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'Six & Up' Classic



August 2002

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PRICE MATCH

FT-1000MP MKV FIELD

£2299

NEW

YAESU



Available
 Autumn

Super Antennas USA YP-2 Portable Yagi

Weights 7lbs
 Packs down to 3ft
 Covers 6m - 20m
 Mono band configure

£399.95
 carr. £6.00



Goes in aircraft cabin

Fits in car boot!

NEW

YAESU FT-897



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

Available
 Autumn

This amazing design has quick
 telescopic boom and elements
 plus screw-in loading coils. Takes
 only minutes to assemble for
 any one band. Support on 15"
 mast. Includes carry bag.
 Limited numbers available now.

YAESU

FT-1000MP Mk-V 200W HF ALL MODE

3 YEARS FREE WARRANTY



SPECIAL OFFER

FREE NEIL GOLD LINE MICROPHONE

£2899 carr.£9

FT-847 160m - 70cm ALL MODE

3 YEARS FREE WARRANTY



£1149 carr.£9

FT-100 D 160m - 70cm ALL MODE

SAVE



£899 carr.£6

FT-920AF HF 160m-6m-100W



100 Watts from 1.8 to 54MHz with dual VFO
 controls. Supplied with FREE FM unit.

£1099 carr.£9

FT-817 'SPECIAL OFFER' £595 C



The amazing FT-817 offers all-modes from
 1.8MHz - 440MHz with up to 5 watts out. Buy
 one of our "WALKABOUTS" antennas at the
 same time and **SAVE EVEN MORE!** We will give
 you an extra 10% DISCOUNT on the antenna!

INCLUDES AC CHARGER
 AND 1 AMP
 Ni-cad PACK

**NEW NEIL
 PRO-SET PLUS**

£199.95 B



The PRO-SET PLUS is for contest and DX operators. Dual
 microphone inserts and acoustically tuned chambers for
 the speakers. A speaker reversal switch places the signal
 in the centre of your head or creates a spatial widening
 sound field. The headset is also the ultimate in comfort
 with full adjustments possible.

KENWOOD

TS-2000 160m - 70cm+23cm OPTION

3 YEARS FREE WARRANTY



£1695 carr.£9

TS-570DG 160m - 10m All Mode

3 YEARS FREE WARRANTY



£849 carr.£9

TS-870 160m-10m 100W Advanced DSP



£1349 carr.£9

SGC

SGC SG-2020 £599 A



Ideal for GRP, but with VOGAD and RF speech
 processing it can sound like 100 Watts! Very
 low current (4A max) makes it ideal for portable
 work. Variable selectivity down to 100Hz means
 no extra filters to purchase.
NEW SG-2020 ADSP now available
 £799 carriage £9.00
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 2020 £369

FREE SG-239 ATU (£239)
 IN MAY, JUNE OR JULY

ICOM

IC-756 PRO II

£2495 C



IN STOCK NOW!

This is Icom's new Flagship.

IC-7400 160m - 2m ALL-MODE



IN STOCK NOW!

£1499 carr.£9

IC-706IIG 160m - 70cm ALL MODE

3 YEARS FREE WARRANTY



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IC-718 100W HF £649 C



YAESU

VL1000

£3499 C



HF + 6m
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 Amplifier +
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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 70cm. 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 & 70cm 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).



£25 ACCESSORY VOUCHER

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



WITH EXTRA WIDE RX COVERAGE

- 144-146MHz Tx/Rx FM
- 430-440MHz Tx/Rx FM

Up to 5W out with Li-ion battery and "scanner" style coverage from 100kHz to 1300MHz including SSB and digital! 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: ± 5 kHz
- CTCSS tone encoder/decoder
- Illuminated keypad,
- memory name function
- Auto power off • Auto batt. sever
- Time-out timer
- 5.5 - 16V DC (13.8V)

HORA

HORA C-408 70cm £49 B



HOCKLEY ONLY Very much underrated handy. Covers the full 70cm band. Wideband receive possible. Very compact fits into top pocket. Ideal for use at rallies. Only uses 2x AA batteries (not included).

- 230mW, CTCSS
- Digital Display

SPECIAL OFFER

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 air-band.

W-25SM 25AMP SWITCH-MODE POWER SUPPLY



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).

£69.95 carr.£6

RIGblaster



PSK31, MFSK, MTEG, SSTV, RTTY, AMTOR, CW, PACKET, APRS, HELIX, REMOTE BASE, METEOR SCATTER, CLUB DIST, REPEATER CONTROLLER, VOICE KEYS

- RIGblaster Plus £139.95B
- RIGblaster M8 £109.95B
- RIGblaster M4 £109.95B
- RIGblaster RJ £109.95B
- RIGblaster nomic 8p £82.95 B
- RIGblaster nomic 4p £82.95 B
- RIGblaster nomic RJ £82.95 B

'Amazing' MP-1 Variable Antenna 7MHz - 430MHz! 150 Watts
Use Portable, Mobile, Home or even balcony!

It's sweeping America as the most versatile antenna for any location. Kit includes telescopic 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!!

PBX-100 Portable HF £99 C



80m - 10m 200W

The PBX 100 offers 80m - 10m operation (max 4-bands at any time) with a height of just 3.6m. Supplied with ground spike, it takes seconds to erect, yet collapses down to little more than 1m. Like all ground mounted verticals, it benefits from radials, and the radial wire is provided. Use it in the garden, in the countryside or abroad. SO-239 connection.

RT-11 REMOTE AUTOTUNER £239 B



NEW FROM LDG

ASK FOR DETAILS. ALSO AVAILABLE IN KIT FORM.

GZV-4000 40A 5-15V Switch Mode



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

£159 C

W-CRI PADDLE KEY £44.95 B



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

W-GMP Morse Key £29 A

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



Kent Morse Practice Oscillator £19.50 A

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



SLIDE TO CHANGE BANDS!!



£149.95 carr.£9

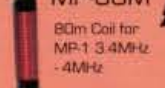
MP-1 Options

TRIPOD



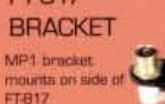
£19.95 A

MP-80M



£22.95 A

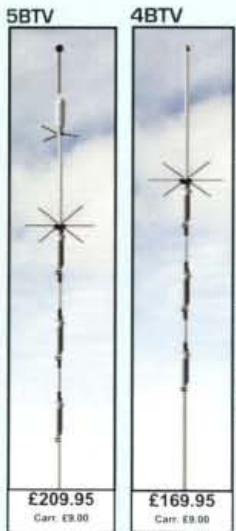
FT-817 BRACKET



£19.95 A

Get in Front with HUSTLER

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



BASE STATION ANTENNAS

Spec	58TV	48TV
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 G3QJV.
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

Model	Band	Bandwidth	Price
MD-1	54" (FOLD @ 22")		£33.95 C
MD-2	54" (FOLD @ 27")		£33.95 C
MD-3	54" (NON FOLD)		£26.95 C
MD-4	27" (NON FOLD)		£22.95 C

HEIL



GM-4	Hand Mic	£129.95 B
GM-5	Hand Mic	£129.95 B
HS-708	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	£76.95 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.



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 - 13dB 2kW 6.09m radius	£669.95 D
X-740	40m add on kit for X-7	£299.95 C
A-4-S	10-20m 4 el. 8.9dB 2kW 5.49m radius	£599.95 D
A-744	Gives 40m or 30m operation from A-4-S	£159.95 C
A-3-S	10-20m 3 el. 8dB 2kW 4.72m radius	£499.95 D
A-743	Gives 40m or 30m operation from A-3-S	£159.95 C
A3-WS	12 & 17m 3 el. 8dB 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 element 10.37m 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 8dB 3m radius 2kW	£189.95 C
ASL-2010	13.5-32MHz 8 el. log periodic 4.0dB 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 52cm. Turning radius is 2.7m. Uses a single feeder, this really works the DX. Get one up before winter!
£349.95 C

CUSHCRAFT VERTICALS



RB (illustrated), covers B 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

RB-GK Optional guy kit for RB £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 QRP/UN vehicle antenna. It works! £349.95 C

NEW MA5V VERTICAL 20-10m £229.95 C

WEP-300B • EARPICES

£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.

REVEK • 15W DUMMY LOAD

£19.95 A



- Range DC - 500MHz
- Power 15W/50W
- VSWR 1.15:1
- Connector PL259
- 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. 6.5dBd 0.93m	£26.95 B
144-WH6	2m 8 el. 8.6dBd 1.79m	£37.95 B
144-WH10	2m 10 el. 9.7dBd 2.3m	£41.95 B
435-WH6	70cm 6 el. 8.6dBd 0.8m	£29.95 B
435-WH12	70cm 12 el. 12.8dBd 1.51m	£35.95 B
435-WH15	70cm 15 el. 14.2dBd 2.19m	£41.95 B

To compare with dBi figures, add 2.4dB

QS-112 • SPEAKER MIC

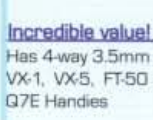
£16.95 A



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

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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 1B - 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 AV-20 & AV-40 compact meters

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/70cm

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/70cm

W-2000	0/6/9dB 2.5m long	£69.95 C
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GREAT VALUE MOBILE WHIPS

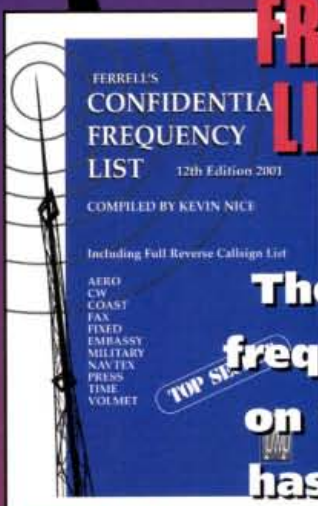


W-285	2m 5/8th whip with PL259 base	£14.95 B
W-7900	2m/70cm 5 & 75dB length 1.58m	£32.95 B
W-627	6m / 2m / 70cm 2 / 4.5 72dB length 1.6m	£34.95 B
W-770HB	2m/70cm whip 3dB / 5.5dB length 1.1m	£24.95 B

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ATTENTION ALL AMATEUR RADIO CLUBS AND INDIVIDUALS



**WHO
ON EARTH
WILL YOU BE
SPEAKING
TO ON
14th & 15th
SEPTEMBER
2002?**

**TRANSMISSION
2002
14th - 15th
SEPTEMBER**

Just get as many people as you can to sponsor you for every contact you or your club makes on the air during the weekend of 14th-15th Sept. 2002.

The money YOU raise will help us to provide specially adapted audio equipment, FREE FOR LIFE, to UK-registered blind people who are in need.

For **FREE QSL CARDS, SPONSORSHIP FORMS,** and full details contact:
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Telephone **01634 832501**
or e-mail: **Fiona@blind.org.uk**



**British Wireless
for the
Blind Fund**



Reg. Charity No: 1078287

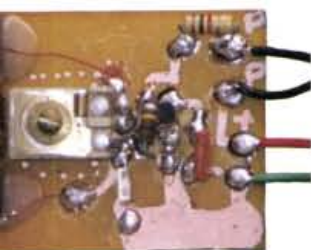
KEEPING BLIND PEOPLE IN TOUCH WITH THE WORLD

TRANSMISSION is a national fund-raising event open to all Amateur Radio Clubs and individuals to aid the work of the British Wireless for the Blind Fund.

OPEN TO ALL RADIO AMATEURS



-
- WT1936
- received from PW readers



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August regulars

9 Rob Mannion's Keylines

Topical chat and comment from our Editor
Rob G3XFD.

10 Amateur Radio Waves

The postbag keeps on filling as readers make 'waves' by writing in with their comments, ideas and opinions. Keep those letters coming!

11 Amateur Radio Rallies

A round-up of radio rallies taking place in the coming months.

12 Amateur Radio News & Clubs

There's a bumper bag of News this month for you to enjoy! Find out how successful GB50, the special event station sponsored by Icom UK was, keep up-to-date with new products and who's doing what in the world of Amateur Radio!

50 Valve & Vintage

A seven-valved aircraft radio and a mystery for you to solve are the topics up for discussion as **Ben Nock G4BXD** takes his turn in the vintage 'wireless shop'.

52 VHF DXer

David Butler G4ASR's regular report on the v.h.f. bands includes your reports from 50MHz and above.

54 HF Highlights

The h.f. bands are attracting so much interest, that we've had to give **Carl Mason GW0VSW** some extra space for his column this month. The bands are buzzing and the new reporters just keep on coming!

56 Keyboard Comms

Roger Cooke G3LDI rounds off his report on the Packet Conference 2002.

58 In Vision

Graham Hankins G8EMX has the latest news from the ATV scene and an update on how the building of the G8SUY 24cm ATV transmitter kit is going.

59 Tune In

Short wave broadcasting is alive and well, despite reports still showing a decline says broadcast band columnist **Tom Walters.**

62 Bargain Basement

The bargains just keep on coming! Looking for a specific piece of kit? - Check out our readers' ads, you never know what you may find!

64 Book Store

The biggest and best selection of radio related books anywhere!

69 Topical Talk

One long serving *PW* reader, **G4EXW** is featured this month. Don't forget if you have a topic you'd like featured or have any ideas for topics you'd like us to research, drop a line to the editorial offices.



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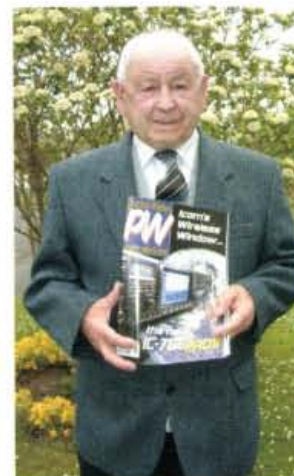
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author info

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

VHF DXer

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SA10 6DX
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E-mail: carl@gw0vsw.freemove.co.uk

Keyboard Comms

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The Drift
Swardeston
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Tel: (01508) 570278
E-mail: rcooke@g3ldi.freemove.co.uk
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Published on the second Thursday of each month by PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Tel: (01202) 659910. Printed in England by Warners Midlands PLC, Lincolnshire. Distributed by Seymour, 86 Newman Street, London, W1P 3LD. Tel: (0207) 396 8000. Fax: (0207) 306 8002. Web: <http://www.seymour.co.uk>. Sole Agents for Australia and New Zealand: Gordon and Gotch (Asia) Ltd., South Africa: Central News Agency. Subscriptions INLAND £25, EUROPE £30, REST OF WORLD £32 (Airmail), REST OF WORLD £37 (Airmail), payable to PRACTICAL WIRELESS, Subscription Department, PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Tel: (01202) 659930. PRACTICAL WIRELESS is sold subject to the following conditions, namely that it shall not, without written consent of the publishers first having been given, be lent, re-sold, hired out or otherwise disposed of by way of trade at more than the recommended selling price shown on the cover, and that it shall not be lent, re-sold, hired out or otherwise disposed of in a mutilated condition or in any unauthorised cover by way of Trade, or affixed to or as part of any publication or advertising, literary or pictorial matter whatsoever. *Practical Wireless* is Published monthly for \$50 per year by PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Royal Mail International, c/o Yellowstone International, 87 Buteville Court, Hackensack, NJ 07601, UK. Second Class Postage paid at South Hackensack, NJ. Send USA address changes to Royal Mail International, c/o Yellowstone International, 2375 Pratt Boulevard, Elk Grove Village, IL 60007-5937. The USPS (United States Postal Service) number for *Practical Wireless* is: 007075.



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One Stop Comms.....Kent.....01634 723025

rob manning's keylines

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

As those of you who've waited for a reply know...correspondence has always been a big problem for me...especially as I try to reply personally wherever possible. It's always been a struggle to keep up with the incoming letters from readers (many requiring personal replies) and to keep to the inflexible production schedule of a monthly magazine. However, now that I have the services of an audio secretary/typist (she's very helpful!) things have improved with traditional letters.

The only problem we have on this score is that readers often send items/letters on more than one topic/point/subject, etc., in the same envelope. **If you do this - please help by making sure you have separate clearly marked sheets** (Atten. News Editor, Atten. Rob, etc.) and avoid using paper clips...they have a horrible habit of snapping up otherwise totally unconnected items of post! Photos should always be clearly identified - in case they get separated...so we know what they are. Other than that...there's no real problems.

Unfortunately however, **I have to admit there are real problems** with the ever increasing flow of E-mailed notes, letters, comments and chit-chat. Nowadays I have to spend as much as two hours - particularly on a Monday morning - clearing the E-mails before starting my other work/correspondence.

My incoming E-mail is set so that it immediately pops up on the screen in front of me while I work. And although some can be immediately re-directed (with acknowledgement) to other members of the team, I've still got many to tackle each day.

To help, and for the sake of speed - I don't **spell-check** (Joke!) outgoing E-mails for typos and other errors - instead I just zip off replies which also carry a prepared apology for my typos, etc. Most people understand and the system works very well indeed - readers get a reply quickly and I can get on with my *PW* work.

Nose-To-Nose

Unfortunately though, the advent of E-mails has brought about the 'nose-to-nose' demand - and typed efforts from those who've never (apparently) written a letter before! The nose-to-nose term is my way of describing the E-mail which comes in with no introduction, 'please' or 'thank you' from someone literally demanding information, help or advice.

In my opinion - such E-mails are the equivalent of a complete stranger approaching you in the street and placing their nose to yours (hence nose-to-nose) and then demanding service. Of course, because of my job - and my nature - I always try to assist. It's a fact of life I have to live with, but fortunately it's often fully

compensated by the many friendly greetings which pop up on my computer screen!

The main difficulty we have at the *PW* offices is that **senders of E-mails forget to identify who and where they are! Yes, I know you can trace sources of E-mails...but it is time consuming!**

So, I ask you (please!) to always include your full postal name and address within an E-mail. We won't use it in the magazine without permission. Additionally, it's essential for you to provide permission to publish letters.

Please mark them clearly 'For Publication'... and include your address of course.



No Attachments

I also ask readers **not to send me E-mails with the text of the message sent as an attachment**. Instead, I ask you to send them with the message/information contained within the E-mail itself so I can open them immediately, so I can do whatever is necessary on behalf of the sender as quickly as possible.

When sending an E-mail with photographs, or something which contains anything other than an ordinary letter, all you have to do is to make it plain in the accompanying E-mail. I can then open the E-mail itself with minimum bother, decide what's to be done - and then re-direct it within the office if necessary. (Photographs and illustrations are passed to my colleagues to process and print out).

The *PW* team enjoy hearing from readers - whatever the method, and by following the suggestions I've made you can help us all! Thanks everyone.

Article Tribute To G5YN

Due to the fact that the author sent the same article to different publishers at the same time, I'm very sorry to say that the promised feature paying tribute to the late (and highly esteemed) **Sir Evan Nepean G5YN**, will not now appear in *PW*. This is because the article has been published in the June issue of *RadioCommunications*.

It was only by chance that the article did not appear in the July issue of *PW* (published after *RadCom*). There can be many complications through such actions, and it can cause many copyright problems and embarrassment for any publications involved. We therefore rely on the goodwill and honesty of potential authors, to ensure it doesn't happen. Thanks for your future co-operation!

Rob G3XFD

practical wireless services

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

Subscriptions

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

Components For *PW* Projects

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

Photocopies & Back Issues

We have a selection of back issues, covering the past three years of *PW*. If you are looking for an article or review that you missed first time around, we can help. If we don't have the whole issue we can always supply a photocopy of the article. Back issues for *PW* are £2.50 each and photocopies are £2.50 per article. Binders are also available (each binder takes one volume) for £6.50 plus £1 P&P for one binder, £2 P&P for two or more, UK or overseas. Prices include VAT where appropriate.

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

Placing An Order

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

Technical Help

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

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

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.



Foundation Licence & G3ESP's Opinions

Dear Sir

I am writing in response to the letter written by Mr Farrar G3ESP (May PW) regarding the foundation licence. I find his comments rather short-sighted and he is exhibiting what is becoming a typical response from the older fraternity and I think this is a great shame. My son has just passed his foundation course and has worked extremely hard to learn the course content. He is 13 years old and would, in my opinion, have struggled with the RAE course content, therefore being denied the possibilities of using the radio.

Whilst I understand and respect Mr Farrar's comments regarding 'the old days' things have changed and 1948 is now a long time ago. Indeed the history of wireless transmissions is only 100 years old and Mr Farrar is relating to something some 54 years ago. One thing G3ESP can be assured of is my son's sense of achievement and he most certainly understands that this is a privilege to have, but nevertheless he has worked hard and has earned this privilege.

Nowadays we have to take things into context and the comments regarding people "wanting everything without effort" are misguided. It is not difficult for the able-bodied to climb a ladder but it could be almost impossible for a disabled person to do so. In our hobby, age can be a disability and my son would not be able to become a Radio Amateur had it not been for the Foundation Course. This is not to say he could not do it but to say that he would find some of the content difficult to understand.

The Foundation Licence allows everyone the chance to start at the bottom of the ladder and be able to broaden their hobby by way of further qualification later on. **I often think that some people need to be reminded that it is a hobby, for fun and enjoyment, albeit under a more structured control than most other hobbies.**

I have also heard the behaviour of some of the older Amateurs towards the new M3 callsigns and think that some people need to grow-up. (I also experienced this when my licence was upgraded to a full class A because I was 'only an M5!'). Operating on c.w. - at 18 words per minute - is my favourite mode. So please don't 'judge a book by its cover' and allow these new Amateurs to learn from us all. A good starting point would be to welcome them in and not shut them out!

Chris Pickett M5LRO
Chatham
Kent

Foundation Licence Exam Paper

Dear Sir

It was interesting to see the example Foundation Exam paper in PW's sister publication *Radio Active*, June 2002. I gave it to a person with no formal training or education of electronics or Amateur Radio. They scored 15 correct out of the 20 questions, a 75% success rate. This was despite thinking all household mains voltages are d.c. and that two of the questions, 9 and 10, are

seriously ambiguous. Even I had difficulty understanding just which of the answer options were correct. So, what does this tell us? If someone with no training can score 75% pass just what is the object of the exercise?

Ben Nock G4BXD
Kidderminster
Worcestershire

Editor's admission: I failed it! But obviously, there's a great deal more work to be done on the examination paper in

question. When Elaine Richards G4LFM (Editor of Radio Active) gave me an examination sheet to complete... I couldn't! Some questions did (as Ben says in his letter) appear to be ambiguous. However, I had not followed a set syllabus aimed at the exam. Or is it a case - as is well known with multiple choice type exam papers - that the better you know your subject the more you look into it with "Well that could happen...if" ...rather than reading the actual questions very carefully? I failed miserably because I'm used to formal 'written' examination papers (That's my excuse!) but I have no doubt the problems will be ironed out eventually...not forgetting the RAE itself has had problems too!

Interesting History

Dear Sir

Mr Beaumont's own letter in your (Foundation Licence May Feedback, June PW) on the subject of G3ESP's original letter reveals some interesting facets of Amateur Radio history of which I was totally unaware at the time. Between 1948, when according to Mr Beaumont, Amateur Radio was restricted to a few people from a privileged background and in possession of degrees in Science and Engineering, and 1951 when I passed the RAE and the Morse test and gained my licence, a sea change must have taken place...or so I must conclude.

I was 16 years of age then, had just completed 'O' levels and I was a Youth-in-Training (YIT) with the Post Office. Without a privileged background and with an income of £2 2s.0d (£2.10p) per week, I had a licence for which my father, a factory worker, had to stand guarantor. I had a year of Morse and 10W input before progressing to a full licence.

My local radio club (Brighton) had representatives amongst its licensed members from all trades and walks of life, many licensed before the Second World War. I fear Mr Beaumont's rewrite of history is a total

misrepresentation. Furthermore his disrespect for historical fact shows a lack of professionalism inconsistent with the professional qualification he displays after his name.

My subsequent career continued on the same basis as my efforts to gain a licence. I accepted the laid down requirements, studied (part-time day and night school) and worked for what I wanted and achieved a good deal of it. I didn't whinge about the terms and conditions and as far as Amateur Radio is concerned I have found it a fulfilling hobby.

Although the Morse test was a hurdle to some people and today has less relevance as far as h.f. operation is concerned, together with the written examination it served to discriminate between those who had a serious interest in the hobby and those who saw a licence - in today's parlance - as a fashion accessory.

Remember the self-training aspect of the purpose behind the licence: it is not intended to be an up-market form of CB. But before you write Morse off...try listening to the various commercial bands where you will still hear a lot of good, hand-sent Morse. The various digital modes are very interesting from a technical viewpoint but for personal satisfaction in communication I still find that Morse is the only mode for me.

The availability of military surplus equipment and the cost of new equipment, in the late 1940s and the 1950s certainly helped to boost interest in the more technical side of the hobby and many an Amateur cut their 'technical teeth' on modifying such equipment for Amateur use. My first receiver was from an ex-Army WS 68 back-pack set covering the 3.5MHz band. I saved a long time to purchase a BC348 which I used for many years including my National Service at RAF Henlow (1954-1956).

However, I fully support the Foundation Licence as a means of bringing new blood into the hobby and provided that it continues as a first step from which licensees can progress to a full licence then I shall continue to support it. The criteria used



☐ Golden Jubilee Radio

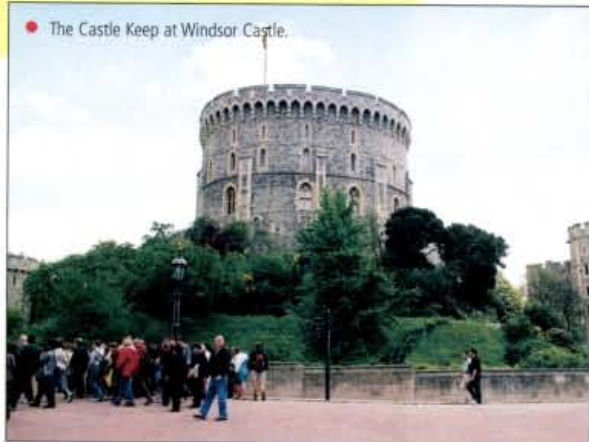
Windsor Castle - GB50

The Amateur Radio Experience was designed to promote Amateur Radio to the public. Information boards tracked the history of Amateur Radio from Marconi's first contact to the present day and artefacts such as a Marconi

The major highlight for GB50 was the visit by the Patron of the

- GB50 was situated on the North Terrace of Windsor Castle.

73 Philip"



Practical Wireless, August 2002

Prized Design

Joyear WS2000

The new Joyear WS2000 radio is the latest receiver to be launched by Worldspace and its now available in the UK through Nevada.

