milliammeter shown in Fig. 1.

The resonance of the tank circuit was then shown by minimum brightness of the bulb. It wasn't uncommon either for a 2V 60mA bulb to be included in series with the crystal to monitor the flow of crystal current, the bulb also serving as a fuse in the event of an abnormal rise in current.

The turns ratio of L5/L6 was established to provide maximum antenna current, generally indicated by a series-connected hot-wire r.f. ammeter. Designs often included a couple of crystals, with a switch to provide two-band operation, along with a switched tapping on the tank inductor L5. Also in those early days a 60W electric bulb may have been adopted as a dummy antenna, which had the advantage that tuning for maximum r.f. output was aided by the brightness of the bulb.

Detection of RF

It may sound crazy **(and certainly not to be practiced these days)**, but another artifice for checking the magnitude of r.f. was to hold the flat end of your thumb close to the output of the tank circuit and then make adjustments to get the biggest r.f. arc, accompanied by the smell of burning flesh! This probably was nearly as bad as keeping warm on a cold winter's night by embracing the radiation of wartime radar. So much for latter-day EMF technophobia!

It's true that trees actually did work as antennas, but the time of the year, the type of tree and its method of loading were all efficiency related. Really, though, there was nothing to beat good old copper conductor.

Quite a lot of Morse transmitters based on the 807 circuit were evolved during the Second World War period and a couple of places where I found myself working on them personally were at an experimental unit in Delhi, India and at SCU14, which was a special communications unit in Singapore, not long after its liberation.

The circuit shown in Fig. 1 is keyed in the cathode circuit, where choke L2 and capacitors C1 and C2 help to eliminate key clicks. For anyone inclined to replicate old-time operation I've included suggestions for component values in the caption. But be warned, the voltages required by the 807 can be lethal.

Sadly, my space for this instalment has now run out; but next time I shall be looking at the equivalent single transistor transmitter, along with an add-on power amplifier stage. Until then keep happy and safe!

pw

WARNING

Using Higher Powered Crystal Oscillator/ Transmitters

Although once very popular indeed, the 'power' type crystal oscillator, such as the 807 valve type transmitter described by Gordon G4VFV (another popular circuit uses the 6L6) requires very effective low-pass filtering when used directly into the antenna without a 'buffer' stage. This is because of the harmonically rich output which can cause TVI and BCI through the harmonics (It's been known for such transmitters working on **3.5MHz** c.w. to be called by other stations on **14MHz** because their harmonics were appearing on that band!). The transmitters work well...but please be aware of possible problems!

Editor.

Radio Basics

The autumn home-brewing season is fast approaching and this month Rob Mannion G3XFD is continuing in his efforts to help anyone suffering from circuits to lay-out problems.

I do my very best to relate as closely as possible to the readers who join me each month in Radio Basics (RB) and it's a pleasure to hear from you all. The E-mails, letters and telephone calls that come in encourage me as well as (hopefully) the replies from myself back to you!

However, I'm often somewhat discouraged by the number of RB readers who are suffering from difficulties caused by translating the theoretical circuit to a working layout. Of course, the ideal solution would be for as many RB readers as possible - to join together with me for a 'Weekend Workshop'...where we could enjoy working together, sorting out the difficulties. But until that time comes...we'll have to work on the page so to speak.

Firstly let's look at some real basics. They're all aimed at relating the circuit to the finial physical lay-out.

Familiarise Yourself

Firstly, I suggest you really get to grips with identifying components. Make sure you know as many as possible in your 'stock' of bits and pieces. The standard reference source I recommended for RB readers is the ARRL's *Understanding Basics Electronics* (Available from the *PW* book store) and this has sections explain (and providing circuitry symbols and physical photography presentations) of all the components you'll come across, along with many circuit examples using the components described.

In fact, by building the simple circuits featured in RB...you're doing that anyway! So, I suggest that you take a look at **Fig. 1**, a diode (crystal set) receiver...the simplest receiving circuit described in these pages.

What you'll see in Fig. 1 is a circuit symbol for a diode rectifier, a tuning coil inductance, the antenna connection, a variable capacitor, earth symbol, headphones and the interconnecting wires. Now, compare the really simple circuit diagram in Fig. 1, with the equally simple layout diagram, using a wooden board and drawing pins (very convenient, simple and effective for beginners) in **Fig. 2**.

You'll immediately be able to relate the circuit to the lay-out...it's literally a picture of the circuit. The only differences are that the circuit symbols for the components are now shown as illustrations representing the physical 'looks' of the components. Another difference is that the circuit has the physical soldered connections (to the drawing pins) shown.

There's not much that can be done to simplify the circuit in Fig. 1. However, you could try practising making a simple printed circuit board. You could also dispense with the wooden board and use tinned wire on a piece of plain Paxolin (Phenolic resin paper board), a sheet of plastic or even matrix board (see later). Using these methods it can be made smaller...but not much simpler.

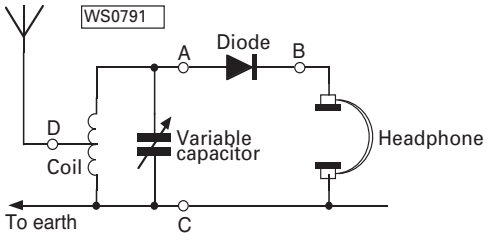


Fig. 1: The diode ('crystal' set) receiver circuit.

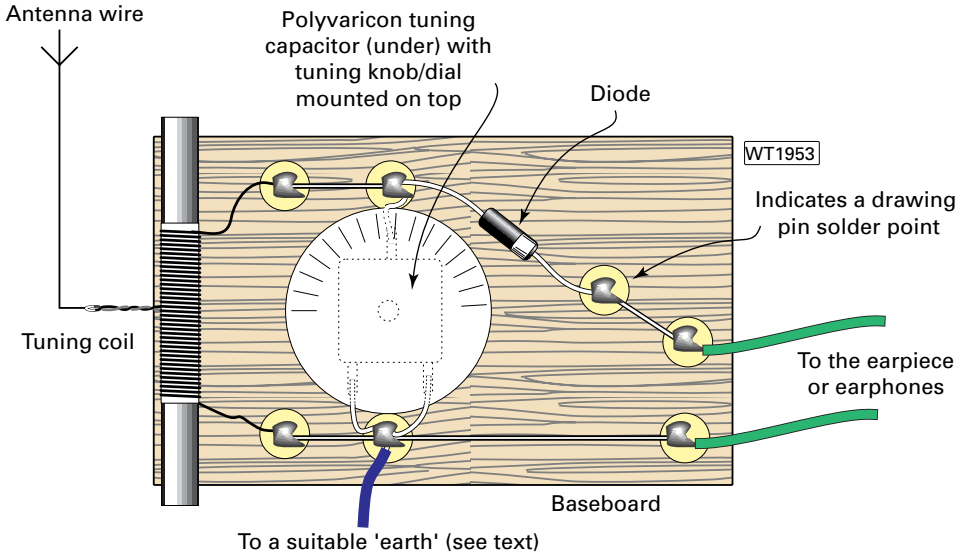


Fig. 2: Wooden based board and drawing pin layout design. A p.c.b. or matrix board lay-out could also be used (see text).

Matrix & Tag Boards

Several readers have written to me recently explaining their difficulties with projects they've built on matrix board (Veroboard is an example). And although such board are excellent for many electronic projects... **I strongly advise readers to avoid using them for anything other than simple amplifiers, etc, until they've become more experienced**. Avoid using them for any circuit with a lot of gain. Apologies for repeating myself again...**but this warning is very important!**

Fault-finding on a matrix board lay-out can be confusing. It's possible (I know, I've done it myself!) to convince yourself of the existence of one problem, and then think something else a few moments later.

Knowing just how convenient constructors consider matrix and tag boards to be, I suggest the following approach. **If you are intent on building a project**

of your own (without a proven/suggested wiring lay-out) using a matrix board (particularly) - **I ask you to please design a wiring diagram beforehand.**

Use coloured pens for different wires, and stick to a colour coding of your choice. However, before you use the colour coded lay-out design, **you** and components placement diagram, colour it in and place on whatever side of the board you've decided to work on (having taken this into account when marking up the paper of course!). Then, if you place the final design on the opposite side to the foil...you'll be able to push the components into the paper (where their connections are to also provide a chance for you to learn more.

The circuit, Fig. 3, is exactly the same 'crystal diode' circuit as shown in Fig. 1...up until the dotted line to the right of the D1, shown as an OA47. Looking across to Fig. 4, you'll see it really is a layout of 'Two Halves'. The diode detector circuitry is to the left of the capacitor (C1 in board is etched will provide solder 'pads' representing the drawing pin connections.

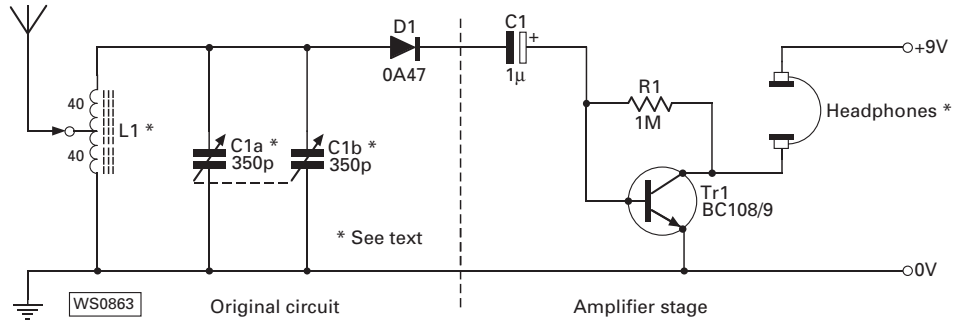
All you have to do it to mark out the lay-out...but leave out the components...as they make their own connections of course. However, having made the wooden board lay-out, you'll now be able to make the p.c.b.. much smaller...saving on p.c.b. material and space.

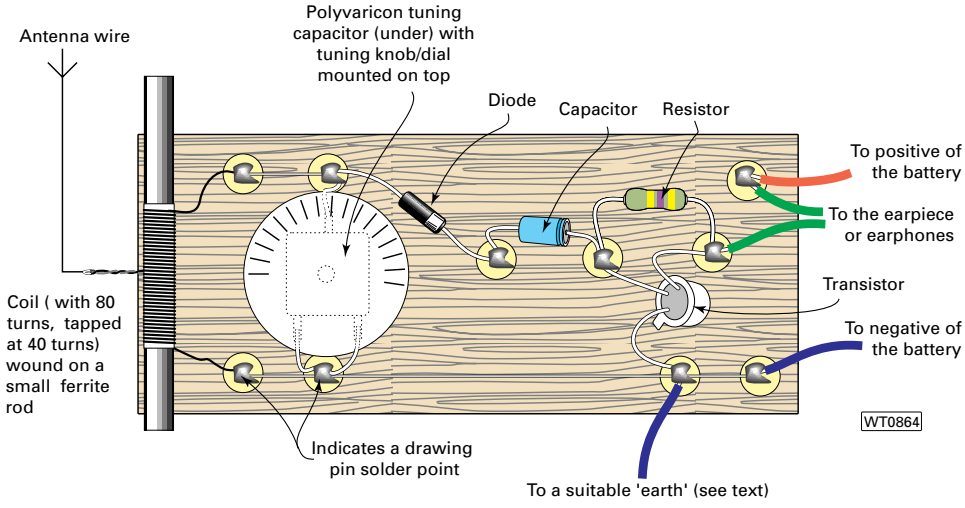
In fact, you could even mount all the components (except the ferrite road antenna and the tuning capacitor - on the copper laminate side. All the connections (required to complete the circuit for the antenna and tuning) can pass through holes drilled in the p.c.b.

You can make the choice of whether or not to make your p.c.b. a 'components on the same side as the copper foil' type, or the more commonly seen method where components are on one side, with leads fed through the drill holes. The first method is the one I advise for the less experienced.

Have fun! And you can be sure I'll be passing on some more ideas to help you become more confidence...very soon! *PW*

● Fig 3: Circuit of the diode receiver with one transistor amplifier.





● Fig. 4: Layout diagram for diode receiver with one transistor amplifier. A p.c.b. design can be used, and the circuit could also be made up using matrix board (see text for techniques).

must (by shading over each drawn 'wire' with another colour - brown perhaps) check to see if it's correct. Remember...even experienced constructors can get confused with the 'wiring directly from circuit as you go' approach!

Finally, I can pass on one little idea I used very many years ago. It still works and all you need is a piece of plain white paper to go directly over the matrix board/tag board (it works better with matrix board). Then pressing hard, rub a plastic pen (brass rubbing style) top over the p.c.b. track on the board...so that all the tracks and holes leave indents on the paper.

Next, work out your wiring be made) and then through the board. When all soldering has been done on the copper side...the paper design can either be left for future reference or torn away.

More Complicated!

The circuit, **Fig. 3**, showing a crystal set with a very basic single stage transistor audio amplifier added, together with the associated wooden board and drawing lay-out, **Fig. 4**, are (as first published in the April 1998 issue of *PW*) are a little more complicated. However, they do allow for more experimentation in lay-out and circuit diagram) with both the capacitor and diode lead soldered to the top of the drawing pin.

I originally chose the (as it turned out...rather controversial) simplified circuit - which works very well - because it clearly indicates the border between the two halves of the project...detector on one side... the audio amplifier on the other.

Now, using the wooden drawing pin board layout as a guide I suggest you use a p.c.b. etch resist pen and mark out on a blank section of copper laminate a size-for-size replica of the drawings pin and wire lay-out. You can even mark out large 'blobs' - which when the

Win A Wurzel Competition!

Guess how long it took G3XFD to build the Walford Electronics Wurzel regenerative receiver kit, featured in the July *PW* Radio Basics...and you could win a kit yourself! I'm donating a ready-to-build kit to the winner of a simple competition. All you have to do (postcard entries please, with the corner flash from this page or subscription number, no letters or E-mails please) is to guess how long it took me to build and connect it up (it worked first time!). **To help...building it took more than one hour and less than five hours**. The reader choosing the nearest to the time it took me...wins the kit. Closing date is **12 September 2002**, my decision will be final and no correspondence will be entered into. The winner will be announced in this column and their prize will be sent directly from Tim Walford G3PCJ (**Walford Electronics**) on my behalf. **Good luck!**

PW

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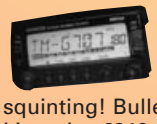

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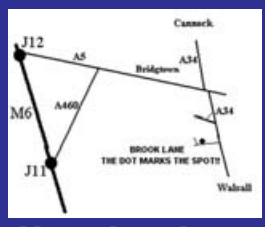

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LINEAR AMP 6 METRE 6 METRE LINEAR AMP....£550
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The amplifier adored through the industry. 1kW, solid state transmit power on HF-500W, 6m, LCD read-out. Price smash.

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The latest of Yaesu's pedigree dual band, dual receive 50W output.

£379.00

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HF and mobile base. An absolute joy to use. Excellent front end, 100W, 100 memories.

Easy to use. A bargain at **£569.00**

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Yaesu's latest mobile transceiver. HF, VHF, UHF, DSP, TX, RX, built-in CW filter, TCXO & larger speaker For that tailored transmit audio derived from the FT-1000MP.

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YAESU VR-5000

HF/VHF/UHF wideband scanner built-in wave meter. Real time band scope. 0.1-2.6GHz.

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YAESU VX-5R

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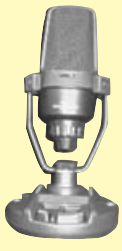

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IN STOCK

Celebrating The History Of Practical Wireless 1932-2002

To celebrate the 70th anniversary of Practical Wireless, the Editorial team take a look back at seven decades of the magazine's involvement in the 'practical' radio hobby. And despite PW's very late start in 1932...its origins go right back to the early 1920s!

Over the years they've worked on *Practical Wireless* the Editorial team have never been surprised to find out new, very interesting snippets from the long history of the magazine. Yes, we all know *Practical Wireless* actually started publication in 1932...but did you know it can honestly trace its beginnings back to the very early 1920s, despite its 'late' appearance on the bookshelves?

The magazine we now know as *PW* was not launched until September 1932, long after the frenetic start of hobby radio. However, the then publishers George Newnes had actually been involved in radio publishing - led by their incredibly versatile staff Editor **Frederick J. Camm** - (the famous 'FJ') from the very early 1920s.

In fact, some of the best evidence of what was to become the famous 'Practical' style - particularly on the wireless theme - can be clearly seen in the very many surviving 'Wireless Encyclopaedia/Handbooks/Manuals' printed and published by George Newnes on behalf of other organisations. Who were those organisations? ...they were newspapers mainly!

In On The Act!

If you're puzzled by the interest of 1920s newspapers in the then very new science of wireless, you must bear in mind they were reflecting the extremely intense interest everyone was showing in the new medium. Wireless was that exciting - it meant so much to people whose lives, from our point of view...might seem to have been very drab until broadcasting arrived.

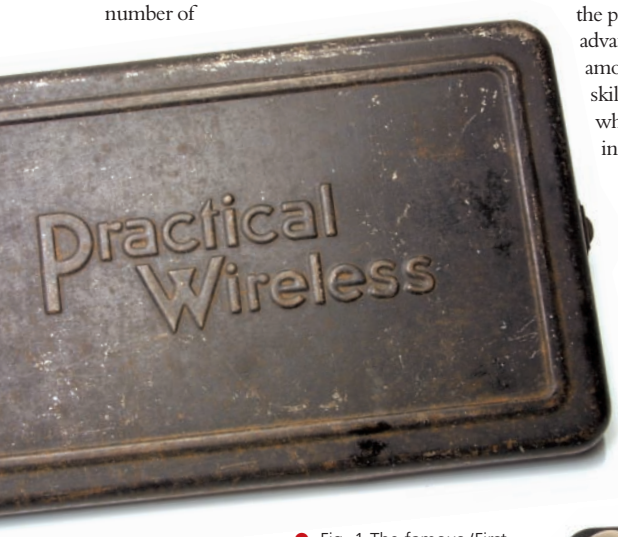
In fact you can directly compare the 'Wireless Frenzy' with the modern media's obsession with 'all things computer'. All you have to do is to swap computer for wireless and travel back to the 1920s!

Nowadays we're used to tabloid newspapers jumping on to the band wagon with any new possible marketing opportunity - ranging from special Royal Jubilee posters and guides published to 'Find the Best Fish & Chips in Ibiza' for your Spanish holiday. However, there's nothing new in that - because the newspapers in the 1920s went as far as commissioning their very own books to help satisfy their readers' hunger for ' anything and everything wireless'. That's how George Newnes and - in particular- F. J. Camm - became so involved.

Literally every major national (and many regional) newspapers had 'their' own *Wireless Encyclopaedia* published - complete with the name of the commissioning newspaper boldly printed on the front cover. But in reality...inside what the reader got was the work of F. J. Camm, published by Newnes on behalf of the promoting newspaper. To anyone in the know...it was very obvious indeed because all the books had the same style and contents! Camm's distinctive, clear 'comic' style (plain, simple

and easy to read) drawings, circuit diagrams and the equally easy-to-read approach made the books extremely popular. Our Editor has copies of the original *Wireless Encyclopaedia* carrying the Newnes name on the book spine, together with others especially commissioned by newspapers such as the *Manchester Evening Guardian Wireless Encyclopaedia* (now *The Guardian)*, and that of the (now closed) *News Chronicle* and several other - also long closed regional newspapers in his collection!

The phrase 'Camm's Comics' was originally meant as a sarcastic comment on the presentation style. But gradually it changed from being derisory to being one of admiration as the large number of 'Practical Titles' grew, eventually covering everything from *Practical Money Making* to boats and motoring...but that was in the future and is out of the scope of this article. But it clearly shows the influence of Fred Camm (at one time involved with over 70 regularly published titles!) and his publishers had on the early days of hobby-wireless in the United Kingdom.



● Fig. 1 The famous 'First Birthday' Practical Wireless tool kit...once free in 1932, it's now a sought after collector's item!

Weekly Mushrooms

To survive, all bookstall wireless magazines had to be weekly in the 1920s. Such was the appetite of readers that any magazine not appearing weekly **just did not survive!** This inevitably led to a large number of titles - taking advantage of the hungry market demanding more wireless - appearing for a short while before closing down. Indeed, so dramatic was the rise and fall of some publications that they became known as the 'Weekly Mushrooms'! (Appearing quickly, apparently coming from nowhere and disappearing soon afterwards).

During this time Camm was exceptionally busy and Newnes were publishing a great deal on behalf of the wireless enthusiast. In fact those of you who have been fortunate enough to see the travelling archive of 1920s magazine during our Editor's Club Visits...will have seen (admittedly only a small selection) the evidence of these titles. Despite the fact that they weren't called *Practical Wireless*...the style and approach, and a little of the presentation technique of what was soon to be that of this magazine was already evident.

The 'wireless boom' soon passed and by the late 1920s magazines were closing, and the market was consolidating to a small number of well-established titles appearing on a regular basis. Despite this...the biggest headache for publishers producing the various magazines was...just what could be put in them to satisfy readers? (Bear in mind that they were weekly).

Late Arrival

When *Practical Wireless* arrived on the scene in 1932 the publishers - still George Newnes - had many advantages over their rivals. They had an enormous amount of relevant experience, they had the skilled staff (including F. J. Camm of course) and when added to their 'secret ingredient' - they had instant success waiting for them.

The secret ingredient for use in *Practical Wireless* when it first appeared in 1932 was in fact very simple indeed. It could be summarised as being a 'Tried & Tested' core of commissioned projects and ideas...wrapped around with as much editorial contents that could be obtained - from any source!

The Tried & Tested projects and kits were backed by famous names such as **John Scott-Taggart** - the almost god-like designer who has often featured in **Charles Miller's** Valve & Vintage articles in recent years. Other famous names including **W. J. Delaney** helped the magazine to get off to a flying start, and rivals soon disappeared.

Other magazines - including the long established *Popular Wireless* and *Amateur Wireless* titles were soon incorporated into the all-conquering *Practical Wireless*. However, an intriguing peek-behind-the-scenes provided by Britain's foremost Amateur Radio journalist **Pat Hawker G3VA** was most revealing!

Pat's memory was published in the Radio Society of Great Britain's *Radio Communications* journal where he was reviewing the book *F. J. Camm...The Practical Man* (published by the late **Gordon Cullingham**, and now unavailable). Commenting on the splendid privately published book - which provided an enormous amount of information for the *PW* team on the enigmatic Fred Camm - Pat mentioned a visit he'd paid to the then Editorial offices in London during the 1930s.

Passing through the offices Pat observed a room full of staff leafing through wireless magazines from around the world...looking for interesting copy. And there can be no doubt that much of that material was re-written and eventually published again in *PW* - such was the demand for material! **Editorial team re-assurance:** We don't do that any more - that's a promise!

Birthday Gift

The success of *Practical Wireless* led to a truly remarkable 'Free Gift' being presented to readers when the magazine's 1st birthday arrived. The delightful tool kit, **Fig. 1**, is nowadays a collectors item. In fact, thanks to a kind reader, who donated it for the purpose our Editor has a tool kit which travels with him to club visits, and is shown in Fig. 1., and was obviously a very much treasured item. Rather different from some cover mounted free gifts you see in the newsagent's nowadays! A selection of later cover-mounted gifts are shown in Figs. **2** and **3.**

Occasionally the 1932 *PW* tool kits are spotted for sale by readers...one recently being purchased for £50. So, keep your eyes open...a tool kit might appear!

