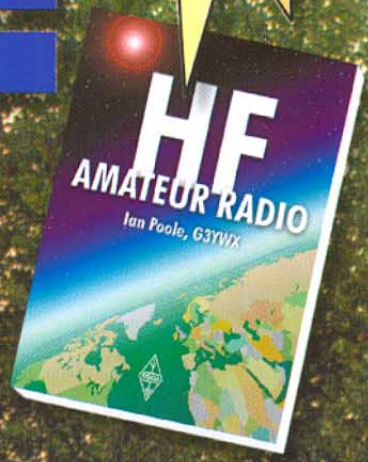
WIN! A VideoLogic DRX-601ES Digital Radio Tuner

RadCom

www.rsgb.org

OUT NOW!

£3.95 Vol 77 No 11 ♦ November 2001 The Radio Society of Great Britain Members' Magazine



Getting Going on Oscar 40 - a Practical Approach

2000-2001 RSGB Annual Report and Accounts

WATERS & STANTON

e-mail: sales@wsplc.com

on-line catalogue: www.wsplc.com

freephone orders: 08000 73 73 88

Carriage Charge Codes:
A=£2, B=£6, C=8 Others: phone

VISA MasterCard

FT-817 160m - 70cms 5W Portable

£799.95 carr.£8

FT-817 is an incredible design feat by Yaesu, and world reviews agree that there has never been anything like it. It's not expensive either. So why not get out in the fresh air, or put one in the car, and put the fun back into your radio. Check out the exciting AT & ATX portable antennas elsewhere in our add.

HF Whips for FT-817

AT-80	80m telescopic	£24.95
AT-40	40m telescopic	£24.95
AT-20	20m telescopic	£19.95
AT-17	17m telescopic	£19.95
AT-15	15m telescopic	£19.95
AT-12	12m telescopic	£19.95
AT-10	10m telescopic	£19.95
ATX	WBNC	£Phone

Carriage charge £2 each

OTT-1 One Touch Tune

Plugs into rear of FT-817and gives immediate carrier for adjusting ATU or checking VSWR

£59.95 carr.£6

W-25SM 25 Amp 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) excluding terminals. Provided with detachable 13 Amp plug and cable. NEW

£69.95 carr.£6

MFJ-Micro Key MFJ-561

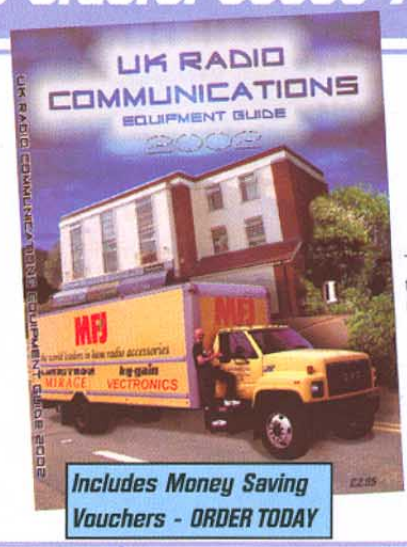
FT-817Micro Paddle

This tiny paddle really is a masterful idea. It's simple, yet very effective. Built from phosphorous bronze, it comes with 1m lead and 3.5mm stereo plug. NEW

£24.95 carr.£2

Z-11 Auto ATU for FT-817 160m - 10m

£199.95 carr.£6



Includes Money Saving Vouchers - ORDER TODAY

New 2002 Catalogue
336 pages
£2.95 VISA
carr. £1.25 MasterCard

The foremost guide to amateur radio products from the latest transceivers to the smallest of accessories. Full colour pages with comprehensive specifications, there is nothing else like it in the world! There is also some editorial and reviews. Three times the size of many magazines, yet it costs no more.

YAESU

FT-1000MP Mk-V 200W HF All Mode £2899

3 YEARS FREE WARRANTY — Plus £8.00 Carr.

The New Industry Standard .....
Would a Serious DXer accept anything less ?

FT-1000 Accessories

FTV-1000 6m (MKV)	£799 B	YF-114CN CW	£84 B
MD-100ABX Mic	£110 B	YF-110SN SSB	£95 B
SP-8 Speaker	£139 B	YF-110CN CW	£106 B
DVS-2 Vce messge	£199 B	YF-115C Collins	£99 B
YF-114SN Fil SSB	£84 B	TXCO-6 Ref Osc	£128 B
		YH-77STA Phones	£56 B

FT-847 160m - 70cm All Mode £1199

3 YEARS FREE WARRANTY — Plus £8.00 Carr.

1.8 to 440MHz, this all-in-one station offers unbeatable value. 100W on HF plus 6m, and 50W on 2m and 70cms. You get genuine RF clipping on SSB for up to 6dB gain and there are 4 separate antenna sockets

Accessories for FT-847

FC-20 ATU	£219 B	MD-100ABX Mic	£110 B
SP-8 Speaker	£139 B	YF-115C Collins	£99 B
FVS-1A Vce synth	£38 B	YF-115S Collins	£99 B

FT-100 D 160 - 70cm All Mode £1249

SAVE — Plus £6.00 Carr.

Yaesu's latest version is now available and includes 500Hz CW filter, high stab. oscillator and CTCSS decoder.

FT- 920AF HF 160m-6m-100w £1099

Plus £8.00 Carr.

100 Watts from 1.8 to 54MHZ with dual VFO controls. Features DSP, Shuttle-jog, Internal ATU, 100 memories and built-in message keyer. Supplied with FREE FM unit.

MD-200ABX £249

SAVE — Plus £5.00 Carr.

Yaesu's Secret Weapon! NEW

The best microphone Yaesu have ever produced. Featuring Variable Side Pressure Control. You can adjust the audio response precisely to meet your personal requirements.
But there is more!
There is also provision for fitting and selecting an additional element that can be selected via the switch provided. The HEIL ceramic elements are ideal for this. Why not fit the HC-5 DX element, just £32.95 - IN STOCK

KENWOOD

TS-2000 160m - 70cms+23cms option £1695

3 YEARS FREE WARRANTY — Plus £8.00 Carr.

+FREE HEIL MIC OF YOUR CHOICE

The amazing TS-2000 offers coverage from HF to UHF. And you can go right up to 23cms with the optional module. Monitor the DX cluster whilst working other DX, optimise your satellite contacts, enjoy the benefit of built-in ATU. It's all there in one very compact box. Colour brochures available on request.

TS-570D 160 - 10m All Mode £849

3 YEARS FREE WARRANTY — Plus £8.00 Carr.

Possibly the best value in budget class HF radios. 100 Watts out on all HF bands with DSP and variable CW filtering. Lovely large dial and built-in memory keyer. We even give you a built-in ATU. Great value!

TS-570 Accessories

VS-3	Voice synth	£45 A	MC-80 Desk mic	£72 B
DRU-3A	Recording	£99 B	PS-33 Power supply	£199 C
HS-5	H'phones	£52 B	SP-23 Speaker	£68 B
MC-90	Desk mic	£187 B	CW filters each	£61 B
			SSB 1.8kHz	£61.95B

10M OR 15M WHIPS £19.95

SUPER VALUE — Plus £2.00 Carr.

100W 10m & 15m Mobile Whips with magnetic mount +
Built-in impedance transformer

Just over 1m long, complete with magnetic base, shock spring, 5m coax cable with PL259 and built-in impedance transformer for 1:1 VSWR. Centred on 28.5MHz or 21.250MHz, this is anabsolute bargain! Get ready for the Autumn and Winter DX.

SGC SG-2020 £599 (Plus NEW SG-2020 ADSP)

Plus £2.00 Carr.

0 - 20 Watts Output
SSB CW AM Data
RF & VOGAD Processing
Variable Selectivity (100HZ)

Ideal for QRP, 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 £8.00

ICOM

IC-746 160m - 2m All-mode £1395

3 YEARS FREE WARRANTY — Plus £8.00 Carr.

Accessories

FL-100 CW	£59 B	RS-746 Software	£44 A
FL-101 CW	£84 B	SM-8 Mic	£129 B
FL-103 SSB	£59 B	SM-20 Mic	£149 B
FL-223 SSB	£59 B	SP-21 Speaker	£74 B
		UT-102 Vce Synth	£32 B

IC-756PRO 1.8 - 52MHz 100W £1895

3 YEARS FREE WARRANTY — Plus £8.00 Carr.

IC-756PRO Accessories

CT-17	RS-232	£99 B	SP-20 Speaker	£164 B
SM-8	Base mic	£129 B	SP-21 Speaker	£74 B
SM-20	Base mic	£144 B	UT-102 Voice synth	£32 A
			PS-85 Power supply	£266 B

IC-706IIG 160m - 70cm All Mode £999

3 YEARS FREE WARRANTY — Plus £8.00 Carr.

New Heil Hands-Free Headset.
This single piece headphone with boom microphone, from Heil USA, allows true hands-free operation using VOX. Wired for IC-706 (all models) it includes PTT switch. Built-in amplifier means no more low audio from older IC-706 models! All this for just £59.95 B

IC-706IIG Accessories

AT-180	Auto ATU	£379 B	FL-223 SSB 1.8kHz	£59 B
FL-100	500Hz CW	£59 B	DC Lead (spare)	£16 A
FL-232	350Hz CW	£59 B	3.5m sep cable	£33 A
FL-103	SSB 2.8KHz	£59 B	5m sep. cable	£49 A
			Others: please phone	

IC-775 DSP 200W HF £2099

SAVE — Plus £8.00 Carr.

Your last chance to purchase this heavyweight from ICOM. It covers all HF bands and gives a robust 200-Watts output. This really is a classic DX machine that has many followers around the world.

IC-718 100W HF £549

SAVE — Plus £8.00 Carr.

If you are looking for a radio with pedigree, but without a high price tag, then this may the one for you. Covers all HF bands plus wideband receive. Plus auto notch, dual vfo, swr meter etc. Plus options including DSP & filters.

HEAD OFFICE
22 MAIN RD, HOCKLEY, ESSEX, SS5 4QS ▪ ENQUIRES: 01702 206835/204965 FAX: 01702 205843

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20, WOODSIDE WAY, GLENROTHES, FIFE KY7 5DF ▪ ENQUIRES: 01592 756962 FAX: 01592 610451-CLOSED MONDAYS

YAESU

FT-1500M 2M FM Mobile £159
Plus £8.00 Carr.

SPECIAL OFFER

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

KENWOOD

TM-D700E 2m + 70cm FM £449
Plus £8.00 Carr.

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

TM-G707E 2m + 70cm FM £289
Plus £8.00 Carr.

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

TM-V7E 2m + 70cm FM £359
Plus £8.00 Carr.

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
Plus £8.00 Carr.

A great budget class radio for VHF & UHF use.

IC-2800H 2m + 70cm FM £419
Plus £8.00 Carr.

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

IC-2100H 2M FM Mobile £229
Plus £8.00 Carr.

Rugged design with switched receive filters 12.5/25kHz

IC-910 2m + 70cm All Mode £1299
Plus £8.00 Carr.

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

YAESU

FT-7100 2m/70cm Mobile £Phone
Plus £8.00 Carr.

NEW

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).

Yaesu Handhelds

Tough Radios Great Specs.

VX-1R 2m/70cm handy	£145 B
VX-5R 6m/2m/70cm	£269 B
FT-41R 70cm	£119 B
FT-51R 2m/70cms	£315 B

KENWOOD

TH-D7E 2m + 70cm £229
Plus £8.00 Carr.

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.

NEW

TH-F7E 2m + 70cm £369
Plus £8.00 Carr.

NEW

With extra wide Rx coverage

Up to 6W out with Li-Ion battery and "scanner" style coverage from 100kHz to 470MHz including SSB on receive! This is a great radio to have at all times when you are on your travels.

ICOM

IC-T81E 6m, 2m, 70cm + 23cm FM £299
Plus £8.00 Carr.

Up to 5W output
Rx FM/WFM/AM
Batt & Charger

Four bands in one very compact handheld. This enables you to take advantage of the UK's complete repeater network right up to 23cms. Also makes an ideal travel companion. AM air receive.

MFJ-461 MORSE CODE READER £84.95
Plus £6.00 Carr.

The MFJ-461 is a stand-alone pocket sized Morse code reader. Similar in size to the MFJ Morse tutors, all you do is hold it close to your receiver and it instantly displays CW on the 32 character high contrast LCD. It has automatic speed tracking, a serial port - if you wish to connect to a computer to display the text on a bigger screen. It can also be connected to your receiver's audio if required. Truly pocket sized at 57 x 82.5 x 25.5mm and 156g.

ADI

ADI AT-600 2m/70cms £179
Plus £8.00 Carr.

HOCKLEY WAREHOUSE EXCLUSIVE

*Dual Band 2m/70cms
*Up to 5 Watts out
*Airband Receive
*Nicad Pack * CTCSS
*Hod Charger

You won't find better value than this. Limited stocks

ADI AT-201 £99
Plus £6.00 Carr.

*2m Handy
*2.5W, 5W (13.5V)
*1750Hz & CTCSS
* Wideband receive
*Drycell case
*Batteries not included
*Full keypad

Higher power than most palm sized models. Fully (illuminated) keypad for ease of frequency entry. Channel or frequency readout.

ADI AT-147 2m 50W £199
Plus £8.00 Carr.

Airband Receive

2m FM mobile transceiver. Three power levels 50,10,5W. Displays frequency or channel numbers, and offers Airband AM receive

HORA

HORA C-408 70cm £49
Plus £6.00 Carr.

HOCKLEY ONLY

230mW
CTCSS
Digital Display

Very much underated 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).

MFJ-969 ATU £189.95
Plus £8.00 Carr.

HF + 6m! 300W "T" Match ATU

It has a very accurate PEP meter built-in, (PP3 battery needed) Includes VSWR cross needle meter, dummy load and lovely roller coaster for critical adjustment. Handles coax, balanced and wire. Size 268 x 242 x 95mm.

MFJ-949E ATU £149.95
Plus £8.00 Carr.

1.8 - 30MHz 300W "T" Match ATU

Our most popular ATU because it covers all HF bands and matches anything from coax to long wire to balanced feed. Take a look at the price and then consider that it even includes a dummy load plus power and VSWR meter. Measuring 260 x 190 x 83mm, it really is great value.

WATSON

80m + 40m Monoband Verticals £69.95
Plus £8.00 Carr.

NEW

Low Cost LF Mono Band Verticals For Small Gardens

* Mono Band
* 40m or 80m
* Hustler Resonator
* Height 5m approx
* 400 Watts
* Ground mounted
* No Radials Essential
* 50-239 Feed

If you have a small garden and want to operate on 40m or 80m, this antenna may solve the problem. It is slim and requires no more than a few square feet of space. Mount it at ground level using a single earth stake and enjoy excellent performance. No radials are required. There is a choice of 40m or 80m. Both models are approximately 5m high when fully extended but may be configured to operate with reduced height of around 3m. Top loading is employed for maximum efficiency and bandwidth. Just drive a stake into the ground or mount a stub pole in concrete and use a separate earth rod. The top loading features the famous Hustler resonator, and this may be adjusted to operate anywhere in the band. Bandwidth on 40m is typically 100kHz and around 50kHz on 80m.

SECOND HAND

HF Transceivers		Scanners Hand Held	
IC-725 x2	£399.00	DJ-X10	£199.00
IC-725	£499.00	R-11 x2	£199.00
IC-728 x2	£495.00	MVT-7300	£229.00
IC-737	£699.00	VT-125 II	£99.00
Kenwood	£699.00	Station Accessories	
Kenwood	£749.00	PK-232MBX	£185.00
MFJ-9020	£115.00	PK-900	£299.00
MX-3.5S	£149.00	ALS-600XDE	£899.00
SG-2020	£485.00	AV-600	£39.00
TS-120S	£295.00	LPM-144-3-100	£139.00
VHF/UHF Base/Mobile Transceiver		Explorer	£499.00
2001 x2	£145.00	SM-8	£69.00
DR-110E	£125.00	AMT-3	£50.00
DR-M06SX	£159.00	FAX-1	£125.00
IC-290H	£229.00	NTR-1	£99.00
TM-221ES	£149.00	EK-4	£35.00
TS-811E	£495.00	KMK	£35.00
FT-225RD	£499.00	IF-232C	£59.00
FT-290R II x2	£249.00	MFJ-249	£149.00
FT-690R II	£299.00	MFJ-484C	£89.00
VHF/UHF Hand Held Transceiver		MFJ-784B	£139.00
DJ-190E	£99.00	MFJ-931	£59.00
DJ-480	£99.00	MFJ-1274	£100.00
DJ-G5	£169.00	MFJ-1610	£4.00
IC-M11	£199.00	PT-105A x2	£25.00
IC-Q7E	£115.00	PT-107A	£39.00
IC-T7E x2	£199.00	MML-144-30H-S	£69.00
TH-28E	£99.00	MML-144-100-S	£139.00
TH-79E	£175.00	MML-432-30H-L	£120.00
TH-D7E x2	£249.00	KX-3	£59.00
C-108	£89.00	2800HA	£79.00
C-408	£89.00	3000A +	£289.00
TH-41E	£85.00	Micro-RF	£69.00
VX-5R	£199.00	Pico-2	£149.00
Shortwave Receivers		Bravo Pro	£50.00
YB-500	£69.00	PowerClear	£199.00
NRD-345G	£349.00	LT-23S	£499.00
NRD-525	£529.00	Masterkey II	£49.00
HF-125	£199.00	DSP-59+	£149.00
HF-225	£249.00	THETA-550	£75.00
DX-394	£99.00	W-25AM	£59.00
R-9914	£69.00	WAT-2	£35.00
ICF-SW100E	£115.00	FIF-232C x2	£49.00
ICF-SW1000T	£299.00	FL-2025	£99.00
ICF-SW7600D	£79.00	FL-7025	£119.00
WA-8000	£199.00	Miscellaneous	
TMR-7602	£59.00	WT-2C	£30.00
R-600	£175.00	AE-2850	£50.00
		KH-104	£60.00
		GPS-II Plus	£149.00
		GPS-3000	£89.00

WATERS & STANTON

Order details on inside front cover

Carriage codes: See Inside Front Cover

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CUSTOMER SERVICE THE ONLY THING WE WON'T DISCOUNT

Get in Front with HUSTLER

5BTV

£169.95 Carr. £8.00

4BTV

£159.95 Carr. £8.00

HUSTLER®

BASE STATION ANTENNAS

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

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

HUSTLER Mobile Antennas

Model	Band	Bandwidth	Price
RM-10	10m	150-250kHz	£19.95 B
RM-11	11m	150-250kHz	£19.95 B
RM-12	12m	90-120kHz	£19.95 B
RM-15	15m	100-150kHz	£19.95 B
RM-17	17m	120-150kHz	£22.95 B
RM-20	20m	80-100kHz	£22.95 B
RM-30	30m	50-60kHz	£25.95 B
RM-40	40m	40-50kHz	£25.95 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	£25.95 C
RM-20-S	20m	100-150kHz	£29.95 C
RM-40-S	40m	50-80kHz	£35.95 C
RM-80-S	80m	50-60kHz	£49.95 C

Lower mast sections

MO-1	54" (FOLD @ 22")	£31.95 C
MO-2	54" (FOLD @ 27")	£31.95 C
MO-3	54" (NON FOLD)	£25.95 C
MO-4	27" (NON FOLD)	£21.95 C

CUSHCRAFT COMMUNICATIONS ANTENNAS

HF Horizontal Beams + Dipoles

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

COUNT ON US!

MA5B	10-20m (5 band) 3 el 2.7m radius 1.2kW	£299.95 C
X-7	10-20m 7 el. 12.5 - 13dBi 2kW 6.09m radius	£669.95 D
X-740	40m add on kit for X-7	£269.95 C
A4-S	10-20m 4 el. 8.9dBi 2kW 5.49m radius	£529.95 D
A-744	Gives 40m or 30m operation from A-4S	£149.95 C
A3-S	10-20m 3 el. 8dBi 2kW 4.72m radius	£459.95 D
A-743	Gives 40m or 30m operation from A3-S	£149.95 C
A3-WS	12 & 17m 3 el. 8dBi 2kW 4.4m radius	£349.95 D
A-103	Gives 30m operation from A3-WS	£149.95 C
D-3	10-20m dipole element 7.86m 2kW	£219.95 C
D-3W	12, 17, 30m 17m dipole element10.37m 2kW	£219.95 C
D-4	10-40m dipole element 10.92m 2kW	£299.95 C
D-40	40m dipole element 12.88m 2kW	£259.95 C
XM-240	40m 2 el. 6dBi 7.3m radius 2kW	£699.95 C
Ten-3	10m 3 el 8dBi 3m radius 2kW	£189.95 C
ASL-2010	13.5-32MHz 8 el. log periodic6.4dBd 5.86m radius	£749.95 D

The Mini-Beam For Small Gardens

Cushcraft MA5B

The best 3 element mini beam you will ever find. 2 element gain on 10, 15 & 20m, and dipole performance on 12m and 17m. Up to 25dB F/B ratio, it accepts 1.2kW yet has a boom length of only 2.2m and element length of just 5.2m Turning radius is 2.7m. Uses a single feeder, this really works the DX. Get one up before winter! £299.95 C

Cushcraft Verticals

R8 (Illustrated), covers 8 bands from 6m - 40m, stands 8.7m high and requires no radials. You can feed it with 1.5kW and typical VSWR is around 1.2:1 £469.95 C

R8-GK Optional guy kit for R8 **£49.95 B**

R-6000 6 band 6m-20m that requires no radials and handles 1.5kW. Stands just 5.8m high and was chosen for the RSGB GB4FUN vehicle antenna. It works!! £329.95 C

WATSON

WMM-3 Data Modem £69.95 Plus £6.00 Carr.

This modem permits a wide range of data to be sent and received. Starterdisc for SSTV, CW, RTTY, Pactor, 1200baud Packet etc.included. The unit is powered from the PC serial socket.

WSA-1 PSK-31 Adaptor £39.95 Plus £6.00 Carr.

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

W-6MV Deluxe Key £39.95 Plus £2.00 Carr.

A high quality Morse key made of brass with wood base. Full set of adjustments

Frequency Counters

Each counter is supplied with internal Ni-Cad pack, AC charger and whip antenna.

Hunter	10MHz - 3GHz	£59.95 B
FC-130	1MHz - 3GHz	£79.95 B
S. Hunter	10Hz - 3GHz	£149.95 B
S. Searcher	10MHz - 3GHz	£99.95 B

MASPRO VHF/UHF YAGIS

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

Take a look at our prices!

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

To compare with dBi figures, add 2.4dB

WATSON

QS-112 Speaker Mic £16.95 Plus £2.00 Carr.

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

SPM-102 Speaker Mic £9.95 Plus £2.00 Carr.

Incredible value!

Has 4-way 3.5mm plug for VX-1, VX-5, FT-50 and IQ-7E Handies

Limited stocks.

WM-308 Base Mic £59.95 Plus £6.00 Carr.

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 Plus £2.00 Carr.

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

Avair VSWR Power Meters

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

AV-200	1.8 - 200MHz	5/20/200/400W	£49.95 B
AV-400	140 - 525MHz	5/20/200/400W	£49.95 B
AV-600	1.8 -525MHz	5/20/200/400W	£59.95 B

All fitted with SO-239, PEP/RMS readings, 3W for FSD approx. AV-600 has dual sensors.

ACCESSORIES

MFJ-Cubs £89.95 (KIT) £139.95 (BUILT) + £8.00 carr

VFO controlled up to 2W(1W on 15m), you can adjust it down to milliwatts. Measure just 90 x 47 x 98mm and requires 12v DC. Models for 80m, 40m, 30m, 20m & 15m. Order MFJ-9380, 9340, 9330, 9320 or 9315 (plus "K" for kit or "W" for built).

MFJ 5W QRP TCVR £189.95 Plus £8.00 Carr.

VFO control, single band, 12V 750Hz xtal filter, sidetone, break-in, speaker, 162 x 60 x 150mm. Great value!

Order MFJ-9040, 9030, 9020, 9015 or 9010. All are ready built for immediate operation.

PBX-100 Portable HF £99.95 Plus £8.00 Carr.

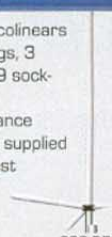
80m - 10m 200W

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.

Base VHF/UHF Verticals

2m / 70cm fibre glass colinears with stainless steel fittings, 3 short radials and SO-239 sockets.

These are high performance antennas, pre-tuned and supplied with all hardware for mast mounting.



Dual Band 2m/70cms

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

Triple band 6m/2m/70cms

W-2000	0/6/9dB 2.5m long	£69.95 C

Great Value Mobile Whips

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

All with tiltover bases.

WSMA-450 2m/70cm £12.95 Plus £2.00 Carr.

Just 4.5cm Long!!

Extremely low profile SMA antenna with transmit (Tx) capability on two bands as well as useful wideband reception across the VHF and UHF spectrum. Ideal for use with covert transceivers/scanners. and for shirt pocket use.

RSGB Matters

HF ACCESS FOR CLASS B LICENSEES

FURTHER TO THE news story concerning the Foundation licence (October *RadCom* page 21), from **1 January 2002** those Class B licensees who have held a Class B licence for not less than 12 months, and wish to gain access to the HF bands, may obtain a Foundation Licence by simply taking the Foundation Licence Morse Assessment. This will enable them to operate on the HF bands as Foundation licensees. They will have to apply for a Foundation licence and use their M2 callsign when operating on the HF bands. They will, of course, continue to enjoy the privileges of their existing Class B licence whilst operating above 30MHz.

Martin Caine of the RA said, "This shows the value that the RA places on our relationship with the RSGB. The Agency, following recommendations from the RSGB, is very pleased to be able to fast-track Class Bs into the Foundation Licence structure."

RSGB 1.8MHz CONTEST

THE RSGB 1.8MHz CW Contest takes place on **Saturday 17 November** at 2100-0100UTC Although this event was omitted from the 2001 *RSGB Contesting Guide*, the full rules were published on page 82 of the *December 2000 RadCom*. The 2002 *Contesting Guide* will be published with the January 2002 *RadCom*.

AMATEUR RADIO IS GB4FUN

GREAT INTEREST WAS SHOWN in the RSGB's new Mobile Shack, GB4FUN (featured on our cover this month) at the Leicester Show. This was the first time that large numbers of members were able to see how the Society will be promoting amateur radio to schools and the general public from early next year, and the reaction was very positive. Visitors were particularly fascinated by the Cushcraft R-6000 vertical mounted on the built-in 6m mast, and the internal 5kW generator.

The vehicle, which was donated by the Radiocommunications Agency and fitted out with amateur radio equipment by Waters & Stanton plc, has received additional sponsorship from Kenwood (UK), Tennamast (Scotland), HSBC and AMSAT-UK.

The vehicle made its first 'public appearance' at the Bedfordshire 'Steam Fayre' at Old Warden on 15/16 September. By the time you read this, GB4FUN will have visited the HF Convention, and it is then scheduled to be at the open day of Waters & Stanton @ Jaycee in Glenrothes, Fife on **20 October**.

Much work still needs to be done before the vehicle is ready to go on tour, including various safety measures and additional radio equipment. This is due be carried out during November. There will be another chance for members to see the finished exhibit at the RSGB AGM at Hamilton on **1 December**.

A plan of visits around the UK is now being drawn up for 2002. Any member or club interested in using GB4FUN to help them with a school visit is invited to contact RSGB HQ (e-mail: gb4fun@rsgb.org.uk) for further details. More information on the project can be found at www.rsgb.org/

The GB4FUN vehicle was operated by members of the Shefford & DARS and Stevenage & DARS along with their own special event station, GB0BSR, at the Bedfordshire Steam Rally in September.

ITU ADOPTS RECOMMENDATION BASED ON RSGB PROPOSAL

THE INTERNATIONAL TELECOMMUNICATION UNION has adopted a recommendation outlining basic qualifications for amateur radio operators world-wide. Recommendation ITU-RM1544, 'Minimum qualifications of radio amateurs', states that minimal operational and technical qualifications are necessary for proper operation of an amateur or amateur-satellite station. It recommends that any person seeking an amateur licence at least be able to demonstrate specific theoretical knowledge of radio regulations, radiocommunications methods, radio systems, radio emission safety, electromagnetic compatibility, and RF interference avoidance and resolution. The recommendation was originally proposed by the RSGB. It was put forward as an RSGB paper at the IARU Region 1 Conference in Lillehammer in 1999, where it was adopted. Having the recommendation in place makes it possible to maintain an ITU document on amateur radio operator qualifications while avoiding the cumbersome process of having to modify article S25 of the *Radio Regulations*. It provides additional definition to amateur qualifications without reducing the prerogative of an administration to set its own standards.

2001 RSGB AMATEUR RADIO DINNER

FOLLOWING THE Society's AGM on Saturday 1 December, the RSGB will be hosting an Amateur Radio Dinner for members and non-members at the Bothwell Bridge Hotel, Hamilton, Scotland. The guest speaker will be Gaston Bertels, ON4WF, Chairman of the IARU Region 1 Eurocom Committee, who will be giving a fascinating and entertaining talk on his role in liaising with the European Commission and Parliament.

Dinner tickets £18.50. Dress: smart casual. For further details or to book please contact RSGB HQ on tel: 0870 904 7373 or e-mail: GM.Dept@rsgb.org.uk

AMATEUR RADIO DEVELOPMENT COMMITTEE FORMED

WELL-KNOWN contester and DX operator Ed Taylor, G3SQX, has been appointed to chair the Society's Amateur Radio Development Committee (ARDC). This is a new committee, developed from the committee chaired by Richard Horton, G3XWH, which has been working on the structure of the Foundation Licence. Building on the start already made with that licence, the ARDC will be responsible for:

- **Leading Society work with the RA on the completion of the future amateur radio licensing structure, including examinations, learning aids and tools**
- **Identifying and implementing (through Headquarters) ways of promoting amateur radio to a wider audience**
- **Identifying and developing possible sources of sponsorship for amateur radio promotion.**

The work of this committee will play a major part in the future development of amateur radio in the UK. Ed Taylor has said that the work of the committee will be transparent, and visible to all. He will encourage input at all stages of its work, and is currently finalising committee membership from those who expressed an interest following the recent item in *RadCom*.

TAILOR-MADE MORSE PRACTICE TAPES

PROVIDING FREE tailor-made Morse practice tapes is an ongoing service for the student and the experienced operator. You can have 90 minutes of intensive Morse receive practice at the speed of your choice. Simply send a blank C90 cassette tape to the Morse Practice Coordinator, specify the speed (anything from 5 to 55WPM) and the format (eg QSO-type as used in the Morse test, plain language with or without signals, callsigns only, numbers only, old GB2RS scripts and so on) as would suit your own personal needs. All you need do is send a return-addressed envelope or a label and stamps with the cassette, together with a note of the speed and format required, to: George M Allan, 22 Tynwald Avenue, High Burnside, Rutherglen, Glasgow G73 4RN.

If you need more information please tel: 0141 634 4567 or e-mail george@allan99.freeserve.co.uk

EMC COMMITTEE CHAIR VACANT

A VACANCY EXISTS for the high-profile role of Chairman of the RSGB EMC Committee. The Committee is concerned with Society policy and activity in the increasingly important area of EMC. The existing Chairman agreed to undertake the role until the end of 2001, and the Society now wishes to appoint someone on a long-term basis.

The Committee comprises a wide and diverse range of specialists in EMC, supported by corresponding members of the Committee and a network of EMC coordinators, under the membership services administrator. The Chairman's role requires an understanding of the underlying technical issues but, more importantly, good organisation and chairmanship skills.

The Chairman must be able to work closely with the existing Society EMC consultants, and to develop close working relationships with external bodies in the EMC field. A solid awareness of potential EMC threats and pending legislation is also needed.

Applications should be addressed to Hilary Claytonsmith, Chairman of the EMC Committee, at RSGB Headquarters, or to her at g4jks@btinternet.com

Please include relevant details of your suitability for the role, referring particularly to the criteria above. Applications should be made by **23 November 2001**.

RSGB MORSE CAMPAIGN

ANOTHER RSGB 'Morse Campaign' takes place over the weekend of **10 / 11 November** at RSGB HQ in Potters Bar, Herts. The idea of the weekend is to provide sufficient intensive practice for those who already know the Morse code characters and prosigns to be able to pass the RSGB 5WPM Morse code test. For further details, or to book, please contact Fiorina Sinapi at RSGB HQ on tel: 0870 904 7373 as soon as possible. You can also book on-line at www.rsgb.org

Following the announcement about the Foundation Licence, the RSGB will shortly be announcing a special Morse Campaign for Class B licensees who wish to take the Morse assessment part of the Foundation course.

LEARN ABOUT AROS

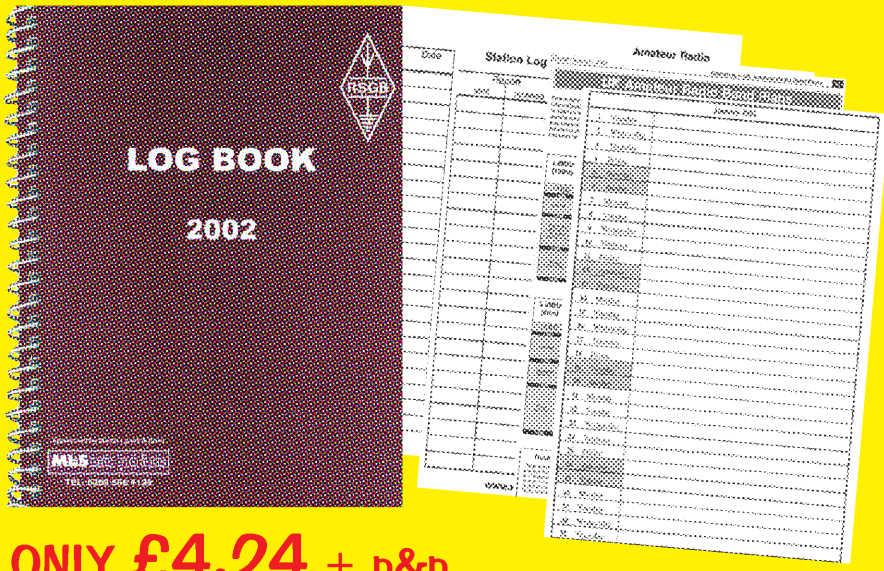
THERE WILL BE a presentation on the work of the RSGB Amateur Radio Observation Service (AROS), given by Barry Scarisbrick, G4ACK, the AROS Coordinator, at the **South Notts ARC** on **Wednesday 28 November**. The club has issued an invitation to *all* local amateurs to attend this meeting. Further details from Gary Bishop, G0WUG, tel: 01509 569679 (non-members of SNARC are asked to contact Gary so he knows the number likely to attend).

STANDARD LIFE FLYER

STANDARD LIFE, one of the most respected financial groups and still a mutual, has a With Profits Bond which invests in fixed interest deposits and equities (quoted company shares). This combination is designed to produce better returns than those from a building society but, by avoiding the more speculative companies, they aim to be conservative (with a small 'c'). The RSGB has been able to negotiate a special deal which means that members who invest with the Standard Life With Profits Bond will have 3% added to the amount they pay in.

An advertisement enclosed with this issue of *RadCom* offers an information pack from the Argent Broking Group, allowing members to make up their own minds whether or not they wish to take advantage of this offer. At present the minimum amount to be invested is £10,000, but Argent will have a preferential deal for smaller sums - details will be given in a later issue of *RadCom*.

DELUXE LOG BOOK & DIARY 2002



For those requiring more from their LogBook we have produced a new product that is far more useful than the existing value log book. This book not only contains generous 255x420mm sized log pages, but also has been designed to fold up easily allowing neat storage and durability. The Deluxe LogBook has in addition benefited from the inclusion of:

- A useful 2002 desk diary section
- A listing of Radio Events in 2002
- Amateur Radio Information Pages
- Current UK Band plans
- Locator Maps
- QSL Bureau information
- And much more

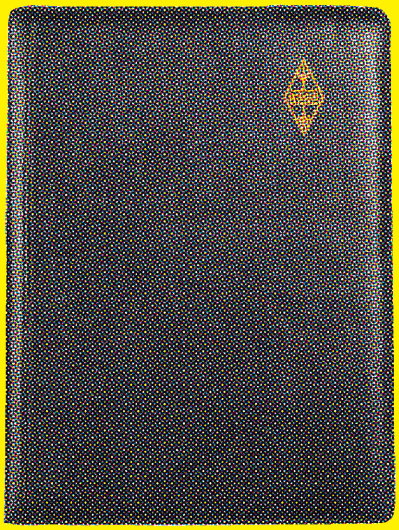
(Overall Size when folded 255x210mm)

ONLY £4.24 + p&p

£4.99 (non-members)

To protect the Deluxe Log Book we have developed a new quality cover for use year after year. The cover is of a padded PU construction giving a high quality feel throughout whilst being very robust, it is finished in classic black with a RSGB diamond Gold Blocked onto the front.
This is the ideal accessory for anyone purchasing the Deluxe LogBook.

Size 275 x 230mm



BUY BOTH THE LOG BOOK & COVER FOR ONLY £10.99 (members only)

ONLY £8.49 +p&p

£9.99 (non-members)

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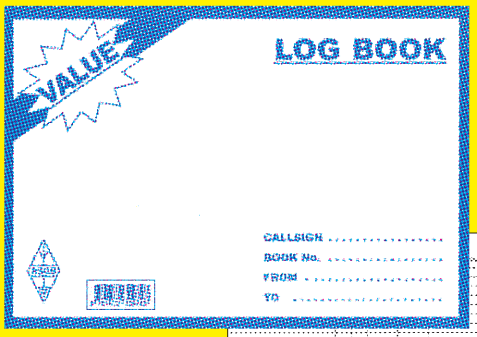

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EACH BOOK

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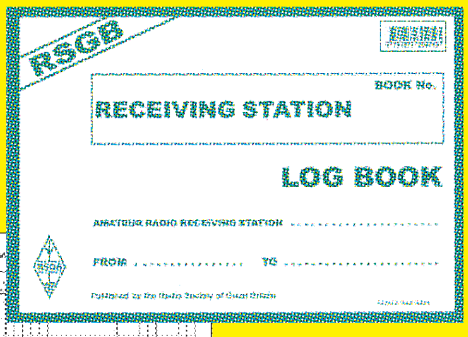

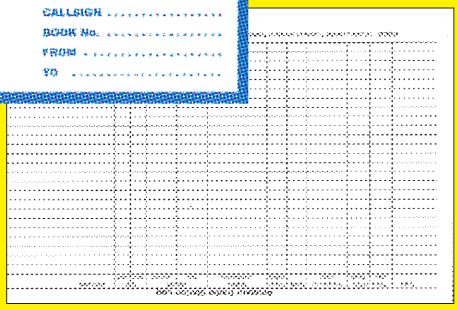

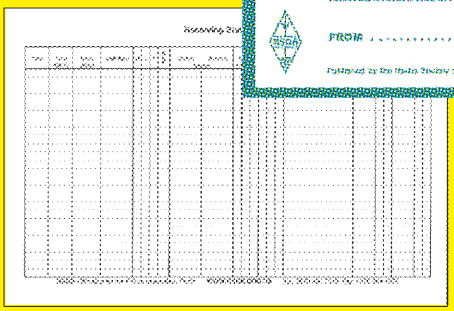

www.rsgb.org/shop - Tel: 0870 904 7373

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Yaesu FT1000MP Mk5
Yaesu's Flagship radio still our number one selling radio among the discerning DXers.

ML&S £2899
£289.90 DEPOSIT!
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INTEREST FREE!

FREE
FT 1500
50W 2M
Mobile Radio!

Yaesu FT817
this is a radio that every radio ham should own. As well as being an excellent portable radio this makes an ideal second receiver for the shack. Supplied as a package with nicads, charger, protective case VHF and HF aerials at only £850.00 you are ready to sample the delights of QRP operation.

FT817 PACKAGE
- Nicads
- Charger Case
- HF Walkabout
- VHF/UHF rubber helical

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Full range of accessories & HF Whips available

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Front Cover:

The GB4FUN amateur radio demonstration vehicle at the Leicester Show. For more on this project, see 'RSGB Matters' on page 5.

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Home Corporate	£40.50
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Affiliated Societies (UK or Overseas)	£40.50

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Special arrangements exist for blind and disabled persons.
Details and membership application forms are available from RSGB HQ.

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November 2001

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Reviews

Regulars

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36 * £125.86

Yaesu FT1000MP Mk5
Yaesu's Flagship radio still our number one selling radio among the discerning DXers.

ML&S £799
ZERO DEPOSIT!
36 * £34.68

FTV1000
Yaesu's new 200 Watt six metre transverter for the FT1000MP Mk5 at only £799.00

RRP £1499
ML&S £1099
ZERO DEPOSIT!
36 * £47.71

FT920AF
a top grade starter radio HF and 6 metres with internal ATU

Icom IC756 Pro Mk2
YES, THE SECRET IS OUT - the IC756 Pro has been improved. The new model will be called the IC756 Pro Mk2 and IC7500 in some countries. Estimated price to be about £2495.00 offering:

- Improved Twin Pass Band Tuning
- Better strong signal handling
- Extra display modes
- Digital Voice storage

Orders are being taken for the new model with first shipments expected in November!

We have a selection of used original IC756 Pros being sold in anticipation of the NEW Mark 2 - FROM £1395 LAST FEW!

This radio ONLY
ML&S £999
ZERO DEPOSIT!
36* £43.37

Icom IC706 Mk2G
the original mobile multiband radio. Now the 3rd variant offering HF/6/2&70 with DSP and detachable head. Icom certainly got this radio spot on with features and performance.

ML&S £3999
ZERO DEPOSIT!
36 * £173.62

Yaesu Quadra VL1000
The ultimate add on for your station. Offering 1000 Watts of effortless RF on HF and six metres this amplifier is a delight to use.

RRP £799
ML&S £599
ZERO DEPOSIT!
36 * £26.00

Yaesu FT840 FM
an excellent basic radio offering top notch performance at a budget price.

RRP £1299
ML&S £1249
ZERO DEPOSIT!
36 * £36.54

Yaesu FT100D
following on from the FT100 the D version offers a few extras and improved HF performance.Auto repeater shift on VHF and UHF plus an easy menu system make this the most popular HF mobile radio.

RRP £339
ML&S £269
ZERO DEPOSIT!
36 * £11.67

Yaesu VX5R
Our best selling hand held ever with free SU1 and Case giving 5 Watts on 2/70 & 6metres. With built in wide band receiver (inc AM & WFM) this is a scanner and a hand held.

Icom IC910H
The LATEST VHF/UHF multimode. Features include 100W on VHF, 75W on UHF and true dual receive.

STANDARD UNIT
ML&S £1299
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OPTIONS AVAILABLE 1296MHz, DSP units, TCXO, Voice Synthesiser, TCXO, Narrow CW filters.

Icom IC718
this is Icom's entry level HF radio. offering 100W HF CW/AM/SSB and DSP. The performance is staggering for a budget radio ! Only £699.00 with DSP

FREE DSP this month
ML&S £699
ZERO DEPOSIT!
36 * £30.34

RRP £1699
ML&S £1199
ZERO DEPOSIT!
36* £52.05

Yaesu FT847
at only £1199.00 this is still the best selling multiband base radio offering HF/6/2 and 70cms plus still the only radio to offer all mode four metre operation.

FT817 PACKAGE
- Nicads
- Charger Case
- HF Walkabout
- VHF/UHF rubber helical

ML&S £850
ZERO DEPOSIT!
36 * £36.90

Yaesu FT817
this is a radio that every radio ham should own. As well as being an excellent portable radio this makes an ideal second receiver for the shack. Supplied as a package with nicads, charger, protective case VHF and HF aerials at only £850.00 you are ready to sample the delights of QRP operation.