The Joyear WS2000 radio is not only new - it also won the Grand Prize at the Korean Industrial Design award for 2001! It's small, stylish and light enough to travel the world with you. The WS2000 features an easy-to-aim removable antenna comes complete with a 2.5m extension cable to allow clear reception of the satellite service. The radio also has 10 presets, last station memory recall, a comprehensive liquid crystal display and costs £129.

Following a recent visit to the UK the Korean radio manufacturer, Joyear confirmed the appointment of Nevada as UK distributors for the Joyear Worldspace products.

So, if you want to find out more about the WS2000 why not look at the Worldspace website at: www.worldspaceradios.co.uk or contact Nevada direct.

Nevada
Unit 1 Fitzherbert Spur,
Farlington,
Portsmouth PO6 1TT
Tel: 023-9231 3090
E-mail: infor@nevada.co.uk
Website: www.nevada.co.uk

From left to right Dale Bradley, Dipak Naran from Worldspace UK, Helen Choi from Joyear, Mike Devereux G3SED and Phil Jeffery from Nevada with the new Joyear WS2000.



Up-graded Kenwood

DX Cluster

Up-graded version of the TM-D700E gives DX-Cluster QSY!

The latest version of the Kenwood TM-D700E has up-graded TNC features, mainly connected with APRS GPS handling and has been introduced as a result of customer requests for it to be brought in-line with the American versions of the radio. It also has a new DX-Cluster feature.

If a special port cable is connected between the D700E and a TS-870S, TS-570D/DG or a TS-2000E, the DX spots operating frequency can be transferred to the h.f. rig, QSYing it automatically! This facility is of course already built into the TS-2000 when it's running in PCT mode.

Kenwood believe that the interconnectivity of v.h.f. and h.f. radios is a first for any manufacturer and will be of great interest to all who enjoy DX-Cluster operation. For more information contact Kenwood direct.

Kenwood Electronics UK Ltd,
Tel: (01923) 655284
FAX: (01923) 655297

New Licensee!

Foundation Success

The South Derbyshire and Ashby Woulds ARG celebrate their youngest Foundation Success to date.

The South Derbyshire and Ashby Woulds ARG has just had their youngest candidate take and pass the Foundation Licence. **Zoe**

Sleming and her Mother both took the course together with 10 Air Cadets and three others.

Not only did Zoe take great interest in the course, she succeeded in surprising everyone by getting 19 of 20

of the questions right! In recognition of her efforts and achievement it was decided to present her with a certificate, which was presented to her by **Lew Kirby G4CRT** at a club meeting.

If you are interested in following in Zoe's footsteps and enrolling one of the courses that the club run - Foundation, RAE and Morse Assessments then contact the club direct - details below.

Mrs B Walley,
Club Secretary
South Derbyshire & Ashby Woulds ARG
Tel: (01283) 760822



Hilltop Operating

Summits On The Air

Since its launch in March 2002, *Summits on the Air* has gained a large following. Want to know more? - then read on....

The *Summits on the Air* (SOTA) award, which shares some similarities with the already successful IOTA award scheme, aims to encourage portable operation from hilltops. In the first two months there were over 100 expeditions to hilltops logged and as of 20 June 134 expeditions and 88 summits have been activated.



A wide selection of hills are included, catering for all ages and abilities - it's not just an award for mountaineers! So far, activity has been concentrated on 144MHz f.m. and 7 and 14MHz s.s.b. and c.w. but all bands and modes can be used to gain the awards. Each summit has a score associated with it, which is related to its height.

Scotland and the Isle of Man have recently joined the *Summits on the Air* scheme bringing the total of available summits in the scheme to well over 1,500. So, with the sun high in the sky and the long warm evenings, what better time to investigate SOTA?

A complete list of Summits that count towards the award together with a useful *Guide for Activators* can be downloaded from www.sota.org.uk So go on.... have a go!

Back in Business

Garex Electronics

Peter Longhurst G3ZVI has some good news for fans of the one of the oldest established UK Amateur Radio companies....

Garex Electronics is back in business under private ownership and is in the process of revitalisation. This long established UK

Amateur Radio company offers a traditional product range of v.h.f./u.h.f. accessories, PMR equipment, spares and antennas. In addition to this they also stock G1MFG ATV products.

If you want to see the full range of products that Garex stock look out for them at a rallies in the South & West and South Wales throughout the summer season. Alternatively check out their new website at www.garex.co.uk

Garex Electronics,
PO Box 52,
Exeter EX4 5FD

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

Open Day!

Record Attendance at W&S

Believe it or not a year has passed since the last Waters & Stanton Open Day and the 2002 event proved to be better than ever!

Despite an uncertain weather forecast the 12th Annual Waters & Stanton Open Day on Sunday 26 May attracted record attendance figures. The rain held off and the sun shone on the hungry bargain hunters!

In true W&S tradition a marquee was erected which enclosed the entire car park. Many of the major radio manufacturers including Icom and Kenwood and Yaesu supported the event by manning stands, as did the Kent TV group, Essex Repeater Group, Novice Licence Instruction and Vintage Radio.

Free food and drink was on offer throughout

the day, and free raffles took place with prizes donated by Kenwood, Yaesu and Icom. There was also the chance to pick up even more bargains at the largest ever 'junk' clearout and auction.

Other attractions for visitors included a

display by St John Ambulance Brigade, an organ grinder, and local radio station Essex Radio who were giving live reports during the day. All those who attended agreed it was the best Open Day ever!



The busy Bargain Stand was several deep throughout the day.



Peter Waters G3OJV, being interviewed prior to an Essex Radio live report on the event.

New Product

Eliminate that Noise!

Do you dream of crystal clear radio communications? Then this could be the answer.....

Manufactured by **bhi Ltd** and now sold through **Adur Communications** the new NES10-2 Noise Eliminating Speaker incorporates digital signal processing technology to remove unwanted background noise from speech. This compact, easy-to-install speaker has been designed to greatly improve the clarity and intelligibility of speech in a variety of radio applications including Radio Amateur base stations, CB, marine communications and taxi base stations. It not only removes unwanted interference from the radio signal, but also truck, car engines and road and wind noise.



Features of the NES10-2 include:

- * Fully adaptive noise cancelling
- * Noise cancellation typically 20dB
- * 8 user selectable noise cancelling levels
- * 12-28V dc operation
- * 2m Audio lead
- * Improved signal-to-noise ratio
- * Input sensitivity control
- * Optional power supply

The NES10-2 is available now from Adur Communications or direct from bhi Ltd. You can contact bhi Ltd on (01293) 530147 or via their website at www.bhinstrumentation.co.uk The recommended price of the NES10-2 and power supply is £118.45 inc. VAT and postage but if you quote *Practical Wireless* when ordering (before 8 August 2002) you can buy the speaker and power supply at the **very special** all inclusive price of **£99.95!**

Adur Communications,
Belmont Buildings, The Street,
Bramber, Steyning, West Sussex
BN44 3WE
Tel: (01903) 879526
FAX: (01903) 879527

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

BRISTOL

North Bristol ARC

Contact: Dick Elford G0XAY
Tel: (01454) 218362
E-mail: g0xay@aol.com
Website: Expert help needed!

The North Bristol Amateur Radio Club meet on Friday evenings at SHE7, Braemar Avenue, Northville, Bristol and offers RAE and Morse tuition and tests and other tuition as needed. Apart from the usual shack nights, chat nights and internal talks, the club often has guest speakers. Look out for **Phil Whitchurch G3SWH** on **July 19** who will be talking on his 'DXpedition to Madagascar'.

DORSET

Bournemouth Radio Society

Contact: Chrs Ellis M5AGG
Tel: (01202) 893126
Website: www.brswebsite.freemove.co.uk
Bournemouth Radio Society meets on the 1st & 3rd Fridays of the month at Kinson Community Centre, Millhams Road, Kinson, Bournemouth. Doors open at 1930 in preparation for a 2000hours start. Forthcoming meetings include: **Aug 2:** Construction & Practice and **16th:** 'From RAF to RADAR' - a talk by **R. Brett-Knowles G3ATT**. Why not go along?

MIDDLESEX

Edgware & District Radio Society

Contact: David G5HY
Tel: (01923) 655284 days/0208-954 9180 eves
The Edgware & District Radio Society meet on 2nd & 4th Thurs of the month at 2000hrs at The Watling Community Centre, 145 Orange Hill Road, Burnt Oak, Edgware, Middlesex. One meeting that you may like to go along to is the one on **Aug 22:** SSB Field Day Briefing. **Please note** there is **no** meeting on Aug 2 as the club have their summer break. All visitors are very welcome.

STRANRAER

Wigtownshire ARC

Contact: Mr Neil Macdonald
Tel: (01776) 702570.
Website: www.qsl.net/GM4RIV
The Wigtownshire Amateur Radio Club meet at Aird Building, Stranraer Academy, Cairnport Road, Stranraer on Thursday evenings. All meetings start at 1930 and run until 2200 hours. The club have facilities to arrange Foundation, Novice and RAE courses, as well as c.w. courses and examinations. The Stranraer Academy is a G&G registered Examination Centre. Further examination information on the courses is available from **Mr Ian Macdonald MM3WI** (Registered Examiner) on **(01988) 403 364**.

In addition to usual club activities Wigtownshire ARC (GM4RIV/GM3W) will be mounting a radio station at Corsewall Point Lighthouse, overlooking the Irish Sea during International Lighthouse weekend on Aug 18. The callsign for the event will be **GB2LCP**.

SHROPSHIRE

Telford and District ARS

Contact: Mike Street G3JKX
Tel: (01952) 299677
E-mail: mstreet@g3jxx.freemove.co.uk
Website: www.btinternet.com/~t.colton or www.telfordrally.org.uk

Meeting every Wednesday at 2000hrs at the Community Centre, Bank Rd, Dawley, Telford, Shropshire, the Telford and District Amateur Radio Society offer a wide variety of club activities to their members. Forthcoming fun includes: **July 17:** Bar-B-Q and Social evening; **24th:** Wrekin Ramble - bring your hand-held; **31st:** Guess the inductance? - L/C Bridges forbidden!; **Aug 7:** Open evening/OTA/Committee and **14th:** Preparations for 'Free Entry' Telford Rally, RAF Cosford, A41/J3 - M54.

Keep those details coming in!

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Flea market bookings contact John Senior G7RXS on 0116-284 1517 E-mail seniorja@aol.com

All other enquires to Geoff Dover G4AFJ on 01455 823344, fax 01455 828273. E-mail g4afj@argonet.co.uk

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MR 644 6 Metre loaded 1/4 wave (Length 40") (3/8 fitting).....**£15⁹⁵**

1/2 WAVE VERTICAL FIBRE GLASS (GRP)**BASE ANTENNA 3.5 dBd (without ground planes)**

70 cms (Length 26").....**£24⁹⁵**

2 metre (Length 52").....**£24⁹⁵**

4 metre (Length 80") adjust top section.....**£34⁹⁵**

6 metre (Length 120") adjust top section.....**£44⁹⁵**

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GF151 2mtr (length 20").....**£39⁹⁵**

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(2 mts 3dBd) (70cms 6dBd) (Length 39")

BM200 Dual-Bander.....**£39⁹⁵**
(2 mts 4.5dBd) (70cms 7.5dBd) (Length 62")

SOBM200 Dual-Bander.....**£49⁹⁵**
(2 mts 4.5dBd) (70cms 7.5dBd) (Length 62")

SOBM500 Dual - Bander Super Gainer.....**£59⁹⁵**
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BM1000 Tri-Bander.....**£59⁹⁵**
(2 mts 6.2dBd) (6 mts 3.0dBd) (70cms 8.4dBd) (Length 100")

SOBM1000 Tri-Bander.....**£69⁹⁵**
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BM45 3 X 5/8 wave Length 62" 8.5 dBd Gain.....**£49⁹⁵**

BM55 4 X 5/8 wave Length 100" 10 dBd Gain.....**£69⁹⁵**

MINI HF DIPOLES (length 11' approx)

MD020 20mt.....**£39⁹⁵**

MD040 40mt.....**£44⁹⁵**

MD080 80mt.....**£49⁹⁵**

ROTATIVE HF DIPOLE

RDP-3B 10/15/20mtrs length 7.40m.....**£99⁹⁵**

RDP-40M 40mtrs length 11.20m.....**£139⁹⁵**

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DLHF-100 10/15/20mtrs (12/17-30m) Boom length 4.2m. Max height 6.8m. Weight 35kg. Gain 10dB.....**£399⁹⁵**

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MRW-300 Rubber Duck TX 2 Metre & 70 cms RX 25-1800 Mhz Length 21cm BNC fitting.....**£12⁹⁵**

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All of the above are suitable to any transceiver or scanner. Please add £2.00 p+p for H/hold antennas.

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70cms (Boom 12").....**£15⁹⁵**

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2 metre 12 Element (Boom 126") (Gain 14dBd).....**£74⁹⁵**

70 cms 7 Element (Boom 28") (Gain 11.5dBd).....**£34⁹⁵**

70 cms 12 Element (Boom 48") (Gain 14dBd).....**£49⁹⁵**

MULTI PURPOSE ANTENNAS

MSS-1 Freq RX 25-2000 Mhz, TX 2 mtr 2.5 dBd Gain, TX 70cms 4.0 dBd Gain, Length 39".....**£39⁹⁵**

MSS-2 Freq RX 25-2000 Mhz, TX 2 mtr 4.0 dBd Gain, TX 70cms 6.0 dBd Gain, Length 62".....**£49⁹⁵**

IVX-2000 Freq RX 25-2000 Mhz, TX 6 mtr 2.0 dBd Gain, 2 mtr 4dBd Gain, 70cms 6dBd Gain, Length 100".....**£89⁹⁵**

Above antennas are suitable for transceivers only

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2 metre (size 12" approx).....**£12⁹⁵**

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Complete with 25 mts of enamelled wire, insulator and choke Balun Matches any long wire to 50 Ohms. All made no A.T.U. required. 2 "S" type greater than other Baluns.
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1 1/2" Diameter 2 metres long	£16 ⁰⁰
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RG58 best quality standard per mt	35p
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Mini 8 best quality military spec best quality per mt	70p
RG213 best quality military spec per mt	85p
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PHONE FOR 100 METRE DISCOUNT PRICE.

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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
N TYPE for RG58	£2 ³⁰ each
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MB-Y2 Yagi Balun 1.5 TO 50MHz	£24 ⁰⁰

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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 ⁰⁰
MD-24N same spec as MD-24 "N-type" fitting	£24 ⁰⁰
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Tri-plexer 1.6-60Mhz (800w) 110-170Mhz (800w) 300-950Mhz (500w) SO239 fitting	£49 ⁰⁰
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AR-31050 Very light duty TV/UHF	£24 ⁰⁰
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RC26 Alignment Bearing for RC5-1/3	£49 ⁰⁰

ROTATOR CABLE

3 Core	0.45p per metre
7 Core	0.80p per metre

MOUNTS

Turbo mag mount (7") 38 or SO239	£14 ⁰⁰
Tri-mag mount (3 x 5") 38 or SO239	£39 ⁰⁰
Stainless Steel Heavy Duty Hatch Back Mount with 4 mts of coax and PL259 plug (38 or SO239 fully adjustable with turn knob)	£29 ⁰⁰
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BEST QUALITY ANTENNA WIRE

The Following Supplied in 50 metre lengths

Enamelled 16 gauge copper wire	£9 ⁰⁰
Hard Drawn 16 gauge copper wire	£12 ⁰⁰
Multi Stranded Equipment wire	£9 ⁰⁰
Flex Weave	£27 ⁰⁰
Clear PVC Coated Flex Weave	£37 ⁰⁰

POWER SUPPLIES

PS-20 20amp with 25amp surge Dual Meter & Adjustable Voltage 5-15v	£99 ⁰⁰
PS-30 30amp with 35amp surge Dual Meter & Adjustable Voltage 5-15v	£119 ⁰⁰

TRAPS

10 metre trap 400W	£23 ⁰⁰
15 metre trap 400W	£23 ⁰⁰
20 metre trap 400W	£23 ⁰⁰
40 metre trap 400W	£23 ⁰⁰
80 metre trap 400W	£23 ⁰⁰

HF BALCONY ANTENNA

BAHF-4 FREQ:10-15-20-40 Mtrs LENGTH:
1.70m HEIGHT: 1.20m POWER:
300 Watts £129⁰⁰

**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 £329⁰⁰



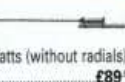
ADEX-3300 3 BAND 3 ELEMENT TRAPPED BEAM
FREQ:10-15-20 Mtrs GAIN:8 dBd
BOOM:4.42m LONGEST ELE:8.46m
POWER:2000 Watts £269⁰⁰



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 £499⁰⁰
40 Mtr RADIAL KIT FOR ABOVE £99⁰⁰

**HF VERTICALS**

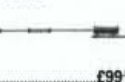
VR3000 3 BAND VERTICAL
FREQ: 10-15-20 Mtrs
GAIN: 3.8 dBd HEIGHT:3.80m POWER:2000 Watts (without radials)
POWER: 500 Watts (with optional radials) £89⁰⁰
OPTIONAL 10-15-20mtr radial kit £34⁰⁰



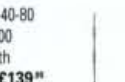
VR5000 5 BAND VERTICAL FREQ:10-15-20-40-80 Mtrs
GAIN:3.5 dBd HEIGHT:4.00m RADIAL LENGTH:2.30m
(included). POWER: 500 Watts £169⁰⁰



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) £99⁰⁰
OPTIONAL 10-15-20mtr radial kit £34⁰⁰
OPTIONAL 40mtr radial kit £12⁰⁰



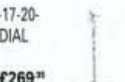
EVX5000 5 BAND VERTICAL FREQ:10-15-20-40-80 Mtrs
GAIN:3.5 dBd HEIGHT:7.30m POWER:2000
Watts (without radials) POWER:500 Watts (with optional radials) £139⁰⁰
OPTIONAL 10-15-20mtr radial kit £34⁰⁰
OPTIONAL 40mtr radial kit £12⁰⁰
OPTIONAL 80mtr radial kit £14⁰⁰



EVX6000 6 BAND VERTICAL FREQ:10-15-20-30-40-80 Mtrs
HEIGHT:5.00m RADIAL LENGTH:1.70m (included) POWER:800
Watts £249⁰⁰



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 £269⁰⁰
80 MTR RADIAL KIT FOR ABOVE £79⁰⁰



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

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MTD-3 (3 BAND) FREQ:40-80-160 Mtrs LENGTH: 32.5m POWER:1000 Watts	£79 ⁰⁰
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TEX'S

TIPS & TOPICS

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

Chin Up

A letter from **Peter G4EVY** says to "keep your chin up" when considering the cost of some simple items. His letter also shows that, sometimes the most unusual items can be pressed into use within the hobby. Peter is the Unit Radio Officer with 213 (City of Rochester) Squadron, Air Training Corps (ATC).

Peter wrote (of his suggestion) "I thought that it might prove of interest to those folk who would like to make up some 400Ω (approximately) open wire feeder, but who have been perhaps put off by the relatively high cost of spreaders. I use the excellent Gillette Blue 2 (disposable razors) and one day thought that the handles looked about right for use as spacers in the open wire feeder that I was proposing to use at the Squadron".

Peter then went on to describe

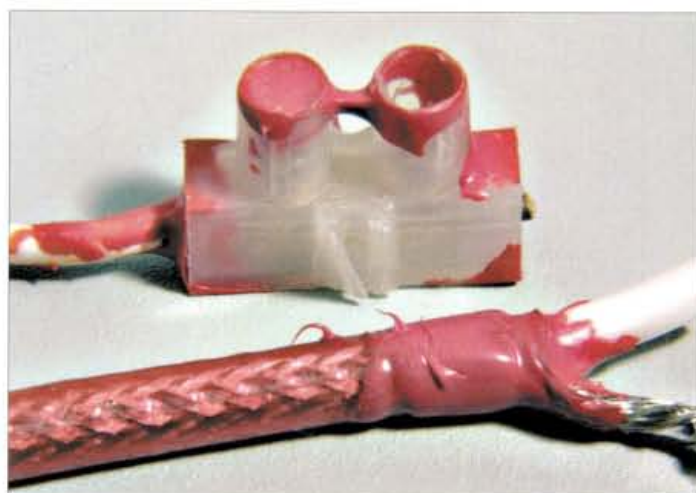
removing the 'head' of the redundant razor with a pair of pliers, then using a file to smooth over the ends before drilling a hole in each end of the handle. Each wire of the pair, is fed through the holes in the handle spacers before being spaced about every 500mm along the run. The spacers are secured in place with small twists of wire similar to the method shown in the illustration of **Fig. 1**.

A great suggestion Peter, and as you mentioned in your letter, if you ever do find a use for the no-longer 'sharp' end, then let us know!

Painted Insulation

Now for a letter from **Dave G4OER** who wrote in to tell me about a 'painted on' insulating material called **Liquid Electrical Tape**. Dave mentioned that he noted an advert for Liquid Electrical Tape in a recent copy of *QST*. On contacting Plasti Dip International (**PDI inc**), the suppliers of the paint-on insulator, he found that there was a UK outlet for their products.

The Liquid Electrical Tape, shown in **Fig. 2**, is an air drying synthetic rubber coating that may be brushed onto electrical circuitry, to act as a sealant against both moisture and corrosive



● **Fig. 2:** Two typical cases where Liquid Electrical Tape would prove useful in any antenna installation.

chemicals. After fully hardening, Liquid Electrical Tape won't peel or crack and it remains flexible under extreme conditions. It could be the ideal way to finish of an antenna project, and it's available in several colours.

For more details about Liquid Electrical Tape and similar products that could be extremely useful to your hobby or perhaps even in your work, contact **Plasti Dip at Unit 1, Harvesting Lane, East Meon, Petersfield, Hampshire GU32 1QR, or Tel: (01730) 823823**.

Corner Dipole

A short letter from **Robert Morison** laid out plans for his Corner Dipole that he has created to improve the Band II f.m. signal for his home stereo system. Robert wrote "I started by screwing a two section terminal block (choc block) connector to the face of a picture rail in the corner of the room. Using miniature 75Ω

coaxial cable, I connected the outer and inner each to one connector of the block.

"Into the other ends, I connected a 680mm length of bell wire (with the ends twisted together) and each wire is held out along the picture rail with a small panel pin forming a horizontal L-shaped dipole. The antenna is so successful, I expect readers may develop outdoor versions".

I don't know about others Robert, but it will probably cure the problems I have with my radio in the kitchen at home.

But that's all I have space for this time. Vouchers go off to Robert, Dave and Peter, with Peter getting the extra voucher for best tip of the month - it was a close shave though!

Tex



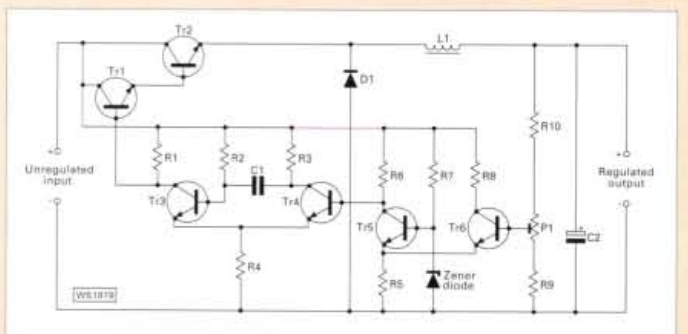
● **Fig. 1:** Using small lengths of a thinner wire to fix open wire feed spreaders in place. The wires may be left, as shown or soldered in place for slightly more stability.

Errors & Updates

Looking At ... The Voltage Regulator Part 2. July 2002

In the drawing of the switch-mode regulator shown on page 23 of the July 2002 issue of *PW* there was a link missing that makes the circuit non-operable as shown. In **Fig. 2** (p23) transistors **Tr5** and **Tr6** have no supply line. Please make a link on the diagram, as shown here, between the junctions of **R1, R2** and **R3** and the junctions of **R6, R7** and **R8**.

My apologies for the mistake that crept into the drawing. **Editor**



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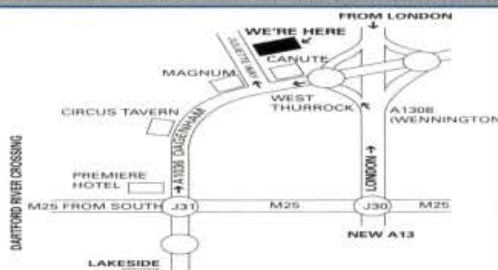
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Radio Basics

This month, in the run-up to the coming 'building season' - Rob Mannion G3XFD looks into his postbag with the aim of assisting those readers who've come across problems getting projects to work.

If you've read Keylines this month you'll have already seen my frank admission that the problems of correspondence brings to me. And unfortunately, Radio Basics (RB) readers aren't immune from the (not inevitable, but often unavoidable) delay in receiving a reply from G3XFD. However, I have to admit that despite my extremely busy schedule, I often do break off for an hour or so just to write a long letter to a reader who has been experiencing many difficulties in getting an RB project going. I do this for **one very important reason...** the flickering flame of enthusiasm can be quickly blown out by the wind of despair!

So, this month I'm devoting the whole of this column to try to sort out what seems to be insurmountable difficulties experienced by some of the readers who otherwise enjoy Radio Basics. And in doing so I ask you not to despair. Instead,

keep trying, it will be worth it I can assure you.

Only In English Cities?

To start off I'm going to concentrate on a letter received from a reader living in Killarney, County Kerry in Ireland. He wrote (not at all pleased with me!) saying "The MK484 radio project is...I think only suitable for use in English Cities" (He'd had virtually no reception with one of the MK484 projects published in PW during 2001 see Fig. 1). He also said that "I've never had any success with t.r.f. receivers*". (And that was a clue which may have helped me to assist him).

Firstly, in the letter I sent to him - it was one of those that had to be dealt with there and then - I assured him that the MK484 **will provide superb reception**, especially during the evenings...even in the West of Ireland. And by sheer coincidence, a nephew of mine

has an MK484 radio with him at college in Limerick - so I know just how well it can work (he can regularly receive Spanish and other medium wave DX broadcast stations at night, plus the various Irish medium wave stations with his favourite 'pop' music).

However, there are **some very specific rules (I aim to explain these whenever they are encountered)** that you must follow when using radio frequency circuits which provide 'active gain'. The term active gain refers to gain provided by an active device (i.e. a transistor amplifier) whereas when it's used in connection with antenna circuits, etc., it means something rather different! So, I'd better explain in simple terms just what's meant here.