Late 1930s & War

Readers were treated to many ideas during the 1930s and of course television featured greatly in the magazine. The series of articles covering 'Practical Television' led to a separate publication - itself entitled *Practical Television* - which although only printed in relatively small numbers (remember...Alexandra Palace in London was the only British transmitter!) was published right up until the outbreak of the Second World War. Fortunately though *Practical Television* became extremely successful after the war and is still published (in the hands of the successors of George Newnes) as *Television*, a journal aimed at the television trade. Another remarkable survivor.

Practical Wireless itself remained a weekly publication until 1940, when paper shortages led to it becoming monthly. However, in this way it still provided valuable help for readers in 'making do and mending'. Readers rose to the occasion in difficult times keeping their radios working despite battery supply problems. At least one constructor built a bicycle-driven generator to power his receiver (with his wife pedalling to receive the BBC news!).

The magazine was still exported, especially to neutral countries where it obviously played apart in the propaganda war. For this reason the magazine has always had a faithful readership in Spain and Portugal...long before the retired readers made their way to the 'Costa del Retirement' and other sunny places.

One amusing story that the Editor tells - clearly demonstrates the problems facing *PW* readers during the war... bearing in mind how sensitive the subject of wireless was. An Irish reader - now in his late 80s - joined the RAF as a Wireless Mechanic (before going into Radar) before the war. He spent all of his service on the East Coast of England on Radar maintenance, etc. Not being able to buy *PW* in England...his mother kept his copies for him on his return home to neutral Ireland on the few occasions he had leave.

Our reader's problems only arose when arriving

back from leave (after changing back into his uniform from civilian clothes) he was challenged as to what the magazines were for! However, once he proved they'd started off in the UK...all was well and our dedicated reader was able to enjoy the hobby when off duty!

Boom Years

Undoubtedly, with the floods of surplus military equipment -and keen trained radio and radar staff also being released from duty after 1945...*PW* entered a second period of 'boom years'. This was clearly demonstrated by the huge number of advertisements in the magazine...**far more than would be tolerated by readers today!**

The boom years lasted right up until the end of the 1950s, indeed it outlasted Fred Camm, who died in 1959. During this time *PW* had featured many conversions of war surplus equipment - including the famous 1155 and other stalwarts. But things were changing and the first printed circuit board, miniature B7G glass based valved receivers and early transistorised projects were already making their mark.

Additionaly the magazine also began to feature more on Amateur Radio, rather than being a 'general coverage' wireless publication. This was a hint of the future.

Practical Electronics

The early 1960s proved to be a time of confusion for *PW*...all sorts of ideas were tried and published. They ranged from electronic music to other novelties. Despite this slightly muddled foray (as it looks from today's viewpoint) - one thing became very obvious - there was enormous interest in articles dealing with electronics and this led to another 'spin-off'...the legendary *Practical Electronics*.

Our then sister magazine was an immediate success and joined the other successful 'practical titles. It's gratifying for everyone concerned that *EPE* is still very much with us, nowadays being published by our friends and colleagues (*Everyday Practical Electronics*...who's company offices in Stapehill near Ferndown are only a few kilometres away from the *PW* base in Broadstone.

● Fig. 2: Data sheets and specialised tools were popular free gifts in Practical Wireless.

● Fig. 3: This trimming tool was a tough little free gift from PW in the 1970s! Many are still in use to this day. Do you still use yours?

Amateur Radio

In the 1980s the decision was taken that *PW* was to concentrate on its Amateur Radio coverage. This was especially appropriate because most of the Editorial staff held Amateur Radio Licences. This tradition continues...because all three of the *PW* Editorial staff are Radio Amateurs (and we're actively working on the Art Department and the other important support staff!).

In 1993 the final break with Poole came (the magazine had been relocated there from London some years before) when we left the attractive Quayside location - complete with lovely views and horrendous car parking problems - for the new offices in Broadstone. Almost ten years later...we're still here and looking forward to providing *PW* for you as the magazine heads towards the 75th anniversary...thanks to your support!

Thank you readers...one and all! Best wishes from **Donna Vincent G7TZB**, **Tex Swann G1TEX/M3NGS** and **Rob Mannion G3XFD**. Not forgetting of course...**Bob Kemp**, **Peter Eldrett** and **Steve Hunt** in the Art Department, **Roger Hall G4TNT** and **Eileen Saunders** in Advertising, **Alan Burgess** & **Margaret Hasted** in Accounts and finally **Clive Hardy G4SLU** in our Book Store. You may not know all of them...but their support is also vital for our success. **What a legacy Fred Camm left for us! We're all proud to look after it for you.** PW

The Pioneering TW Communicators

The Story Behind The British 'Black Box'

Tom Withers G3HGE, the man behind the famous name provides a short history of TW Electronics Ltd 1958 - 2000. This innovative British company pioneered 'All in one box' Amateur Radio transceivers for v.h.f. and there's no doubt they led where others followed!

"It's nice to be remembered"...so I remarked to the Editor of *PW* when we first started arranging this article. And as it was prepared...I realised fully what a fascinating story it is!

So, in presenting these memories, I'll try to show how a small family business provided Radio Amateurs of the day with well made v.h.f. and u.h.f. equipment at an affordable price. In the process, we unwittingly paved the way to what was I believe to be the forerunner of today's mobile 'black box' from Japan. The **TW Communicator** was our 'flagship' product....but it was only part of the TW Story.

Home In A Shed

We started life as T. Withers Electronics and operated from 15b Gilbert Street, Waltham Cross, Hertfordshire. Home was a wooden shed (heading photograph) measuring eight by 15 feet (2.4 x 4.5m).

The shed's walls were lined with plywood finished in a delicate primrose emulsion. The floor was covered in a dust laden Wilton carpet liberated from offices at St Pancras Station in London! A bench ran down the window side of the building and the 'office' consisted of a desk, filing cabinet, chair and typewriter.

I was a television engineer by trade and the first year was spent carrying out trade television repairs. I repaired the sets during the day and my wife delivered them to the various retailers as soon as she had returned from her normal full-time secretarial job.

It did not take long for me to realise that my customers were dealing with all the easy faults and I had all the tricky ones. This, together with a gradual downturn in trade made an alternative way of making a living a top priority.

After a brief but interesting dalliance with ice cream chimes, I turned my attention to a small 10W 144MHz transmitter I'd built and was using at the time. Using (of course) all valve circuitry and employing a Mullard QQV03-10 power amplifier (p.a.) stage modulated by a pair of EL84 pentodes.

The transmitter, **Fig. 1**, was to become the prototype of the TW2, our first product, **Fig. 2**. And little did we know it then, it was the first link in the Communicator chain.

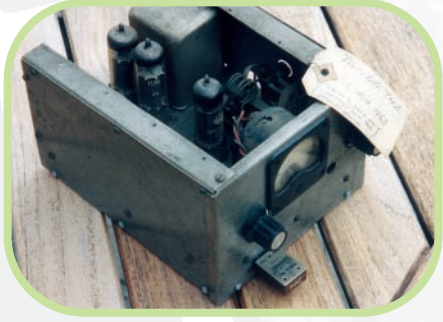


Fig. 1: The rig which started it all - the TW2 complete with American surplus crystal from Lisle Street! (see text).

Early models of the TW2 were built from a bare chassis. All valve holder cut-outs were made with 'Q Max' chassis cutters and the cases and front panels had to be matched for a good fit.

Very early models can be recognised by the half circle meter cut out. The initial production run was (I believe) for six units and our first advertisement appeared in the April 1960 RSGB Bulletin (Now of course *Radio Communications*). Around this time, my wife and I had been joined by **Roger**, a keen young school leaver who lived nearby.

Forgotten Advert

We had quite forgotten our advertisement in the RSGB's *Bulletin*! However, when a few weeks later there was a knock at the door and we were

Where the TW story all began! 'Fagin's Den' in Waltham Cross in Herfordshire was photographed on the 'moving out' day. The building was still standing in 1998 although it was unused, after a period when it was a Rabbit Sanctuary!

confronted by our very first customer, the enormity of the situation hit us: **We had actually sold our first and only complete and working TW2!**

Further enquiries and sales followed and it was not long before Roger and I were burning the midnight oil. We were kept busy drilling and filing the chassis and front panels and then wiring up to completion and test.

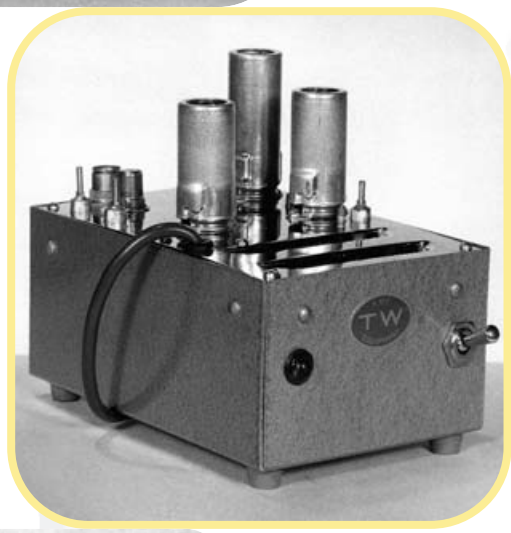
Each transmitter was supplied with a United States Army surplus 8MHz crystal and this was ground to frequency using an old mirror with 'Vim' household cleaner as an abrasive! Electrically, the transmitter varied little from the prototype but the external appearance altered as professionally engineered and finished metalwork became available.

● Fig. 2: A production version of the TW2 (see text).

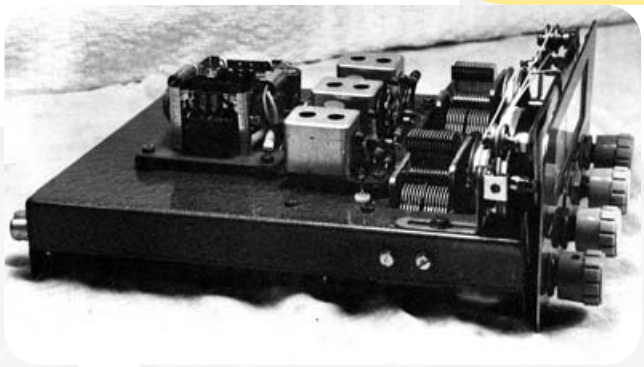
After a few months the price was increased to 23 Guineas. For younger readers a Guinea was - in old money - 21 shillings - which equating to the modern £1-5p (but without taking in to account inflation!) to cover these improvements and help offset advertising costs.

Our next product was the TW Cascode Converter. This was crystal controlled and was offered with a choice of intermediate frequencies (i.f.s), the most popular being 28-30MHz.

Using a 6BQ7A as the radio frequency (r.f.) amplifier the converter gave a measured noise factor of around 4-5dB which was good for those days. A large number of these units were sold and they remained in production



● Fig. 3: The TW Nuvistor converter, using the remarkable RCA 6CW4 low-noise Nuvistor valve (see text).



● Fig. 4: The prototype 'Two Mobile' receiver (see text).

until the Radio Corporation of America (RCA) introduced the then revolutionary miniature 6CW4 Nuvistor.

Built using all metal construction and originally designed (I believe) for American TV tuners, this diminutive valve had an excellent low noise performance. The 6CW4 was used by us as an r.f. amplifier in one of our most popular units, the TW Nuvistor Converter, **Fig. 3**. Again, a choice of i.f.s was available and it was supplied with or without built-in mains power supply.

Hello Dearie!

Our supplier of surplus American crystals ceased trading from that once popular source of components in Lisle Street, London. (Who were those oh so friendly ladies...with their customary greeting of "Hello Dearie"?)*.

Cathodeon Crystals of Linton, Cambridgshire then became our new suppliers. But ordering from them never did have quite the same frisson as from the Lisle Street source! The mirror and Vim were at last dispensed with and our units, fitted with the commercial crystals, took on a more professional appearance.

Editorial note:** For further insight on the various characters (and customers!) of Lisle Street I recommended the article entitle 'Lisle Street - Radio's Memory Lane' by **Peter Hyams GW4OZU**, published in the April 1999 PW. A few copies of that issue are available at £2.75 including P&P from the book service. A fascinating read!* ***Editor.

Miniature Prototype

During 1964, I produced a miniature prototype 1.8MHz receiver. The coils were hand wound and the tuning capacitors were junk box items.

The prototype used OC170s for the r.f. and mixer stages. The output of which was fed into a Görler 470kHz i.f. strip and thence into a Görler 1W audio amplifier.

Complete with beat frequency oscillator and diode noise limiter, the receiver performed well. Before long it was modified to cover 4-6MHz and fitted with a prototype all transistor 144MHz converter using a GM378A r.f. and mixer and OC170 fifth overtone crystal oscillator.

Even in its prototype form, the receiver performed well. Metalwork drawings were prepared, and the components ordered. Coils came from Electroniques of Felixstowe (the late **G4RW** of 'Stabqoil' fame).

All parts being to hand, a 'first off' was rapidly built against the prototype. The metalwork fitted together nicely and once wiring was completed and checked, battery, speaker and 144MHz antenna were connected.

However, during alignment of the 4-6MHz tuneable i.f., it was observed with quiet horror that the tuning was far from linear and that 144-145MHz would occupy just 25.4mm (1inch) of the 102mm (4 inch) tuning scale.

No amount of experimentation with trimmers and padders improved the situation. In desperation, I placed the tuning gangs at minimum and splayed out the moving vanes until near perfect linearity was achieved.

Flushed with success, I connected the 144MHz and aligned it. In anticipation, I'd tuned the receiver to the spot on the dial where, if all went well, **GB3VHF** (the RSGB beacon in Kent) would appear.

The overtone oscillator plopped into action and dead on cue up came the beacon. Unfortunately it was accompanied by around 50 S9 spurious beats as I tuned across the band!

The dank hand of misfortune seemed reluctant to let go. But in a sudden flash of brilliance, inspired by absolutely no real technical understanding of what was going on, I connected a 100Ω stopper resistor in the base of each OC170 in the tuneable i.f. Thankfully the spurious beats disappeared leaving GB3VHF in splendid isolation!

We soon became adept at distorting the capacitor vanes and production of the 'Two Mobile' receiver became quite routine and again we had forged another link in the Communicator chain. Models of the little receiver, the protoype is shown in **Fig. 4**, were introduced for 1.8, 3.5., and 70MHz and all sold well

Mobile Operating Increasing

With interest in mobile operating increasing rapidly, we were aware that we were unable to offer a suitable mobile power supply capable of supplying high tension to any valve type transmitter. We set about trying to find the solution.

By kind invitation of the late **John Brown G3EUR**, a visit was made with other Radio Amateurs to Avel Products in Essex. John, as many readers will remember was well known for his contribution to the design and manufacture of some of the ingenious clandestine radios used

CONTINUED ON PAGE 36

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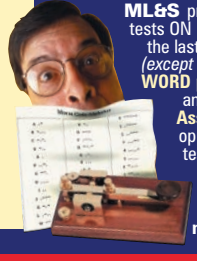

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during the Second World War (His Obituary in *The Daily Telegraph* provided fascinating reading!).

Avel Products were early manufacturers of toroidal transformers and on display was one capable of delivering 300V at 100mA. A few of these were ordered for early delivery and they arrived within a few days complete with application notes.

Within an hour or so, our first d.c. to d.c. toroidal power supply was working - until the lid was placed in position whereupon the 300V being measured, smartly disappeared! (Typical eh?) A check for dry joints or shorts revealed nothing and the unit was again switched on. As before, 300V until the lid was screwed on.

It really was a case of "now yer sees it, and now yer don't"! Unfortunately it took a little time to realise that the brass bolt anchoring the toroid and running through its centre was just long enough to touch the lid thus forming a shorted turn! The T W Mobile Power Supply was a much needed addition to our product line and of course formed the final link in the chain.

Self Contained Unit

Sales for 'separates' for mobile operating were going well. But having had some experience dealing with customers' installations, I felt that a single self-contained unit complete with transmit-and-receive switching would be a valuable addition to our range.

The new product was to be a simple bolting together of tried and proven units. I started by placing a TW2 chassis on the bench; next to it on the right, a Two Mobile chassis.

Both units were held together by a hand fabricated panel, an off-cut from this formed the chassis of the toroidal power supply. (I mounted this above the receiver tuning gangs).

With the addition of a suitable relay for power and antenna switching, the embryo Communicator was ready to test. From inception to working prototype took just a few hours...however, a production model requires engineering drawings and considerable thought as to styling.

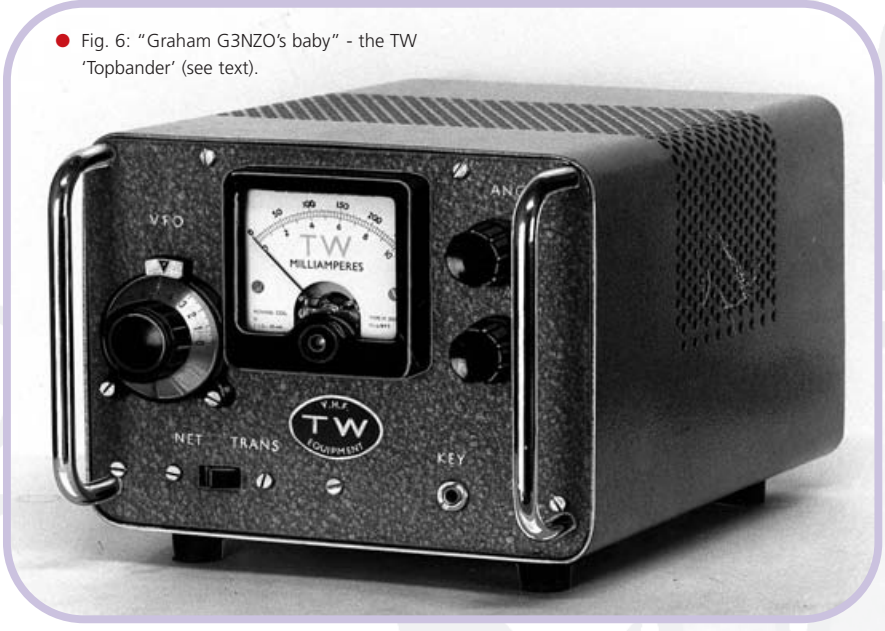
The front panel was to be finished in eggshell black with two chromium plated strips running the full width of the front panel and framing the anode/grid meter and receiver tuning scale. This distinctive feature was copied from the AR88 receiver we used as a tuneable i.f. on the bench!

A suitable case was designed and within a few weeks, the Communicator, **Fig. 5**, was in full production. **Graham Kidder G3NZO** (who replaced Roger some months earlier) was a keen 1.8MHz mobile operator and at his suggestion, a model for this band was introduced.

The 'Top Band' version, **Fig. 6**, was variable frequency oscillator (v.f.o.) controlled. Mechanical stability was such, that dropping it onto a bench from a height of some 152mm (six inches) merely resulted in a momentary shift of a few Hertz. A 70MHz version was then introduced and this proved to be most popular.

Exceeded Wildest Expectations

Sales of the Communicator exceeded our wildest expectations! They were further boosted when we were awarded the Manufacturers First Silver Plaque at the 1964 RSGB Communications Exhibition in London, **Fig. 7**. The award more than compensated for an incident that occurred within minutes of the opening ceremony.

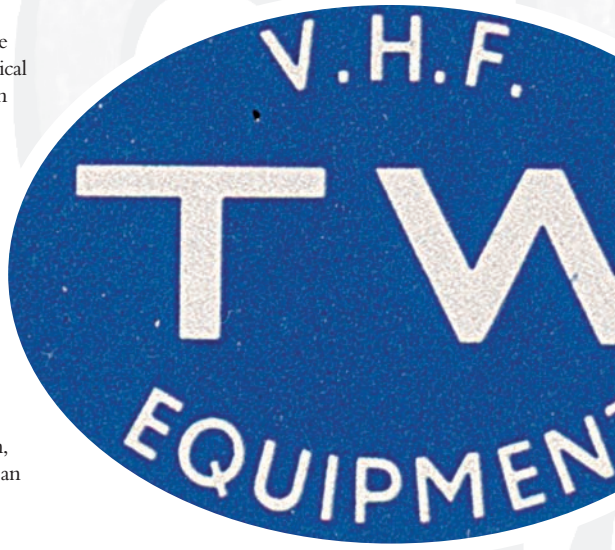


● Fig. 6: "Graham G3NZO's baby" - the TW 'Topbander' (see text).

The incident came about when a nattily dressed gent approached our stand and made a beeline for the Communicator display. Any thought that this was this was yet another discerning customer was rapidly dispelled when I realised that he was incandescent with rage. (This was to our advantage as the Seymour Hall was notorious for its poor lighting!).

It seemed that the poor chap was in professional communications and had developed a radio telephone that he intended calling 'The Communicator'. I pointed out that our unit was a fact of life and his was as yet unborn; further, he had no intellectual rights to the name. Sweetness and reason prevailed and he left without another word.

In 1965, we were again awarded the Manufacturers Plaque, Fig. 7, this time for our solid state 144MHz v.f.o. And, as it transpired, this was to be the last unit I would develop at Gilbert Street. However, in 1966 at the RSGB show we had some Royal Interest', **Fig. 8**, on our stand!



Larger Premises

During the period 1965 to 1966, orders for our equipment outstripped the speed at which Graham and I could build, test and despatch. It was for this reason that I decided to seek larger premises in Suffolk. A site in Bury St. Edmunds was found and work commenced on a factory unit with accommodation above.

In the meantime we struggled on at Gilbert Street and as usual were posting the smaller units at the main Post Office at the top of the street. The landlord's six year old grandson was pressed into service as post boy and for the princely sum of five shillings (25p) a week, he would take all urgent parcels for posting.

All went well with our little arrangement until an occasion when it was necessary for me to visit the said Post Office to register a package. I handed it to a counter clerk, he took one look at the label which carried our company name, turned to his colleagues and yelled out "Look fellas, it's the Fagin of Gilbert Street"! It really was time to move on.

Move To Suffolk

Our new works were ready but Graham had decided not to relocate. So our move to Suffolk was once again a family affair but with the addition

of our daughter who was a few months old.

The furniture van was loaded with our worldly possessions and the entire contents of the 'works'. My 144MHz Bi Square antenna was tied to the back and helped secure the bulging rear doors! We set off for Suffolk, my wife leading the way (I followed behind ready to retrieve anything of value that might fall from the pantechnicon).

Within a couple of weeks of settling into the new works, I started production and the first unit produced was the 'Communicator 2'. This coincided with a change of company name to 'TW Electronics.

The move to Suffolk caused considerable disruption and it became necessary to make rapid inroads into outstanding orders. An advert was placed in the local paper and the first applicant was just what we wanted, fully experienced and well used to working under pressure. **Nancy**, for that was her name, proved to be a 'natural' and it was not long before we were making significant progress with the order book.

● Fig. 5: The production style TW Communicator. This photographs features the (now rare) 70MHz version (see text).

Sales of separates declined but demand for Communicators 2 and 4 remained buoyant. The Lisle Street connection was re-established when that well known and respected company **G. W. Smith** stocked our range of equipment.