THE VERY BEST RADIO EQUIPMENT brought to you by MARTIN LYNCH & SONS

Yaesu VX1R
still the smallest handheld around with built in scanner offering up to 1 Watt on 2 & 70 and Lithium ion battery that last for ages this is the ultimate pocket radio at only:

ML&S £159
ZERO DEPOSIT!
36 * £6.90

IC746
This radio still ticks along as a great shack in a box giving 100 Watts HF/six and 2 metres.

This radio ONLY
ML&S £1299
ZERO DEPOSIT!
36 * £56.39

Icom IC775DSP
This is the Icom Flagship and still a very popular choice with the daytime net guys. TX audio is first class and despite being a top grade radio the uncluttered controls and simple display make it a delight to own.

Where is the 785?

Have a

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The BEST RADIO EQUIPMENT at the

6 months INTEREST FREE credit IS BACK!

YAESU VR-5000
the new desktop scanner from Yaesu all bands and all mode with a host of features.

ML&S £699
ZERO DEPOSIT!
36 * £34.34

If you require the B2000 or 23cms
CALL FOR A PRICE PACKAGE

FIRST 3 ORDERS
FREE VR-120

The Millennium Radio Station

Kenwood TS2000
Every once in a while a new product comes along that sets a new trend and the TS2000 has certainly done that. Offering all bands 1.8 to 23cms *(23 cms optional)* Built in DX cluster monitor and auto QSY plus dual speed packet modem make this radio stand out. Add to that the excellent Kenwood build quality and reliability you have a radio that is going to be around for a long time.

ML&S £1699
ZERO DEPOSIT!
36 * £73.76

Kenwood B2000
all the features of the TS2000 but no knobs. This radio is controlled via your PC or the Head of a TMD700E *(Upgrade will be required on early versions of the TMD700E)*

ML&S £1599
ZERO DEPOSIT!
36 * £69.42

Kenwood TS570DGE
this is a first class radio that has no competition in its price bracket. Offering 100 Watts HF and built in ATU. A good choice for your first HF station but equally at home in the experienced operators shack.

ML&S £849
ZERO DEPOSIT!
36 * £36.86

Kenwood TS870S
The original DSP radio still very popular and very reliable offering 100 Watts and built in ATU

ML&S £1395
ZERO DEPOSIT!
36 * £60.56

Kenwood TS50S
this is the original HF mobile radio still selling at only £599.00 - an absolute BARGAIN

ML&S £599
£60 DEPOSIT!
36 * £26.00

Kenwood THD7E
the Packet handheld that every one wants.

ML&S £299
ZERO DEPOSIT!
36 * £12.98

Kenwood TMD700E
with packet cluster monitor and APRS built in this is fast becoming THE mobile radio for VHF/UHF in car operation.

ML&S £459
ZERO DEPOSIT!
36 * £19.92

Kenwood TMG707
a simple twin band VHF radio with a large display and speech option make this an ideal choice for people with Eyesight problems.

ML&S £299
ZERO DEPOSIT!
36 * £12.98

Whats new!

New MIRACLE ANTENNA has just arrived!
This antenna has been designed with the FT-817 in mind but is a 55 inch whip with a tuning box at the base. The performance is staggering and it will work with any radio from 3.5 to 150mhz (5W max). It even works without a counter poise. Call for full details and price.

MD200A8X
The new "Old Style" microphone from Yaesu. The audio is very punchy with top class clarity. A superb match for any Yaesu Base radio.
This microphone has room for a second insert which is switchable.
At an introductory price of **£249.95** *delivered to your door.*

NEW RADIOS announced by Yaesu and Icom - call for details

Yaesu VX5R Limited edition VX-5MD

ICOM 756 PRO 2

FT-897

Samlex SEC1223
Back in stock! The best selling original 23 amp switch mode power supply Only **£99.95** accept no substitute!!!!!

SGC Smart Tuners
we have the full range of these unique tuners in stock with an SG230 and 20 foot of wire you are ready to operate top band to ten. The SGC tuners start at **£259.00** with different types to suit specific needs. Give us a call with your requirements.

New Icom radio!
Icom have announced the New IC7400, replacement for the IC746. Many improvements including 32 bit DSP!
CALL FOR DETAILS

Kenwood TH-F7E
The new TH-F7E dual band hand held transceiver with a built in multimode scanner (0.1-1300mhz) in stock at only £289

ML&S £289
ZERO DEPOSIT!
36 * £12.54

Diamond SX1000
1.8-1300mhz power and swr meter. 200W and dual sensor. The ideal companion for the TS2000/FT847 at only **£169.95**

Diamond Power Supplies
When it comes to a shack supply so many times we hear of people having a £1500 radio on a budget power supply. Those who care about there radio use Diamond GSV3000s and GSV4000s. •GSV3000 is a first class linear PSU rated at 30 amps at £150 • GZV4000 is the best Switch Mode Comms power supply rated at 40 amps at **£160.** Prices include delivery.

MFJ-269
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RadCom NEWS

Yet More RAE / NRAE / Morse Courses

THE **STRATFORD upon Avon & DRS** will again be holding **RAE, NRAE and Morse** classes. The club is also a satellite examination centre. For details on the RAE and NRAE classes please contact John Harris, G8HJS, tel: 01789 295257. Morse classes are held on the 2nd and 4th Mondays. Details can be found at www.stratfordradiosociety.freeserve.co.uk or from David Jones, G6FEO, tel: 07970 148204, fax: 01926 642858 or e-mail: g6feo:cwcom.net

Verulam ARC Morse courses on Thursday evenings in **St Albans**. Details from Ian Buffham, G3TMA, tel: 07973 844732.

South Cheshire ARS is running **Novice** and **Morse** courses on Thursday evenings at Training Ship Ambuscade, 57 Queen Street, Crewe. For more information contact either Pete, G0MMH, tel: 01270 560007, Barry, G8UVN, tel: 01270 874386 or Kath, M1CNY, tel: 01270 761608.

Manchester Wireless Society, Simpson Memorial Hall, Moston Lane, **Moston**, Manchester, holds **RAE**, **Novice RAE**, and **Morse** courses and tests. Visit the club on Tuesdays 7.30 - 10.00pm or contact Steve, tel: 0161 3300914 for details.

Details of the **Keighley ARS RAE** course have changed - see page 90.

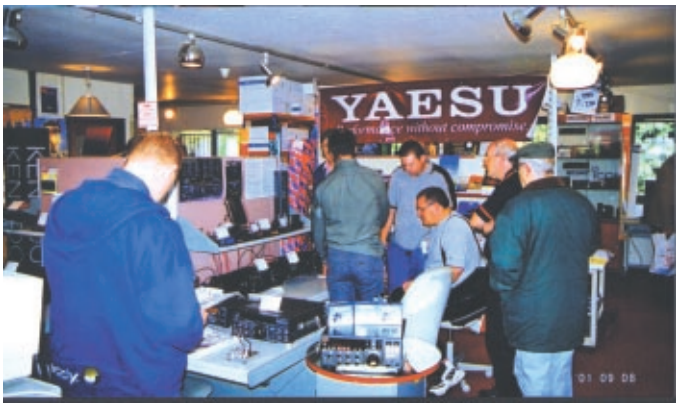
'Strength Through Communication'

THE CLAN MacLean Amateur Radio Society has recently been founded and is open to anyone who qualifies for Clan membership under the Scottish Clans 'three-generation rule'.

The aim of the society is to encourage communication between Clan members throughout the world by amateur radio. Frequencies of operation and other details can be found on the society's web page (www.cmars.org.uk). To join, send an e-mail to g0bmh@cmars.org.uk, stating your name, callsign and any other relevant details. Membership of the Clan Association is not a requirement, but is recommended (see http://www.maclean.org for details). All news and information is distributed via e-mail so a valid e-mail address is required to join.

VE 5WPM

CANADA HAS JOINED the growing number of countries to reduce the Morse code test requirement for a full HF licence from 12 to 5WPM. RAC, the Canadian national society, reported that the changes came into effect earlier in the year.



At the Waters & Stanton Open Day at the Lowe showroom in Matlock, Derbyshire, on 8 September. Here, the earlycomers get their hands on some of the latest transceivers that were on display.

Digital Radio Coverage

FURTHER TO the review of the VideoLogic DRX-601E/ES Digital Radio Tuner in last month's *RadCom*, we are now pleased to be able to offer one of these tuners in our competition exclusively for RSGB members (see page 45). Members are advised, however, that Digital Radio coverage of the United Kingdom is not yet complete. A BBC Digital Radio coverage map is available on the Internet at: www.bbc.co.uk/digitalradio/text/information/coverage/index.shtml

All nine QSL cards for the special event stations operating from around Manchester to celebrate the 17th Commonwealth games. 18,000 cards - 2000 for each of the special event callsigns - are being printed, and about 500 will remain uncut as shown here for those who wish to hang a set on the shack wall. Details of the stations, GB2, 4, 5 and 8CG and GB0, 2, 4, 5 and 8MCG can be found at http://www.geocities.com/gbgames2002

VHF Award News

SEPTEMBER WAS a busy month, with claims for 6m, 2m and the microwave bands. Breaking the mould of recent months was a claim from Gerard Elliott, GI4OWA (BT), who successfully updated his 144MHz Squares Award with stickers for 125 Squares / 20 Countries, 150S / 20C and 175S / 20C. Jerry's claim was remarkable in that the vast majority of the 80+ QSLs submitted were for Sporadic E and Auroral contacts and were for distances normally associated with 50MHz. It underlines just how good the Es seasons were in the mid-90s and also the necessity being in the right place at the right time.

Also on 144MHz, the first claim for a Millennium 2000 Award has been received. This came from Reg Woolley, G8VHI (CV), for a contact with ER6A/P in KN47AF. This took place on 2 July 2000 at 1215UTC at a distance of 2181km. For this contact Reg was using an FT-225RD with a 60W linear feeding a pair of 14-element Cushcraft 'Junior Boomers' at 15m AGL. Reg also successfully claimed a certificate for 40squares / 10 countries on 144MHz. Finally for 1296MHz Reg claimed a Distance Award for a contact with DL8OBU in excess of 700km. On this band he used a TM-255E feeding a Microwaves Modules transverter and a PA delivering 35W to a 67-element at 18m above ground.

The successful claims for the 50MHz band were as follows:

Mike Goodwin, G7NBE (LE), gains stickers for 20 countries (2-way) and also for 50 squares; Roy White, G6XCY (CM), gains a sticker for 20 countries (2-way), and Chris Smith, G3UFS (BN), gains stickers for 40 and 50 countries(2-way).

David Jarrett, G4DCJ (PE), gets a sticker for 375 squares, a claim that moves David up a rung in the 'top ten' placings. Congratulations to all recipients.

Details on all VHF, UHF and Microwave Awards can be obtained on receipt of an A4 or A5 SASE from the Awards Manager, Tony Jarvis, G6TTL, Dovecote Farm, Patman's Lane, Friskney, Boston, Lincs PE22 8QJ or e-mail: vhf.awards@rsgb.org.uk They are also available on the Internet at www.rsgb.org

Summary of Award Recipients for September

50MHz: 50Squares: G7NBE. 375s: G4DCJ. 20 Countries (2-way): G7NBE, G6XCY. 40c: G3UFS. 50c: G3UFS.

144MHz: 40Squares / 10Countries: G8VHI. 125Squares / 20Countries: GI4OWA. 150s / 20c: GI4OWA. 175s / 20c: GI4OWA.

Microwave Distance Award: 1296MHz: G8VHI.

IARU Millennium Award: G8VHI.

RSGB QSL Bureau News

A NEW RSGB QSL Bureau Sub-Manager has been appointed for the G4YAA-YZZ series of callsigns. He is William Jones, G7PUJ (QTHR), who takes over from Wilfrid Storace-Rutter, G0WLF. Wilfrid is thanked for his service in the past.

Barry Addis, M0ART, who recently gave up as Sub-Manager for the G0JAA-JZZ, G4JAA-JZZ, GM2AA-GM3ZZ and GM2AAA-GM3ZZZ series of callsigns, says, "Thanks to all those whom I looked after for their friendship and kind comments over the time I was their Sub-Manager. I will miss them all." George Mills, G0SSC (QTHR), has taken over the G0J and G4J series, while Robert MacLeod, GM4DZX, (QTHR), takes over the GM2 and GM3 series of callsigns.

Lifetime Achievement Award for G8KVU

Raynet Zone Coordinator Receives Fire Service Award

A SPECIAL MERIT Award was presented to Madeley Smith, G8KVU, the co-ordinator for Raynet West Midlands Zone, for his lifetime's contribution to community and fire safety. Madeley was a former firefighter, a Fire Officer at a Coventry chemicals factory, Special Constable and St John Ambulance Officer. He said: "I was surprised and delighted to have been informed of receiving the award". The Rev Graham Smith, G4NMD, who nominated his father for the award, said: "Our family were known to answer the home telephone with the message 'Fire, police or ambulance - which service do you require?'!"

The award is one of the new Bill Hardy Memorial Awards that were presented on 28 September at Radford Road Fire Station in Coventry.

Madeley Smith, G8KVU (left), receiving his special merit award from Harry Clark, a member of the local fire safety committee.

US Radio Amateurs Respond to Terrorist Attacks

THE RSGB, along with all others in the civilised world, shared in the shock and disbelief at the events in New York and Washington on 11 September. The Society sent a message of sympathy and support to the ARRL.

Steve Nichols, G0KYA, reported that he was monitoring the KQ2H repeater in Manhattan on 29.620MHz at the time of the terrorist attack on the World Trade Centre. He told *RadCom*, "The whole drama unfolded on the repeater as the first eye-witness reports were relayed. A few minutes later one of the hams was live on air as the second aircraft hit and the repeater relayed his somewhat traumatic account of events as it hit the second tower."

The ARRL reported that numerous emergency communication nets were established by radio amateurs on 2m, 70cm and HF. The youngest volunteer was 10-year-old Beverly Holtz, KC2IKT, of Long Island, who received her licence on 14 September. While she was studying for her licence, Beverly's father, Fred Holtz, K2PSY, impressed on her the importance of the questions on emergency procedures, saying that you never knew when you would need them. The day after her licence was received, Beverly and her father were listening to an emergency net on a repeater when they heard a call for volunteers to staff a Red Cross shelter where 40 European students were staying after being stranded when their flights were cancelled. Despite her age, Beverly was keen to volunteer and Fred says that he was impressed that the net control treated her as an equal and allowed her to do so. She was the only radio operator for an entire eight-hour shift, relaying health-and-welfare traffic to the net controller. Beverly said that the eight hours seemed like one hour. "I can't wait to do more," she said. "It made me feel good to help."

The New York City District Emergency Coordinator, Charles Hargrove, himself licensed as N2NOV, expressed his appreciation to the amateur community, saying: "Thank you for all the support and well wishes . . . This is a difficult time for all of us. We appreciate all the amateurs who have volunteered their time and equipment."

Following two weeks of intense effort, the Amateur Radio Emergency Service (ARES) and Radio Amateurs Civil Emergency Service (RACES) volunteer effort in New York City was wound down. REACT International, however, was still seeking radio amateurs to support the Salvation Army's relief efforts in New York City.

It was estimated that some 500 amateur radio volunteers had helped out with communications support for the disaster.

Following the New York disaster, the UK Radio Amateurs' Emergency Network decided to examine, and to enhance where necessary, its HF capabilities. It asks that any Raynet member who feels that they can help should send a brief note giving their name, callsign, station details and the times which they would normally be able to operate. Please e-mail: hf@raynet-uk.net, or write to 'HF', The Radio Amateurs' Emergency Network, Hunters Moon, Newton-le-Willows, Bedale, North Yorkshire DL8 1SX. Alternatively, contact the RSGB's Emergency Radio Liaison Officer, Tom Reilly, G0NSY, by e-mail: erlo@rsgb.org.uk or tel: 0208 621 0069. It is hoped that a rota giving continuous 24-hour coverage throughout the week can be arranged, although no duties are currently outstanding.

Licence Revoked

THE RA HAS written to say that, as result of a prosecution, the Agency revoked the Amateur Radio Licence of Mr Frederick Astles, G1GJM in August. No further information was provided.

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Pic-A-Switch:
a frequency-dependent switch

*Part three, by Peter Rhodes, BSc, G3XJP **

THIS PART covers the mechanics of software-writing, and then concentrates on gaining some insight into the behaviour of the PIC chip itself. For balance with the *art* of software writing, the final version of the design flow-chart is discussed - just in time to implement it with the Pic-A-Switch code to be published next month.

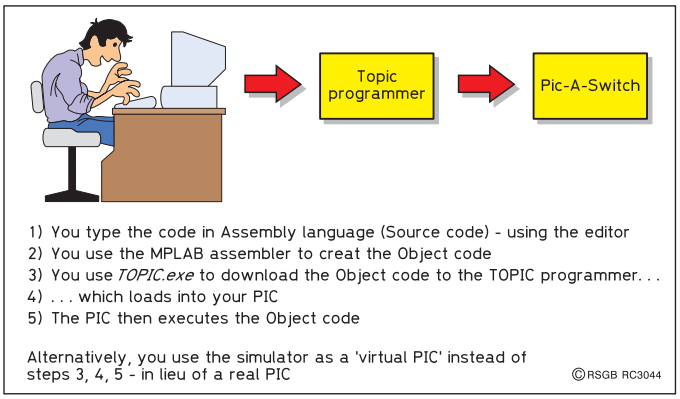

Fig 14: The basic software production sequence using the tools recommended in Part 1. Although illustrated for Pic-A-Switch in particular, the process is completely general. In practice, all this goes round in ever-decreasing circles until the desired result is achieved and fully tested.

PROCESS OVERVIEW

THIS SECTION covers the mechanics of creating the code, as distinct from the creative process of deciding what you want it to do in the first place. **Fig 14** summarises the sequence that follows.

PROGRAMMING LANGUAGE

In general, the really structural decision surrounds what 'language' you are going to write in, since this determines the tools you need for the job. In this case, since I have already written the code, that decision has been taken. Not that you can't change it if you are already, say, a competent 'C' programmer.

Ultimately, the only language understood by the PIC is the binary '0' and '1'. This may be digestible by the PIC, but believe me, it is essentially indigestible by human beings. Known as 'object code' it is optimised for function, not for ease of writing or understanding. Theoretically, you could - but nobody does!

On the other hand, we humans converse in some approximation to English which lacks the absolute precision needed. To get round this, we write in a language which is completely unambiguous - and, with a little practice - also understandable. The result is called the 'source code'.

For this project I have chosen to write the source code in the 'assembly language' defined by Microchip. Others use higher level languages such as 'C' or 'BASIC' etc.

The benefit of writing the source code in assembly language is that it is indeed easily learned and understood - because it is a language of only 35 words and precious little grammar. (The corresponding disadvantage is that the language is *not* understood outside the world of PICs.)

One benefit of writing this way (or in a higher-level language) is that you are buffered from having to know much about the PIC's internal architecture. For example, you never need to know that every PIC instruction is coded in 14 bits - and what they are. I mention this specifically because, regrettably, the PIC documentation is littered with this detail and simply because it is there, you might think it important to you. Or worse, that you had to learn it all!

MPLAB (OVERALL ENVIRONMENT)

This comes with substantial on-line help and a tutorial, so it is not my intention to regurgitate it here. To get started, the first task is to set up a 'New Project' followed by a 'New Source' - and name them.

MPLAB EDITOR

The editor is little other than a thinly-featured word processing package. Once you know precisely what you are trying to achieve (there is no escaping this step), you type - and later change - your source code in the editor, instruction by instruction, line by line.

Given the design process chosen for Pic-A-Switch, the cerebral task in this case is to 'code the flow-chart'.

The editor also allows you to comment your code fully in free-form English so that you will be able to understand it next day. (It's not that you won't be able to understand each instruction - but you might forget why you 'did it this way' - or even why you 'did it' at all.)

MPLAB ASSEMBLER

When you have finished creating your source code, all you then need is a tool to translate that source code into PIC-speak object code. This tool is the 'assembler'.

Basically, you just press the button and some 20 seconds later it is done.

However, if you made any errors in the source, the assembler will point them out to you. But note that this only applies to syntactical or language errors (in practice, frankly, usually typos). It does *not* tell you if the code is elegant or will achieve your purposes. You wish!

MPLAB SIMULATOR

After assembly, you have the option to test your code on a virtual PIC. This behaves and responds exactly like a real PIC except you can slow time down to human pace. The clock in the window just ticks more slowly. No external hardware is needed. Instead, the PIC behaviour is faithfully modelled on your PC.

In practice the simulator is often first invoked when it becomes obvious that the code is not working or is exhibiting some unexpected behaviour - and you can't quickly spot the error in your code.

It allows you to step through the code, either in great chunks - or ultimately a line at a time - while you examine the results at a leisurely human pace - and until you pinpoint the moment it all goes wrong.

It is also valuable for checking elapsed times of sections of code if they are critical to your application.

The greatest unique feature is that you can simulate combinations of circumstances that your code is designed to handle. For

* *Danvers House, Wigmore, Herefordshire HR6 9UF.*
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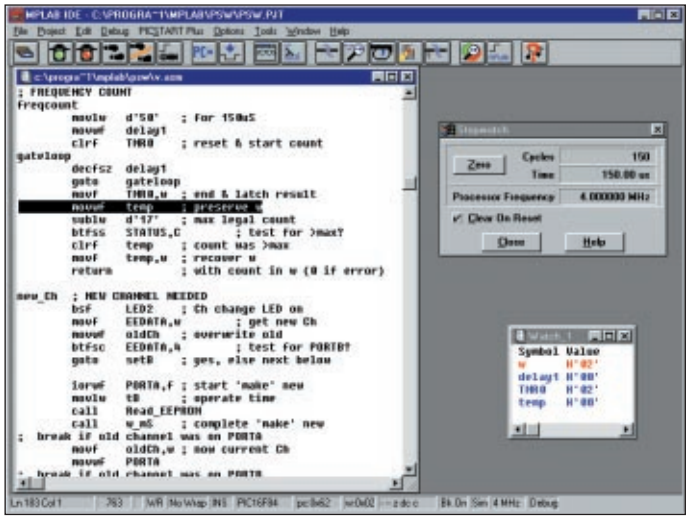


Fig 15: A snapshot of MPLAB in operation during the development of Pic-A-Switch. On the left is the source code, well worth a read just to get a feel for what it looks like. The simulator is in use and the highlighted line is about to be executed. The Stopwatch shows elapsed time - and the Watch window shows the present values of some nominated registers; the value of w is in red because its value has just changed.

some error situations in particular, it may be difficult or impossible to create these circumstances in real life. Indeed, you hope they never happen. But this is often the realistic, if not the only way, of testing the code's response.

LOADING THE PIC

Once you have some legal code assembled, you use TOPIC to download it to the PIC. (The real PIC lest there be any confusion.)

In practice, this is done in small logical chunks which are progressively tested and then elaborated.

WHAT DOES IT LOOK LIKE?

For visualisation purposes, **Fig 15** shows an MPLAB window - working on the source file *v.asm* in a project directory called *PSW* - my short name for the Pic-A-Switch project. When *v.asm* is assembled, the object code file *v.hex* is automatically generated. **Fig 16** shows the MPLAB interface to DOS, in this case TOPIC, with the command line to load *v.hex* and then run it.

UNDERSTANDING TIME

THERE IS MANY a faster computer, but because the PIC has no burden of running layers of operating system (eg DOS, Windows, etc), it is no slouch when it comes to control applications.

With a 4MHz clock, most instructions execute in 1 microsecond (µs). A 12WPM CW 'dit' lasts 100 milliseconds (ms), so the PIC will execute 100,000 instructions during this 'dit' period.

Since the entire code for Pic-A-Switch is only 132 instructions, except that some of them are there specifically to introduce long and deliberate delays, it could get through the whole lot 700 times during this 'dit'. Frightening, isn't it?

This, to give you a sense of time perspective when contemplating PIC applications.

UNDERSTANDING THE PIC

TO BE clear, this discussion is confined to the 16F84 PIC - and is more or less confined to the features used in this project. For all the detail (and more), refer to the 16F84-04P data sheet.

Manufactured by Microchip, it is a low-cost 'computer-on-a-chip'. Because it is optimised for control applications (as opposed to, say, DSP applications), it is usually referred to as a 'microcontroller'. You will find something like it in your washing machine, your central heating controller and nowadays, in your toaster.

A quick glance in the catalogues will show you that there are many other PICs and indeed many other makes of microcontroller on the market.

The virtue of the 16F84 is that is reprogrammable and better still, electrically reprogrammable (as opposed to erasing it by bathing it in UV light) - leading to fast and cheap development. For production cost purposes, one would load the finished program to a compatible OTP (One-Time Programmable) PIC but, for a few off, the cost difference is in the noise. So it is ideally suited to home-brew applications.

The minimal configuration to get it going is a +5V supply and a crystal (or RC) across its OSC pins. Then, of course, you need some inputs and outputs and not least, it needs loading with a program to tell it what to do.

Either the program can be loaded on the PIC while it is plugged into a programmer - or the programmer can be jumpered to the PIC *in situ* on the target PCB. The former is realistic if you are loading the code a few times only; the latter is highly desirable for development purposes, when re-loading occurs every few minutes.

INPUTS AND OUTPUTS

The 16F84 has 13 I/O pins in total, arranged in two groups known as ports. PORTA has five of them (called RA0-RA4); and PORTB has eight (called RB0-RB7).

All of these pins can be configured as either inputs or outputs - and indeed the configuration can be changed 'on the fly' during program execution.

As a broad generality, *any* application notes the inputs, then does some 'sums' in order to send some correspondingly-useful result to the outputs.

INTERRUPTS VERSUS POLLING

Certain I/O pins have additional features. For many applications, the most important of these is the ability of the PIC *hardware* to react to an external stimulus on some of these pins. This suspends the main program flow, reacts to the stimulus in some useful way which you code - and it then picks up the flow again where it left off.

Known as 'handling external interrupts', for reasons of simplicity (and lack of need) this is *not* the process Pic-A-Switch uses. Rather, it periodically tests the input pins of interest by *software* (a process known as 'polling') - and then reacts accordingly.

I/O PIN ALLOCATION

For Pic-A-Switch, two inputs are needed, one for sensing RF and measuring its frequency, the other for an optional PTT line. Eight outputs are *needed* (and two more are used for driving useful LEDs). That leaves one spare. The only mandatory pin allocation is the 'RF sense' input to RA4, as discussed in a moment.

It is also convenient either not to use RB6 and RB7 or to use them as inputs - since these pins are also shared with *in situ* programming.

All the others are determined only by the ease of laying out the PCB. There are no other constraints. It's that simple!

COUNTING

The principal incremental feature which is used by Pic-A-Switch is the ability to route RA4 (configured as an input pin) to an internal counter - via an optional prescaler. The prescaler division ratio can be specified and, if set for 256:1, it is possible to count at up to 50MHz on RA4.

This counting occurs in *hardware* (ie to put it crudely, it just 'happens'). Thus to measure a frequency all the *software* needs do is to reset the counter, wait for some useful gate time and then read the content of

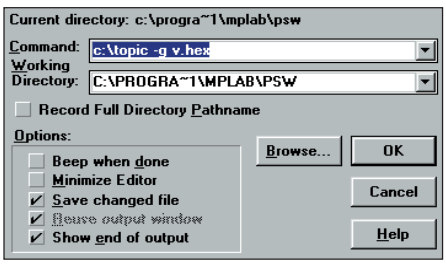


Fig 16: Snapshot of MPLAB command interface to TOPIC. *TOPIC.exe* itself is in C:\ and the '-g' command means 'go' (ie run) after loading.

the counter register.

With a little cunning, it is possible to deduce the content of the prescaler also. But because Pic-A-Switch is only interested in which *band* you are on, the higher resolution detail in the prescaler is not needed - and is simply ignored.

REGISTERS AND INSTRUCTIONS

The former is a set of locations in memory where data are held. The latter specifies the operations you want to perform on those data.

The general form of most program elements is to fetch the content of some register, do something useful to it (eg test it, increment it, add something to it, compare it with something else etc)… and then write the result back to some useful destination register - or take some differential action as a function of the result. The detail follows:

REGISTERS

THESE FALL INTO several functional categories:

GENERAL PURPOSE FILE REGISTERS

These are somewhat analogous to the 'memories' in a calculator. You have 68 of them - to store intermediate results. Their addresses run from 0C to 4F hex and they are each 8-bit registers - which means they can store numbers in the range 0-255.

In practice, you start out by giving each one a meaningful and unique name - tell the assembler its address - and thereafter, simply refer to them by name only. Their contents are lost on powering off.

EEPROM REGISTERS

The essential difference with these is that their content *does* survive power down. The penalty is that you have to go through a specific procedure to access their contents - which merely takes a little longer and occupies a little more code space.

There are 64 of these 8-bit registers, starting at address 2100 hex.

SPECIAL FUNCTION FILE REGISTERS

These are locations in memory through which the PIC's internal workings and your code can communicate. Both your code and the PIC's hardware can access these registers, so ultimately they are your code's interface with the outside world.

There are 15 of them, each with a specific purpose, split into 2 Banks (0 & 1) for addressing purposes. Only the 12 used by Pic-A-Switch are discussed here. The most commonly used are available in both Banks - or in Bank 0 only. Occasionally used ones are in Bank 1 only. So in practice, the code is run looking at Bank 0 with occasional switches to Bank 1 to access the register(s) of interest - and then back again. Other than this minor inconvenience, you simply refer to the register by name and the assembler takes care of the detail. See the panel.

BANK 0 ONLY:

TMR0 the internal 8-bit counter, used here to measure transmit frequency.

PORTA and **PORTB** read from any I/O pins configured as inputs - and write to any I/O pins configured as outputs.

EEADR To read the contents of a byte in EEPROM, this register is first loaded with its address.

EEDATA contains the result of reading the EEPROM byte.

BANKS 0 and 1:

STATUS contains the Z and C bits which can be tested to determine if the result of an operation produced either Zero or a Carry. It also contains the RP0 bit used for Bank switching. Which bits are which? You don't need (or want) to know. Simply type STATUS,Z or STATUS,C etc and it will all happen!

(The general syntax for addressing a bit is RegisterName,Bit eg PORTA,3)

INDF and **FSR** are two registers used for a process called 'indirect addressing'. It works by loading an address of interest into FSR whereupon the content at that address is available for reading or writing in the INDF register. An example follows in the Pic-A-Switch code next month.

BANK 1 ONLY:

OPTION_REG is used by your code to tell the PIC how you want its counter prescaler configured. There are several other options.

TRISA and **TRISB** are the two registers which you use to specify whether the corresponding bits in PORTA and PORTB are inputs or outputs.

EECON1 is used to tell the PIC that a forthcoming EEPROM access is a read or write.

THE WORKING REGISTER

Known hereafter as 'w' (pronounced nowadays presumably as "dubya"), this is *the* important one. And there is only one. This is where most (but not all) computation occurs - as will become obvious when the Instruction Set is discussed in a moment.

DEFINING LITERALS

The variable content of any of the preceding registers may be used as an operand in an instruction. You may also specify a literal (otherwise known as a constant) as an operand. The assembler gives you the freedom to express its value in different formats to suit the occasion (and your taste). For example, the decimal number 66 can be expressed as **d'66'** or in hex format as **h'42'** or in binary format as **b'01000010'**. The binary format tends to be used when the bit pattern is significant - as opposed to the numeric value, but there is no ultimate difference. For the record, **a'B'** is the ASCII notation, very useful if sending characters to an ASCII peripheral such as an LCD display. There are other permissible notations.

THE INSTRUCTION SET

THERE ARE 35 instruction mnemonics in total - and many of these are variations on a theme. Only those instructions used in the Pic-A-Switch code are covered here, though that is indeed most of them. The others are no less important and are described in the product literature.

CONTEXT

Until your code tells it to do otherwise, the PIC starts by executing the first instruction - and continues literally in a linear fashion, ie line by line. There is enough room for 1024 of these instructions. (Pic-A-Switch needs only 132, so is not exactly 'tight' on program space.)

By analogy, you can regard an instruction as equivalent to a hardware component, and a well-bounded collection of instructions (eg a subroutine or a complete functional sequence) as analogous to a hardware module (with a well-defined interface and purpose). The analogy fails completely when it comes to cost, since whole blocks of code can be copied from one project to another with no incremental component cost.

NOTATION

All instructions begin with a 'verb' which specifies the operation (eg ADD) and in most cases this is combined with an ending which defines the nature of the operand(s).

For notational purposes in what follows, the letter 'f' represents the name of a file register; and the letter 'd' represents the destination for the result of an operation.

When there is a choice of destination, it is *always* a choice between either the working register w - or the register f you were operating on in the first place. So instead of d in these instructions, you would type either of the letters w or f - depending on your desired destination.

ADDITION & SUBTRACTION

ADDWF f,d	add w to f
SUBWF f,d	subtract w from f

For example, addwf fred,w adds the content of file register fred to the content of w - and places the result in w; whereas addwf fred,f places the same result in fred instead.

ADDLW k	add literal to w
SUBLW k	subtract w from literal

where k is the value of the literal. Yes, I know, this last one feels the wrong way round. A pity, but that's how it is. It wouldn't be a proper language without one irregular verb - and that was it! All the above affect the STATUS,Z and C bits.

LOGICAL OPERATIONS

These instructions are bit-by-bit logical operations on two operands. They all affect Z only.

ANDWF f,d	AND w with f
IORWF f,d	Inclusive OR w with f
XORWF f,d	Exclusive OR w with f

and the corresponding literal operations:

ANDLW k	AND literal with w
IORLW k	Inclusive OR literal with w
XORLW k	Exclusive OR literal with w

In case you need reminding, AND produces a 1 only if both bits in the operands are 1, IOR produces a 0 only if both bits are 0 and XOR produces a 1 only if both bits are different. For example, to toggle bit 3 of w: XORLW b'00001000'.

LOADING REGISTERS (MOVE)

MOVF f,d	Move f to d
MOVWF f	Move w to f
MOVLW k	Move literal to w

So, if you want to load the content of one register (RegA) into another (RegB) you need *two* lines of code:

```
movf RegA,w
movwf RegB
```

Note that the second line is more fully movwf RegB,f but, since f is the default destination, it need not be explicitly specified (if like me, you are lazy).

Note that MOVF affects Z but MOVWF and MOVLW do not.

To test if the content of a register (RegC) is zero, the somewhat obtuse code is to move it to itself, (eg movf RegB,f) thus affecting the Z bit which can be subsequently tested.

Note that all the MOV instructions are in fact not a *move* but rather a *copy*, in the sense that, even after a MOV, the source is unchanged. In some cultures, this is contra-instinctive; in others it is taken completely for granted. Depending on your background this either will - or will not - be a complete surprise to you.

CHANGING PROGRAM FLOW

In order to refer to a particular point in the program flow by name, you can place a 'label' against a given line of code.

Syntactically, a label is any unique single word, starting with a letter, typed hard on the left margin.

GOTO	**label**

Program flow jumps to the point in the program where you placed the label.

CALL	**label**

where label is the name of a subroutine. Program flow jumps to label but comes back and resumes immediately after the calling point, following a

RETURN

which defines the end of the subroutine.

REGISTER CLEAR

CLRW		clear w to zero and set Z
CLRF	**f**	clear f to zero and set Z

BIT SET & CLEAR

BSF	**f,b**	Set bit b in register f
BCF	**f,b**	Clear bit b in register f

Note that you can't set/clear bits in w this way. Instead you need a logical operation; to set bit 3 in w, use IORLW b'00001000' and to clear it use ANDLW b'11110111'.

BIT TESTING

This is how the classic branching from a flow-chart 'diamond' is implemented. It works by testing a bit and skipping the next instruction or not depending on the result:

BTFSC	**f,b**	Skip if bit b is clear
BTFSS	**f,b**	Skip if bit b is set

Time out for a little example:
Compare two registers called freqA and freqB. If their contents are the same (ie equal), branch to (ie goto) 'Same', otherwise continue:

```
        movf    freqA,w
        subwf   freqB,w
        btfsc   STATUS,Z
        goto    Same
        (if different continue here)
        .....
Same
        (if same continue here)
        .....
```

INCREMENT & DECREMENT

INCF	**f,d**	increment f (ie f = f + 1)
DECF	**f,d**	decrement f (ie f = f - 1)

The next two are unusual and good value in that you get two operations for the price of one instruction!

INCFSZ f,d	increment f and skip next instruction if result is zero
DECFSZ f,d	decrement f and skip next instruction if result is zero

INCF and DECF affect Z - but INCFSZ and DECFSZ do not.

SOME OBSERVATIONS

Status bits You may have noticed considerable emphasis on which instructions affect which STATUS bits. There is a trap here for the unwary and an opportunity for the cunning. For example, it is no use incrementing a register (incf f) and then testing the carry bit (C) to see if it overflowed - because incf does not affect the C bit. In this case the Z bit would work. Conversely, it is often convenient to be able to test a status bit some lines after the instruction which produced it, in which case it is obviously essential (and usually simple) to contrive the intervening code so that it only uses instructions that do not overwrite the status bit in question.

Address versus data The classic information you need to know about any given register is:

- Where is it? This is its 'address'.
- What is its content? This is the 'data'.

For example, to load the *address* of register fred into w, the code would be movlw fred,w ... whereas to load fred's *data* needs movf fred,w.

Would that it were always that simple. Sometimes the 'data' content of one register is in fact used to 'address' another. This is the basis of our frequency-to-output channel converter as will be revealed later.

POST SCRIPT

THAT WAS THE DEFINITION of a language. You may need to read it a few times - but better still, use it - since certainly, as with all languages, practice makes perfect. If you are still daunted, imagine the *Oxford English Dictionary* reduced to one page. And that merely defines the vocabulary, not the grammar.

BACK TO OUR FLOW-CHART

THE FINAL VERSION is shown in **Fig 17**. Some comment on the detail follows:

1. For the initialisation band, 10m is as good a default choice as any since, for LPF switching applications, the 10m LPF should pass any HF frequency - until a better result can be applied after the transmitter is first keyed. For antenna switching purposes, any choice is as good as any other. In any event, it may be customised. The complexity of retaining the last selection at power-off was considered to be unjustified.

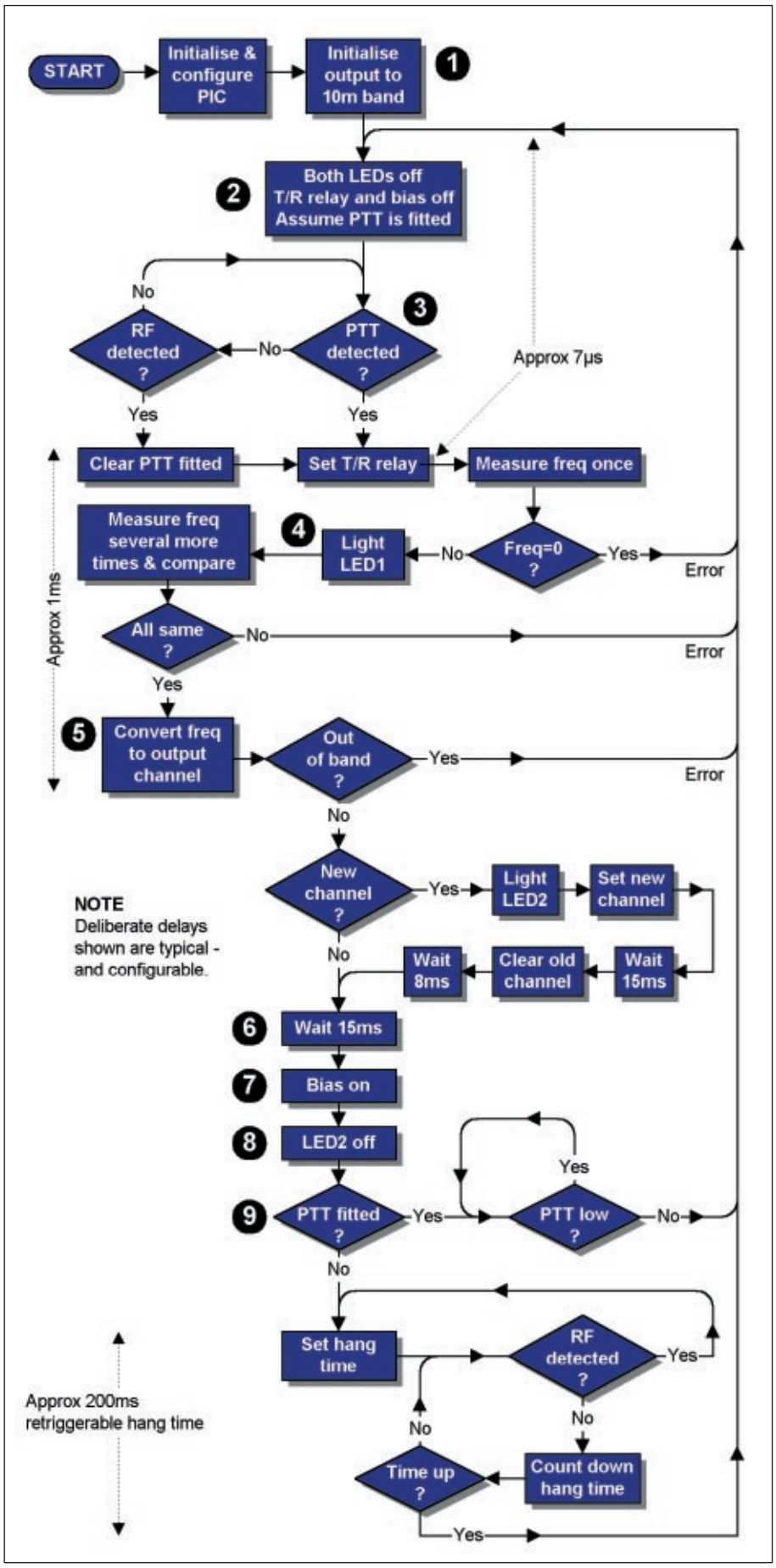


Fig 17: Final version of the Pic-A-Switch system flow chart. This is 'codable' in the sense that all the branching logic is defined, even though the implementation of some process boxes may still be unclear. You could draw sub-charts for these. Numbers refer to discussion points in the text.

❷ This sets up the resting state when on receive. It is also the re-entry point in the event of any frequency measurement errors. You have to be a little careful here not to rattle the T/R relay. A glance at the elapsed times shows that in the event of an error it takes only a few *micro*seconds from turning the T/R relay off to getting it back on again, whereas the time to detect the error is in the order of *milli*seconds. The ratio of these times means that in practice, the relay won't even notice it.

❸ The PTT line is assumed to be fitted until proved otherwise (by RF being detected while the PTT line is still high). Although the PTT and RF detect tests loop forever until something happens, it is vital to test the PTT state *before* testing for RF - on re-entry as a result of an error. If it were done the other way round it would be possible to miss the PTT line.

❹ LED1 is lit to denote successful measurement of frequency. If measurement is inconsistent, the LED will be pulsed on and off during error loops. To the eye, this will appear as a dimmed LED.

❺ The detail of how this is implemented follows in the next episode - in the explanation of the code itself.

❻ This delay is to let the T/R relay settle. Arguably, it should be placed before the point where the channel-change logic rejoins the main flow. It was placed here instead to leave a safety margin after a band change on the grounds that a few extra milliseconds were unimportant operationally.