Gain: With antennas you can achieve 'gain' from a particular direction/directions, by reducing signals from another direction/ directions. A Yagi antenna, commonly used at v.h.f. is an example of this technique. And for the purposes of this article a crude - but effective - analogy using a candle and a mirror will help. Place a lighted candle on a saucer in a darkened room and observe the candle's relatively feeble light. Now place a small pocket mirror behind the candle. Immediately you'll notice how much brighter the light is from the front - and to an extent to the side, whereas to the rear (behind the candle and mirror) it will be very much darker. The mirror has provided 'gain'. No power has been used...all we've done is to effectively concentrate the available light energy where we want it. Simple eh?

On the other hand, integrated circuits such as the extremely effective MK484 (and the ZN414 predecessor) provide an enormous gain - something in the order of 70dB μ V (for help in understanding this term - please see the very helpful article entitled 'Funny Things, Decibels' by Gerald Stancey G3MCK, page 38 July PW). For now, though, it may help you understand that if you have a gain of 60dB μ V on a signal originally at 1 μ V...it will be **1000 times larger**. (yes...1 millivolt - mV).

So, if you bear in mind what happens when you place a microphone too near a

loudspeaker in the same amplifier circuit (the familiar 'howl round') you'll realise there's great potential for oscillation and general instability - with both audio and radio frequency circuitry. Fortunately, however, the problem is very easy to overcome and t.r.f. circuits - including that inside the remarkable little MK484 integrated circuit (i.c.) can prove extremely effective **providing you take precautions** to minimise any unwanted feedback.

*The term t.r.f. stands for **tuned radio frequency**.

Simple Precautions

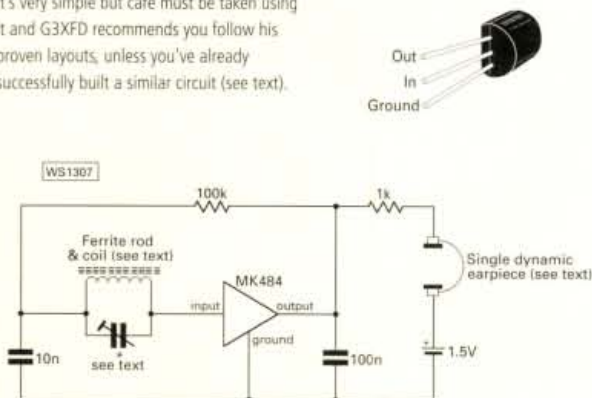
So, now I've explained one of the major difficulties with high gain circuitry (it can affect any circuit with gain) I can now go on to describe how the can be overcome with simple precautions. Incidentally, I'm fairly certain that the reader in Ireland had either: a circuit which had gone into **oscillation** (see below) because of instability, connected the MK484 the wrong way round, or had a faulty i.c. (I sent him a replacement and now look forward to hearing how he got on).

Detecting Circuit instability: Even though you may not have access (or the experience to use) test equipment...diagnosing a radio frequency (r.f.) circuit which has 'taken off' (started oscillating) is very simple indeed. If it's a receiver causing problems (such as the MK484 radio) you'll probably only be able to hear received stations accompanied by a persistent whistling.

However, sometimes you'll find that only the strongest stations have the whistling distortion. In this case you can use another radio (as a test receiver) placed within arm's length - to detect any signal from the problem receiver. This is because in effect your faulty receiver can be a very low power transmitter (Although out of the scope of this article - it's important to know that superhet receivers have a built in oscillator and always radiate very low power signals).

Assuming your MK484 (or other t.r.f. receiver) is tuned to the medium wave, when the test receiver is tuned over the

● Fig. 1: The circuit MK484 t.r.f. radio project - it's very simple but care must be taken using it and G3XFD recommends you follow his proven layouts, unless you've already successfully built a similar circuit (see text).



same band (held within arm's length) whistles (heterodynes) and various 'swishes' (as you tune past the frequencies being generated by the faulty t.r.f. circuit), and squeaks may be heard. If these effects are noted...you then have to sort the problem out...and it should be as equally simple to cure.

Revising The Layout

To cure any proven instability in the MK484 (I'll concentrate on this circuit from here onwards) you must revise the layout of the circuitry and check you've followed the proven layout, as in **Fig. 2**, which was published for your benefit. You may have easily erred from the proven layout. If you have, please ensure it's changed to as near as possible to that shown, ensure that you have included the by-pass capacitor as shown. (One reader told me that he'd built the MK484 receiver onto thick Paxolin board, using nuts and bolts for the terminals, rather than soldering). However, the large size of the nuts and washers used ended up making the receiver totally unstable. He soon got it going when it was rebuilt using the wooden base board method, learned to solder and eventually made a p.c.b.!

It's also extremely important (on the unscreened type of bread-board layout) to avoid placing the ferrite rod too close to the MK484 itself (The layouts shown on these pages

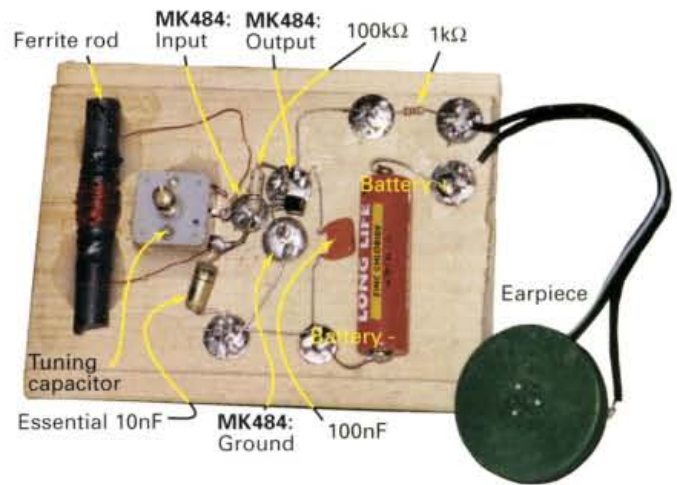
have been extensively tested 'on air'). And to avoid external output-to-input feedback you must avoid placing the components - especially the ferrite rod antenna and the spacing of the drawing pins - closer than the proven circuit in **Fig. 2**. By following this advice you should end up with a fully working and enjoyable circuit.

Half-way House

Even though this edition of RB is concentrating at looking at, and assisting readers with constructional problems involving the simplest projects...I think it's a good idea to look at the various construction formats...although in my opinion there's no doubt whatsoever that the best finished project is one that works, whatever format you use!

When you have made your simple radio - particularly in the suggested very successful drawing-pin-and-wooden-board fashion, I have no doubt you'll then want to make it again, using a more convenient format for portability. And even though many readers have written in over the years to tell me how wary they are in using ferric chloride etchant, and its alternatives, I still urge you to 'have a go'. The results can be very encouraging.

However, for those who aren't keen on making a p.c.b. there's (fortunately!) now a 'half-way house' construction method which combines the



● **Fig. 2:** Annotated photograph of the simplest form of bread-board layout of the MK484 single i.c. tuned radio frequency (t.r.f.) radio. This layout is highly recommended as a 'first project' as it has proved extremely successful over a period of almost 30 years, since the introduction of the original ZN414 i.c. The 10nF by-pass capacitor (0.1μF) is essential and must be connected between the 'earthy' (chassis/common connector) side of the tuning capacitor to earth. Note: tuning control removed for clarity.

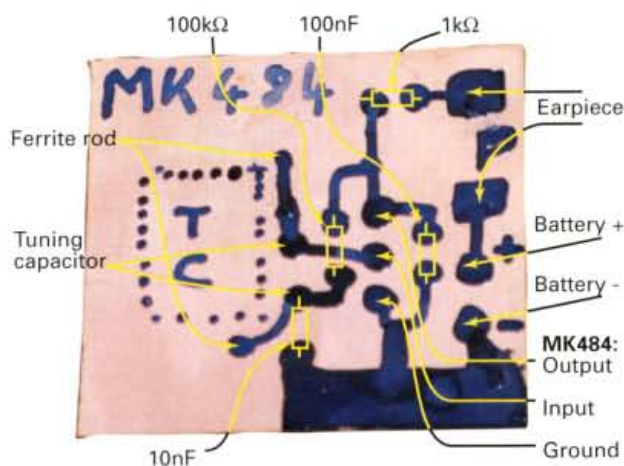
simplicity of the bread-board style, with the use of efficient printed circuit board material.

The system I'm recommending is the **Copper Island Construction Outfit** (I call it the 'CICO' system) which is made and sold by **Duncan Walters G4DFV**...a very keen constructor himself and someone who also does his utmost to support the hobby (Full details on how to get a CICO system in the information panel).

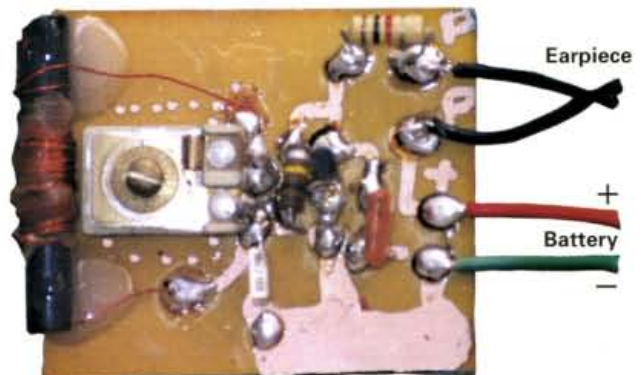
A full review by yours truly was published in the January 2002 issue of *PW*, and the

photographs, on page 49 of that issue, graphically illustrate what you get in the kit itself. In practice I can reassure anyone who hesitates on seeing the word Super Glue (Cyanocrylate adhesive) not to worry! I've been using my CICO kit for almost a year now and it's splendid...and my five remaining fingers have not been stuck together yet!

In use the CICO system is simplicity itself - all you need to do is to mount the supplied p.c.b. pads as you would with the drawing pins on the wooden base board, using the adhesive.



● **Fig. 3:** Annotated photograph of very simple components-on-the-same-side printed circuit boards for the MK484 single i.c. radio project. Readers are encouraged to try this method as it's extremely effective. (See separate panel for details on p.c.b. etching). Connections for the MK484 are indicated as Ground, Input and Output (see Fig. 1 for base connection details of the i.c.). If the receiver is to use to use a polyvaricon type variable capacitor rather than the compression trimmer shown - the 'common' or 'chassis' connection must be made to the lower tuning capacitor p.c.b. soldering 'pad' which also provides one connection for the 10nF capacitor (see text).



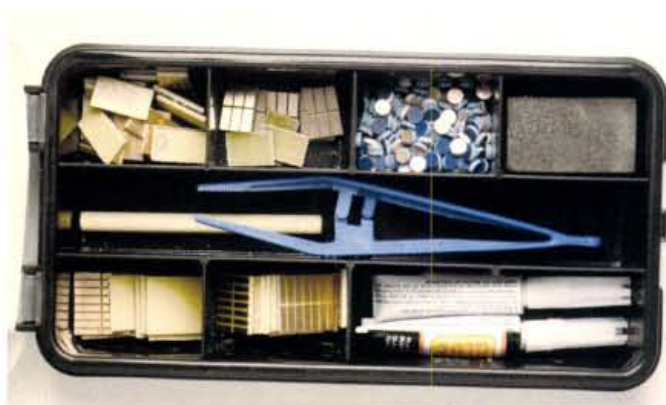


Fig. 4: The Copper Island Construction Outfit (CICO) which G3XFD recommends as ideal for both beginners and the more experienced constructor (see text).



Fig. 5: One of the projects G3XFD built using the CICO system - the null detector and audio amplifier from the Radio Basics C/R Bridge, as published in the January issue of PW (see text).

The copper foil on the p.c.b. acts as the ground plane, and - as you can see, in Fig. 5, the rest is very straightforward because - for the simpler projects - you can literally follow the same layout as used for the circuit diagram.

As you become more experienced...you'll naturally get the 'feel' for modifying the layout to suit the particular needs (radio frequency, audio frequency, screening etc.) of each job.

In practice I've tended to use the CICO system as an alternative to making a permanent p.c.b., and also for making prototypes. However, I also think that the technique is extremely useful for anyone who wishes to gain more experience with p.c.b. style ideas, before going on to make the traditional boards, complete with etching, etc. It's a very helpful idea needed.

Audio Output

A number of readers have written to me specifically regarding headphones for the MK484 single i.c. radio projects (particularly the version using only the MK484...without the extra audio amplifier stage). Additionally, **despite my advice not to do so**, some constructors have tried to use the Peizo-electric (earplug-style) inserts. These - in the MK484 circuit as published - are totally unsuitable! So, **please do not try them, or attempt to use loudspeakers**.

Several readers have tried to use very small loudspeakers in the mistaken belief that the smaller they are, the less power is required to operate them. Unfortunately, it's usually the opposite as they can be quite

inefficient! Surplus telephone single earpiece units are ideal and various PW advertisers (such as John Birkett) sells them for £1 or so by post.

Finally, on this point...for those who haven't got, or cannot purchase a simple telephone earpiece (they're very useful things to have in the workshop!) I published an MK484 radio project with an add-on single amplifier which I used the BC184 transistor in the February 2000 issue of Radio Basics (together with long wave/medium wave switching details). The four page reprint, along with the two page reprint of the single MK484 i.c. radio project are available for £2.50 (including P&P) from the PW Book Store on (01202) 659930.

Well, that's it for this time, and next month as previously mentioned, I'll be looking at the problems, and help you get over the difficulties experienced when circuits have to be converted into lay-outs. It seems to be a problem for many less experienced constructors...but it's one that's easily overcome. It's also a very enjoyable part of the hobby. Cheerio for now.

PW

Materials For PCBs & Telephone Inserts

Circuit boards: The necessary 'starter' items for etching your own printed boards are available from many sources - including regular advertisers in PW. In particular, **Robin Sykes G3NFV of Sycom**, has supported Radio Basics by stocking etch resists pens, ferric chloride and other items required. For further details please contact Sycom direct either by telephone on (01372) 372587, or via E-mail: robin@sycomcomp.co.uk

Suitable telephone inserts: Surplus telephone inserts are often available at Amateur Radio rallies for less than £1. For those unable to attend rallies, John Birkett (see his advert in this issue) often has these in stock for 50p + postage, and they are able to post them to you. Due to the fact that they are surplus in origin, the type of earpiece insert provided and the price will vary. However, all traditional telephone earpieces (which look like small, single earphones and are used in the handset) will work successfully. **Caution:** Some modern telephones - now use small loudspeakers in the handsets - **these are not suitable for use in the single MK484 radio** (see text). For further details contact **J. Birkett** on (01522) 520767, or write to **25 The Strait, Lincoln LN2 1JF**.

CICO system: The Copper Islands Construction Outfit is available for £17.95 from **Duncan Walters G4DFV** at **11 King George V Avenue, Mansfield, Nottinghamshire NG18 4ER**. Tel: (01623) 465443, E-mail: pentode@ntlworld.com

Headphone Adapter Project

A number of readers have contacted me to ask when the promised headphone adapter project - (first mentioned in March, along with the special offer for the budget priced headphones from Nevada) is to appear in the column. In answering **I apologise for the delay**, which has been brought about because of problems locating a source of the components s needed. I've got enough in my 'spares' box...but to publish the project I need a reliable source for RB readers. There's absolutely no point in my presenting a project if you cannot buy the components needed is there? So, hopefully, the project will be published within a few months. Sorry for that readers...but I'm delighted so many of you have found the headphones useful...and when the project arrives it will make them even more versatile. (**Note:** Nevada confirm that the special budget-priced headphones - **please quote PW Radio Basics and Nevada reference MD-806** - are still available for £7.50 including P&P. Contact Nevada at **Unit 1, Fitzherbert Spur, Farlington, Portsmouth, Hampshire PO6 1TT**. Tel: 0239-231-3090.

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It's a Modern Classic

The Yaesu FT-736R

Richard Newton G0RSN has had the chance of trying out a truly versatile transceiver from Yaesu, first reviewed in the magazine during the 1980s. It must have been good...because he wasn't very keen on returning it to the owner!

With the Royal Golden Jubilee in full swing as I write this, and nostalgia foremost in the mind of the Nation it's perhaps appropriate that I was asked to review a transceiver as part of the It's A Modern Classic series of articles. The radio that is to re-enter the spotlight is the Yaesu FT-736R, which was first reviewed in *Practical Wireless* in June 1988.

Although I'm a regular contributor to *PW*...this was an unusual commission. I really didn't know what to expect when I called into to the *PW* offices in Broadstone to pick up the transceiver.

On arrival I was greeted by an awesome sight! Personally, I think that anyone could be forgiven for thinking FT-736R was a state of the art h.f. base station...complete with all the trimmings, and just off the shelf. However, in actual fact this radio is a v.h.f./u.h.f. base station that was **first on the market about 15 years ago**. And I can tell you honestly, this rig made a considerable first impression on G0RSN!

Very Professional

The transceiver has a very professional look indeed and it's finished in a charcoal grey metal and plastic. It measures approximately 368 wide x 129 high x 286mm deep, weighing in at a reassuring 9kg.

When it comes to powering the rig, it offers



complete versatility. This is because it will operate either direct from a 240V a.c. mains supply (plugging directly into a domestic wall socket) or it can run from a 13.8V d.c. power supply. And for ease of portability the FT-736R has a handy carry strap on one of the side panels, very useful indeed for this robustly built transceiver.

Well Stocked

The well stocked rear panel is home to the separate outputs for each band. These include an N type connector for the 1.2GHz band, and another N type for the 430MHz band. There's also an SO239 connector each for the 144 and 50MHz bands.

Incidentally, on the FT-736R each band is independent. So if the operator is using the same antenna for more than one band a duplex or coaxial switch would be needed.

Also on the rear panel

● Yaesu's modern classic...the FT-736R, which was tried and tested by *PW*'s review team of Richard G0RSN and Terry G7VJJ/M3TJW.

there's a 3.5mm jack socket for **DATA IN** and **OUT**, plus a Phono type socket for external transmit switching by a packet TNC or a foot pedal. There's also another 3.5mm jack socket which provides for an extension speaker, and a 0.25 inch jack socket is for a c.w. key.

Finally, there's a **Ground** terminal and two DIN sockets. One of the DIN sockets is for the connection and the control of external transmitter amplifiers, whilst the other is a serial CAT interface for computer control.

Front Panel

The front panel of the FT-736R is home to all the controls. However, **I'm not going to list them one-by-one!** Suffice to say that although (at first) the transceiver's front could be a little

daunting...all the controls are very well labelled and they're beautifully set out.

Functions such as the tone burst, voice processor and **Voice Operated Transmit (VOX)** have green illuminated indicators assigned to them. This is so that you can see at a glance that they are 'enabled' (very useful).

The Yaesu FT-736R has what I would

● Close-up view of the transceiver's front panel. The comprehensive selection of controls rather daunted G0RSN at first (see text).



describe as 'real' controls. **It has real button switches** that operate with a **very reassuring click** and knobs that you can operate **without the use of tweezers**.

The main dial is 'weighted' to true perfection in my opinion and it's the prime method in the transceiver is tuned. However, the operator can also choose to use the multi-function direct entry keypad for tuning purposes.

Band Coverage

When originally supplied the Yaesu FT-736R covered the 144 and 430MHz Amateur bands. Depending on the owner's requirements this could then be increased to four bands by purchasing and adding modules for the 50MHz and the 1.2GHz bands. A 220MHz option was available for the US market.

The rig that I'd been loaned for the review period had been fitted with both modules and so had a very impressive coverage. In the one package it covers 1.2GHz and the 430, 144 and 50MHz Amateur bands.

Multi-mode Transceiver

The Yaesu FT-736R is a multi-mode transceiver operating f.m, narrow n.f.m, s.s.b. and c.w. There is, however, no a.m. facility.

Using the n.f.m. setting the normal i.f. bandwidth of 15kHz is reduced to 8kHz (ideal for the modern 12.5kHz channel spacing). With optional extras the rig will also operate Fast Scan Television.

The Yaesu FT-736R has an output of 25W on 144 and the 430MHz bands on all modes. The output drops to 10W on the 50MHz band and approximately 2 to 3W when operating on the 1.2GHz band.

Large Display

The transceiver's main display is large and well illuminated with the read out being very plain and easy-to-read. In operation the different functions appear as the operator selects them on the display.

A single needle multi-function meter is provided. This shows relative power out, a.l.c. levels and received signal strength.

Everything about this radio oozes professionalism and quality. One look leaves you with the impression that it was intended for the very dedicated and serious v.h.f./u.h.f. operator!

When I was first licensed I

could have only dreamed of owning or even operating a radio like the Yaesu FT-736R. I was in no doubt that when new to the market this rig definitely turned heads. I also had the suspicion that it could still hold its own today and I was looking forward to finding out.

Read The Manual

As I settled down to read the manual I started to get a feel of how ground-breaking this rig must have been for the discerning v.h.f./u.h.f. operator. It offers the kind of controls you would normally expect to find on a top class h.f. base station: it has an adjustable i.f. shift and i.f. notch controls, a noise blanker and a three speed selectable automatic gain control (a.g.c.) to mention a few.

There's also a facility for a masthead pre-amplifier for the 430 and 1296MHz bands. (This is controlled by a front panel button which puts a voltage onto the coaxial cable feeder).

To be quite frank...**I was quite amazed** to see that the Yaesu FT-736R has a dedicated packet output. A 3.5mm socket provides for simple **DATA IN, DATA OUT** and **GROUND** for AFSK packet use. For this mode, an additional TNC is obviously required.

Another indication that Yaesu were keen that this rig was to be at the cutting edge, was the fact that the FT-736R is also ready to be used for satellite working. For this it employs the dual v.f.o.s to provide full duplex operation.

With an optional unit fitted the FT-736R offers full CTCSS operation and selective calling. And for the keen c.w. operator...it can be

fitted with an electronic keyer.

Versatile Memory

The Yaesu FT-736R also offers an impressive and very versatile memory system. It comprises of 100 memories and a programmable **Global Call Channel** for the rig, accessible from any band **with a single button press** and a **Programmable Call Channel** for each individual band. It also has a priority watch facility where the rig will automatically monitor a programmed frequency while you operate elsewhere.

The rig also offers scan facilities on the memories and programmable band scan limits. The operator may also use the **Programmable Band Scan Limits** to create a small sub band within a band they want to scan. For example, they may wish to scan the f.m. simplex portion of the 144MHz...but exclude the repeater portion of the band...a simple job for the '736R.

On The Air

So, it was then time to see what the Yaesu FT-736R could do on the air. But would it perform as well as it looked?

Although I don't have a specific antenna for the 1.2GHz band, I connected the transceiver to a discone antenna. Unfortunately, although I had a tune round no signals were heard. However, although the 1296MHz band is not - apparently very busy here in Dorset - the Editor tells me that in Japan (particularly) it's very popular indeed! Perhaps it will become a busier band eventually?

As is usual with equipment trials and reviews on behalf of

Product

The Yaesu FT-736R

Company

Yaesu UK Ltd.

Pros & Cons

Pros: "The Yaesu FT-736R remains a force to be reckoned with 14 years after PW first reviewed it"....."The Transmitted and received audio is very good"...."very impressive and highly effective 'classic' transceiver".

Cons: Richard said "The only thing that I could find that may separate it from the modern rigs is the power output...especially on 50MHz. However, in my opinion this would not be a sufficient reason to dismiss this very impressive and highly effective 'classic' transceiver".

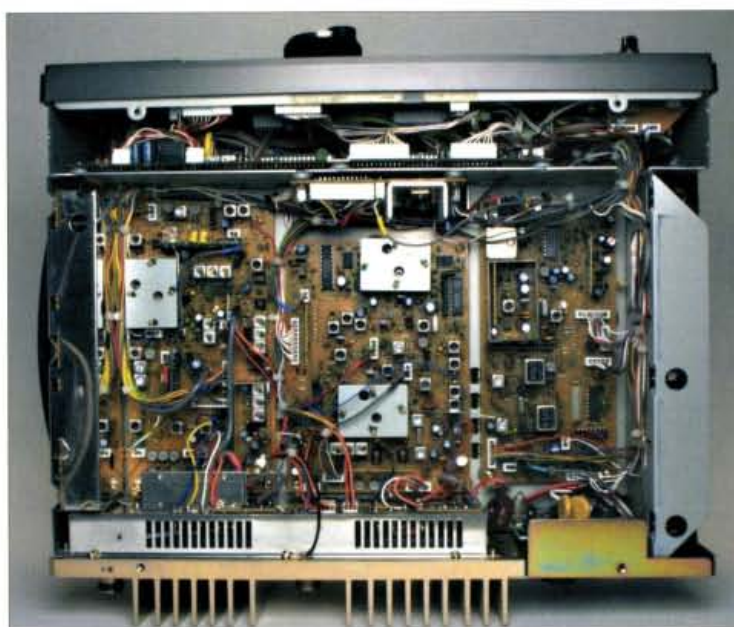
Price

Available second-hand (occasionally, as original owners tend to keep them). Price depends on modules fitted - examples have been advertised for sale from approximately £850 to £1300.

Summary

Richard GORSN said: "All in all Terry and I had great fun getting to know the Yaesu FT-736R. So, if you're wondering 'What did Richard really think of it?' I'll answer in this way..."I would be very proud to be the owner of one".

● A compact and recognisable lay-out is visible when the top cover is removed. Although integrated circuits are in evidence - this modern classic was not dominated by surface mount components!



Continued on page 28



● The rear panel on the FT-736R. Although the transceiver has a relatively low power output compared to equipment manufactured today, the heat-sinking cooling fins are prominent.



● Underside of the transceiver, with screening panels mounted.

● (Far right): Something you don't see on many transceivers - the phono sockets for the ATV mode on 1296MHz. These are located in a recessed area under the carrying handle (see text).

PW...I employed the help of my father-in-law, **Terry Wood G7VJJ/M3TJW** for the on-air testing. Terry has a lovely little attic shack in his bungalow on the northern reaches of Bournemouth at locator IO90BS and I really don't know what I'd do without his

help. (Thanks Terry).

For the on-air testing we used Terry's tri-band collinear for 144 and 430MHz f.m. working, his 9-element beam for 144MHz s.s.b. and his two element HB9CV antenna for 50MHz. All these antennas are about 8 metres off the ground and Terry's QTH is about 30 metres (100 feet a.s.l.).

After some rather prolonged and fruitless "CQ" calls on all three bands we finally got our first contact via GB3WR, the repeater high up on the Mendip Hills on 145.600MHz near to Wells in Somerset.

Alun G0TJP (also from the Mendip Hills) returned our call. To access the WR repeater from Terry's area of Bournemouth is no mean feat in itself. So, we weren't a very good signal in and to be honest I was amazed we were in at all!