A number of retailers acted as agents for the TW range, the foremost being **N.W. Electronics** of Manchester. **Fred Nicholls G3MAX**, the proprietor became a firm friend and champion of TW quality and service.

The Phase II

The last unit to be engineered by me was the Phase II Transverter. It was based on a design by that doyen of v.h.f. operators the late **Tom Douglas G3BA**.

In essence, the Phase II enabled the owner of an h.f. transceiver or 'separates' to receive and transmit single sideband suppressed carrier (s.s.b.) signals on the 144MHz band.

The Transverter and its power supply were housed in Communicator style cases, and as anticipated, it sold well. It did (I believe) introduce 144MHz to many a dyed-in-the-wool h.f. operator.

Japanese Imports

During the period 1966-1968, we dealt with a steady flow of orders for Communicators, converters and transverters. However, as we approached the end of 1968, the impact of Japanese imports was beginning to tell and it became uneconomical to carry on with the manufacture of Amateur Radio equipment.

The last Communicator left the works in January 1968. And as the 'Rising Sun' rose... the very last unit despatched was a Phase II Transverter in October of that year.

However, as they say...one door closes, another opens. Our son Iain was born in August 1968 and about this time TW Electronics entered the field of sub-contract assembly to the electronics industry.

Firmly Established

Our manufacturing staff of two was soon increased and by 1972, we were firmly established in our new venture. Early contracts came from the studio sound mixing desk sector and involved the assembly and wiring of modules.

It was not long before we graduated to wiring the carcasses and these took up all available ground floor space. We as a family moved out and the modules and other work moved in upstairs.

● Fig. 7: The Manufacturers' awards from 1964 and 1965 (see text).

We sold the unit at 120 Newmarket Road in 1981 and moved into much larger premises in a nearby industrial park. We were then able to increase our customer base to include among other things, medical instruments, switched mode and laboratory power supplies and marine v.h.f. transceivers

Works Manager

Our son Iain joined the company in 1985 and a few years later became Works Manager. He was responsible for the introduction of fully automated printed circuit board (p.c.b.) assembly and the pick-and-place surface mount assembly equipment.

It was gratifying to see that despite a fairly large work force and the use of two flow solder machines and other automated processes, TW quality was maintained. This stood us in good stead in what turned out to be a highly competitive and shrinking market place.

● Fig. 8: Tom G3HGE Meeting HRH The Duke of Edinburgh at the 1966 RSGB Show. Tom's original caption reads "A Communicator?...To you Guv', less 20%". History does not record whether Prince Philip equipped his 'carriage & four' with a rig!

During 1999, two of our major customers followed a growing trend and transferred their sub-contract work to Eastern Europe. On 5 June 2000 we decided to call it a day thus ending 41 years of service to the Radio Amateur and professional alike

Happy Years

My years of designing and manufacturing v.h.f. equipment were happy ones. And it's with a great fondness that I remember the Radio Amateurs who were a source of inspiration and encouragement during those early years.

My grateful thanks to **Ben Nock G4BXD** who stirred up so many memories and to the numerous people who took the trouble to write to *PW* with their recollections and kind comments.

Oh...by the way...Fagin's Den at 15B Gilbert Street became a rabbit sanctuary in 1967 and was still standing, though unused, in 1998! Our old factory at 120 Newmarket Road is a heating oil distribution centre. Finally...I have a 'For Sale' item....one Bevelled mirror, one side slightly opaque....ideal for crystal grinding! PW

Down Memory Lane With G4VFV

● This 1939 copy of *PW* incorporating *Practical Television* is a rare find. In those day *PT* was generally a page or so within *PW* a situation which stayed until the 1950s when *PT* became an established magazine regularly in its own right.

Gordon King G4VFV says writing for PW has been a large part of his life over the last 50 years or so, and here he recalls how he got started.

I was very pleased to be invited to contribute to this special 70th anniversary issue of *Practical Wireless*, not only because writing for *PW* has represented a goodly slice of my life over the last half a century or more, but also because I feel that I have played a small a part in the continuation of the magazine through its several editors and devoted editorial teams over the years.

I've been searching through copies of early *PW*s in an endeavour to locate my very first article within their pages but, sadly, it would seem that the vast majority of my early efforts are no longer with me, having either been lost or inadvertently disposed of during the processes of numerous QTH changes with my family since the end of the 1940s and into the early 1950s. I'm pretty sure, though, that I started to write for **F. J. Camm**'s popular magazine not too long after the conclusion of the Second World War on my return to 'blighty' from Singapore, where I was working with a Special Communications Unit (SCU14), in one guise, to discover novel ways of arranging 807s for the best c.w. communication!

● Fig. 1: Gordon surveying a stereo hook-up in his firm's lab/workshop at Oxford at the commencement of stereo transmissions in the 1950s.

Return From SCU14

In 1946 I returned form SCU14. I can remember this pretty accurately because it was around the time of a sun-spot high (Cycle 18, I think) when Radio Amateurs were having their confiscated kit returned and it once again became legal to get back on the air - albeit, for a start in the 28MHz band. I recall adapting some Royal Signals kit just before leaving Singapore to establish contact on these bands with some of the first British stations in the West Midlands to get back on the air. Happy days!

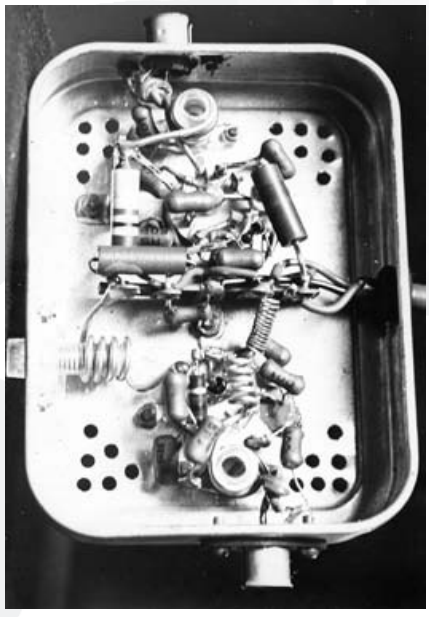
Anyway, once back in the UK it didn't take me very long to return to my pre-war days of repairing domestic radios. It was around this time when Mr. Camm, the founding Editor of *PW*, was keen to bring the magazine into the post-war era of radio and to encourage new enthusiasts and students into its realms. Articles dealing with the theory of radio, new ideas and developments which stemmed from the war years, the basic arts of servicing both pre- and post-war

radios (TV was still a little round the corner) and the many new techniques then being uncovered, were the order of the day!

One article of mine that fell into the areas Mr Camm was looking for was entitled The Tuned Circuit and appeared in the November 1952 issue (Vol. 28 No. 553). It was a quasi-technical description of this fundamental radio circuit and although I say it myself, it wouldn't be out of place in a 2002 issue of *PW*! (Perhaps I could persuade Rob G3XFD, our current Editor to do a re-run!).

Early Cable TV

I also have happy memories of writing a series of articles dealing with the servicing of radio receivers when F. J. was the Editor. I recall this time in particular because it was then that I had just encouraged Oxford City Council to give a colleague and myself the legal concession to provide parts of the City suffering poor reception with a cable television system. This was in the mid-1950s when cable TV hadn't really been invented yet and solid-state devices were still in the future.



● Fig. 2: An example of the inside of an early tobacco-tin r.f. amplifier.

The system we developed was the first large-scale, wide-band system using coaxial cable networking in the UK. Eventually the Rank Organisation became involved and networks of this kind soon appeared in various parts of the country, including the West Country, under the Viewline banner. This was the inspiration for my arrival from Oxford, my birth-place, to the fishing port of Brixham at the end of the 1950s, but that's another story in itself!

Stereo Sound

Prior to my active devotion to Coaxial Relay, as it was then called, I was employed as technical manager by an electronics company dealing with the servicing of radio and TV receivers and other pieces of electronic kit. This practical insight into those exponentially expanding areas of interest put me in a remarkably good position to keep *PW* readers reasonably well on-line during the early post-war years. Indeed, those were the years which saw the advent of f.m. radio, the advance to stereo both off-air and on disc and signs of the transistor.

My early contributions also included little design-projects built within 'polished' two ounce tobacco tins. Yes, I was a pipe smoker at the time! (**Fig. 1**). Printed-circuit technology hadn't yet arrived, so it was point-to-point wiring all the way through as shown in **Fig. 2.**

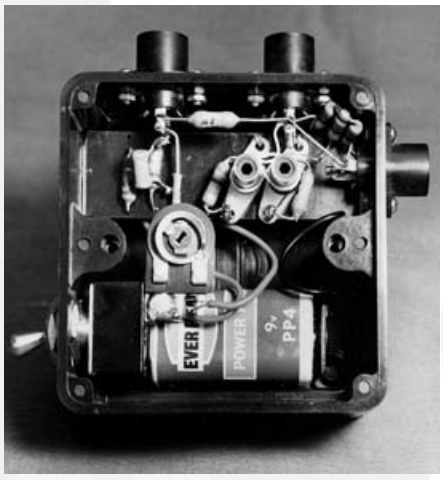
The tobacco-tin projects included such devices as pre-amplifiers, frequency converters, filters, etc. The time was ripe for home experiment and construction; the transistor was not yet properly on the scene.

Practical Television

Early 1950 saw the rapid expansion of *Practical Television* which started as a series of articles before the war in *PW* and then developed into a seperate title. This was another of George Newnes publications, also with F. J. Camm at the helm.

The expansion of *PT* into a seperate magazine meant that *Practical Wireless* now had a partner to take over the then increasing interest in the technicalities of TV, leaving *PW* to concentrate more on the radio side of the hobby. At this stage my contributions were divided somewhat between the two magazines. (*Practical Television* is now published as *Television* by IPC Media).

My tobacco-tin articles included a low-noise antenna preamplifier and a London/Birmingham Converter (published in *PT*, February 1951). In those days many TV receivers adopted fixed-tuned tuned radio frequency (t.r.f.) circuits, so the latter project made it possible for single-channel Band I receivers of this kind, normally tuned to the London station on Channel 1, to respond to the Sutton Coldfield station on Channel 4, with the possibility of enhanced picture quality.



● Fig. 3: The dual-band King Telebooster which was inspired by a tobacco-tin design.

The time was now ripe for low-noise preamplification between antenna and receiver. Published designs along these lines became popular and, indeed, one design of mine in this area of interest led the way to the acclaimed dual-band King Telebooster as shown in **Fig. 3**. It is perhaps noteworthy that an article dealing with The History of the Telebooster has been submitted for one of *PW*'s stable mates, *Radio Active*.

My First Crystal Set

Now, in revelation of my great age!, I was an experimenting eight-year-old way back in the 1930s when *Popular Wireless* was incorporated into *Practical Wireless*. Those were the days when my grandmother, a lovely lady, introduced me to the secret of making a crystal set using a small knuckle of coal, careful selected from her coal cellar, with a vein of silver running through it, to act as a signal rectifier or detector. I can still recall the great thrill of hearing an early BBC station when the cat's whisker was gently steered to the active part of that improvised crystal!

I was inspired by *Practical Wireless* and later *Practical Television* through the whole of F. J.'s reign and onwards during the 1950s when I was myself contributing to both magazines in some abundance, including running a couple of on-going series called Servicing Radio Receivers and Using Test Instruments. On the sad demise of F.J. there appeared to be an editor hiatus, though both magazines continued to flourish.

● Fig. 4: Gordon in his Brixham lab during the 1960s.

My wife Barbara and I became great friends of the late Norman Stevens and his wife Phyllis, and we spent many happy hours together in Brixham. Norman, of course, was the next named editor of both *PW* and *PT*. It was Norman, who at the end of 1962 encouraged me to start the Test Case column in *PT*, which is still running to this day.

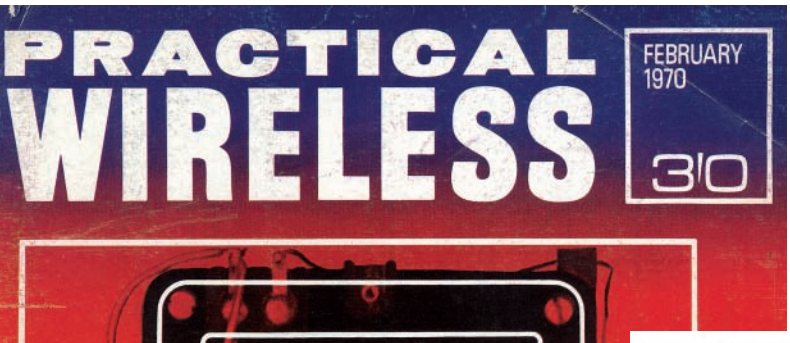
I continued to write many articles for *PW* and *PT* under Norman's editorship, and I was also involved in the popular *Practical Television* query service offered by the magazine in the early 1960s. During that time I was answering up to almost 3,000 readers' queries a year!

My contributions in *Practical Wireless* have continued over the years both with **Geoff Arnold** and in latter years **Rob Mannion G3XFD** at the helm. It's also good to know that **Elaine Richards G4LFM**, former features editor of *PW & SWM* in the 1980s & 90s, is now editing *Radio Active* magazine.

I must say that it has been my great pleasure in working with so many professional enthusiasts and nice folk working on *Practical Wireless* and indeed *Practical Television* over the years and I have enjoyed every minute of my time spent writing for the magazines. Despite my great age, I am still aiming, with God's help, to continue writing for a while yet! PW

1932-2002

Practical Wireless-



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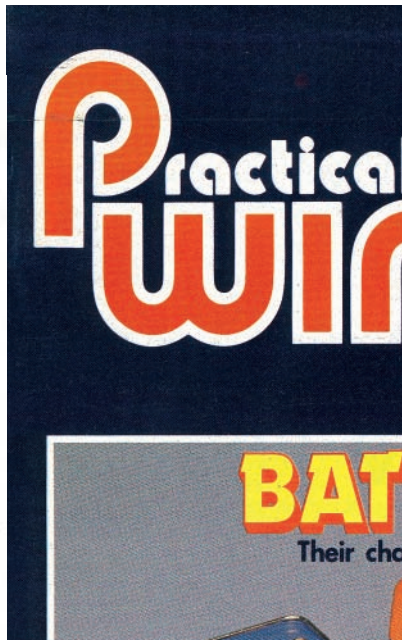


A BEGINNER'S CONSTRUCTIONAL COURSE
PRACTICAL WIRELESS
1/3
OCTOBER 1957
EDITOR: F.J.CAMM
Contents
TRANSISTORS FOR BEGINNERS
NOTES ON MODULATORS
THE ALIGNMENT OF F.M. RECEIVERS
COMPLETE RADIO SHOW REPORT
Etc. Etc. Etc.


PRACTICAL WIRELESS
JUNE 1966
2/6
FREE INSIDE!
24 PAGE POCKET GUIDE TO
TRANSISTOR CIRCUITS


PRACTICAL WIRELESS
Portable Gramophone


SUB MINIATURE 300mW
transformerless AMPLIFIER


MUSETTE 6 TRANSISTOR SUPERHET PORTABLE RADIO
39'6


PW
PRACTICAL WIRELESS
1000th ISSUE


Practical Wireless
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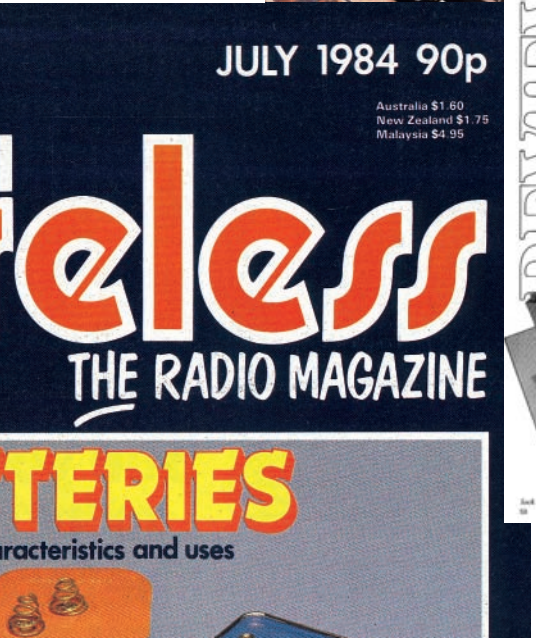
Treasure that Junk!
Short Wave Simplicity - The MK484
ICOM IC-T3H
viewed...
Plus all your regular favourites!


REVIEW
Mizuho MX-7S 40m SSB/CW Transceiver & Accessories


JULY 1984 90p
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THE RADIO MAGAZINE
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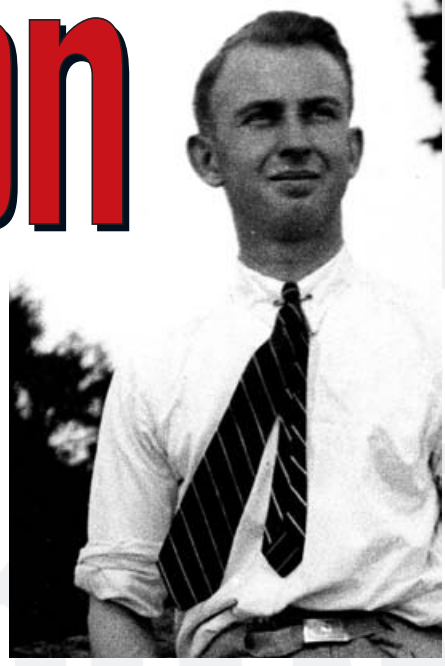
My Radio & Television Times

Ray Herbert G2KU is well known for his work with television pioneer John Logie Baird. Here Ray looks back over seven decades of his involvement in the radio hobby and his work with television.



● Ray Herbert G2KU, Radio Amateur and television pioneer, taken in 1935.

Shortly after *Practical Wireless* first appeared on the bookstalls, I became converted from Hornby trains to the world of wireless. Making an early start at the age of 14 had its disadvantages though....since components were expensive and I could not get very far on sixpence (two and a half pence nowadays!) per week pocket money.

Fortunately, my parents were prepared to help, accepting that Amateur Radio had considerable educational value. But it was still hard going convincing them that a tiny piece of quartz crystal, the size of postage stamp, really cost 20% of a week's wages!

At that time all-mains sets were replacing battery operated receivers. This worked to my advantage and the pensioned-off family battery-powered Cossor Melody Maker had soon been converted for short wave use by keen young Ray.

Breadboard style construction was predominant in those days, and this usually meant a piece of plywood covered in aluminium foil to provide direct earth connections. Front panels then usually consisted of wood or Ebonite*, which caused hand-capacity problems because the proximity of hands and fingers (while operating the controls) could give rise to instability. Because of this insulated extension shafts were often used. Another solution to this irritating effect was to sit on an earthed metal tray!

Ebonite**: The Chambers Scientific & Technology Dictionary defines that this material is a hard insulating material made from rubber which has been vulcanised, i.e. the latex molecules have been cross-linked through sulphur atoms.* ***Editor.

Limited Power

In those days, for the majority of Amateur Radio stations licence conditions limited the power to a maximum of 10W. However, despite this low power, for some inexplicable reason, the coils for the power amplifier (p.a.) stages were invariably made using 0.25inch (6.3mm) copper tubing which was easily capable of handling 1kW!

Beginners were issued with the 'Artificial Aerial' licence which meant that the transmitter operated into a dummy load. My 'full' call G2KU was obtained in December 1935,..just after I'd left school.

Looking back at my log book it's interesting to be reminded of the Amateur Radio scene 67 years ago. The Readability, Strength, Tone (RST) code in use now had not yet appeared. Readability was then reported in the form of QSA 1 to 5 and signal strength on a scale of R1 to R9. No 'handles' were asked for...everyone had the same name, 'Old Man'.

Special application had to be made to use powers in excess of 10W. This also had to be done when you wished to operate on the 1.8 and 3.5MHz bands.

Nobody used commercially-made transmitters or receivers at that time. Endeavouring to improve the performance of your own home-made equipment took up a great deal of time.

Amplitude modulation was then used for telephony work. Anode modulation provided the best results for telephony, but it required a considerable amount of audio power, and this lead to experiments with suppressor and grid modulations systems.

Early Television

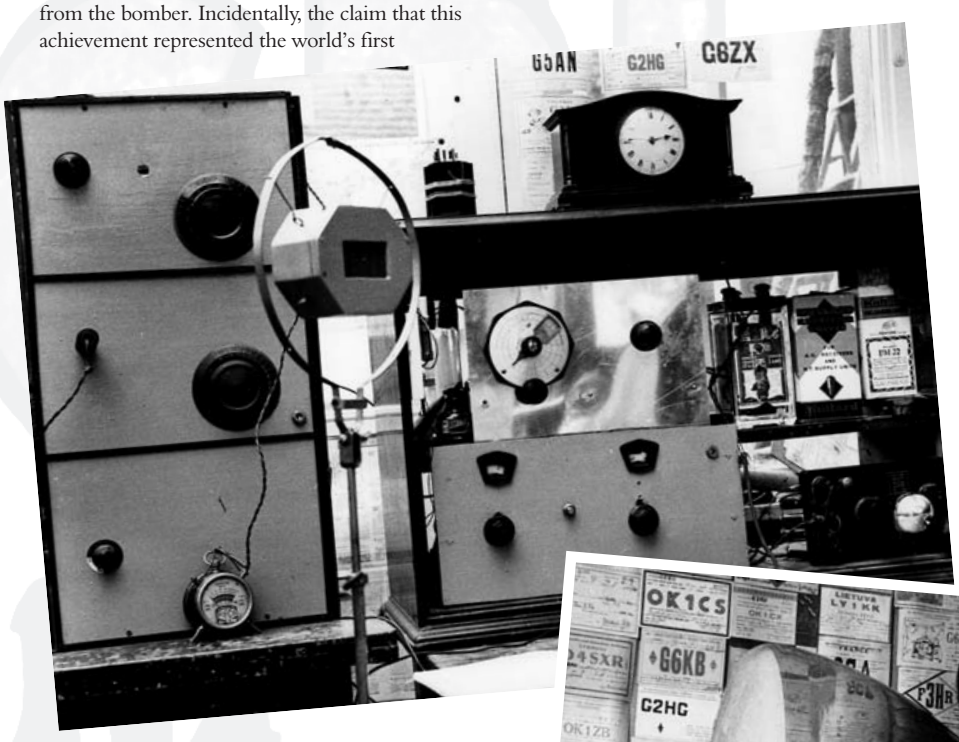
I also had an interest in the early television, which ran parallel to my Amateur Radio hobby. During this time I managed to build a 30 line televisor which provided interesting, but flickering pictures. However, with the arrival of the high definition 405 line service, few constructors were able to build their own receivers due to the complexity and need for special test gear.

Fortunately for me, Baird Television Ltd. provided me with my first job and they made obsolete stock available to their staff at bargain prices. A television cabinet could be purchased for 30 shillings (£1.50) and a reject 15inch (380mm) cathode ray tube cost £3. Time bases and power supplies were also available at 'junk sale' prices.

Shortly after joining Baird's I had the good fortune to participate in a piece of television history. This came about because the company had received a contract from the French Air Ministry to install television equipment in a Marcel Bloch bomber. This was so that observers on the ground at a distant point could have instant visual information on a screen regarding activity in enemy territory.