❼ Until the bias supply is switched on, the PA is throttled back. For remote antenna switching applications, this process and all subsequent ones are irrelevant since the lines are probably not connected. The software still executes, of course, but with no other effect than providing some useful loop delay.

❽ LED2 is lit to signify a channel change. Logically, it should be turned off at the end of the channel-change process, not here. If you do just that, the LED is on for such a short period, it is not easy to spot it. This is typical of minor problems that arise during testing. In this case, fortunately, it can be solved by simple expediency.

❾ The route back to the top of the chart for the next cycle is determined by whether a PTT line was detected earlier. If so, the code loops until the PTT line is lifted. Otherwise a 'hang time' is used to prevent syllabic-rate relay chattering. This hang time is retriggerable should yet more RF appear during the count-down. ♦

Next month, G3XJP concludes 'Pic-A-Switch' with a description of the code

A Practical Approach to Operating AO-40

*Part one, by Howard Long, G6LVB **

Are you a Class B licensee who yearns for world-wide communication?
Do you have antenna restrictions, perhaps because you live in a flat?
Do satellite communications interest you, but you think it is beyond your wallet?
Would you like to try satellite operations, but think it is all too difficult?

ANSWERING "yes" to any of the above questions means that this article should interest you. Recently, I discovered that the newly-launched AO-40 satellite provides solutions to all of these questions.

As with many facets of technology, satellite communications are immersed in an ample reservoir of jargon. To some extent, this adds to the misconception that satellite operation is sometimes viewed as a difficult or élitist part of amateur radio. I can assure you that, after a short while, many of these specialist terms become second nature, but undoubtedly it can seem rather daunting to begin with.

The author's AO-40 satellite ground station set up in a basement garden.

GET PRIMED

TO GET STARTED, we'll begin with an overview of some of the features of the satellite, which can also serve as an AO-40 operating primer.

AO-40 has an enormous number of facilities, including cameras and digital communications, but this article concentrates on the fundamental voice and CW communications modes.

In common with many other amateur satellites, AO-40 acts like a repeater, in that it extends coverage area by virtue of its position over the Earth, re-transmitting signals on a different frequency. However, there are two differences when compared with a repeater.

The first difference is that, rather than re-transmitting a single channel, AO-40 retransmits a frequency range, or *passband*. In 'satellite-speak', the device doing the re-transmitting is known as a *linear transponder*. This allows many conversations to be conducted simultaneously.

Secondly, the satellite's receiver passband (or *uplink*) is on a different amateur band from the satellite's transmitter passband (or *downlink*). The reason for having the uplink and downlink passbands in different amateur bands is that it is common practice, on analogue transponders, for the amateur ground station to listen on the downlink at the same time as transmitting on the uplink.

Having uplinks and downlinks on different amateur bands enable a station to check that its signal is making the trip by simultaneously listening to its signal returned from the satellite whilst transmitting. This is often known as *full duplex* operation. We'll see later that there are several tweaks that a station can make to optimise its uplink whilst listening to itself. If the uplink and downlink were on the same band, a station would need expensive filters to ensure that its receiver wasn't being desensitised by its own transmitter. If you've ever tried to monitor a repeater output whilst transmitting on its input you'll know what I mean.

AO-40 was designed with several uplink

70cm uplink	U analogue uplink	435.550 - 435.800
23cm uplink	L1 analogue uplink	1269.250 - 1269.500
13cm downlink	S1 analogue downlink	2400.225 - 2400.475
13cm downlink	S2 analogue downlink	2401.225 - 2401.475

Table 1: The commonly-used uplink and downlink passbands.

** 72 Princes Gate, London SW7 2PA.*

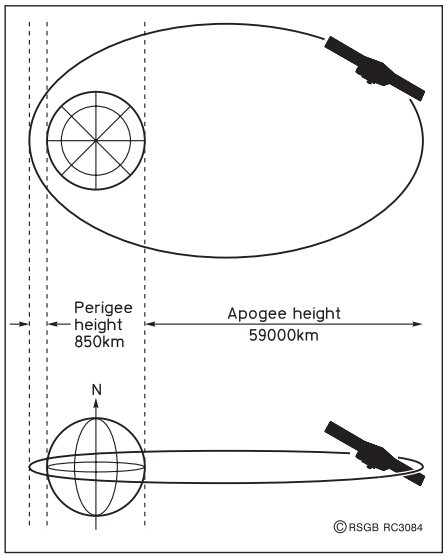


Fig 1: The orbit of AO-40 is roughly in the equatorial plane. The diagram is not to scale.

and downlink passbands over many different amateur bands. Currently, the most commonly-used uplinks are on 70cm and 23cm, designated the 'U' and 'L' uplinks respectively. **Table 1** illustrates some of these.

On the downlink, the most regularly-scheduled passbands are on the 13cm band, called 'S1' and 'S2'. S1 is connected to a narrow-beam high-gain dish antenna and S2 to a wider-angle lower-gain helix antenna. At the time of writing, the status of the S1 downlink is unknown, so S2 is being used exclusively until further notice.

To distinguish on which uplink and downlink passbands a station is operating, a 'Mode' nomenclature is used. For instance, 'Mode U/S2' (currently the most commonly-used mode) means that the ground station is uplinking (transmitting) on the U passband and downlinking (receiving) on the S2 passband. Depending upon the context, it's also common to see simply 'Mode L/S' or 'Mode U/S' used.

AO-40's transponder passbands are *inverting*. This means that a signal received by the satellite at the lower end of the uplink passband is retransmitted at the upper end of the downlink passband. This also means that, if you transmit using LSB, your signal will be returned as USB. Indeed, LSB on the uplink and USB on the downlink is the convention for voice operation.

FM is frowned upon on linear transponders, because it is wasteful on bandwidth and uses a lot more of the limited satellite power resource (100% duty cycle compared to only 20% for SSB).

THE ORBIT

AN IMPORTANT ASPECT of AO-40 is its orbit. AO-40 travels in a highly-elliptical orbit, with its closest point to the Earth (*perigee*) at about 850km altitude and its furthest point (*apogee*) at 59,000km altitude. At perigee, the satellite has a circular view of the Earth (or *footprint*) of only 2000km diameter but, at apogee, almost half the globe is in the footprint.

The satellite's orbit is also roughly in the same plane as the equator (**Fig 1**), so from the UK a view to the south will be advantageous. In the UK, the satellite spends a good proportion of the time above 20° and even 30° elevation, so don't be too worried about local obstructions below these elevations. Indeed, I operate regularly from my basement garden.

Although you'll need to know where the satellite is in the sky, it sits 'floating', apparently almost motionless, for most of the time. It's therefore unnecessary to invest in expensive azimuth and elevation rotators if you can set up your antennas so that you can point them manually every so often.

A large proportion of AO-40 operators don't use a rotator. Instead they set up their antennas in their gardens at ground level, or pointing out of their windows. Minor re-pointing every half hour is generally all that's required.

The satellite has a counter on board known as the *MA* (or Mean Anomaly) representing how far through an orbit the spacecraft is. In amateur satellite terms, this value starts at zero at perigee, reaches 128 at apogee, and carries on through to 255 back at perigee where it resets to zero again.

The mean anomaly is used to determine the schedule of operation, such as when the analogue transponders are switched on.

Because the satellite isn't always visible (ie above your local horizon), and because you'll be using directional antennas, you'll need to find out where the satellite is at any given time. These days, almost without exception, this is done by computer. There's plenty of software about that performs this task, some free and some available for a small sum. Prediction software varies in features, and you tend to pay for features. For AO-40, it's important for the software to be able to tell you the azimuth and elevation from your location, and also the mean anomaly. Some prediction software helpfully indicates the *squint angle* of the satellite. This allows you to estimate how well the spacecraft's antennas are pointing at your location. Almost all software works in real time, and most versions provide listings to allow you to predict in advance the visibility of satellites, so you can plan your week around them! Some software will also control transceiver frequencies and rotators.

Prediction programs all need to be fed with up-to-date Keplerian Elements, or 'Keps'. These are parameters which describe the motions of satellites and are published on the Internet from a variety of sources, including AMSAT-UK and -NA.

Examples of fully-featured programs are *InstantTrack* and *Nova*. *InstantTrack* is a DOS product whereas *Nova* is a Windows program. Because it's a DOS program, many satellite operators run *InstantTrack* on their old PCs. Most packages are available from AMSAT-UK and AMSAT-NA. [A listing of useful Internet sites will be published in the final part of this article - *Ed.*]

RECEIVING AO-40

So just how *do* you receive AO-40? AO-40's lowest frequency downlink band is 13cm (2.4GHz). Now before you all switch off at the thought of microwaves, bear with me. Prior to AO-40 I had no microwave experience. With the practical details presented here, I found that it wasn't at all hard.

The reason there's not much equipment for receiving 2.4GHz is a practical one, not a technological one. Feeder losses become very significant at 2.4GHz. As an example, I have 180ft of 'low loss' Westflex W-103 between my shack and the rooftop antennas, with a corresponding 20dB loss – or 1/100th of the 2.4GHz power – finally arriving at my radio. Consequently, a slightly different approach to the conventional 'antenna - feeder - receiver' combination is

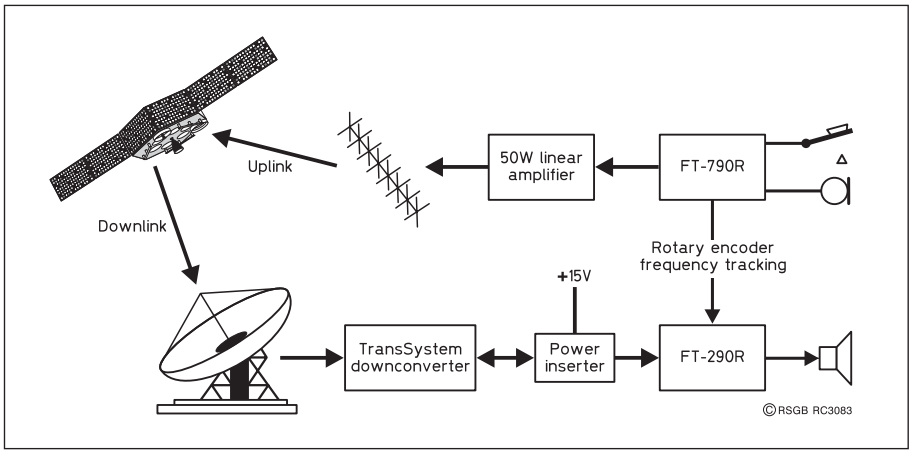
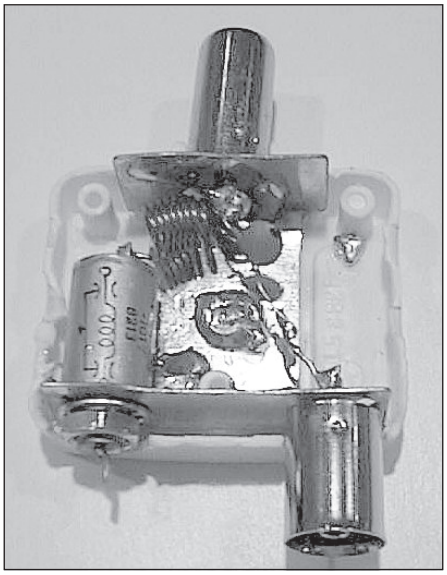


Fig 2: The AO-40 ground station used by the author.



A broadcast FM/TV duplexer converted into a power inserter.

used at 2.4GHz. Part of the receiver is placed at the antenna, amplifying the signal and sending it at a much lower frequency down the coax, with correspondingly lower loss. The device doing this is called a *downconverter*.

There's nothing new in this approach. Almost all satellite and some terrestrial TV receivers have been doing this for many years. So why not use a TV downconverter? Well, more often than not, that's exactly how it's done. Over the years, several different units have become available as spin-offs from the MMDS (Multipoint Microwave Distribution System). MMDS is a fixed terrestrial broadband system around 2.5GHz used in North and South America in particular.

MMDS Downconverters come and go, with units from Drake and TransSystem being amongst the most popular. They all require some degree of modification for optimum use. Without modification, most convert 2.4GHz to 122MHz, the 'intermediate frequency' or IF. Therefore, either the downconverter's local oscillator crystal needs to be changed, or you need to be able to receive 122MHz directly.

Remember that you'll need to be able to receive SSB at this intermediate frequency (IF). My system is shown in **Fig 2**. I purchased an old FT-290 Mk1 for £100 for this job. There are many other ways to achieve the same goal. You could use a VHF scanner if it will receive SSB. Alternatively, if you have HF SSB reception facilities you could use another receive converter or a transverter to convert the 144MHz IF down to the 10m band.

It appears that the TransSystem AIDC 3733 units are the most widely available at the current time, and show fairly good performance figures.

Modifications for improving the TransSystem performance are:

- snipping off a $\lambda/4$ coaxial notch filter in the 2.4GHz passband (+9dB improvement in noise figure (NF));
- replacing a filter (+3dB improvement in NF).

Modifications aiding use with existing equipment are:

- replacing the local oscillator crystal frequency to give a 144MHz IF;
- changing the dipole feed to an N-type socket.

Only the filter replacement requires some soldering and, although slightly delicate, it's not surface-mount technology.

Bob Seydler, K5GNA, sells the TransSystem units and all the modification parts, ships them world-wide and takes credit cards (via PayPal). I purchased mine, with a replacement crystal, filter and N-type adapter for £59. Bob will even supply units already modified. See the list for further details on obtaining them and the modification details.

Downconverters are normally powered via the coax using a device called a bias tee, or power inserter. Again, you can purchase these or build your own, using the circuit of **Fig 3**. I modified a TV/FM duplexer I had in the junk box for this job. This is shown in the photograph (left).

Other alternatives for a downconverter are to construct your own (such as the design by G3WDG) or to buy a purpose-built unit such as one from SSB Electronic or DB6NT.

Whichever route you choose, be careful not to transmit into the downconverter! An easy way to avoid this is simply to unplug the microphone from the downlink radio.

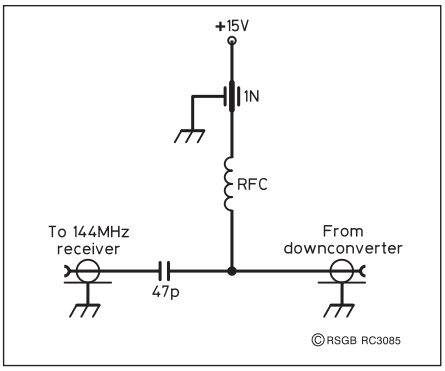


Fig 3: Circuit diagram of a power inserter. The component values are not critical.

THE RECEIVE ANTENNA

Even with no prior experience, it's quicker and easier to build an antenna for 2.4GHz than it is to construct a Yagi for 2m, or to work out the logistics of hanging a long wire. What's more, you certainly don't need any expensive test equipment to receive AO-40, as hundreds of existing operators will testify.

There are several antennas that will work with AO-40, including Yagis, loop Yagis, axial-mode helices and dishes, all available commercially.

A good performer for receiving AO-40's 2.4GHz downlink is an old 60cm analogue satellite TV dish, replacing the existing LNB feed with a short axial-mode helical antenna. These dishes are available free to the savvy amateur as satellite TV moves from analogue to digital transmissions.

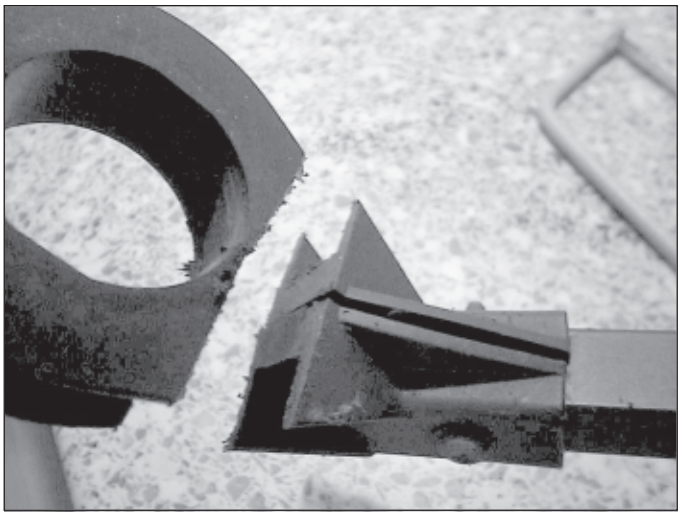
The 60cm diameter dishes I've used provide 20dBi gain at 2.4GHz. It takes about two hours to build a new feed and modify these dishes for use on AO-40.

Tricks I've used to find an unused dish waiting for a new home include checking to see if there's any feeder connected or, slightly more subtly, whether the dish is pointing significantly away from where you'd expect. Contact the owner and away you go – he'll probably thank you for taking it away.

The original LNB is attached to the dish's arm with a plastic collar. Detach the collar from the arm and discard the LNB. The plastic collar bracket is retained to provide the perfect angle for the replacement feed. The collar itself is too narrow for the new feed, and so the collar part needs to be sawn off, retaining the base of the plastic bracket (see photo below). ♦

NEXT MONTH...

G6LVB looks at the helix feed, the uplink, and operating safely through AO-40.



Cut off with a hacksaw and discard the collar part of the LNB bracket.

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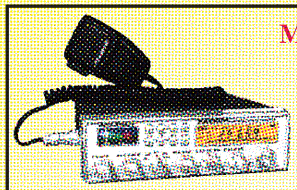

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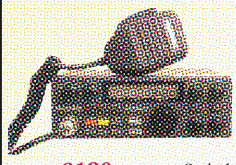

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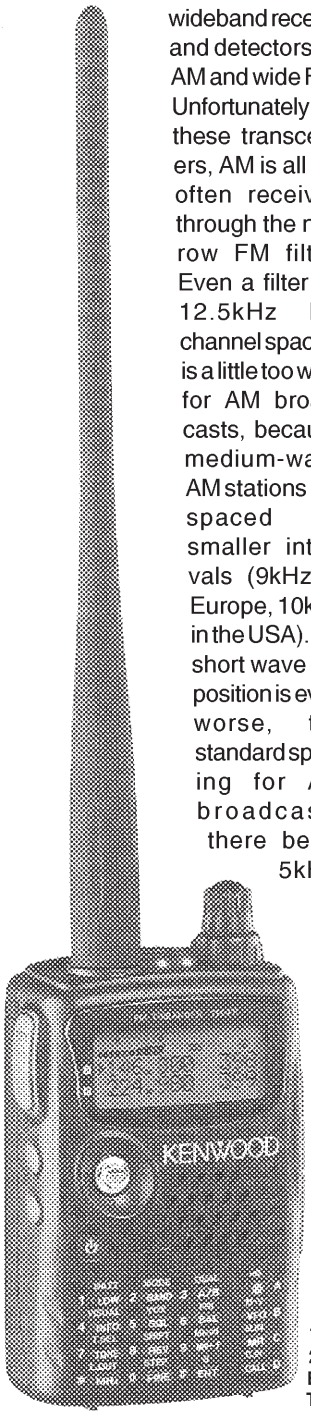
WHATEVER NEXT

STEVE WHITE, G3ZVW
31 Amberley Road, London N13 4BH.
e-mail: steve.white@rsgb.org.uk

EARLY commercially-built VHF handheld transceivers for the amateur market were FM single-banders. Next came the dual-bander, then the dual or tri-bander with wideband receive and detectors for AM and wide FM. Unfortunately, on these transceivers, AM is all too often received through the narrow FM filter. Even a filter for 12.5kHz FM channel spacing is a little too wide for AM broadcasts, because medium-wave AM stations are spaced at smaller intervals (9kHz in Europe, 10kHz in the USA). On short wave the position is even worse, the standard spacing for AM broadcasts there being 5kHz.



The American version - the TH-F6A - includes 220MHz transmit, as well as 144 and 440MHz. Expect the dual-band European version - the TH-F7E - to look the same.

The stronger signal invariably wins, blotting out the weaker one, and where two or more signals of about the same strength fall within the passband you shouldn't expect to hear much of anything, except perhaps a heterodyne (whistle).

Meanwhile, as well as more modes and wider frequency coverage, top-of-the-line HF base station transceivers also got dual receive capability. Until now that facility hadn't filtered through to the handheld, but it was only a matter of time before increasing integration and miniaturisation made it possible.

FIRST OF ITS KIND

ENTER THE Kenwood TH-F6A (pictured left), the first handheld transceiver to include a second receiver (as opposed to a 'dual watch' facility). In the publicity leaflet, Kenwood describe it as having two 'bands', but they are not referring to them in the sense that radio amateurs usually do.

A-BAND

The specification of this part seems similar to others on the market today. Basically it is an FM transceiver with all the bells and whistles that we have come to expect. It runs 5W, 0.5W or 50mW out; includes FSK and AFSK; CTCSS and DCS; programmable scanning, hundreds of memories, etc. The European version, the TH-F7E, has 144 and 432MHz transmit; the American version, the TH-F6A, has 144, 220 and 440MHz transmit.

B-BAND

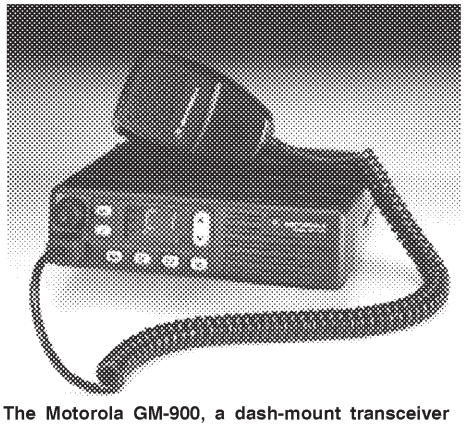
Now, as I see it, for the innovative bit! Despite its diminutive size (58 x 87 x 30mm with its lithium-ion battery pack, 58 x 87 x 34mm with its 4 x AA-cell battery pack), the rig features an entirely separate general coverage receiver that covers 100kHz to 1.3GHz. What's more, it includes detectors for AM, FM, SSB and CW. For the reception of AM broadcasts up to 7MHz, there is a selectable internal ferrite rod antenna. Two frequencies can be received simultaneously, even on the same band.

In their efforts to make a complicated transceiver easy to operate, the Kenwood designers have taken a technique often used in cellphones and incorporated it in this transceiver. A multi-scroll key is used to change bands and frequency (rock left / right and up / down respectively). In addition, there are the customary rotary controls, keypad and press buttons.

In a recent conversation, Kenwood was able to confirm that the dual-band European version, the TH-F7E, was about to be delivered as this column was being prepared.

ONE TO WATCH

ANOTHER MEMBER of the Motorola family of transceivers that should become more available to radio amateurs in the future is the GM-900. It is a dash-mount mobile (see photo below) that, like other Motorola radios, can be converted for amateur use purely by reprogramming.



The Motorola GM-900, a dash-mount transceiver that, in time, is likely to come onto the surplus market in larger numbers.

According to Alex Haylett, PA3FZN, the drawback with many Motorola radios is that the ROM used to store programming information has a rather small capacity. This is not a problem for most commercial users, because they don't often want many channels, but radio amateurs are likely to find it frustrating. As Alex says, "The GP-300 as well as the GM-900 suffers from lack of code plug space (too little internal ROM). That means if you wish to program these sets for 10 repeaters and 6 simplex with CTCSS/5 tone, then forget it. You have to be very selective on what you need to install regarding channels, because you will not be able to program the radios with as many channels as you would wish."

A trawl of the Internet revealed that PA3FZN isn't the only person to have converted a GM-900 for amateur use. Andy, GW1SYG, the sysop of GB7DEE is already using one on the 70cm port of his AX25 BBS at Saltney, near Chester.

MICROSCOPIC MICROPHONIC

EARLIER THIS year I featured the Clearspeech loudspeaker, produced by NCT (Noise Cancellation Technologies). This company is involved in a number of aspects of communication technology, and recently my attention was drawn to an innovative 'mic on a chip' they have developed.

The SMM (Silicon Micro-machined Micro-

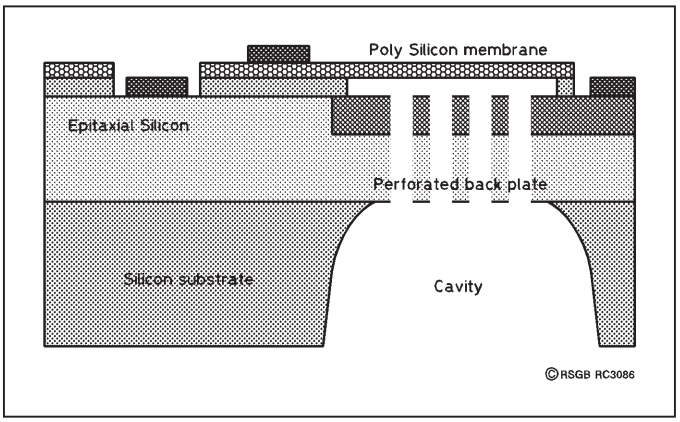


Fig 1: Construction of the SMM (Silicon Micromachined Microphone). Unlike most microphones, sound enters from the rear.

phone) is claimed to be the 'ultimate in miniaturisation', a phrase that I would personally be rather cautious about using. The development of the first prototype product in the SMM family was completed this year by the Siemens subsidiary Infineon. Infineon continues to perfect the production of this unique microphone chip and, once commercially available, Infineon and NCT will market the SMM.

According to Infineon, the SMM has been subject to research and development for a number of years. Despite this, no mass-produced and cost-effective SMMs have yet reached the market. The new production technique looks set to overcome this. During the course of the process, the essential parts of the microphone are built, then the perforated back plate is fabricated using trench etching for the holes and subsequent oxide refilling (**Fig 1** shows the layout of the finished product). After this, a low stress poly-silicon membrane is deposited and annealed. The membrane thickness is less than 1µm. After the electronics have been built on the front of the chip, attention turns again to the rear. First the unwanted substrate is etched away, then the sacrificial oxide is removed (in a 'wet' process). After drying, the wafer of silicon on which many such SMMs have been built is diced and packaged - a challenging exercise in itself, due to the mechanical sensitivity of the membrane. Finally, the SMM is packaged, usually in a surface mount chip no more than a couple of millimetres square.

The SMM has the advantage of not incorporating any plastic in its design, which means it can be used at much higher temperatures than other microphones. I see its main advantage as being its size, which will make it ideal for hearing aids and ever-shrinking mobile phones.

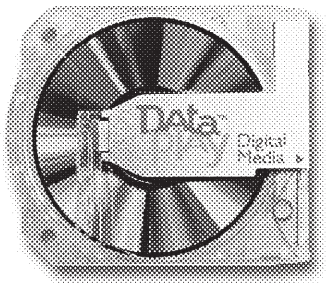
HOW MUCH FASTER?

IN THIS COLUMN in February I discussed personal computer CPU speeds and posed the question "How much faster are these things set to go?" I went on to suggest that a 3GHz CPU might be available by the end of 2001. As I write, the highest speed PC CPU available is an Intel P4 running at 2GHz, but Intel recently showed a 3.5GHz P4. Split the difference, and I guess I wasn't far out.

What is more interesting though is the fact that Indium Phosphide is now being looked at as a way of upping the speed even more. According to Dr Jim Prendergast, Vice President and Director of Motorola's Physical Sciences Research Lab, "One of our next goals is to complete the task of growing indium phosphide on silicon. This technology should support chip clock speeds of more than 70GHz."

MICRO DISK

BEFORE YOU read on, reach into your pocket and see if you have any £2 coins. If so, put one down in front of you. Now, ponder for a moment on how much data could be stored on a disc that is just a little larger in diameter than that.



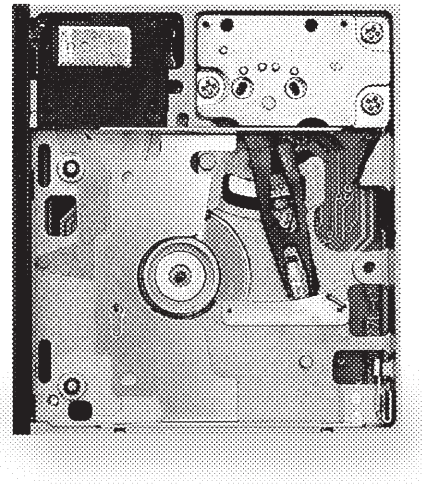
DataPlay disc, shown actual size (33.8 x 41.5mm).

In recent columns I have discussed cramming more and more data onto CD-sized (120mm diameter) media, but the latest and smallest 'true' disk on the market (as far I know) is not much bigger than a coin. The DataPlay disk has been developed to meet the need to store large quantities of data for today's portable devices; primarily MP3 players, PDAs and cameras; but it has also found its way into backup devices and a miniature electro cardiogram.

The DataPlay disc itself (pictured above) is available in single and double-sided versions, which store up to 250MB or 500MB of data respectively. A DataPlay cartridge measures 33.8 x 41.5 x 3.1mm, and the media inside 32 x 0.6mm. The density of the recorded data is 4.66MB per square millimetre - and with 1351 tracks per millimetre it makes the track pitch 0.74µm. Recorded data are reckoned to have a 100-year lifespan, and media are re-usable over 1200 times.

The 'micro-optical engine' (see photo below), as the DataPlay drive is called, is about the size of a matchbox. Its power consumption is quoted as being very low, even in recording mode, and the data transfer rate is just under 1MB/sec.

More so now than ever, the price has to be right for an item of new technology to be adopted. DataPlay media are expected to sell for between US $5 and $12, depending on whether you buy the single or double-sided discs. This may sound a little expensive for something that weighs less than 4g, but it is considerably cheaper than the memory cards that are used in today's digital cameras, MP3 players, etc. ♦



The DataPlay 'micro-optical engine', a disc drive the size of a matchbox.

W W W.

Kenwood TH-D7A:	www.kenwood.net/ama_page.cfm (then click on the link)
Motorola radios and conversions:	www.batlabs.com
Silicon Micromachined Microphone:	www.nct-active.com
DataPlay micro-optical disc:	www.dataplay.com

If there is an item of new technology you would like to know more about - or one that you know about and think ought to be mentioned here - drop a line to the author, or e-mail him at the address at the start of the feature.

Down To Earth

Newcomers' News

News and Comment from and for Amateur Radio's Newcomers. Compiled by Steve Hartley, G0FUW *

THE announcement in last month's *RadCom* about the future of UK amateur licences has set everyone talking and much debate is evident on the air. Let's hope the changes have the desired effect and encourage even more newcomers into the hobby.

NEW LICENCE STRUCTURE

THE DETAILS OF the new classes of licence have been well publicised in *RadCom*, so there seems little point repeating them here. However, it would be wrong to let such a significant event pass without comment, particularly when the changes are most likely to affect newcomers!

The new Foundation licence will allow newcomers to gain on-air experience more quickly and enable them to operate other amateurs' equipment under supervision. This can only be a good thing as so many of us 'older hands' found out when taking to the air for the first time. I certainly remember the panic attack I suffered when someone returned my first Morse code call! Whilst I am a great advocate of building your own station, with the limited training for the Foundation licence it seems sensible to restrict operation to commercial equipment and approved kits.

The extension of the Novice (now Intermediate) licence is less of a change and I do not see many stations actually noticing much difference. The increase of power should only make one or two 'S' points of a difference to the receiving station and as many Novices have already shown, you can still work the world with low power (QRP), particularly with Morse code (CW).

Reducing the Morse test speed to five words per minute takes us a step closer to what now seems the inevitable removal of the requirement altogether. This is not ground-breaking, but merely follows many other countries around the world. Again, I suspect that many A/B licence holders will not make any changes to their shacks, as most rigs are limited to 100 watts in any case. I don't know many Full A licence holders who make full use of the 400 watts available.

Overall then, are the changes for the better? I am sure that there will be those who are totally opposed to the new system, much in the same way that the Class B licence, the multiple-choice exam and the Novice scheme had their critics when they were new, but I for one give my full support to anything that makes amateur radio more accessible and attractive to those who are new to the hobby. Well done all involved.

START THEM YOUNG!

PROUD FATHER Nick Morley, G0HLX, wrote with details of his young daughter's early start in amateur radio. Our hearty congratulations go to Victoria, now 2E1VIX, on passing her Novice exam at just nine years of age, one of the youngest ever to pass.

Vicky has the use of an elderly FT-290RII for 144MHz (2m) with a vertical antenna for local frequency modulated (FM) contacts and a 12-element ZL special beam for some more distant contacts on single sideband (SSB). Operating from near Camberley, Surrey, she will also be active on 50MHz (6m) and 433MHz (70cm).

Who said youngsters aren't interested in amateur radio? Well done, Vicky and good DX!

MORSE CODE

DAVID PRATT, G4DMP, raised the question of how to send the '@' symbol, eg in e-mail addresses, in Morse code, and I have received several responses suggesting different ways of covering it.

Malcolm Sadler, M0BHE (ex-2E1DLC), recalls using @ at school as shorthand for 'at', as in "how much would it cost for 40 apples @ 10p each". He therefore suggests that the Morse code should be 'di-dah dah', which would be easily recognised and quicker than the earlier suggestion of 'di-dah-dah-di-dah'. A fair point.

A Novice point of view comes from David Gunning, 2W0ALZ, who thinks that using the French accented 'a' would be a good idea but also suggests the simple 'at' would be a good solution. He observes that, as the character would appear in the middle of an e-mail address, there is little scope for confusion whatever was used.

Eur Ing Alan M Gordon, G3XOI, suggests a more novel character 'OAT' with the 'O' representing the circle around the 'at'.

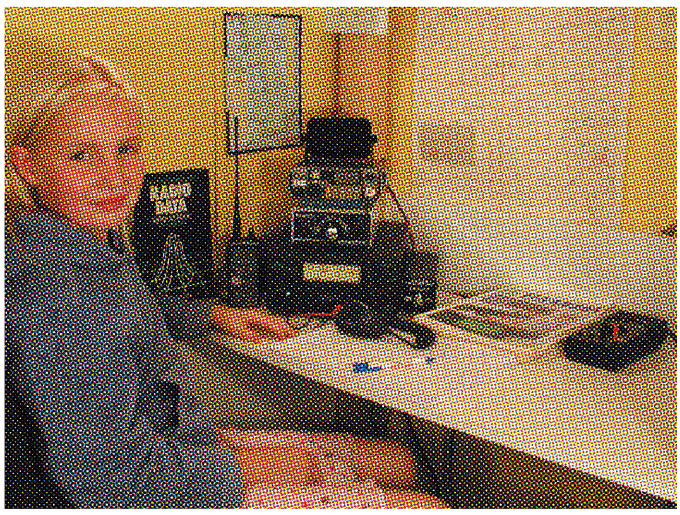
Despite being licensed for some six years, Dean Godden, M5AEM, is still an avid reader of 'Newcomers' News' and always keen to learn some more. Dean is not on his own there, as my postbag will confirm! Dean is another supporter of using plain 'at' as the alternatives are longer and defeat the point of CW abbreviations. That said, he uses 'dot' for '.' Should that be a full stop sign (di-dah-di-dah-di-dah), which is fractionally shorter than 'dot'? Anyway, Dean reports no problems in using 'at' or 'dot' on the air.

Well, the consensus seems to be that a simple 'at' (di-dah dah) will do the trick and being the shortest suggestion it has my vote.

A WINNER!

IN THE AUGUST 'Newcomers' News' I asked for newcomers to send in details of their first contacts in order to win a transistor tester, kindly donated by Peter Waters, G3OJV, of Waters & Stanton plc. The first out of the bag was Anne Reed, 2E1GKY, who made her first contact with Roger, G0RGJ, on 23 February 1998, on 70cm. At 63 years of age Anne describes herself as a very enthusiastic amateur with a particular interest in lighthouses. She is also treasurer of the Gloucester Radio Club. Well done Anne, the tester is on its way!

There is a second tester still up for grabs, see the August column for details. ♦



Victoria Morley, 2E1VIX (see Start Them Young)

Spread The Word!

Send your news and colour photos to: Steve Hartley, G0FUW, QTHR.

E-mail: newcomers.radcom@rsgb.org.uk

* *5 Sydenham Buildings, Lower Bristol Road, Bath BA2 3BS; e-mail: newcomers.radcom@rsgb.org.uk*

Down To Earth

Morse Code - the Little-Known Facts

Part One, by Mike Bedford, G4AEE *

LIKE IT OR NOT, these are the twilight years for Morse Code. It's had a long innings, there's no denying that. The code was developed as long ago as 1835 and although it was used initially for land-line communication it could be heard on the airwaves for the majority of the last century. But times are changing. Maritime use of Morse was discontinued a couple of years ago and its status as a legal pre-requisite for gaining access to the amateur HF bands is likely to come to an end in a couple of years.

As Morse Code approaches the end of the line, therefore, you might think there's little more to be said on the subject. Surely everything which could be said about Morse has already been said and those who take an interest in it will have all the facts and figures at their finger-tips? Interestingly, this appears not to be the case, as I hope to demonstrate as we take a look at some of the lesser-known facts about Morse Code.

MORSE VERSUS ASCII

MORSE WAS THE first internationally-accepted system of coding characters for electric transmission, Baudot was the second, and ASCII - widely used by computer systems and the Internet today - was the third. You might reasonably expect, therefore, that Morse would be far less sophisticated than ASCII. Actually, in many ways, the converse is true. Let's think about code efficiency and, in particular, the number of bits required to represent a character. After all, if the characteristics of the communication channel remain the same, the fewer bits per character, the more efficient the communication. ASCII is an eight-bit code and all characters are preceded by one start bit and are followed by one stop bit. If we forget about parity, therefore, 10 bits are transmitted for each character. To use this as the basis for our comparison, though, isn't too fair on ASCII, since it has codes for lower-case characters in addition to upper-case characters, it has codes for all the common European accented characters, lots of symbols, and various control codes. If we only wanted to be able to transmit the limited character set used by Morse we could make do with just six of ASCII's eight bits, so we'd transmit a total of eight bits per character.

So how long is a Morse character in bits? Actually that's not an easy question to answer since there's so much variation. An E (·), for example, has a one bit mark followed by the three bit space which follows all characters, so is four bits long. Q (– – · –), on the other hand, is a 16-bit character. To come up with a character length for Morse, therefore, we have to calculate an average, but that average, of course, must be weighted by the frequency of occurrence of letters in the English language. And if we do the sums we discover that the average length of a Morse character is about 8.7 bits, just a touch longer than ASCII - not bad for a code that was developed over 100 years before the first stored program computer. And don't forget that Morse uses ratios of 1:3 between dots and dashes and between inter-dot / dash and inter-character spaces. This was done, no doubt, to make the code less prone to misinterpretation when poorly sent. Had it not been for this consideration, though, a 1:2 ratio could have been used and this would have resulted in Morse being more efficient than ASCII.

So what is it about Morse which makes it such an efficient coding system? The answer is that it employs the principle of variable length coding, whereas ASCII is a fixed-length code. With a variable-length code, the commonly-encountered letters such as E (·) and T (–) are assigned short codes, whereas the less common letters such as J (· – – –), Q (– – · –) and Y (– · – –) are given longer codes. This make a phenomenal difference to code efficiency.

The Huffman encoding method, for example, which is used for data compression and is used in PC products such as WinZIP, analyses a file and then assigns variable length codes to each character depending on its frequency of occurrence. Huffman encoding can, typically, reduce the size of an ASCII text file by around 50%. So modern methods of data compression draw on a technique which was developed by Morse in the first part of the 19th century.

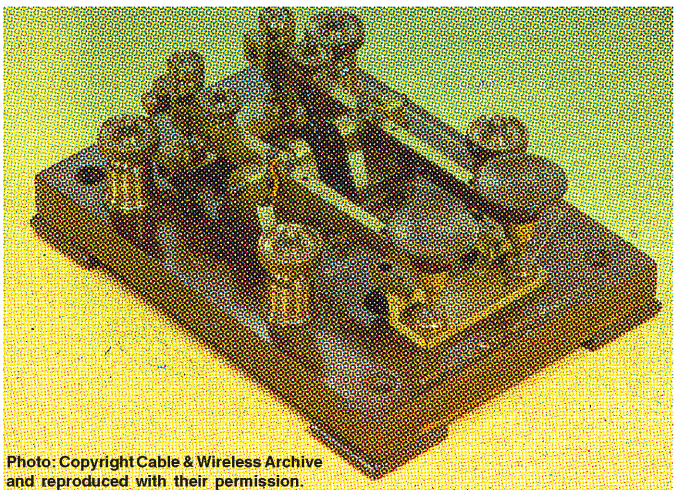


Photo: Copyright Cable & Wireless Archive and reproduced with their permission.

A key used for sending Morse Code over trans-Atlantic cables. Different switch contacts were used for the dots and dashes as we'll see next month in part 2.

A PLETHORA OF MORSES

IN OUR comparison between Morse and ASCII, we arbitrarily reduced the length of ASCII codes to six bits to exclude those characters not found in Morse - lower case letters, for example. It would be wrong to assume, though, that those characters in the top half of the ASCII character set - mainly the accented characters used in the common European languages - are not catered for in Morse. You might not have learned them for your Morse test, but there are half a dozen or so codes which represent accented letters. Clearly this is far fewer

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DOTS AND DASHES, DITS AND DAHS

THROUGHOUT THIS article I refer to 'dots' and 'dashes', which will, undoubtedly, cause some readers to come to the conclusion that I don't know what I'm talking about. After all, only the layman refers to dots and dashes: radio amateurs use the words 'dit' and 'dah' instead. I'm not so sure.

If you're *speaking* Morse Code, while trying to learn it for example, then yes, by all means, use dits and dahs. After all, "dah di dah dit dah dah di dah" sounds much more like the Morse for 'CQ' than "dash dot dash dot dash dash dot dash". And if the key to good Morse is good timing, then this is essential.

But if the word for a short or a long Morse element crops up in an ordinary sentence then surely the words dot and dash sound better than dit and dah. It's a personal thing, admittedly, but, for the record, that's my justification.

than the total number of accented characters in use but the philosophy seems to be that only one language will be in use at once, so a single code can represent more than one accented letter. For example, the code ·–·– is usually shown as representing the German A umlaut (Ä) but I've also seen tables in which Å, as used in Swedish, Danish and Norwegian, is also given as a possible interpretation of that code.

So, the next time a French radio amateur gives his name as –·– · –· ··–·· don't be too quick to accuse him of QSD (your keying is defective) or assume that he'd had a heavy session on the Pernod the previous evening. It could just be that his name is René.

But languages such as French, German, Italian and Spanish, which use essentially the same alphabet as English with a few additions, are just the tip of the iceberg. What about Greek, Russian, Hebrew or Arabic, languages which all use a totally different alphabet? You might be surprised to learn that these languages too have their own variants of Morse Code. But, on the other hand, if you know much about these languages you might not be too surprised after all. Because although the scripts are totally different from the Latin script we use, the alphabets are clearly related and most letters in these languages have equivalents in the Latin script. So, for example, the Arabic alif (ا), the Greek alpha (α) and the Hebrew aleph (א) all use the code ·–, just the same as the Latin A.

Where things get very much more interesting, though, is when we turn our attention to the east, and specifically to the Japanese language. Japanese Kanji characters are the familiar symbols which are shared with the Chinese language. These are not phonetic characters, instead they're a stylised form of picture language so every single word has its own Kanji character. Needless to say, there are quite a lot of them - over 7000 to be precise, although you can probably get by with considerably fewer. Now, if we bear in mind that there are two combinations of one dot or dash (· and –), four combinations of two (· · · – – · and – –), eight combinations of three and so forth, it's clear that to be able to come up with Morse Codes for each of the Kanji characters, some of those codes would have to be 12 elements long. If you struggled with 26 letters, 10 figures and a handful of punctuations, how would you fancy learning thousands of codes and remembering, for example, that the Morse for 時 (the kanji character for hour, in case you were wondering) is – – · – · · · · · – – – ·?