Lou G1ULZ was our next contact on 145.450MHz simplex

f.m. Lou is a local Amateur living about 13km away from Terry in West Moors. Lou was very helpful and was a huge signal with us; he was running 3W into a ground plane antenna.

Lou reported that the audio from the FT-736R was "very good indeed", we reduced our power out using the variable drive control to the absolute minimum and we were still end stop. Lou again commented "it really is very good audio Richard".

Both Terry and I agreed that the received audio was also very good. The rig's internal speaker provides a very full, yet mellow audio that's easily listened to. And for those occasions where you need a bit more 'top' there's a very effective Tone control.

The next contact was on 144.275MHz s.s.b. when **Geoff G3NAQ** from Newbury (IO91HL) answered our CQ and we had a very enjoyable chat. Geoff was using a home-brewed station which sounded very impressive indeed. He was a massive signal with us and gave us a similar 5 and 9 plus report. When asked to comment on our transmitted audio he remarked "It sounds fine, good".

Geoff helped us out with a quick test of the speech processor.

We did a comparison and Geoff confirmed that although it did not make any major difference to the signal strength the audio was much better with the processor switched on.

I noticed that the S-meter reading on rig was only showing about 5 and 7 but Geoff was a massive signal. Because of this I felt the meter was not really representative of what I was hearing...but was not unduly concerned.

Next was the turn of 50MHz, and what a band! We spent an hour tuning round a completely flat band and then, suddenly, on 50.139MHz on s.s.b. there was **Andreu EH5FKX** (Spain) giving his location as the first four characters of a locator,



IM98. We called a couple of times and noticed that the twin needle s.w.r./power meter we had in line was showing 7W output.

Just as I was wondering whether the 7W would be enough to reach Spain and break the ever increasing 'pile-up'...Andreu replied to me! I thought it might be rather good to use the special Golden Jubilee call sign so I worked Andreu using GQ0RSN/P and got a 5 and 9 signal report from him!

We then heard, Antonio EH3BFX from JN11CO but sadly we lost the band before being able to make contact with Antonio. Such is life on 50MHz!

Although the FT-736R doesn't have a separate RIT control for s.s.b. operating, it does have a function called the Clarifier. This uses the main dial, and when it's activated the transmit frequency remains unchanged. The main tuning knob then only controls the receive frequency within $\pm 10\text{kHz}$.

We did not have any luck on 430MHz so Terry volunteered to operate the FT-736R and I would go and speak to him from my mobile station.

The mobile tests on 430MHz f.m. simplex were very successful. We operated over very demanding terrain through town and in areas where we would not have expected to keep contact and we were both very impressed indeed with the results. I'm also in a position to be able to say that the transmitted audio from the Yaesu FT-736R is of the highest quality.

Terry was now finding his way around the controls and starting





● Richard Newton GÖRSN getting to grips with a transceivers which he considers to have been aimed at the specialist v.h.f./u.h.f. operator. He wrote "I'd be proud to own one".

(Photo courtesy of Terry Wood G7VJ/IM31W.)

to enjoy operating the FT-736R (he still speaks longingly about the excellent quality of the received audio!).

Another Foray

Terry could not resist having 'another go'...and after speaking to me on 430MHz he took another foray onto 50 and 144MHz. He worked **Vic 14XSS** from Italy (JN54KN) on 50.151MHz s.s.b., getting a 5 and 5 signal report from Vic...still just using the 7W and the simple HB9CV two element beam.

Terry then heard **CT4NH** from Lisbon in Portugal (IM58JR) on 50.149MHz s.s.b. Unfortunately though...he was unable to break the massive pile-up.

Next (just to finish up) Terry decided to try a f.m. simplex on the 144MHz band. **Peter M3PEC** from Salisbury gave Terry a 5 and 9 report on 145.525MHz and reported: "Very good audio and good modulation". Incidentally Peter was using a Yaesu...an FT-480R at his end.

Next Terry contacted **John M3JKR** near St Catherine's Point

Manufacturer's Specifications

General

Operating frequency ranges:

50 to 50.3999MHz (with optional unit).

144 to 145.999MHz.

430 to 439.999MHz.

1240 to 1299.999MHz (With optional unit).

l.s.b., u.s.b., c.w., f.m. ATV (A3F, optional module).

-10 to +60°C.

170 -264V a.c. 50Hz or 13.8V d.c.. negative ground.

Max. 250VA. Receive 1.5A, transmit 8A.

(WHD) 368 x 129 x 286mm

9kg (19.8lbs)

Modes

Operating temp. range:

Supply voltage:

Power consumption:

Dimensions:

Weight:

Receiver

Circuitry:

&

Intermediate frequencies:

50, 144MHz bands double conversion superhet. On 430 1296MHz triple conversion superhet.

13.69MHz and 455kHz, 47.43MHz (430) and 133.91MHz.

s.s.b./c.w. better than -15dBµV for 12dB S+N:N

f.m.: better than -9dBµV for 12dB SINAD

60dB or better

s.s.b./c.w. better than 0dBµV

f.m. better than -12dBµV

Sensitivity:

Image rejection:

Squelch sensitivity:

Selectivity

(-6/-60dB)

Narrow c.w. (optional)

On f.m.:

Narrow f.m.:

Audio output impedance:

Audio output power:

Transmitter

Power input:

s.s.b./c.w.: 2.2/4.5kHz

600/1.2kHz

12/25kHz

8/19kHz

4 to 16Ω

1.5W into 8Ω with 5% THD

Modulation methods

Spurious radiation:

Carrier suppression:

30W d.c. at 50MHz

60W d.c. at 144/430MHz

45W d.c. at 1.2GHz

s.s.b.- balanced, filtered carrier

f.m. - variable reactance (±5kHz or ±2.5kHz max. deviation)

Better than -60dB

Better than -40dB below peak output.

on the Isle of White on 145.475MHz. John also commented on the good transmitted audio quality of the FT-736R.

Last, but by no means least came a very enjoyable contact with **Mike 2E1HC** from Warsash, 22km or so East of Southampton in Hampshire. Mike told Terry: "Very good audio, good modulation" and gave Terry a 5 and 3 signal report.

An Old Adage

There's an old adage that says "You get what you pay for". I quote this because - with all the optional modules fitted this transceiver would have cost close to £2000 in 1988. I dread to think what this

would equate to these days, but I think that this may explain why the Yaesu FT-736R remains a force to be reckoned with 14 years after *PW* first reviewed it.

The only thing that I could find that may separate it from the modern rigs is the power output...especially on 50MHz. However, in my opinion this would not be a sufficient reason to dismiss this very impressive and highly effective 'classic' transceiver.

All in all Terry and I had great fun getting to know the Yaesu FT-736R. So, if you're wondering "What did Richard really think of it?" I'll answer in this way..."I would be very proud to be the owner of one".

PW

Editorial Promotion Apology

Some readers may have been truly confused when the Next Month *Practical Wireless* promotion was published on page 69 in the July issue. The confusion may have arisen because of our mistake (a complete puzzle this because the transceiver was there in front of us when it was written) in calling it an Icom rig, with the classification including the term 'IC-736'. My apologies goes to everyone concerned...especially to Yaesu as the transceiver was of course manufactured by them. Editorial 'Sack Cloth & Ashes' are the order of the day. **Sorry everyone!**

Rob Mannion G3XFD.

The Key To Improving Your



● There's really no doubt...Gerald Stancey G3MCK really enjoys using the Morse Mode. He hopes you'll enjoy using it too!

Keen c.w. and QRP operator Gerald Stancey G3MCK aims to show not only that it's very easy to become a competent c.w. operator...but that there are also other benefits!

In this modern day and age you may be led to believe that operating on the key with Morse (c.w.) is a mode that has passed its sell-by date. While this may be true in the professional world, we as Radio Amateurs must not forget that **we are 'amateurs'** and that what is right for the professionals may not be right for us who, unlike professionals working in their particular service, often have shallow pockets.

To begin the look at why I think it could be beneficial for you to improve your c.w., proficiency...let's take a look at the background. **And to start...it's generally accepted that operating on c.w. has an advantage of about 20dB, that is a power ratio of 100:1, when compared with single sideband (s.s.b.) transmissions.** This sounds a lot and it is!

Let's now put the 20dB into

perspective: In effect it means that to compete with a 14MHz c.w. station running 100W to a dipole antenna at 10m above ground...an equivalent s.s.b. transmitter will need to run 400W to a 3-element beam antenna at 18 metres or so above ground. Now just think of the cost, planning and Electromagnetic Compatibility (EMC) problems that the s.s.b. user has to face compared with the c.w. operator!

Rule Of Thumb

Having now mentioned EMC it's well worth remembering that the EMC gurus give the following rule of thumb: expect problems when running 100W, expect to be clear when running 5W c.w. For those who are a little rusty on converting power ratios to dB the difference between a 100W signal and a 5W signal is 13 dB giving the c.w. station a 7dB advantage.

In other words if you are a typical urban Radio Amateur, using c.w. offers significant financial and social benefits. It could even be the only way that you can effectively get on the h.f. bands.

Amateur Accuracy

It's often said that when using c.w., **accuracy must come before speed.** This is obviously correct for professional operators, but I don't think this is true for Amateur Radio operators. How

can this be you may ask?

The answer is that the normal Amateur 'rubber stamp' QSO, on either c.w. or s.s.b., passes virtually no information of real importance! Of course you need to get the call sign correct, but does it really matter if you copy his power as being 90W when he sent 80W? Of course not!

Also there's a lot of redundancy in a normal Amateur transmission. This means that you can miss letters, even words, and still have a pretty good idea about what was sent.

In short the message to any new c.w. operator is: **relax, don't worry about missing things, just enjoy yourself, get stuck in and with time you will improve.**

Take The Plunge

Like all things, unless you take the plunge you'll never get going. Some Radio Amateurs say they will go on c.w. when they feel "comfy" at 15 words per minute (w.p.m.).

However, these people will never go on the key as they never will feel "comfy". This may seem hard **but it is the truth.** I think it's necessary to accept that, like jumping into a swimming pool, your first few c.w. QSOs may not be much fun.

However there are a number of actions that can be taken to ease things. Firstly, you should target c.w. operators who are just having rubber stamp QSOs.



● In the article Gerald G3MCK suggests that regular practice will help you understand the 'Morse language' better. Units such as the Datong D70 Morse Tutor can help in this respect. Although no longer produced, the D70 is still available second-hand in the PW Bargain Basement section for reasonable prices. Portable and easy-to-use, the Morse tutor will send groups of five letters, mixed letters and numbers or numbers alone to provide receiving practice. Although the unit sends 'perfect' machine Morse (rather than the varying quality of some hand-sent Morse - regular practice sessions will enable an operator to maintain their decoding speed.

CW

You'll already know the sort of thing that they are going to say and if you can't copy them it does not matter. **Remember that you are using them for experience.**

Rubber stamp c.w. operators are easy to find on h.f. as virtually all QSOs with non-UK Amateurs use this format. Make life easy for yourself by having crib cards written out, for example:

First over: GE OM TNX
ES UR RST 579 579 QTH
LEEDS LEEDS = NAME
GERALD GERALD = HW
CPY ?

Translation: *Good evening
Old man, thanks and your
RST is 579 579. My location
is Leeds. How do you copy?*

Second over: R TNX OTTO
FER INFO = RIG TS570 =
PWR 50W = ANT DIPOLE
= WX CLEAR = HW ?

Third over: R OTTO MNI
TNX QSO ES HPE CUAGN
73 GB +

The above are typical exchanges but can be modified to suit the circumstances. Note the brevity of the text, no unnecessary use of words like 'is' and no repeating back to Otto his QTH and other details that he may have sent you.

Having A Chat

Most of the time the crib card information will see you happily through rubber stamp QSOs. However, you may fall on someone who wants to chat and this may be beyond your ability. There are two ways of dealing with this situation. Firstly the graceful escape; **send:**

SRI OM XYL QRM MUST
QRT = HPE CUAGN 73 GB +
Translation: *Sorry Old
Man, interference from my
wife...must get on with the
(gardening perhaps?).*

*Hope to see you again. Best
wishes, good-bye.*

Alternatively ask the other station to QRS (send more slowly) and tell them you would like to chat but as you are a newcomer - not at this speed! Any good operator will respect you and be delighted to comply. The choice is yours.

Competence With Practice

Competence only comes with practice. This applies to c.w. operators just as much as it does with Olympic athletes. Just sitting and wishing will not get you anywhere.

Regular practice, let's say one QSO a day, is better than sporadic bursts of high activity. We all lead very busy

any other language. So, my advice is to give yourself as much exposure to hearing the sound of Morse as you can.

I suggest that when you're working in the shack...put the receiver on to a c.w. station instead of the local v.h.f./u.h.f. voice repeater. This is just emulating the process used by total immersion language teaching...by surrounding yourself with the c.w. 'language'.

It's also helpful, but not essential, to have an 'Elmer', someone who is good at c.w. and will encourage and advise you. One of the best things they can do is take you on a 'tour' of the Amateur c.w. bands and identify the stations that are sending too fast for you to copy. Also your friend

• Tutors such as the MFJ-411 can provide you with very effective regular practice anywhere and at any time. However, Gerald G3MCK recommends you listen to 'off air' c.w. as much as possible. In effect you should 'immerse yourself' in your chosen new 'language' as you would do with any spoken language you're learning (see text).

will identify those stations whose c.w. is virtually unreadable...as you'll certainly need to be shown that such stations do exist!

Positive Attitude

Finally take a positive attitude. **Don't see c.w. as an obstacle, see it as a gateway of opportunity and something to enjoy.**

You're learning a new skill and the pay-off is working DX or maybe even just being able to get on the air...in other words c.w. could be your Amateur Radio 'Passport' to even more enjoyment in the hobby.

Who knows, after a short time you may come to love the mode in the same way as I...and many others do. So, I look forward to working on the key very soon!

PW

Quick Guide To Q Codes & CW Abbreviations

Puzzled by the c.w. short-hand? The following list will help, as it shows the abbreviations/Q codes most often used to reduce the number of letters/words you have to transmit to convey a meaning.

ABT	About
AGN	Again
ANT	Antenna
BK	Interruption signal
CPI/CPY	Copy
CUL	See you later
ES	And
FB	Fine business
FER	For
GA	Good afternoon
GD	Good day
GE	Good evening
GM	Good morning
HPE	Hope
HR	Here
K	Invitation to transmit
MNI	Many
MSG	Message
OM	Old Man
PSE	Please
PWR	Power
RPRT	Report
UR	
RPRT	
RST	Your/Their report in readability, strength tone.
RX	Receiver
SRI	Sorry
TNX	Thanks
TX	Transmitter
VERT	Vertical
VY	Very
WID	With
WX	Weather
XYL	Wife
YL	Young lady
73	Best wishes
878	Love & kisses

A selection of more commonly used Q Codes in Amateur Radio

QRM	Interference (from other stations)
QRN	Interference (from electrical sources)
QRO	High power
QRP	Low power
QRS	Send slower
QRT	Closing down
QRV	Go ahead/ready
QRX	Stand-by
QRZ	Being called by??/please identify
QSB	Fading
QSL	Confirm
	contact/reception
QSO	Radio
	contact/conversation
QSY	Change/changing frequency
QTH	Location



lives but time for one QSO can be carved out of anyone's day and there's much you can do to help yourself.

For example, why not get up 10 minutes earlier in the morning? If, like me, you're not a 'morning person' then how about last thing at night? **You know your lifestyle** and can probably think of other ways of getting 10 minutes in the shack...remember practice makes perfect (or very nearly so).

Like Any Language

In time, listening to the incoming c.w. from your receiver comes to sound like

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	GAIN (dB)	BOOM (Metres)	PRICE
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2M5L 144 MHz 5 element	12.24	2.5	£85.00
2M7L 144 MHz 7 element	14.19	4.4	£99.95
4 Metre Yagi			
4M3L 70 MHz 3 element	8.7	1.48	£85.00
6 Metre Yagis			
6M1 50 MHz 3 element	8.21	1.9	£85.95
6M5L 50 MHz 5 element	10.31	3.6	£119.95
6M5LDX 50 MHz 5 el. Long Yagi	11.75	6.0	£165.95
6M7LDX 50 MHz 7 el. Long Yagi	13.31	9.6	£249.95
TR 6-5 50 MHz 5 el. economy	10.20	3.6	£99.95
28MHz Yagis			
10M3L 28 MHz 3 element	7.41	3.0	£129.95
10M4LDX 28 MHz 4 el. Long Yagi	9.42	5.4	£189.95
21MHz Yagis			
15M3L 21MHz 3 element	8.21	4.4	£225.00
15M4LDX 21MHz 4 el. Long Yagi	10.60	8.2	£255.00
18MHz Yagis			
17M3L 18 MHz 3 element Yagi			TBA
14MHz Yagis			
20M2L 14 MHz 2 element Yagi	6.37	3.0	£179.95
Log Periodic Yagis			
LP270 144 - 440 MHz	9.50	1.4	£110.00
LP1300 105 - 1300 MHz	11.13	1.5	£129.00
LP 1830 18 - 30 MHz	7.80	3.0	£399.00
Verticals			
V4M 70MHz 1/2 Wave Vert	2.2	2.35	£59.95
V6M 50MHz 1/2 Wave Vert	2.2	3.75	£59.95
2M258 144MHz 2 x 5/8 Colinear	8.5	3.2	£69.95
Baluns			
CB 18-52 18 - 52 Mhz 50 Ohm Balun			£12.95

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SIRIO 28MHz Beams			
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SY27-4 4 element 26 - 30 Mhz	9.6dB		£79.95

CUSHCRAFT			
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A3W5 5 element Beam 12/17 Mtr			£399.95
MA5B Mini Beam 10/12/15/17/20			£349.95
D3 Dipole 7/14/21/28 Mhz 7.86 Mtr Long			£199.95
D4 Dipole 7/14/21/28 Mhz 10.3Mtr Long			£299.95
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R6000 Vertical 14 - 50 Mhz			£299.95
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ZX 6-2 2 El. 50Mhz Beam	6.2dB		£39.96
ZX 6-5 5 El. 50Mhz Beam	12.1dB		£103.20
ZX 6-6 6 El. 50Mhz Beam	12.5dB		£119.96

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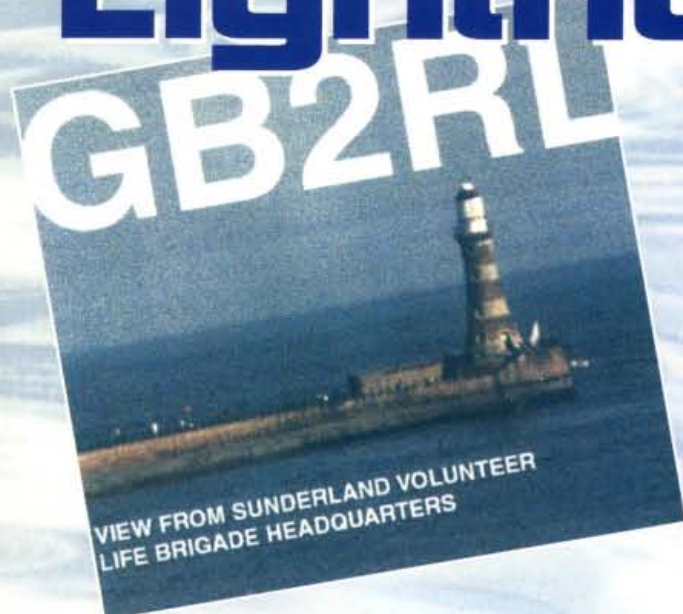


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- 200W PEP

Lighthouse Acti



● The QSL card that was sent to all stations who made contact with GB2RL.

Ken Hunt
M0BPC recalls
how the Bishop
Auckland
Radio Amateur
Club got on
when they took
part in an
activity week-
end to 'air' a
lighthouse!

It all started back in 1998 when the Special Event Organiser of the Bishop Auckland Radio Amateur Club (BARAC), **Glen M0AYI** called for volunteers to take part in a Lighthouse activity weekend in August. The idea was to man and put on air a club station for 48 hours from a local, - well 48km (30 miles) away - Lighthouse!

Unfortunately due to the Lighthouse weekend falling in August and that being the peak holiday period many of the club stalwarts were unavailable to volunteer. Even Glen wouldn't be returning from his holiday in time to take part!

Eventually five club members, myself included, came forward and offered to man the station from 0900hours on the Saturday until as late as possible on the Sunday. So, now it was time to prepare, from my point of view nothing further happened until 0700hours on the Saturday when I left home to collect **John G7BYE** on the way to the Lighthouse.

Roker Lighthouse

Glen M0AYI set about arranging for the club to use the Headquarters and Museum of the Sunderland Volunteer Life Brigade, which overlooks Roker Lighthouse at the mouth of the River Wear. He also sorted out the call sign for the event, which was **GB2RL**.

The pier that leads to Roker Lighthouse is considered too dangerous to use, particularly if

weather conditions are poor. So as the event rules allow the use of nearby buildings nearby to the Lighthouse that is being put on air, it was decided that the watch room of the Volunteer Life Brigade would be the ideal site for us to set-up our Amateur Radio station for the event.

Setting-Up

Fellow BARAC member **Tim M0ACV** who is probably the best known of our members in the Northeast due to his work not only as a Novice and RAE instructor but as an invigilator at RAE Exams, (the BARAC clubhouse being a registered City & Guilds Examination centre) arrived at our weekend QTH at about the same time as John and I did ready to get things set-up and ready to go.

It's probably Tim's exceptional organisational skills that are most highly prized by his fellow club members and this certainly shone through as we began to unpack his car. Tim's car revealed all the rigs, power supplies cables, connectors antenna's etc that we would need for our planned two h.f. and one 144MHz station for the event.

Not wanting to be left out or miss out on the fun, Glen had cut his holiday short and promptly arrived with **Sam M1BVM**, the nucleus of our team. So the '36 hour men', set about erecting antennae and ably assisted by club Chairman **Ian G7ESY** soon had the station up and running and ready to operate.

First Call

I seized the honour of putting out the first call and with John keeping log the first call of the weekend was made on 14MHz. "Is this frequency in use? Is the frequency in use? CQ CQ CQ This is GB2RL. Golf Bravo 2 Roker Light standing by".

After that first call a busy hour followed on 14MHz, using a Yaesu FT-920 and G5RV. Meanwhile Glen and Sam worked the 3.5MHz band running a Kenwood TS-690 and Windom to complete the first team's station.

As the day progressed we

were very grateful for the continuing supplies of cups of coffee and boiled sweets liberally supplied by our off-duty operators and the arrival of other club members throughout the event. This enabled us to have frequent changes of operator and log keepers with **Neil M1BVK**, **Andrew G7WCU** and **Brian M0BAR** all taking their turns on the microphone and at log keeping.

The Lighthouse Activity Weekend coincided with the Rescue Brigades open day and great interest was shown in our radio station as well as the Brigade's Museum.

We were pleased to welcome the deputy Mayor and Mayoress to our shack and such was the interest shown by the Deputy Mayoress that she was encouraged to send a greetings message on the 144MHz band. The CQ call resulted in an interesting exchange with **GO0BF/P**. We also had a visit from the a reporter from our regional newspaper, the *Sunderland Echo*.

Highlights

The highlight of the first day wasn't me working Boston and Nova Scotia in quick succession or Tim working a station high in the Arctic Circle. Instead it was the considerable achievement of John who won a bottle of Brandy in the Life station raffle!

Our original intention was to keep GB2RL working through the night but a combination of sore throats, tiredness and a lack of contacts, even Glen working c.w. only raised two contacts in an hour of trying! This resulted in the station being closed down at around 0200hours.

Did I mention that Tim was a master of organisation? Well he was the only one of us to have a mattress on which to place his sleeping bag, the rest of us had to make do with the bare floorboards for the night!

Sunrise Start

Sunday started early with the team watching the sunrise over the Lighthouse. Unfortunately

although the weather had been very favourable on the Saturday the forecast predicated that it was expected to deteriorate as Sunday progressed.

We decided to move the 144MHz rig and set-up into the main hall to make more space for the h.f. operators and log keepers in the watch room. Unfortunately it proved impossible to maintain the rate of contacts that we'd had on the Saturday, as we were often squeezed out of our chosen frequency by adjacent frequency stations, it was very frustrating to use a frequency for an hour or more then to lose it to the QRM.

As no operator would deliberately start transmitting 3-400Hz from an existing station, I had to assume that they too had been using the band for a long time and only changing band conditions revealed the problem. After giving negative copy reports to several stations we tried several times to QSY but were unable to find suitable frequencies.

The return of the club members who had gone home for a night's sleep allowed fresh ears to listen" was the order of the day. The v.h.f. station



● Ken M0BPC operating an IC-706 from the look-out room of the Sunderland Volunteer Life Brigade museum headquarters. The dummy (on the left of the photo!) is one of the museum's many exhibits and memorabilia.



● The view from the watch room of the Volunteer Life Brigade HQ that the operators of GB2RL enjoyed during the Lighthouse Activity Weekend.

mainly manned by G7BYE and M0BAR continued to make contacts throughout the day but with the deteriorating weather conditions and our inability to find a clear frequency we decided to close down the station before dark.

Overall GB2RL made about 400 contacts before the close down thanks to the patience and perseverance of the stations in our 'pile-ups'. It was fascinating to hear details of other stations and to have them wanting to work us.

Thanks

My personal thanks go to the station who's callsign I didn't hear but who alerted ON4BRN/LGT to the presence of GB2RL in his pile-up, which resulted in a prized entry in our log, yours is the spirit which makes Amateur Radio so rewarding! The team behind GB2RL would like to thank all those stations who tried to make contact and unfortunately couldn't - thank you for your perseverance.

Even though our part in the event was over, there was still the job of sending out the QSL cards. Mark G0GFG, who was unable to attend the event himself due to poor health had the unenviable task of deciphering our writing and sending out all our QSL cards!

Finally, I think the highlight of the Sunday was John inadvertently leaving his bottle of brandy in my car - I wonder if he has missed it yet!

PW

The International Lighthouse/Lightship Weekend

Mike Dalrymple GM4SUC has sent us the following information on the 2002 International Lighthouse/Lightship weekend.

Over the last few years the International Lighthouse/lightship Weekend has grown in popularity. Looking at the recent years it can be seen that in 1999 there were 204 lighthouse/lightship stations on the air from 36 countries. The following year, 2000, the number had grown to 255 stations in 44 countries and last year, 2001, the total had reached 348 stations in 46 countries.