My responsibility was to operate the 200W

television transmitter located in the forward gun turret. Testing started early in 1939 and during July 15 live television transmissions were made from the bomber. Incidentally, the claim that this achievement represented the world's first



● Ray's main station, as photographed in 1935. Note the microphone...you feel you almost need a BBC top coat and tails to sit in front of it!

television transmission from an aircraft in flight, has not so far been challenged.

People with experience in television were in great demand for 'Radiolocation' (Radar) work and I spent the Second World War years doing just that! Additionally, Home Guard and Air Raid Precautions (ARP) kept most people busy in the evenings, but for many like myself, secret listening for the Radio Security Service was an import voluntary activity.

After the War, radio shacks benefited from the wide availability of surplus equipment at astonishingly low prices. Commercial receivers having the highest specifications of the day could be purchased by weight instead of actual value, sometime for £1 per kilogram!

Tropical Island Dream

The opportunity of working from a tropical Island using a rare callsign is the stuff of Amateur Radio dramas, but it became a reality for me in 1954. It all started when the British Malayan Petroleum Company were drilling for oil about a mile (1.6km) off the coat of Brunei in North Borneo.

Access to the drilling platform was by aerial ropeway (similar to cable cars used for access to ski-slopes). And to avoid the complication of a trailing cable to control the shore-based electrical control gear, the company for whom I worked rashly offered to provide an untried radio controlled system.

On being asked to carry out the commissioning work, my instincts told me that this type of job should be avoided. However, an opportunity of operating on the shores of the South China Sea with a rare callsign...proved irresistible to me!

● A 405 line television receiver, completed by Ray in 1939. The tube was bought at a discount! (See text).

The last stage of the journey from the UK had to be made by private aircraft to a small jungle airstrip. However, since the weight restrictions were severe, only a very small light-weight rig could be contemplated. With this in mind I took an 18W transmitter using a miniature 807, built on a chassis the size of a QSL card, together with a four valved superhet receiver of the same dimensions.

The necessary Amateur Radio Licence had to be obtained from a British resident in Brunei town some 80 miles away...but there were no roads! However, local residents explained that when low tides occurred at midday, you could drive along the beach for 60 miles and across the Tutong River on a raft made from wooden planks and oil drums. A rough track then enabled the rest of the journey to be completed.

Editorial note: *Intrigued at Ray's adventures I telephoned him to ask what sort of vehicles they'd used. In replying he told me that they were the usual types of pick-up trucks available in the 1950s - no Landrovers available there - and they could conceivably have been of the old Morris Minor/Austin types (this was of course before the days of the huge all-conquering Japanese-built Toyota/Mitsubishi four-wheel-drive vehicles. The drivers were Asian (mostly Indians) who were highly skilled at driving over the many miles of hard packed damp sandy beach, often at well over 50mph...quite a speed in those days! Ray said however: "The only thing you had to be sure of...was to check the tide times so that you didn't run out of daylight on the way back". Because of this - all the senior staff kept tidetables in their offices to assist in planning trips to town!*

Ray also told me that when the company he'd been working for had accepted the radio control commission for the aerial ropeway...they'd not taken into account the effect of tropical storms on the radio control system. Anyone using g the ropeway soon found out that the remote end would 'switch out' (coding becoming confused by the electrical storms) and they could find themselves marooned in mid air. "Simply overcome"...Ray told me..."We just used to carry a length of rope to lower from the gondola so we could bale out"!

Another factor not taken into account by the company in far away England was the humidity level in Brunei and there were many problems due to equipment failing in the damp condition. It was so bad that when I put my pipe on the bedside table...it was covered with mildew next morning"!... said Ray. ***Editor****.*

Dipole & Palm

Despite the logistical difficulties Ray Herbert VS5KU was soon on the air using a dipole strung between a palm tree and the Rest House. Over a period of two months 350 contacts were made between 40 countries. Due to the remoteness of the location, every QSO exceeded a distance of 1000 miles.

In an area without newspapers, radio programmes, cinemas or television...Amateur Radio certainly proved it worth! It's a hobby I've enjoyed for 70 years or so and continue to do so. PW

Valve & Vintage

This month the 'wireless shop' brown dust-coated manager is Phil Cadman G4JCP. Almost buried under piles of vintage PW blueprints, Phil's taking a look at the tremendously important part they've played over the last 70 years.

Welcome to this special 'blueprint' edition of the Valve and Vintage column. I hope I'm going to jog a few memories as I recall them as a very popular feature of *Practical Wireless*. They started with the very first issue and continued until the second half of the 1960s. Which was about the time I began reading *PW*. I wonder if there's a connection....?

While browsing through my collection of *PW* blueprints preparing this article, I received a rather pertinent E-mail from **Wally Bell**. In his E-mail, Wally said how he felt home-made sets from the 1930s were rather neglected, and often passed-over by collectors in favour of commercially manufactured sets.

Wally told me that he has some home-made one and two-valve radios which clearly took many hours to build. Maybe they were made in the evenings? - when some chap had done his day's work - and intended to be used by the whole family.

Unfortunately, one of Wally's radios was a most sad affair. It appeared to have been made in the 1930s but had never worked. Whoever built the set had gone to a lot of trouble over the cabinet but had made a complete mess of the wiring. (So much so, the set could not possibly have worked).

Novelty Of Radio

It's difficult to imagine the novelty of radio in the early 1930s. Broadcasting was hardly out of its infancy, yet everyone wanted to listen-in. A radio set promised both entertainment and news, right in your own living room and it was under these conditions that *Practical Wireless* was born.

However, *PW* was in fact **the last general interest hobby radio** periodical to be introduced in the UK prior to the outbreak of the Second World War. Incidentally, **I'm not forgetting** our sister publication *Short Wave Magazine* which was launched in 1937 - but this of course was aimed specifically at the Radio Amateur and Short Wave Listener.

According to the founder and first Editor of *PW*, **F. (**Fred**) J. Camm**, there were **11 weekly and eight monthly** competitors already well established when *Practical Wireless* first went on sale. But F. J. had one over-riding philosophy which helped *PW* outlast all its competitors: **"to help that chap who built the set which never worked".**

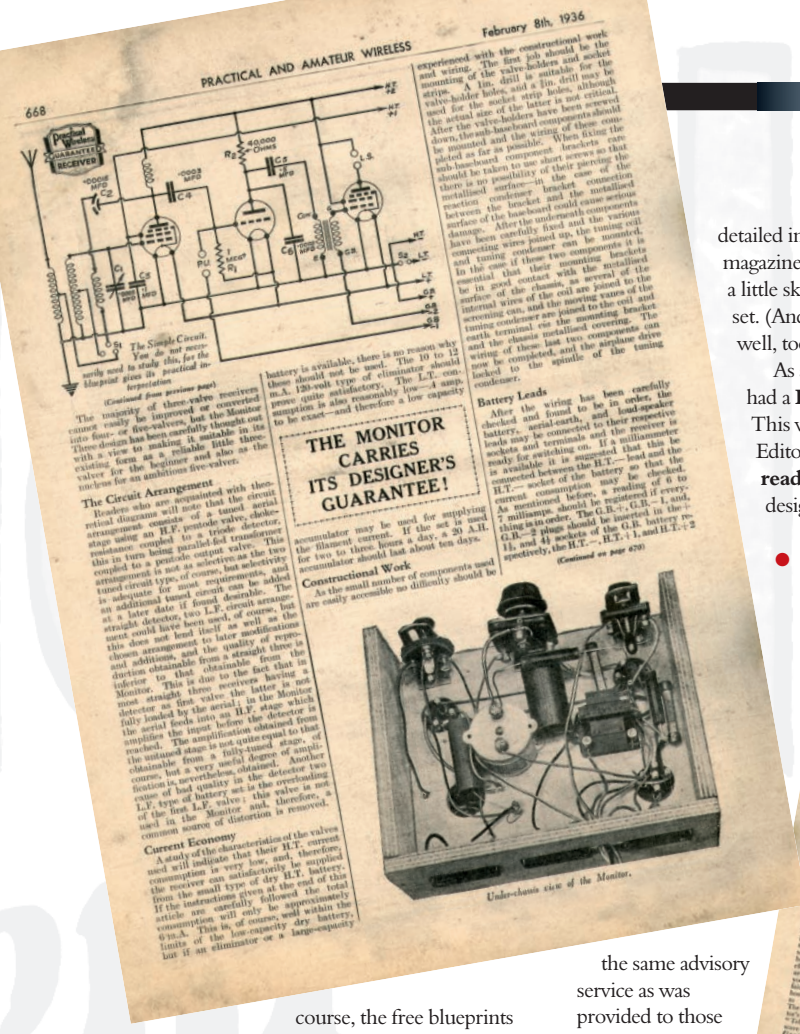
Constructors in the 1930s ranged from the dedicated transmitting Radio Amateur to the ordinary non-technical man in the street. Ardent radio enthusiasts had little difficulty in following a circuit diagram but to many, such a diagram was incomprehensible.

It took some knowledge and experience to match each component on the circuit with the physical component it represented. And many people didn't have that experience. They just wanted a radio at a price they could afford. Which usually meant building it themselves.

Free Blueprint

The first issue of *Practical Wireless* came with a free blueprint: **The Long-Range Express Three**. Of

● Fig. 1: The 'blueprint' of the Monitor receiver, as presented free with the - then weekly - issue of *PW* on February 8th 1936 (see text).


PRACTICAL AND AMATEUR WIRELESS February 8th, 1936

668

THE MONITOR CARRIES ITS DESIGNER'S GUARANTEE!

The Circuit Arrangement

Battery Leads

Constructional Work

Current Economy

Under-chassis view of the Monitor.

course, the free blueprints published by *PW* were never quite like the engineering blueprints used in manufacturing. They were simply layout, drilling and wiring diagrams produced to help would-be constructors.

The earliest blueprint I have in my own collection is from the 8th February 1936. Entitled **The Monitor Three (M3)**... a three-valve (0-V-2) beginners' set which perfectly illustrates F. J. Camm's philosophy. The blueprint is really nothing more than a detailed, life-size wiring diagram showing all components and all interconnections.

As the M3 was primarily a beginner's set, components were mounted on a metallised wooden baseboard with wooden side cheeks, rather than on a metal chassis. Actually, the use of a metal chassis was - so F. J. claimed - pioneered by *Practical Wireless*.

Until the advent of metal chassis, sets for home assembly had been designed for baseboard construction. A technique which produced, so F. J. felt... "amateurish looking results".

What made blueprints possible - and so useful - derived from the stated policy of the magazine: **that all *PW* designs could be built with absolute confidence and they would perform in accord with all stated claims**. To achieve that aim, every component used in a design was specified exactly, including the manufacturer. This is what made accurate drawings possible.

The Circuit

The theoretical circuit of The Monitor Three was published in the body of the magazine. However, the accompanying caption stated that it was **not necessary** to study the diagram, as the blueprint gave its practical interpretation.

In practical terms the accuracy and completeness of the blueprint combined with clear, detailed instructions in the magazine, meant that anyone with a little skill could build a radio set. (And one that performed well, too).

As a final 'safety net', *PW* had a **Free Advice Bureau**. This was provided in the Editorial belief **that every reader** who built a *PW* design ought to be entitled to the same advisory service as was provided to those who purchased a commercial receiver.


F. J. Camm's Monitor 3

SPECIALLY DESIGNED FOR BEGINNERS

By F. J. CAMM

EASY TO BUILD—AND GUARANTEED!

A REMARKABLE RECEIVER FOR 45/-

LEARN AS YOU BUILD!

● Fig. 2: The circuit of the Monitor was published within the magazine itself (see text).

Looked at with a cynical marketing eye, the free blueprint was simply a way of selling more magazines. But it was also a genuine attempt to help ordinary people construct their own, working, radios. If that philosophy led to the creation of many new radio enthusiasts eager for more, then where was the harm in that approach?

To cater for people wishing to build sets some time after the relevant issue had been published, *PW* introduced a **Blueprint Service**. My February 1936 issue lists 52 *PW* blueprints at 1s. (5p) each, with accompanying back issues at 4d. (about 2p) each. Selected blueprints from two former competitors of *PW* - *Amateur Wireless* and *Wireless Magazine* - were also available through the Blueprint Service.

Until 1939

Free blueprints continued to be included with special issues of *PW* until war broke out in 1939, when restrictions on the use of paper limited what could be included in magazines. Later the following year, further newsprint restrictions caused *PW* to became a monthly periodical rather than a weekly and it's remained a monthly publication ever since.

After hostilities ended continuing shortages meant that blueprints were not immediately re-introduced. Indeed, the next blueprint wasn't issued **until 1952**.

By the time **The Mini-Four** blueprint was given away with the March 1952 issue of *PW*, the world of radio had changed considerably. People no longer needed to build sets out of financial necessity, they did it for their own education or enjoyment.

When active hostilities ceased there was no shortage of new radio enthusiasts. Radio had played a pivotal role in the Second World War and many people had been instructed in radio operation and engineering during their time in the Services. Now they wished to continue their association with radio as a hobby.

So, the post-War blueprints would be geared towards helping both the inexperienced and experienced hobbyist. They guided the novice radio enthusiast with his or her first project, and the more able constructor with time-consuming tasks, such as marking-out a chassis ready for bending and drilling.

Designs & Developments

The designs which were then published in *Practical Wireless* took full advantage of war-time and post-war developments in radio and electronics. This was a fact ably demonstrated by **The Mini-Four** portable.

The set was a conventional four-valve superhet but it used modern miniature (B7G based) 1.4V/90V battery valves: the DK91, DF91, DAF91 and DL92. In fact, the set used miniature components throughout, resulting in a very compact design.

Even a matching case was available! Interestingly, the set used a midget coil turret from **Stern Radio**. This consisted of four pairs of adjustable coils: three medium-wave pairs and one long-wave pair.

Two 150pF fixed capacitors replaced the normal twin-gang tuning capacitor thereby saving space. Tuning was done by adjusting each pair of coils (antenna and oscillator) to receive a chosen station. Once set up for a particular locality, the set could be quickly switched to one of either three medium wave stations or one long wave station.

The set proved so popular that the March issue was sold out the same day it was published, and this was despite an increased printing run. Paper restrictions prevented the entire issue being reprinted, so just the blueprint and article were made available to satisfy those who had failed to get a copy.

Ronald Roberts G3TAR from **Rugeley in Staffordshire**, built a Mini-Four during his National Service days. Travel to and from the Coastal Command Sunderland flying boat base at Pembroke Dock in West Wales - where he was stationed - involved a long train journey.

The Sunderland aircraft at the base were used to drop sonar buoys, which were also equipped with a transmitter to listen for submarines and transmit the results to the aircraft. Damaged buoys were never repaired and luckily, Ron found out they used miniature 1.4V valves. He managed to beg a set of valves, and with them built the Mini-

Four as company on his journeys.

(This was the time before ferrite rod antennas, so trains over the Black Mountains would often be seen with six metres or so of wire trailing from a window. Definitely not recommended today!

Twenty First Birthday

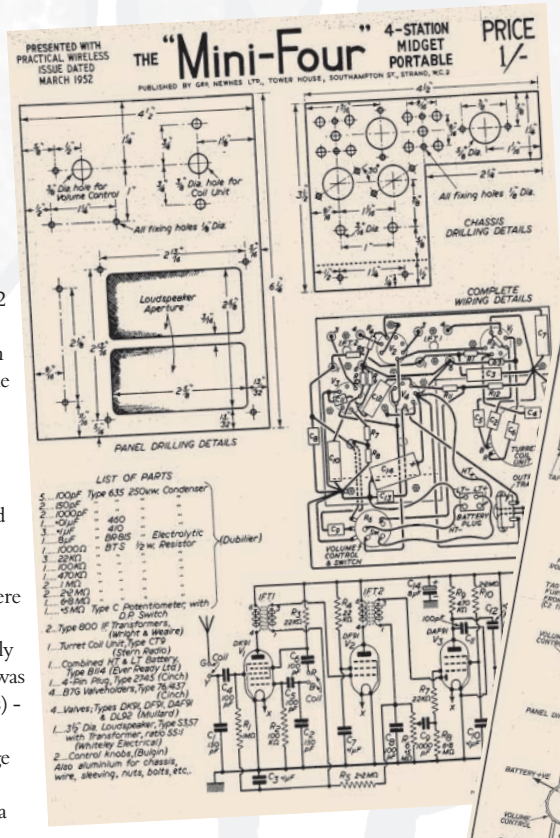
In October the following year, *Practical Wireless* celebrated its 21stt birthday with a special 96-page issue and a free blueprint of F.J. Camm's **Coronet A.C. Four**. The set was a 'short' superhet consisting of an ECH35 frequency changer, EF39 i.f. amplifier, EBL31 detector/audio output and GZ32 rectifier.

Incidentally... superhets with only three amplifying stages - the usual audio pre-amplifier stage being omitted - were termed 'short' for the obvious reason.

The Coronet set was described as simple-to-build and easy to wire, perfect for enthusiasts who wanted to progress beyond t.r.f. sets but were hesitant about tackling a full-blown superhet. Priced separately at 3s. 6d. (17.5p), the blueprint was huge, almost 680mm (27 inches) - square.

The blueprint showed a large circuit diagram, full-size chassis bending and drilling detail, and a full-size wiring diagram. A comprehensive parts list completed this impressive document.

To minimise any alignment problems, a pre-aligned coil pack with matching i.f. transformers (made by **Roding Laboratories -** anyone remember them?) was specified. And to keep costs down, the usual choke smoothing was replaced by an extra stage of resistance-capacity smoothing.



● Fig. 3: The Mini Four used the B7G based 'All dry' 1.5V l.t. and 90V h.t. midget valves (see text).

Swinging Sixties

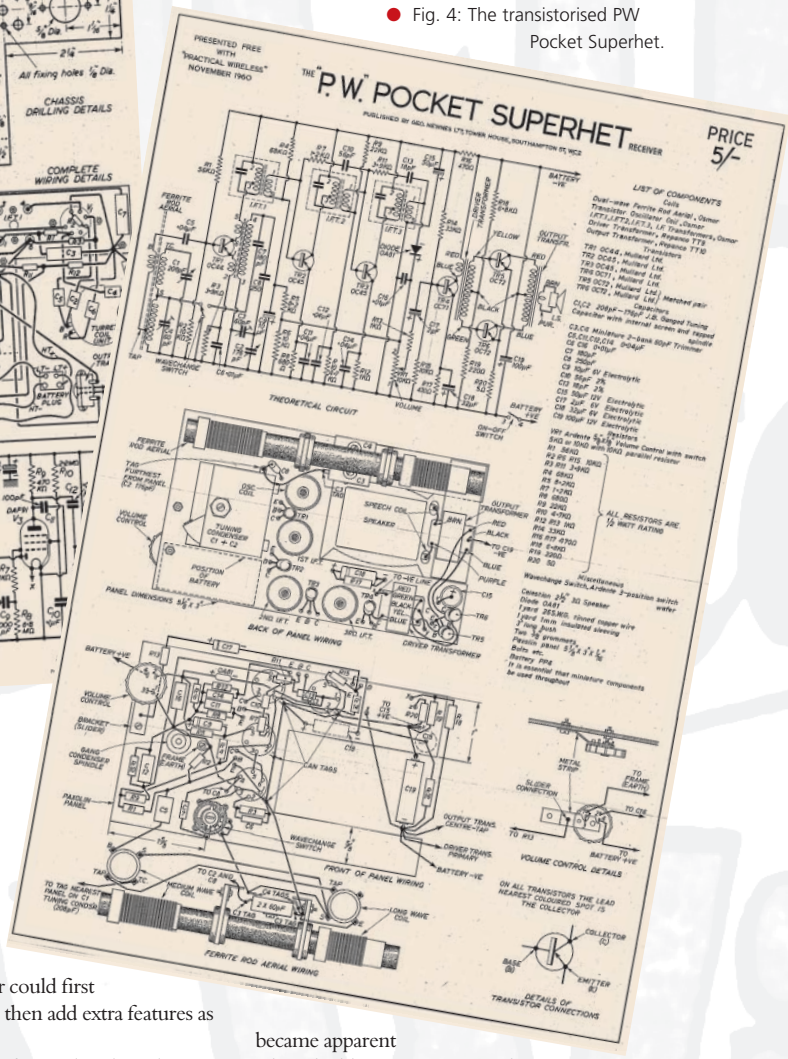
The number of free blueprints included with copies of *PW* never approached pre-war figures, particularly during the 1950s. However, once the 'Swinging Sixties' were in full flow there came a mini-golden age of blueprints and free gifts. In the years 1962, 63 and 65, seemingly every other issue of *PW* had a blueprint or some other 'freebie' tucked between the covers.

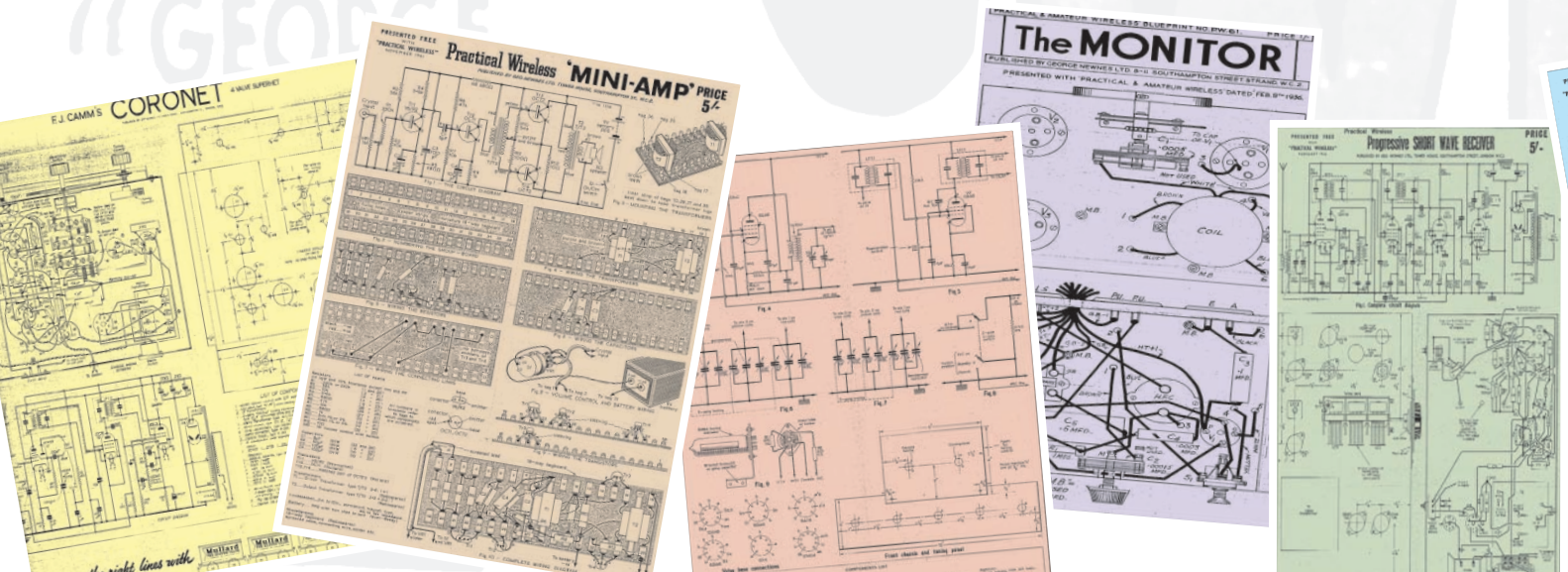
One ever-popular project was the short-wave receiver, particularly the 'progressive' type. This was where the constructor could first build a basic superhet and then add extra features as and when desired.