Needless to say, there are no Morse symbols for kanji but this doesn't mean that Japanese speakers miss out. In addition to Kanji, the Hiragana and Katakana scripts are also used in Japanese writing. Both are phonetic, which means that the number of characters is far fewer than in Kanji. Katakana tends to be used for spelling out foreign names or words which have been imported from other languages but it's quite possible to spell out any Kanji character in Katakana. And this is the solution to Japanese Morse Code.

Unlike the Greek, Russian, Arabic and Hebrew variants of Morse, the Katakana code is very different from that we're used to. There are actually 46 Katakana characters, each basically a syllable. And if you're intrigued in the concept of a totally different Morse Code from the one you're used to, it's shown here as **Table 1**.

In the concluding part next month, Mike Bedford looks at American Morse, Cable Code, and compares the efficiencies of the various types of Morse Code with ASCII. ♦

	A	I	U	E	O
	A ア	I イ	U ウ	E エ	O オ
K	KA カ	KI キ	KU ク	KE ケ	KO コ
S	SA サ	SHI シ	SU ス	SE セ	SO ソ
T	TA タ	CHI チ	TSU ツ	TE テ	TO ト
N	NA ナ	NI ニ	NU ヌ	NE ネ	NO ノ
H	HA ハ	HI ヒ	HU フ	HE ヘ	HO ホ
M	MA マ	MI ミ	MU ム	ME メ	MO モ
Y	YA ヤ		YU ユ		YO ヨ
R	RA ラ	RI リ	RU ル	RE レ	RO ロ
W	WA ワ	N ン			WO ヲ

Table 1: Japanese Morse, using the Katakana phonetic writing system.

Down To Earth

The Birth of Radar

Part Two, by Brian Kendal, G3GDU *

IN THE SECOND part of 'The Birth of Radar', Brian Kendal continues the story of the development of British radar prior to the outbreak of WWII.

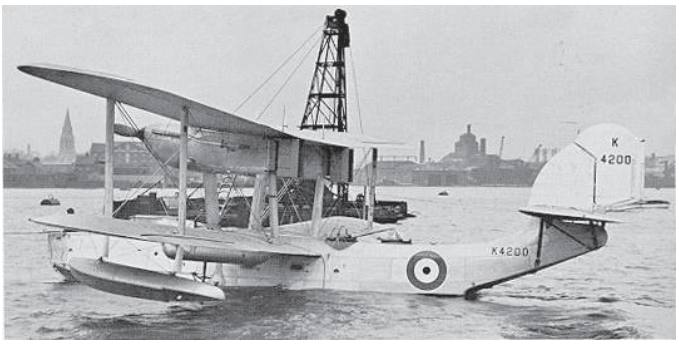
When the members of the Tizard Committee - the Committee for the Scientific Survey of Air Defence - visited Orford Ness on 15 June 1935, they had been impressed by the display of ionospheric echoes. However, Watson Watt had decided to stay a further day and the following morning they received a strong aircraft return at 17 miles range. This turned out to be a Scapa Flying boat from the Felixtowe Air Station. Good echoes were received as it flew up and down the coast, and when, after half an hour, it returned to base, Watson Watt telephoned the Commanding Officer asking if the aircraft could repeat the flight. The team then had the pleasure of seeing a repeat performance.

From that point on, progress was rapid, with aircraft echoes being received up to 40 miles by September and up to 80 miles by the end of the year. During this period the operational frequency of the equipment was changed. Initially 6MHz had been chosen, as described, but interference from commercial traffic soon made this choice unusable. The operational frequency was raised, first to 12MHz and then to 25 - 30MHz, where it remained until several years after the war.

HEIGHT AND DIRECTION FINDING

AS WAS POINTED out in Watson Watt's original memorandum, the design of a complete early warning system required not only range but height and bearing information as well. The next important step by the team was when Arnold Wilkins introduced a method of height finding by comparing the signal strengths received on aerials at different heights (see **Fig 4**).

12 Weald Drive, Furnace Green, Crawley, West Sussex RH10 6JU.



A Supermarine Scapa flying boat.

The technique had been used previously at the Slough radio research facility for measuring the angle of incidence of trans-Atlantic radio signals. This made use of the characteristic of aerials to radiate a lobe in the vertical plane, the angle of which is a function of the height of the aerial above ground. By comparing the strength of an incoming signal from two aerials at different heights, it is possible to calculate the angle at which the incoming signal is approaching. If the range of the origin of the signal is also known, its height can also be calculated. This technique is called 'split lobe height finding'.

The answer to the final unknown in the equation, that of bearing determination, was provided in late 1935 by Watson Watt himself. The solution lay in two dipoles mounted at right angles (**Fig 5**).

Identical feeders transferred the signal from the dipoles to a *goniometer*, a device which, when rotated, would produce a nul in the signal output corresponding to the bearing of the incoming signal. Unfortunately, in this form, it would also produce a nul 180 degrees removed from the original bearing. This was addressed by placing a reflector element behind each dipole. Each reflector was split in the centre and open relay contacts placed across the gap. When an echo was received, the goniometer was moved a few degrees off the null and the relays were switched to close the gap. If the signal increased, the signal was coming on to the 'front' of the array and if it decreased, it was coming on to the back.

By the late summer of 1935, the number of staff on site was increasing rapidly and it was becoming obvious that alternative accommodation would soon be necessary.

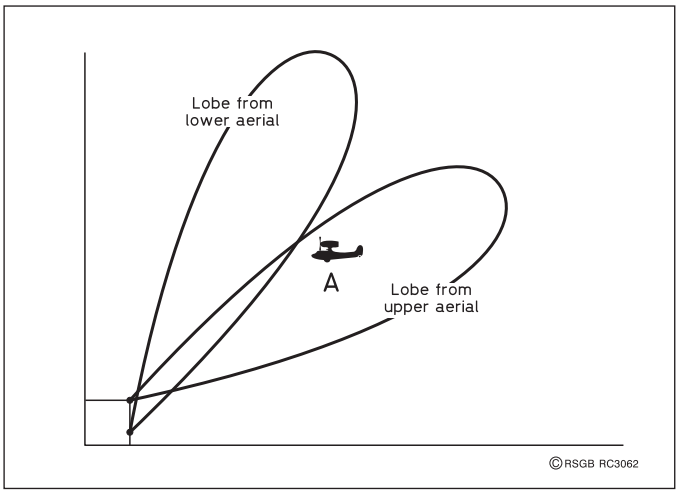


Fig 4: Chain Home (CH) height finding. An aircraft at 'A' would give a far stronger radar return to the upper aerial. By comparing the signal strengths on the upper and lower aerials, the height of the target could be calculated.

BAWDSEY MANOR

INTEREST SOON CENTRED on Bawdsey Manor (see Fig 1 last month and the photograph opposite). This was owned by Sir Cuthbert Quilter who, when approached, agreed to a sale for the sum of £24,000. Work then gradually transferred to the new location which also provided living quarters for the staff, although the site at Orford Ness was maintained for a considerable time.

The only remaining problem was to be able to differentiate between friendly and enemy aircraft. Initially this was achieved by fitting a half-wave dipole element to the leading edge of the wing of the aircraft and alternately opening and short-circuiting the gap in the centre to cause a rhythmic variation in the strength of the reflected signal. This had only limited success, but it was a considerable period before a reliable IFF (Identification Friend or Foe) system was developed.

By late 1935, after only seven month's work, most of the requirements of Watson Watt's original memorandum had been met and it was then only a matter of straightforward development to produce an equipment suitable for use by the military.

THE 'CHAIN HOME'

OVER A PERIOD of only seven months, the Orford Ness team had developed a transmitter with

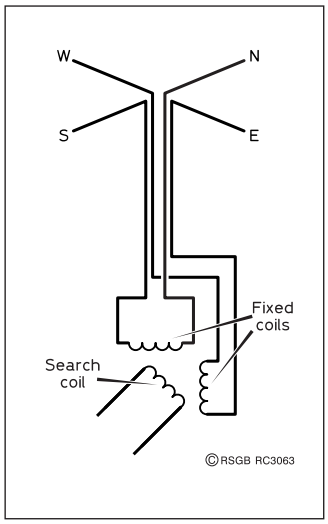


Fig 5: Using crossed dipoles with a goniometer for direction finding.

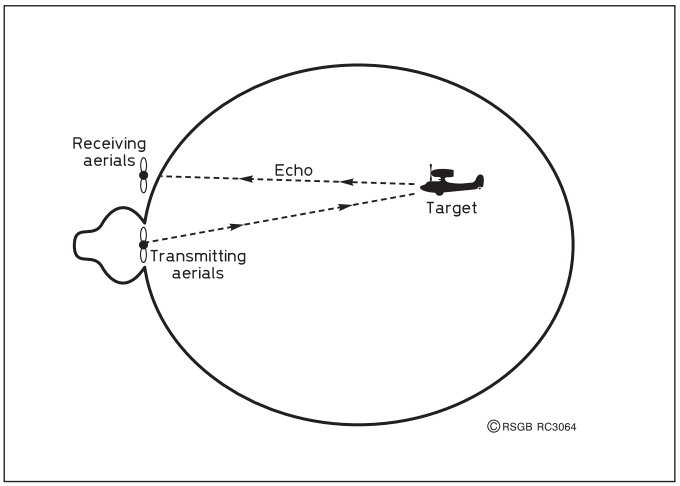


Fig 6: Basic principle of the Chain Home radar developed by the Bawdsey team.

a pulse power output of 100kW and a pulse width of 10 microseconds.

An aircraft flying at an altitude of 7000ft could be detected at 70km to an accuracy of half a kilometre, whilst an aircraft at 15,000ft could be detected at 85km. These results had been achieved using only 75ft masts and there was every expectation that an increase of aerial height would considerably improve performance. This success was recognised by the Air Ministry when on 19 December they ordered a chain of stations to defend the approaches to London.

Bawdsey Manor.

On receiving the order, Arnold Wilkins made a proposal for stations to be located at Bawdsey (Suffolk), Gt Bromley (Essex), Canewdon (Essex), Dunkirk (Kent) and Dover (Kent). Three of these stations - Bawdsey, Canewdon and Dover - were almost complete by the summer of 1936 and it was intended to include them in the September Defence Exercises, but in the end it was decided to use only the Bawdsey installation.

On the first day a number of distinguished visitors came to observe the new installation, but to the team's great surprise, they did not receive a single return at a range adequate for interception. A quick check by Bowen indicated that the transmitters were not radiating a signal. He therefore rapidly deployed to Orford Ness and, after some major maintenance, ran up the old transmitter the following morning. The viewers at Bawdsey were then rewarded by a mass of returns. Later that day the problem on the Bawdsey transmitter was resolved and despite the early problems, the exercise was deemed to be a success. The basic principle of the Chain Home radar, as developed by the Bawdsey team, is shown in **Fig 6**.

By the time that Prime Minister Neville Chamberlain went to Munich in 1938, the chain of five radar stations around the Thames Estuary was operational and as early as late 1936 the Air Ministry was making plans to install a further chain of 19 stations along the East Coast (see Fig 2 last month).

Arnold Wilkins drew up a specification for suitable sites which included terrain, distance from sea, height above sea level, etc. This was submitted to the Air Ministry who returned it virtually unchanged, except for one vital addition: "That the choice of site should not gravely interfere with grouse shooting". The British certainly know how to put things into perspective!

The chain was installed and operational by the outbreak of war in 1939 - a proud monument to the small team at Bawdsey who, starting from scratch, had developed a 3D radar system and supervised the installation of 24 stations covering from the Isle of Wight to the Orkneys in a time scale of just four years.

This chain was maintained by the RAF and backed up by a system of filter and plotting rooms which ultimately resulted in the successes of 1940.

However, this is only part of the story, for a team from Bawdsey, lead by 'Taffy' Bowen, also managed to develop an airborne radar which became operational just a month before the outbreak of war. But I will tell of this in my next article. ♦

Helplines FOR MEMBERS

● Jack, G2BCY, seeks any information - circuits, values, setting up, etc - for the **Realistic TR3000** 7½ips reel-to-reel tape recorder. Photocopies or loans to copy are welcome and all expenses will be met. G2BCY, QTHR. Tel: 0191 265 4780 or e-mail g2bcy@cwcom.net

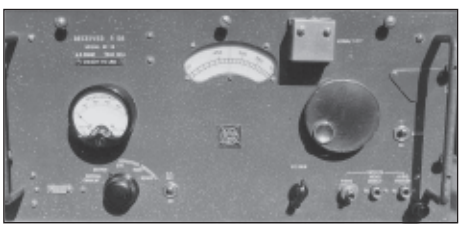
● Stan, G3XHC, is restoring a deaf **RA117A**, and would appreciate a circuit and/or manual to copy. He will meet all expenses. G3XHC, QTHR. Tel: 01803 833 621 or e-mail stan33@ btopenworld.com

● Colin, G0VAR, needs a manual or circuit diagram for the **KW2000**. G0VAR, QTHR. Tel: 07990 511 032.

● John, M5JVW, needs information or manuals for the **Advance OS15** oscilloscope, and will cost any costs incurred. M5JVW, QTHR. Tel: 01925 229 350.

● John, G6HKQ, requires information or ideas for securing the boom sections of a recent 2m nine-element crossed Yagi to the mast. He will defray all expenses. G6HKQ, tel: 01842 878 703 or e-mail phyllis.mernagh@btinternet.com

● Peter, RS31144, needs help in locating any information on a very unusual **WWII UHF radar receiver** (right) that he owns. It is identified on the front panel as **Model P58**, made by British Thomson-Houston. RS31144, e-mail: petrel@aloe.co.zw



● Bruce, G3WCE, has acquired various pieces of **Heathkit** Equipment with the intention of stripping and rebuilding them with new components where appropriate, but is lacking the manuals for: **SB100**; **SB301E**; **SB401E**. If anyone has these and can spare them to sell, lend or copy, he will offset all expenses. G3WCE, QTHR. Tel: 01692 538 794 or 01603 250 910.

● Kevin, F6HYA, is looking for information on converting a **Microwave Modules transverter, type 144-28S**, to independent receive and transmit paths. His has the optional receive connector unconnected. Circuit diagrams or sketches would be welcome. Expenses paid. E-mail: kevin.galligan@esa.net

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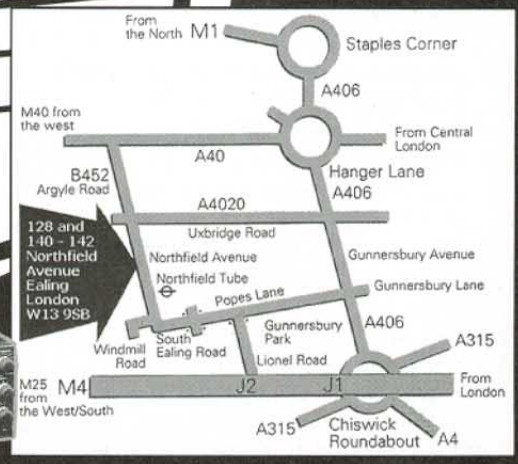

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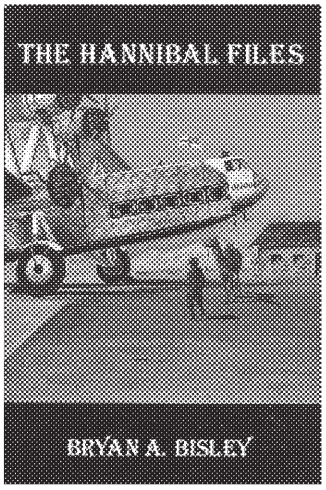
Book Review

THE HANNIBAL FILES
by Bryan A Bisley



THE HANNIBAL FILES is a 495-page adventure novel of political intrigue, espionage and international secrecy, with interwoven themes of amateur radio and aviation. The story starts in 1940, when an Imperial Airways airliner, the *Hannibal*, disappears without trace while on a flight from India to England. On board were VIPs and a King's Messenger diplomatic courier carrying secret files. The time shifts to 1960, when the wreckage of the *Hannibal* is discovered. The British government, still anxious to find the missing secret files, mounts a recovery operation involving the Royal Navy, the RAF, the SAS and civilian accident investigator Alec Perkins.

Our hero Alec is kidnapped while on an overnight stop in Iraq, but uses his amateur radio skills to make contact with the outside world to inform his family and employers that he is safe.

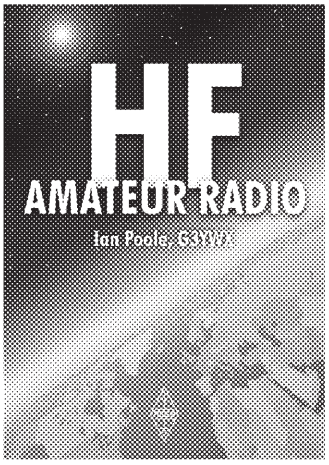
We won't give away any more of the story, except to say that what follows is a ripping yarn involving the establishment of a clandestine radio station, the BBC Monitoring Service at Caversham Park, and a nation fighting for statehood, with a bit of amateur radio and, yes, even sex thrown in for good measure.

The author, Bryan Bisley, G3OCA and now VE7FH in British Columbia, Canada, writes from personal experience. He served with British European Airways and several BOAC Associate Companies in the Persian Gulf area, Lebanon, and Ireland during the 1950s and 1960s. *The Hannibal Files* is Bryan's first novel, although he has written many technical books and short stories. He is now working on two sequels, *The Beirut Files* and *The Dublin Files*. More details about the book can be found on the Internet at www.hannibalfiles.com

The Hannibal Files will be of interest to readers concerned with international affairs and aviation, as well as amateur radio enthusiasts world-wide. It would be an ideal Christmas present for any radio amateur or listener who enjoys adventure or spy stories.

The Hannibal Files
Published by Innisfree Publishing
Available from RSGB Sales
Members' price £10.19
Non-members' price £11.99

HF AMATEUR RADIO
by Ian Poole, G3YWX



THE HF, or short-wave, bands are one of the most interesting areas of amateur radio. Stations from all around the globe can be heard and many interesting contacts can be made. Operating on these frequencies requires many skills if the most is to be made of the available time.

HF Amateur Radio deals with the radio spectrum from 1.8 to 30MHz. In its 128 pages, this book takes the reader through setting up an efficient amateur radio station, which equipment to choose, installation, and the best antenna for your location. It is packed full of information including which frequencies to use, how to operate on the bands, and the advantages of each mode of transmission. *HF Amateur Radio* will benefit those new to amateur radio, anyone contemplating exploring the world below 30MHz, and just about any licensed amateur or short-wave listener who feels he could get more out of his station.

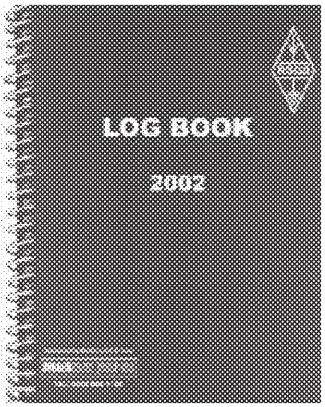
The advent of the Full Class A/B licence a few months ago brought about a welcome influx of UK amateurs on the HF bands. Now, with the reduction to 5WPM of the Morse code speed for a Full Class A licence, it is anticipated that there will be many more taking their first steps on the HF bands. *HF Amateur Radio* is ideal for the experienced Class B amateur who now wishes to explore the HF bands.

It will also be ideal for potential Foundation licensees, who will be able to learn about what to expect on HF even before they take their course. Amateur Radio is all about self-training and, with this book at their side, Foundation licensees will be able to gain much knowledge which will stand them in good stead when they go on to study for the Intermediate or Full licence.

Ian Poole is a well-known author with the rare ability to convey what can be, to beginners, a complex subject in an easy-to-understand style, but without over-simplifying the subject matter or talking down to his readers. Highly recommended for any beginner, or for experienced amateurs who wish to learn more about the HF bands.

HF Amateur Radio
Members' price £11.89
Non-members' price £13.99.

RSGB DELUXE LOG BOOK & DIARY 2002



IN ADDITION TO the ever-popular 'value' log book, the RSGB has just launched a new product: the *Deluxe Log Book and 2002 Diary*. The new book is the same price as the existing version, whilst incorporating lots of extra material in a spitral 'lay-flat' format.

So what's in this new publication? A prefix list greets the owner on first opening, with the familiar European locator map, together with details of how to work out your locator from a knowledge of your geographical longitude and latitude.

Details of the QSL Bureau and the current band plans follow, with the GB2RS broadcast schedule and a handy 2002 diary. Rallies, events and contests for the coming year are not forgotten.

The log book pages then follow as a set of facing pages containing the well-known headings, with space for 25 contacts per opening. The facing pages have a total size of 420mm wide by 255mm high, giving plenty of room for the entry of each contact.

There are some pages free for notes or doodles, whichever is your fancy, at the end.

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- Built-in CTCSS sub tones

NEVADA PRICE £235.95

Alinco DR-610E

- 2m/70cms twinbander
- 50/35W VHF/UHF + mid/low power
- Built-in duplexer
- Extended RX possible (118-999 with gaps)
- AM for Airband receive

NEVADA PRICE £399.95

Alinco DR-605E

- 2m/70cms twinbander
- 50/5 Watts 2mtrs
- 100 memory channels
- 35/5 watts 70cms
- 138-173MHz RX possible
- 9600 bps I/O jack fitted

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Alinco DJV5E

- New dual band transceiver
- 5W/1W/0.5W output
- Super wide RX (76-999MHz)
- Includes wide FM mode
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LARGE RANGE OF ACCESSORIES AVAILABLE
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- 40 memory ch+1 call ch

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- Up to 5W VHF
- Wide RX possible (typical 135-173MHz)
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- 40 memory ch+1 call ch

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NOW WITH PSK 31 INTERFACE
- Eliminate heterodynes
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- Brickwall PSK31 filter
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- Binaural CW
- CW spotlight
- Enhanced noise reduction

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YAESU

Yaesu FT-1500M

NEVADA SPECIAL! save £69!
50W Heavy duty 2 metre FM mobile

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NEW!
- 6 mtr Transverter for Yaesu FT1000MP Mk V
- 200W output
- RX pre-amps
- Fully interfaces with Mk V and Quadra amplifier

NEVADA PRICE £799

Yaesu FT-847

All mode DSP Transceiver 70cm - Top Band

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NEW! IN STOCK!
- HF/6/2/70 cms
- Transportable with wide RX
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YAESU FT-90

Micro-sized TWINBANDER WIDE RX inc AM AIRBAND

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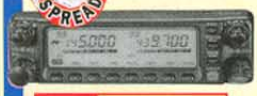
YAESU FT-8100

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YAESU VX-5R

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- Wide Band Receiver
- Ultra Rugged Construction

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Reduces noise from power lines, TVs etc - up to 40dB. Wipes out S9 line noise.
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Icoms latest SUPER rig

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special offer bulk purchase ~~£2395~~ £1895

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- All mode 6mtr/2mtr
- 100 Watts
- DSP
- Built in ATU

NEVADA PRICE ~~£1699~~ £1299

Icom IC-706 Mk IIG

- 100W HF/6 + 50W
- 2M + 20W 70cms

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Icom 910H

1.2GHz & DSP OPTIONAL
- VHF/UHF All mode TX
- Suitable for DX'ing or Satellite
- 100W 2mtr/ 75W 70cm
- Full Duplex

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Icom 718

- 100W HF Transceiver
- Built in keyer
- General coverage RX

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IN STOCK! READY TO SHIP!
- 0.03 -60MHz
- Twin PBT built-in
- PC control capability
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PRICE MATCH

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PRICE MATCH

IN STOCK! Covering 100kHz - 2GHz & lots of features inc computer control.

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- 1200 BPS, VHF/UHF packet
- Host mode
- Advanced command set
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- Includes PK-TERM 99 demo software

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KENWOOD TS-2000

DC to Daylight! HF to 1200MHz*

IN STOCK!

*1200MHz optional

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100W HF radio with a superb DSP RX.

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KENWOOD TM-D700E

Dual band DATA mobile radio

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KENWOOD THD7E

Dual Band Handie
- Up to 6W Output
- Built in TNC!

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KENWOOD TM-G707E

- Twin band mobile
- 50/35W RF output
- Large display
- CTCSS ENC/DEC
- 12009/9600 pkt

NEVADA PRICE £299

President LINCOLN

High class 21W 10mtr Multimode Transceiver
- 28 - 30MHz
- AM/FM/SSB

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PALSTAR PS-50

50 Amp heavy duty supply with meters. 13.8V DC 40/50 Amp

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PALSTAR PS-30

- 3-15V adjustable
- 25/30A max
- Voltage + current meters
- 10mW RMS noise and ripple

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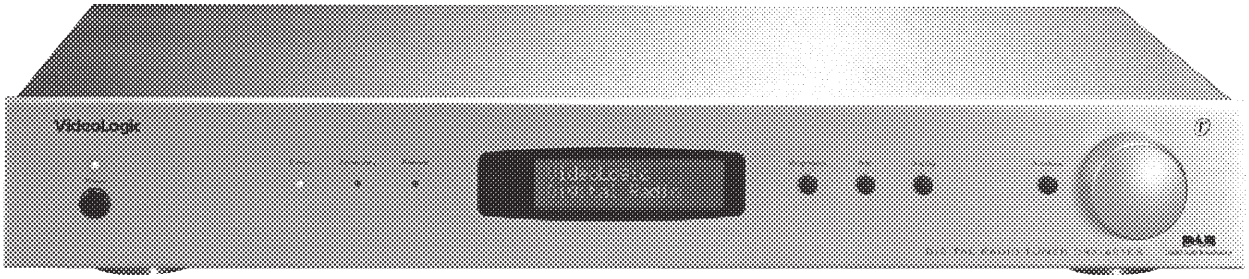
- Post them to us, enclosing your name & address & we will (subject to status) send your goods immediately.

WIN! A DRX-601ES

Digital Radio Tuner worth £349, courtesy of VideoLogic



THE NEW VideoLogic DRX-601ES is a high-sensitivity RF tuner that provides high-performance, affordable access to digital audio broadcast (DAB) transmissions. A revolution in broadcast audio quality, Digital Radio provides superb quality sound, eliminating the hiss, crackle and fade associated with analogue radio broadcasts. The DRX-601ES uses the latest technology to receive digital broadcasts from the BBC, national and local commercial radio, and unique digital-only stations with near-perfect quality. The DRX-601ES has a silver anodised aluminium front panel, silver finish casework and controls, blue LED indicators and an easy to read blue / white display (the DRX-601E with black case is also available at a slightly cheaper price).

You'll have seen the review in *RadCom* last month (page 49) in which we tried out a DRX-601ES. The sound quality has to be heard to be believed! Now, thanks to manufacturers VideoLogic, a new DRX-601ES could be yours in our free competition. Take a look at the three questions below. Hint: if you're unsure of any of the answers, re-reading last month's review will help! Good luck.

COMPETITION TIME

Look at the three questions below. Write your answers on **a postcard or the back of a sealed envelope** (no letters accepted) and send them to: VideoLogic Digital Radio Competition, RSGB HQ, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE. Don't forget to include your own name and address! The closing date is first post on **Wednesday 2 January 2002** and the winner will be announced in the February 2002 *RadCom*.

Questions

1) How many Digital Radio stations broadcast in the UK?	**a) About 20**	**b) About 40**	**c) Over 60**
2) What is the frequency range of the UK Digital Radio band?	**a) 88 - 108MHz**	**b) 174 - 240MHz**	**c) 24.000 - 24.250GHz**
3) What is the UK recommended retail price of the DRX-601ES?	**a) £349**	**b) £699**	**c) £799**

Only one entry per member (multiple entries will be disqualified). No other correspondence can be entered into. All entries will become the property of the RSGB; please state on your entry if you do not wish to receive further promotional material or offers from the RSGB. Employees of the RSGB or of VideoLogic are not eligible to enter. The winner will be the first ***correct*** *entry drawn at random. The draw will take place on 2 January 2002.*

Regular Feature

in practice

IAN WHITE, G3SEK

52, Abingdon Road, Drayton, Abingdon, OX14 4HP
Web site: www.ifwtech.com/g3sek
E-mail: g3sek@ifwtech.com

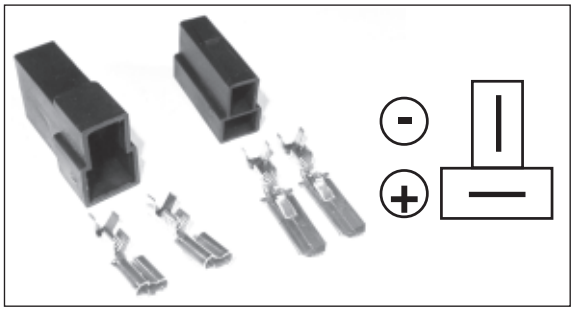


Fig 2: Two-pole 'AMP Faston' connector suitable for 12V DC. The widely-used wiring standard is: socket to PSU; plug to equipment; polarity as shown above.

DC CONNECTORS

RETURNING TO the item in May 2001, here are some updates.

POWERPOLE CONNECTORS have attracted a lot of interest as a high-quality solution for '12V' DC interconnections. A useful web page by PowerWerx (USA) gives comprehensive data and assembly details. (In the UK, Powerpole connectors are available from Farnell or RS, as detailed in the May column.)

More importantly, PowerWerx has recommended a wiring standard for polarity. This can be very useful for clubs and contest groups that have to 'mix and match' members' equipment in the field. Since we in the UK are only just starting to use these connectors, let's standardise now on **Fig 1**. Note which way up the connector is, with the contacts on the lower side. Note also that Powerpole connectors have no different 'male' and 'female' versions. To ensure they will be polarised correctly, **all Powerpole connectors must be wired the same way**, regardless of whether they will be used as 'outputs' or 'inputs'.

Fred Sammon, GI4PCY, has also recommended the connectors shown in **Fig 2**. These are based on standard 0.25in blade connectors, with a barb to lock them into the plastic shells. Based on the AMP 'Fastin-Faston' range, these connectors are widely available, eg from Barenco (01949 860 607 and at large rallies), Farnell, RS/Electromail and probably your local automotive electrical suppliers. The 0.25in blade will carry 20A comfortably, and these connectors are significantly cheaper than the Powerpole type. They have a very positive lock, with the friction of both blades and also a barb on the plastic shell, but this means they will definitely require two hands for disconnection. Also the blades are not designed for repeated large numbers of disconnections - in time, you may find that the socket parts need to be crimped a little tighter. This is in fact the 'Raynet power connector', first noticed on Storno PMR equipment, and the wiring and polarity standard is shown in Fig 2. (Thanks to everyone who provided information and multiple checks on the wiring standard.)

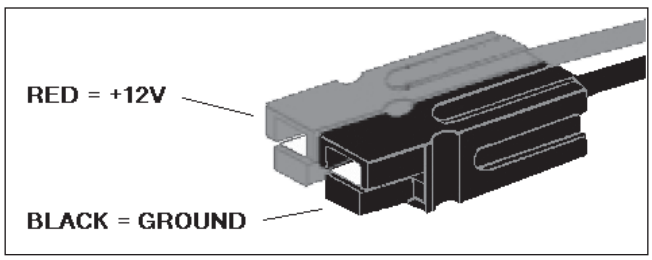


Fig 1: Recommended polarity for Powerpole connectors (from PowerWerx web site).

J-POLES AND 'SLIM JIMS'

DOES THE FOLDING-over of an end-fed vertical half-wave antenna (as in G2BCX's 'Slim Jim') make much difference to the radiation pattern?

THE POPULAR 'Slim Jim' is a variant of the 'J-pole' antenna, so perhaps I'd better describe that first. The whole purpose of these antennas is to make an omnidirectional vertical dipole that can be perched at the top of a mast and fed from the bottom, rather than at the centre. End-feeding implies a high impedance, possibly several kilohms, and therefore something is needed to provide a match to 50Ω coax. The J-pole (**Fig 3**) does this by inserting a quarter-wave section of parallel line at the base. The key property of a quarter-wave section of transmission line is that high impedance at one end is transformed to low impedance at the other, so there is a convenient low-impedance feedpoint somewhere at the bottom end (see later).

We can label the three 'wires' in a J-pole as W1 and W2, comprising the quarter-wave stub, and W3 which is the main half-wave radiator (Fig 3). Old-timers will also recognise the J-pole as a classic 'Zeppelin' antenna. Amateurs have usually used the 'Zepp' as a convenient way of end-feeding a horizontal half-wave (W3) with the feeder W1/W2 predominantly vertical. However, the original configuration was more like the straightened-out J-pole version, because it was devised to be trailed behind the Zeppelin airships. The feed system was intended to keep high RF voltages well away from the hydrogen balloon... for rather obvious reasons.

There is an old controversy about what happens to the RF current distributions in W1 and in W2. Some claim that they are equal and opposite, so that their far-field radiation effectively cancels out - but this is not completely true. Although the current at the open end of W2 is zero (it has to be, because there's no further conductor to carry the electrons), the current at the junction between W1 and W3 in the opposite leg of the stub is *not* zero. Therefore the current distributions in W1 and W2 are not quite the same, and the stub *must* radiate a little.

The underlying reason for this controversy is the mistaken impression that the RF current at the junction between W1 and W2 passes through zero - which it does not. This impression has probably been created by countless drawings of current distributions on wires (some of them mine) which show the current profile crossing through the line of the wire. What actually changes at his transition point is the *phase* of the current, but that doesn't also imply zero current. If anyone still

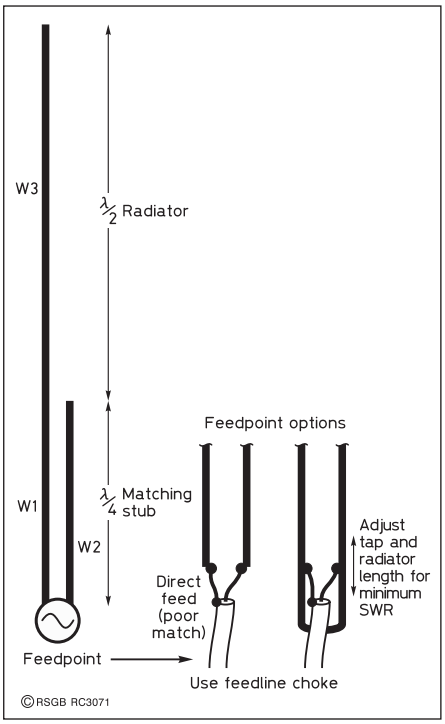


Fig 3: The basic J-pole antenna. Feed with coax through a feedline choke, and insulate from mast.

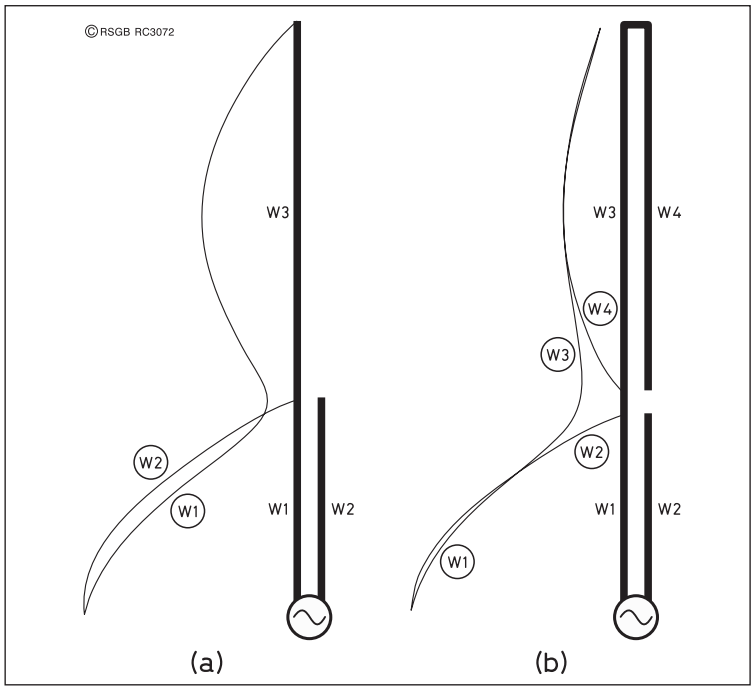


Fig 4: Current distributions on (a) the J-pole, (b) the Slim Jim variant. The difference between the currents on W1 and W2 determines how much the matching stub will radiate.

doesn't believe me, I challenge them (a) to find that zero-current location with a current probe, and (b) to cut their antenna at that location because, according to their theory, it shouldn't make any difference! Let me repeat: the only place where the RF current is zero is at an open end.

Fig 4(a) shows the current distributions on a straight J-pole as predicted by computer modelling [1], and these agree with the explanation above. The 'zero' axis is the line W1-W3, and these diagrams show only amplitude, not phase. The currents at the top ends of W2 and W3 go to zero, as they must, but clearly the current at the W2 - W3 junction opposite the top end of W2 is far from zero. Also the currents in W1 and W2 are not equal at any point along their lengths, the current in W2 being slightly larger, so the stub does radiate. This has the effect of tilting the radiation pattern slightly upwards, by about 7° for an antenna in free space, though the field strength at the horizon (0°) is only an insignificant 0.1dB lower.

The 'Slim Jim' (**Fig 4(b)**) is a development of the J-pole by the late Fred Judd, G2BCX, and was intended to overcome those two problems: radiation from the stub and upward tilting of the radiation pattern. This was done by folding over the half-wave radiator, in effect adding a fourth wire, W4. Now it is true that adding W4 greatly improves the cancellation of currents along most of W1 and W2, as Fig 4(b) shows. But it is *not true* that this removes the tilt in the radiation pattern - in fact it appears to make it worse. According to the computer model [1], the upward tilt increases to 12° and the shortfall at 0° increases to about 0.4dB. Also the radiation pattern is a little less circular, because the main radiating elements W3 and W4 are slightly separated in space and carry slightly different currents. Finally there is no significant difference in gain at the angle of maximum radiation - you couldn't expect there to be.

In fairness to G2BCX, he carried out his work before the insights of computer modelling were available. Probing with a field strength meter would have demonstrated the improved cancellation of W1 and W2 along most of their lengths, but even G2BCX's highly advanced pattern-plotting range with its 'radar' CRT display would not have detected the relatively small effect on the gain and vertical pattern. One wonders what those exceptional pioneers could have achieved with the techniques and tools we have now...

HOW SHOULD I feed a J-pole or a Slim Jim?

THERE ARE BASICALLY two ways to feed members of the J-pole family, either directly at the bottom centre, or by tapping a little way up the stub (Fig 3). Direct feed is at an impedance of 20-25Ω, which is inconvenient for 50Ω coax, but the impedance rises as you move up the stub, so it's easy to find a location where the impedance is 50Ω. One side of the coax goes to W1, and the other side to W2 directly opposite.

What you must *not* do is to run the coax straight away down the mast. Otherwise the outer of the coax will radiate and become an unwanted part of your antenna - and then you'll *really* have a tilted radiation pattern! To avoid this, coil the coax up to form an RF choke of a few turns, a few centimetres in diameter, quite close to the feedpoint. Then it will not matter whether the inner or outer of the coax is connected to W1 (which nicely short-circuits another long-running J-pole/SJ controversy). Likewise you must not directly connect the bottom of your antenna to the mast, or else the mast too will become an unwanted part of your antenna system. Use some kind of insulator between the antenna and the mast clamp, eg a length of plastic tubing or even several layers of PVC tape.

So what am I saying, overall? I hesitate to be dogmatic about fractions of decibels, purely on the basis of computer modelling, but both the models and technical common sense show that the Slim Jim is not the major advance over the J-pole that some fervent followers have claimed. The normal J-pole is simpler, lighter and at least as good - though you'd never detect the difference on the air. The main improvements in performance are to be had by correctly isolating the antenna from the coax and the mast.

COMPONENT SUPPLIERS

PLEASE NOTE that Maplin Electronics has now moved, and has changed both its mailing address and phone numbers: Maplin Electronics, Freepost NEA9433, Barnsley, S73 0BR. Orders on 0870 264 6000.

The 'Component Suppliers' page on the 'In Practice' web site now lists a range of UK suppliers for tools, materials and other specialist items. There is also a link to the ARRL database of US suppliers. Please take a look, and let me know about any changes in contact details, or anyone else you think I should add.

TAPE TIP

FROM K0FF via the Internet:

WHEN TAPING ROLLS of coax or other cable for storage, an easy way to keep the tape 'goo' off the cable is to make the first wrap or two with the sticky side out. Then twist it around with the sticky side down, and finish wrapping. ♦

REFERENCE

[1] The EZNEC models used for both the J-pole and the Slim Jim are on the 'In Practice' web site.

WWW.

PowerWerx
www.powerwerx.com/powerpoles.html
'In Practice' web site
www.ifwtech.com/g3sek

If you have new questions, or any comments to add to this month's column, I'd be very pleased to hear from you by mail or e-mail. Please remember that I can only answer questions through this column, so they need to be on topics of general interest.

Technical Tip

Constant Temperature = Stable Frequency

*By R G (Dan) Dancy, G3JRD **

USING AN OLD FT-101 as the main station transceiver, I found that receiving the satellite pictures on the 3.786MHz net at 8am every morning was requiring too much attention. Breakfast is an important preoccupation at such an early hour (I *am* retired).

My shack is a brick-built edifice in the garden, and is not economic to heat all the time. The net result is that, by 8am on a winter's morning, the temperature inside the shack, and that of the equipment, is not very conducive to continuous compensation of the frequency drift as the transceiver warms up.

Having sat and cogitated about it for a few milliseconds (my attention span is not very long), it became clear that some form of local heating might be possible. So, within a couple of days, a thermistor was placed inside the FT-101, fixed centrally just above the lower metal plate of the case, led through an existing hole at the rear, and wired into a simple home-brew temperature control unit.

A heating pad was made, which consisted of ten 500Ω, 5W ceramic resistors, parallel-wired to present an effective resistance of 50Ω. These were dragged out of one of my innumerable junk boxes, and were probably acquired in Lisle Street in the 1950s! The resistors were spaced an inch or so apart and set in car-exhaust repair paste (which is an effective electrical insulator), baking hard after a short time.

This gives good temperature distribution over the whole area of the heating pad, which is about 3in x 4in x $^{3}/_{8}$in thick (7.5 x10 x 1cm).

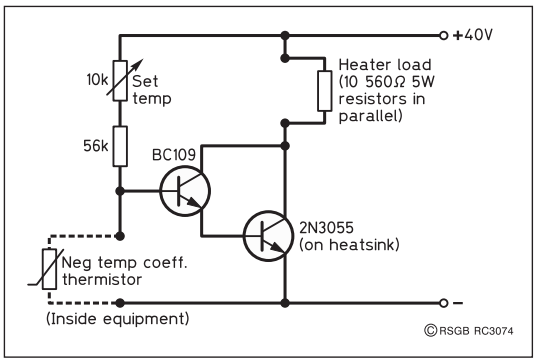
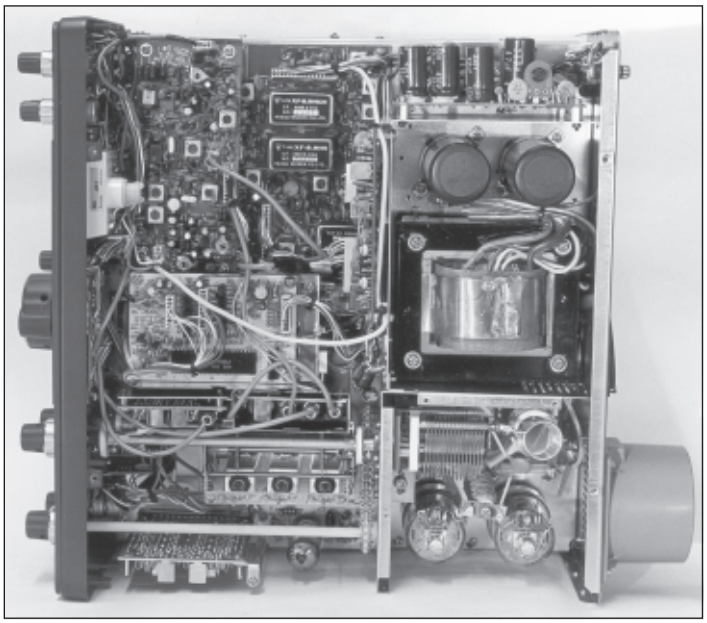


Fig 1: Circuit diagram of the temperature controller and heating pad.