Additionally, there are quite a few lighthouse/lightship stations on the air each year for which an entry is not received in time for the event. So when is the event to be held in 2002? The answer is from 0001 hours UTC on Saturday 17 August until 2359UTC on Sunday 18 August 2002. Already over 100 entries in 27 countries have received by VK2CE at the official web site for the event at vk2ce.com/illw

So come and join us in the fun of the weekend, or you could establish a station at a lighthouse, lightship or maritime beacon yourself. **Don't forget....it's not a contest. Instead it's an event, a weekend to enjoy playing radio with your friends and meeting new people.** Enjoy the weekend!

If you require any further information or I can help in any way you can contact me on (01292) 443127 or by writing to 11 Shawfield Avenue, Ayr KA7 4RE. E-mail:

gm4suc@compuserve.com

Mike Dalrymple GM4SUC

HAVE YOU VISITED SUNDERLAND VOLUNTEER LIFE BRIGADE



The Watch House is the working Headquarters and a Museum showing over 100 years of Life Saving on the Coast of Sunderland

The Sunderland Volunteer Life Brigade

The Sunderland Volunteer Life Brigade (SVLB) was founded in 1877 to rescue people from ships in distress using the Breeches Buoy method of rescue and is now one of only three remaining brigades from the 40 or so which were active at the end of the 19th Century. Their services are still available, on call, 24 hours a day 7 days a week to assist the Coastguard in coastal searches and cliff rescue.

For more information on the SVLB or to find out more about the museum which tells the story of over 100 years of life saving in Sunderland write to Sunderland, Volunteer Life Brigade, Coastal search And Rescue Unit, Pier View, Roker, Sunderland. Tel: 0191-567 2579



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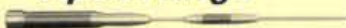
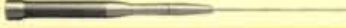
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Antenna Workshop

Readers Antennas - Two Thoughts

This month we go all 'Roy-all' as we have ideas for antennas for the h.f. bands from two readers. An idea using a CB antenna comes from Roy Mansell G0OVK and from Roy Walker G0TAK, comes a suggestion that you try a balun loaded end-fed antenna which covers 1.8-430MHz.



● Roy G0OVK holding the relatively small box that the A99 antenna arrives in.

CB Antenna On HF

After being absent from the h.f. bands for around three years, I decided that I was missing something. I was talking to a friend of mine,

Bob M0CVK, who mentioned that the conditions on the h.f. bands were looking up and that it was possible to work good DX on a regular basis.

So, I went out and bought myself a new Kenwood TS-570DGE radio. Having taken care of the radio side of things, I turned to sorting an antenna for the bands. Next I decided that I wanted something that didn't stand out like a sore thumb. It also had to be easy to erect so, in the end I came to the conclusion that a vertical antenna was the way to go.

Vertical antennas can have a good low angle of radiation and can take up little space. But then I

was faced with another problem. Many vertical antennas are just set up for a single band and I didn't want to be limited in that. So, I started looking round for a vertical antenna suitable for operating on different bands.

vertical antennas were, in my opinion ridiculous. Thinking it over, I remembered that around five years before, I'd heard of a vertical CB antenna which gave a fairly good match and low s.w.r. on the 18, 21, 24 and 28MHz bands.

After some more searching, I managed to identify the CB antenna that could perform on several Amateur bands. It was the A99 vertical antenna, made by Solarcon in the USA. I managed to get hold of these, 5.2m long, antennas from **The CB Centre** in Bridgenorth Shropshire for just under £50.

The antenna is encased in a white g.r.p. tube when assembled, and needs a short pole to hold it in place. So, assembling the few tools needed, I set about building and mounting it on the chimney. The A99 is available with a ground-plane kit, or as a plain vertical antenna (as I bought mine).

Assembling the three screw-together parts is quick and easy, needing only two U-bolts to attach the antenna to the short stub mast. The antenna can be 'tuned' with two metal tuning rings at the base of the antenna, which lock together. I then decided that I would leave them as they were - tuned to 27.205MHz.

System Performance

So, how did the antenna system perform? Well I have to say that it performs as well as I had hoped! It has a low s.w.r. on the 18, 21, 24 and 28MHz bands and was actually useable on the 14MHz band although the 3:1 s.w.r. is just within what the internal antenna tuning unit (a.t.u.) can deal with.

Since putting the A99 antenna up, I've worked stations around the world with just 100W. If you want to work the world on a low budget, I think the A99 from Solarcon is ideal.

So, there you have it - a cheap multi-band vertical antenna for £50, which, with the cost of many vertical antennas these days, is like a breath of fresh air. Try it yourself, you won't regret it!

Roy G0OVK



● Fig. 1: The A99 antenna assembled and mounted on the highest point of the house.

Expensive!

Looking through various supplier's catalogue, my initial view was that it was going to be rather expensive! Some of the prices asked for some

On Antennas For The HF Bands

End-Fed Monopole

Time and time again I have to correct the chap on the other end who sends 'rgr the G5RV', with 'the antenna is a G5IJ imi G5IJ'. (I'm sure my Morse isn't that bad!).

The antenna I'm to describe is ideal for the upstairs shack. Moreover it'll tune on all the bands from 1.8 to 430MHz! Beat that with your G5RV (no disrespect to the late **Louis Varney G5RV** intended). Personally I've had excellent results with all the models I have constructed, together with other Amateurs who've also tried the antenna out.

To be honest, it's not a new antenna idea, but one that has been around for quite a long time. Originally I was introduced to the 'G5IJ Push-Push Twin Line antenna' in *RadCom*†. Basically the antenna is a twin line radiator driven by a toroidal transformer. († *Radcom* March 1969 - Technical Topics by **Pat Hawker G3VA**.)

Unlike many other antennas, the G5IJ antenna works with two outputs, **but both are in phase**. So, the radiating elements may therefore be shorted together, or left open, according to your preference. The advantages this antenna has over a dipole, or other wire antenna are that it can be folded into almost any shape, it can be any length you can accommodate and it is independent of earth radials or counterpoise.

Toroidal Transformer

Now let's turn to the making of the essential toroidal transformer. Start by folding a 5m length of 0.95mm (20s.w.g.) enamelled copper wire in half and twist the 'pair' together with one turn every 50mm. Then clean and tin the folded over end for about 5mm.

Next with the twisted pair and starting from the folded end, wind, onto the toroid 27 turns closely (but evenly) spaced. **Remember, every time you pass the pair through the centre of the toroid counts as one 'turn'**. Secure each end of the winding with a cable tie, this helps. Finally cut off the excess wire then clean and tin these two ends leaving sufficient for the connections.

In use, the coaxial cable forms the primary winding and is placed as a 'Faraday cage' over the secondary. The length of coaxial cable depends on your circumstances and should be the length from transceiver to antenna plus about 1.3m.

Around 1.3m from the end of the coaxial cable, bare the braid for about 5mm and lift the it in a loop above the inner insulation. **With care**, tin this loop and slip it over the tinned common 'hairpin' end of the first winding and solder them together.

Maximum Number

Wind the primary using the coaxial cable to get the maximum number of turns onto the core. The turns

should be wound as evenly as possible on the toroid. When you have done this, cut the rest of the coaxial cable off leaving a tail of about 75-100mm. From this tail, strip off the outer covering and the braiding as close to the toroid as possible after the last turn.

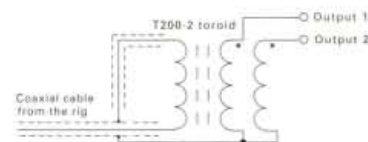
Place insulating tape over the exposed braid where you've trimmed it off. Lead the inner and insulation back to connection of the screen and loop, then solder the inner to this point too. (Be careful not to release the first joint, or overheat the insulation!).

The transformer is now complete, and you can put your plug of your choice on the end of the coaxial cable. The radiating elements, (any type of 300Ω twin) may be attached to the secondary (I used 'Choc-block' connector). You could even use 20m or so of any old wire that is laying about. Length doesn't seem to matter ... arrange to suit you and try it out.

My experience is that the matching on all bands is reasonably flat across the bands, though it may be a little higher than you would expect. (It is however, 'tameable' with a tuner). Try to read the *Radcom* article as it gives tables and theory of the antenna.

Contacts have been made with the 20m of TV 300Ω twin feeder coiled up on the wardrobe door. Please try it out, and let me know if it works for you?

Roy G0TAK



● Fig. 2: A schematic diagram of the layout of the G5IJ toroidal transformer end-fed antenna.



● Fig. 3: A completed transformer ready to be mounted in a box for weatherproofing purposes. The secondary (inner) winding has been wound with slightly thicker wire so, taking up slightly more room on the core.

Qs & As

In general the answer is: It probably won't matter - just try it!

Q. I don't have a T220/2 toroid?

A. Use the (cleaned up) scan coil toroid from a large screen TV.

Q. Will more than 20m of wire work?

A. Yes, I currently use a loop of 80m of wire at an average height of one metre above ground.



● Fig. 4: A smaller version of the G5IJ antenna toroid mounted in a suitable box, prior to weatherproofing. You can see how the antenna connections terminals are mounted.

Glowing Voltages

A nuclear battery perhaps? No, just l.e.d.s used as voltage references by Robert Kerr GM4FDT in his replacement for the "no longer available" bias batteries.

I like valved equipment, and especially restoring older valved radios. But there is one item that I mourn the passing of. And that humble, but in many cases absolutely vital part, was the bias battery.

The bias battery sat within many early radio sets, often not being changed for years on end. It provided a series of negative voltages in the range -1.5 to -9V to bias the various valve stages of the set. The batteries consisted mainly of six AA sized cells wired in series and stuck into small sockets poking through the pitch that invariably covered the tops of the batteries.

Commonly Seen

Although the most commonly seen battery was the 9V pack, variants were available with maximum voltages of 4.5 to 18V. The six-cell version was available well into the 1960s, where it was often used as a variable voltage

source for prototype transistor circuits. I remember that every electronics lab, that I visited seemed to have several on each bench. But where are they now when I need some?

In an effort to overcome this problem, I set out to create a suitable unit that could be used as a cheap and easy-to-make replacement. I could, of course have just soldered the required number of batteries together, and recreated the original bias battery myself. But I decided that I would make an electronic substitute.

I've often found it quite difficult to solder some batteries as many have terminals that seem to be nickel plated, both for corrosion resistance and perhaps to make them look pretty! The action of a hot soldering iron, held on for some time, also seems to reduce the life of some batteries too. So, what could I use as a replacement?

Light Emitting Diodes

In the end I settled on using red light emitting diodes (l.e.d.s) and a simple voltage regulator circuit as shown in the circuit of Fig. 1. As the function of a bias battery is to both source and sink some current at times during normal operation, the circuit shown here has that ability.

The forward biased voltage of a red l.e.d. is about the same the terminal voltage of an AA cell, that's about 1.4-1.5V. So, six l.e.d.s will have an overall voltage of around 9V. However, the maximum current capability would have to be limited to around 5-10mA, to safeguard the diodes.

The current limitation could be inconvenient if the total current drawn from the h.t. system is

more than around 10mA. So, what's needed is the ability to bypass the rest of the h.t. current, and that's the function of the transistor.

The capacitor between the collector and base of the transistor is effectively many times larger (due to the gain of the transistor) than its physical value. This helps keep the voltage across the whole circuit constant with changing h.t. current.

Replacement units

The bias battery replacement unit can be built, as a stand-alone unit where it could be incorporated into a block to resemble the original battery. Alternatively, it could be built into the h.t. eliminator unit directly. Incidentally, I remember that combined h.t. and bias batteries were available at one time.

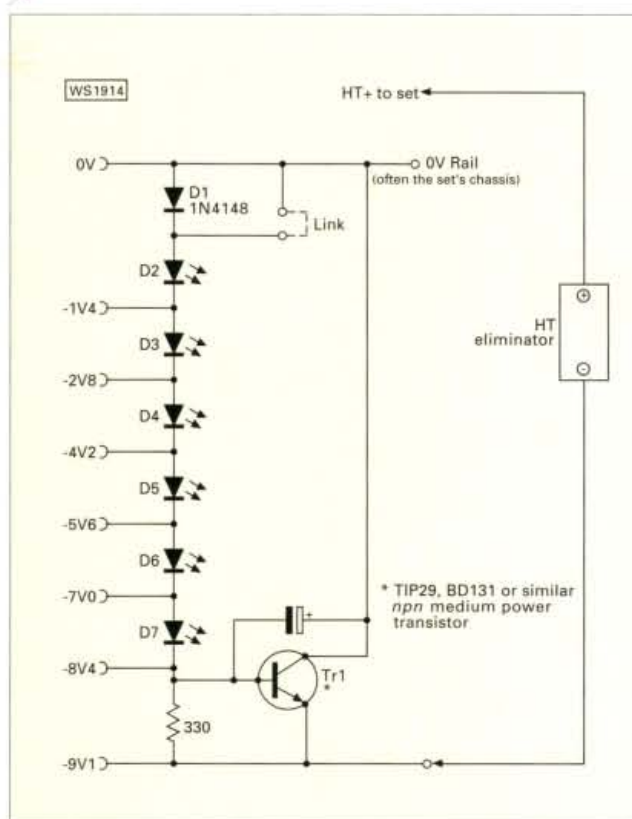
The maximum h.t. current that can be passed through the unit is a function of the transistor used. Different transistors could be used as long as the maximum current, voltage or power dissipation of the device are not exceeded. The transistor may need a small heatsink if it becomes hot to the touch.

For test purposes, a small 12V 'wall-wart' type p.s.u. can be used with a 150Ω resistor in series with the leads and the unit. Connect the positive lead from the p.s.u. (with series resistor) to the (0V rail) of the unit. The negative lead from the p.s.u. should be connected to the emitter of Tr1.

When the p.s.u. is connected, if the unit is working correctly, then all the lights should glow and the voltages of 1.5, 3, 4.5, 6, 7.5 and 9V (approximately) should be available between the positive lead and the sockets. Removing the short across D1 should add around 0.6V to each setting.

And there it is ... your modern replacement for the grid bias battery.

Fig. 1: By using a few components as shown here you can make a replacement for a grid bias battery. If you can't find suitable sockets, try using the contacts from 'Choc-block' connectors.



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TH-F7E

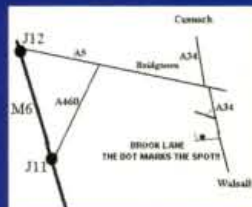
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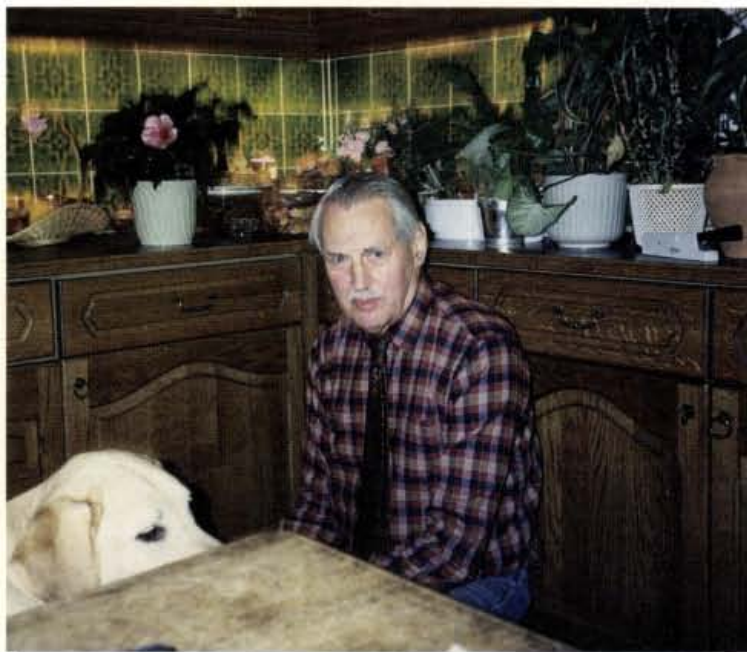
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AKD	6001	6m FM TRANSCIVER	£135	ICOM	IC-2SET	2M HANDY	£89	TENTEC	SCOUT + MODULES	£350
ALINCO	DJ-580E	270CM HANDY TRANSCIVER	£140	ICOM	IC-RT1E	RECEIVER	£399	TIMEWAVE DSP-9+		£125
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ALINCO	DJ-G5EY	DUAL BAND HANDY	£199			TRANSCIVER	£1295	TOKYO HY-POWER	HL-37V LINEAR AMPLIFIER	£60
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ALINCO	DJ-X10	WIDE BAND RECEIVER	£275	KANTRONICS	KAM PLUS	TNC	£220	TRIO R-2000	RECEIVER + CONVERTER	£300
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ALINCO	DR-150E	2M 50W MOBILE TRANSCIVER	£140	KENWOOD	PS-20	10A POWER SUPPLY FITS TR-9130 ETC	£55	TRIO TRIO 9130	2M MOBILE MULTIMODE	
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AOR	AR-1500	HANDY SCANNER 6-1500M / 72	£99	KENWOOD	SP-950	LOUDSPEAKER	£90	WELZ SP-15M	SWR & POWER METER	£20
AOR	AR-3000	WIDE RECEIVER	£350	KENWOOD	SW-2000	SWR METER	£60	YAESU FC-102	1.2KW ATU WITH 4 WAY SWITCHING UNIT	£200
AOR	AR-3000A	WIDE RECEIVER	£475	KENWOOD	TH-22E	2M HANDY TRANSCIVER	£89			
AOR	AR-3030	HF / VHF RECEIVER inc converter VHF	£450	KENWOOD	TH-25E	HANDY TRANSCIVER	£49	YAESU FC-20	AUTO ANTENNA TUNER FOR 847/FT100	£175
AOR	AR-3030	HF RECEIVER	£399	KENWOOD	TH-47E	HANDY TRANSCIVER	£100	YAESU FC-902	ATU 500W	£140
AOR	AR-7030	TOP RECEIVER	£550	KENWOOD	TH-75E	270 HANDY TRANSCIVER	£125	YAESU FL-2100Z	HF AMPLIFIER	£450
AOR	AR-7030+	HF RECEIVER (With AM Filter, Optical Encoder)	£650	KENWOOD	TH-78E	270CM HANDY TRANSCIVER	£175	YAESU FP700	POWER SUPPLY	£100
AOR	AR-8000	WIDE BAND RECEIVER	£199	KENWOOD	TH-79E	HANDY TRANSCIVER	£189	YAESU FP-757HD	HEAVY DUTY POWER SUPPLY	£120
AOR	AR-8200 mk1	WIDE BAND RECEIVER	£230	KENWOOD	TL-922	HF LINEAR AMP 1Kw (AS NEW?)	£899	YAESU FRG-100	HF RECEIVER	£300
AZDEN	PCS-4000	2M TRANSCIVER	£99	KENWOOD	TM-231E	2M MOBILE TRANSCIVER	£120	YAESU FRG-7700	HF RECEIVER	£220
BNOS	AMPLIFIER	432-16-50 70CM 50Watt	£99	KENWOOD	TM-241E	2M MOBILE TRANSCIVER	£120	YAESU FRG-8800	RECEIVER INCLUDES CONVERTER	£399
CAPLO	SPL-3000	ANTENNA TUNING UNIT	£199	KENWOOD	TM-251E	MOBILE TRANSCIVER	£140	YAESU FRT-7700	ATU MINT!	£75
DAIWA	CNW-419	ATU	£190	KENWOOD	TM-255E	2m MULTI-MODE MOBILE	£400	YAESU FRV-7700	UHF CONVERTER MINT!	£180
DAIWA	CNW-518	1KW AUTO ATU	£199	KENWOOD	TM-455E	70CM MULTIMODE MOBILE	£495	YAESU FT-1000MK5	200W DSP HF TRANSCIVER	£2,600
DAIWA	NS-660P	SWR & PWR MTR	£40			TRANSCIVER	£495	YAESU FT-1000MP AC	HF BASE DSP TRANSCIVER (Late serial no)	£1,550
DAIWA	CN-540	SWR & PWR MTR	£30	KENWOOD	TM-733	270 MOBILE TRANSCIVER	£225	YAESU FT-1000MP DC	BASE TRANSCIVER	£1,200
DAIWA	CN-630	SWR & PWR MTR	£40	KENWOOD	TR-751E	2M MULTIMODE TRANSCIVER	£350	YAESU FT-101ZDmk111	HF TRANSCIVER inc FM	£375
DATONG	FL3	FILTER	£75	KENWOOD	TR-851E	70CM MULTIMODE MOBILE	£395	YAESU FT-225RD	2M BASE MULTIMODE CLASSIC!	£399
DATONG	FL-2	FILTER	£60			TRANSCIVER	£395	YAESU FT-23R	HANDY TRANSCIVER	£180
DRAKE	MN7 ATU	300 WATT INPUT	£140	KENWOOD	TS-120	HF SOLID STATE MOBILE	£225	YAESU FT-2500M	MOBILE TRANSCIVER	£190
DRAKE	R7	HF RECEIVER	£550	KENWOOD	TS-450S	HF TRANSCIVER	£499	YAESU FT-290RMI1	2M ALL MODE TRANSCIVER	£180
DRAKE	R-8E	HF RECEIVER	£499	KENWOOD	TS-450SAT	HF BUILT IN ATU EXCELLENT		YAESU FT-290RMI2	MOBILE 2M MULTIMODE	
DRAKE	SW-2	HF RECEIVER	£299			TRANSCIVER	£575		TRANSCIVER	£275
DRAKE	SW-8	WORLD BAND RECEIVER	£375	KENWOOD	TS-530SP	HF MAINS 100Watt TRANSCIVER	£275	YAESU FT-411E	2M HANDY TRANSCIVER	£99
DRESSLER	D200	2M MAINS AMPLIFIER 400Watt	£399	KENWOOD	TS-680	HF 6M MOBILE/BASE TRANSCIVER	£400	YAESU FT-41R	HANDY TRANSCIVER	£120
FAIRHAVEN	RD-500	WIDE BAND RECEIVER	£575	KENWOOD	TS-690SAT	HF 6M Inc ATU	£650	YAESU FT-470	270CM HANDY TRANSCIVER	£140
ICOM	AT-150	AUTO ATU	£175	KENWOOD	TS-711E	SM BASE STATION TRANSCIVER	£399	YAESU FT-650A-C	26-50MHz 100w BASE SATATION	
ICOM	AT-500	AUTO ATU	£275	KENWOOD	TS-790E	270CM BASE STATION TRANSCIVER	£699		TRANSCIVER	£599
ICOM	IC-2000H	270 MOBILE TRANSCIVER	£170	KENWOOD	TS-790E	2m / 70cm MULTIMODE BASE		YAESU FT-690MK11	6M MULTIMODE MOBILE	
ICOM	IC-2100H	2M MOBILE TRANSCIVER	£150			TRANSCIVER	£799		TRANSCIVER	£295
ICOM	IC-251	2m MULTIMODE TRANSCIVER	£295	KENWOOD	TS-811E	70cms MULTIMODE BASE		YAESU FT-690RMI1	6M MULTIMODE MOBILE	
ICOM	IC-275E	25W TRANSCIVER	£525			TRANSCIVER	£399		TRANSCIVER	£250
ICOM	IC-275H	2M MULTIMODE 100W TRANSCIVER	£575	KENWOOD	TS-830S	HF TRANSCIVER	£325	YAESU FT-690RMI2	6M PORTABLE	£375
ICOM	IC-290H	2M MULTIMODE MOBILE	£250	KENWOOD	TS-850SAT	HF TRANSCIVER MINT!	£800	YAESU FT-726R	2 / 70 / HF TRANSCIVER	£400
ICOM	IC-2KL	AUTOMATIC LINEAR AMPLIFIER + PSU	£999	KENWOOD	TS-870SAT	HF/DSP-IF-100W BUILT IN ATU		YAESU FT-726R	2 / 70 / 6m TRANSCIVER	£575
ICOM	IC-320H1	2-70CM MOBILE TRANSCIVER	£160	KENWOOD	TS-950SD	HF/150W DSP BASE TRANSCIVER	£1,100	YAESU FT-730R	70CM MOBILE TRANSCIVER	£120
ICOM	IC-471E	70CM BASE MULTIMODE	£299	KENWOOD	TSB-2000	LATEST KENWOOD - COMPUTER CONTROLLED	£1,299	YAESU FT-736R	270/623CM TRANSCIVER	£1,050
ICOM	IC-490E	70cms MULTIMODE MOBILE	£265	KENWOOD	VFO-120		£50	YAESU FT-736R	2m / 70cm TRANSCIVER	£650
ICOM	IC-728	HF TRANSCIVER	£399	KENWOOD	VFO-180	EXTERNAL VFO	£75	YAESU FT-736R	2m / 70cm / 6m TRANSCIVER	£750
ICOM	IC-730	HF TRANSCIVER MINT!	£400	KENWOOD	VS-1	VOICE SYNTHESIZER	£30	YAESU FT-7400	70cm MOBILE TRANSCIVER	£160
ICOM	IC-735	HF TRANSCIVER	£400	KENWOOD	VS-2	VOICE SYNTHESIZER	£30	YAESU FT-747GX	HF TRANSCIVER	£399
ICOM	IC-737	HF BASE BUILT IN ATU 100W	£595	KENWOOD	YG-455C-N1	270Hz CW CRYSTAL FILTER	£100	YAESU FT-747GX	TRANSCIVER	£299
ICOM	IC-737	HF inc ATU BASE STATION	£575	KENWOOD	YK-88A-1	AM FILTER	£40	YAESU FT-757GXMK11	TRANSCIVER MINT!	£400
ICOM	IC-746	TRANSCIVER	£899	KENWOOD	YK-88C-1	500Hz CW NARROW FILTER	£40	YAESU FT-757MK1GX	HF TRANSCIVER	£375
ICOM	IC-756	HF / 6m All Band Transceiver	£999	KENWOOD	YK-88CN1	270Hz CW FILTER 8.83MHz IF	£40	YAESU FT-767GX	HF BASE 100watt built-in ATU	£599
ICOM	IC-756PRO	ICOM TRANSCIVER	£1,699	KENWOOD	YK-88S-1	2.4KHz SSB NARROW FILTER 8.83MHz IF	£40	YAESU FT-77	INCLUDES FM MINT!	£275
ICOM	IC-765	HF BASE TRANSCIVER	£800	KENWOOD	YK-88SN	1.8KHz SSB FILTER (TS-440 / R5000)	£40	YAESU FT-790R	70CM MULTIMODE MOBILE	£225
ICOM	IC-775DSP	HF 200W BASE STATION	£1,499	KENWOOD	YK-88SN-1	1.8KHz SSB NARROW FILTER 8.83MHz IF	£40	YAESU FT-7B	HF 50W MOBILE TRANSCIVER	£199
ICOM	IC-820	2-70CM BASE STATION 50Watt	£599	KENWOOD	PS-430	POWER SUPPLY	£120	YAESU FT-80C	0-30MHz COMMERCIAL TRANSCIVER	£375
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ICOM	IC-910	270 CM BASE TRANSCIVER + 23CM UNIT	£1,100	LOWE	HF-150	SW RECEIVER	£1,500	YAESU FT-811E	70CM HANDY TRANSCIVER	£99
ICOM	IC-R2	HANDY SCANNER	£99	LOWE	HF-250	INCLUDES REMOTE CONTROL	£300	YAESU FT-847	HF / 2 / 6 / 70cm BASE TRANSCIVER	£999
ICOM	IC-R3	SCANNER + TV	£299	MCL	MCL1100	EASY READER	£75	YAESU FT-900	HF TRANSCIVER	£550
ICOM	IC-R7000	RECEIVER MINT! CONDITION	£550	MJF	MJF-414	MORSE CODE TRAINER	£120	YAESU FT-902DM	HF BASE TRANSCIVER	£400
ICOM	IC-R72	RECEIVER	£399	MJF	SET-UP	971-9015-4114 PORTABLE 21MHz	£299	YAESU FT-920AF	HF/6M BASE WITH DSP	£899
ICOM	IC-R75	HF / 6m RECEIVER	£475	MICROSET	PT-135	POWER SUPPLY	£80	YAESU FT-980	HF TRANSCIVER	£495
ICOM	IC-T81E	QUAD BAND HANDY 2m/6m/23cm/70cm	£250	MICROWAVE MODULES	28/144 TRANSVERTER 28/144		£125	YAESU FT-990AC	HF BASE STATION TRANSCIVER	£750
ICOM	IC-T8E	HANDY TRANSCIVER	£175	PACCOM	TINY II	TNC	£99	YAESU FT-ONE	HF BASE TRANSCIVER	£450
ICOM	IC-W21E	HANDY TRANSCIVER	£199	PACCOM	TNC-320	TNC	£90	YAESU FTV-901	TRANSVERTER inc 2m Mod	£165
ICOM	PCR-1000	COMPUTER SCANNER	£200	PLESSEY	PR-2250	HF RECEIVER BEST QUALITY	£1,200	YAESU FV-707	VFO UNIT	£99
ICOM	PS-15	20A POWER SUPPLY FITS ALL ICOM	£110	QW 70	RACAL 1792	CLASSIC!	£1,200	YAESU SP-8	LOUDSPEAKER Including Audio Filters	£100
ICOM	PS-85	POWER SUPPLY	£175	QW 70	RACAL	28/144 TRANSVERTER	£100	YAESU VFO-102	MINT CONDITION!	£199
ICOM	R-75	HF RECEIVER	£400	RACAL	PRO-2037	HF RECEIVER	£499	YAESU VR-5000	TOP RANGE SCANNER RECEIVER	£500
ICOM	SP-20	SPEAKER	£120	REALISTIC	PRO-394	HF RECEIVER	£99	YAESU VX-5R	2 / 70 / 6 HANDIE SW	£220
ICOM	SP-21	LOUDSPEAKER, BOXED	£55	REALISTIC	SGC-2020	SCANNER BASE	£99	YAESU XF-114SN	2KHz SSB FILTER	£60
				SONY	ICF-SW77	FMSW/MWLW PORTABLE AS NEW!	£250	YAESU VO-100	SCOPE VERY RARE!	£150
				SONY	SW-100E	FMSW/MWLW PORTABLE	£90	YAESU VS-60	SWR METER L6 - 60MHz	£99
								YUPITERU MVT-7000	HANDY SCANNER	£390
								ZETAGI B-132	10 / 11m LINEAR AMPLIFIER, MAINS	£60



My Early

Neil Grieg G2FBU looks back to 1930 - to the time he obtained a copy of a John Scott-Taggart book. It launched him into a life-long fascination with radio and an eventful career during and after the Second World War.