One such receiver was featured in the February 1966 issue under the rather descriptive, if boring title of **Progressive Short Wave Receiver**. The basic five-valve design used an American-miniature valve line-up: 12AH8 mixer/oscillator, 6BA6 i.f. amplifier, 6AT6 detector/audio pre-amplifier and 6BW6 (why not a 6AQ5?) audio output. A 6X4 provided the h.t. supply. Coils and i.f. transformers were from Denco.

The blueprint gave the usual large circuit diagram, drilling detail and under-chassis wiring diagram. The progressive aspect of the design became apparent when the blueprint was turned over; on the reverse there were additional circuits for a

● Fig. 4: The transistorised PW Pocket Superhet.





6BA6 r.f. stage and a 6BA6 **regenerative** second i.f. stage.

The regenerative stage is worth a mention. It gave additional selectivity - rather like a Q-multiplier - when reaction was increased, and it allowed c.w. reception when pushed into oscillation. One more enhancement was included on side two: an EM84 'magic-eye' tuning indicator.

The last blueprint I have in my own collection is one from December 1966. It's a two-valve regenerative receiver intended for beginners. The regenerative detector is a 6BR7, with a 12AT7 audio amplifier/audio output stage. **I'm left wondering, was this the last blueprint to be issued?**

Despite - or maybe because of - the set's simplicity, it seems to have been a popular design. One person who almost built the set was **Stephen Forsyth MM0CQT** from **Buckie** in Scotland. I say almost because Stephen, in true Amateur Radio fashion, decided to modify the design.

An EF91 was substituted by Stephen as the regenerative detector while the 12AT7 was replaced by an ECC83 (12AX7) plus EL84. It seems the 12AT7 was too quiet; a bit more gain plus a few watts of audio was deemed necessary. (Maybe Stephen liked loud pop music?). An Ever Ready Sky Lord battery set was stripped (this would be sacrilege today) and the chassis and case used for the modified design.

Transistorised Designs

Now, I hope the Editor will forgive me but I have to mention transistorised designs when talking about blueprints*. The three-legged beasties have been around for well over half *PW's* lifetime - the first transistor circuits appeared in the late 1950s - so they ought not to be neglected.

Just as the Mini-Four had demonstrated the popularity of valve portables in the early 1950s, the transistor portable was becoming an even more popular receiver in the early 1960s. Naturally this didn't go unnoticed by the staff at *PW*, and so the November 1960 issue included a free blueprint of **The *PW* Pocket Superhet**.

The set used miniature transistor components throughout; coils and i.f.t.s from Osmor and transistors from Mullard. The circuit was completely standard for the time: ferrite rod antenna, OC44 self-oscillating mixer, two OC45 i.f. amplifiers (complete with Mullard's recommended neutralisation scheme), an OA81 detector, OC71 audio amplifier, and a matched pair of OC72s driving a 63mm (2.5 inch) loudspeaker.

A worthwhile project indeed! But I think it was the availability of a smart plastic case (in a choice of colours: Cream, Red or Blue!) through the *PW* offices for just 6s. 6d. (32.5p), that probably persuaded many constructors to build the set.

***Editorial note:** No problems Phil...I cut my teeth on the transistor circuits published on the blueprints. After all...they are also part of our heritage aren't they? **Editor**.*

Delicate & Mysterious

It should be remembered that in the early 1960s, transistors were perceived as delicate and somewhat mysterious by constructors who were steeped in valve technology. The then Editor made it known, despite some opposition, that *PW* would continue to promote the use of transistors.

The Editor thought semiconductor devices would ultimately dominate both electronics and radio. So it was felt to be the duty of *PW* to help enthusiasts build and understand solid-state equipment.

A example of pro-semiconductor conviction appeared in the November 1961 issue, when a free blueprint of a four-transistor audio amplifier was included with the Magazine. Called the ***Practical Wireless* Mini-Amp**, it was a straightforward design intended for the raw beginner.

The circuit was similar to the audio section of the previous year's pocket portable. However, in this version it was preceded by a one-transistor preamplifier.

To make construction as easy and foolproof as possible, the circuit was built on a 2 by 18-tag, group board. Step-by-step directions and large illustrations made everything very easy (all highly reminiscent of the early 1930s).

The whole thing proved very popular, and many people wrote saying how much they liked the group-board method of construction. Looking back, it's clear that group boards matched the physical size of many of the components used in transistor projects. In those days, transistors - like the young ladies of the 1960s - had long legs! (Or was it short skirts?).

More Than Radio

Over the years, *Practical Wireless* blueprints have covered more than just radio sets. There have been several amplifiers, a three-speed **Autogram**, the odd loudspeaker design, and even an electronic organ.

The transmitting Radio Amateurs weren't neglected either, with several transmitters and transceivers making an appearance. But probably the most unusual blueprint was the electric Hawaiian guitar featured in June 1965. Quite a departure from the kind of project normally found in a wireless magazine!

Looking back, it's the radio sets that have endured. One blueprint - **PW88: Simple S.W. One-valver** - was published on the 9 April 1938. It was still available - together with several of its contemporaries - over 25 years later!

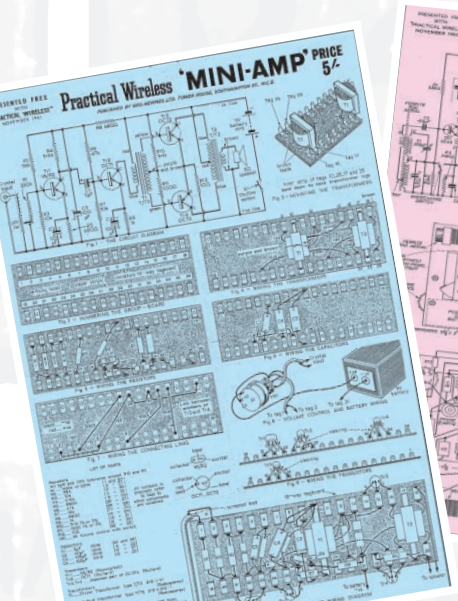
This PW88 blueprint must have been responsible for encouraging many would-be radio enthusiasts. I know of one: **Jack Cooper G3DPS** of **Alton** in Hampshire. He recently told me that when he had saved enough money for the components, he built the set and it worked first time. And that success encouraged Jack to continue in the hobby for over 50 years!

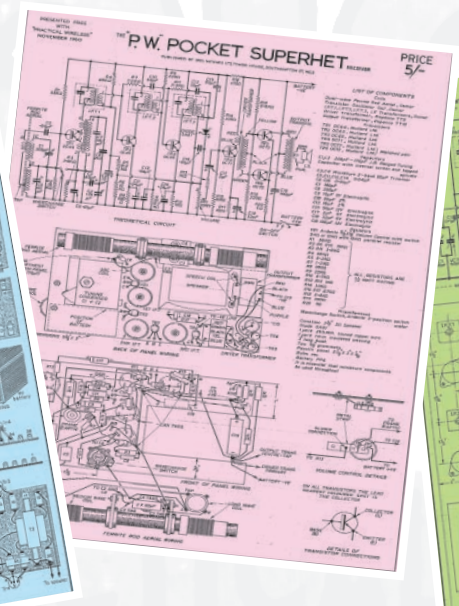
Finally, I must say thank you to **Bob Allen** of **South Shields** for sending me copies of some blueprints missing from my collection. Unfortunately, old copies of *PW* often have any free blueprint missing, which is most annoying as circuit diagrams were seldom duplicated in the body of the magazine.

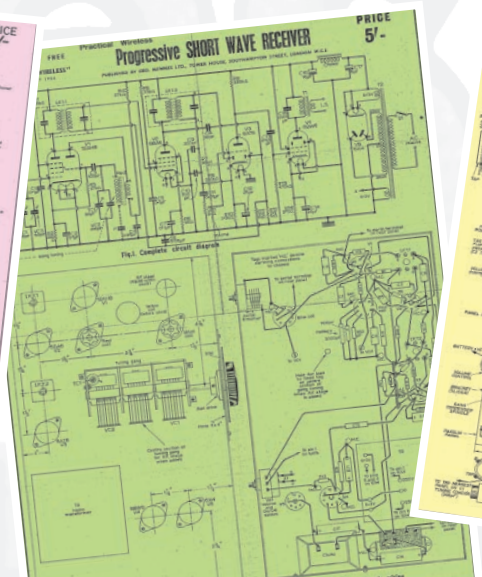
However, my biggest thank-you must go to *Practical Wireless* itself. Yes, *PW* was the first radio magazine I read regularly, and I now realise just how big an influence it had on making radio and electronics both my favourite hobby and my career.

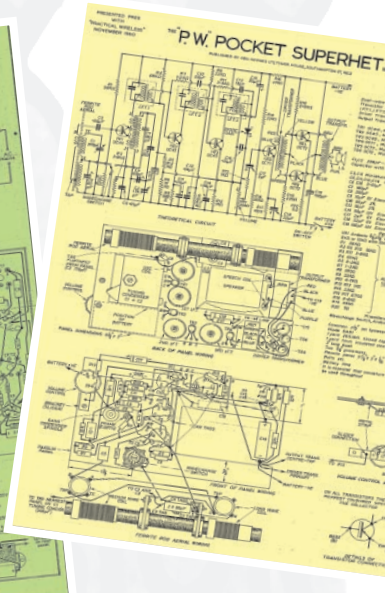
My congratulations to *PW*, and a special thank-you for keeping the name **PRACTICAL WIRELESS** on every cover, from the very first right through to this 70th anniversary issue. So...here's to the next 70 years!

Please send your comments and letters to me either via the *PW* offices, via E-mail to **phil@valveandvintage.co.uk** or direct to: **21 Scotts Green Close, Scotts Green, Dudley, West Midlands DY1 2DX.** PW









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MFJ-948	1.8-30MHz 300W Tuner w/Balun	£139.95
MFJ-949E	1.8-30MHz 300W Tuner+D/load	£159.95
MFJ-962D	1.8-30MHz 800W Compact Tuner	£259.95
MFJ-969	1.8-60MHz 300W Tuner	£199.95
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Carrying On The Practical Way

This month, to celebrate *PW*'s 70th anniversary the Rev. George Dobbs G3RJV says he's "Walking down Memory Lane". He's got some interesting memories...starting with a quotation... from himself!

"It is helpful to the short wave listener and essential to the licensed amateur that an accurate check of receiver frequency can be made.."

George Dobbs *Radio Constructor*, June 1962

It seems amazing that I wrote the words comprising the 'appropriate quotation' **40 years ago** to begin my **first-ever** Amateur Radio article for now defunct (and much missed) *Radio Constructor* magazine. The article described a Crystal Calibration Oscillator that I was using with my R107 receiver.

For interest, rather than benefit, I've shown the circuit in **Fig. 1.** In those days of germanium transistors, devices capable of working at the higher frequencies were just beginning to be available to the likes of me.

Just in case anyone does want to build it – perish the thought! - I recall, the r.f. choke was just something from my junk box and the two trimmer capacitors were the old 'beehive' type. The crystal was at 1MHz, but any suitable frequency to provide calibration signals would do the job.

George Looks Back

This month *Practical Wireless* looks back on 70 years of publication. So I thought I'd also look back on the times I have shared with *PW*.

I began, as a schoolboy in the 1950s with *PW* and books by the late F. J. Camm, the founding Editor. The magazines and the books were both provided by the local library and I bought copies of the *PW* whenever I could afford them.

With my armoury of barely understood material, I began my hobby as a radio constructor, learning by success and failure. Most of the parts were gleaned from the abundant government surplus market of those days.

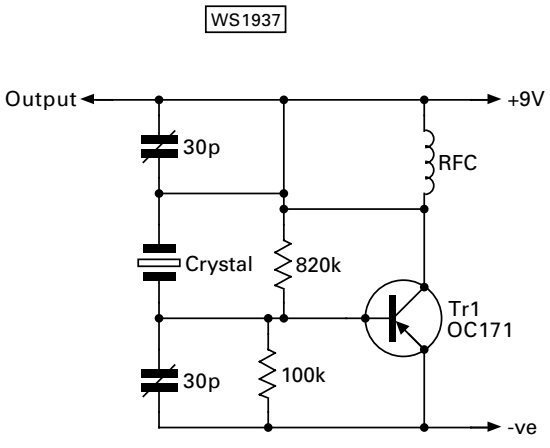
My history of writing for Amateur Radio magazines has been somewhat haphazard. I've never been a technical author...after all I have never received any technical training! So, I would describe myself more as an "Amateur Radio entertainer", who enjoys sharing the pleasure derived from a hobby.

● This month's vintage style nostalgic project - using a 955 Acorn style valve. George says it's rather different and if you can't get hold of an Acorn and B7G battery valve could be used.

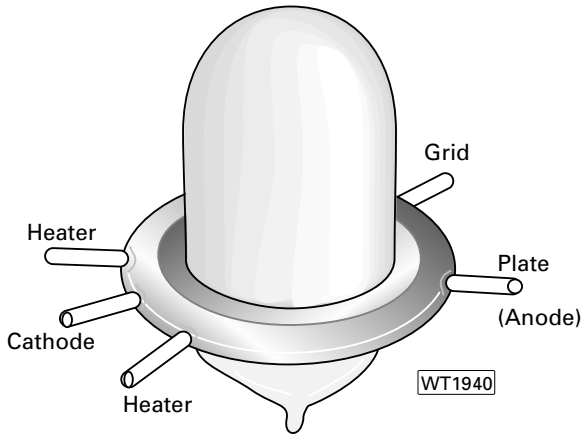
I've also found much solace and gentle pleasure in applying a soldering iron to a few components at the end of a day's work. My hobby has been a beneficial contrast to the 'day job'!

My five years as a student in the mid-1960s provided little opportunity for radio. When I took up the hobby again in the 1970s I found that everyone was building with solid state devices and I'd been left behind.

The 1970s were the golden years for the articles by the late **Doug DeMaw W1FB**, in the American *QST* magazine. Doug was attempting to drag the American radio constructors into the solid-state world with a fine series of articles, all on a QRP theme.



● Fig. 1: The circuit from first ever G3RJV Amateur Radio article, as published in *Radio Constructor* magazine. The article described a Crystal Calibration Oscillator used by George with his R107 receiver (see text).



● The 955 Acorn Valve.

The W1FB articles were my inspiration to get out the soldering iron and begin again. Doug was my Amateur Radio 'hero' for many years and it was a real pleasure to come to know, and visit, him towards the end of his life.

The G-QRP Beginnings

In the early 1970s I began operating a series of home-built QRP stations and exchanging ideas with others who were doing similar things in the UK. I wrote letter to *Short Wave Magazine* (now a sister publication of *PW*) asking for others to share their ideas, and this launched the G-QRP Club and the *Sprat* magazine.

The few small QRP projects I prepared for *Short Wave Magazine* began what was to become a regular stream of articles for that publication throughout the 1980s.

It still amazes me that articles like the SCD Transmitter (named after my then new-born son – now a thriving adult!) are still being built. Only last month someone asked me for more information on this circuit which dates back to January 1980! Incidentally...I must do a proper up-date of that transmitter for this column.

During the 1980s I shared a series of articles dealing with simple s.s.b. equipment construction with **Ian Keyser G3ROO**, and also ran a long series called Plug in your Soldering Iron and Begin Here. All these articles were for the old style *SWM* and it was some time before I wrote anything for *PW*.

Writing On The Wall?

My writing for *PW* began in a gentleman's toilet in Oxford! (No...it wasn't on the walls!). It came about when I was washing my hands and was joined by the then editor of *PW* who said: "Isn't it about time you wrote something for us"?

What followed from that meeting was the *PW* Severn, a QRP Transceiver for the 7MHz band which appeared in May 1983. It was not only a pleasure to join the *PW* writers but a lovely sense of satisfaction in seeing the Severn as lead article with a picture on the front cover! As a boy, those who wrote for *Practical Wireless* had seemed little less than gods and here was I with an article featured on the front!

The *PW* Dart, a double sideband (d.s.b) transceiver for 1.8MHz, and the *PW* Teme, a modular QRP transceiver, were published the following year. So began what has been nearly 20 years of continuous writing for *PW*, most of it under the gentle guidance of our Editor **Rob Mannion G3XFD**. Most of my efforts are now concentrated in thinking of new little projects for the Carrying On The Practical Way or COTPW as it's affectionately known in the Editorial offices!

And speaking of little projects, I had better describe something for this issue. Before the above-mentioned 'gentle guidance' of the large Editor concludes that I have given his readers short change!

Nostalgic Acorn Circuit

So for a nostalgic issue, I offer a nostalgic circuit! It comes about because amongst the older items I've got laying around in my junk storage is a 955 Acorn valve...new and boxed and dated for the month I was born. I thought it might be fun to use it to build a simple QRP transmitter!

The 'Acorn' valve (It really looks like a glass acorn) was first produced by the Radio Corporation of America (RCA) in March 1935. The valve's structure made them suitable for early v.h.f. equipment, which extended their life right through the Second World War and they were still available, and used, in the 1950s. My version is the 955 triode though it really does not lend itself well to transmitter circuits.

One of the great characters of the QRP world was the late **Hollis Button WF6U**, who was an avid QRP circuit builder, anglophile, and lover of English canals. He visited me many times in the 1990s when he was well over 80 years old and on his annual visits to the UK.

On one such visit he brought his little Acorn valve transmitter to show to other G-QRP Club members at a convention. The circuit I offer here is from the piece of paper he left with me.

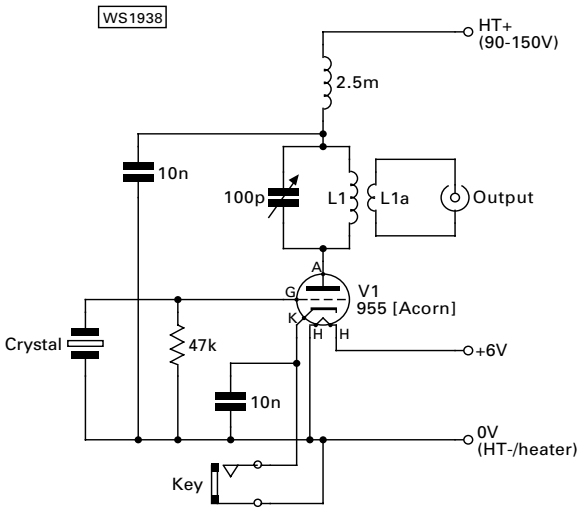


Fig. 2: The transmitter circuit using the 955 Acorn triode. George says "It's no more than a 'tuned grid - tuned plate' oscillator with a link winding for presenting an r.f. signal to the world" (see text).

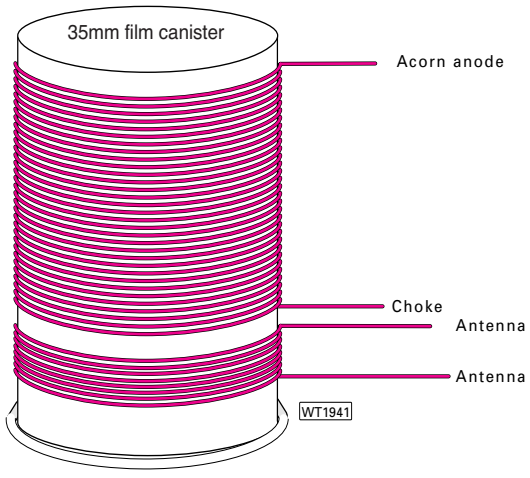


Fig. 3: The original W6FU transmitter project had a fine ceramic coil former but G3RJV used a 35mm film canister. The number of turns given, would enable the transmitter to be tuned on 3.5 or 7MHz.

The Circuit

The transmitter circuit is shown in **Fig. 2**. It's no more than a 'tuned grid – tuned plate' oscillator with a link winding for presenting an r.f. signal to the world.

However, I'm afraid that when it comes to duplicating this circuit, *PW* readers are on their own! Acorn valves are still around but not easy to find and the bases are rarer still...although our Editor tells me that he often sees them for sale at rallies and shows, especially on the RAIBC fund-raising junk sales stall. So it will be worth looking out for both the 955 triode and 954 pentode version.

As an alternative readers could perhaps use a small battery valve like the 3S4 and join the screen grid and anode together. Hollis' transmitter had a fine ceramic coil former but I resorted to a 35mm film canister. The number of turns given, see **Fig. 3**, would enable the transmitter to be tuned on 3.5 or 7MHz.

Power Supply

Obtaining the necessary power supply is again in the hands of the reader. I ran the 955's heaters with a 6V lantern battery and used an old 'battery eliminator' for the high tension (h.t.) supply. **Note:** Remember to have adequate voltage rating for all the parts used in the circuit.

The transmitter is certainly QRP – the best I got from mine was about a quarter of a Watt (250mW). The secret is to tune for maximum output power **and then re-tune for the best sounding note**.

It may not be the ultimate in Amateur Radio transmitters but it is fun and, with that fine shaped valve, it can be made to look quite beautiful. Well – you wanted something old – Mr. Mannion, Editor, Sir...and you've got it! Enjoy the nostalgia readers and happy birthday *PW*.

PW

Amateur Radio in Pol

Henryk Kotowski SM0JHF discovers how the Amateur Radio hobby has developed in Poland and meets some of the characters behind its success.

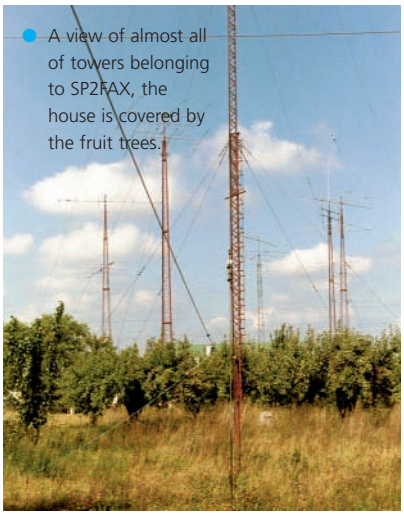
Jurek SP3GEM in his shack in Jarocin.

Facts & Figures
There are approximately 15,000 licencees in Poland. The most common prefix used is **SP** but also **SQ** and **3Z** are issued. The prefix **SN** is used for special event or contest stations, as well as **HF** in some cases, while **SO** indicates a long-term visitor. As from 1 January 2001, the CEPT agreement was in force in Poland, so short-term visitors can operate their radios preceding their own callsigns with **SP/**.

Poland is a country of significance in Central Europe. Once a superpower of the European region to be later dissolved among its neighbours, it is today catching up with Western Europe and trying to redeem the years of stagnation after the Second World War.

Anyone interested in h.f. contesting could not have failed to notice an emerging group of top scorers in the last five years from Poland. Winning an international contest from Central Europe means excellent operating skills, modern equipment but mainly outstanding antennas.