Sitting under the centre of the FT-101 on a flat aluminium tray, slightly wrinkled to reduce heat transfer to the bench, there is a gap of about $^{1}/_{2}$in (12mm) between the top of the pad and the underside of the transceiver.

This gives a satisfactory spread of heat into the case and, once set up, maintains a steady temperature of about 26°C inside.

I make no claims that the simple temperature-control circuit of **Fig 1** is a proportional controller, but it works well, which is what matters. An inexpensive digital temperature indicator was purchased, and the sensor fixed inside the transceiver, with the small display unit mounted on top of the set, so that the interior temperature could be seen at any time.

When the temperature inside the set is low, the full power of 21W is dissipated in the heating pad. When the shack temperature is about 18°C, the power drops to about 8W, and continues to drop as the temperature rises towards the required value.

Drift when switching on is now very close to zero on any band, and the heater is left on all the time. As a bonus, the stable temperature of about 26°C no doubt helps to prevent condensation inside the transceiver, and should prolong its life. ♦

** 1 Ladds Corner, Little Twydall, Gillingham, Kent ME7 2UW.*

Radio Society of Great Britain

Annual Report 2000 - 2001

THIS HAS BEEN a very busy year for the Society. Following the AGM approval of the new governance structure, much work has been undertaken to set up the Board processes, and to bring the new Regional organisation into being. I am very grateful to the many people who have worked tirelessly to support these changes and I am much encouraged by the positive feedback we are getting about the higher profile of the Society at events around the country.

The last year also saw the conclusion of the work with the RA on the new structure of amateur licensing in the UK. Whilst the announcement of the new structure was after the end of the Society year, I am pleased to report that there has been a great deal of interest and support for the changes which have been announced. Of course, some would have liked to have seen more now, but given the international constraints which the UK is bound to honour, I believe the Society has achieved a sensible step towards the structure which we all hope will come into effect in a couple of years, after WRC 2003. With the newly announced structure and the planned high profile promotion of amateur radio to non-amateur audiences, we have the opportunity to make a positive impact on the health of amateur radio in the UK.

On a more cautious note, the work being done by the Society to try to influence international standards for emissions from broadband data systems over unscreened lines (eg PLT and xDSL) continues. This is a difficult area as there are huge commercial interests involved. The Society, working with the other users of the HF spectrum in the UK, is arguing for standards which will allow HF communications systems to continue to operate as intended. It is not clear, at the time of writing, whether we shall be successful.

As I come to the end of my two years as President, I would like to express my thanks to the many people who have supported the Society's work over that time, both on the full time staff and amongst the many volunteers. I hope that the changes we have made over this period both to the way the Society operates and to the structure of licensing, have helped secure the future health of our hobby.

Finally, I wish the Society, and its new President, Bob Whelan, every success for the future.

Don Beattie, G3BJ
2001 President

WELCOME TO THE 2000 / 01 Annual Report and Accounts. Once again the report gives you a full and interesting insight into the work of the Society.

Reading through the committee reports I'm amazed at the level of diversity of the work undertaken by the Society's volunteers in any one year. We are again indebted to them for their continued commitment.

Commercially we have held our own in what is becoming an extremely challenging arena to work in. Membership levels throughout the year have been relatively stable.

This has been a busy year but there is still much more to do and many challenges to face. The threats to amateur radio are numerous and varied and the next 12 months will see our minds focussed on preparations for the IARU Region 1 Conference in September 2002 and WRC2003, at which many of the issues threatening the hobby will be debated.

Closer to home we will be undertaking a pro-active programme of promotions designed to take amateur radio to a wider audience. GB4FUN, our newly-commissioned demonstration vehicle will have a key role to play in this.

The strength of the Society is its members, this report illustrates to you the work we undertake on your behalf. Thank you for your support and enjoy the read!

Peter Kirby, G0TWW
General Manager

RSGB Committees' and Officers' Reports for the Year ending June 2001

Amateur Radio Direction Finding (ARDF)

AMATEUR RADIO Direction Finding continued to enjoy increasing popularity during the past year. Seven Qualifying Events for participation in the RSGB 160m National Final were organised by the clubs in South Manchester, Salisbury, Echelford, Banbury, Colchester / Chelmsford, Mid-Thames and Torbay. An eighth event was organised by the Committee Chairman in the Stratford-upon-Avon area. The 16 qualifiers plus the 1999 victor assembled in Salcey Forest to take part in the National Final, which was ably organised by George Whenham.

On 2m, two weekend events were held by the Basingstoke Amateur Radio Club in the New Forest. These events are not only competitive but great fun as well.

Many 160m and 2m events were organised by clubs around the country and at least two (the Mid-Thames DF Club and the Arden Forest DF Group) are dedicated to direction finding.

Following the outbreak of foot and mouth disease at the end of January all topband and many 2m contests were cancelled. This situation remains at the time of this report but it is hoped to run a National Final in September.

On the European ARDF scene, teams have been entered in German and Belgian events and in the European Championships to be held in France.

Presentations on direction finding were given to several clubs during the year. It is hoped that these will encourage more members to participate in this healthy, outdoor branch of amateur radio.

Amateur Radio Observation Service (AROS)

DURING THE REPORTING period 25 cases have been opened and all but two have been successfully closed. A sample of the types of complaint is as follows:

"Repeater abuse x 3 – passed to RMC. Jamming, CB on 10m, piracy x 2. 2E1 on HF, Anon x 2, QRM on Church PAs, abuse on 70cm, language, unlicensed ops not supervised, callsign announcements, Retransmission of police broadcast on 2m."

Sometimes a complaint is received but when asked for further information about 25% do not reply. The AROS Coordinator has written to a number of those accused of infringements, pointing out BR68 infringement clauses and likely consequences. So far *all* these have had the desired effect. No case has needed to be escalated to the RA, although the AROS Coordinator has received assurance from the RA Enforcement Policy Unit that any such cases will be treated seriously. The relationship of AROS with the RA is very good and two official review meetings have been conducted, plus three unofficial meetings. At present AROS is assisting the RA with one of their cases.

A series of AROS club talks is now under way: 25 requests have been received so far. The feedback received is that the AROS club visits have been a positive step by the Society.

Data Communications

DURING THE YEAR 2000 - 2001 the Data Communications Committee has strengthened its working relationships with other committees of the Society. In particular, much has been accomplished due to close liaison with the HF, VHF, Licensing Advisory and Repeater Management committees.

A major achievement has been the implementation of an on-line application process to facilitate the issue of Notices of Variation (NoVs) to allow Internet gateway operations. To date, 137 applications for these NoVs have been processed, and due to close co-operation with the Radiocommunications Agency the average time from application to issue has been 10 days - a remarkable achievement.

Work is continuing with the development of high-speed microwave linking equipment, and it is envisaged that the first kits of parts to produce 64kbps full-duplex systems will become available around December 2001. Further development should see increases in data rates - possibly 384 kbps or faster. It is envisaged that these systems may be used to carry digital voice traffic on a point-to-point basis, and experiments using PC-based 'conferencing' software across RF links are progressing.

An experiment allowing packet radio mailboxes to carry limited scope personal advertisements has been agreed with the RA and is progressing without any problems being reported to date. It is envisaged that with a satisfactory outcome the RA may allow this scheme to be expanded to other modes of operation.

Work has begun on reorganising the committee's regional structure to be more closely aligned with that of the Society.

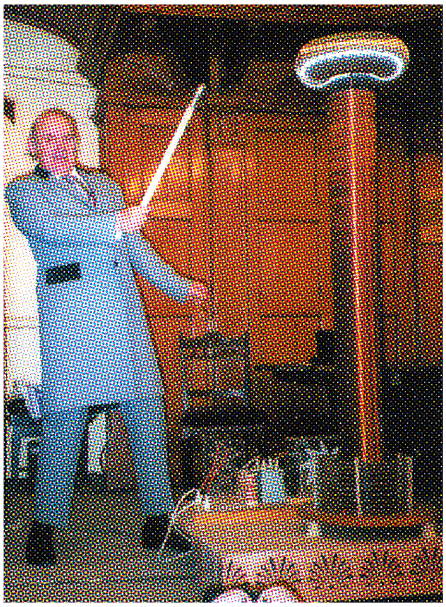
Emergency Radio

THE MAIN PERIOD of activity for most emergency communications groups throughout the UK took place during the severe flooding during the autumn and winter of 2000 - 2001. Local government Emergency Planning Officers called out volunteer organisations to assist with providing shelter and sustenance for people who had to be evacuated for varying periods depending on local flood levels and subsequent damage. Raynet teams were called out but many more put on standby.

The other aspect of Raynet groups involvement is to provide communications to a variety of charity events including marathons, long-distant cycle rides etc. Raynet members often crew volunteer ambulances and check points, providing communications over difficult terrain.

This year the outbreak of foot and mouth disease and the limiting of countryside pursuits has caused the cancellation or rescheduling of events which led to a limit in cover by Raynet teams.

All charities have suffered financially and this includes some Raynet groups that depend on donations to cover running costs. Membership is falling as long-time members get older and sometimes less able. Any 'public spirited' member not already a member of Raynet who would like to join in, please contact Thomas J Reilly, G0NSY, c/o RSGB HQ.



The RSGB supported National Science Week in March 2001. Here, Dr Ken Smith, G3JIX, in Victorian garb, lights a fluorescent tube from a Tesla coil, to the delight of a large and enthusiastic young audience at Dover.

EMC

LAST YEAR'S REPORT outlined changes which were being made to the committee structure to reflect the wider range of activities with which we are now involved. This is now in full operation. Charles, G4UJW, the EMC Membership Services Administrator, and the team of Co-ordinators deal with almost all queries from members, consulting with other committee members only when there is some particular point to be resolved. This has enabled the other members of the committee to concentrate on other high level activities.

Requests for assistance from members have been a mixture of breakthrough and interference to reception. There has been a disturbing increase in breakthrough cases where bad feeling is the main issue. Some members still appear to believe that they have a right to operate with 400 watts output, no matter what the circumstances, leading to inevitable difficulties.

Members of the Committee are actively involved in fighting the perceived threats to amateur radio from Powerline Telecommunications and xDSL systems. To this end, members of the Committee sit on two BSI Committees and the OFTEL PNO-IG Working Group. They also work closely with the RA on the DSL/PLT Technical Working Group and at the European level with the CEPT/ERC SE35 Working Group. Committee members are also involved in the RAKE Committee, dealing with issues relating to the use of 433MHz by Low Power Devices. G4JKS presented a paper on PLT and its effects on amateur radio at the PLT Workshop, hosted by the Powerline Telecommunications Forum. The EMC Committee continues to provide input to the IARU Region 1 EUROCOM Committee and the EMC Working Group.

A huge amount of work goes on behind the scenes on EMC work and thanks are passed to members of the Committee and co-ordinators for their work. In particular, the work of Dave Lauder, G0SNO, in producing the 'EMC' column for *RadCom* (together with all the preparatory research work he carries out), is gratefully acknowledged.

GB2RS

THE GB2RS NEWS has been broadcast every Sunday, with the exception of the Christmas / New Year holiday period. The news has also been published on the Internet each week, being available to RSGB members on Wednesdays and to the general public on Fridays. This Internet version includes links to amplify some of the news stories and 'advertisements' for other RSGB services and products. There are some 145 officially-appointed newsreaders - who must be paid-up members of the Society - who take it in turns each Sunday to read the news over the air on both a National and a Regional basis. The news is broadcast in voice on eight bands (160, 80, 40, 10, 6, 4 and 2 metres plus 70cm - including via some repeaters). It is also broadcast using ATV on 23cm in the Southampton area.

Of the 145 newsreaders, about 65% have now indicated that they can take the news script by direct e-mail. It is planned to introduce this service to them during 2002. The remaining newsreaders will continue to receive their scripts by post.

GB2RS may be likened to a popular weekly newspaper, and we are also aware of its value as a centre of operating activity during after-news nets.

HF

A PAPER ON 5MHz issues was prepared and presented to the RA Committee responsible for HF matters (UK Project Team 40). This was carried out to establish the feelings of other UK HF users as to the feasibility of a domestic 5MHz amateur allocation. The paper was greeted with interest and the primary user of the block of frequencies in question agreed to evaluate the proposals made in the paper. This feedback is awaited with interest.

The subject of 7MHz 're-alignment' has finally made the agenda of a World Radio Conference. The next Conference is WRC2003 and is scheduled for Venezuela in early 2003. The stated aim of the IARU is an eventual exclusive 300kHz Amateur Service allocation in the region of 7MHz. Fighting

for a similar increase in frequencies are broadcasting interests who maintain added frequencies are necessary for the introduction of HF digital sound broadcasting. The Society has been working with the RA on this subject for the past four years and is represented on the UK CEPT Project Team 40 by the HF Manager, who in turn is part of the UK delegation to the International PT40. A paper from the Society provides the greater part of the UK proposal to CEPT.

Informal discussions are now also taking place between European national societies to establish the interest in obtaining frequencies around 500kHz. Between the Navtex channels on 490 and 518kHz there is little or no monitored activity and it is felt this could be put to good use by the Amateur Radio service.

On 73kHz and 136kHz the LF Experimenters Trophy, kindly sponsored by Nevada Communications, and known as the Nevada Cup, was awarded to David Bowman, G0MRF. This Award is presented annually for outstanding achievements on the LF bands. The LF Transatlantic Challenge trophy, jointly sponsored by the RSGB, DARC and AMRAD, was awarded to John Currie, VE1ZJ, for logging Dave Bowman, G0MRF, on 136kHz. Additional trophies were awarded to Laurie Mayhead, G3AQC; Peter Dodd, G3LDO, and Larry Kayser, VA3LK, for two-way communication on 136kHz.

The HF and IOTA Convention held over the second weekend of October each year again proved to be a success and probably one of the best yet, providing valuable income to the RSGB HF DXpedition Fund. The fund, which is run at no cost to the Society, is supported by income from the raffle held at the Convention, donations and legacies.

HF Awards

THE YEAR IN REVIEW has seen an increase in the overall numbers of awards issued, with applications and enquiries arriving from all over the world. A total of 39 certificates, 14 endorsement stickers and four plaques were issued during the year. The most popular was the IARU Region 1 Award; 28 were issued. The Commonwealth Century Club (CCC) series and the DX Listeners Century Award for SWLs were also popular, with 12 and 9 certificates and endorsement stickers respectively being issued. In addition, 21 WAC award applications were verified and forwarded to IARU HQ, and nine applications by RSGB members for other overseas awards (not including DXCC) were checked.

G3TBK continued his pursuit of the Commonwealth Century Club award series by successfully claiming the first Class One WARC endorsement for his 5-band award.

The DXLCA Award continues to attract interest among the SWLs. This year Gim Dawans, ONL7681, from Belgium increased his top SWL score with a claim for 325 countries.

Award checking was carried out during the HF Convention in October and the VHF Convention in March.

In addition to award claims, over 100 items of correspondence were dealt with in order to assist members with their award-hunting problems. The rules for all RSGB Awards were reviewed during the year and some minor revisions were made.

HF Contests

DESPITE FOOT AND MOUTH disease affecting portable contests in the UK it has, nevertheless, been a busy year for the HF Contests Committee (HFCC). Early in 2001 the committee faced the difficult decision of having to cancel NFD and the portable sections of the Low Power contest. However, in conjunction with the VHFCC and the RSGB Board the HFCC was able to draw up a code of practice to enable the resumption of portable contests in the UK from the beginning of September.

During the year Chris Burbanks, G3SJJ, handed over the role of IOTA Contest Manager to Don Field, G3XTT. It is hoped that Don will be able to bring a fresh approach to the future development of this flagship RSGB contest.

In the previous year the committee hoped to be able to improve the computer software tools used in the adjudication process. While some developments have taken place, progress has not been as fast as was initially hoped.

The number of Special Contest Callsigns issued at the end of July 2001 is 78 and there continues to be a small but steady flow of new applications for these calls.

With the World Radiosport Team Championships being held in Finland in July 2002, the HFCC chose Andy Cook, G4PIQ, to lead the UK team, accompanied by Fred Handscombe, G4BWP.

The future of RSGB HF contests is often discussed at meetings. While no decisions have yet been made, the possibility of removing some of the less well-supported events from the calendar is being considered.

The Society's Annual Meeting was held in the splendid surroundings of Harrogate Ladies' College in December 2000.

Intruder Watch

PROBLEMS EXPERIENCED over the last year have been largely due to spurious signals from broadcast stations and unmodulated carriers from a number of sources. Spurious transmissions from broadcast stations in Portugal, Italy, Romania and Uzbekistan have caused interference in the 7, 14, 18 and 21MHz bands. All were attended to fairly quickly when brought to the attention of their authorities by the RA Monitoring station at Baldock, following our reports.

Radio Taiwan started broadcasting on 7090kHz but was subjected to considerable protest from Intruder Watch organisations and official monitoring stations on a world-wide basis. This action lead to a rapid removal of the station. Complaints were made to the Iranian authorities regarding the occasional appearance of a broadcast station on 7100kHz. Observations on this frequency are continuing. The US AFRTS broadcast feeder from Sigonella in Sicily which appeared accidentally on 14000kHz was removed quickly when the error was pointed out to the appropriate authority.

Several unmodulated carriers have appeared occasionally around 14001kHz. They have been confirmed as originating from NATO installations at Keflavik in Iceland and Sigonella in Sicily. Now that the IW Co-ordinator has a working HF direction finding installation, identification of transmissions from these sites is usually straightforward. A report can be immediately phoned through to Baldock with an indication of where the carrier is likely to be coming from. This was complicated somewhat earlier this year when each site was transmitting a carrier. The transmissions are unintentional and are terminated whenever the appropriate person is informed at either site.

IOTA

THE LAST 12 months have again seen a period of remarkable growth for IOTA. The start of the period coincided with the publication in the *IOTA Directory 2000* of major changes in the programme. The addition of 58 new groups to the island list was to have a considerable effect on the bands - an explosion of activity as DXpeditioners tripped over each other in the rush to be the first to operate from the islands affected. 44 of the 58 groups saw activity during the period, including a surprising number of the more remote ones. IOTA DXpeditioning in general reached an unprecedented level - it was helped in the first six months by activity generated by the IOTA Millennium Activity Programme managed on behalf of the Committee by the Chiltern DX Club and by the increasingly popular IOTA Contest. Overall, 62 IOTA groups were activated for the first time during the year and this, together with repeat operations from seldom-activated groups, generated considerable interest for newcomers and old stalwarts alike. It is difficult to estimate the total number of operations put on primarily for IOTA during the year but it was probably in excess of 2000.

The year 2000 - 2001 has been yet another of remarkable growth for the RSGB's IOTA programme. Here IOTA Chairman Martin Atherton, G3ZAY, and IOTA Manager Roger Balister, G3KMA, man the IOTA stand at the 2000 RSGB International HF and IOTA Convention.

The IOTA Manager maintained a careful watch on all operations from the new groups, establishing and maintaining contact from the initial planning stage through to receipt of validation documentation confirming presence on the island. Including all operations from new or rare groups, and some others where paperwork was provided on a voluntary basis, 209 operations provided validation during the period under review, a 40% increase on the previous year. It is of note that almost without exception every expedition asked complied fully with the requirements as laid down, many in an exemplary fashion.

Much effort was devoted to implementation of other changes introduced in mid-2000. A procedure for the conversion of members' records to the new island listing was formulated for members and checkpoints, involving the submission for rechecking of cards from islands affected by the changes. The tighter requirements introduced for island QSL cards (only listed islands to count and the island names to be printed on cards) needed to be explained and well publicised.

Additional islands continue to be checked for rule compliance, a task carried out with the help of the IOTA Committee Chairman, Martin Atherton, G3ZAY. On acceptance they are listed on the IOTA Manager's web site prior to being incorporated in the next *IOTA Directory*. The web site also lists new IOTA reference numbers as they are issued as well as operations that have provided acceptable validation.

The Manager's job includes liaison with other national societies on IOTA matters, including licensing, with ARRL where there is a DXCC / IOTA joint interest, with national island award sponsors and with other similar bodies. Attendance this year at the Dayton and Friedrichshafen conventions has provided good opportunities for this.

While most of the award issuing side of IOTA is carried out by checkpoints operating direct to the HQ IOTA Co-ordinator, Sylvia Manco, queries relating to the acceptance of particular operations and cards have to be referred to the IOTA Manager for decision.

The Society owes a debt to a body of people many of which neither live in the UK nor are Society members, whose efforts, voluntarily given, have enabled IOTA to consolidate its position as a world-ranking activity programme, second only to DXCC.

Licensing Advisory

A CONSIDERABLE fraction of the committee workload involves defending our existing facilities and responding to consultative documents and proposed legislation, in addition to progressing new topics. A response was produced to the Treasury Review of Spectrum Management. Of the many items being progressed with the RA, some have come to fruition. Gazette notices announced the introduction of advertising on packet, Internet linking to amateur stations, access to 430 - 432MHz for Novice licensees and changes to emergency communications and greetings messages. Unfortunately, some restrictions were also imposed on unattended operation in a number of bands around certain locations. Discussions continued on future licence structures. We re-iterated to the RA our concerns regarding the inadequacy of standards for RF immunity for receivers and expressed concerns regarding proposals for the possible use of automotive radar in and around our allocation at 24GHz. Discussions were also held regarding allowing the use of amateur radio in connection with radio-controlled models and on high-altitude balloons.

Management Committee

THE MANAGEMENT COMMITTEE reviews with the Society Executive the financial and commercial operations of the Society. It is a single committee portfolio at the Board. It has met formally eight times this year.

The financial performance of the Society continues to be affected by the slow decline in the number of members and a general weakening of the market for amateur radio publications and equipment. Despite this, through tight management of income and expenditure, a very satisfactory financial result has been achieved again this financial year.

As was reported last year, a systematic programme to manage the membership numbers has been put in hand including a number of targeted mailings to particular groups

Above: Barry Maxwell of the RA hands over the keys of a former RA monitoring vehicle to RSGB General Manager Peter Kirby, G0TWW. The vehicle has now been converted to GB4FUN, a fully-equipped mobile amateur radio demonstration vehicle (right), thanks to Waters & Stanton plc. Peter Kirby is seen here with Peter Waters, G3OJV, with 'Zippy' Wheaton, G4ZPE, of W&S plc on the roof.

of members and a more personal approach direct from the President to members who, it is felt, may lapse their membership. There is evidence that these initiatives are having a positive effect and so they will be continued for the foreseeable future.

A decision was made to increase subscriptions from July 2001. This was necessary to meet the increasing costs of running the Society but also to help create some financial flexibility to permit further investment in amateur radio. At the same time it has been possible to include in the club subscription some basic insurance cover to give RSGB Affiliated Societies more protection. Clubs have welcomed this change.

Advertising income has met budget despite a very difficult market caused by a general downturn in advertising activity. As current advertising contracts expire the opportunity is being taken to review pricing to ensure that a better page rate is achieved.

Publications have been regularly reviewed during the year. There are several changes which may affect the Society's publications income. The new regional organisation is now the main way the Society sells publications at rallies and similar events. So far this is showing improved margins with volume of sale close to previous. Training of regional teams has been started and this has been successful; few problems were encountered. The pipeline of new publications has been a major concern of the Committee and a number of collaborations with other publishers have been negotiated. It is hoped that this will improve the variety and margins on books but involve the Society less in the origination process.

With the change in the editor of *RadCom* the committee discussed with the new editor the general policies the Society felt were appropriate. A review is planned for September.

The first half of the year was concerned with the successful revision of the Society's legal framework but this was referred to in last year's report. Following the donation by the Radiocommunications Agency of a suitable vehicle, the committee has developed a business case for its use to demonstrate amateur radio. The Committee was anxious that the vehicle be brought into use as quickly as possible once the longer term financial and resource aspects had been understood. A basic sponsorship arrangement has been agreed with Waters and Stanton. This has enabled trials to start this autumn at non-radio events and schools, for which we are very grateful.

Microwaves

THE COMMITTEE continued to monitor and respond to the commercial pressures on the microwave bands. Liaison is ongoing with the RA to resolve the constraints on unattended operation of beacons and repeaters in the 2.3 and 10GHz bands, and some measurements and trials are planned. Following the re-planning of all allocations above 71GHz that was agreed at WRC 2000, it is hoped to be able to make the new allocations available early in 2002, so that both the old and the new allocations will be available for a number of years to ease the changeover.

A committee stand was manned at the Bletchley VHF event and a lecture given by G3WDG on receiving AO-40. The usual programme of microwave round tables was held at Martlesham, RAL, Wimborne and Cheltenham. Some new certificate designs were considered for operating and contest awards, and the contest programme was reviewed although activity was limited this year by constraints placed on portable operation by the foot and mouth outbreak. Some technical developments discussed included receivers for AO-40 and the use of software for weak-signal detection. The G3BNL Memorial Trophy was awarded to G3FYX, G3PYB, G8ACE and G8BKE for their pioneering work on 76GHz. Discussions were held with HQ about publications; the *Microwave Newsletter*, under the able editorship of Peter Day, G3PHO, continues to flourish.

Morse Practice Service (GB2CW)

THE DAY-TO-DAY business of volunteers providing radio amateurs within the UK with scheduled broadcasts of Morse practice under the special callsign GB2CW has continued. The changes in the Morse test system have meant that many of these volunteers have amended their schedules to provide more 'QSO-style' practice at the slower speeds required for some of the tests, while continuing to provide adequate practice for those operators aiming at the 12WPM test.

In addition to practice being provided for those aiming to pass the Morse tests, weekly practice sessions have been maintained at speeds of 15, 18, 20, 22, 25, 27 and 30WPM each Thursday evening on 80 metres. These are specially designed for operators anxious to improve their Morse-reading capability and it is interesting to note that we continue to receive favourable weekly comment 'on air' from UK and foreign radio amateurs.

The Morse Practice Tape Service has now become firmly established and around 470 tailor-made Morse practice tapes have been supplied to members since September 1999. We are very grateful for the regular publicity for the service given in *RadCom*.

The loyal band of volunteers who give their time and talents week by week in providing the Morse practice broadcasts for the benefit of their fellow radio amateurs is thanked.

Three (successful) youngsters sit their RSGB Morse tests, in this case at the London Amateur Radio Show at Picketts Lock.

Morse Test Service

THE MORSE TEST Service examined 586 candidates during the year, compared with 753 the previous year. The pass rate increased slightly, to 85.5%. The number of absentees was 50% lower, with failures reducing by 30%. In addition to these tests, a further 120 were conducted at various 'Morse Camps'. These resulted in 92 passes at 5WPM and 16 at 12WPM, with a total of 12 failures (all at 5WPM). This gives a percentage pass of 90%, confirming once again that the Morse Camps are a great success.

The Morse Test Service continues to run smoothly, with few problems. Morse tests on demand remain popular, with county Morse testing teams attending more than 30 amateur radio rallies during the year.

DTI inspectors again continued with spot checks, arriving unannounced at scheduled test sessions and rallies. Again, there were no complaints submitted by the inspectors.

More than 30 county Morse test teams were active on the air with GB callsigns over the second weekend in May in order to mark the 15th anniversary of the Morse Test Service. This weekend is now a very popular annual event and is particularly enjoyed by QRP and Novice stations who appreciate the chance to work special event stations. Around 3000 CW contacts were made and a number claimed the special certificate available for making contacts with the Morse test team stations.

Novice Training

THIS REPORT COVERS the work of the Novice Training Team from July 2000 until July 2001. The review of all Novice instructors that was undertaken last year was successfully completed and the gaps in areas where there is a lack of Novice instructors are gradually being filled. There is still a large turnover of Novice instructors due to changes in employment etc and there has been a steady trickle of new instructors. The process of vetting potential instructors has been tidied up with all new instructors having to provide references to RSGB HQ. One suggestion to help encourage the growth in the hobby is to have a poster available so that clubs and individuals who run NRAE courses can have a professional advertising presence.

There was interest shown at several rallies and open days when a Novice construction stand was run (eg at Bletchley). A number of people expressed an interest in joining the hobby due to the fact that they could build equipment and learn on a practical basis rather than just theory. This may be something to pursue in the future at other major rallies.

A problem has been noted with some disabled prospective Novices not being able to join courses due to lack of facilities at the instructor's house and this has involved instructors having to try to make alternative arrangements.

In the past year there were 454 exams sat, with the lowest number of candidates being in September (72). This is slightly down on last year but is not as significant a drop as in previous years.

The satellite centres have already shown their worth in the first year of operation and have made the exam more available. It is still hoped that when exams on demand for the RAE and NRAE are introduced the number of candidates will increase.

Planning Advisory

DURING THE YEAR the Planning Advisory Committee has updated and reprinted the members' *Planning Advice* booklet. The booklet is much in demand, and feedback from members suggests its advice is accurate, helpful and user-friendly. Obtaining a copy of the booklet from RSGB headquarters before any dealings with the planners is highly recommended. A copy of the revised booklet has again been sent to all Councils in England, Wales and Scotland.

The committee's second main service is to supply advice directly to members to help them with their individual dealings with planners, or to provide advice generally about planning matters. About 40 members were directly helped by Panel members. Such help includes general advice, drafting of letters and statements and so on. In addition, a similar number of requests for initial advice came in by e-mail.

Talks to affiliated clubs and at conventions have been given on an occasional basis. The Committee maintains its close links with the EMC Committee. Wider public concern about the perceived health effects of cellular masts is reflected in neighbour objections to members' applications, but Government advice on this is firm and it is not expected to become a significant factor in any refusals of permission. Mobile masts are regarded by some Councils as immune from planning control, and by others as requiring permission. Any

member intending to use such a mast is recommended to seek advice from a Panel member before doing so.

The retiring Committee chairman, Geoff Bond, G4GJB, is thanked for his work on behalf of the Society both as Chairman of the Committee and as a Panel member over many years.

Propagation Studies

MOST OF THE work of the Propagation Studies Committee (PSC) is on a continuing and collaborative basis with the aim of encouraging a better understanding of radio propagation by radio amateurs and listeners at all frequencies. Every week 'the propagation team' contributed a summary of the latest solar data, news of interesting openings and propagation prospects to GB2RS in two versions: one for the main GB2RS script, the other e-mailed to newsreaders and posted on the Internet on Saturday evening so as to be as fresh as possible for Sunday readings. An updated bulletin was also transmitted on 80m CW three times on Sunday.

Propagation predictions for a large number of paths were contributed every month to *RadCom* and also presented, updated, in numerical and chart forms on the Internet. Work continued during the year on refining the prediction program to achieve equal validity on all the HF bands. This was assisted by a working group monitoring the NCDXF beacons, enabling comparisons between results and predictions.

On behalf of Region 1 of the IARU, the PSC also maintains the HF beacon list, which is generally accepted as the most authoritative and widely-used of the various listings available. That list also serves as a vehicle for encouraging frequency coordination and best practice in beacon operation, with a view to maximising the usefulness of the beacons as a casual operating aid and as a basis for systematic study of propagation. An HF beacons mailing list under PSC auspices now encourages interest in beacons, circulates monitoring results and assists prompt, world-wide dissemination of changes.

PSC continued to support and produce *The Six and Ten Report*, devoted to surveying and analysing propagation on 28 and 50MHz. A selection of results from *The Six and Ten Report* continued to be made generally available on the web.

Repeater Management Committee

THIS YEAR HAS NOT been without its problems; the loss early in the year of Roger Jones, G3YMK, has been felt by the members of the Repeater Management Committee, and all the amateurs to whom Roger had given assistance. However, the team was pleased to welcome two new members, Len Baddesley, G8LXI, and Andrew Barrett, G8DOR, who have taken on roles as managers for the Midlands East and South West respectively.

The RMC has also continued to enjoy an excellent close working relationship with the Radiocommunications Agency. The committee's commitment to open forums continued throughout the year, coupled with attendance at numerous radio clubs and societies throughout the UK.

The committee has continued to use information gathered from members of the whole of the amateur community to assist in planning a repeater network, which is satisfactory for all its users. Due to the continued development of Internet linked repeaters there are now several 24-hour 7-day unattended links, which have been authorised by the Radiocommunications Agency.

Another development has been the allocation of the first 10-metre HF repeater in Northampton. The RMC proposed Spectrum Mask for TV transmissions has now been implemented.

We are constantly striving to make advancements and improvements to the UK repeater network and to ensure that the service it provides is at the forefront of radio technology. We look forward to the challenges of the coming year and welcome all views, opinions, thoughts and suggestions on ways in which the repeater network can be moved forward.

Technical and Publications Advisory Committee (TAPAC)

PART WAY THROUGH the year Dick Biddulph, M0CGN, stepped down as Chairman and handed over to Tony Plant, G3NXC. Dick had been Chairman for nigh on a decade and will be a hard act to follow. Fortunately he will remain a member of TAPAC so his knowledge and experience will not be lost.

The RSGB Spring Show and VHF Convention 2001 was held at Bletchley, close to Bletchley Park, home of the WWII Enigma machine decoding success. Guided tours of Bletchley Park were available for those attending the Spring Show and VHF Convention.

The main work of the Committee continued to be the review of technical articles for publication in *RadCom* and the generation of nominations for four trophies and prizes (Ostermayer, Courtney-Price, Norman Keith Adams and Wortley-Talbot). It is perhaps an indication of the changes that have taken place in the hobby that it is often difficult to find suitable nominations for all four trophies and prizes.

With 16 members and their very wide geographic distribution, TAPAC operates as a wholly corresponding Committee. Nearly all members have e-mail facilities and this is proving a very effective means of communication, although it is still necessary on occasions to revert to 'snail mail' or the telephone.

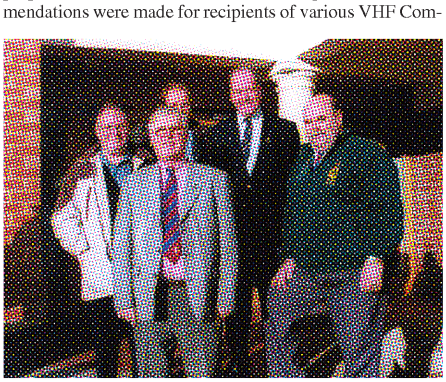
One of the functions of the Committee is to provide technical assistance for members. This function is not one which occupies the Committee to any great extent because there are very few occasions where such assistance is requested. The members of TAPAC have between them a very wide range of knowledge and it is a pity that this resource is not better used by the membership of the Society.

VHF

DURING THE YEAR a number of band plan recommendations (in liaison with DCC / RMC as appropriate) was made. These included APRS (144MHz), Internet Repeater linking (144, 432MHz), PSK31 (50, 70, 144MHz), UI data frequency (50MHz).

Liaison work has been carried out in conjunction with the UK VHF beacon co-ordinator, John Wilson, G3UUT, regarding a 144MHz trans-Atlantic beacon, GB3SSS, to be located at Poldhu, Cornwall. This exciting project is planned to be operational in readiness for the Marconi Centenary event at Poldhu in December 2001. Discussions and frequency allocations were also made for GB3SIX and GB3LER, both units on the 50MHz band, and GB3SMG which is expected to operational on the 50 and 70MHz bands.

The VHF Committee attended the RSGB Spring Show and VHF Convention held at Bletchley. Suitable talks for the event were arranged and the VHF Manager gave a talk entitled 'Making more miles at VHF'. This talk has also been given at the Weinheim VHF Convention in Germany and at local radio clubs. The aim is to encourage operators to make full use of the VHF bands and to understand the various propagation modes that exist at these frequencies. Recommendations were made for recipients of various VHF Committee awards including the Harold Rose Trophy (PY5CC), Louis Varney Cup (G3RUH), and the VHF Committee Cup (G3FPK).



The RSGB's Regional Representation Scheme, introduced in January 2001, was masterminded by Peter Sheppard, G4EJP, seen here front left with his North-East England regional team.

The Committee reviewed a number of applications for Special Research Permits. The merits of these permits were discussed and appropriate recommendations made to LAC.

Preparations were made by the VHF Committee and the VHF Manager for the interim IARU meeting scheduled to be held during April 2001 in Vienna. Regrettably this meeting was not held although an informal meeting of the IARU Region 1 Committee was arranged later in the year in Friedrichshafen. Several papers for the 2002 Conference in San Marino have been prepared and include PSK frequencies on the VHF bands, FSK441 (WSJT) frequency allocations, extension to the beacon sub-band on 70MHz, and a 50MHz Code of Conduct.

The VHF Manager's work is carried out both at national and international level. From a national perspective the majority of work was dealing with enquiries from members, non-members and from RSGB HQ. The subject matter has been far-reaching and has covered many aspects of VHF operation.

Any queries relating to VHF operation and practice can be sent to the VHF Manager by e-mail: g4asr@btinternet.com

VHF / UHF Awards

THE PAST YEAR has seen a slight reduction in the numbers of awards issued, 93 this year compared with 108 for the previous year. Claims for the 50MHz band again dominated, producing 69 awards (74%). It was gratifying to note that several of these were 'first time' claimants.

The 'IARU Millennium 2000 Award' for Sporadic E contacts in excess of 2000km produced 10 successful claims. It is notable, however, that they were all for 50MHz, not the band for which this award was initially considered. This is difficult to understand as there have been numerous Es openings on 144MHz which would have produced qualifying contacts. Does this imply that 6 metre adherents are more willing to QSL?

In an attempt to encourage Novice licence holders to explore the 'DX portions' of their bands, a 'UK Novice Award' was introduced which does not require verification by means of QSL cards. A number of enquiries has been received, but as yet no claims.

The definitive web pages www.argonet.co.uk/users/tonyg6ttl/awards/awards.htm continue to expand. They now have a number of information pages in addition to award details. There are now tables of the leading award holders in most categories. A page is devoted to Award News which is updated monthly. 'Award News' has also featured in the news pages of *RadCom* on a regular basis.

Details of all 'high order' claims are now held on file by the Awards Manager and all update claims received for increments over 200 squares will be so treated. At present consideration is being given to accepting electronic submissions and this will be available soon to claimants whose details are already held. The intention is to make this available to all claimants once a suitable format has been established.

VHF Contests

DURING THE LAST YEAR the VHF Contest Committee (VHFCC) has continued to make progress with reviewing its portfolio of contests. A major goal now is trying to align many of the cumulative events with our European counterparts' events. The VHFCC continues to make use of the latest technology and over the last year has introduced a post-contest scoring system on its web site (www.blacksheep.org/vhfcc/), where entrants can post their claimed scores for comparison against other competitors, prior to the final results being released.

A major factor over the last year has been the outbreak of foot and mouth disease, which has led to a significant number of portable contests being cancelled. We hope that members have understood the reasons for doing so, and we greatly appreciate the support that has been given not only to the VHFCC but the whole farming community during these difficult times. A major casualty of the outbreak was the cancelling of VHF NFD - something that the committee didn't undertake lightly. We plan to bring NFD back with a bang for 2002.

During the last year, three new members have been appointed in order to lighten the already heavy workload for existing members.

Most of the committees have their own web sites: see www.rsgb.org/society

RADIO SOCIETY OF GREAT BRITAIN

(A Company Limited by Guarantee Registered in England No 216431)

Report of the Board for the Year Ended 30 June 2001

The Board of the Radio Society of Great Britain ("the Society") presents its Annual Report and the audited financial statements for the year ended 30 June 2001.

Principal Activities

The principal activities of the Society are to provide services to members who are radio amateurs, short wave listeners or others with interests in radio communication. The Society represents the interests of UK licensed radio amateurs to the regulatory authority in the UK, the Radiocommunications Agency (RA) and via the IARU to other international bodies.

Review of the year

The new structure and governance for the Society was agreed by the Membership and ratified at the AGM in December 2000. The Board has been operating successfully with the new structure since January 2001.

In parallel, the reorganisation of the Regional organisation has been largely completed. Board member Peter Sheppard had already completed a major part of the reorganisation before his unfortunate accident. The Society wishes him a speedy recovery.

The Society has consulted the Membership in order to plan a new approach to the licensing of radio amateurs and the examination process. This new approach, announced at the end of September, will be implemented progressively from late 2001.

It has not proved possible to implement the RAE 'on demand' proposals, due to a change in policy within City and Guilds. It is, however, expected that the new Foundation licence will represent the start of a radical change in the way the radio amateurs' examination process operates.

The Society has received and equipped the demonstration vehicle donated by the Radiocommunications Agency. This vehicle is to be an integral part of the Society's promotion of amateur radio to schools and the general public.

The membership of the Society on 30 June 2001 was 25,329 compared with 25,640 at the start of the year.

The Society has extended the number of locations offering 'Morse Camps' to include Northern Ireland as well as Harrogate and Headquarters. Over 200 candidates have been successful in gaining their 5WPM qualification through these weekends. By 30 June 2001 696 licensed amateurs had obtained the M5 licence.

A Special Advisory Group of the President met to consider the future trends in amateur radio technologies, operating environment and relationship with society at large. These deliberations are part of an on-going process to reshape the Society to meet the demands of the future.

The Society is alert to the implications for amateur radio arising from the Treasury studies on spectrum pricing and has made its own contribution to the studies currently being undertaken. The Society continues to monitor the EMC threats of Power Line Telecommunications and xDSL systems being trialed in the near future. The Society exercises its influence by being directly represented on a number of the key UK and European policy committees.

RadCom continues to be recognised as the premier amateur radio magazine in the UK with a circulation of 26,000. The Society ceased production of *Radio Today* in October 2000.

Financial Report

The operating result for the year after non-recurring items and interest income, was a surplus of £2,901 compared with a surplus of £12,432 in the prior year. A decline in subscription income and a reduction in advertising income from the amateur radio suppliers were mainly responsible. There were improvements in income resulting from the supply of ancillary services, and the closure of the *Radio Today* journal. Improved book sales compared with the prior year, and a reduction in servicing costs resulting from the outsourcing of book distribution produced an increased contribution from this activity. Expenses were tightly controlled during the year, though there were inflationary costs to absorb.

The Society always plans for a break-even position which, despite budget contingencies, can be affected by non-recurring items. For the year to 30 June 2002, this objective continues.

Outlook

With the announcement of the Foundation licence, the upgrade of Novice privileges and the planned launch of a strong promotional programme for amateur radio, the Society is well placed to build the next generation of radio amateurs. Working with local clubs and other bodies, and especially the teaching profession, the Society will promote amateur radio both as an absorbing and vibrant hobby and also as a viable route into a career in the telecommunications industry. The new Regional organisation is a key part of this process. A new committee, the Amateur Radio Development Committee, has been formed which will have direct Board representation further emphasising that the development of amateur radio is at the centre of the Society's strategy.