● Neil Grieg G2FBU, who is now a sprightly 82 year old with his (large!) friend Max the Labrador at home in Yapton in West Sussex. Neil traces his interest in radio back to the time he first read John Scott-Taggart's book *Wireless Valves Simply Explained*.

In 1930 there came in to my hands a book - *Wireless Valves Simply Explained*, written in 1922 - by **John Scott-Taggart** (a well known regular contributor to *Practical Wireless*). The valves under discussion in the book, **Fig. 1**, were diodes and triodes.

The receiving circuits in the books look rather strange today, and one telephony transmitter, **Fig. 2**, had the microphone connected into the antenna circuit. Needless to say...the book fascinated me as you'll see by the (faint pencil) annotations on the page!

For Christmas 1932 I was given a kit receiver - a Lissen 'Skyscraper' 4, which (so the advertising claimed) enabled you to listen to the world. Unusually for advertising...this turned out to be quite true!

Two of the four valves in the excellent Skyscraper kit were audio pentodes and I used headphones across the output of one of the valves. There was also a screened grid pentode radio frequency (r.f.) stage followed by a screened grid detector.

An excellent little receiver, the Lissen covered three switched ranges: long wave, medium wave and short wave. The short wave coverage included the 7 and 14MHz bands and (with the coil covers removed!) the 3.5MHz band as well.

Substantial Impact

The Lissen Skyscraper kit was to have a substantial impact on my future. And it was, I suppose, the

ultimate reason that I spent my time during the Second World War in the Signals!

One evening during January 1933 I came across what I later discovered to be the 7MHz (40 metres) Amateur band and heard a G2 - it was G2SO I think - calling "Test on 40 metres" he then went on to work another G station.

Why, you may ask...was the G2 calling "Test" rather than "CQ"? Well, the reason lay behind the wonderful minds of those who were responsible for licensing in those days. They only granted a Licence to Amateurs to **carry out experiments** with antennas and equipment enabling them to see what happened (if anything) when things went wrong!

In those days Radio Amateurs were not granted licences in order to communicate...so the calling of "CQ" was out. However, the fact that G2SO calling test on 40 metres" meant exactly the same as "G2SO calling CQ on 40". Fortunately, the 'Test' requirement was eventually dropped.

Useful Experimental Work

The suggestion that Radio Amateurs were then carrying out useful experimental work and "tests" was no more than the plain truth. After all, Amateurs were originally 'given' the short waves, as is now well known, because everyone 'knew' they (the short waves) were considered "quite useless".

However, far from being 'useless' the short waves became an extremely useful utility which remain in use today...despite satellite technology!

Incidentally, to get a Licence in the far off 1930s, the UK applicant, apart from the necessary Morse Tests, had to submit circuit diagrams of the equipment he or she (not forgetting that one of the leading pioneers on 28MHz was the late **Nell Corry G2YL**) proposed to use, together with details of the experimental work the station proposed to undertake. (I understand that some applicants called in a better qualified chum to produce a suitably erudite, and thus impressive application!).

Following my discovery of my first Amateur station I kept going back to 40 metres repeatedly. I then also discovered 80 and 20 metres and needless to say... was 'hooked'! And in the summer of 1934 I applied to join the Radio Society of Great Britain and was very elated to receive a 'callsign' - that of British Receiving Station (BRS) 1571.

Artificial Aerial Licence

During 1937 I applied for an Artificial Aerial Licence which allowed the Licensee to **build equipment but not to put it onto the air**, and in due course the callsign 2FBU was allotted. It was the nearest approach to the modern Novice Licence, and was referred to by one Cynic as "A form of licence existing only in the imagination of the General Post Office" (GPO).

Wireless Memories

The reason for the 'AA' Licence being introduced I must leave to the reader's imagination, but the similarity to the instructions that rabbits should take care of growing lettuce comes forcibly to my mind! However, (presumably, because I was only then 17 years old) my father then received a letter indicating the pains and penalties which would arise if the transmitter that I was allowed to build was attached to (wicked boy) my antenna!

Sunspot Peak

Quite when the sunspot maximum of those days reached its peak I can't remember. But looking back into my logbook I can see that 1936 was a good year.

Conditions were certainly remarkably good and as an example of both the conditions and the excellence of the Lissen receiver, I can quote from my log for Saturday 19 September 1936 (this day was also when I first met my future wife...but that's another story).

On that Saturday morning between 0743 and 0807 on 14MHz I logged four VK (Australian) stations, a ZL (New Zealand) and a W2 (USA). The signals all varied between 589 and 579. However, as the RST method had not then been introduced...what I actually wrote in the log was (e.g.) QSA5, S8, T9.

In those days, except in the USA, most Radio Amateurs used low power and, for the most part, quite simple antennas. In the UK the standard Licence power was for an input power of 10W.

Again, looking in my logbook, the following day produced a very similar crop of VK, ZL, but at rather lower signal strengths, perhaps because my 'on-air' session was about an hour later.

Second World War

Then came the Second World War and after interludes at a

Holiday Camp at Prestatyn in North Wales (in concrete chalets with no heating and snow on the ground) and Catterick Camp in Yorkshire I found myself in the Western Desert...quite a contrast to Wales and Yorkshire! There, I found myself in command of a Wireless Telegraphy Section (using No. 12 sets).

While in the desert I cunningly persuaded my Commanding Officer that someone ought to do some tests on wireless under the

distances than they were designed for. Additionally, I tried the same with the No. 11 Set, which only had an output of a few watts.

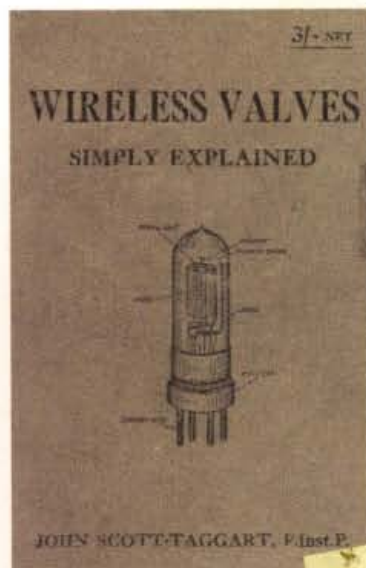
At the same time, from the famous town of Tobruk, there was a radio link to Cairo (965km, around 600 miles) using a No. 3 Set. This was in fact an imposing beast mounted in a large truck with a vast motor-driven d.c. generator. Two very large output valves in the power amplifier (p.a.) stage produced an output of around 300W, feeding, in this case, a "T" antenna on two 21m high (70ft) masts.

The No. 3 Set broke down - I can't remember why - but the important

1944 I then found myself operating in Normandy (on D-day plus 1) using the first 52 Sets.

By the end of the war I was in Germany, close to the Russian Zone border, listening on an R107 receiver to the remarkable (and in my opinion highly suspect) call signs referred to by **Patrick Alleley GW3KJK** in his article *The Bullets Had Barely Stopped Flying*, published in the September 2000 issue of *PW* (page 28).

Eventually the German authorities agreed to allow Amateur Radio operation and I was soon on the air as D2XZ in February 1946. The German Licence was for operation on



● Fig. 1: Neil G2FBU still owns his original copy of *Wireless Valves Simply Explained*. Even the illustration on the front cover is evocative of the period. However, as Neil suggests "some of the circuits look really odd today".

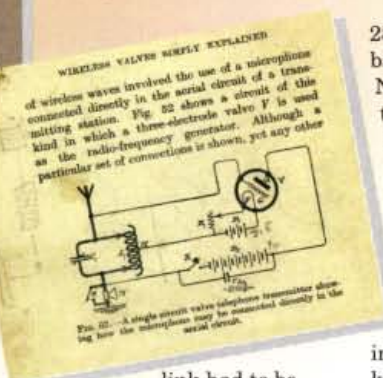
● Fig. 2: A transmitter circuit showing the microphone connected in the antenna circuitry! The annotations (in pencil) on the circuits are G2FBU's and the page has been 'scanned in' at *PW*...using modern technology to pay a tribute to a pioneering publication.

prevailing conditions over a period of 24 hours and on different frequencies...and that someone should be me!

I got the job...and the task enabled me to spend a few days in the Siwa Oasis, some 240km (around 150 miles) south of the coast. Between test transmissions I listened enviously to American Radio Amateurs on 14MHz (Pearl Harbour and the entry of the Americans into the Second World War were still a few months down the line). But it had at least enabled me to visit Siwa and get on the radio!

Long Distance 19 Sets

Much of my two and a half years in the desert was spent trying to make No. 19 Sets operate over far greater



link had to be maintained. The only spare set was an 11 Set feeding a W3DEP 26m (84ft) long wire antenna at 5m above ground.

The No. 11 Set took over the 3 Set's link immediately with no trouble at all. **And Cairo seemed not to notice any difference!** (Shows what can be done).

Sicily & D-Day

I returned (via Sicily) to the UK in December 1943. Then in

28MHz and the old 5 metre band, with a 50W d.c. input. Needless to say...a great deal of time was spent on the air thereafter!

Licensed as G2FBU in the Spring of 1946 I was demobbed in the summer and commenced operating under severe difficulties. It took nearly three years to get mains power to our cottage

in remote Surrey. "Don't you know there's been a war on?" was the comment when I complained!

Finally, everything has changed since the 1930s of course...or has it? In the November 1934 issue of the RSGB's old *T&R Bulletin* there's a headline... 'CW versus Telephony' reporting that several members have taken up the defence of c.w., after the publication of a letter entitled 'Modulated Waves'. So...perhaps things haven't changed that much after all!

PW

Carrying On The Practical Way

This month the Rev. George Dobbs G3RJV comments on some of the feedback from readers, taking a look at some d.c. switching techniques and transmitters. But let's not forget the appropriate quotation!

"Most people would succeed in small things if they were not troubled with great ambitions".

Henry Wadsworth Longfellow, Driftwood; Table Talk, 1857

Judging from my mail, the little QRP transmitter designs are one of most popular circuits to appear in this column and over the years there have been several of them. A few weeks ago an avid *PW* reader wrote to me about his results using a 7MHz transmitter I described as long ago as December 1996!

The popularity probably lies in ease of construction. This is then followed by tangible results when contacts are made on the air.

It really is great fun to take a home-constructed low power transmitter and use it on the air alongside a receiver, or the receive side of a transceiver. However, such a set-up does require some method of changing over from the transmitter to the receiver.

For simplicity, many operators just use a double-pole change-over switch to switch off the transmitter and change the antenna from the transmitter to the receiver. But, there are small circuit additions that can greatly enhance the use of QRP transmitters with a receiver.

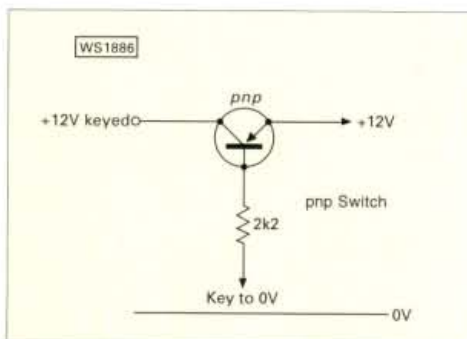
This month we will look at a few minor circuit additions, which will help in the practical use of a transmitter. These involve using electronic devices as switches. So, let's take a look!

Electronic Switch

The circuit shown in **Fig. 1**, is an electronic switch often seen in QRP transmitter designs. This is a d.c. switch using a *pn*p bipolar transistor.

In the circuit, the emitter of the transistor is connected to the 12V d.c. supply line and when the base is 'grounded' via the resistor, the transistor conducts and 12V appears at

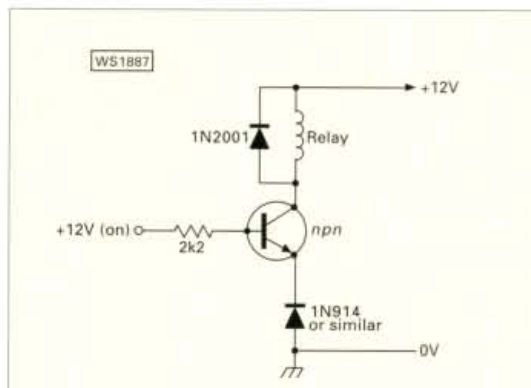
● Fig. 1: An electronic switch often seen in QRP transmitter designs. This is a d.c. switch using a *pn*p bipolar transistor (see text).



● This month G3RJV describes simple methods- including the radio frequency sensing change-over systems shown here - so you can add that extra versatility to your QRP transmitter.

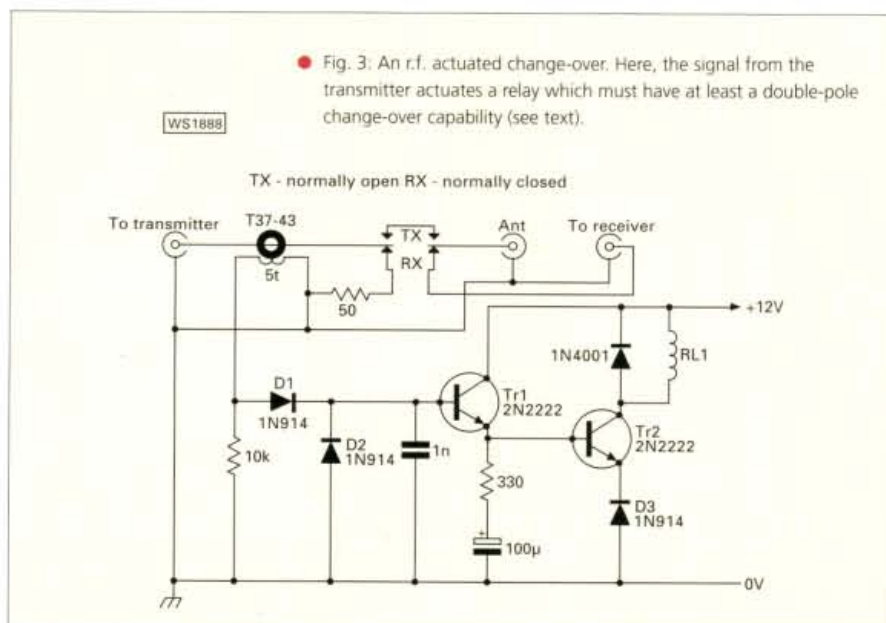
the collector. The voltage at the collector responds to the grounding of the Morse key.

As a result, this little circuit allows the key to be connected to ground rather than being in series with the power supply. (This is always a preferable



● Fig. 2: A very commonly used d.c. switch application (see text).

● Fig. 3: An r.f. actuated change-over. Here, the signal from the transmitter actuates a relay which must have at least a double-pole change-over capability (see text).



choice for a transmitter).

A very common d.c. switch application is shown in Fig. 2. To use a bipolar transistor as a switch, forward bias (base voltage) has to be applied to make the transistor conduct. When the transistor is biased to full conduction ('turned on') current will pass through the relay in the collector circuit and cause the electro-mechanical device to close.

When it's completely turned on, the transistor is said to be 'saturated'. Incidentally, the diode in the emitter applies a little bias to aid the turn-off of the circuit.

As the relay switches off, the collapsing magnetic field (The 'back e.m.f.') in the relay coil can cause transient voltages to appear. So, another diode is connected across the relay coil to clip these transients.

The circuit in Fig. 2 would normally be called a 'relay driver' and versions of it have often been used in change-over systems for transmitters. Sometimes, the circuit in Fig. 1 is used to drive the circuit in Fig. 2 to perform the transmit-receive switching between a transmitter and a receiver.

A delay circuit may be added to the circuit. This serves to hold the relay on a little longer after the key is raised, so that the transmit function is held on at the normal speed of Morse keying.

Many Versions

There are many versions of the keying techniques and change-over circuits in Amateur Radio literature. In my opinion the main problem is that the circuit **must**

be added to each little transmitter.

My preferred approach has been to use a radio frequency (r.f.) change-over system. This uses the same d.c. switching principles except that the change-over action is not directly actuated by the key, instead it's initiated by the r.f. signal which comes from the transmitter.

The r.f. switching method has the advantage that the circuit does not have to be connected to the key. Instead, it can be a small self-contained module which can be used in conjunction with any transmitter or receiver. And although I've described such systems before, I think it's appropriate to share two of my favourite circuits for the job.

The circuit, Fig. 3, shows an r.f. actuated change-over. Here, the signal from the transmitter actuates a relay which must have at least a double-pole change-over capability.

In Fig. 3, the system is shown 'at rest', that is...in the receive condition. In this state one side of the relay contacts are used to switch the receiver to the antenna.

At the same time, via its own contacts on the relay the transmitter is connected to a 50Ω resistor, which provides a suitable load for the switch on of the transmission. The wire between the transmitter input socket and the relay switch passes through a ferrite core with a small pick-up coil.

As soon as transmission occurs, the r.f. signal passing through the core produces a signal in the coil, this is then rectified by a pair of diodes to produce a d.c. voltage on the base of a transistor. The transistor then

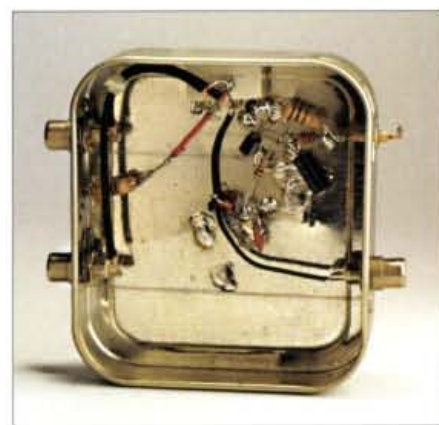


Fig. 6: The r.f. change-over circuit made up into a tin-plated case. This provides screening and convenient soldering points...after the original contents have been eaten! (see text).

capacitor and 330Ω resistor act to hold the base of Tr2 in conduction for a short time after Tr1 turns off.

The value of the delay is set so that as the transmitter is keyed, the relay will not clatter in-and-out with the keying action. At normal keying speeds the circuit remains in the transmit state, and when keying ceases the circuit returns to the receive state. The value of this capacitor can be altered to suit the usual keying speed of the operator.

Sensing Coil

For the r.f. sensing coil in Fig. 3 or Fig. 4 I use a T37-43 ferrite core, which has five turns of small gauge enamelled wire. (probably any small ferrite core would do the job).

With five turns on the core, the circuit works well with transmitters putting out as little as 1W. Extra turns may be required for very low r.f. power outputs.

Warning: Although it only takes the transmitter output for very short periods of time, the 50Ω resistor should be capable of handling the r.f. power of the transmitter.

Simpler Circuit

A rather simpler version of the circuit I've discussed, using a VMOS device, is shown in Fig. 4. Incidentally, I've got this circuit attached to the back of my favourite receiver, a Davco DR-30.

The circuit module is permanently connected to the receiver antenna input. All I have to do to use any QRP transmitter is connect the output of that transmitter to the TX socket and I can begin transmitting.

I don't mute the receiver other than turning down the volume control, although extra contacts on the relay could be used for receiver muting. However, I have added a couple of back-to-back diodes to the receiver input to clip the voltage reaching the receiver - see Fig. 5.

So, get that soldering iron out...try some switching and r.f. 'sensing'...it can that little 'extra' to your QRP transmitter!

PNW

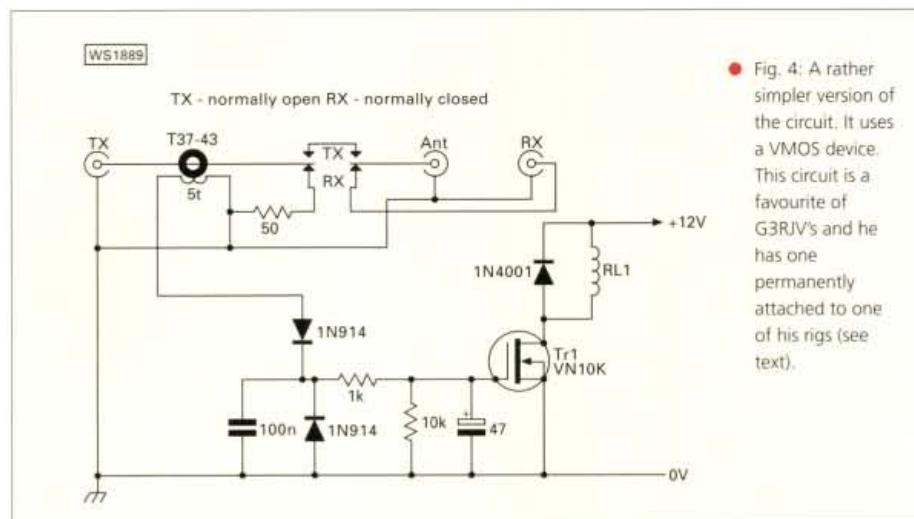


Fig. 4: A rather simpler version of the circuit. It uses a VMOS device. This circuit is a favourite of G3RJV's and he has one permanently attached to one of his rigs (see text).

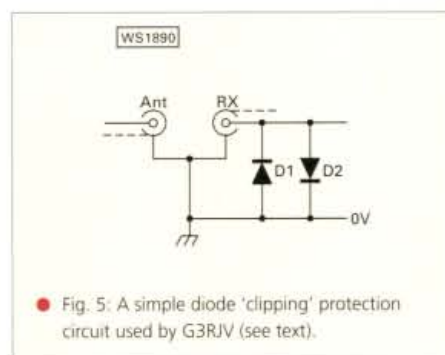


Fig. 5: A simple diode 'clipping' protection circuit used by G3RJV (see text).

conducts, producing a voltage at its emitter resistor.

The resultant voltage causes a second transistor to act as a relay driver as in Fig. 2. The relay contacts then switch over, allowing the transmitted signal to reach the antenna.

Two Capacitors

There are two capacitors in the circuit: The 1nF capacitor in the base of the first transistor helps to remove any residual r.f. signal from the d.c. voltage and the 100μF

GB50

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What the visitors said...

"Talked to someone In DC - it was
"Spoke to someone in Maryland - a
"Unique experience, I talked to some
really global. Wow, what a way to
"Lots of fun, thanks for letting me j
"Nice equipment - excellent technol
"Congratulations on an excellent dis





swell!"
 amazing!"
 reone in Chicago, and we greeted each other,
 meet people - Great station"
 oin in"
 ology"
 splay, guaranteed to educate and inform"

"Very good presentation of the hobby"
 "Very interesting, especially the Morse-code"
 "Cool - Fascinating!"
 "Very interesting and friendly experience"
 "Informative and interesting"
 "The best amateur radio display this side of the Atlantic!"
 "Great effort, I will definitely seek further information on Amateur radio"
 "Very impressive display - friendly and knowledgeable staff - enjoyed"

the Golden Jubilee



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Count on us!