As with many things seeing is believing, so I decided to visit a couple of the top Polish operators to see their Amateur Radio stations. Deciding to visit Poland was not much of an effort for me as I was born in Poland and even though I left the country some 27 years ago and have lived in Stockholm, Sweden ever since, I travel to Poland at least once or twice a year.



A view of almost all of towers belonging to SP2FAX, the house is covered by the fruit trees.

First Stop

Upon arriving in Poland my first stop was at the home of **Jurek SP3GEM** who lives in the small town of Jarocin in western part of the country. Jurek courageously started an antenna manufacturing business in 1992 and tested many of his own products on the air.

Today Jurek's activity has subsided and he has limited the antenna farm to a pair of elaborate 21MHz arrays. He ranks as one of the masters of this band, frequently signing **SN3A** in world-wide contests.

The second 'big-SP-gun' I visited was **Kazik SP2FAX**. He lives in the countryside near the medium sized city of Bydgoszcz in northern Poland. Kazik moved out of town in 1995 and started erecting towers with antennas designed and manufactured by SP3GEM. Later, he built a spacious house with a swimming pool and a garden.

Kazik's house is so big that multi-multi activity is feasible without causing too much interference to Kazik's family. Usually, the **SN2B** callsign is aired for Multi-Op events.

Kazik is 48 years old but is still very agile and vigorous, as if he were still a teenager. He was 16 when he first entered the world of Amateur Radio and gained his licence. From the very beginning Kazik was an ardent telegraphy fan, on the other hand though access to more modern and advanced equipment was very limited so using c.w. was a necessity for getting on the air at all!

Radio Banned!

One cold December morning in 1981 all Amateur Radio was banned by Martial Law in Poland but fortunately this wasn't permanent. Sometime in 1994 Kazik SP2FAX suddenly decided for a revival and swiftly chose a piece of land first having verified ground conductivity charts. His present antenna farm consists of the following:

Band	Antennas
28MHz	6-element Yagi at 32m & 6-element Yagi at 23m
21MHz	6-element Yagi at 32m & 6-element Yagi at 20m
14MHz	6-element Yagi at 46m & 6 element Yagi at 24m 3-element Yagi fixed South
7MHz	3-element Yagi at 44m
3.5MHz	Vertical and 4-square array
1.8MHz	Vertical and Beverages for reception (successfully used on 3.5 and 7MHz bands)

If you'd like to contact Kazik and find out more about his antenna farm you can do so via E-mail at: **sp2fax@poczta.wp.pl**

The third significant Polish operator I wish to mention is **Chris SP7GIQ**. He has a slightly different and more austere approach to building a winning station than Kazik SP2FAX.

Chris lives exactly in the middle of Poland near the small town of Lask and is a year or so younger than Kazik but got infected with 'radiomania' at the same age of 16. His antenna farm is more compact, all his antennas are self-made, the equipment is modest, even the house is smaller.
At the time of writing Chris' radio set-up consisited of:

Band	Antennas
28MHz	5-element Quad at 27m 5 + 5 + 5 + 5 (stacked) Quads - top at 35m
21MHz	4-element Quad at 27m 4 + 4 (stacked) Quads at 35m
14MHz	4-element Quad at 27m 4 + 4 (stacked) Quads at 35m
7MHz	2-element Quad
3.5/1.8MHz	Vertical and Beverages for reception

Chris can be contacted via E-mail at **sp7giq@pro.onet.pl**

Competition Spirit

Inspired by the three 'champions', SP7GIQ, SP2FAX and SP3GEM and driven by the spirit of competition, a large group of SP

and

operators have significantly improved their antennas, equipment and operating skills in recent years. A list of these would be very long and never complete, however I have visited a few of them, which I will tell you about here.

Bogdan SP5WA is maybe better known among DX chasers as 5N3CPR in Nigeria. He is not a newcomer to Amateur Radio and held different callsigns before changing to the present shorter one.

A few miles from **Bogdan's** home I found the most active Amateur Radio club in Warsaw area, **SP5ZCC**. Hosted by a high school in a small community of Sulejowek this club attracts mainly young people as it was initially started within the Scout's movement. Their website can be viewed is at **http://www.sp5zcc.waw.pl/**

The SP5ZCC club provides other web services for local DXers, for example DX bulletins in Polish. The most successful DXer in this country is **Richard SP5EWY**.

Richard is not interested in contests but is an expert on hunting DX entities on different bands and belongs to the world elite in this category. Even his wife, **Joanna** holds a licence (**SP5VMI**) so an understanding and tolerant XYL is a pre-requisite for such a time consuming accomplishment!

The house with antenna on the roof of Bogdan SP5WA.

Less active on the air but deeply engaged in the matters of Amateur Radio in Poland are two gentlemen I also met on my trip. One is the president, **Tomasz SP5CCC**, of the SPDX Club, which is a vital group of hundreds of ardent DX chasers and contesters. The website of the club,

Chris SP7GIQ inside the shack.

partly in English, is at **http://www.sp5pbe.waw.pl/SPDXC/index.html**

The other is the Editor of a full-colour magazine, *Swiat Radio*, devoted to radio and Amateur Radio, **Andrzej SP5AHT**. This monthly publication has its website at **http://www.swiatradio.com.pl/** and is of good quality, read by several thousand radio enthusiasts in Poland.

My point is that if there is stamina, good basic training, passion and of course the means, then it's possible to reach quite far by international standards. In the time span of ten years the amateur radio image of Poland has been totally modified by ambitious and hard working people, a few of whom I have been able to present here. *PW*

Ryszard SP5EWY with his attractive and tolerant wife, Joanna SP5VMI

Delta Loop Portable

Rob Mannion G3XFD enjoys working portable, using relatively low power. Fed up with 'just missing' juicy DX on 18MHz...he's tried using an unusual Delta Loop with great success!

● Fig. 1: The Fibreglass 10m high telescopic mast in use with a Tenna-Tourer mast base (see text).

Many readers will be familiar with my usual portable h.f. operational set-up...using the Tennamast drive-on Tenna-Tourer mast base which supports a 10 metre high collapsible fibreglass fishing pole (available from **Sycom**, see advert this issue).

The vertical wire (wound round the erected pole) antenna system is used in conjunction with a 20 metres long single wire radial, laid out along the ground. In practice the system works exceedingly well and I've had great fun in working West Coast USA stations (often using 400W plus into complex beam antennas...with my 10W or so on either c.w. or s.s.b.

However, I've often lost out on some really juicy DX - often having received a 'QRZ' when I've called them. Frustrating indeed! So, I then looked at a simple directional antenna which I could erect quickly, and was easily portable.

A cubical quad antenna would be ideal for DX...but that's not the sort of antenna to erect and dismantle on a regular basis! Although I should mention that the cubical-quad can be used when mounted just above the ground...and still provide you with phenomenal DX. Indeed, other things considered (children, washing hanging out, and partner objections!) the cubical-quad is the ideal small space antenna (**yes it really is...just think about it!**).

Instead, bearing in mind the logistical problems, I looked at either a square or Delta loop. I ended up trying a trick I'd thought of...using a Delta Loop and bamboo canes.

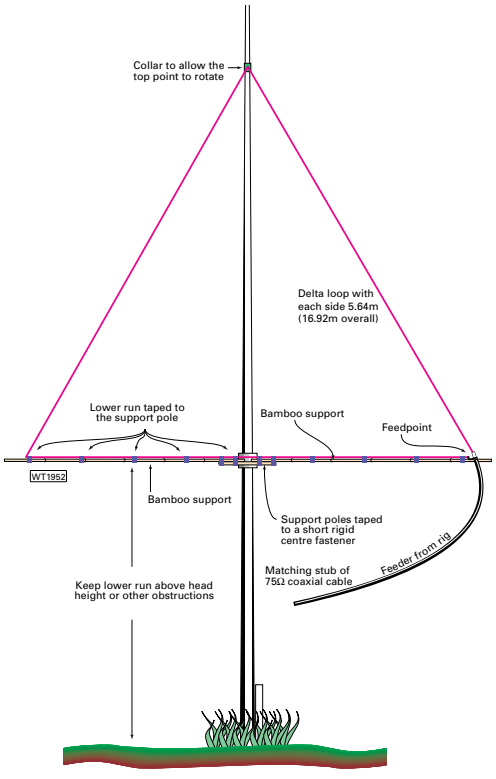
Bamboo & Delta

The photograph, **Fig. 1**, shows my ill-fated (I got rid of it as it was so unreliable) VW Sharan MPV estate car 'parked' on the Tenna-Tourer mast base. I've used this photograph because it illustrates the portable mast very effectively - and it's from this system I've 'hung' my Delta loop from.

The portable Delta loop is extremely simple, **Fig. 2**. For 18MHz (18.100MHz) it consists of a loop (using 7mm stranded wire as used in mains 'flex') of 16.92m (55ft 6ins) total length. The bottom part of the wire forming the loop is permanently taped to the two bamboo sticks. (From a gardening centre, I got some 10ft lengths (they're not sold in metric sizes apparently), but shorter lengths can be joined together with non-metallic sleeves.

I made a mast 'collar' bracket from a sheet of fairly stiff polythene (removed from a large detergent container), making a hole (for the mast pole to pass through loosely) and lugs, which were then taped onto the bamboo. Make sure it's stiff enough to make the whole length of bamboo to move round the mast pole as one unit, and adjust it so the 'boom' clears the roof of your vehicle!

The apex of the continuous loop (only broken at feed-point) to connect to the coaxial cable inner and outer is provided with a polythene collar to slip over the very thin top section. In effect it all looks like a sail rigging...without the sailcloth! It only take a few minutes to erect, and dismantle. To dismantle I lower the telescopic sections, slip off the top collar, fold the loop wire and wrap it around the bamboo sticks, pop it on the roof rack and drive home!



● Fig. 2: Using a simple length of wire, together with garden-centre bamboo sticks it's possible to make an extremely effective Delta loop antenna which folds and transports easily. Here, the fibreglass mast (or similar) used by G3XFD is illustrated - for clarity - as a free-standing system, leaving enough headroom/vehicle clearance (see text).

Tuning & Feeding

Tuning is incredibly simple and feeding with 50Ω coaxial cable into a standard antenna tuning unit (a.t.u.) in my car I've found that there's no need to use a coaxial balun. Purists can use a 2.73m length of 75Ω television type coaxial cable. (the Delta Loop length for 14MHz is 21.64 metres - 7.2m per side!, matching stub 3.49m).

In use you only need to rotate the loop a quarter of a turn to 'beam in' a DX station because it's bi-directional of course, the main lobes being at right angles to the bamboo boom. (the feedpoint indicated provides low angle radiation). Although I intended the apex collar to rotate...in practice it jams and the wire spirals around the mast if you turn it through more than 90°...making the loop smaller. This increases the loop's resonant frequency significantly...increasing the system's bandwidth (useful!).

Obviously, the idea becomes more attractive for 21, 24 and 28MHz. So I urge you...have a go, you'll be astounded at the results. Let me know how you get on working the DX! PW

LDG AT-11MP Auto ATU Kit

● The sensing bridge with two of the smaller value inductors. Many of the components are small and good lighting is needed when working.

Tex Swann G1TEX/M3NGS has been testing out an auto a.t.u. Read on to find out more...

One evening at our radio club (**Poole Radio Society**), one of the members brought in a kit auto a.t.u. that he'd ordered over the internet. The LDG kit is of a very high quality manufacture, but is for low power (30W max) and was being sold very cheaply. I was impressed and captivated and I'd decided that I'd rather like one!

Looking around for a similar kit, I discovered the LDG AT-11MP kit available from several sources in the UK and promptly ordered one. When the kit arrived I found a rather large box, with the two piece metal housing and all the required parts in sealed plastic bags. So, ten out of ten for a complete kit in all regards and all the parts of the highest quality.

The instructions were printed on a series of loose leaf (printed on both sides) sheets. The sheets were just that - loose so, a minus point for that. But putting them in order and stapling them together made them more manageable. In defence of the instructions though, they are extremely well laid out and complete. The first four pages detailed the practical capabilities of a finished unit.

Step-Wise

The step-wise instructions for the construction of the unit cover just seven sides, but they are easy to follow with large colour pictures as illustrations where appropriate. There are eight toriodal tuning coils to wind, along with a small bridge sensing transformer. The technique is described well enough to make it quite easy to wind all these coils without qualms.

After winding the coils, assembly is carried out in the order of 'shortest to tallest height' on the board. I took time identifying the various multiple resistor packages to make sure I got them in their correct place. I checked the orientation of the socket for the small square microprocessor several times before soldering it in place.

The microprocessor controls the whole unit and its operation so, an error here and the unit will not work at all. When fitting the actual i.c. in place, I suggest that you check several times before fitting it, as a mistake at this stage would probably be fatal to the unit. **If you are unsure get help!**

I found when fitting the various switches to the small separate control panel, that a third hand would have been useful. This was especially true when it came to putting the assembled board into the case, with five bolts, each with a nylon spacer, to hold the board in place.

Suggested Modification

I decided to fit the suggested '706 modification' (to be used with the IC-706?), on the off-chance that I would have the opportunity to try it at some point in the future (and I didn't fancy all those screws, spacers and nuts again). Before applying power to the system, I set the two sensing bridge variables to the middle of their travels and was ready to switch on.

On applying power and switching on, I set about carrying out the set-up as described (but using only 10W and a suitable dummy load). Now it was time for some real testing. I removed the dummy load and plugged in the antenna system, switched over to the a.m. mode on the set and pressed the p.t.t. key.

As the r.f. coursed its way through the AT-11MP in the direction of the outside world, I heard - nothing! I was using 7MHz and the antenna is quite low s.w.r. anyway on that band. So, I switched over to 14MHz, where the s.w.r. is a little over 2:1 without matching.

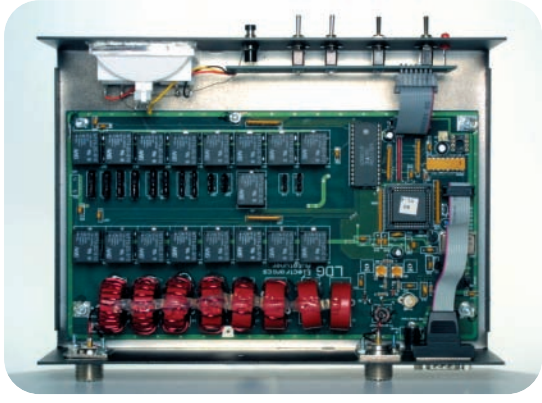
Again I keyed up - and this time was rewarded with a short muted rattle from the box, before the displayed s.w.r. settled down to around 1.2:1 and the indicated forward power came up to show 5W. Using the manual **Cap** and **Ind** switches it was possible to change the inductance and capacitance values and to alter the s.w.r. indicated.

After my tests with low power, I took the AT-11MP along to the radio club and tried it on the trapped (3.5/7MHz) dipole antenna at 100W level. The unit performed perfectly, needing only the occasional flick of either the **Cap** and **Ind** switches to achieve an indicated s.w.r. of 1.3:1 or less on most bands.

Splendid Unit

The LDG AT-11MP is a splendid unit, is easily build over a weekend, and looks professional sitting on the bench. But to keep the costs down the unit doesn't have any band memories like other more expensive units. So, each time it begins, either an auto, or requested matching operation, it goes through a full sequence of tuning.

It's this full sequence tune that's the source of my only negative comment. When trying for a difficult match, the units can sound rather like a troupe of Lancashire clog-dancing spiders. Not that it's loud, but it does grab your attention the first time it happens.



● Inside the finished unit, it looks like a commercial unit in its quality, and offers over 128 000 L/C combinations to achieve a match in most situations.

Kits for the AT-11MP are available from **Waters & Stanton**, more details from their advertisements in this issue.

All-in-all, the LDG AT-11MP automatic antenna kit, offers extremely good value for money and looks good to boot!

PW

If you have internet access, then for more information look at: http://www.ldgelectronics.com

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REPORTS & INFORMATION BY THE LAST SATURDAY OF EACH MONTH.

THIS MONTH DAVID BUTLER G4ASR HAS DETAILS OF SPORADIC-E OPENINGS ON THE 50 AND 144MHZ BANDS

Radio conditions on the 50, 70 and 144MHz bands during June were exactly as I'd predicted. Sporadic-E (Sp-E) propagation affected the 50MHz band every single day, with the exception of June 28 when nothing was reported. Multi-hop Sp-E paths occasionally formed enabling contacts to be made into the Middle East and North Africa.

The transatlantic path to North America also opened up with the assistance of multi-hop Sp-E and contacts were made with stations in Canada, USA and the Caribbean islands. Openings via Trans-Equatorial Propagation (t.e.p.) was also reported on the 50MHz band enabling some very long distance contacts to be made into Southern Africa and South America.

Your reports also show that Sp-E openings occurred during June on 70 and 144MHz. Predictably all openings on 70MHz were to stations in either Cyprus or Slovenia. On the 144MHz band there was much better DX worked with many contacts being over the magic 2000km mark.

Tropo conditions on 144, 430MHz and higher frequencies were quite poor although some stations managed to find some periods when band conditions were up. No auroral back-scatter contacts were reported on any band although some stations in Scotland did report a few late evening 50MHz Auroral-Es events.

THE 50MHz BAND

Although Sp-E propagation was reported on all but one day during June it was nevertheless somewhat disappointing. Openings were generally of short duration and there were many instances when the band was completely lifeless for much of the day. As usual the band, when it did open up, provided many contacts throughout Europe and if you were prepared to dig deep there were some real DX nuggets worth chasing.

It's probably true to report that every country in Europe (with the exception of Hungary which does not as yet have authorisation to use the 50MHz band) was active at some time or other during the month. Some of the more rare European countries worked from the UK included the stations of CU8AO (Azores), HB0LL (Liechtenstein), HV5PUL (Vatican City), LX1JX (Luxembourg), SV5BYR (Rhodes), SV9CVY (Crete) and 3A2MW (Monaco). It was good to see activity from north of the region with stations such as JX7DFA (Jan Mayen), OH0RJ (Aland Island), OJ0VR (Market Reef), OY9JD (Faroe Islands), TF3BRT, TF3FK, TF3GW and TF8ITT (Iceland).

There were occasions during June when multi-hop Sp-E openings were formed enabling c.w. and s.s.b. contacts to be made into the Middle East area. Some of the stations known to have made contacts with the UK included A45XR (Sultanate of Oman), JY9NX (Jordan), OD5/OK1MU (Lebanon), TA1AZ (Turkey), YA5T (Afghanistan), YI9OM (Iraq), ZC4ODW (UK Sovereign Base on Cyprus), 4Z4DX (Israel) and 5B4FL (Cyprus).

Stations in northern Africa are also within Sp-E range of the UK and I've received reports that contacts were made with CN8LI (Morocco), D44TD (Cape Verde), EH8BPX (Canary Islands), EH9AI (Ceuta & Melilla) and SU1SK (Egypt). A number of UK stations also reported transatlantic multi-hop Sp-E openings which occurred on June 1, 3, 10, 16, 17, 19, 21and 29. Although most were of short duration with weak signal strength it did enable contacts to be made into the Caribbean, Canada and the USA.

Tony Jones GW4VEQ mentions that the 50MHz band was open at his QTH (Gwynedd IO73) for one hour on June 10 between 2100-2200UTC. He reports hearing and working the stations of FG5FR (Guadeloupe), FJ5DX (St. Barthelemy), K1GUN, K1SIX, NA1CW, W1JR, W3EP (USA) and VE1YX (Canada). A more lengthy opening occurred on June 16 between 1130-1700UTC.

Stations from G4HBA (Devon IO80) in the south to GM0EFT (Dundee IO86) in the north reported contacts with FP/NA1CW (St.Pierre & Miquelon), W1XZ, KD2I, W3EP, K5MA, AA6TT, WB9Z, NOPB and many, many more. The expedition station FP/NA1CW (GN17) reported working into the UK on June 16, 17, 19 and 21.

Another expedition station FS/W6JKV (French St.Martin) was also successful in making some c.w. contacts with UK stations between 2000-2200UTC on June 29. Trans-Equatorial Propagation was reported on ten days during the period (June 1, 2, 3, 5, 7, 8, 9, 11, 19 and 23rd) split fairly equally with five African events and six into South America. Note that all of these openings occurred between 1600-2000UTC. Amongst the DX worked were D2EB (Angola), V51XX (Namibia), 7Q7RM (Malawi), 9J2BO (Zambia) and stations in Argentina (LU) and Brazil (PY).

THE 144MHz BAND

Considering the rather indifferent Sp-E conditions on lower frequencies it was surprising that the maximum usable frequency (m.u.f.) reached the 144MHz band at all! However, this was not the case and I recorded eight days, June 1, 2, 3, 4, 8, 10, 19 and 20th when Sp-E openings caused excitement on this v.h.f. band.

Surprisingly a total of nine separate events occurred during the weekend and two public holidays of the Queen's Golden Jubilee. It made me wonder whether the RSGB Patron, HRH Prince Philip, Duke of Edinburgh, had managed to pull a few strings!

The opening on Saturday June 1 was a 30minute affair commencing around 1715UTC. Stations throughout central England reported s.s.b. contacts with stations in Bulgaria (LZ), Hungary (HA), Romania (YO) and Yugoslavia (YU). Located on the Isle of Wight (IO90) the station of **Dave Edwards G7RAU** worked ten Romanian stations between 1708-1733UTC. All stations were situated in either KN34, 35 or 36 locator squares showing how geographically selective Sp-E openings can be. His longest distance contacts were with YO4GJH at 2243km, YO3IZI at 2217km and YO4RHK/P at 2167km.

There were two events on the following day, Sunday June 2. The first between 1325-1355UTC to Croatia (9A), Greece (SV) and Italy (I) and a later opening between 1710-1830UTC to Croatia, Hungary, Italy and Slovenia (S5). This event covered a large swathe of the UK from the south-east coast of England, through the Midlands and over to Northern Ireland.

Reg Woolley G8VHI (Warwickshire IO92) reports only working one station, LZ1KWT (2312km) on June 1 but managed to work 13

Italian stations in the opening on June 2. His furthest DX made between 1339-1424UTC was with the station of IK8YFU (JM88) at 2072km. The station of G7RAU was again in the thick of the action making 41 s.s.b. contacts between 1318-1435UTC with stations in Greece and Italy. His contacts included the stations of SV2DCD (2089km), SV3CYM (2278km) and SV6DBG (2117km). Later in the evening between 1752-1805UTC Dave made s.s.b. QSOs with HA5OV and YU7EW.

Pista YU7EW (KN05) reports that between 1737-1752UTC he contacted the stations of EI2FSB, EI3EBB, EI5FK, EI7GL, EI9GQ, G3VXR, G7RAU and M5FUN. On the previous day June 1 at 1729UTC, Pista made a solitary s.s.b. contact with the station of G4LOH (IO94) with 59 signals both-ways.

Enrico Baldacci I5WBE (JN53) mentions making a total of 17 QSOs with UK stations between 1403-1430UTC on June 2. His s.s.b. contacts included the Welsh stations of GW3HWR, GW6TYO, GW8ASA, GW8JLY and MW0AXA.