Raising the level of public awareness of the many facets of amateur radio including our contribution to our communities will be a key part of the publicity programme. 2002, being the Golden Jubilee of the Queen's accession to the throne, will provide opportunities for all radio amateurs to publicise our activities. The Society intends to support clubs which wish to organise public demonstrations and the demonstration vehicle will be available for this purpose. Initiatives taken by clubs in furthering the Society's objectives will continue to be highlighted in *RadCom*.

Through *RadCom* the Society intends to provide an opportunity for radio amateurs to describe their technical innovations to the widest audience. Amateur radio provides an excellent environment to undertake technical experimentation since it is not highly regulated and many new lines of research are continually being opened up with new technology. It is intended to increase the use of electronic mail for Society communications both inter-committee and also to members in general. Integration of the Society's website as an extension of *RadCom* is also envisaged.

It is expected that Government policy will start to be of increasing concern to UK radio amateurs over the next year. Our excellent relationship with the Radiocommunications Agency is of great value in this context. It is expected that the pressure on our frequency allocations will continue to increase, especially in the microwave area. The Society is viewed as an impartial and expert member of the relevant UK and European committees and is therefore well positioned to influence the debate on regulations. As pressures build in the telecommunications industry and government for adoption of broadband technologies such as PLT and VDSL, the Society continues to argue for relevant technical standards to protect users of the radio spectrum.

With the advent of the IARU Region 1 meeting in 2002 and WRC in 2003 a start has already been made on background policy papers.

To meet these goals a secure financial base for the Society is essential and the Board will continue to keep all aspects of the Society's commercial activities under close review.

The Society undertook a general survey of members' interests in July 2001 that will help greatly in shaping the Society to meet the needs of the membership.

Personnel

The Society maintains a headquarters establishment of 25 salaried staff. The Society gives full and fair consideration to employment applications from disabled persons and has implemented the necessary requirements for Stakeholder pensions.

The Society is supported by a large number of unpaid volunteers who work tirelessly for the benefit of members. Their efforts are greatly appreciated.

All references to "The Board" throughout these financial statements should be considered to be equivalent to "The Directors" under the Companies Act 1985.

Council and Zonal Members from 1 July 2000 to 31 December 2000

President D F Beattie, G3BJ; **Treasurer** K Ashcroft, G3MSW.

Ordinary Members of the Council

G L Adams, G3LEQ; R H Biddulph, M0CGN; G W Dover, G4AFJ; R Horton, G3XWH; R M Page-Jones, G3JWI; R C Whelan, G3PJT.

Zonal Members of the Council

Zone A: P R Sheppard, G4EJP; Zone B: J F Layton, G4AAL; Zone C: F C Handscombe, G4BWP (co-opted; stood down 31 December 2000); Zone D: D W McQue, G4NJU; Zone E: E P Essery, GW3KFE (retired 31 December 2000); Zone F: J D Smith, MI0AEX; Zone G: T W G Menzies, GM1GEQ.

Board and Regional Council Members from 1 January 2001 to 30 June 2001

President D F Beattie, G3BJ; **Hon Treasurer** K Ashcroft, G3MSW

Board of Directors

G L Adams, G3LEQ; R H Biddulph, M0CGN; G W Dover, G4AFJ; R Horton, G3XWH; R M Page-Jones, G3JWI; R C Whelan, G3PJT; P R Sheppard, G4EJP (Regional Council representative); J D Smith, MI0AEX (Regional Council representative).

Regional Council

R S Atterbury, G4NQI*; E Cabban, GW0ETU*; J F Layton, G4AAL (resigned 30 May 2001); S N Lloyd Hughes, GW0NVN; J H Martindale, GM4VPA*; T W G Menzies, GM1GEQ; R E Piper, G3MEH*; I Rosevear, G3GKC*, P R Sheppard, G4EJP, J D Smith, MI0AEX. (*Co-opted until 31 December 2001.)

Political and charitable contributions

The Society made no political or charitable donations during the year (2000: £nil).

Annual General Meeting

The 75th Annual General Meeting of the Society will be held at 11.00am at the Strathclyde Fire Brigade HQ, Bothwell Road, Hamilton, Scotland, on Saturday 1 December.

Auditors

In accordance with section 385 of the Companies Act 1985, a resolution for the re-appointment of KPMG as auditors of the company is to be proposed at the forthcoming Annual General Meeting.

By order of the Board
S Minocha, Secretary

Statement of the Director's responsibilities

Company law requires the Directors to prepare financial statements for each financial year which give a true and fair view of the state of affairs of the Society and of the surplus or deficit for that period. In preparing those financial statements, the Directors are required to:

(a) select suitable accounting policies and then apply them consistently;
(b) make judgements and estimates that are reasonable and prudent;
(c) prepare the financial statements on the going concern basis, unless it is inappropriate to presume that the Society will continue in business.

The Directors are responsible for keeping proper accounting records which disclose with reasonable accuracy at any time, the financial position of the Society and to enable it to ensure that the financial statements comply with the Companies Act 1985. The Directors have general responsibility for taking such steps as are reasonably open to them to safeguard the assets of the Society and to prevent and detect fraud and other irregularities.

START OF AUDITED ACCOUNTS

Income and Expenditure Account for the Year Ended 30 June 2001

	note	2001 £000	2000 £000
Gross income from all sources	3	1,515	1,573
Direct costs (cost of books and products sold)		(171)	(145)
Gross surplus		1,344	1,428
Administrative expenses:			
Sales and distribution expenses		(348)	(431)
Other operating expenses:		(1,011)	(1,004)
Total expenditure		(1,359)	(1,435)
Operating deficit		(15)	(7)
Other interest receivable and similar income	6	20	21
Interest payable and similar charges	7	(2)	(2)
Surplus on ordinary activities before taxation	4	3	12
Tax on surplus on ordinary activites	8	-	-
Retained surplus for the financial year	12	3	12

All income and expenses for both years have been derived from continuing operations. There were no recognised gains or losses other than the surplus for the year. There is no significant difference between the above and the historical cost profit. The movement in the income and expenditure account is shown in note 12.

Balance Sheet at 30 June 2001

	note	2001 £000	2000 £000
FIXED ASSETS:			
Tangible assets	9	544	572
CURRENT ASSETS:			
Stocks	10	120	147
Trade debtors		59	70
Other debtors		-	16
Prepayments and accrued income		76	106
Cash at bank and in hand		353	363
		608	702
CREDITORS: amounts falling due within one year			
Trade creditors		(68)	(124)
Obligations under finance leases	11	(13)	(11)
Subscriptions in advance		(348)	(371)
Accruals and deferred income		(121)	(172)
Other creditors		(35)	(29)
Other taxation and social security		(20)	(19)
		(605)	(726)
NET CURRENT ASSETS / (LIABILITIES)		3	(24)
TOTAL ASSETS LESS CURRENT LIABILITIES		547	548
CREDITORS: amount falling due after more than one year			
Obligations under finance leases	11	(10)	(13)
NET ASSETS		537	535
CAPITAL AND RESERVES:			
Income and expenditure account	12	362	359
Restricted funds	12	3	4
Revaluation reserve	12	172	172
MEMBERS' FUNDS		537	535

These financial statements were approved by the Board on 29 September 2001 and signed on its behalf by D F Beattie BSc (Eng) CCIPD (President), K Ashcroft FCA FCMA (Treasurer).

Report of the auditors to the members of the Radio Society of Great Britain

(A company limited by guarantee)

We have audited the financial statements on pages 55 to 58.

Respective responsibilities of directors and auditors

The directors are responsible for preparing the directors' report and, as described on page 55, the financial statements in accordance with applicable United Kingdom law and accounting standards. Our responsibilities, as independent auditors, are established in the United Kingdom by statute, the Auditing Practices Board and by our profession's ethical guidance.

We report to you our opinion as to whether the financial statements give a true and fair view and are properly prepared in accordance with the Companies Act. We also report to you if, in our opinion, the directors' report is not consistent with the financial statements, if the Society has not kept proper accounting records, if we have not received all the information and explanations we require for our audit, or if information specified by law regarding directors' remuneration and transactions with the Society is not disclosed.

Basis of opinion

We conducted our audit in accordance with Auditing Standards issued by the Auditing Practices Board. An audit includes examination, on a test basis, of evidence relevant to the amounts and disclosures in the financial statements. It also includes an assessment of the significant estimates and judgements made by the directors in the preparation of the financial statements, and of whether the accounting policies are appropriate to the Society's circumstances, consistently applied and adequately disclosed.

We planned and performed our audit so as to obtain all the information and explanations which we considered necessary in order to provide us with sufficient evidence to give reasonable assurance that the financial statements are free from material misstatement, whether caused by fraud or other irregularity or error. In forming our opinion we also evaluated the overall adequacy of the presentation of information in the financial statements.

Opinion

In our opinion the financial statements give a true and fair view of the state of the Society's affairs as at 30 June 2001 and of its surplus for the year then ended and have been properly prepared in accordance with the Companies Act 1985.

KPMG, Chartered Accountants, Registered Auditors

Notes (forming part of the financial statements)

1. STATUS

The Radio Society of Great Britain is a private company limited by guarantee and does not have a share capital. Every member of the Society undertakes to contribute to the assets if it should be wound up while he is a member or within one year after he ceases to be a member for payment of the liabilities of the Society contracted before he ceases to be a member. Every member also undertakes to contribute to the costs, charges and expenses of winding up the same, and for the adjustment of the rights of the contributories amongst themselves, such amount as may be required not exceeding one pound.

2. ACCOUNTING POLICIES

The following accounting policies have been applied consistently in dealing with items which are considered material in relation to the Society's financial statements. The financial statements have been prepared in accordance with applicable accounting standards and under the historical cost accounting rules, modified to include the revaluation of land and buildings.

The Society revalued its land and buildings in the year ended 30th June 1999. The difference between the depreciation based on the historical cost and revalued amount is not material. As a result no note of historical costs profits and losses has been shown.

The company is exempt from the requirement of Financial Reporting Standard No 1to prepare a cash flow statement as it is entitled to the filing exemptions as a small company under sections 246 to 249 of the Companies Act 1985 when filing accounts with the Registrar of Companies.

Fixed assets and depreciation: Depreciation of tangible fixed assets (except freehold land which is not depreciated) is calculated on the cost or revalued amount on a straight-line basis over the estimated useful lives of the assets. The annual rates used are as follows: Freehold buildings: 2%; Fixtures and fittings: 10%; Furniture and equipment: 20%-25%;Computer hardware and purchased software: 20%-33%; Leased assets: over the period of the lease.

Stocks: Stocks and work-in-progress are stated at the lower of cost and net realisable value.

Taxation: The charge for taxation is based on the surplus for the year and takes into account taxation deferred because of timing differences between the treatment of certain items for taxation and accounting purposes. Provision is made for deferred tax only to the extent that it is probable that an actual liability will crystallise.

Leases: Assets acquired under finance leases are capitalised and the outstanding future lease obligations are shown in creditors. Operating lease rentals are charged to the income and expenditure account on a straight line basis over the period of the lease.

Pensions and post retirement benefit: The Society contributes to group personal pension policies to provide benefits for employees on a defined contribution basis.The assets of the policies are held separately from those of the Society in independently administered funds. The amount charged against income represents the contributions payable to the policies in respect of the accounting period.

3. ANALYSIS OF INCOME

	2001 £000	2000 £000
Subscription income	839	865
RadCom advertising income	186	212
Book sales	333	309
Other income	157	187
	1,515	1,573
Other income comprises the following:		
Morse tests	10	14
Novice licence	10	3
Rallies and exhibition fees	42	33
Repeaters	25	25
Mailbox agreement	7	-
Special event callsigns	5	6
Newsletters	3	3
Sundry income	23	12
Radio Today	32	91
	157	187

4. SURPLUS ON ORDINARY ACTIVITIES BEFORE TAXATION

This is stated after charging:	2001 £000	2000 £000
Auditors' remuneration:		
Statutory audit	10	9
Other services	2	2
Depreciation:		
Owned assets	38	38
Assets held under finance leases	15	12
Hire of plant and machinery	2	11
Council / Board and Committee expenses:		
Council/Board expenses	14	11
Committee expenses	21	18
Other expenses	7	4
Total Council / Board and Committee expenses	42	33

5. INFORMATION REGARDING EMPLOYEES AND DIRECTORS

Directors serve in a voluntary capacity and are not remunerated for their services.

The average number of persons employed by the Society during the year was as follows:	2001 Number of employees	2000
Headquarters	25	27

The aggregate of payroll costs of these persons were as follows:	2001 £000	2000 £000
Wages and salaries	468	480
Social security costs	42	43
Other pension costs (see note 14)	17	19
	527	542

6. OTHER INTEREST RECEIVABLE AND SIMILAR INCOME

	2001 £000	2000 £000
Bank deposit interest	20	21

7. INTEREST PAYABLE AND SIMILAR CHARGES

	2001 £000	2000 £000
Finance charges payable in respect of finance leases and hire purchase contracts	2	2

8. TAX ON SURPLUS ON ORDINARY ACTIVITIES

UK corporation tax	-	-

The Society is liable to corporation tax on its investment and book sales income, less attributable expenses. However, due to brought forward tax losses there is no corporation tax charge for the year.

9. TANGIBLE FIXED ASSETS

Cost or valuation:	Freehold land & buildings £000	Computer equipment £000	Fixtures & fittings £000	Furniture & equipment £000	Motor vehicle £000	Total £000
At beginning of year	490	196	66	112	45	909
Additions	-	8	-	-	19	27
Disposals	-	(1)	-	-	(17)	(18)
At end of year	490	203	66	112	47	918
Depreciation:						
At beginning of year	9	164	41	103	20	337
Provided during the year	9	21	7	2	15	54
Disposals	-	-	-	-	(17)	(17)
At end of year	18	185	48	105	18	374
Net Book Value						
30 June 2001	472	18	18	7	29	544
30 June 2000	481	32	25	9	25	572

Freehold land included above and not depreciated amounts to £ 207,000 (2000: £207,000)

On a historical cost basis, land and buildings would have been included as follows:	2001 £000	2000 £000
Cost	422	422
Depreciation	(47)	(45)
Net book value	375	377

The freehold land and buildings (comprising Lambda House, Cranborne Road, Potters Bar, Hertfordshire EN6 3JE) were professionally valued on 30 June 1999. The valuation was performed by AC Marriott, FRICS ACIArb of Wright and Partners Chartered Surveyors. The valuation was in accordance with the RICS Statements of Asset Valuation Practice and Guidance Notes. Based upon that valuation, the Council concluded that the property should be valued at £490,000. Of the above assets, all motor vehicles are held under finance lease. The society has followed the guidance contained in Financial Reporting Standard 15 on transitional arrangements and has decided to retain the revalued amounts relating to land and buildings. This is subject to the impairment tests contained in Financial Reporting Standard 11.

10. STOCKS

	2001 £000	2000 £000
Work in progress	8	13
Consumable stock	-	4
Goods held for resale	112	130
	120	147

11. OBLIGATIONS UNDER FINANCE LEASES

	2001 £000	2000 £000
Gross obligations under finance leases	27	27
Less: finance charges allocated to future periods	(4)	(3)
	23	24
Due within one year	13	11
Due within the second to fifth years inclusive	10	13
	23	24

12. RECONCILIATION OF MOVEMENTS IN MEMBERS' FUNDS

	Restricted funds	Income and expenditure account	Revaluation Reserve
	£000	£000	£000
Opening members' funds	4	359	172
(Reduction) / Surplus for the financial year	(1)	3	-
Closing members' funds	3	362	172

13. COMMITMENTS

Annual commitments under non-cancellable operating leases are as follows:	2001 Other £000	2000 Other £000
Operating leases which expire:		
Within one year	-	5
Total	-	5

14. PENSION SCHEME

The charge for the year was £17,308 (2000: £18,858). There were no outstanding contributions at the year end (2000: £nil).

END OF AUDITED ACCOUNTS

Prize and Memorial funds

RESTRICTED FUNDS

	Balance on 30 June 2001 £	2000 £
The J Fraser Shepherd Prize Fund	933	895
DXpedition fund	866	1,901
K M Bennett Legacy Fund	1,013	1,045
Total Restricted funds	2,812	3,841

TRUST FUNDS

	Balance on 30 June 2001 £	2000 £
The Pilot Officer Norman Keith Adams Prize Fund	872	828
The Legacy fund	11,689	13,994
Total Trust funds	12,561	14,822

Income & Expenditure Account for the Year ended 30 June 2001

	30 June 2001 £	£	30 June 2000 £	£
Income				
Subscriptions	839,080		864,681	
RadCom Advertising	186,245	1,025,325	212,295	1,076,976
Books and Products for Resale		332,922		308,413
Newsletter, Publications & Radio Today		31,928		94,208
Other Services		124,853		93,227
Total Income		**1,515,028**		**1,572,824**
Contribution from Subscriptions, Radcom Publication and Other Activities				
Subscriptions net of RadCom Publication Costs	642,902		687,044	
Amateur Radio Costs	(113,914)	528,988	(115,339)	571,705
Books and Products for Resale		115,183		102,849
Newsletter, Publications & Radio Today		547		(25,710)
Other Services with a revenue implication		23,281		5,356
Total Contribution from Activities		**667,999**		**654,200**
Less Non Activity Specific Overheads				
Commercial Costs	(162,896)		(150,889)	
Administration	(288,405)		(294,403)	
Despatch	(57,662)		(59,311)	
Office Costs	(127,339)		(125,865)	
Landlord Costs	(45,165)	(681,467)	(35,627)	(666,095)
Net Surplus/Deficit from Activities		(13,468)		(11,895)
Interest Income		20,296		21,282
Non-recurring (expenditure) / income		(3,927)		3,045
Retained Surplus for the Financial Year		**2,901**		**12,432**

Notes: Activities refer to publications and amateur radio services operated in the normal course of the Society. Simplification of the published accounts is confined to this section of the results.

Regional Managers' Elections

KATH WILSON, M1CNY (DOB 28.10.51)

(CANDIDATE FOR ELECTION AS REGIONAL MANAGER FOR REGION 3 - NORTH WEST)

CURRICULUM VITAE: First licensed as a Novice in February 1994. Passed RAE in December 1977. Worked with people with learning difficulties helping them to adapt to living in the community. Membership Secretary to the UKFM Group Western since 1995. Membership Secretary to Widnes and Runcorn ARC. Member of Cheshire Radio Scouting Team. RLO for Cheshire 1999 - 2001, when I was co-opted to Regional Manager of the North West.

PERSONAL STATEMENT: During my year as co-opted Regional Manager I've met, listened and discussed with many amateurs dealing with their problems, concerns and queries. If elected as Regional Manager I realise that I am a member of a team and will continue to improve the links between team members, RSGB members, clubs and societies with the aim of bringing amateur radio to the notice of schools, youth organisations and the not so young organisations.

Nominated by:	Town:	Known for (yrs)
S A Bell, G0SBI	**Cheshire**	**11**

Novice instructor since 1992. President of the Halton Radio Club. Have been in the hobby for 60 years. Taught Kath the Novice (I'm to blame for that!) I have held a licence for 10 years.

Martin Hallsworth, G1GYC Stockport 7

Chairman Macclesfield Wireless Society. Member of NARSA Committee (Blackpool rally organisers).

Stephen Sparkes, M1DDO Wilmslow 5

Member of UKFM Group (Western). Member of Macclesfield Wireless Society. Member of RSGB.

Ernie Holme, G4YYB Bolton 2

RSGB Newsreader. Member of West Manchester RC.

Dave Hughes, 2E1EAP Bolton 6

Treasurer UKFM Group Western

Gordon Adams, G3LEQ Cheshire 10

RSGB Director (Spectrum), RSGB GB2RS News Manager, RSGB HF Committee Member, Chairman UKFM Group (Western), Education Officer North Cheshire Radio Club, RSGB Senior Novice Instructor (Cheshire).

R D Bibby, G1PIX Cheshire 10

Chairman Widnes & Runcorn ARC, Skills Instructor - Cheshire Radio Scouting, Home invigilator - City & Guilds.

B F C Sutherland, M0CVP Chester 4

Past Vice-Chairman, past Chairman, current Honorary Secretary of Chester &DRS.

David Ollerhead, G4JMF Ellesmere Port 4

Ex-Deputy Chairman, ex-Chairman and current President of Chester & DRS.

Ray Williams, G1PRL Cheshire 10

Ex-Secretary and current Committee member of Chester & DRS.

GEOFF DARBY, G7GJU (DOB 26.05.45)

(CANDIDATE FOR ELECTION AS REGIONAL MANAGER FOR REGION 4 - NORTH EAST)

CURRICULUM VITAE: I received my amateur radio licence in 1990. I had become a member of Derwentside ARC before sitting the RAE. I am an active member of Northwest Durham Raynet. I have been Secretary of Derwentside ARC since 1990. I applied for membership of the RSGB in 1995 and was asked to look after County Durham as RLO in 1998. I worked very closely with Peter Sheppard, G4EJP, during the pilot of the regional reorganisation, remaining as Deputy Manager for District 13 after the acceptance of the new scheme at the AGM in 2000.

PERSONAL STATEMENT: Having worked with Peter Sheppard, G4EJP, during the build-up to the regional reorganisation, and now seeing the fruits of the work done, I would like to have the opportunity to carry this work further. There are a lot of ideas that have been put to me by clubs and by independent members in the North East region that I would like to pursue and, given the chance, bring them to a fruition. I enjoy meeting the members, whether it be at clubs or at rallies and where possible try to take on board their suggestions.

Nominated by:	Town:	Known for (yrs)
Don Gowland, G4LGA	**Consett**	**15**

Chairman Derwentside ARC, Vice Chairman Derwentside ARC and Treasurer Derwentside ARC.

Thomas Hanratty, G0JRT Consett 15

Zone 1 co-ordinator - Radio Amateur Emergency Network.

Alan G Wallis, G4YMU Lanchester 15

Group Controller Northwest Durham Raynet

Derek T Oldham, G0TAP Tynemouth 5

Secretary Tynemouth ARC (GX0NWM) 1989 - 1991, Chairman Tynemouth ARC 1991 - 1993 and 2000 - 2001.

Elizabeth A Lee, M0BQD North Shields 7

Ex-Vice Chairperson of Tynemouth ARC, ex-Treasurer Tynemouth ARC, Net Controller and holder of club callsign, GX0NWM. A licence-holder, M0BQD.

Bill Wilson, M0BWI South Shields 5

Treasurer for South Tyneside ARS.

Mark M Hill, G0GFG Crook 9

Club Secretary Bishop Auckland RAC, also QSL Manager

William Gleave, G8YWK Durham City 15

Chairman Great Lumley ARES, Chairman - Tyne and Wear Repeater Group.

Andrew Russell, G0VRM Hessle 2

Deputy RSGB Regional Manager - District 14, Secretary Raywell Park Scouts ARS (G4CMT), committee member Hornsea ARS (G4EKT), Secretary East Yorks Repeater Group.

David Taylor, G4EBT Cottingham 2

Secretary East Yorks ARS, past Chairman East Yorks ARS and RSGB RACC East Yorks ARS.

PATRICK ALLELY, GW3KJW (DOB 07.02.37)

(CANDIDATE FOR ELECTION AS REGIONAL MANAGER FOR REGION 6 - NORTH WALES)

CURRICULUM VITAE: A retired Police Inspector licensed since 1955, I have been active on bands from 160 metres to 70cm. My main interest is, and always has been, chasing DX on the bands either on SSB or on my preferred mode CW. I have been a GB2RS newsreader for 19 years, RLO for S Gwynedd, RAE Instructor at local night school and Morse tutor. Member of RSGB since 1953, life member of RSARS and a founder member of my local radio society.

PERSONAL STATEMENT: If elected, I will endeavour to protect the expertise of amateur radio to show that in this digital age that amateur radio is a modern and enjoyable way to communicate with fellow enthusiasts around the world. I would not only target the young person, who has many other competing interests, but I would try to involve the more mature who have the time, finances and often experience to be able to participate in what is one of the more challenging and certainly more addictive hobbies.

Nominated by:	Town:	Known for (yrs)
A Ellis, GW2HFR	**Pwllheli**	**20**

Member of RSGB since 1941, member of Porthmadog Club.

Ralph C Taylor, GW2HCJ Penrhyndeudraeth 30

Chairman Porthmadog RS, founder member 25 years, member Dolgellau RS, 25 + years.

Alan F Skellern, GW0SAU Porthmadog 13

Chairman Porthmadog & DARS (seven years), current Treasurer of Porthmadog & DARS.

E Ll Jones, MW0AEV Llanbedrog 6

David E Jones, MW5NCO Porthmadog 6

Chairman Porthmadog & DARS.

Evan O Roberts, MW5DOR Blaenau-Ffestiniog 5

R S Johnson, GW4UJT Trawsfynydd 15

J C Richards, GW0AQR Bont Newydd 10

RSGB GB2RS newsreader 11 years, Secretary Arfon Repeater Group 15 years, Former Chairman, Dragon Radio Club, 3 years.

Alan J Plumbley, GW0SZB Morfa Nefyn 10 +

JOTA Organiser, 5 years

G Cadwaladr, MW1DFN Caernarfon 6

Regional Managers' Elections

LIZ CABBAN, GW0ETU

(CANDIDATE FOR ELECTION AS REGIONAL MANAGER FOR REGION 6 - NORTH WALES)

CURRICULUM VITAE: First licensed as G6ETU in 1983, I subsequently gained my 'A' licence in 1985. My interests include contesting, I have been involved with several contest groups and club contests, the highlight being part of the winning group in Open Section VHF NFD 1997. I have taken part in DXpeditions including to Morokulien and Jersey, translated for an Anglo-French Microwave Convention in Le Havre and run numerous JOTA and Special Event Stations. Whilst teaching in London, I was on the committee of Chesham and District ARS, holding positions of Chairman, Secretary and Events Organiser for many years.

PERSONAL STATEMENT: With a broad range of involvement in amateur radio activities, I hope to bring a breadth of experience to this post. Whilst not being a specifically technical 'ham', I have acquired a reasonable level of knowledge in this area over the past 18 years. My aims for the future include promoting amateur radio in the 21st century, particularly amongst young people and doing my best to reverse the downward trend in numbers coming into the hobby. I hope to set up a regular 'RM net' on HF to discuss events, successes and air problems. Now retired, I have time to devote to the position and speaking some Welsh, which I continue to study, I look to raising the profile of amateur radio in North Wales. Under the new scheme I feel we have a new opportunity to improve the connections between HQ and the membership in our country.

Nominated by:	Town	Known for (yrs)
Dewi Roberts, GW0ABL	**Llanfairpwll**	**1**

Former Regional Liaison Officer Anglesey and North Gwynedd, Chairman Dragon ARC 1986-1994.

Gervase Chavasse, GW4URJ	**Dolgellau**	**1 month**

Corporate member RSGB, Secretary, Meirion ARS, Controller South Gwynedd Raynet Group.

David Evans, GW4GTE	**Buckley**	**1**

Formerly holder of GB3WA, GB7WA Packet Repeater licences, formerly beacon keeper for GB3CR, GB3MP.

John Roberts, GW3RBM	**Mold**	**6 mths**

RLO Clwyd Sept 1997, DRRM (District 22) appointed 5 July 2001.

David Griffith, GW0OPY	**Llanbedr**	**5**

Senior Morse Examiner Gwynedd, member RAFARS, RNARS, past Chairman MARS.

Robert A Smith, GW0AYQ	**Talybont**	**5**
Robert Tyson, GW6HUV	**Colwyn Bay**	**5**

Honorary Treasurer Conwy Valley ARC.

John Lawrence, GW3JGA	**Prestatyn**	**<1**

Founder of Flintshire RS, Honorary Secretary & Chairman Flintshire RS, Regional Rep Region 11, committee member Conwy Valley ARC, Chairman Bangor University ARC, committee member British Amateur Television Club, EMC Co-ordinator North Wales.

Gordon Rogers, GW0RJV	**Montgomery**	**3 mths**

RLO County Powys, ex-Chairman Powys ARC.

Max L Heron, MW1KDP	**Barmouth**	**3 mths**

Ex-Chairman & Vice-Chairman Meirion ARC.

ROGER PIPER, G3MEH (DOB 20.01.41)

(CANDIDATE FOR ELECTION AS REGIONAL MANAGER FOR REGION 9 - LONDON & THAMES VALLEY)

CURRICULUM VITAE: Obtained G3MEH at 16 with early activity on HF only. Currently active on all bands 1.8MHz to 2.3GHz. Keen supporter of VHF/UHF Contests and current holder of John Pilags Memorial Trophy. GB2RS newsreader for 17 years. Chairman of Aylesbury Vale RS. Member of Chesham & DARS. Honorary member of Aylesbury Vale Repeater Group. Now early retired after working mainly in Broadcast Engineering.

PERSONAL STATEMENT: Having been involved in establishing the London and Thames Valley Regional Team after being co-opted as Regional Manager, I am now asking for the opportunity to continue as a member of that team. If elected, I will vigorously pursue the interests of those amateurs in the region, seeking policy changes where appropriate.

Nominated by:	Town:	Known for (yrs)
Keith Holland, G3MCD	**London**	**48**

DRRM 33 (Deputy RSGB Regional Manager, London & Thames Valley region)

Jeremy Browne, G3XZG	**Chesham**	**10**

Chairman Chesham & DARS

Matthew Cabban, G1WPF	**Chorleywood**	**7**
Martin P Green, G4PMG	**Tring**	**12**

Reserve GB2RS newsreader, Deputy County Controller Hertfordshire Raynet.

Francis Townsend, G8BCT	**Farnham**	**37**
T J Thirlwell, G0VFW	**Bovingdon**	**6**

Secretary of Chesham & DARS.

G M Somers, G7VFV	**Aylesbury**	**5 +**

Former Secretary of Aylesbury Vale Radio Society, current committee member of Aylesbury Vale Repeater Group.

Bob Armstrong, G8SPE	**Acton**	**29**
Chris Packman, G6XDI	**Hayes**	**7**

Newsletter editor & webmaster for the Ariel Radio Group (London) 1996 - present, Honorary Treasurer Ariel Radio Group (London) 2001 - present.

Neil Savin, G0SVN	**Maidenhead**	**6 mths**

Deputy RSGB Regional Manager District 34, Secretary Maidenhead & DARC, Novice Instructor.

MALCOLM SALMON, G3XVV (DOB 03.01.44)

(CANDIDATE FOR ELECTION AS REGIONAL MANAGER FOR REGION 12 - EAST & EAST ANGLIA)

CURRICULUM VITAE: Licensed since 1968, RSGB member since 1968, Essex Raynet member since 1968, past Treasurer of Essex Repeater Group, Treasurer of Essex IP Group, holder of NOV for Mailbox (GB7EIP) and Node GB7EP, member of RSGB DCC.

PERSONAL STATEMENT: Never before has amateur radio been under such pressure to survive the demands placed upon the allocation of radio spectrum. If for no other reason, this dictates that we must have a strong national society to represent us. I truly believe that the new Regional Structure will bring the membership of the RSGB and those elected and employed to represent that membership, closer together thereby bringing about a much more powerful hobby when approaching the relevant authorities. Having been a licensed radio amateur for 33 years and a member of the RSGB for that time, I would deem it an honour to be a part of this new structure and feel that my experience in a parallel situation within the PMR Industry would enable me to assist with the successful implementation of the new scheme and to ensure that it continues to benefit the RSGB membership and amateur radio generally.

Nominated by:	Town:	Known for (yrs)
D Willicombe, G0DEC	**Braintree**	**12**

Chairman & Editor for Braintree Amateur Radio & Computer Communications Club, Controller of Braintree Raynet Group.

Scott Piercy, G7RVB	**Colchester**	**7**

Equipment Manager for Colchester Radio Amateurs, Tutor for RAE and NRAE for Colchester Radio Amateurs.

F R Howe, G3FIJ	**Colchester**	**41**

Secretary of Colchester Radio Amateurs since club was formed in 1963 - the club is affiliated to the RSGB, Tutor for RAE and NRAE courses since 1956 and 1990 respectively, On air Morse instructor for 12WPM and 5WPM since 1964.

L A Crane, G3PED	**Manningtree**	**30**

Honorary Life Member No 88 RNARS, Honorary Life Member No 02 BARTG, Honorary Life Member Colchester Radio Amateurs, ex-member RSGB Raynet Committee, ex-member RSGB Rallies & Exhibition Committee.

C Thomson, G3PEM	**Chelmsford**	**10**

Chairman Chelmsford Amateur Radio Society 1981 / 1982, corresponding member Propagation Committee 1999, Vice-Chairman Chelmsford Amateur Radio Society 2000 / 2001.

Kenneth Whittle, G7RFT	**Chelmsford**	**8**

Committee member of Chelmsford Amateur Radio Society.

A W Gilbey, G4YTG	**Chelmsford**	**10**

Chelmsford Amateur Radio Society Committee member, licensed as G4YTG.

Harry Heap, G5HF	**Chelmsford**	**3**

Head of Receiver Group 1939 - 1940, President Chelmsford Amateur Radio Society.

N J Hull, G6ZVV	**Chelmsford**	**17**

Essex Raynet Chairman / County Controller, Chelmsford Scout Amateur Radio Fellowship Treasurer.

Stuart Little, G7KSQ	**Chelmsford**	**10 +**

Controller Essex Raynet B7 Group.

Board Elections

FRED HANDSCOMBE, G4BWP (DOB 15.10.57)
(CANDIDATE FOR ELECTION AS BOARD MEMBER)

CURRICULUM VITAE: I was first licensed in 1973 having joined the RSGB in 1971. I am active almost daily. My current interests include LF and 6m DXing, IOTA chasing, RTTY and data-modes, antenna experimentation and contesting. I have been a member of the HF Committee since 1991 and the HF Awards manager since 1993. I have also been involved in the organisation of the HF Convention for a number of years. I was previously co-opted on to the Council of RSGB as a regional member. I am also a member of ARRL, G QRP Club, FOC, UKSMG, GMDX Group and Mid-Beds Contest Association.

PERSONAL STATEMENT: I have had a long time interest in many aspects of amateur radio and I am keen to see our hobby not only continue, but to increase in popularity. In order to do this we need to have a strong Society, not only to preserve, but also to improve our licence and operating conditions, and to promote the hobby widely to all age groups. This will require effective leadership and direction at Board level. I believe I have the necessary experience to make an active and informed contribution to the management of the Society's affairs at Board level, and, if elected, I would be capable of effectively managing a Board Portfolio in many of the vacant areas to the benefit of all members.

Nominated by:	Town:	Known for (yrs):
Martin J Atherton, G3ZAY	**Cambridge**	**15**

Chairman RSGB IOTA Committee, committee member of Cambridge University Wireless Society, former Chairman RSGB HF Committee.

Ian J Capon, G0KRL	**Bury St Edmunds**	**8**

Committee member, CDXC, the UK DX Foundation; ARRL DXCC field checking representative, past Secretary, Bury St Edmunds ARS, life member RSGB, life memberARRL.

S Cole, GW4BLE	**Newport**	**20 +**

ROTAB Trophy (for outstanding & consistent DX work) 1991, DXCC Honor Roll, founder member & treasurer 'Contest Cambria' (GW7X), CQWW Contest European single-op all band record holder, member Chiltern DX Club, committee member Blackwood ARS (GW6GW), founder committee member Welsh Amateur Radio Convention (1974).

Geoffrey W Dover, G4AFJ	**Kirkby Mallory**	**10**

Board member RSGB, director Sport Radio, treasurer Leicester Amateur Radio Show Committee, treasurer / membership Secretary Leicestershire Repeater Group (LRG), founder committee member of National Space Centre ARS, former chairman of LRG, ARC of Nottingham, RSGB Repeater Management Committee, Council member RSGB 1996 - 2000, plus various other roles over the last 30 years!

M J Down, G4ALR	**Henlow**	**30**

Secretary Mid-Beds Contest ASSN, Novice instructor.

Robert Ferguson, GM3YTS	**Dunblane**	**10 +**

Chairman GMDX Group, former President FOC (First Class CW Operators Club), member Stirling & DARS.

Tim Kirby, G4VXE	**Windsor**	**10 +**

RadCom columnist 1999 - present, corresponding member of RSGB HF and VHF Contests Committees, past member of RSGB VHF Committee, member of e.QSL.cc Advisory Board.

Peter Maile, MI0BME	**Lisburn**	**15**

DCC member, treasurer GI PWG

Lionel Parker, G5LP	**Wellingborough**	**18**
Colin J Thomas, G3PSM	**Totton**	**20 +**

RSGB HF Manager, RSGB HF Committee Chairman, IARU Region 1 External Relations Committee member, Licence Advisory Committee member, member of UK Delegation to CEPT Frequency Management Team 40 (HF matters), member of Waterside (New Forest) RS and Horndean & DARS.

JOHN BUTCHER, G3LAS (DOB 19.11.36)
(CANDIDATE FOR ELECTION AS BOARD MEMBER)

CURRICULUM VITAE: Joined the RSGB as listener in 1954 and licensed in 1956. Spent many years mainly on VHF/UHF, including spell on RSGB VHF Committee, before being 'born again' as an HF DXer in 1997. Since then has worked 325 countries on all bands 160 - 6m. Active on CW, SSB, RTTY and occasionally some of the 'new' data modes. Spent 35 years teaching and researching in Solid State Physics and Integrated Circuit Technology. Retired in 1997 as Professor of Microelectronics and Pro Vice-Chancellor of Middlesex University. Currently a member of RSGB HF Committee and Chairman of Chiltern DX Club.

PERSONAL STATEMENT: Having enjoyed the benefits of RSGB membership for 47 years, I think it is right that I should seek to 'put something back in'. Certainly, our hobby is facing many challenges which will require great efforts from many strong national societies if we are to protect the regulatory structures and environment in which we currently operate. The competition for spectrum space is always with us and we face severe potential problems from the proposals for the introduction of power line data transmission systems. At the same time, the vital influx of new radio amateurs is threatened by alternative technologically-based hobbies which did not exist when I, and many others, started up in radio. The RSGB must be in the forefront of the campaign to protect our hobby and I believe I have experience and abilities which could be of assistance in these efforts.

Nominated by:	Town:	Known for (yrs)
Philip Whitchurch, G3SWH	**Congresbury**	**5**

RSGB member, FOC member, CDXC member, active HF operator & DXpeditioner, Senior RSGB Morse Test Examiner.

Mike Devereux, G3SED	**Burridge**	**3 +**

Vice-Chairman Chiltern DX Club, Managing Director Nevada Communications.

J Kellaway, G3RTE	**Potters Bar**	**10**

IOTA Committee member, DXCC checker for ARRL in the UK.

Roger Balister, G3KMA	**Woking**	**3**

IOTA Manager (previously Director) since 1985, member of IOTA Committee, member of HF Committee 1984 - 1996, past President of Chiltern DX Club (CDXC, the UK DX Foundation), awarded RSGB Founder's Trophy and ROTAB.

Neville Cheadle, G3NUG	**Hemel Hempstead**	**5**

President CDXC (Chiltern DX Club), The UK DX Foundation, Team Leader 1998 9M0C Spratly Is and 2001 D68C Comoro Is DXpeditions, 350+ DXCC countries and 900+ IOTA island groups confirmed, several mini-DXpeditions to Malaysia, former Chairman RSGB HF Committee and HF Convention Organising Committee, Manager of the 'IOTA 2000' Programme, joint editor of *DXpeditioning Behind the Scenes*, Director - Island Radio Expedition Foundation, Chairman CDXC 1994 - 2001.

Charles Wilson, GM4UZY	**Montrose**	**2.5**

Committee member of GMDX Group, Islands of Scotland Award Manager.

Dr J E Tindle, GW3JXN	**nr Cardigan**	**20**
Frank Cooper, G2QT	**Ashford**	**10**

Very active in amateur radio over 68 years.

H F Lewis, G3GIQ	**Ealing**	**5**

Ex-HF Committee, ex-IOTA Committee.

Ian Davies, G3KZR	**Bruton**	**40 +**

CUWS Organiser 1958 / 1959, Southgate & District late 1950s.

PETER MAILE, MI0BME (DOB 15.04.46)
(CANDIDATE FOR ELECTION AS BOARD MEMBER)

CURRICULUM VITAE: Born in Wellingborough, Northants, I am now aged 55, a Civil Servant working for a Belfast-based dept. I became GI1ONL in 1985 and MI0BME in late 1997. I am interested in all aspects of amateur radio and became a member of the Datacommunications Committee some years ago, operating mainly on RTTY and PSK. I take great interest in RTTY contests and Raynet operating. A member of BARTG and CDXC.

PERSONAL STATEMENT: If elected to the Board I will work to promote the objectives of the Society and its members in whatever duty I am asked to carry out. There is a wide range of interests, be it HF, UHF and above, CW, RTTY, phone, repeaters, data, EMC and many others, all of which advance the science and practice of amateur radio. We need to promote the exchange of information and ideas on these subjects not only to the members but world-wide, at the same time the interests of the members and the wider amateur radio community need to be safeguarded in the ever-changing world we live in.

Nominated by:	Town:	Known for (yrs)
Ian J Kyle, GI8AYZ	**Lisburn**	**15**

Past President, RSGB.

John McCullagh, GI4BWM	**Ballyclare**	**10**

Controller Northeast Northern Ireland Raynet Group.

Fred Handscombe, G4BWP	**Bury St Edmunds**	**10**

HF Committee member, RSGB HF Awards Manager, former Regional Council member.

J Clayton, G4PDQ	**Cheltenham**	**8.5**

Chairman Cheltenham ARA 1996 - 2000, Deputy Chairman Cheltenham ARA - current.

Martin Lynch, G4HKS	**Ealing**	**8**

Retailer of ham radio (proprietor).

Iain Philipps, G0RDI	**Amersham**	**6**

Chairman, RSGB Datacommunications Committee, Secretary UK Six Metre Group, Senior County Morse Examiner.

Stephen Morton, G8SFR	**Pembury**	**7**

Currently Secretary to Kent IP Group (KIPG), founder member of KIPG, Secretary to RSGB Datacommunications Committee (DCC), Node Co-ordinator for DCC since 1994.

Simpson Weir, GM3SAN	**Baillieston**	**15**

RSGB DCC corresponding member, committee member West of Scotland UHF Repeater Group (GB3GL / GB3ML), committee member of MACPAC (the Scottish Digital Communication Group).

Alexander Gartshore, GD3UMW	**Crosby**	**7**

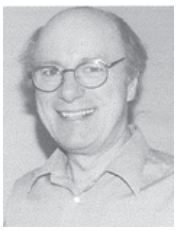
Past Chairman of Isle of Man Radio Society, committee member GD6IA Contest Group, Project Co-ordinator of Manx Amateur Radio Network, Sysop GB7BIG Packet Cluster Node.

Chris Deacon, G4IFX	**Farnham**	**6**

Committee member, UK Six Metre Group and Editor of *Six News* Magazine, member RSGB Propagation Studies Committee.

Board Elections

EDWIN TAYLOR, G3SQX (DOB 22.04.46)
(CANDIDATE FOR ELECTION AS BOARD MEMBER)



CURRICULUM VITAE: Licensed and RSGB member since 1963. As GW3SQX, discovered Field Day with Cardiff Group, developing interests in contesting, DX and propagation. Operated as ON8KO, N0ED and GU3SQX. Former member of Flight Refuelling ARS, on the Forward Planning committee. Participated in Packet, moonbounce, and antenna projects. Past member and secretary of HF Contest Committee, helped create AFS SSB and IOTA contests. Member of Chiltern DX Club, Contest Cambria (GW7X) and Guernsey ARS. Have taught RAE and Morse. Author of *Practical Wireless* articles: contesting, antennas, equipment reviews; also 'Scene USA' and 'DX Destination'. Chairman of the RSGB Amateur Radio Development Committee.