Value & Vintage

A big hello to you all, and I hope you're enjoying the summer and the radio operating...an ideal time for portable operations, rallies and the like. It's been a good couple of months here. A few new arrivals and a few rallies attended where kind comments on these pages were received. (Thank you to all those who took the time to say "hello").

So, now it's down to business! Not long after I obtained the RME-70 receiver (mentioned in the May 2001 issue) I acquired an example of its predecessor, the RME-69 receiver, **Fig. 1**, along with its matching DB-20 Pre-selector. The information on this set (taken from Fred Osterman's *Shortwave Receivers Past & Present* publication) states that the set is a nine valved single-conversion superhet with an intermediate frequency (i.f.) of 465kHz. The set tunes 550kHz to 31.5MHz in six ranges.

The DB-20 Unit

The DB-20 is a three valved unit, with two radio frequency (r.f.) amplifiers and a rectifier. This could be used in front of the RME-69 (or any receiver for that matter) to improve sensitivity and image rejection.

Oddly, the RME-69 receiver has no control markings, apparently the RME philosophy was that if you did not understand the thing already, you should not be messing with it! Pretty sharp thinking eh?

Unfortunately, although on my sample the case and front panel are in good condition the inner

This month it's Ben Nock G4BXD's turn to look at time - amongst other things - he's got a 'mystical' valved aircraft radio to look at in wonder!

workings of the receiver have been 'got at'. There are various wires hanging in mid-air, components have been changed and added, together with a couple of extra controls, visible on the extreme right of the receiver.

The set needs a complete strip and re-build when I can find the time. In the meantime I prepared a close-up of the tuning dials and meter which are shown in **Fig. 2**.

Green Kit Mystery

An item of 'Green Kit', a commonly used euphemism for ex-military equipment, that also arrived recently has an identification plate which states "Transmitter Radio S R", see **Fig. 3**. I've not seen such a model before and the S R in its title led me to think about the Out Station Sound Ranging set (OSSR), mentioned in my May 1997 column. It may be this, a later version, was produced for a similar role?

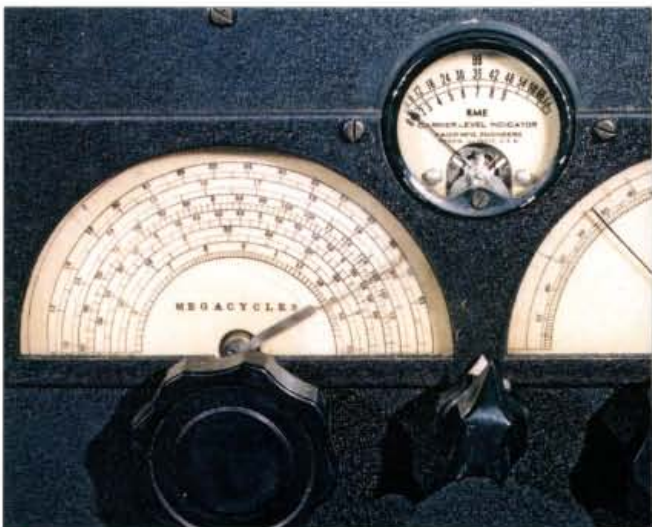
The set is very nicely constructed, as most military sets are. Housed in a die-cast case which is virtually indestructible the electronics inside occupy various sub units and chassis. It's a fully transistorised five channel very high frequency (v.h.f.) set probably covering the region of 30 to 50MHz.

Inside, there are various modules with numerous filters and mixers, and as with many military sets it looks a might over engineered. Unfortunately, not many other details are known ...so if anyone out there does know this set I would welcome the additional data. Thank you!

Early Aircraft Set

Another new arrival (it's been a good couple of weeks for new toys!) was a very nice example of an early aircraft mounted set, the R1147B receiver, **Fig. 4**. Amazingly **seven valves** are squeezed into this small set in an absolute miracle of construction for its time.

● Fig. 1: The RME-69 receiver with DB-20 preselector above. The added controls (see text) are visible on right side of front panel.



● Fig. 2: Close-up view of the very stylish - and beautifully clearly inscribed - tuning dials and S-meter of the RME-69 (see text).

look after the vintage 'wireless shop'. This
ery' for you, and an amazingly small seven-

The set is a v.h.f. type and probably pre-dates the start of the Second World war.

The receiver even came in its wooden transit box (always a nice addition for a collector) along with a second box which contains a remote control unit and accessories. The receiver looks complete and intact, so I may well try and energise it once more. More news later.

American Made

To complete a quartet of new arrivals here there's the BC-639A or R5032A, **Fig. 5**, which is the US made version of the British R1132A vhf receiver. This is a 10 valved v.h.f. receiver tuning 100 to 150MHz which was used in situations including control towers and communications to remote airfields.

The USA produced version has the same controls as the British set, though its general appearance is much better. The transfer lettering on the R1132 is replaced with metal nameplates for all the controls and connectors which in turn would mean easier restoration if needed.

It also has to be said, as with most American made versions, that the internal construction (compared to the British) is far better. Of course, **it must not be forgotten** that our work force and factories were working under almost unbearable work loads, along with the problems of bombing and material shortages at that time.

Highest Priority

Additionally...I think it's all very well for some collectors to prefer American-made sets for their quality and finish **but the reasons for this excellence should also be remembered**. Collecting examples of British made war time equipment is still the highest priority on my list.

Well that's about it for now, the space time

continuum has ended for now! I hope you enjoy the rest of the summer and I look forward to seeing you on these pages in November.

As always you can write to me at **62 Cobden Street, Kidderminster, Worcestershire DY11 6RP**. You can also contact me via E-mail at **G4BXD@qsl.net** and have a look at my web pages at **www.qsl.net/g4bx** so cheerio for now!

pw



Fig. 3: The 'mystery' Transmitter Radio 5 R set with array of connectors along the bottom of the unit. In his column Ben poses the question "Can you help solve the mystery?" (see text).



Fig. 4: The diminutive R1147B receiver, the tuning control (top right) can be driven by a Bowden cable from the control box.

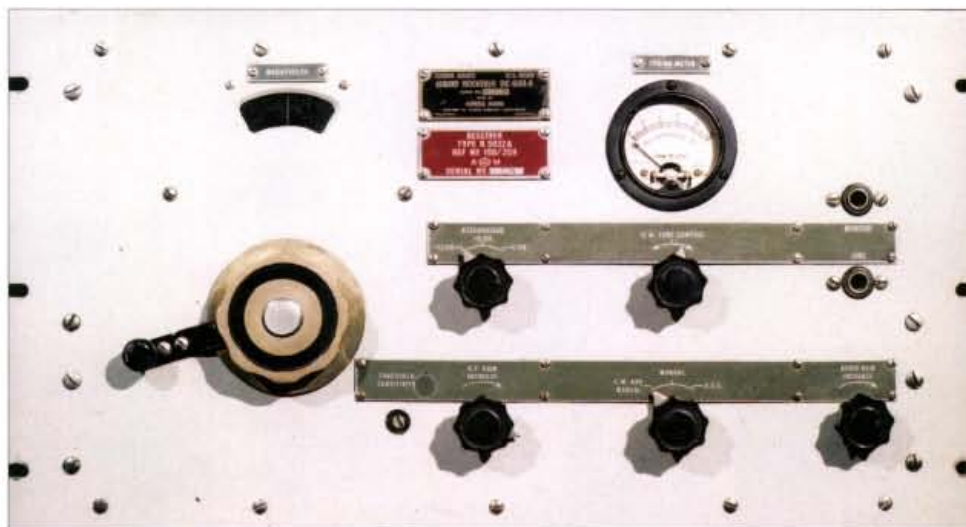


Fig. 5: The BC-639A or R5032A receiver. Ben G4BXD says it has "Nice clear lines and easy to read nameplates".

VHF DXER

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REPORTS & INFORMATION BY THE LAST SATURDAY OF EACH MONTH.

Previously, I made the forecast that propagation on the 50MHz band during May would be via trans-equatorial (t.e.p.) with contacts being made with stations in southern Africa and South America. I anticipated that Sporadic-E (Sp-E) activity would reach as high as the 70MHz band and that auroral propagation would produce activity on the 144MHz band. So, now let's take a look at your band reports and see if my predictions were correct!

Propagation over the trans-equatorial path was a little disappointing with relatively few events being noted. Nevertheless t.e.p. openings on the 50MHz band were reported on 12 days during the month with the best occurring in the period between May 12-19. Amongst the DX contacted on c.w. and s.s.b. were the stations of D2EB (an h.f. operator in Angola now active on 50MHz), FR1GZ (Reunion Island), Z21FO, Z22JE (Zimbabwe), 5R8FU (a new station from Madagascar, his antenna was donated by the UK Six Metre Group), 7Q7RM (Malawi) and 9J2BO (Zambia). Many South African operators were also contacted including the stations of ZS6AVP, ZS6NK and ZS6WB.

Openings to South America were reported at 1820UTC on May 12 to CX1CCC (Uruguay) and LW6DC (Argentina), at 1900UTC on May 16 to LU9EHF (Argentina) and at 2015UTC on May 27 to PY5CC (Brazil). All openings lasted for around 20 minutes or less.

The trans-equatorial propagation was much better on May 31. From 1600UTC stations over much of England and Wales were heard making c.w. and s.s.b. contacts with

operators in Madagascar, Malawi and Zambia. This African event faded out around 1730UTC but was replaced by an opening to South America which started at 1900UTC. Stations, mainly in north-west England, reported making c.w. and s.s.b. contacts with the Brazilian stations of PY1RO, PY2PA, PY2XB, PP5JD and PY5CC.

SPORADIC-E

I'm pleased to report that the Sporadic-E season on the 50MHz band is back in full swing. Although slow to start the openings

stations of CN2JA and CN8LI (Morocco), EH9AI (Ceuta and Melilla, North Africa), HV5PUL (Vatican City), JY4NE (Jordan), TF8ITT (Iceland), US0YA and UR5TW (Ukraine), 4X4IX and 4Z5AO (Israel).

At times the maximum usable frequency (m.u.f.) peaked over 70MHz enabling long-distance contacts to be made on the Four Metre band. An opening on May 26 between 1600-1800UTC enabled 70MHz enthusiasts to contact the stations of S51DI, S53WT, S53X and S57UUD (Slovenia). Apart from Cyprus (5B), UK Sovereign Bases on Cyprus

THIS MONTH DAVID BUTLER G4ASR HAS DETAILS OF DX WORKED DURING THE SPRING ON THE VHF BANDS

increased in intensity and duration as the month progressed. According to the UK DX Cluster many contacts were made with stations located in CN, CT, DL, EH, EH6, EH9, ES, F, HB0, HB9, HV, I, IT9, JY, LA, LY, LZ, OD, OE, OH, OH0, OK, OM, ON, OY, OZ, PA, SM, SP, SV, S5, TF, T9, UR, YL, YO, YU, 4X, 5B, 9A and 9H.

Contacts via short-skip Sp-E were also made between stations in EI, G, GI, GJ, GM, GU and GW. That's nearly 50 countries available during May! Some of the Sp-E DX worked on the 50MHz band during this period included the

(ZC), Republic of Ireland (EI) and Gibraltar (ZB) there is currently no other activity within Sp-E range of the UK. The only other country with authorisation to use the 70MHz band is South Africa (ZS) but this is way too far for a Sp-E contact. The only hope of working this country is directly via t.e.p. or a mixed propagation path consisting of Sp-E linking into an equatorial F-layer mode.

Although no Sp-E contacts were recorded on 144MHz during May it did reach this band during the Golden Jubilee weekend. A number of openings between the UK and Finland, Estonia, Latvia, Italy, Sicily, Bulgaria and Romania occurred in a four day period between June 1-4. I'll have further details next month.

AURORA

The last of my predictions last month concerned aurora and I'm pleased to report that two back-scatter openings did occur on the 144MHz band during May. The first took place between 1600-1800UTC on May 11 enabling c.w. contacts to be made from northern UK with stations situated in Finland, Norway and Sweden. Other operators in England and Wales reported making contacts with stations in Scotland and Northern Ireland.

An intense auroral opening between 1620-1750UTC was reported on May 23.

DATE			TIME	FREQ.	MODE	REPORT	To AMATEUR RADIO STATION
Day	Month	Year	GMT	MHz	Two-way	RST	
7	6	81	1640	70.113	A1	449	GW4ASR/P

Tx solid state Input 20 W ☒ Pse ☐ Tks QSL
 Rx Collins 51J4+Conv. P.O.Box 1267 Limassol
 Ant. Tx:dipole Rx:4 elem. 4m qso to UK OM!
 Remarks Many tks for second

5B4AZ 73 DHUK
 P.O. BOX 219 LIMASSOL, CYPRUS
 NEOCLIS KYRIAZIS

● A QSL card confirming the 3456km contact on the 70MHz band between the stations of 5B4AZ and GW4ASR/P.

During the first hour very little DX was reported with only inter-UK contacts being made.

From 1700UTC two specific back-scatter points formed. By beaming at 30° (from central England) stations such as OZ2TF (Denmark), LY2IC (Lithuania) and YL3AG (Latvia) could be contacted. Move the beam out to 70° and stations as far as Croatia were being worked. Some of the real DX contacts made on c.w. included the stations of HB9DRD (Switzerland), HG1PVL, HA5OV and HA5UL (Hungary), OK1MG (Czech Republic), S54M (Slovenia) and 9A6NDX (Croatia).

Reg Woolley G8VHI (Warwickshire IO92) mentions that the aurora on May 23 was the highlight of the month. At 1600UTC he heard the GB3RMK beacon (50.060MHz) with an auroral sound and a few minutes later the station of GM7PBB (IO68) calling CQ.

Moving up to the 144MHz band Reg then worked a number of German stations on s.s.b. before being called by F1YJ (JN17) in central France. Moving the beam to 70° Reg was then pleased to get a call from F1FLA (JN26) located near the Swiss border.

Colin Smith GM0CLN (Midlothian IO85) was active in the aurora on May 23 making c.w. contacts between 1624-1745UTC. On the 144MHz band he runs a Trio TR-751E transceiver, a 100W Microwave Modules amplifier and a 14-element MET Yagi at only 3M above ground.

Colin made a total of 27 contacts with stations in England, Scotland, Belgium, France, Germany, Netherlands, Norway, Sweden and the Czech Republic. Interestingly all contacts over 1000km were worked in the short period between 1703-1733UTC. This shows how important it is to stick with the aurora and only go QRT after it has finished! His best contacts were with the stations of DL3SWS (1002km), DJ9MG (1064km), DL4DWA (1213km), OK1VT (1373km) and OK1FPR (1448km).

The aurora on May 23 commenced at my QTH (Herefordshire IO81) at 1624UTC and finished abruptly at 1747UTC. I spent the first 30 minutes of the opening making c.w. contacts on the 50MHz band.

No long distance QSOs were made apart from one contact with the station of LB1NI (Norway). All other contacts were with stations in England, Scotland and Wales.

At 1659UTC I moved up to the 144MHz band and immediately started to hear DX stations on a beam-heading of 75°. Unusually this auroral opening produced contacts with stations to the south-east of the UK instead of the more normal QSOs into north-eastern Europe. A total of 18 c.w. contacts were made with stations located in Belgium, France, Germany, the Czech Republic and Switzerland. Some of the best DX worked included HB9BNI, HB9DFG,

HB9QQ and the furthest distance station OK2VWB (JN99) at 1510km.

THE 70MHZ BAND

Brian William GW0HGF (South Glamorgan IO81) is active on the 70MHz band and writes in an attempt to encourage more operators onto the band. He remarks that the Four Metre band gets little mention in this column possibly because he thinks little DX is worked on 70MHz.

However, Brian challenges the definition of DX. From South Wales it can be anything over 50km! Currently he is using a 50 to 70MHz transverter running into a modified Pye A200 amplifier, this produces 35W output which is fed to either a vertical dipole or a 2-element horizontal H-type wire beam. With this he can often hear the Scottish GB3ANG beacon (70.020MHz) around S1-2 on most mornings. Brian also mentions that during the first quarter of the year he had worked the station of S51DI (Slovenia) three times via Sp-E.

Tim Kirby G4VXE (Berkshire IO91) relates his attempts at working into Slovenia on the 70MHz band. During the summer Sp-E season last year he was listening to the band when he heard an unusual signal. It was a PSK31 transmission on 70.205MHz.

Since the computer was off and he can't run PSK31 on his transceiver Tim waited to see what the signal would 'do'. It soon announced itself on s.s.b. as S53X. Signals were not strong but optimistically G4VXE called and was totally surprised when Milos replied, exchanging 55 reports. His signals built over the next half hour and peaked over S9. Other stations heard during the opening were S51DI and S51IV.

Tim remarks that he was using the FT-847 transceiver without any pre-amplifier and a 50MHz mobile whip on the balcony at the back of the house. Conditions **must** have been good!

Generally speaking there are only two propagation modes worth considering when it comes to working DX on the 70MHz band. These are aurora and Sporadic-E. Real tropo openings are virtually non-existent at this relatively low frequency although some enhancements may be noticed from time-to-time.

Meteor scatter can work but the path lengths within the UK are very short and it's difficult to get effective reflections unless the antenna is pointing upwards. Propagation via trans-equatorial or F2-layer is possible but only during the peak of the solar cycle, every 11-years or so. So, it really comes down to aurora or Sp-E for the bread-and-butter DX working on the 70MHz band.

Aurora is very useful for inter-UK working whereas Sp-E is the main mechanism for working into Slovenia, Gibraltar or Cyprus. Not many people have worked into Cyprus though.

On June 7 1981 when operating as GW4ASR/P (IO82) I contacted the station of 5B4AZ (KM64) over a path of 3456km. For 20 years I held that 70MHz DX record until it was beaten last year by the stations of EI3IO (IO63) and 5B/G1JJE (KM64). The s.s.b. contact made on July 29 2001 increased the record by a further 177km to a distance of 3633km.

Norman Banks 5B/G1JJE is currently in Cyprus until August and will be attempting 70MHz contacts with the UK again this year. His contact with EI3IO was made running only 8W output from a Yaesu FT-847 transceiver into a wire dipole strung between two water butts! This year he has increased the power to 100W and will use a 6-element Vine Yagi. Norman also expects to activate the station ZC4ATC at various times during the summer.

TROPO CONDITIONS

Although intended as a transatlantic beacon to North America the **GB3SSS** beacon (144.407MHz) is proving an excellent indicator of tropo conditions between the UK and Spain. During March, April and May it was heard many times by stations such as EA1OS (IN53), EB1DNA (IN63), EA1CRK, EA1DKV, EA1EBJ (all in IN73) and EA2AAC (IN83). All are located along the north coast of Spain in an ideal position to spot transitory marine tropo ducts.

The reason I'm mentioning this is that the beacon will also be a very useful indicator for stations much further afield in the Canary Islands. This 3000km path appears every year on the 144MHz and higher bands during the summer months.

Operators known to be active and who have made contact with G, GM and GW stations on the 144 and 430MHz bands include EA8BTX, EA8BTZ and EB8BTV. But now there's an even longer path than could be opened up from the UK. It's the path to Cape Verde Islands and it's over 4000km long!

Think it's impossible? Well hear this. On May 31 the station of D44TD (HK86) had a tropo opening lasting for over 10 hours to coastal stations in Portugal and Spain. Among the s.s.b. contacts completed by D44TD were the stations of CT1EEB at 2990km, CT1DYX at 3100km and EA1DIH at a mind-boggling 3371km!

All it will need is the Cape Verde to Spain marine duct to link up with a simultaneous duct from Spain to the UK. And if you think that is impossible then that's exactly what happens when the band opens up to the Canary Islands every summer. Monitor 144.300MHz very carefully during the next few weeks and you could be in for a real surprise!

73, David G4ASR

DEADLINES

That's it again for another month. Please forward any news, views, comments or photographs to the address and by the date given at the top of the column. Thanks for your letters and good luck with DX on the v.h.f. bands. See you again next month.

HF HIGHLIGHTS

CARL MASON GW0VSW

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

John Densem G4KJV operated GB99SQD during the month of June from the signaller's position on-board a *Britannia* aircraft at Kemble Airfield, Gloucestershire. The special call was to celebrate the reforming of 99 Squadron last summer, which was John's last squadron when he flew in the aircraft between 1965/68.

John goes on to say to me "I know you are ex-Navy and thought you would be interested in one of my modest claims to fame. I was stationed in Fayid, Egypt from 1952 to 1955 flying in *Valetta* aircraft. One of our usual trips was down the Red Sea to Aden with a refuelling stop at Port Sudan. It was quite a boring run as all the signaller had to do was a position report on the hour, an operations normal report on the half hour, collect the weather reports and listen out on 500kHz, 15 to 18 and 45 to 48 minutes past the hour. As you know that was also the ship's calling frequency.

"On one trip after listening for the three minutes, a ship called in. I answered and he queried my five-letter callsign. Changing to a slightly lower frequency we had a quick chat, as he was probably more bored than I was. I asked him if he could give me a bearing, which he did, together with the ship's position. The navigator's face was a sight to behold when I passed him the info.

"Three years ago I met the navigator again at a reunion and he remembered the incident well. My claim Carl, is that I've got to be the last aircrew radioman to have

received a bearing when airborne!"

If any readers would like further information on the aircraft look at www.bristol-britannia.co.uk/

YOUR REPORTS

On to your reports now and **Larry Stringer G4GZG** in Ongar has been using his Elecraft K1 and centre-fed dipole 'on the key' with just 5W QRP. Larry says "I had a QSO early one morning with **Mick M3AIW** in Colchester who was my first M3 on 7MHz. I must say that Mick's c.w. was better than I have heard from some older licensed stations". Larry then spent

that has been addressed recently in several publications and on the Internet. If readers have any comments or thoughts on the subject please drop me a line! Geoff's 7MHz c.w. log includes JT1BH (Mongolia), 8P6CBO (Barbados), ZA1FG (Albania), CT3AS (Madeira) and 3A/OH4MDY (Monaco) all around 2300UTC.

THE 14 & 18MHz BANDS

On to 14MHz and the log of **Colin Topping MM3ACL** in Gauldry, Fife. Colin's DX this month includes 4X4FR (Israel), AA2WC (U.S.A) in Port Jervis, New York, EA6/G3MSM

CARL MASON GW0VSW HAS SO MUCH TO REPORT THIS MONTH WE'VE HAD TO GIVE HIM EXTRA SPACE!

an hour in the evening between 1900 and 2000UTC working DL2GJ (Germany), HB9CGL (Switzerland), SM7EOI (Sweden) OZ8PG (Denmark) OK1DZD (Czech Republic), GM3NCS Donald in Cummington, Elgin, IT9ULN (Italy) and LA9IAA (Norway).

Welcome to new reporter, Short Wave Listener **Geoff Wallis**, who lives in Corsham, Wiltshire and has a station that includes an FT-757GX, FRG-7700 and AOR730 receivers. Antennas are the Cushcraft R7000 vertical, a G5RV and long wire coupled to a MFJ-948E tuner.

Geoff says "The bands have been up and down over the last few weeks with a lot of QSB and sunspot activity. Australia, New Zealand and the Far East are still being heard with some patience, but Africa is very poor.

Geoff continues "I am retired and spend a good deal of time listening to the bands and like others have witnessed the extremely bad manners employed by some people when it comes to chasing DXpeditions, calling even while the DX station is already in QSO. I find this inexcusable and rank bad manners on the part of the operators who cannot and will not wait their turn".

I must agree with Geoff and it is a problem

● John Densem G4KJV recently operated GB99SQD during June from the signaller's position on-board a *Britannia* aircraft at Kemble Airfield, Gloucestershire.

(Balearic Islands) and HB9CQS (Switzerland) for a new country on h.f. all with 10W s.s.b. from a IC-706MkII, HB Pi-Match and G5RV antenna.

Martyn Medcalf M3VAM in Chelmsford, Essex also used s.s.b. to work IN3LQB (Italy), YL/RZ3BY (Latvia), OH1F (Finland), D44AC (Cape Verde), 9A5ST/P (Croatia) on EU-016 Brac Island, LZ1AI (Bulgaria) and SP2WGZ/2 (Poland) operating from a lighthouse. The rig was a IC-746 and SGC-237 tuner with 27 foot of wire.

There was just one s.s.b. contact for **Owen Williams G0PHY** in Biggleswade, Bedfordshire with VU2PEB (India) at 1909UTC using 100W to a dipole antenna.

The conditions on 18MHz this month were "not so good" for **Ted Trowell G2HKU** on the Isle of Sheppy, Kent. However, using just 5W QRP from an IC-721S and HF-6 vertical Ted's c.w. reached OJ0VR (Market Reef), JX7DFA (Jan Mayen), 9M2TO (West Malaysia), FR5FD (Reunion), ZF2MT (Cayman Islands) and A45XR (Oman) between 1800 and 2000UTC.

THE 21 & 24MHz BANDS

The 21MHz band had a few good openings around 1800UTC when Ted G2HKU worked E21EJC (Thailand), 3B8/DL6UAA (Mauritius) and FY5YE (French Guiana) all with QRP.

On now to **Mike Baker G3SUK** in Stowmarket, Suffolk who found conditions "varied" for most of the month. The s.s.b.



contacts on this band included 4X2F (Israel) 1556, IG9/DL4KM/P (Italy) 1610 on Pelagie Island AF-019 and 7X3WDK (Algeria) at 1635UTC using an IC-746 with 80W to a Carolina Windom.

New reporter **Simon Poysden** **G1BND/M3BND** uses a modified FT-707 with matching tuner and band specific dipoles made with speaker flex and TV coax. First contact as M3BND was with T77C (San Marino) for which he received a 59 report. Encouraged by this Simon went on to work EC7DTY (Spain), CT1EEB (Portugal), RK3DZD (European Russia), OE4P/N (Austria), YL7A (Latvia) and LX5ALX (Luxembourg). Not bad going with a simple antenna and 10W!

One more s.s.b. contact now for Owen G0PHY on 24MHz who worked C56JJ (Gambia) on 24MHz at 1100UTC with 100W and a dipole.

Spending some time on this band was **Robin Trebilcock GW3ZCF** in Bishopston near Swansea. Using an IC-775 and 100W into a horizontal loop Robin's s.s.b. reached ZL2AGY (New Zealand) and JA1FHK (Japan) around 0825UTC followed by a c.w. contact with XW1HS (Laos).