On Bank Holiday Monday June 3 there was another series of Sp-E openings. The first commenced at 0740UTC lasting until 0915UTC enabling contacts to be made with stations in Croatia and Italy. At around 1315UTC there was a brief opening to Portugal (CT) followed around 1400UTC by an event to Italy, Portugal and Spain (EA). This opening lasted until 1455UTC.

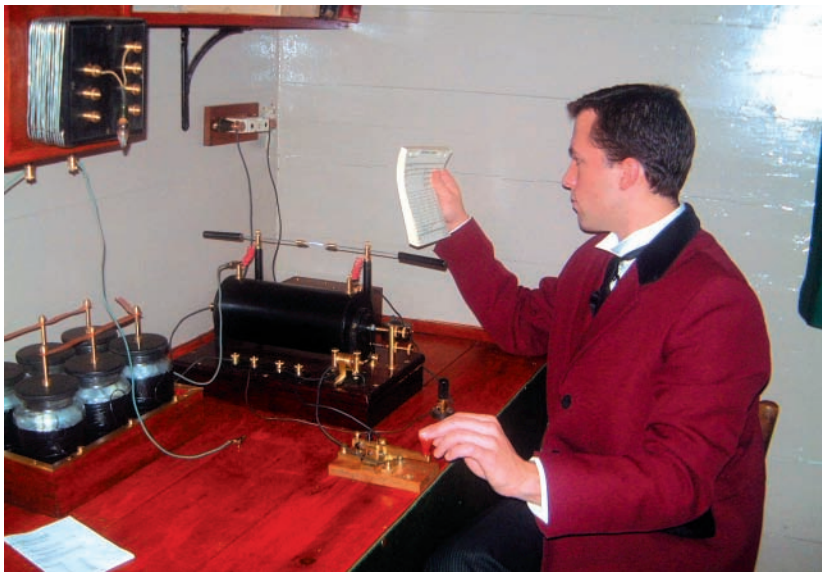
In the early evening between 1710-1740UTC there was another opening, again to Italy. Reports show that UK stations participating in these events were located between Dorset on the south coast of England, Wales, the Midlands and up as far as North Yorkshire.

The early morning opening was patchy according to G7RAU. Nevertheless Dave still managed to work five Italian stations between 0742-0819UTC.

At my QTH (Herefordshire IO81) three s.s.b. contacts were made between 0808-0813UTC with the Italian stations of IW0GPN (1601km), IZ0DGE (1616km) and IK0BZY (1620km). At the station of G8VHI a contact was made at 1420UTC with CT1HZE (IM57) for country No. 40. Reg G8VHI has recently increased his transmit power from 25 to 200W with a TE Systems amplifier. It certainly seems to be paying off. No doubt the pair of 14-element Cushcraft Yagis also helps!

You don't really need large antennas to make Sp-E contacts as the results from **Alessandro IK8YFV** show. He made over 90 s.s.b. contacts in the afternoon using only a vertical antenna and a 40W transmitter. He reports contacting the UK stations G0COL, G0UYC, G3LQR, G4HGI, G4KWQ, G4SWX, G8AZA, G8VHI and GQ0OOO. It's all a matter of being in the right place at the right time!

The right place is probably Italy as stations located there experience far more Sp-E openings on the 144MHz band than we do in the UK. **Alex Carletti IW0GPN** (JN62) uses a Yaesu FT-736R transceiver and a 16-element Yagi. During the Sp-E opening on June 2 he made 60 contacts in one hour, 35 being with stations in England and Wales. Amongst these were the stations of 2E1IDX, GW3MFY, GW4VBM, GW8JLY and MW0AXA. In the opening between 0746-0821UTC on June 3 he worked a further 10 UK stations.



● A re-enactment of Marconi's over the horizon experiments from the Lizard Wireless Station, Cornwall. The Marconi Company went on to pioneer v.h.f. and microwave 'over the horizon' communications.

SPORADIC-E ON 144MHz

A few months ago I had mentioned that it is exceedingly rare for Sp-E propagation at 144MHz to appear from the north and north-east of the UK. (Normally the favoured paths are between east through to south.)

The opening on the Jubilee Holiday, Tuesday June 4 to Estonia (ES), Finland (OH) and Lithuania (LY) was therefore quite rare! It lasted around 30 minutes between 0830-0900UTC with stations in southern England and East Anglia getting in on the action. Dave G7RAU was one of them! Running 400W of s.s.b. into a pair of 9-element Yagis he worked five Finnish stations between 0818-0833UTC. All were over 2000km, the best DX being OH5KE (KP30) at 2067km.

The next Sp-E event occurred on Saturday 8 June between 0945-1130UTC. The 144MHz band wasn't open for all of this time as the Sp-E cloud was forming, dispersing and then re-forming over a period of time.

The opening was really good with some excellent DX being worked by stations throughout much of England and Wales. (Sorry Scotland - you just get the Auroras!) Contacts were made into southern Spain (EA7), Morocco (CN) and the Canary Islands (EA8) with distances approaching 3000kms. Some of the DX reported on the 144MHz band included CN2DX (IM63), EA7HBP (IM67), EA8BPX and EB8BTV (IL18).

Two openings occurred on Monday June 10, the first between 1145-1205UTC to Morocco and Portugal and the second between 1845-1850UTC to Italy and Romania. The stations of CT1EPS (IN57) and CN2DX were heard working a few stations in England and Wales.

Activity was much reduced as the openings were fairly short and took place at the beginning of the week when many operators were at work. Another Sp-E event was recorded on Wednesday June 19 between 1350-1400UTC to stations located in Italy. The opening was quite brief with little activity being noted. Enrico I5WBE mentions working into the UK between 1354-1356UTC. In this 3-minute period he contacted G0BBB, G3BNE, G3YVR, G8IZY and M3TOK.

The final Sp-E opening of the month occurred on June 20. A small event to Italy and Malta (9H) between 1325-1345UTC heralded a much larger event in the early evening. This lasted for over half an hour from 1710-1745UTC with the 144MHz band open to stations in Croatia, Hungary, Slovenia and Yugoslavia.

I caught the mid-afternoon opening at 1334UTC when I heard the station of 9H1XT (Malta) calling CQ in c.w. on the s.s.b. calling frequency, 144.300MHz. His signals were peaking 579 over a path of 2300kms.

At 1337UTC an s.s.b. contact was completed with the station of I8MPO (1830km) with 59 reports both-ways. Dave G7RAU was pleased to catch the opening later in the evening. Between 1710-1738UTC he worked 10 Yugoslav stations, HA3HV (JN86) and 9A2SB (JN95). Not bad for a line-of-sight band is it!

DEADLINES

That's it again for another month. Forward any news, views, comments or photographs to the address and by the date given at the top of the column.

Good luck with DX in the Perseids meteor shower in early August. 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 MASON GW0VSW ROUNDS UP THE LATEST NEWS FROM THE HF BANDS

My review of the Radio Works Carolina Windom antenna in last month's issue has generated a good deal of interest judging by the mail box this month! **John Thexton G3URE**, Twickenham said "I was extremely interested to read your article in last month's *PW* and to learn of your findings. After a 25 year seperation from active radio whilst working overseas and where radio was prohibited, I entered retirement with a degree of regret because my chosen retirement home is in a small block of flats. The erection of antennas is beset with problems, so I would still be unable to actively pursue my radio hobby. Hopes for a solution to the problem arose last year when Yaesu introduced the FT-817 and I saw its transportability as my salvation. It would be easy to take the little rig with me when I visited my daughters in Bath or Chiswick on baby-sitting duties and then I could operate /P.

Realising that my daughters' gardens were ideal for more normal sized antennas, I lashed up a 7MHz dipole and immediately found myself enjoying many s.s.b. contacts on 7MHz with just 5W. Truly, you don't need vast power to make contacts.

"I decided that the Carolina Windom was likely to offer wider capabilities, especially the 7MHz version you reviewed. About the same time, I decided to purchase the Icom IC-706 MkIIG with Heil electret boom microphone and later added the matching autotuner.

"Since using the Windom with the IC-706 I have been receiving embarrassingly glowing reports on strength and quality. I can now quickly swap my antennas to make realistic comparisons between the dipole and Windom. Although, I strongly favour the Windom I have found that both antennas perform well, but there seems to be a marked reduction of static received 'noise' when using the straight dipole. Probably the active 3m long vertical element of the Windom picks up more local static than the horizontal. Neither can be elevated more than 5m in height and in the Bath location, the alignment is decidedly dog-legged and closely follows the sloping ground. Meanwhile, I'm still searching for ideas to overcome my home location antenna problems and will now try the ATX with a simple counterpoise cut for 7MHz".

Thanks for all the information John and I hope you find a way to operate from your home QTH soon. If any other readers have had similar antenna restrictions and have found ways to overcome them please let me know.

AFGANISTAN OPERATION

Chris Vernon has been active from Afghanistan as **YA/G0TQJ** using his FT-890 and a Windom antenna at 45 feet and had good openings in to EU around 1600UTC. Chris say's "I have been mainly active on 21MHz s.s.b. and RTTY but because of heavy QRN I am unable to operate any lower than 14MHz. I have only worked one station on 18MHz so far, G0UIH, with the QRN at S5-7 and 28MHz has been very hit or miss. A QSL card will be produced when I return to UK". Glad to hear that all is going well Chris and I hope the conditions improve before you return home.

DX NEWS

The popular annual International Lighthouse and Lightship Weekend will be held from 0001UTC on 17 August through 2359UTC on the 18 August. There are already 27 countries taking part with 100 announced operations so far. Further information can be found at the official website for the event **http://vk2ce.com/illw**

Two operators who will be taking part will be Volker DL1WH and Peter DL2RPS who will be operating as DL0FFF from the lightship *Fehmarnbelt* in Lubeck 15-18 August. This will be the first Amateur Radio activity to take place from this ship and both s.s.b. and c.w. will be used. Please QSL via the bureau or direct to DL1WH.

In France the Chatelleraud Radio Club will activate a special event station **TM2CCM** to celebrate the World Championships for hot-air balloons from 18 August to 1 September. Please QSL via the bureau to F5KOK.

Further afield Peg KB9LIE and Paul K9OT will be active as **FP/KB9LIE** and **FP/K9OT** from Miquelon Archipelago NA-032 on 11-19 August. They will operate s.s.b and c.w. on 3.5-28MHz and will also attempt 1.8MHz using 100W to wire and vertical antennas. Special emphasis will be on 10, 18 and 24MHz bands and QSLs should go via their home calls. They will also participate in the North American QSO Party using s.s.b as **FP/K9WM**. K9WM is the callsign for the Green River Valley ARS who have an interesting website at **www.qsl.net/grvars/** All QSL cards for FP/K9WM go via NN9K.

Finally, if you need French Polynesia keep a look out for Paolo who will be active from the Island of Bora Bora OC-067 between August 10-14th as **FO/IK2QPR**. Activity will be all bands from 3.5-28MHz using s.s.b. and c.w. QSL via Paolo Fava, IK2QPR, Bertani 8, 46100 Mantova, Italy.

YOUR REPORTS

On to your reports now and it appears that most of you found conditions this month either non-existent, patchy or at best mediocre! However, it's not all bad news as the logbooks of our reporter's show. They have certainly managed to weed out some good DX despite the poor propagation.

In Kendal, Cumbria **Roy Walker G0TAK** found the static noise on 7MHz "very high" for most of the day. Using c.w. 5W CQ calls resulting in only a few replies outside the UK. F2YV (France) at 1526 and PA1MAX (Netherlands) at 2050UTC.

A change of band to 10MHz improved things slightly with HB9LCY/QRP (Switzerland), I1GZG, (Italy), TM8ZV/P (France) and DJ3VI/P (Germany) all making Roy's log. The equipment used was an Index QRP Plus, Alinco EDX tuner and 3.5MHz long wire loop.

THE 14 & 18MHz BANDS

All c.w. man **Ted Trowell G2HKU**, Isle of

Sheppy found 14MHz "abysmal at times" but still managed to work R1MVI (Malyj Vysotskij Island) with 5W QRP at 1500 followed by 100W contacts with A61AJ (United Arab Emirates) 1700, FM5GU (Martinique) at 1900, TA0/Z37M (Turkey) and EA9EU (Ceuta & Mellia) at 2100UTC. The equipment used was a Ten Tec Omni V or IC-721S and G5RV or HF6 vertical antenna.

Martyn Medcalf M3VAM, Chelmsford, Essex used s.s.b. from a IC-746 and SGC-237 tuner with 27ft of wire to work OH0/OH1TD (Aland Island) 1734, 9H4JB (Malta) 1743, 3A2MY (Monaco) 1755, RF3A (European Russia)1826, LY2FY (Lithuania) 1833, EK3GM (Armenia) 2318 and Z32XX (Macedonia) 2355UTC all despite mediocre conditions.

In Scotland **Colin Topping MM3ACL**, Gauldry, Fife managed a few hours operating in the late evening. First station in the log was 9A2LM (Croatia) 2230 followed by a new country OA4AJO (Peru) who answered Colins CQ call at 2240 and finally 9K2MU (Kuwait) at 2258UTC. All contacts made with 10W s.s.b. from a IC-706MkII, HB Pi-Match and G5RV antenna.

Owen Williams G0PHY, Biggleswade, Bedfordshire made 100W s.s.b. contacts with OJ0R (Market Reef) at 1158 followed by MJ/F8CUR (Jersey), a French expedition to Les Minquiers at 1400UTC. The antenna was a dipole.

On 18MHz Ted G2HKU found an opening between 1900 and 2000UTC working BQ9P (Pratas Island) QSL via KU9C, R1ANF (South Shetland Island) QSL via RK1PWA, XW0X (Laos), JA7BXS (Japan), KP4SQ (Puerto Rico) and KG4IZ (Guantanamo Bay). Also operating on 18MHz **Mike Baker G3SUK**, Stowmarket, used his IC-746 with 80W to a Carolina Windom to make all s.s.b. contacts with DT6FW (South Korea) at 1927 followed later at 2156UTC by RA0FA (Asiatic Russia) on Sakalin Island AS-018.

THE 21 & 24MHz BANDS

On 21MHz Mike G3SUK found conditions "slightly better" and worked 9K2XX (Kuwait) 2055, YM0KA (Turkey) on Alibey Island AS-099 at 2138, JA5WNH (Japan) 2206 and TK/IK2WZM (Corsica) 2254UTC. A long list of contacts here for **Robin Trebilcock GW3ZCF**, Bishopston near Swansea who was using PSK31 once again with an IC-775 and 50W output into a horizontal loop. Stations worked included 8P9AM (Barbados) 1148, KP4VP (Puerto Rico) 1508, VR2GI (Hong Kong) 1601, BX4AAC (Taiwan) 1622, YE1D (Indonesia) 1853, ZF1VX (Cayman Islands) 1902, HF0POL (South Shetland Island) 1905, VU3DMP (India) 1948 and JA8GG (Japan) at 2233UTC.

I must thank Robin for his help in getting me up and running with PSK31. Several conversations on the telephone and 14MHz finally sorted out my software problems and it was not long before I was busy chasing the DX!

The 10W s.s.b. of Martyn M3VAM reached JW0HR (Svalbard), RA9FLW (Asiatic Russia) and UR5TW (Ukraine) around 1815UTC. Martyn has also been helping students complete a Foundation Course and during an evenings demonstration was pleased to receive a 5/4 report from CT3FT (Madeira Island) using an FT-817 with 5W output. The antenna was a Miracle Whip mounted on a convenient table.

Tiff. 1: Chris Vernon has been active from Afghanistan as YA/G0TQJ.

It was good to hear from **Mark Hampton M5MDH** in Eastleigh, Hampshire who has started a new job and has not been able to spend too much time on the h.f. bands. The DX this month using s.s.b. includes KC1XX (U.S.A.) in New Hampshire 1034 followed later by KP4XA (Puerto Rico), SM6GNL/QRP (Sweden) and JQ6KYV (Japan) around 1215 and 7Z1AC (Saudi Arabia) at 1655UTC. On the 24MHz band Mark made just one contact, A41LZ (Oman) at 1355UTC.

Two other reporters list contacts on 24MHz. Ted G2HKU found ET3PMW (Ethiopia) and OD5/OK1MU (Lebanon) at 1500 followed a few hours later by TN3W (Congo) QSL via EA3BT and a change of mode here for Robin GW3ZCF who found KE7X/6Y5 (Jamaica) at 1135 on c.w. and D44TD (Cape Verde) s.s.b. at 1827UTC on what appeared to be a very quiet band..

THE 28MHz BAND

Finally, the 28MHz band where most of our reporters seem to have spent some time. Owen G0PHY lists just one s.s.b. contact with TN3B (Congo) at 1100UTC, getting the Spanish Expedition first call.

On the key, Ted G2HKU managed PY7IQ (Brazil), HZ1AB (Saudi Arabia), P40Y (Aruba) and OC2WW (Peru) between 1500 and 1900UTC. The chosen mode for Mark M5MDH was f.m. who found conditions very good for a short time in the morning.

Mark heard and worked 3V8BB (Tunisia) at 0919 and say's "The Tunisian operator was working Japanese stations and I was amazed to finally hear some good signals from several stations in Japan a few minutes later. Unfortunately, despite several attempts, I was unable to work JH7DFZ and JA8NFV". Slightly later, around 1210 Mark worked P4/W1USN (Aruba) and 9J2BO (Zambia) QSL via G3TEV both using s.s.b.

Robin GW3ZCF worked AP2IA (Pakistan) 1110, ZX2B (Brazil) 1459, 4Z4DX (Israel) 1708, AY2EC (Argentina) and CX5UR (Uruguay) at 1845UTC all with PSK31.

SIGNING OFF

That about wraps it up for this month. Although conditions have not been so good our reporters have once again managed to dig out the DX.

My thanks to you all for your reports, letters and E-mails. Keep up the good work. Thanks also to **Mauro Pregliasco I1JQJ/KB2TJM** editor of *425 DX News* for the DX information.

73, Carl GW0VSW

PW LISTENING & OPERATING WATCH LIST. (ALL TIMES UTC)

Sean Gilbert G4UJC operates around 0700-1100 and 2100-0000 7 days a week on all bands using an IC-746 and loft mounted G5RV dipole antenna.

Rob Mannion G3FXD's station at his new home is not yet fully operational but he is working most days on 7, 18 and 28MHz from his car using an Alinco DX-70 running c.w. and s.s.b. at 50W to Pro-AM mobile whips. He's on 7MHz around 1700 (clock time) most weekdays on the way home from office (c.w. and s.s.b.) when he parks up for 30 minutes.

Carl Mason GW0VSW listens and operates on 7030/14060 most mornings at 0700 with a FT-817 and inverted Carolina Windom.

Don McLean G3NOF operates 1030 Saturdays on 3.685MHz on the ISWL Net or 1030 Sundays on the Yeovil ARC Net on 3.665MHz using a Kenwood TS-950 and trapped dipole antenna.

George Woods G3LPT operates an open net on 29.630 n.b.f.m. 0830 Tuesday to Friday.

John Wheeler G0IUE monitors 28.600 n.b.f.m. every evening between 1730 and 2230 regardless of conditions using a Yaesu FT-920 transceiver running 100W and 2-element tri-band beam.

KEYBOARD COMMS

ROGER COOKE G3LDI

THE OLD NURSERY
THE DRIFT
SWARDESTON
NORWICH
NORFOLK
NR14 8LQ
TEL: (01508) 570278
E-MAIL:
rcooke@g3ldi.freeserve.co.uk
PACKET: G3LDI @ GB7LDI

ROGER COOKE G3LDI HAS NEWS OF NEW PROGRAMS, AWARDS AND A SUPER COMPUTER!

If you have ever toyed with the idea of working EME or meteor scatter, then the *WSJT* for weak signals program could be just what you need. Read on, download the program and try it!

The name of the computer program *WSJT* stands for Weak Signal communications, by K1JT. The program currently supports two digital signalling modes.

The first signalling mode, FSK441, is designed to support communication using the very brief pings from meteor trails in the ionosphere. The second mode, called JT44, is designed for extremely weak but roughly constant signals such as those found on troposcatter, ionoscatter, and Earth-Moon-Earth (EME) paths. Both modes provide very significant improvements in sensitivity over traditional c.w..

The mode JT44 is an exciting new weak signal mode invented by **Joe Taylor K1JT**. It is based on the mode PUA43 invented by **Bob Larkin W7PUA**, that runs on the DSP-10. JT44, however, can run on any soundcard in a Microsoft Windows Environment, and thus should run on any modern rig with good frequency stability and s.s.b. capability.

The JT44 mode is a time-synchronised frequency shift keying mode that uses one tone frequency to provide frequency and time synchronisation for the communicating stations, and another 43 tone frequencies to encode 43 permissible characters. It differs from PUA43 in its use of the 44th tone for synchronisation. The PUA43 system achieves synchronisation by means of specially designed hardware; this allows for more efficient encoding in PUA43, at the expense of loss of applicability to a wider range of hardware.

Each JT44 transmission lasts approximately 25.08 seconds, containing 135 intervals of data. 69 of these intervals contain only the synchronising tone, and the other 66 contain the encoded data. The synchronising and data intervals are interleaved in a pseudo-random pattern such that the auto-correlation function has a large spike at correct alignment, and very small values elsewhere. This property allows JT44 stations to achieve alignment with each other without the need for special hardware. There are still some calibration experiments to be done where the power level is systematically reduced and the effect on integrity of data transmission assessed.

Version 2.0.1 of *WSJT* is now available. If you have not used WSJT before or even if you have be sure to read the Users Guide and Reference Manual. This is available at: **http://pulsar.princeton.edu/~joe/k1jt/wsjt201.pdf** If you download the full version of the program, the manual will be included as a PDF file, for which you will need Acrobat reader.

If you have already installed version 2.0 or later of *WSJT*, download the self-extracting zip file UPD201.EXE (approximately 0.37MB) to upgrade to version 2.0.1. Execute this file in a convenient directory such as C:\TEMP, and direct the installation program to use your existing WSJT installation directory.

To prepare for a full installation of *WSJT* Version 2.0.1 from scratch, download the file WSJT201.EXE (approximately 5.4MB) and execute it to install *WSJT* to a directory of your choice. Be sure to print and read the PDF-formatted manual.

A lot of effort has been put into writing a clear, comprehensive, an illustrated *Users Guide and Reference Manual* for *WSJT*. You will do yourself a big favour by printing and reading the manual carefully.

The manual is included in both the update and full-installation self-extracting archives, so you do not need to download it separately. *WSJT* is a complicated and multi-faceted program and you will not get the most out of it without using the manual.

SENSITIVITY

If you are curious about claims that JT44 makes possible EME and other QSOs at signal levels that would be unintelligible with c.w., try downloading and examining a collection of wave files that **GM4JJJ** recorded from K1JT during an EME contact. The files are available as a self-extracting Zip file from **http://pulsar.princeton.edu/~joe/k1jt/eme_qso.exe**

After executing the file to unzip its contents, you can open the wave files using your own copy of WSJT (version 1.9.4 or later) and see how they decode, doing so should produce a WSJT screen. You may also wish to listen to the files and play them into Spectran, FFTDSP, Linrad, or other DSP processing of your choice. The signals in these files are some 6 to 9db stronger than the weakest ones presently decodable by WSJT. You may also look at the programs Set-up and Options screen for entering various station preferences.