PERSONAL STATEMENT: My approach is to look forward: beyond the Morse test for HF, probably abolished in 2003. We can use this as an opportunity to advance, rather than a development to be feared. At the same time the RSGB must address our falling UK numbers. The outside world knows virtually nothing about our hobby - we have to change this. We must urgently discover what attracts people these days, then give amateur radio a higher profile. We should rationalise the new licences, to create a world-class system. I will press for improved conditions where reasonable: extended bands, higher power if appropriate, short (vanity) callsigns, relaxed logging requirements, CW sub-band protection and recognition of new modes. The RSGB should offer encouragement to amateurs in the forefront of our technology. Publications need to be improved, appealing to all skill levels. Qualifications: BSc, Chartered Engineer, 25 years experience running a software business.

Nominated by:	Town:	Known for (yrs)
Chris Burbanks, G3SJJ	**Plumtree**	**20**

1985 - 2000 Committee member RSGB HF Contests Committee, 1994 - 2000 Chairman HFCC.

Dr Harold Owen, G2HLU Swanage 10

Corresponding member of HF Contests Committee since 1990, adjudicator for Commonwealth Contest since 1994, organiser of Slow Morse Practice Transmissions for Swanage & Purbeck ARC.

Andy Talbot, G4JNT Hedge End 12

Past Vice-Chairman Flight Refuelling ARS G4RFR, RSGB Microwave Committee Chairman 1996 - 1999, member of RSGB Specialist Advisory Group on future of AR, contributor of numerous technical articles to *RadCom* & *Microwave Newsletter*.

Don Field, G3XTT Peppard Common 9

'HF' columnist *RadCom*, Chiltern DX Club newsletter editor, Manager IOTA Contest, past member of RSGB Management Committee, HF Committee, Packet Working Group, past Chairman of Reading & DARC and of CDXC.

Francis Ross Clare, GW3NWS Magor 20

Licensed 40+ years, Honorary member Newport ARS, Chairman GW8GT, ex-Senior Instructor Gwent (Novice licence).

Dave Lawley, G4BUO Penshurst 12 +

Member & former Chairman RSGB HF Contests Committee, HF Manager, M2000A, UK team member, WRTC-1990 & WRTC-2000.

Clive Whelan, GW3NJW Peterston-Super-Ely 38

Chairman Contest Cambria Group, licence holder GW7X, member FOC since 1967 (First Class CW Operators Club).

Phillip Cooper, GU0SUP Castel 2

President Guernsey ARS (GARS) 1997 - present, GARS Committee member 1995 - 1997, Committee member British Amateur Radio Teledata Group (BARTG) 1998 - present and have always played an active part in the group's affairs. Columnist for BARTG magazine, author of articles for *Practical Wireless* and *RadCom*.

Richard Horton, G3XWH Harrogate 1

Founder / Chairman of STELAR 1993 - 1997, RSGB Council member 1995 - 1997, RSGB Council / Board member 1999 - 2001, RSGB Management Committee member 1997, Chairman RSGB Foundation Licence Examination Forum 2000, RSGB Delegate, City & Guilds RAE / NRAE Committee.

Hilary Claytonsmith, G4JKS Woolston 18

Chairman EMC Committee, past President, Life Vice-President RSGB.

RICHARD CONSTANTINE, G3UGF (DOB 28.09.48)
(CANDIDATE FOR ELECTION AS BOARD MEMBER)

CURRICULUM VITAE: Licensed 1965, former committee member, twice Chairman of, local club, contest and expedition organiser. 1969 - 1974 marine Radio Officer operating amateur Maritime Mobile, HF and VHF. Instrumental in establishment of repeater GB3WY. 1979 - 1989 amateur radio retailer, importer, 1989+ director of two national companies specialising in mobile communications management and vehicle location systems. Novice instructor Rishworth School RC for 10 years. Morse examiner for four years, trustee and advisor to educational radio charity STELAR since its registration, currently active, all mode, QRP operator 160m to 432MHz, constructor, contributor to *RadCom* interested in all aspects of amateur radio.

PERSONAL STATEMENT: I have been a licensed amateur for 35 years, a Society member for almost 40 years and have earned my living in radio communications throughout my professional life as a direct result of boyhood interest. Based on my own personal experience, I would welcome the opportunity to contribute to the future development of amateur radio. I am particularly concerned about the sustained commercial pressures on our radio spectrum and of the need to encourage more people of all ages to take up the hobby. This I would hope to achieve through closer ties with mainstream education, industry and other agencies. These are challenging and changing times that simply cannot be ignored and which require a sustained professional response from our national society. In addition to 25 years of business experience, I remain an active operator and constructor, interested in all aspects of the hobby.

Nominated by:	Town:	Known for (yrs)
George Dobbs, G3RJV	**Rochdale**	**10**

Honorary Secretary G QRP Club.

Anthony Vinters, G0WFG Sowerby Bridge 11

Chairman of STELAR, Novice Instructor.

Esde Tyler, G0AEC Hebden Bridge 20 approx

RadCom columnist for Novices, Novice instructor, Secretary Todmorden ARS, Information / advice stand at most northern rallies, speaker at many local radio clubs, STELAR Committee member.

John Muzyka, G4RCG Kirkhamgate 18

Chairman of North Wakefield RC for 5 years, present Contest Manager and rally manager of NWRC, Secretary of Yorkshire DX Cluster Group.

Terry Barnes, GI3USS Bangor 6

Past President RSGB (1992), Honorary Treasurer Bangor and DARS (32 years), Repeater keeper GB3NI, GB3LY, GB3UL, Chairman Belfast RSGB Group, Honorary Treasurer RAIBC (NI), GI rep RMC.

Chris Rees, G3TUX Haslemere 10

Manufacturer of Howes Kits and supplier of Morse keys, QRP and CW enthusiast, RSGB member since 1963, licence holder since 1964.

Keith Kahn, G3RTU Salford 30 +

Officer / committee member Bury RS, officer / committee member Northwest Packet User Group, past committee / Secretary RSGB HF Committee, past committee / Secretary RSGB HF Convention Committee, NRAE / RAE Instructor.

J H Fish, G4MH Golcar 30

Honorary member, Halifax & DARS for 30 years.

Steve Ortmayer, G4RAW Halifax 10

Chairman Halifax & DARS 1992 - 2000, Novice instructor, G QRP Club Novice officer.

W C A Carpenter, G4KQJ Brighouse 20

GB2RS newsreader, West Yorkshire, Member RAFARS, Net controller, local net.

ROBIN PAGE-JONES, G3JWI (DOB 26.04.37)
(CANDIDATE FOR ELECTION AS BOARD MEMBER)

CURRICULUM VITAE: I am a Chartered Engineer, having wide experience of commercial activities both technical and managerial. Member of the RSGB since 1954 and Chairman of the EMC Committee from 1992 until last year when I took on the Technical Portfolio of the new RSGB Board. I have been a member of the RSGB Council / Board since January 1999. I am the author of *The RSGB Guide To EMC* and the EMC chapter of the *RadCom Handbook*. I am a member of G QRP Club and have been an active member of the Vange Amateur Radio Society for many years.

PERSONAL STATEMENT: I currently hold the Technical Portfolio on the Board and wish to be re-elected so that I can continue to play a leading part of the Society's drive to secure the future of amateur radio against the unprecedented threats to the spectrum which have arisen in recent years. In addition to my Board activities I am an active member of the EMC Committee, and am Honorary EMC Consultant to the Society, representing members' interests on a number of official bodies. I strongly support technical innovation, particularly in areas which will impact the future of amateur radio. I am also interested in radio history and traditional techniques. My preferred operating mode is CW with occasional excursions on PSK31 and SSB.

Nominated by:	Town:	Known for (yrs)
David Lauder, G0SNO	**Barnet**	**12**

Member of RSGB EMC Committee, Consultant to RSGB Board, writer of 'EMC' column in *Radio Communication*.

Ken Ashcroft, G3MSW Harpenden 5

Treasurer RSGB - 5 years.

R H Biddulph, M0CGN Surbiton

Member of Council / Board of RSGB, member and ex-Chairman of TAPAC, member and ex-Chairman of Wimbledon & DARC, member and ex-Chairman of Kingston & DARC, Editor of 6th edition & co-editor of 7th edition of *Radio Communication Handbook*, editor of *VHF Handbook*, author of article for *RadCom*.

Gordon L Adams, G3LEQ Cheshire 4

RSGB Board member (Spectrum), President UKFM Group (Western), Education Officer North Cheshire RC.

Charles Elliott, G4UJW Alrewas 2

Chairman of Christian Radio & Computer Association, RSGB EMC membership services administrator.

Richard Marshall, G3SBA Harpenden 3

Member of the Electromagnetic Compatibility Committee and Honorary Consultant to the Board.

George Rawlings, G8CUN Basildon 16

Technical Manager Duxford Radio Society, Imperial War Museum, Duxford, Cambs.

N R Pascoe, G3IOI Wickford 20+

Member of FOC 1980 - 1985, Member of RSGB 49+ years, Member of AMSAT UK, Member of RAIBC.

R A Jackson, G3ASH Basildon 10+

Treasurer of Vange ARS for 16 years.

John M Strutt, G4XTS Billericay 18

President Vange ARS.

RADIO SOCIETY OF GREAT BRITAIN

(A Company Limited by Guarantee. Registered in England No 216431)

LAMBDA HOUSE, CRANBORNE ROAD, POTTERS BAR, HERTS EN6 3JE

Election of Board and Regional Council for 2002-2004

(Only paid-up corporate members are entitled to vote)

The ballot paper below contains the names of the candidates for the vacancies on the Board and Regional Council. The candidates are listed in order of receipt of their nomination paper. Note that no nominations were received for the vacancies in Region1 (Scotland West & Western Isles); Region 2 (Scotland East & the Highlands); Region 5: (Midlands); Region 10: (South & South East); Region 11: (South West & Channel Islands).

Please note:-

a) For the election of a Regional member each corporate member shall place a **CROSS** in the space provided against the name of **ONE** candidate. Only corporate members resident in the Region concerned may vote in the election, and then only in the Region he or she is resident.

b) Corporate members may vote for up to **FOUR** candidates in the Board election.

c) Each corporate member voting must write his/her name and callsign, RS or membership number legibly on the back of the envelope for this ballot paper to be valid.

d) Ballot papers must reach RSGB HQ by 12 noon on Friday **23 NOVEMBER 2001**.

S Minocha
Hon Company Secretary

Ballot paper

Regional Council

Region 6 (North Wales - Wrexham, Denbighshire, Flintshire, Conwy, Gwynedd, Ynys Môn (Anglesey) and Powys)

(a) Patrick Allely, GW3KJW		**(b) Liz Cabban, GW0ETU**	

Region 3 (North West)	**Kath Wilson, M1CNY**	**Elected unopposed**
Region 4 (North East)	**Geoff Darby, G7GJU**	**Elected unopposed**
Region 9 (London & Thames Valley)	**Roger Piper, G3MEH**	**Elected unopposed**
Region 12 (East & East Anglia)	**Malcolm Salmon, G3XVV**	**Elected unopposed**

Note: Region 7: (South Wales) and Region 8: (Northern Ireland) have sitting Regional Managers, therefore no election is called this year.

Board

(a) Fred Handscombe, G4BWP		**(b) John Butcher, G3LAS**	
(c) Peter Maile, MI0BME		**(d) Edwin Taylor, G3SQX**	
(e) Robin Page-Jones, G3JWI		**(f) Richard Constantine, G3UGF**	

Cut along the dotted line

Back of Election Form

RADIO SOCIETY OF GREAT BRITAIN

(A Company Limited by Guarantee. Registered in England No 216431)

Proxy For Use At RSGB Annual General Meeting

I,* ..... Call/RS .....

of .....

a member of the above named Society hereby appoint

..... Call/RS .....

of .....

or failing him/her ..... Call/RS .....

of .....

*** Full name and address to be inserted in block capitals.**

as my proxy to vote for me on my behalf at the Annual General Meeting of the Society to be held on Saturday 1 December 2001 and at any adjournment thereof as indicated below.

In the event of no proxy being named or of your nominated proxies failing to attend the Annual General Meeting the proxy will automatically revert to the chair of the meeting.

Please indicate with an 'X' how you wish your vote to be cast; otherwise the Proxy will abstain or vote at his or her discretion.

ANNUAL GENERAL MEETING	FOR	AGAINST
RESOLUTION 1 To receive and, if approved, confirm the minutes of the 74th Annual General Meeting as circulated to all members with the December 2001 *RadCom*.		
RESOLUTION 2 To re-appoint the auditors KPMG and to authorise the Board to fix their remuneration.		

Signature ..... Dated 2001

NOTES

1 Members may appoint any member OR non member as their proxy holder. However the following are willing to act as proxies:
The President D F Beattie, G3BJ, Hares Cottage, Woolston, Church Stretton, Shropshire SY6 6QD,
The General Manager P A Kirby, G0TWW, RSGB, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE

2 The proxy form must be signed by either the fully paid up corporate member or by his or her attorney duly authorised in writing.

3 Articles 37 to 49 inclusive refer to proxy votes and the calling of a poll.

4 In order to be valid this form MUST reach the Society's registered office not later than 11.00am on Thursday 29 November 2001. It may be sent in the envelope provided for the 2002 - 2004 Council Election vote.

Cut along the dotted line

Back of Proxy Form

RADIO SOCIETY OF GREAT BRITAIN

(A Company Limited by Guarantee. Registered in England No 216431)

Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE

Annual Meeting

Annual General Meeting

NOTICE IS HEREBY GIVEN that the 75th Annual General Meeting of the Radio Society of Great Britain will be held at the Strathclyde Fire Brigade HQ, Bothwell Road, Hamilton, Scotland, on Saturday 1 December 2001 at 11.00am for the transaction of the undermentioned business:

Agenda

1 To receive and, if approved, confirm the minutes of the 74th Annual Meeting circulated to all members with the December 2001 edition of *RadCom*. (Resolution 1)

2 To receive and consider the accounts for the year ending 30 June 2001 and the reports of the Board and auditors thereon.

3 To announce the names of members to serve on the Board and Regional Council for the year 2002.

4 To call for volunteer scrutineers for the 2002 Board and Regional Council Election.

5 To reappoint the auditors KPMG and to authorise the Board to fix their remuneration. (Resolution 2)

Notes

(1) Members are asked to attend no later than 10.45am. Doors will open at 10.00am. Refreshments will be available.

(b) A Society bookstall will be open from 10.00am - 2.00pm.

(c) The Society will make available for sale an audio tape recording of the proceedings. The use of video recording equipment will not be permitted at the meeting.

(d) Members entitled to attend and vote at the meeting may appoint a proxy to attend and, on a poll, vote on his or her behalf. The proxy need not be a member of the Society , but is not allowed to speak at the meeting other than to join in the demand for a poll.

By Order of the Board –
S Minocha, Hon Company Secretary
4 October 2001

On completion of the AGM

1 Presentation of Awards

2 President's address

A buffet lunch will be available at 12.30pm.

Open Forum

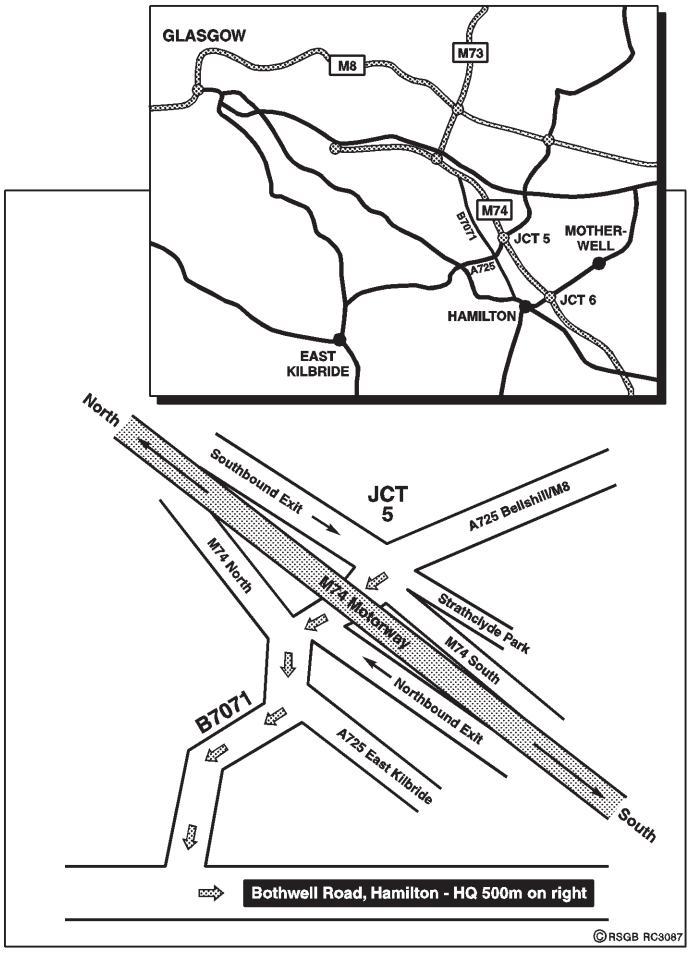
The Open Forum will commence at 2.00pm and end at 4.00pm or shortly thereafter. Items for discussion at the Forum will include:

1 A review of recent licence changes and the introduction of the Foundation licence.

2 Recognising the threats to Amateur Radio operation in the UK.

2001 Amateur Radio Dinner

At the Bothwell Bridge Hotel, Hamilton, Scotland commencing at 7.30pm. Tickets, price £18.50, available from RSGB HQ. Open to members and non-members.



Maps showing location of venue for AGM: the Strathclyde Fire Brigade HQ, Bothwell Road, Hamilton, Scotland.

The Committees of Council / the Board

The name and callsign of each Chairman is shown in **bold**. *Corresponding or liaison members are shown in italics.*

The President is an ex-officio member of all committees. Committee members listed served during the period 1 July 2000 to 30 June 2001.

ARDF: Geoff C Foster, G8UKT; *C Mott-Gotobed, G4ODM; G Nicholls, G4DLB; D C Holland, G3WFT;* D Pechey, G8NMO; C D Plummer, G8APB; D A Burleigh, G4WIZ; G W Dover, G4AFJ; M P Hawkins, G3WMM.

DATA COMMUNICATIONS: Iain Philipps, G0RDI; *Robin Page-Jones, G3JWI; Andy Talbot, G4JNT; Fred Handscombe, G4BWP; Tony Horsman, G0MBA; Ian Brothwell, G4EAN; Dick Whittering, G3URA; Charles Brain, G4GUO; Ian Maude, G0VGS; Sim Weir, GM3SAN; David Biram, G6TVA; Paul Steed, G0VEP; Rob Compton, G1ZPU;* Martin Green, G1DVU; Steve Morton, G8SFR; Peter Maile, MI0BME; Dirk Koopman, G1TLH; Jason Flynn, G7OCD; Roger Harris, G3ZFR.

EMC: Hilary Claytonsmith, G4JKS; *N R Hooper, G8NLY; J Greenwell, G3AEZ; D Cossar, GM3WIL; G M Allan, GM4HYF; C R Caine, G4IWS; R E G Petri, G0OAT;* R C Marshall, G3SBA; D W McQue, G4NJU; C Elliott, G4UJW; R D Watson, G0MKG; S N Lloyd Hughes, GW0NVN; D M Lauder, G0SNO; M J Culling, G8UCP.

EMC CO-ORDINATORS: T W G Menzies, GM1GEQ; A Jones, G1KEA; K N Watkins, G3AIK; W A Gardner, G3HRV; S Ellis, GD3LSF; F Sawyer, G3SLN; R Smith, G3SVW; H D Kernaghan, GI3USK; D Cossar, GM3WIL; D Morris, GM3YEW; A Maish, G4ADM; C Barnes, GW4BZD; G Brown, G4ICD; R Adam, GM4ILS; P Goodfellow, G4KUQ; G Brooks, GM4NHX; D McQue, G4NJU; S Bennie, GM4PTQ; B Harrison, G4UJS; G Valleley, G4YRS; H Pearson, G7KET; L Parry, G8AMK; S Dimmock, GD8COH; P Bertram, GJ8PVL; K Hendry, G0BBN; A Armstrong, G0FBW; P Daly, G0GTE; R Gilchrist, G0TUE.

HF: Colin Thomas, G3PSM; *J W Gould, G3WKL;* A H E Williams, G4WWA; R J Nash, G4GEE; F C Handscombe, G4BWP; G W Dover, G4AFJ; M C Phillips, G3RFX; G L Adams, G3LEQ; S Khan, G0STU; K Khan, G3RTU (Committee Secretary).

HF CONTESTS: Justin Snow, G4TSH; *Bob Treacher, BRS32525; Tom Wylie, GM4FDM; Richard Everitt, G4ZFE; Tim Kirby, G4VXE; Steve Knowles, G3UFY; Colin Thomas, G3PSM; Harold Owen, G2HLU;* Laurence Mason, G4HTD; Dave Lawley, G4BUO; F G Robertson, G4BJM; J C Burbanks, G3SJJ; A Holdsworth, G8OO; Lee Volante, G0MTN; Jan Fisher, G0IVZ.

IARU: Malcolm Appleby, G3ZNU; *R L Glaisher, G6LX (deceased); C Cummings, G4BOH; D J Butler, G4ASR; J D Forward, G3HTA; W M Dunnell, G3BYW;* I L Cornes, G4OUT; G Shirville, G3VZV; C J Thomas, G3PSM; M W Dixon, G3PFR; L W Barclay, G3HTF; J Bazley, G3HCT; R J Hughes, G3GVV; R J C Broadbent, G3AAJ.

IOTA: Martin Atherton, G3ZAY; *M Crownover, AD5A; D S Chamberlain, W9DC; R Neilson, GM0EFT; R D Williams, G4LVQ; J L Hall, G3TOK; R S Small, G3ALI; J M Duthilleul, F6AJA; H G Gobel, DK1RV; S Khan, G0STU;* L Ranger, 2E1EKT; D L Jones, W4BAA; M Pregliasco, I1JQJ; A R Williamson, GI0NWG; G W Dover, G4AFJ; G J Kellaway, G3RTE; R Balister, G3KMA; S Lawman, G0UIH.

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MANAGEMENT: Bob Whelan, G3PJT; K Ashcroft, G3MSW; D F Beattie, G3BJ; R Horton, G3XWH; D McQue, G4NJU; Marilyn Slade, RSGB HQ; Mark Allgar, RSGB HQ.

MAGAZINE ADVISORY GROUP: Peter Kirby, G0TWW; *P Chadwick, G3RZP*; M Dennison, G3XDV; S P White, G3ZVW; S E Telenius-Lowe, G4JVG; P Waters, G3OJV.

MICROWAVE: Julian Gannaway, G3YGF; *G Shirville, G3VZV; R W L Limebear, G3RWL; L P D Kellett, G8KMH; D R Edwards, G8BFV; B Chambers, G8AGN; R A Stewart, G4PBP; P E F Suckling, G4KGC;* P G Murchie, G4FSG; *D J Robinson, G4FRE; E R Jewell, G4ELM; M G Kinder, G0CZD;* S M Lewis, GM4PLM; S J Davies, G4KNZ; A C Talbot, G4JNT; S T Jewell, G4DDK; C W Suckling, G3WDG; P E H Day, G3PHO; M W Dixon, G3PFR; G L Adams, G3LEQ; M H Walters, G3JVL; S Chettle, G8ATB.

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PLANNING ADVISORY: Stephen Purser, G4SHF; R J Amblin, G3LYN; J W E Jackson, G3TZZ; B K Sankey, G7RWY; L F G Thomas, GW4ZXG.

PROPAGATION STUDIES: Martin Harrison, G3USF; *E H N Oakley, M1BWR; K Feldmesser, RS87676; C J W Thompson, G3PEM; R G Flavell, G3LTP; S J M Whitfield, G3IMW; L W Barclay, G3HTF; W M Dunell, G3BYW; I D Brotherton, G2BDV;* A H E Williams, G4WWA; C J Deacon, G4IFX; G Williams, G4FKH; G H Grayer, G3NAQ; G L Adams, G3LEQ; C E Newton, G2FKZ; R G Cracknell, G2AHU; S W Nichols, G0KYA; N Clarke, G0CAS; S J Reed, G0AEV.

REPEATER MANAGEMENT: Carlos Eavis, G0AKI; *G Shirville, G3VZV; F Sinapi, RSGB HQ;* D Wilson, G7OBW; M Lewis, GW7KDU; C Dalzeil, GM8LBC; A Barrett, G8DOR; A Horsman, G0MBA; L Baddeley, G8LXI; W Mahoney, G3TZM; R Jones, G3YMK (deceased).

TECHNICAL AND PUBLICATIONS ADVISORY PANEL: Tony Plant, G3NXC; M J Willis, G0MJW; R J Newstead, G3CWI; P B Buchan, G3INR; R M Page-Jones, G3JWI; P Dodd, G3LDO; J D Harris, G3LWM; D J Walker, G3OLM; P Chadwick, G3RZP; C V Smith, G4FZH; J Wilkinson, G4HGT; E David, G4LQI; R H Biddulph, M0CGN; P H Saul, G8EUX; P J Swallow, G8EZE; F Floyd, GW5AF.

VHF: Mike Adcock, GW8CMU; *A G Hobbs, G8GOJ; G Shirville, G3VZV; R W L Limebear, G3RWL; M W Dixon, G3PFR; I Philipps, G0RDI; J R Morris, GM4ANB; I F White, G3SEK; G H Grayer, G3NAQ; N A S Fitch, G3FPK; C V Farlow, G0RUZ;* A Jarvis, G6TTL; I L Cornes, G4OUT; D J Butler, G4ASR; J F Wilson, G3UUT; J P H Burden, G3UBX; G L Adams, G3LEQ.

VHF CONTESTS: Martin Platt, G4XUM; *S G Cooper, GM4AFF; C W Tran, GM3WOJ; M Goodey, G0GJV; L Volante, G0MTN;* P S Lindsay, G4CLA; I W N Pawson, G0FCT; R Horton, G3XWH; S W Redfern, G4AEQ; I R Dixon, G4BVY; I L Cornes, G4OUT; A R J Cook, G4PIQ; G W Dover, G4AFJ.

HONORARY OFFICERS

Emergency Radio Liaison Officer: T Reilly, G0NSY

Deputy Emergency Radio Liaison Officer: S Lloyd Hughes, GW0NVN

GB2RS News Manager: G L Adams, G3LEQ

HF Manager: C Thomas, G3PSM

HF Awards Manager: F Handscombe, G4BWP

Intruder Watch: C Cummings, G4BOH

IEE Liaison Officer: P H Saul, G8EUX

IOTA Manager: R Balister, G3KMA

Microwave Manager: M Dixon, G3PFR

Morse Practice Coordinator: G Allan, GM4HYF

Novice Scheme Coordinator: R Snary, G4OBE

Society Historian: G R Jessop, G6JP (deceased 11/2/01)

VHF Manager: D Butler, G4ASR

VHF Awards Manager: A Jarvis, G6TTL

QUA Editor: Ian Kyle, GI8AYZ / MI0AYZ.

The Icom IC-R3 Receiver

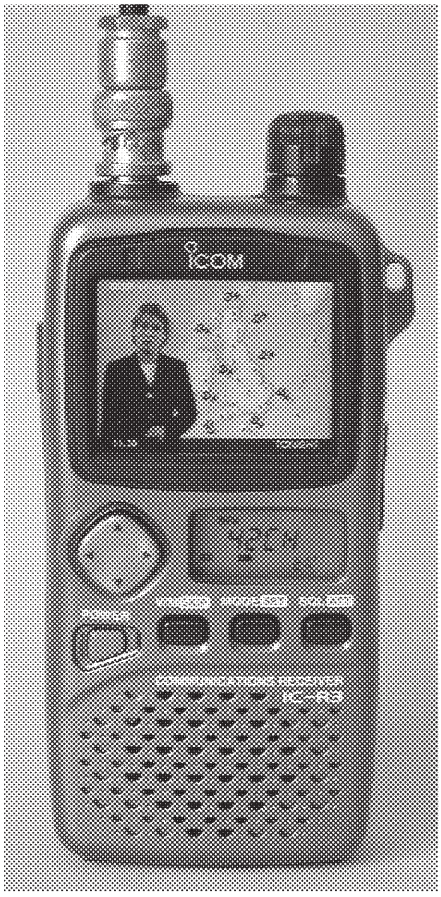
Reviewed by Chris Lorek, G4HCL*

MANY READERS like to keep an ear open on radio transmissions, whether these are local amateurs, broadcast stations, even the local coastguard weather information transmissions while out on the sea during the summer months. For others, utility transmissions hold an added interest. As for myself I find an expanded coverage handheld VHF / UHF radio is extremely useful - in my professional role as a radio engineer working with various government and commercial organisations it's often invaluable as an engineering tool.

Icom has been in the handheld communications receiver business for some time, I fondly remember marvelling at their tiny IC-R1 receiver many years ago. Their latest offering, the IC-R3, is a lot more than just a receiver. It adds a colour TFT screen to the usual monochrome LCD, which, besides allowing a graphical display, also has the ability to display off-air received video images along with the accompanying audio. "OK, it's a portable TV", you say? Well, not only can you tune into the latest cookery programme or catch up with tomorrow's weather report on normal broadcast AM TV on UHF, but it can also tune to DX TV transmissions above 30MHz on VHF and UHF, and both amateur and commercial FM TV transmissions between 900 and 1300MHz (which includes part of the 23cm ATV band) and 2250 - 2450MHz (eg some cordless video senders).

COVERAGE

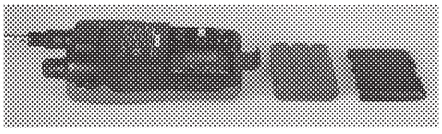
THE IC-R3 also receives AM, FM and wideband FM audio signals, with an incredibly wide frequency coverage of 495kHz to 2450.095MHz. This range is divided up into 11 sub-bands, although you can program any frequency and mode into these, effectively giving 11 different VFOs. There are 450 memory channels, in eight banks of 50 channels each, plus 50 'scan edge' memories. These let you program the set to search between specific frequencies in order to find active frequencies. Each of the memory channels can be assigned a short alphanumeric name to remind you of what you've programmed into it. If you're in a new area and you want to find which TV channels you



can watch, there's even an automatic TV channel programming mode which stores these for you - just like the 'auto tuning' function on a TV or VCR.

CONTROLS

ICOM USED ITS 'rocker pad' technique, as fitted on recent Icom amateur handhelds, as a control navigation tool for the receiver. Combined with the graphical display this allows an uncluttered front panel without a large number of knobs and buttons. For example, pressing the up / down pad sections can act as an up / down volume control, and the left / right pad sections used to change between frequency ranges. There's a click-step rotary knob on the top panel which acts as a frequency / memory channel change. Rotating this quickly can automatically speed up the rate of frequency change.



SCANNING

AS WELL AS a programmed frequency range search using the 25 pairs of memory channels assigned for these, you can of course also scan through the programmed memory channels. With this, you can either scan through all the memories (ie in all banks) or those in any one memory bank. In each case individual channels can be 'locked out' of the scan mode should you wish. There's also up to 400 'frequency pass' channels which use the remainder of the set's unprogrammed, ie blank, memory channels, which the receiver will automatically ignore on searches. This facility is very useful to prevent it halting on, for example, paging or beacon frequencies.

SUB-TONE & BANDSCOPE

A NICE BUILT-IN extra is the provision of CTCSS (sub-tone) decode, where the receiver squelch will, if you wish, only raise when a signal is accompanied by the correct sub-tone. There's also a CTCSS search, where the set will check which CTCSS tone is in use on the frequency you're tuned to, and automatically set the receiver to that tone for you.

As an alternative to actual scanning, the receiver has a bandscope function where, whilst the receiver remains quiet, it can sweep either side of your tuned frequency and display the relative strengths of received signals on the colour display. You can then tune to any of the received indications to view which frequency it was and to receive on that channel. There's also a 'Direction Finding' function, where the colour display can be used to show you a signal 'history' of the received strength over a few seconds, eg if you're using a beam or a loop antenna, to home in on a signal.

SOCKETS & POWER

A 3.5mm earphone socket is present on the top panel for either private listening or external speaker. A further side-mounted 3.5mm stereo socket gives audio and video outputs in TV mode.

The receiver comes with a 1650mAh 3.7V Lithium Ion battery pack, which fits into the

*PO Box 400, Eastleigh, Hants SO53 4ZF.

rear of the case. After a 15-hour charge using the supplied AC wall charger, this should give you an operating time of several hours with the backlight off, just under two hours with TV reception enabled, or a massive 25 hours plus in standby monitor mode with the built-in battery saver operating. Three AA batteries can also be fitted in place of the Li-Ion pack by using a small internal battery spacer that's also supplied, so there's no problem with running out of power when a recharge isn't possible.

A battery saver is fitted, which extends the operating time when you're monitoring a quiet channel by cycling the power on and off to the receiver until a signal appears. If you're in the habit of forgetting to switch the set off, and get flattened batteries as a result, an 'Auto Power Off' facility can also be selected. The set can be operated from an external 6V DC supply, and there's an optional DC cigarette lighter cable available together with a desktop charger for rapid charging, just two and a half hours for a full recharge.

OPTIONAL ACCESSORIES

USING AN OPTIONAL cloning cable and software, you can transfer data from memories etc to and from a Windows-equipped PC. This provides a handy way to edit the memory channel data. The cloning cable also allows two IC-R3s to have their memory contents transferred from one receiver to the other.

The IC-R3 comes with a telescopic whip antenna that's double-hinged at the bottom, terminated with a BNC plug to mate with the set-top BNC socket. As well as the supplied belt clip as a carrying aid there's also an optional carrying case to help prevent damage from scratches etc, and there's a small loop provided to fit a wrist strap if you have one handy somewhere (it isn't supplied).

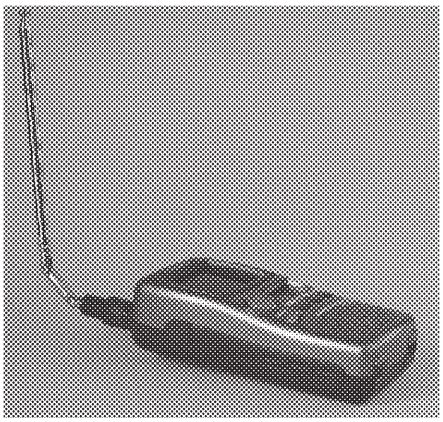
The IC-R3 measures 61W x 120H x 33Dmm and weighs 300g with battery and antenna fitted. A 58-page user instruction manual gives clear operating instructions. At the rear of this there's a cut-out quick reference guide which can be folded into three to give you a handy credit card sized document for your wallet.

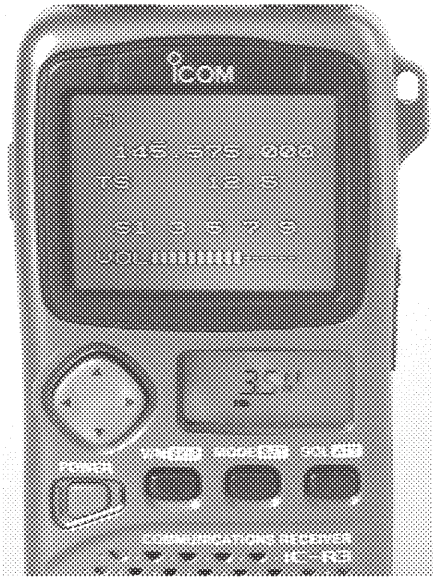
CIRCUITRY

A TRIPLE CONVERSION superheterodyne receiver is used, with IFs (Intermediate Frequencies) of 240.1MHz, 26.05MHz and 455kHz (the 2nd IF changing from 26.05MHz to 13.25MHz on WFM mode). Above 1150MHz, a quadruple conversion system is used. To help prevent strong signal overload problems, a four-level attenuator can be switched in when you're operating below 1150MHz. The TFT colour display is a light-emissive type, ie one which gives light out rather than needing daylight to view it as an LCD does. Naturally this increases the overall current consumption when it's in use. The smaller LCD reverts to giving a battery voltage indication when the TFT display is switched in, and for night-time use without the colour display there's a backlight provided for the LCD.

IN USE

EVEN THOUGH I'VE been accustomed to using Icom amateur handhelds as well as the IC-R1 and IC-R2 handheld receivers, it took me a short while to get used to operating the IC-R3. Cycling through the various frequency stepping methods was a little difficult at first, but after a while I did get the hang of operating the receiver. The small fold-up quick reference guide was invaluable here. I found the whip antenna very efficient - far better than a compromise 'rubber duck' type, although I had to be careful I didn't damage it. The double hinge at the base (see photo below) helped prevent this, it also let me use the receiver laid flat on a table top to stop it falling over, which it often otherwise did. The large number of memory channels was very useful, although I gave up trying to 'alpha tag' all of them!





Needless to say, there was plenty to listen to using the IC-R3. It's handy size allowed me to carry it around in my inside pocket, and it made a great companion on my travels around the UK.

Plugging in my rooftop VHF / UHF collinear back at home gave a few problems from pagers on 153MHz, but the multi-stage attenuator was handy here. The receiver naturally wasn't quite as sensitive on, say, 2m and 70cm as a purpose-designed amateur handheld, but quite acceptable considering its vast tuning range and efficient set-top antenna.

On HF I had to be careful again with an external antenna due to strong signals, but it's admittedly not designed as an amateur or utility receiver on this range, the AM / FM modes limiting it here to broadcast and 10m FM listening. I also found the colour LCD couldn't be switched in, even for memory or tuning use, below 30MHz.

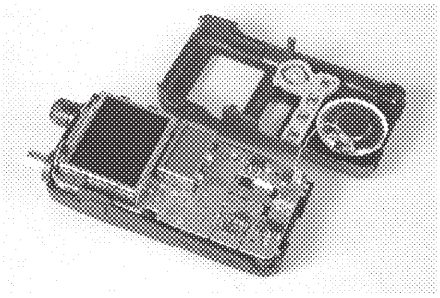
When using the set out portable, the colour TFT display quickly gobbled up the battery power - I had to be selective in choosing to use this without a power supply plugged in. A set of fully-charged nicads gave me little more than a half hour's use with this on, but several hours using the smaller LCD, which was entirely adequate for most of my listening needs. The TFT display came into its own during memory and VFO set-up, and used with the rocker pad this gave a very flexible means of control.

TV

BEING A SATELLITE listener / viewer hobbyist (I once had several fixed dishes installed plus a large motorised system for hunting around), I found a handy use of the IC-R3 was to help with dish alignment. Here, I normally use an in-line meter at the dish position with its battery box to supply power to the LNB, but adding the IC-R3 also let me see the analogue video signal in the 950 -

1300MHz range, using its FMTV mode. The audio sub-carrier offset could be adjusted on FMTV so I could tune to various audio channels on each transponder. I didn't have much luck on 23cm ATV though, as my local repeater's output frequency is above 1300MHz (as are most in the UK) which the IC-R3 can't receive in FM TV mode.

AM TV worked well for broadcast reception, I found I could always receive the sound sub-carrier much better without the video display switched on. Although it's not an absolute scientific test, when I was using the receiver in a reasonably strong TV signal area in Preston, receiving from the Winter Hill transmitter, I managed to get nice strong pictures but with the same programmes received on both low (Group A) and high (Group C/D) channels on the receiver. Try as I might I never received any video on 2.4GHz, even though the IC-R3 receives all



the 13cm amateur ATV frequencies and half of the licence-free 2.4GHz 'video sender' allocation. A check in the lab showed the receiver was a little less sensitive here though, so maybe a steerable 13cm beam and high-gain masthead preamp is called for.

The lab tests in effect replicated the on-air results: no great surprises, but they did show the R3 to be 'on par' with many other modern wide-band handheld receivers currently available. The receiver sensitivity tailed off as the frequency approached the upper limit of each of its internally-switched ranges, ie 1150MHz and 2450MHz, although the 1300 - 1700MHz sensitivity, for example, was fine.

CONCLUSIONS

ICOM HAS COME UP with a 'first': a compact and very portable receiver not only with an incredible tuning range right up to 2450MHz but with AM and FM video receive facilities as well. If you want a 'receive everything' scanner and can justify the higher price compared with an AM / FM / WFM portable receiver, do take a close look at the IC-R3 or, even better, try one out if you can, you could just be tempted.

The list price is around the £450 mark and our thanks go to Icom UK (tel: 01227 741741) for the loan of the receiver for review. ♦

ICOM IC-R3 RECEIVER - LABORATORY RESULTS

All measurements taken at 145.000MHz, FM, unless otherwise stated, using fully-charged internal lithium-ion battery.

Sensitivity
Input signal level in µV PD required to give 12dB SINAD.

2MHz	0.53µV PD (AM)
4MHz	0.46µV PD (AM)
6MHz	0.54µV PD (AM)
8MHz	0.45µV PD (AM)
10MHz	0.41µV PD (AM)
15MHz	0.48µV PD (AM)
20MHz	0.43µV PD (AM)
30MHz	0.19µV PD (FM)
50MHz	0.17µV PD (FM)
70MHz	0.19µV PD (FM)
100MHz	0.85µV PD (WFM)
145MHz	0.21µV PD (FM)
170MHz	0.20µV PD (FM)
250MHz	0.39µV PD (AM)
350MHz	0.23µV PD (FM)
435MHz	0.26µV PD (FM)
450MHz	0.26µV PD (FM)
550MHz	2.12µV PD (WFM)
750MHz	2.31µV PD (WFM)
950MHz	1.28µV PD (FM)
1297MHz	0.38µV PD (FM)
1500MHz	0.32µV PD (FM)
1700MHz	0.37µV PD (FM), 2.24µV PD (WFM)
1900MHz	0.45µV PD (FM), 4.78µV PD (WFM)
2300MHz	0.98µV PD (FM), 10.78µV PD (WFM)

Adjacent Channel Selectivity
Measured as increase in level of interfering signal, modulated with 400Hz at 1.5kHz deviation, above 12dB SINAD ref level to cause 6dB degradation in 12dB on-channel signal.

+12.5kHz:	39.7dB
-12.5kHz:	50.0dB
+25kHz:	60.4dB
-25kHz:	58.6dB

Blocking
Measured as increase over 12dB SINAD level of interfering signal modulated with 400Hz at 1.5kHz deviation to cause 6dB degradation in 12dB SINAD on-channel signal.

+100kHz:	72.6dB
+1MHz:	82.1dB
+10MHz:	83.7dB

Intermodulation Rejection
Measured as increase over 12dB SINAD level of two interfering signals giving identical 12dB SINAD on-channel 3rd order intermodulation product.

25kHz spaced signals:	57.2dB
50kHz spaced signals:	57.4dB

Maximum Audio Output
Measured from external audio output socket, using 1kHz audio, at the onset of 10% distortion.
106mW RMS

Image Rejection
Difference in level between unwanted and wanted IF image signal levels, each giving 12dB SINAD on-channel signals.

1st IF (240.1MHz) image:	66.1dB
2nd IF (26.05MHz) image:	45.2dB
3rd IF (450kHz) image:	50.5dB

Squelch Sensitivity
Level of signal required to raise receiver squelch.