THE 28MHz BAND

In Ellesmere, Shropshire another new reporter, **Paul Burgess M0CCQ** had an excellent month on 28MHz working some

very good DX using a FT-920 and 300W to a 5 element ZX monoband Yagi. Paul's log includes ZL1IW (New Zealand), EP3SMH (Iran), AP2JZB (Pakistan), 9M6CT (East Malaysia), 5N6EAM (Nigeria), XW1HS (Laos), VP8GEO (Falkland Islands), ZD8Z (Ascension Island), CP6XE (Bolivia), VK2UZ (Australia), 9V1UV (Singapore), J88DR (St Vincent) and 9N7WU (Nepal).

You may remember that **Graham Stone 2E0GDX** asked in the June column if any other Novices had worked Australia. Well, I had a 'phone call from **Dennis Shallcross 2E0AFI** in Hilcote, Derbyshire to say he had worked in to VK at least half a dozen times using an FT-840 and either a dipole or converted CB vertical antenna. Dennis has worked 196 countries, 176 of them confirmed and just needs Alaska to have 'Worked All States'. This month ZD9IR (Tristan da Cunha) was worked at 1558UTC for a new country!



● New reporter Paul Burgess M0CCQ had an excellent month of DX working on 28MHz.

SIGNING OFF

There was a lot to fit in this month and I hope I have not missed anyone out as I had a few problems with the computer again! Have a good DX filled month.

73. Carl GW0USW

Two pages every month: Because of the phenomenal increase in reported h.f. bands activities, with the interest being reflected by contributors to HF Highlights we're delighted to announce to readers that it will now be published as two pages each month. But don't forget...it's your contributions that help Carl produce an excellent column! **Editor.**



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PRESENTATION - THAMES VALLEY IP GROUP PROJECTS

Robin G8ECJ introduced the Thames Valley group, their preference for IP with Linux, and outlined a recently developed piece of hardware, the G4XYW 9k6 modem, based on an Atmel AVR RISC processor, and intended for the OptoSCC board. A sample was circulated. The modem would be of particular interest to those needing to link to stations equipped with Kantronics 9k6 TNCs in the light of the work done on the transmitted waveform. It was claimed to be marginally better than an RUH 9k6 modem.

To improve performance Robin

BBS software, written in Python (for Linux users) by Andy G4XYW. The BBS software - still in the beta stage aims to interface both AX25 and IP users to news and mail. More details will become available from the TVIPUG in due course.

PRESENTATION - THE MAXPAK LOCAL AREA NETWORK

Chris G0CNG, chairman of MaxPak and sysop of GB7MAX, outlined the main nodes and BBS's in the Midlands. Centred on GB7WV in Wolverhampton, he explained the role of the network as it links to GB7MAX and the BBS's radiating out from it.

the consideration of the first topic of 'Packet Radio, present and future' and some brief general observations were made.

However, with initially discreet departures becoming less discreet and informal discussion groups becoming more vocal, G1DVU wound up the proceedings, thanking among others **Roger G3ZFR** for organising the venue, and especially **Paula G8PZT** for having proposed the event and having cajoled people into coming and participating.

OTHER NEWS - SOFTWARE CD

Many Clubs provide software programs for members and non-members, normally on floppy disks. You select what you want from a list and send off for it. However, to have a choice of many different programs on one CD-ROM is very convenient.

I recently had a CD sent to me to mention in the column. Compiled on behalf of the **Chelmsford Amateur Radio Society** by **Trevor Hawkins M5AKA**, and it's quite comprehensive. There are programs for just about every data mode, with a selection of several to choose from in some cases, including the meteor scatter software that I am mentioning this month.

Several logging programs and general information files are available together with information on the new foundation licence. It would make a very good source of information available on one disk, for the newcomer to the hobby, as well as provide a valuable source for the average Amateur.

Most of the software on M5AKA's CD should run on a PC running Windows '95 or higher. Some programs may only run on Windows 98/ME/2000/XP while others such as PSK31sbw may not run on the later operating systems such as 2000/XP. Some software such as Satscape needs a 266MHz or faster PC.

The PC must have a SoundBlaster compatible sound card, support at least VGA 640 by 480 video (800 by 600 preferred) and have at least a 133MHz or faster Pentium processor. Almost all PCs produced in the last six years should meet these requirements.

You will need a Zip utility on your PC to unpack some of those programs stored as ZIP files. A copy of EnZip is provided for this. Windows 95 users should check the EnZip website

ROGER COOKE G3LDI ROUNDS OFF HIS REPORT ON THE PACKET CONFERENCE 2002

explained how they may introduce a couple of extra chips to improve the interfacing of the modem to the PC's RS232 port. They will also be developing an interface to USB ports, given that the RS232 standard may not be around for very much longer.

Secondly, Robin described the group's Regen controller, based on modem hardware. It keys up on squelch open or DCD from modem selectable active high or low. It sends flags when no data or when handling invalid data, detecting Morse idents etc and masking them out. It does CWID, which is programmable on a per CPU basis, although its transmission is time dependent and may crash a packet frame already in transmission.

Thirdly, G8ECJ demonstrated a front-end processor board, suitable for installing inside a PC. It contains a 64180 chip as used in some TNC's, two SCC chips, giving scope for four radio ports. It can be connected to a modem (Baycom or G4XYW) or via SLIP to a Windows PC, or via KISS to an existing TNC. A few were offered for sale at low cost.

Fourthly, a PC motherboard was exhibited, which was a self-contained 4 port node with processor on board. These were being offered free of charge.

Finally, G8ECJ described the 'Morelia'

He bore with good grace the couple of observations made about the use of some frequencies and callsigns not in line with DCC guidelines.

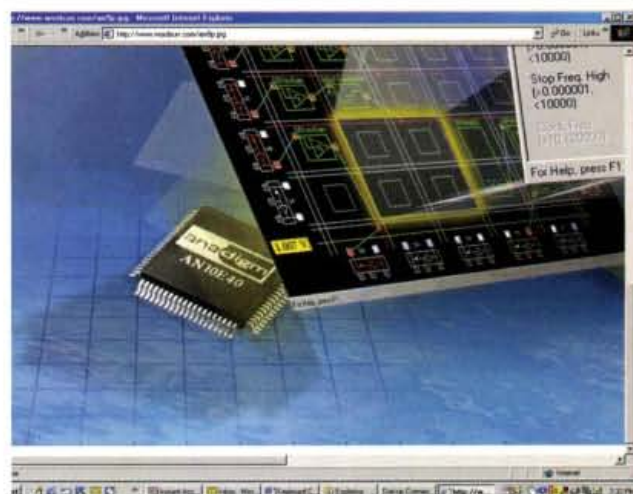
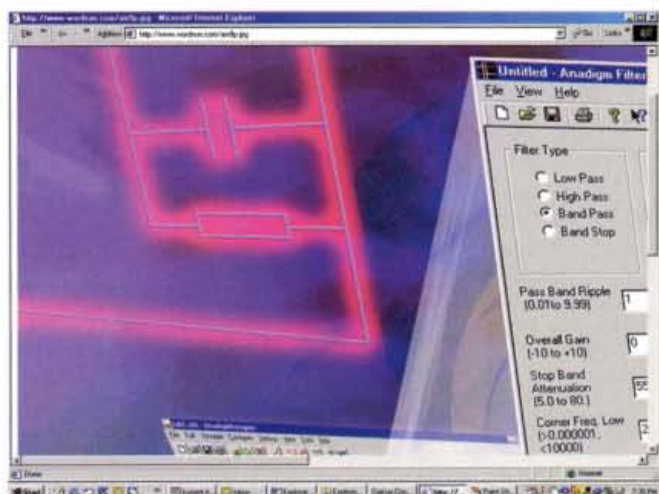
PRESENTATION - THE MAXPAK MAX02 PACKET MODEM

Joe G4VYA explained the origins of the **MAX02 packet modem** modem. It's his design, adapted from the YAM modem designed by Nico Palermo. It can use either the power supply from the PC or from an external source. He recommended the use of AGW software, as this enables the TNC to be configured to be a 1k2 or a 9k6, via the program's internal TNC commands - i.e. no hardware adjustments are required when changing from a low to a high speed modem.

Joe also recommended visiting the Maxpak website to download a slightly doctored version of AGW, which will overcome some problems experienced by users of Windows '95.

DISCUSSIONS

The Conference had run significantly over time. Participants were beginning to need to get away as the discussions were beginning (at 1700). Then G1DVU attempted to 'chair'



<http://www.cpm.freeserve.co.uk/> for the 95 patch.

You will also need a copy of Adobe Acrobat Reader to view the newsletters and other .pdf files. A copy of Acrobat Reader 5.0 is included on the CD or go to the Adobe Acrobat website

www.adobe.com/acrobat Each folder contains an Internet Explorer shortcut that points to the website from which the software was downloaded. Where available documentation on the software in .pdf format has been included in the folder.

For those who have a PC but do not have internet access there is a copy of some websites including AMSAT-UK, CARS and some other Essex clubs. To browse any of these just open the folder and double-click on the file called index.html This will display that site's home page from the CD and you can then browse through the site as though you were online.

If you are interested in obtaining a copy of this CD, then write to Trevor at 'Wych Elm', Mayes Lane, Danbury, Essex, CM3 4NJ Tel: (07941) 039832 or E-mail: m5aka@amsat.org

FILTER DESIGN

Tight filtering is a necessity on the bands these days, even more so when using data modes, especially when you listen to a major RTTY contest. You can now design your own filters using free software that you can download.

Anadigm has added filter synthesis to its field-programmable analog array (FPGA) configuration software. The tool provides an extremely versatile means of specifying high-order classical filters, and combining them with additional signal conditioning circuitry to implement single-chip analog solutions.

Dubbed FilterDesigner, the new tool comes free with the latest version of Anadigm's configuration software for FPGAs. Users can choose from high-pass, low-pass, band-pass and band stop filter types, and within the space of a few minutes create and output the required coefficients in an ideal form for implementation using combinations of the bilinear and biquad filter elements provided in Anadigm's drag-and-drop library

of ready-to-use 'IPmodules'. With 20 analog blocks available, each of which is capable of implementing a single filter stage, FPGAs users can construct highly sophisticated single-chip analog solutions - something which is currently only achievable by ASIC technologies.

In its default mode, FilterDesigner v1.0 offers Bode plot views of filter response for high-pass, low-pass, band-pass and band stop filters. Linear amplitude, and linear phase plots are also available. Butterworth, Chebyshev, Inverse Chebyshev or Elliptic approximations may be employed to create the desired response.

All that users need to do is specify the characteristics of the filter effect they seek, in terms of high-level parameters such as corner frequencies and pass band gain. The tool automatically constructs the required circuit, and decomposes it into the filter stages and settings required for implementation using the general-purpose array structure of an FPGA.

The software will create filters of any complexity, but it also alerts users if the filter design is beyond the capacity of the first generation of FPGAs. Depending on the bandwidth, this upper limit can be as high as a 20th order filter in a single chip. FPGAs can be concatenated if even higher order filters are required.

FilterDesigner is free and can be downloaded from <http://www.anadigm.com/filtersynth.html> For further information contact Anadigm Ltd, 3-5 Mallard Way, Crewe Business Park, Crewe, CW1 6ZQ. Tel: (01270) 531990, Fax: (01270) 531999, E-mail: support@anadigm.com Website: <http://www.anadigm.com>

CORRECTION

I received a note from Albert Alvareztorres, Jr AA1DO of the American Radio Relay League's (ARRL) Technical Information Service (TIS) correcting me on a mention in my May column. This is what it says:

"First, thank you for the publicity about the propagation article in the TIS (Technical Information Service) Web Pages, however these pages, www.arrl.org/tis are not maintained by K9LA - they are maintained by

myself, the Technical Information Coordinator here at ARRL Headquarters. The article by K9LA's - The Sun, the Earth, the Ionosphere was submitted for possible inclusion in the popular TIS Pages and I, of course, jumped on the opportunity".

The TIS pages contain a wealth of information categorised by topic from QST, QEX, other ARRL publications, some RadCom articles and also original material. Albert's note proves that PW has a wide circulation and is read world-wide. So, if you wish to contact the TIS service, here are the details: Albert Alvareztorres, Jr AA1DO Technical Information Service, ARRL, Inc., 225 Main St., Newington, CT 06111. Tel: 1-860-594-0214, FAX: 1-860-594-0259 or E-mail: tis@arrl.org or aa1do@arrl.org The website can be viewed at <http://www.arrl.org/>

HEARTFELT PLEA!

I have had several QRP c.w. operators write to me regarding some persistent QRM of the recognised QRP frequencies. Dave G4OER, writes in and asks: "Can I make a plea through the column Roger? On 7MHz, many operators are using too much power. The band is getting very crowded and I find that most of the time, 15W or so is plenty. I think they tend to forget that 5 by 9 means perfectly readable and extremely strong and anything above nine is overkill and just wastes power and can cause unnecessary congestion".

It's a perfectly reasonable request Dave, but unfortunately some of the ARRL 'codes of operating' are thrown out of the window these days. Gentlemanly behavior seems to be a thing of the past, just listening to the pile-ups on such stations as VP6, P5 et al proves that there are some real hooligans out there!

So, please be aware that some stations like to use QRP, respect others on the band. The 7MHz band is small enough now, and to try to cram in all modes in such a small space is just about impossible.

Still, as the saying goes, with all the sham and drudgery, it's still a wonderful hobby! I'll leave you with that thought and will see you again next month.

Roger G3LDT

IN VISION

BY GRAHAM HANKINS G8EMX

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I've bought myself a camcorder! I always tend to buy the 'last of' rather than the 'first of', so the analogue Hi8 Camcorder with a very reasonable price tag had, as the saying goes, 'my name on it'. Apart from being a 'new toy to play with', this has given me the means to try a bit of television production, by filming some footage for a 'Beginners Guide to ATV' video being planned by the British Amateur TV Club (BATC).

The BATC has asked itself: "We publish a book (*An Introduction to ATV* – a few still available), but we are a television club, so why don't we produce a video?" several times, but nothing – yet – has been seriously done about it. Well, I devised a storyboard and set about putting some of it onto tape. Beginning, obviously, with a title sequence, leading into a piece to camera introducing myself and the object of the video, then visuals of the bandwidth needed for ATV, the 430 and 1270MHz Amateur spectrum and develop from there. Easy.

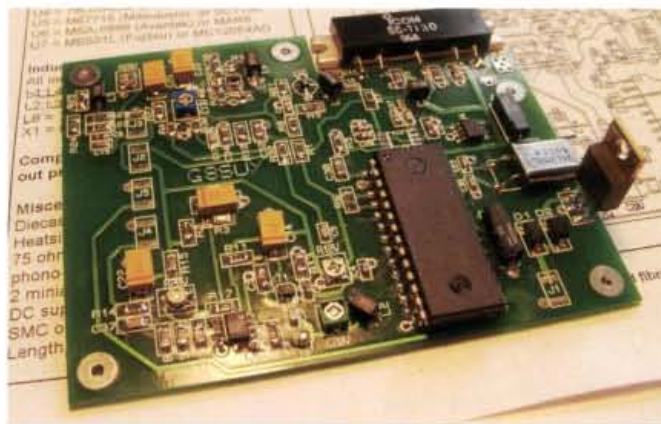
Actually, **not so easy**. The piece to camera proved so difficult that I shall have to re-shoot a different version! Even with a script that I had written for myself on a subject I knew about, I forgot what to say when the camera was running!

difficult item was the 8 pin dual in-line i.c. – I could not see anyway of establishing pin 1. Andy explained that one edge of the package was bevelled, and so it was, (very slightly), when viewed under the lens.

Now for some hints when constructing the very compact 24cm ATV transmitter kit. For best output power, Andy recommends that C40 (1pF) be mounted as close as possible to T2. The huge phase lock loop chip (U2) did not, as supplied, comfortably fit between the solder pads – squeeze all leads to the full 90° to the chip's body, then carefully, with tweezers, bend out the thin part of each pin, and cut off short.

Fit C2 after U2 is soldered, otherwise it's difficult to reach the U2 solder pads. I had difficulty fitting some of the inductors and L5 may be too small to fit between the pads, solder one end and use thin wire for the other.

The transmitter generates 1265 (simplex)



● The completed 24cm ATV transmitter kit, built by G8EMX.

GRAHAM HANKINS G8EMX HAS THE LATEST NEWS FROM THE ATV SCENE

So, I put my script in large type on the computer monitor. No good, as on playback, my eyes were clearly looking away from the camera. Next idea was to memorise short sections of script and edit out the 'look aways'.

Oh dear, with the camera light on, I was temporarily 'blinded' and couldn't even see the words, let alone remember them! What I really need is an Autocue – any BBC studios free, I wonder? Or presenters available at very low rates? This project is ongoing.....

KIT BUILDING UP-DATE

With a lot of help from a magnifying lens, metal tweezers (the plastic ones tended to melt, even with just a 15W soldering iron!) an anti-static wrist band and a few E-mails to **Andy Parnell**, the G8SUY 24cm ATV transmitter kit, which uses surface mount components (s.m.c.) is now assembled. Although this was my first s.m.c. project, it became quite easy, almost routine, to mount these very, very small components – the 1pF capacitors are only 1mm long! The most

and 1249MHz (repeater input), not 1259MHz as incorrectly stated last time. Thanks to In Vision reader **R. Irish G4LUF**, Devon for writing in to point this out.

DRAYTON MANOR RALLY

The BATC exhibition display faced the Beacons Repeater Group at the Drayton Manor Rally, near Tamworth, towards the end of May. This was the first time that the BATC had been represented at this rally, which is one of the principal radio gatherings in the Midlands.

Apart from the usual rally business, it was good to renew some old acquaintances and make a couple of new ones. **Stuart Marshall G4NGT** makes ATV antennas, advertises in the BATC's magazine *CQ-TV* and was exhibiting in one of the marquees. But I had never met him before or appreciated the range of horns and slots he produces for the ATV microwave bands. Another visitor to the BATC stand requested a talk for a club near Derby; E-mail addresses were exchanged and I will likely give a talk later this year.

During one of the 'lulls' in visitors to the Drayton Rally, I spoke to **Alan Kendall G6WJJ**, who is chairman of the Beacons Repeater Group in Birmingham. The Group runs 10GHz ATV repeater **GB3BG** in Sedgley, but was originally formed to progress a 1.3GHz ATV repeater for the area, which at the time was being considered at a farm near Barr Beacon, hence the Group's name!

Progress and news of this now very long-running 24cm project seems to occur extremely sporadically, so I was anxious for any recent developments. The latest site, a private house in Erdington, is still available and it seems that four close-down names may possibly have been found, so I shall be maintaining contact with the BRG to urge progress on this.

Another 10GHz ATV repeater in the Midlands is **GB3DJ** in Telford, looked after by **D. (Dave, I think) Hall**. Dave came to the Drayton Rally; now retired, he can concentrate on ATV up to 47GHz and continues to set distance records for microwave ATV contacts, but, unfortunately, did not give me any details to report! I explained that I only needed the facts – frequency, distance, where to where etc and, if possible, basic details of the equipment used. But unless folks send these to me – E-mail or 'snail mail' – their efforts and achievements go unappreciated by a wider audience!

That's all for this month, next time I'll be presenting a special report on the BATC Convention and General Meeting!

73 & PS
Graham G8EMX

TUNE-IN

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I read the other day about a 'gentle decline' in short wave broadcasting and I think that's probably a fair assessment. There is still a huge amount of short wave, and the bulk of it will probably still be in existence in five to ten years time. But consider the following news items: **Radio France International (RFI)** is expanding its services in Latin America and Cambodia, but it's all on f.m. In Colombia and Ecuador, satellite and pre-recorded programmes in Spanish and French will be available, in large cities, small communities and heavily-populated regions. It will now have three f.m. relays operating round the clock.

As if to emphasise the way things are going, the same week RFI announced a new-look website, www.rfi.fr which is a constantly-updated and an easy guide to all its programmes.

The **World Radio Network** also announced a brand-new service to South America. This will complete the London broadcaster's global coverage, but there's **no short wave**. The service is essentially satellite-based (Telstar 12), featuring international radio broadcasters such as Radio Netherlands, Public Radio International, Radio

beginning to do well, getting audiences and revenue. Can the public service stations survive?

The Portuguese state broadcaster **RTP** currently runs six television channels. The government has now decided that this is too expensive, and is going to amalgamate the six channels into one.

In Denmark, a new draft media law for radio and television outlines plans to privatise the public network TV2. Meanwhile, **Radio New Zealand International**, small though it is, once again faces cuts, because of rising electricity costs. But riding to the rescue comes a New Zealand government committee saying that \$NZ 6million earmarked by the government for the setting up of a national youth network would be better spent on improving the financing of existing services, including RNZI.



● Check out RFI's new-look website at www.rfi.fr

● Global Radio aims to cover the whole of Europe with three satellites to broadcast 60 or 70 channels direct to vehicles and homes across the continent.

TOM WALTERS SAYS DESPITE REPORTS OF DECLINE SHORT WAVE BROADCASTING IS STILL IN EXISTENCE

Canada International, China Radio International, Radio Australia and Channel Africa. And, significantly, WRN has decided to take advertising, alongside its relays of public service broadcasters.

Another satellite broadcaster also announced plans – and very bold they are too! Luxembourg-based **Global Radio** aims to cover the whole of Europe with three satellites, using seven regional beams, to broadcast 60 or 70 channels direct to vehicles and homes across the continent. Special radios for this first European satellite-direct digital radio service will be made by North American company Delphi. You can find out more at www.globalradio.lu

PUBLIC SERVICE BROADCASTING

While we're having a bit of a worry, here's a good one – public service broadcasting. The 'traditional' public service international broadcasters, such as those relayed by **World Radio Network**, are always in trouble. Governments constantly need proof that the broadcasters can deliver value for money.

Meanwhile, commercial broadcasters are

Some countries really struggle to maintain outdated short wave equipment. A recent report from Mongolia notes the need for special controls for short wave radio stations, because the present system, which depends on outdated Russian technology of the 1960/70s is not up to modern requirements.

The current schedule for **The Voice of Mongolia** is: 1000-1030 on 12.015MHz (this one uses 250kW and is aimed South, for Asia and the Pacific); at 1508-1530 on 12.015 and at 2000-2030 on 12.015MHz (these are both on just 50kW, aimed West, which should just reach Europe). Very charming and individual the transmissions are, too.

DIGITAL RADIO MONDIALE

We're a bit light on schedules this month, because there's so much general stuff about. One general solution to the short wave decline is possibly Digital Radio Mondiale (DRM). That means using the existing international a.m. frequencies to transmit digital signals. The start date always seems to be 'next year'. And so it still is.

But in May 2002 Continental Electronics successfully demonstrated that its transmitters are DRM ready. The demonstration, says the press release, 'underscored the superiority of the DRM broadcasting system over the conventional a.m. modulation system used in international shortwave broadcast bands'.

The live DRM broadcast demonstration spanned 1,500 miles, from EWTN Global Catholic Network's mountain-top radio station, WEWN, in Birmingham, Alabama, to the floor of the Las Vegas Convention Centre. The event took place during NAB 2002 in co-operation with Telefunken SenderSysteme Berlin and the Fraunhofer Institute of Germany.

John Uvodich, president of IDT Continental Electronics said: "Demo observers repeatedly said that our a.m. shortwave signal sounded as clean and clear as local f.m." Frequencies used were 5.825, 7.520, 9.975, 11.875 and 13.615MHz.

The demonstration used a 500kW IDT-CE transmitter and a Telefunken DRM exciter. The transmitter is capable of operation in standard amplitude modulation, controlled carrier-level modulation or single side band service. From a central master control panel or from a remote computer it delivers full carrier power at any frequency between 3.9 and 26.1MHz. Telefunken also provided the special receiver.

Of course, to ensure that the classic show goes on, you could always buy your own short wave station. Herald Broadcasting have at last decided to call it a day, and have put their WSHB station at Cypress Creek, South Carolina up for sale. The WSHB uses some 17 frequencies to broadcast globally in six languages.

So, why is WSHB being sold? Herald are getting out "to shift the focus to programme production rather than owning and operating program delivery facilities". The price, they're asking is \$US 6.3 million, so it seems you need deep pockets to stay in international broadcasting!

Bye for now, Tom

Trader's Table

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This month we have found some *Practical Wireless* 'Classics' to offer you. The gems we have for you are *Wires & Waves*, *Passport To Amateur Radio*, *Introducing QRP*, *Practical Power Supplies* & *Out of Thin Air*, all of which would normally cost over £9 plus P&P.

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The interesting feedback from readers with their memories of *Practical Wireless* over the past 70 years goes on. This time we feature an encounter which took place during a club visit by the Editor and pay tribute to a long-time reader.

As readers will know...our busy team leader visits Amateur Radio Clubs on invitation whenever he can. This aspect of his work has taken him all over England, Wales, Scotland, Northern Ireland, The Republic of Ireland, Holland, Belgium, and Germany and the USA (when attending the Dayton HamVention).

During his club visits our Editor has had the opportunity to meet some truly delightful, friendly people, who reflect the Amateur Radio hobby in a very effective way. Such was the case when he visited the **Harwell Amateur Radio Society**, based at Didcot in Berkshire on Tuesday 12 March, where the opportunity to meet G4EXW came. It was an experience our editorial team leader has spoken about with pleasure ever since!

Meeting **Banfield** ('**Baney**' is his preferred nickname)
May G4EXW was a pleasure for the Editor...and even though this Welshman has lived in England many years...he still qualifies for a genuine 'W'! **By the time you read this he will have celebrated his 86th birthday - on 18 June to the best wishes from the team**

Born near Neath in South Wales this amazing character moved to Oxfordshire in 1966 to work at the Rutherford Laboratory at nearby Chilton. Passing his RAE in 1971 he then got the callsign G8HMI, and on passing his Morse tests became G4EXW. Interested in all bands from 3.5 to 144MHz he was well known on the 'Laver Bread' net, popular with anyone from the Swansea/Neath area who is now in exile
(Editorial note: Laver bread is the seaweed



delicacy very much favoured by those fortunate enough to live near the Gower Peninsula in particular).


Baney first subscribed to the *Amateur Wireless* and then *Practical Wireless* when the two journals amalgamated in the early 1930s. So, obviously he's

had a very long career in radio...although he didn't get his 'ticket' until much later. And - although he hadn't told the Editor this - we understand he's a very talented water colour and oil painter, enjoying both mediums as an artist. Obviously a multi-talented man, and we're left wondering if Baney's two children, **Aveline and Charles** have inherited their father's abilities and hobbies?

So, in looking forward to hearing from other 'long serving' readers and paying tribute - the *PW* team wishes Baney many more years in the

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Look out for all your regular favourites too including:

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