GETTING STARTED

To get started with WSJT/JT44 EME You will need *WSJT* software with latest upgrade plus Dimension 4 Software and a RigBlaster or similar device.

1. First of all, download WSJT100.ZIP and install it. It will normally install to c:\program files\wsjt directory
2. Next download WSJT latest upgrade and un-zip it in same directory as WSJT100.ZIP installed to c:\program files\wsjt
3. Next download Dimension 4 software and install it.
4. Set Dimension 4 to update your PC clock about every 1-2 minutes.
5. Get a RigBlaster or similar device to hook your rig to your PC serial port.

Basically the PC serial port keys your rig. The PC sound card then sends transmit audio to your mic input via the sound card line-out. On receive you hook your rig speaker out to your PC sound card line input.

In a nutshell that is it. Look on main jt44-eme page for where to get all this and how to configure it. This is just the very basic's on how it all works.

OTHER SITES

Here are some other excellent WSJT / JT44 links for you to take a look at:

W8WN's Hot News Page
http://www.qsl.net/w8wn/hscw/papers/hot_news.html

WB5APD's JT44 EME Page
http://www.qsl.net/wb5apd/jt44-eme.html

JT44 Activity Logger (Live)
http://www.chris.org/cgi-bin/jt44talk

DK5YA JT44 Forum
http://www.vhfdx.de/cgi-bin/yabb/YaBB.pl

DIGITAL PREFIX AWARDS PROGRAM

The Penn-Ohio DX Society (PODXS) recognises the achievements of Amateur Radio Operators world-wide, for confirming two-way communication by offering its new Digital Prefix Awards Program. This award is available in MIXED, RTTY and PSK31 but more are coming out.

If you feel that you qualify for a non-listed digital mode, please request that we review your information. All applications must use the PODXS DPX Application Form (PODXS form 3-36), and the Endorsement List Form (PODXS form 3-37) both of these including the DPX Rules can be downloaded, see below. Complete all the forms, enclose your application fee and send to **PODXS DPX Awards Manager, Ernie Mills, WM2U, 9 Morningside Dr. Ballston Lake, NY 12019-1531, USA. E-mail: wm2u@qsl.net**

Please note that regardless of method of generation, c.w. is not considered a valid mode for this award. The certificates will be mailed out unfolded in a 9x12 envelope.

To apply for the Basic Certificate for the Digital Prefix Awards Program you shoul fill out the Application Form (PODXS 3-36) completely. You must fill a separate form out for each Basic Certificate and attach an Endorsement Form (PODXS 3-37) showing your claimed prefix contacts.

You can include any number of Prefix, Band and/or Continent endorsements on a single application Form (PODXS 3-36) but submit a prefix list, one for each, on Form (PODXS 3.37) and clearly title it.

Operating Modes: RTTY is normal Teletype operation. PSK modes are BPSK, QPSK and PSK10. Mixed is RTTY, PSK, and may include other modes like: MFSK, Hellscheiber, Throb and MT63 etc.

Each Prefix upgrade, Band or Continent endorsement must have a separate Endorsement List Form (PODXS 3-37) completely filled out and showing the endorsement type clearly. Multiple prefix claims (increments of 50) for the same application can be included on the same form.

Enter the complete callsigns in alphabetical order and make sure that any portable prefix is in its proper position. i.e. G3/WM2U would count as G3. i.e. The portable prefix is a prefix not a suffix. Suffixes indicating maritime, mobile or portable operations or suffixes indicating interim license class prefixes are not valid.

Any portable prefixes without numbers must be designated zero (0). AIR counts as AI0. Band endorsements are available for working the following number of prefixes on these bands: 50 on 1.8MHz, 175 on 3.5MHz, 250 on 7MHz.

Continent endorsements are available for working the following number of prefixes per continent: North America (NA) 160, South America (SA) 95, Europe (EU) 160, Africa (AF) 90, Asia (AS) 75 and Oceania (OC) 60. When applying for a prefix upgrade endorsement, send an alphabetically ordered list of the additional prefixes being claimed over the last endorsement, or a Xerox copy or computer print-out of your complete prefix list but maintain a similarity to the Endorsement Form (PODXS 3.37)

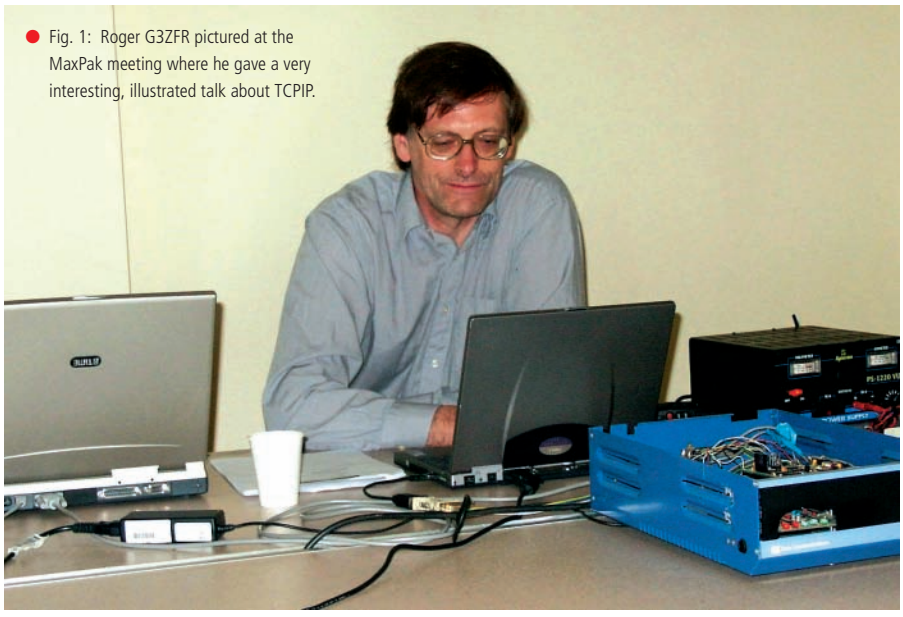


Fig. 1: Roger G3ZFR pictured at the MaxPak meeting where he gave a very interesting, illustrated talk about TCPIP.

Remember to include your application fee: PODXS 070 Club members $3.00 (or 4 IRCs) and indicate 070 certificate number. Non-070 members $6.00 (or 8 IRCs). Endorsements Stickers, $1.00 (or 2 IRC's) (All funds quoted in US dollars).

Why not join the 070 Club and save yourself $3.00? The 070 club is free to join. Go to **http://www.qsl.net/ag4cz/070.htm** and fill out the form. If you need more information about the 070 Club see **http://hometown.aol.com/n3dqu/podxs070.htm** Once a year the Top Ten (highest total of confirmed prefixes per award issued) will be posted on the PODXS web page at **http://hometown.aol.com/n3dqu/podxs.htm**

MAY MAXPAK

The photo **Fig. 1** shows a picture of **Roger G3ZFR**, taken at the May MaxPak meeting when he gave a very interesting, illustrated talk about TCPIP. The meeting was well attended and some people even travelled from Derby and Coventry for the talk, which was held at the MaxPak HQ in Perton, near Wolverhampton!

SUPER COMPUTER

A new Japanese super computer has taken the title of world's fastest away from an American computer, zipping along nearly five times faster than its closest competitor. The NEC Earth Simulator which creates a 'virtual planet Earth' to predict climate patterns tops the 2002 list of fastest supercomputers.

According to **Jack Dongarra**, a University of Tennessee computer science Professor who leads the group of researchers that tracks the world's 500 speediest computers "The climate industry in the US has had inferior machines for a number of years".

The NEC Earth Simulator, as large as four tennis courts, works at a speed of 35,600 gigaflops. A gigaflop equals a billion mathematical operations per second. The top-ranked computer on the list's November 2001 edition, IBM's ASCI White, runs at a speed of 7,226 gigaflops.

A computer capable of calculating complex equations so quickly could save lives and property by predicting typhoons and other severe weather. Jack added: "Math gives us this wonderful crystal ball to predict the future".

"The new supercomputer, housed at the Yokohama Institute for Earth Sciences, is a breakthrough not just for Japanese technology but scientists everywhere, said Dongarra. He expects US researchers and others to try to tap into Earth Simulator's massive computing power".

If you want to know more take a look at the following:

Earth Simulator
http://www.jamstec.go.jp/jamstec-e/earth_simu/index.html

Top 500 List
http://www.top500.org/

NEC

http://www.nec.com/

AND FINALLY...

A Dell customer called to say he couldn't get his computer to FAX anything. After 40 minutes of troubleshooting, the technician discovered the man was trying to FAX a piece of paper by holding it in front of the monitor screen and hitting the Send key!

Yet another Dell customer called to complain that his keyboard no longer worked. He had cleaned it by filling up his tub with soap and water and soaking the keyboard for a day, then removing all the keys and washing them individually. And you think **you** have problems!

Roger G3LDI

TUNE-IN

TOM WALTERS
P.O. BOX 4440
WALTON
ESSEX
CO14 8BX

E-mail: tom.walters@aib.org.uk

TOM WALTERS ROUNDS-UP THE LATEST BROADCASTING SCHEDULES AND HAS NEWS OF A NEW BOOK TO HELP YOU LOCATE THOSE STATIONS

I've received a rather sad E-mail from Terry Ibbitson, who lives near Wakefield. Terry is very depressed about the number of short wave stations that he says this column lists as going internet-only and misses the thrill of his early days, tuning in to Radio Australia.

Terry, don't get too fed up! With exceptions such as **Swiss Radio International** and the **BBC**'s short wave service to North America and the South Pacific, most other stations are still in business. In the latest *Global Broadcasting Guide*, the **Association for International Broadcasting** lists over 90 stations, many of which still operate complex schedules. It's true that stations are cutting out some transmissions, but the big stations such as the BBC, **Deutsche Welle**, and the **Voice of America** still operate in around 40 languages, on short wave, together with f.m., Internet and satellite services.

Terry also says that short wave listening today is too easy. In answering this I say, well, yes and no. Stations want to be heard and they want maximum audiences, so they have had to improve their delivery of short wave signals, often by using relays in other countries, as well as improving transmitter audibility. But planning a short wave schedule that will work reliably is an art as a science.

Engineers have to put out a whole array of frequencies, in the hope that one or more of them will work at any one time. Some of their coverage charts show frequencies more in hope than in reality.

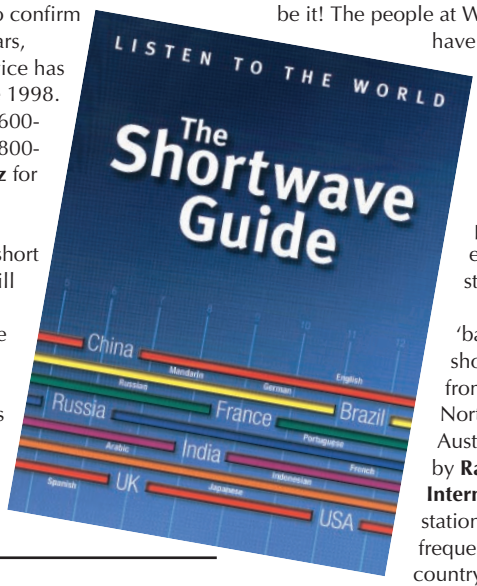
But after all this it seems that some broadcasters still don't actually take enough trouble to get the information out. Take **The Voice of Greece (VOG)**, a while back I had a bit of a go at them about the information on their web site, which has the extraordinarily long address of **www.alpha.servicenet.ariadne-t.gr/Docs/era5eng/informationeng.htm** Amazing as it may seem, this address actually does get you to their site. But when you download their short wave transmission schedule –you get a schedule dated 1998-99!

None of the three published E-mail addresses for VOG works. You have to telephone – making sure that they haven't gone home for the afternoon. I did this, and in the end a charming lady promised an up-to-date schedule, which arrived by E-mail very quickly. The lady's E-mail is **b.charalabopoulos@ert.gr** I hope that by the time you read this, they've mended their ways!

The new schedule for the Voice of Greece tends to confirm Terry Ibbitson's worst fears, because the English service has contracted sharply since 1998. It is now Europe-only: 0600-0650, 0700-1000 and 1800-1900, all on **15.630MHz** for the current period to October.

But cheer up Terry, short wave is **not** dead and will not die for decades to come and there's still the 'thrill of the chase' in tracking down the more difficult stations. What is happening is that stations are going multi-media, to make sure that they catch audiences by one means or another.

Most of the more advanced stations offer audio on the Internet in addition to short wave and sometimes satellite. Other stations take just as much tracking down as ever.



RADIO FINLAND

Of course, Terry, you could get cast back down again by a report that **Radio Finland** is to hack away at its foreign language services. Shortwave broadcasts in English, French and German, it is said, will end in October. Well, this kind of announcement was made by **Kol Israel** not long ago. **There was such a rumpus that the cuts were withdrawn.**

The station **YLE Radio Finland** currently broadcasts in English at 0630-0658: **Europe, Asia, Pacific, 1**5.135, 21.670 (Sat: 15.330, 21.520MHz) and at 1230-1259: America 15.400, 17.660 (Sat: 11.990, 13.730MHz), also in Finnish, Russian and Swedish. Protest now while you can – **YLE Radio Finland, Box 00024 Yleisradio, Finland**, E-mail: **rfinland@yle/fi**, FAX: **+356 9 1480 1169**, Website: **www.yle.fi/rfinland**

NEW SHORTWAVE GUIDE

I've checked the contact information for YLE Radio Findland in a new book from **WRTH Publications** (the World Radio TV Handbook as was) called *The Shortwave Guide*. If anything can cheer Terry Ibbitson up, this must be it! The people at WRTH publications have had so many requests for specialised international broadcasting information that they have published this new very glossy 208-page book, listing every short wave station.

The book uses the 'bar chart' format showing every channel from **2.310MHz** in the Northern Territories, Australia, to **25.820** used by **Radio France International**. All the stations sharing each frequency are listed, with country and transmitter power. The very clear bar chart shows each language in a different colour, with each bar carrying the target area and the days of the week when the frequency is used. This is backed by a well-written introduction to short wave listening, a World Time Table, and a Directory of International Broadcasters, with full contact details.

The *Shortwave Guide* is a work of great scholarship, with contributions from very well-known names in the DX world, such as Anker Petersen, Dave Kenny and Bob Padula. The only problem I can foresee with this excellent production is that while it enables you to identify what is on a particular frequency and can give you back the 'thrill' of chasing the more obscure stations, there is one important omission – it doesn't also list frequencies by time or station. To find all the frequencies used by a given station, you would need the brain power of a very mighty computer!

The Shortwave Guide can be purchased from the PW Publishing Book Store for **£12.99** plus P&P. To place your order contact the Book Store on **(01202) 659930**. Additionally you may also be interested in the *Global Broadcasting Guide* which is a booklet listing stations broadcasting in English and their frequencies. Copies of the *Global Broadcasting Guide* are also available from the PW Book Store prices **£2.25** plus P&P.

Bye for now, Tom

Trader's Table

Disclaimer

Advertisements from traders for equipment that is illegal to possess, use or which cannot be licensed in the U.K. will not be accepted. While the publishers will give whatever assistance they can to readers or buyers having complaints, under no circumstance will the magazine accept liability for non-receipt of goods ordered, late delivery or faults in manufacture.

THE SHORTWAVE SHOP

01202 490099

TRANCEIVERS

YAESU VX1 VHF/UHF TRANCEIVER £125
YAESU FL101HF TRANSMITTER £125
YAESU FR101 HF RECEIVER £139
YAESU FT101B HF TRANCEIV £195
YAESU F101E HF TRANCEIVER £125
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YAESU F747 HF TRANCEIVER £95
YAESU FT209 TRANCEIVER £55
ICOM IC2E TRANCEIVER £95
ICOM Q7E TRANCEIVER £185
ICOM IC207 TRANCEIVER £425
ICOM IC706 MK1 HF/2M MOBILE TCVR £295
ICOM IC725 HF TRANCEIVER £210
KENWOOD TS520S HF TRANCEIVER £495
KENWOOD TS850S+AT50 ATU £75
KENWOOD TH205 TRANCEIVER £125
KENWOOD TH28E TRANCEIVER £99
KENWOOD TH235E TRANCEIVER £85
AKD 7003 70CM TRANCEIVER £169
ALINCO DR590 TWIN BAND 2/70 MOBILE £425
TEN TEC CORSAIR 2 HF TCVR+PSU .....

MARINE TRANCEIVERS

SOWESTER MARINE £75
RT6000 TRANCEIVER £65
ICOM M3EURO £129

RECEIVERS

ICOM PCR1000 PC RECEIVER MARINE £225
ICOM PCR100 PC RECEIVER £125
ICOM IC7100 VHF/UHF/HF RCVR £475
ICOM ICR70 RECEIVER £299
AKD HF3 HF/WX FAX RCVR ETC £99
KENWOOD R5000 HF RECEIVER £475
KENWOOD R600 HF RECEIVER £185
AOR8000 PLUS PC INTERFACE £195
AOR 2700 H/H RECEIVER £135
AOR AR5000+3 HF/VHF/UHF RCVR £1095
NRD 525 HF RECEIVER £350
YUPITERU MVT7100 AS NEW BOXED £159
YUPITERU MVT7300 H/H £185
YAESU FRG7700 HF RECEIVER £125
YAESU VR500 WB H/H RECEIVER £145
YAESU FRG 7 HF RECEIVER £95
FAIRHAVEN VX500 RADIO DATABASE £499
RELISTIC DX394 HF RECEIVER £95

ACCESSORIES

ELH-730G UHF MOBILE AMP £65
30WATT WATSON 2 METRE AMP £65
AMERITRON HF 600WATT AMP £495
TINY 2 PACKET TNC (IDEAL UI_VIEW) £95
CODEMASTER £45
ZATAGI HP500 PWR/SWR METER £25
YAESU FTV107 TRANSVERTER £89
YAESU FP757HD PSU £95
ICOM SP21 SPEAKER UNIT £59
KENWOOD AT130 ATU £125
PACKRAT PK232 MODEM £95
SPECTRUM 10METRE TRANSVERTER £95
MFJ931 ARTIFICIAL GROUND £89
NRD RTTY BOARD FOR NRD 525/535 ..... £95
NRD TUNING INDICATOR UNIT £35
G4HCA HF 600WATT LINEAR AMP £425
WATSON WMM3 SSTV/UIVIEW/PSK31 ETC £39

NEVADA

023-9231 3090

VHF/UHF TRANSCEIVERS

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ALINCO DJ-191E 2M HANDHELD TRANSCEIVER £99
ALINCO DJ-580E 2M/70CM HANDHELD £129
ALINCO DJ-SR1 PMR 446 TRANSCEIVER £79
ALINCO DR-140E 2M MOBILE TRANSCEIVER £159
ALINCO DR-140E 2M MOBILE TRANSCEIVER £125
AZDEN AZ-61 6M HANDHELD TRANSCEIVER £65
KENWOOD TS-790E+PS31 2M/70/23CM BASE STATION £1195
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Icom IC-211E 2m (144MHz) 10w f.m./s.s.b. mains 12V. Original box, manual, mic, 12V lead, £150. Trio TR9000 2m 10W f.m./s.s.b. 12V copy of manual, slight fault at turn on, hence £90. Tel: Steve on (01329) 663673.

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Yaesu FT-101EE, £75. Mizuho SB2X, 2m (144MHz) s.s.b./c.w. portable, £85. Kenwood TH-46E 70cm (430MHz) f.m. hand-held, £85. Tel: Steve on (01329) 663673.

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WANTED

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Yaesu CPU2500 2m (144MHz) f.m. trans Heathkit HW101 h.f. trans etc., FT-107 h.f. trans with p.s.u. Ten-Tec Argosy h.f. trans. Ray G4OWY. Tel: (01305) 777691 after 6.30pm please. E-mail: g40wy@aol.com

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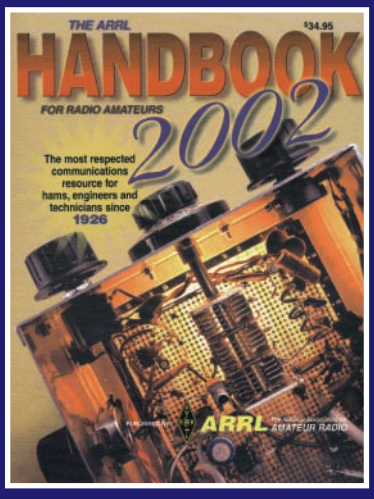

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topical talk 70TH ANNIVERSARY

In his Keylines editorial this month our Editor has paid tribute to the generation of Radio Amateurs who were active when *PW* was first published. In this - rather different - Topical Talk the *PW* team welcome someone at the other end of the age spectrum!

First there was the very successful 'Novice' scheme...of which there's no doubt...encouraged many keen young - and not so young - entrants into the radio hobby. At the same time it became obvious to many working in the hobby that the structured Novice Amateur Radio Examination (NRAE) course with its strong practical element showed up the traditional RAE. However, there are some Instructors who developed the 'Practical' side of their instruction to a fine art and dedicated Novice Instructor **Wyn Mainwaring GW8AWT** is one of the best examples we can think of here in Broadstone!

Wyn, a retired BBC Engineer is one of the most supportive readers you can imagine and there's not many of our regular authors who have not received one of his long hand-written letters. But living in beautiful mid-Wales (near Maenordeilo, not far from the scenic single line Shrewsbury to Swansea Central Wales Railway of which he's a keen supporter) he's best known for the tremendous efforts he and wife **Eileen 2W1BPS** provide in introducing and training newcomers. So, it seems appropriate the we also pay tribute to the 'up and coming' people who are joining the hobby...thanks to Wyn, Eileen and the legion of other supporters our hobby has...in every conceivable part of our group of Islands.

● Eleanor making component storage boxes from old oat-cake biscuit boxes (as he likes them...they're supplied by her Instructor Wyn!). Photograph courtesy of GW8AWT.

Youngest & Prettiest

Eleanor McGready is, at 11 years old, the youngest ("And prettiest" so says Wyn GW8AWT!) student since he became involved in training Novices. In fact Wyn says she was a mere one-seventh of the age of the oldest candidate for the Novice/Intermediate Amateur Radio Licence he'd met before!

However, the *PW* team think the best way to pay tribute to Eleanor and the many other keen newcomers...is to print her own words. And without further ado here they are!

"Dear Mr Mannion, my name is Eleanor, I'm 11 years old and attend the 1st Llandeilo Guides. Sometime I help Wyn GW8AWT and test l.e.d.s. (The blues and greens are my favourites!). I set both digital (to measure voltage) and analogue test meters to check the values of their series resistors. In the photo you can see my credit-card sized colour code card...and I get tested on my memory of the code. Not many girls seem to like radio/electronics...but I do! Best wishes from Eleanor ".

Thanks Eleanor! With such enthusiasm there's much hope for the future of the hobby, and everyone at *PW* wish you and your generation well and hope you enjoy the hobby which can last you for a life time! *PW*

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- External Control Function
- Increased Performance of SSB Data Mode
- USB Standard in CW Mode
- Changed Keyboard Lettering and Colour
- Improved Readability
- Increase in Noise Blanker Performance
- 8 New Screen layouts with 7 font styles
- SSB/CW Synchronous Shift Function
- ...and *sooooooooo* much more!!!

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