Sq Level	AM	FM	WFM
Auto:	0.14µV PD (4dB SINAD)	0.17µV PD (8dB SINAD)	6.51µV PD (29dB SINAD)
Minimum (1):	0.56µV PD (14dB SINAD)	0.57µV PD (26dB SINAD)	7.36µV PD (29dB SINAD)
Maximum (9):	1.54µV PD (23dB SINAD)	1.37µV PD (31dB SINAD)	19.3µV PD (29dB SINAD)

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Frequency range 0 - 1750MHz
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Technical Topics

PAT HAWKER, G3VA
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FORECASTING 'GOOD' HF CONDITIONS

WHO WOULD BE a weather forecaster? Satellites with cloud cover pictures, radar etc have improved the 'art' beyond all recognition. Yet mistakes still occur. The 1987 hurricane has still to be lived down. August Bank Holiday Sunday this year was forecast as warm and mainly dry. In London it rained virtually all day!

Yet meteorologists are still well ahead of radio physicists. Despite some 60 years of radio propagation predictions, HF forecasts are still at the stage reached many years ago by weather forecasters. Not much better than a wet finger held in the wind. The trouble is, of course, the unpredictable Sun. The physicists have built up much knowledge of its external workings, but still, as for earthquakes, have no reliable method of predicting just when and where or how powerful solar flares and the associated sunspots will occur, their impact on our ionosphere or exactly when a solar cycle will begin or end or of what magnitude.

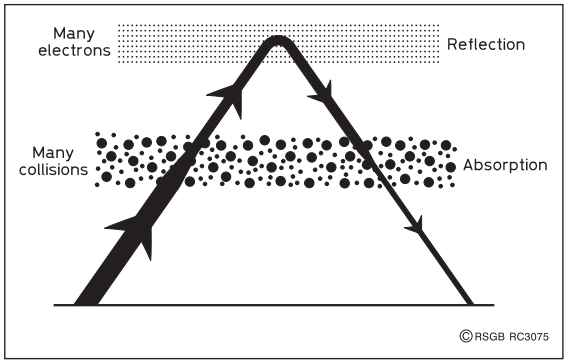

Fig 1: Ionospheric regions responsible for reflecting and absorbing radio waves. Note that it is the lower, less conductive layer(s) – primarily the D-layer - that absorb and thus attenuate HF signals (Source: Ratcliffe 1966)

When the pioneer amateurs began to explore the use of the 'short waves' in the early 1920s, the page was blank. Nobody knew what to expect at various wavelengths at various seasons, or whether HF could provide reliable communications over various distances. It was clear that groundwave signals had limited range, but there appeared to be a mysterious 'silent zone' before HF signals reappeared at good strength. The professional communications engineers (with the exception of Marconi and his chief assistant, Franklin) had written off wavelengths below 200 metres as of little or no value. In 1912, the USA politicians had been content to hand over this entire region of the spectrum to the amateurs. They believed their signals would never reach far beyond their own backyards!

The first trans-Atlantic tests in the early 1920s used wavelengths around 200 metres and needed darkness over the entire path. The first two-way contact (France/USA) in December 1923 was on about 110 metres. Amateurs first girdled the globe (UK/New Zealand) in October 1924 on about 80 metres around the dawn/dusk period. It was clear that the early ideas on radio propagation, involving only the unproven existence of the Kennelly-Heaviside reflective layer required drastic revision.

Following experiments in 1924, John Reinartz, W1XAM/W1QP, presented in the April 1925 *QST* an ionised reflecting layer hypothesis to account for the strange behaviour of the short waves, in particular the mysterious 'skip distance' effect.

But this was still only a hypothesis. It was left to [Sir] Edward (Victor) Appleton (1892-1965) to add 'QED'. Appleton, following several years at the Cavendish Laboratory, Cambridge, became professor of Physics at King's College, London University in 1924. In 1925 he, with the help of Barnett, was able to demonstrate the existence of a much higher layer than that assumed for the Heaviside layer. This became the Appleton layer, but Appleton himself renamed it the F-layer and showed that there were other intermediate layers which he named the D- and E-layers. This sparked off intensive investigations into the physics of the upper atmosphere that continue to this day, but the role of the Sun at first remained obscure.

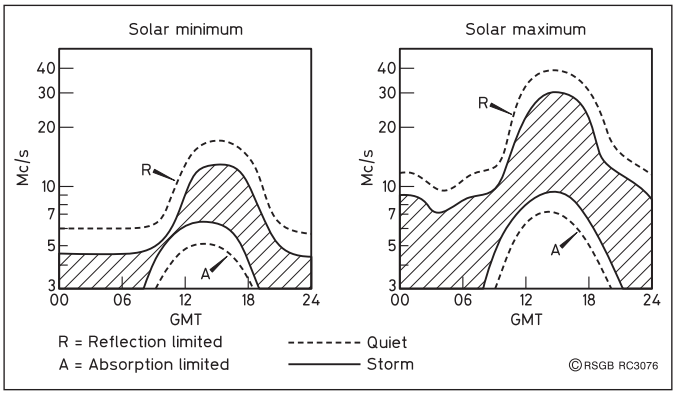

Fig 2: Frequencies usable over a commercial (high power) circuit between London and Halifax, Nova Scotia in December 1954 (solar minimum) and December 1958 (solar maximum) indicating how an ionospheric storm might affect the frequencies assuming that the storm has reduced the reflection-limited frequency and increased the absorption-limited frequency by 25%. (Source: Ratcliffe 1966)

It took more than a decade before the connection between the ionised layers and the Sun began to be understood in any depth. Even in a 1934 publication of the Science Museum on the *History and Development of Radio Communication*, the degree of uncertainty is well conveyed. To quote: "It has since been found that there are intermediate states of ionisation, that the waves *may* be polarized, that the state of ionisation *may* be affected by distant thunderstorms as well as by the Sun, and that there *may* be a direct connection between the undisturbed value of noonday ionisation and the eleven-year sunspot cycle" [my italics - *G3VA*].

Even in the late 1930s, I recall that some amateurs were convinced of a direct connection between the quarters of the Moon, the tides, barometric pressure, etc and DX conditions. It was J H Dillinger in the USA who, in 1935-6, first showed clearly the connection between the Sun and the sudden black-outs (SIDs) that had been observed (*QST,* December 1935, January 1936, *T&R Bulletin,* March, April, May 1936). In April 1938, a major conference was held in Washington DC at which Dr Dillinger and others presented papers showing how the characteristics of the ionosphere changed 'regularly' through a sunspot cycle and how various forms of ionospheric disturbance were associated with sunspot activity (see 'Magnetic Storms', by John Sinclair, BRS40, *T&R Bulletin,* May 1938).

For amateurs, the 28MHz band exercised particular fascination. In the late 1930s, Denis Heightman, G6DH, added a footnote to history by observing a "hissing phenomenon" thought to arise from "chromospheric eruptions on the sun": see 'Sunspots, Magnetic Storms and Radio Conditions', by E J Williams, G2XC (*T & R Bulletin* July 1939). In the 1940s, these radio emissions from the sun were to form one of the foundation stones of the whole new science of radio astronomy. They were investigated at the Cavendish in the immediate post-war period by [Sir] Martin Ryle (1918-84), G3CY, later the Astronomer Royal.

For many years, a leading British authority on HF propagation was J A Ratcliffe. FRS, who did much to extend an understanding of it beyond the specialist ranks of the radio-physicists. **Figs 1** and **2** are taken from his 1966 presidential address to the IEE: 'The ionosphere and the engineer'. Another who did much in the immediate post-war period to ex-

tend knowledge on a practical engineering level was the New Zealander, T W Bennington of the BBC. Amateurs should thank Les Moxon, G6XN, for his sterling work in the 1950s on extreme low-angle radiation and chordal hop (see later).

In 1938, Dr F T Farmer of the Cavendish, with others at Edinburgh University, published an important paper 'Critical Frequency Measurements of Wireless Waves Reflected Obliquely from the Ionosphere' (*Proc Physical Society)*, that compared the F-region skip frequency, for transmission between two distant stations, with that calculated from the normal-incidence characteristics on a simple ray theory.

WWII, a sunspot minimum period, saw the development of ionospheric propagation forecasting, based largely on daily measurements of the critical frequency, by a special group under T B Eckersley. I recall that at the Weald SCU1 station forecasts were phoned through daily – not that we were able to make much use of them since our clandestine outstations had their frequencies and times fixed in advance by their Signal Plans.

By the end of WWII, some at least of the effects of solar flares were becoming clear (**Fig 3**), but it was not until the 1960s that the importance to amateur radio of the Pedersen wave, chordal hop and the associated grey-line propagation, as well as trans-equatorial (TE) propagation began to be observed, investigated and appreciated. Chordal hop was discovered largely due to a pioneering investigation of signals from Europe received in Australia by Hans Albrecht, DL3EC / VK3AHH. TE was discovered by amateurs on the North to South America path and then confirmed by observations on signals between Cyprus and Southern Rhodesia (Zimbabwe) by Ray Cracknell (G2AHU / ZE2JV) and R A Whiting (G3UYO / 5B4WR). Later the Rev Paul Sollom, G3BGL (whom, in the September 'TT', I embarrassingly, but fortunately wrongly, described as "the late") cooperated with the Slough Radio Space and Research Station in showing that at VHF many of the stronger 'over-the-horizon' signals were due to a form of chordal hop.

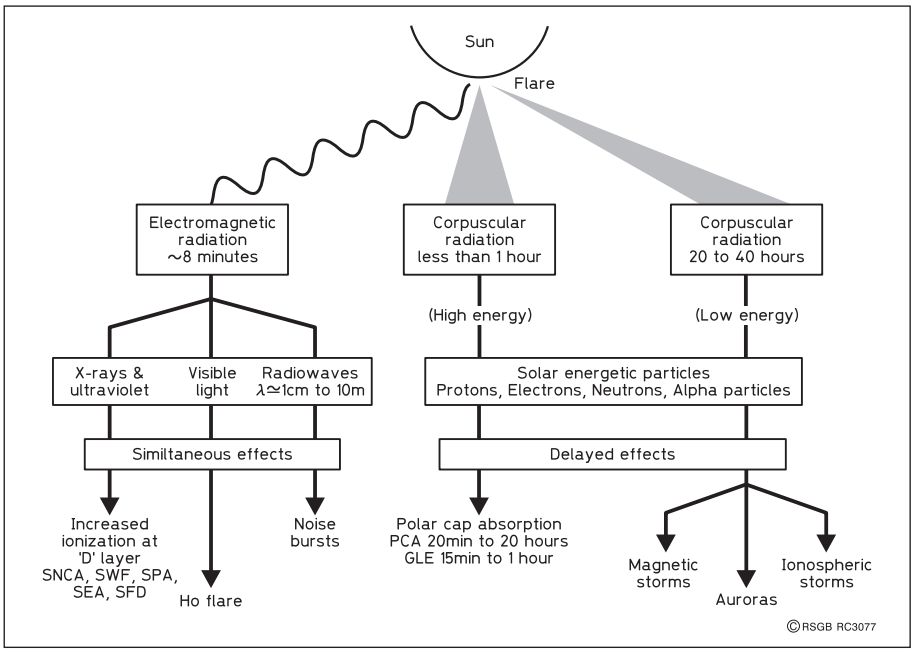

Fig 3: Effects of an X-class solar flare.

CCIR Report 250-1 'Long-Distance Ionospheric Propagation Without Intermediate Ground Reflection', produced in the late1960s, noted: "It is now well established that there are modes of propagation by means of the regular ionospheric regions, by which HF and VHF radio waves can travel to great distances in or below the ionosphere, over low absorption paths, without intermediate ground reflection. The distances extend from the classical limit of a single-hop out to 10,000km."

Report 250-1 recognised the following modes of propagation: (1) Normal one-hop propagation including both direct and Pedersen rays to well beyond the classical limit of single-hop (4000km); (2) Ionospheric ducting between E- and F-regions; (3) those resulting from horizontal ionisation gradients, such as the equatorial F-region ionisation trough.

Yet many amateurs still believe that their contacts beyond a maximum of 2500 miles are, with a few exceptions, covered (even on low power) by means of multiple hops between the F-layer and Earth. Amateurs have shown that, with the aid of ionospheric tilts that occur at dawn and dusk, even high-angle radiation from low dipoles can span many thousands of miles without intermediate ground-reflection, launched by the tilts into the waveguide formed between ionised layers. It is time we paid less attention to multiple hops (important for high-power HF broadcasts etc) and more to Report 250-1 and its chordal hop, grey-line and TE modes!

It was soon found that the daily relative sunspot number (SSN), based on an average of observations at a number of observatories, only loosely relates to short-term, daily variations in the layers, and that numbers averaged over 90 days are more meaningful. Later still, it was realised that a reliable indication of the current strength of the ionosphere can be found by measuring the solar flux emitted by the Sun. Solar flux has been defined as a measure of the level of radiation from the sun, and consequently, an indication of the general state of the ionosphere. Solar flux is measured at a frequency of 2800MHz (10.7cm) from a single observatory at Penticton, Canada.

For over four years, I have been recording the R (SSN), solar flux and geomagnetic field (Ap) figures originating from Boulder, Colorado and the Kiel geomagnetic field (Ap and K), as broadcast on DK0WCY (see 'TT', October 1997, March 1998 and December 1999). In July 1997, we were still in the doldrums between Sunspot cycles 22 and 23 with occasional days showing the zero SSN of a sun completely clear of spots. Solar flux figures tended to be in the 60s or 70s. Three years later we were at the peak of a rather disappointing Cycle 23 with some calendar months showing an *average* solar flux a little over 200. Typical months:
March 2000, 215.2;
May 2000, 184.6;
July 2000, 205.2;
March 2001, 179.7;
May 2001, 155.6;
July 2001, 105.5;
August 2001, 163.7.

A long 'active' period from 1 September 2001 to at least 18 September, averaged 221. This suggests that we are now past the peak of Cycle 23, but with a good promise that the 28MHz band will remain open at times for at least a couple more years.

But these daily predictions, although useful and interesting, cannot tell us reliably all that we would like to know. Monitoring of DK0WCY has brought home just how variable (hourly, daily, seasonal) are relatively low-power 10MHz signals over a path length of some 800km (500 miles). The predictions give little guidance as to the days on which to expect the very low absorption and hence low path losses that result in exceptionally good conditions on the HF bands. From observation, I would suggest that the very best daylight conditions seem to occur in the Spring and Autumn in the the period just preceding a severe magnetic disturbance. But why this should be so remains a mystery, since the first effect of a severe solar flare is to *increase* the ionisation of the

absorbing D- and E-layers, hours before these layers are reinforced by the particles carried on the solar wind.

We still cannot predict with any accuracy when the major solar storms will occur, or the degree to which they will affect the Earth's ionosphere. We cannot predict at what time of the day the MUF will be at its highest – by no means always at noon. The professionals have increasingly recognised the shortcomings: 'Outstanding Problems in Short-Term Ionospheric Forecasting', was a paper given by J D Milsom of GEC Research Ltd at ICAP87. He summarised the problems of even short-term forecasting as "the effect of temporal and spatial variability of maximum usable frequency (MUF), forecasting ionospheric absorption, and the high-latitude ionosphere." Military automatic link establishment (ALE) systems have to depend on real-time probing by ionospheric sounders.

Amateurs can be proud of the role they have played in the investigation of HF and VHF propagation, and should be conscious that there is still more to uncover. Remember, amateurs, with lower powers, are more interested than professionals in anomalous, and unfortunately rare, exceptionally-good DX propagation conditions.

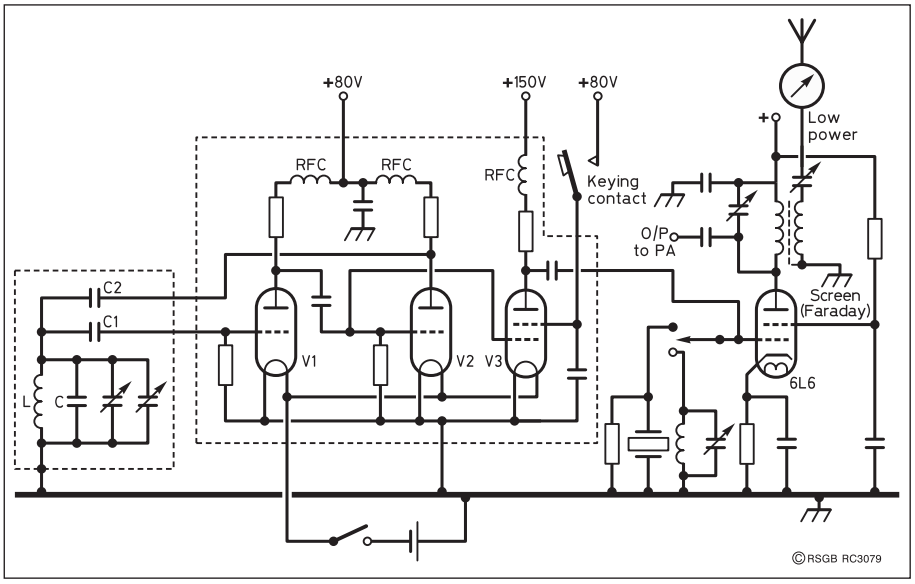

Fig 5: G6GR's pre-war 1.7MHz Franklin oscillator, described in the RSGB's *T&R Bulletin*, July 1939. The key feature was the virtual isolation of the tuned circuit from the valves by the use of low-value (1 or 2pF) capacitors C1, C2.

THE FREE-RUNNING LC OSCILLATOR

ALTHOUGH DIGITAL techniques in the form of frequency synthesisers or 'huff and puff' stabilisers now tend to dominate amateur transceivers, there is still a role for the free-running, analogue LC oscillator. Furthermore, PLL synthesisers still require an analogue oscillator.

One of the practical VFO designs that has survived, virtually unchallenged, for almost a quarter of a century is that of Peter Martin, G3PDM. His outstanding design was first published in 'TT', April 1977, and subsequently appeared in various RSGB publications: **Fig 4.** With a FET Vackar 5.88 - 6.38MHz tunable oscillator and bipolar/buffer isolation, the original model achieved a warm-up drift of 500Hz (caused by the gate-source capacitance changing as the FET warmed up) in the first 60 seconds from switch on. Thereafter ±2Hz per 30 minutes (about 3 parts in 10^7), better than most crystal oscillators or low-cost frequency synthesisers!

It was stressed that such an 'incredible' performance required careful attention to some 15 electrical and mechanical factors, as detailed in the 1977 'TT' and subsequently other RSGB publications. A problem later arose in obtaining an Oxley 'Tempatrimmer' or the lower-cost 'Thermo-Trimmer'. A substitute arrangement was later described in 'TT' based on using a differential variable capacitor to obtain the desired temperature coefficient from a combination of one positive- and one negative-coefficient fixed capacitor.

Stewart Revell, G3PMJ, has recently been 'reverse-engineering' the G3PDM VFO, in order to find the value of the coil inductance and capacitor range for any required frequency range, following the procedure outlined in his article 'An Introduction to Variable Tuned Circuits', *RadCom*, March 2001, pp34-35. He has thus provided a mathematical justification for the values / constructional details of the oscillator resonant circuit given in the original 'TT' item. There is not the space to reproduce his maths but I would be willing to provide a photocopy of his two-page letter with his corrections (and add details of the 15 precautions recommended by G3PDM) on receipt of a SASE and 19p stamp. I would, however, stress that the calculation of correct tuned circuit values is only one factor accounting for the stability found in this 'genuine Vackar' oscillator.

In addition to the Vackar, I have always been attracted, particularly for valve oscillators, to the Franklin Master Oscillator, originally developed in the 1920s by C S Franklin for the Marconi Short-Wave Beam system. It was fully described in the classic textbook by Ladner & Stoner, and widely used in Marconi marine transmitters in the 1930s, and introduced to UK amateurs by E L Gardiner, G6GR, in 'The Franklin Master Oscillator in Amateur Transmission' (*T&R Bulletin*, July 1939). **Fig 5** outlines his practical 1.7MHz Franklin oscillator using battery valves and feeding a 6L6 stage normally operated as a frequency doubler for 3.5MHz, but which optionally he used as a crystal-controlled oscillator.

He wrote: "The stability of the Franklin oscillator depends upon two main factors; first the quality of the LC tuned circuit; and second the degree of loose coupling between this circuit and the valves, resulting from the very small values needed for the two coupling capacitors, C1 and C2 (if possible less than 1pF and not greater than 2pF). In commercial practice, an elaborate

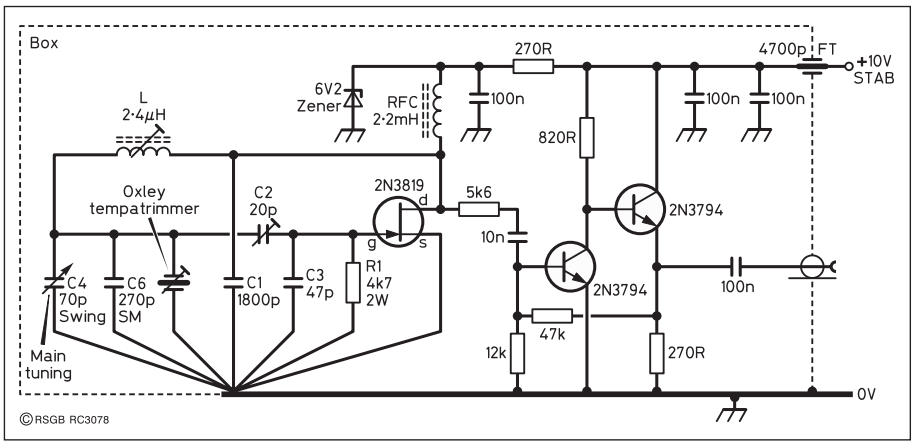

Fig 4: The G3PDM high-stability FET Vackar oscillator as first described in 'TT' April 1977, intended for a Mark II version of the G3PDM receiver in *Radio Communication Handbook* 5th edition, 1976.

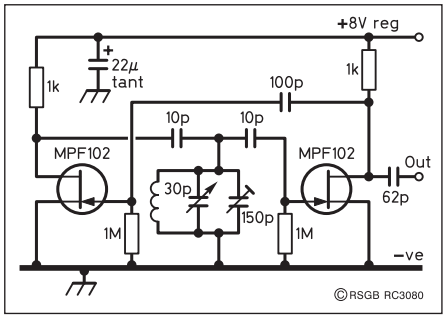

Fig 6: A solid-state Franklin oscillator used with a buffer amplifier etc by VE3RF.

construction is employed, in which a tubular capacitor C surrounds the coil L, the whole being cleverly compensated against changes of temperature… It is not essential to go to this length in amateur equipment, provided that the coil L is rigidly constructed and is of a low-loss, high-Q type, and that the capacitor C is well designed."

He added: "In most oscillators the resonant circuit is tightly coupled to a valve, and considerably loaded thereby. Whatever may have been its Q when measured alone, its 'working Q' will be a good deal lower. It is in this respect that the Franklin circuit scores, for the small-value capacitors C1 and C2 effectively reduce valve loading to an almost negligible value… There are no tappings or similar complications, only a simple tuned circuit with one end earthed… a double-triode such as the 6N7 may be used… On 1.8MHz the drift was measured as about 300Hz per hour, most of this occurring in the first 10 minutes after switching on, a materially better figure than that usually obtained from an X- or Y-cut crystal… The performance of the oscillator is well illustrated by the T9x reports received on 56MHz [presumably multiplied rather than heterodyned up]."

Although G6GR had built his Franklin oscillator in 1937, the fact that the article was published in mid-July 1939, only six weeks before amateur radio was closed down on 1 September, tended to obscure the merits of this approach. For many years, the Franklin, despite its significant advantages, remained virtually unknown to amateurs in the USA and few in the UK.

A later variation of the Franklin oscillator was the cathode-coupled oscillator first described by Fred Butler of GCHQ in *Wireless Engineer* in 1944. The Butler oscillator has since been adapted to use junction FETs rather than valves, and has appeared several times in *TT.* **Figs 6** and **7** are taken from an item 'Franklin and Butler Two-Device Oscillators' ('TT' February 1990 or *TT Scrapbook 1990-1994,* pp9 / 10). Personally, I have never been convinced that source/cathode-coupling isolates the tuned circuit as well as the Franklin low-value capacitors from inter-electrode or junction temperature changes. Furthermore, the variation of J-FET input capacitance is greater than for a valve. Nevertheless, the J-FET Butler oscillator appears to be satisfactory up to UHF.

Gian Moda, I7SWX / F5VGU, recently drew attention to an article 'A Unique, Low-Voltage, Source-Coupled J-FET VCO', by Bettina Koster, Peter Waldow and Ingo Wolff (*RF Design,* April 2001). This is subtitled: 'A Simple Feedback Direct-Frequency VCO Principle Using Common SMD Components for Frequencies up to E-Band [3GHz]'. The arrangement of **Fig 8** was investigated at frequencies of 20, 50, 145, 230, 430, 870, 920MHz and 2.45 and 3.2GHz. It is stressed that "Due to the application of two active [J-FET] devices, low-cost circuit elements with non-negligible electrical losses may be used, even in the resonant circuit. The oscillator may be assembled on low-SOT FR4 substrate using common surface-mounted devices (SMDs). The oscillator principle can be operated down to short-wave frequencies as well, but is best suited for frequencies in the range of 100MHz to 3GHz." The supply voltage is in the range of 1.5V to 3.0VDC. The primary application is to serve as a VCO signal source in a low-voltage, small-band PLL circuit so high-stability is not a prime requirement." The authors conclude "these experiments suggest that a consistent oscillator design principle can simplify a number of RF design problems."

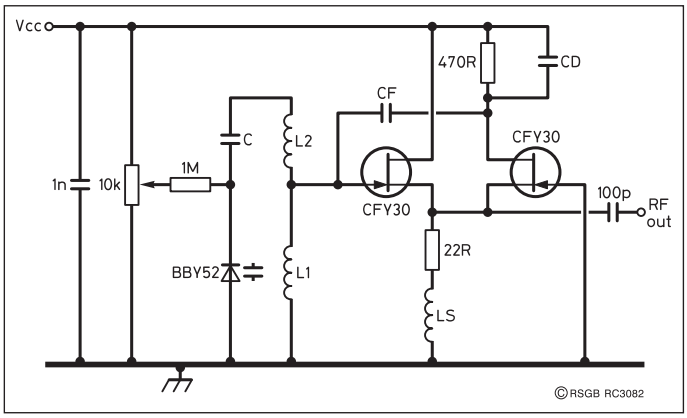

Fig 8: The VHF/UHF, low-voltage, source coupled J-FET VCO as investigated by Koster *et al* (*RF Design*, April 2001). The authors provide typical element values for nine frequency bands between 3.2GHz and 20MHz. A few are given below:

Freq (MHz)	C (pF)	L1 (nH)	L2 (nH)	Ls (nH)	Cf (pF)	CD (pF)	Vcc (VDC)	Pout (dBm)
3200	2.2	1.35	2.7	8.2	0.25	n/a	3.0	6.4
2450	3.3	2.7	4.7	8.2	0.25	n/a	2.5	6.7
430	3.3	33	n/a	39	1.0	2.2	2.0	10.7
145	12	136	n/a	136	4.7	10	2.0	10.3
50	56	470	n/a	470	22	47	2.0	10.0
20	82	940	n/a	940	56	100	2.0	8.7

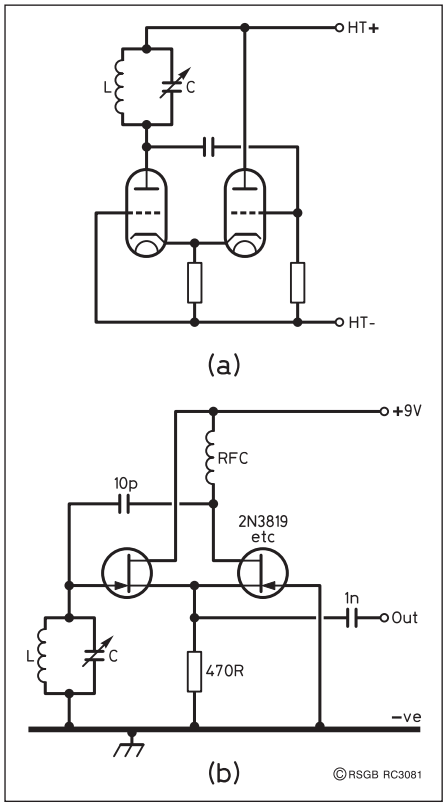

Fig 7: (a) The basic Butler cathode-coupled oscillator. The tank circuit can be shunt-fed as in (b), which shows a source-coupled J-FET Butler oscillator.

HERE & THERE

JIM LITTLER, (ex-G4HPH), in reference to the July 'TT' item reporting Dr Lowenstein's experiences with DC-AC inverters, points out that a moving-coil meter plus rectifiers will not read the true RMS voltage because the form factor of the square wave output is not 1:1. In these circumstances, a moving-iron meter is necessary. He has had similar problems with a squirrel-cage motor run from an inverter. He had to put in a soft-start device between the load and inverter.

ANDRÉ JANET, F9HX, warns about using 'selected' resistors and capacitors from batches of 5%- or 10%-tolerance components when constructing phasing networks. He writes: "Matching to ±1% from a batch of standard tolerance components could be offset as the long term stability is not ensured by the manufacturing processes. You would do better to use 'made for precision' components, such as polystyrene capacitors and metal film resistors whose values remain stable over a long period." ♦

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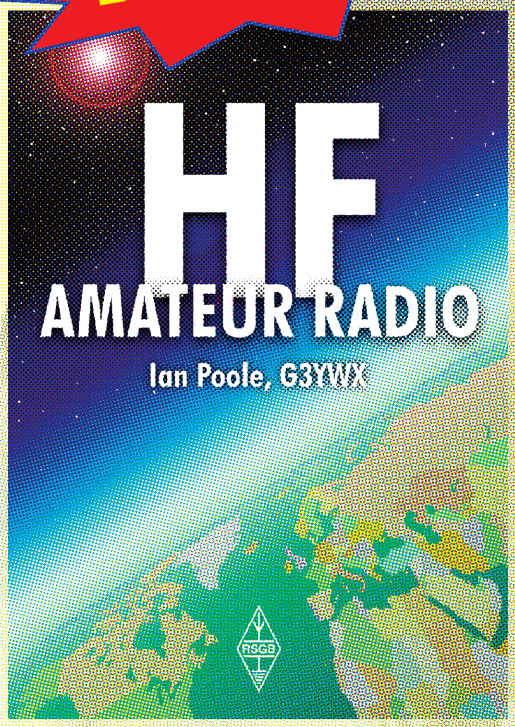

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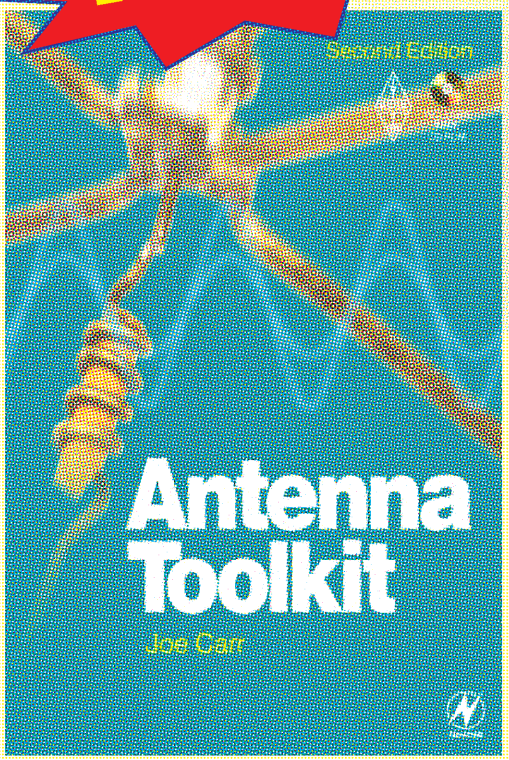

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YAESU	FT-101 TRANSCEIVER MINT!	£200.00
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YAESU	FT-23R HANDY TRANSCEIVER	£89.00
YAESU	FT-2500M MOBILE TRANSCEIVER	£190.00
YAESU	FT-290RMK1 2M ALL MODE TRANSCEIVER	£180.00
YAESU	FT-290RMK1 Includes Bracket + FL-2010 LINEAR AMP	£275.00
YAESU	FT-290RMK11 MOBILE 2M MULTIMODE TRANSCEIVER	£275.00
YAESU	FT-3000M 2m 70W MOBILE TRANSCEIVER	£175.00
YAESU	FT-41R HANDY TRANSCEIVER	£120.00
YAESU	FT-470 DUALBAND HANDIE TRANSCEIVER	£150.00
YAESU	FT-690MK11 6M MULTIMODE MOBILE TRANSCEIVER	£295.00
YAESU	FT-7 MINT! CONDITION	£275.00
YAESU	FT-726R 2 / 70 / 6m TRANSCEIVER	£575.00
YAESU	FT-730R 70CM MOBILE TRANSCEIVER	£120.00
YAESU	FT-736R 2m / 70cm TRANSCEIVER	£650.00
YAESU	FT-736R 2m / 70cm / 6m TRANSCEIVER	£750.00
YAESU	FT-7400 70cm MOBILE TRANSCEIVER	£160.00
YAESU	FT-747GX HF TRANSCEIVER	£399.00
YAESU	FT-757MK1GX HF TRANSCEIVER	£375.00
YAESU	FT-767GX HF BASE 100watt built-in ATU	£599.00
YAESU	FT-790R 70CM MULTIMODE MOBILE TRANSCEIVER	£225.00
YAESU	FT-7B HF 50 W MOBILE TRANSCEIVER	£199.00
YAESU	FT-80C 0-30MHz COMMERCIAL TRANSCEIVER	£375.00
YAESU	FT-840 HF MOBILE TRANSCEIVER	£450.00
YAESU	FT-847 HF / 2 / 6 / 70cm BASE TRANSCEIVER	£999.00
YAESU	FT-900AT HF/ DETACHABLE FRONT BUILT IN ATU	£650.00
YAESU	FT-980 HF TRANSCEIVER	£495.00
YAESU	FT-ONE HF BASE TRANSCEIVER	£450.00
YAESU	FTV-901 TRANSVERTER Inc 2m Mod	£165.00
YAESU	MD-1 DESK MICROPHONE	£75.00
YAESU	SP-5 LOUDSPEAKER Including Audio Filters	£100.00
YAESU	SP-767 LOUDSPEAKER Including Audio Filters	£80.00
YAESU	SP-8 LOUDSPEAKER Including Audio Filters	£100.00
YAESU	SP-980 LOUDSPEAKER Including Audio Filters	£55.00
YAESU	VX-5R 2 / 70 / 6 HANDIE 5W	£220.00
YAESU	XF-114SN 2KHz SSB FILTER	£60.00
YAESU	YO-100 SCOPE VERY RARE!	£150.00
YAESU	YS-60 SWR METER 1.6 - 60MHz	£30.00
ZETAGI	B-132 10 / 11m LINEAR AMPLIFIER , MAINS	£60.00

Members' Advertisements

RSGB Members wishing to place an advertisement in this section must use the official form incorporated on the label carrier of Radio Communication. This will prove membership and must be for the current month. No acknowledgment will be sent. Ads not clearly worded, or which do not comply with these conditions will be returned. If an ad is cancelled no refund will be due. An advertisement longer than 60 words will be charged pro rata. Trade or business ads, even from members, will not be accepted. Traders who wish to use this facility must send a signed declaration that the items for sale are part of, or intended for, their own personal amateur station. The RSGB reserves the right to refuse ads, and accepts no responsibility for errors or omissions, or for the quality of goods for sale or exchange. Each advertisement must be accompanied by the correct remittance, as a credit card payment, cheque or postal order made payable to the Radio Society of Great Britain. Please note that because this is a subsidised service to members, no correspondence can be entered into. Licensed members are asked to use their callsigns and QTHR, provided their addresses in the current edition of the RSGB Yearbook are correct. RS members will have to provide their names and addresses or telephone numbers. Please include your town and phone number in the free boxes provided to assist readers. Advertisements will be placed in the first available edition of *RadCom*.

The closing date for copy is the first day of the month prior to publication, eg the deadline for the March issue is 1 February.

Warning: *Members are advised to ensure that the equipment they intend to purchase is not subject to a current hire purchase agreement. The 'purchase' of goods legally owned by a finance company could result in the 'purchaser' losing both the goods and the cash paid.*

EXCHANGE

ICOM 32E h/held with speaker/mic (Icom), 3 batteries Icom CM35 charger, for Yaesu FT-290 or like. Malcolm, G7NFO. 01788 843 224 (Rugby).
E-mail: malcolm.hall2@ntlworld.com

FOR SALE

ALMONERS silent key/shack clearance sale. Many items left. Rigs, linears and accessories (HF/VHF/UHF). E-mail for lists.
E-mail: howardwalton@thersgb.net

ICOM IC-746 HF/VHF tcvr with RS-746 computer control software package, vgc, man, boxed, £795 ono. Kenwood MC-80 desk mic, £40. Carriage by mutual arrangement. 01986 798 524 (Woodbridge).
E-mail: steve@sboldvic.demon.co.uk

QTH in Beds/Herts border. 5/6 bedroom detached house in immac cond in quiet cul-de-sac, c/w Force-12 6-ele triband Yagi and 40ft mast with full planning permission. £249,995 no chain. G2YT, QTHR. 01462 812 965 (Shefford).
E-mail: g2yt@aol.com

YAESU FT-101Z with AM option fitted, FV-101 remote VFO, spare PA tubes, exc cond, recently checked over by SMC. Fist and desk mics included, £230 ovno. Also RA-17 rack-mount rcvrs x3 for spares or restoration, £40 each or £100 lot. G0OPL, QTHR. 01952 404 251 (Telford)
E-mail: bill_cowell@compuserve.com

ALINCO 6m FM tcvr DR-M06, almost new, man, boxed, £120 post paid. Kantronics packet TNC-4, still boxed, £115 post paid. 01704 892 088 (Ormskirk, Lancs).
E-mail: g7mike@g7ndp.fsnet.co.uk
ALINCO DX-70TH as new, £360. Yaesu FT-7200, vgc, £75. Kenwood TL-922 linear vgc, £599. Neil, GM0VPG, 01463 220 125 (Inverness)
E-mail: gm0vpg@talk21.com
AOR-300A with wefax satellite narrower switchable filter, vgc, AOR serviced, £485, no offers plus p&p. AOR *Searchlight* prog for above rcvr, £45, only sold with above or £65 without above. Radio Shack Pro60 scanner 30 to 399.987MHz with gaps nicad pack, AM-FM-WFM modes, only £69 + p&p, perfect w/order. Yaesu VR-500 + 2 nicad packs & charger and computer software from Yaesu; this alone would cost £60+, my price the lot £175 + p&p, this has just been serviced. 0117 982 8352 (Bristol).
E-mail: alfbrimm@btopenworld.com
AR88D, manual, 17 spare valves & new wavechange switch wafers, £60, 3 x 813W (USA), £10 each. Philips 4CX250B, HF base, Johnson chimney & 110V blower, £35. 2 x 6146 (USA), 310 each. 2 x 8580, 2 x 8463, £10 lot. Buyer collects or plus carriage. G3KWJ, QTHR. 01372 270 364 (Ashtead).
E-mail: nick.valentine@onetel.net.uk
BC-453 Q5-er command rcvr, £25. Marconi CR-100 rcvr. Offers? Kent key unused, £25. GW3IGG, QTHR, 01437 890 759 (Haverfordwest).
BNOS 2m 100W linear amp 10W in 100W out, exc working order, boxed, £75 ono. 01452 417 394 (Gloucester).
BRAND new IC-706 IIG, SEC-1223 PSU, CR-627 Diamond antenna, DP-SPM Diamond magnetic base. Never used, cost new £1082, for sale £725. 01279 641 248 (Harlow, Essex).
CLEAR out: Realistic DX-100L comms rcvr, 0-30MHz, BFO, £35. HK-708 straight CW key, £12. Altai KDM6 dip meter 1.5MHz-250MHz £25. 70cm h/held, 4W o/p, repeater RB1-RB10, c/w charger (no toneburst), £35, all offers. G0GXJ, Ray. 01226 743 987 (Barnsley).
CUSHCRAFT A3S triband HF beam, never used, still in original packing, £275 ovno. G4LRG. 01296 668 166 (Ivinghoe) or 07775 696 568.
E-mail: g4lrg@aol.com
CUSHCRAFT log periodic aerial ASL-2010 13.5-32MHz bands 10, 15, 17, 20, 30m, £250. M0BTT, QTHR. 01780 740 276 (Peterborough).
E-mail: m0btt@btinternet.com
DESKTOP cabinet and full workshop man for RA1792 rcvr, £50 each. Racal RA1778 rcvr fully synthesised development of RA1772, no mods, £400, new boxed valves 6AB7M, 6AC7M, 6K7M, 6K8M, 6SA7M, 6SK7M very rare, £5 each. 01526 860 546 (Lincoln).
DRAKE R7 HF rcvr, gwo, all filters & man, £295. Tektronix 7623 storage scope gwo, with man, £150. KLM 2m 22-ele crossed Yagi unassembled, £75. Little used Mutek TVVF50C tvtr, £100. Moonraker 6m 3-ele beam, £25. Palomar noise bridge, unused, £25. Buyer to collect. 01935 813 097 (Sherborne).
EDDYSTONE model 840A, two available in good condition. Silent key sale for Gordon, G8KIL. Buyer collects, £80 ono each. Laurence, G2DD. 0118 977 2775 (Wokingham).
E-mail: ldjames@csi.com
FOR sale KW2000B PSU, man, £110. Yaesu FT-290 Mk1 + PA, £140. Buyer inspects, collects. G4MVJ, QTHR. 01922 451 797 (Aldridge).
FOR sale or swap WHY? Hammarlund SP-600 HF rcvr. RCA CR-91 75kHz - 30MHz. Unusual R1155 variant, 3-18MHz and 18-32kHz. Hallicrafters 520-R, tatty but working. OK spares. All items heavy, so buyer to arrange transport. Mark, G0BTP, 01452 538 204 (Gloucester)
FT101-ZD, SP-102, YD-148 perfect working station, best offer. 2m FM Standard SRC140 plus SRCV110 working, best offer. 01943 879 815 (Leeds).
FT-847 tcvr, FC-20 auto ATU, 3 Collins filters, CN-101L SWR meter, MC-60 mic, all mint, original packing, £1100. Will take 2m-70cm FM-base in PX. G3PTN, QTHR. 0113 265 4644 (Leeds).
E-mail: zygic@btinternet.com
FT-920 HF + 6m, 500Hz CW filter, £800. FDK750X 2m multimode, £80. MFJ-259B, £150. PK-88, £70. Trio 751E 2m multimode, £200. 1200W petrol generator, £100. Vintage AVO coil-winder, offers? SASE for list. VHF amps, PSUs. GM4DGT, QTHR. 01506 890 959 (nr Edinburgh).
E-mail: bill@gm4dgt.demon.co.uk
GERMAN rcvr, Sternradio Berlin, ca 1960. LM/KW/UKW, 600 x 325 x 255mm, LS 215 x158mm, weight 11.5kg, h/book and circuit diagram, £50 ono. 01302 365 472 (Doncaster).
HAYDONS telescopic mast, 8m, £30. Datong multimode filter FL3, £20. Frequency counter mic-10C28 1MHz-25GHz man and charger, £20. Hy-Gain 2-band GP antenna TS3303, 144 and 430MHz, absolutely as new, £25. Roy. 01782 503 444 (Stoke-on-Trent).
E-mail: royg4kme:aol.com
HEATHKIT enthusiasts! New/part-built kits AFM-TI/AFM-AI AM/FM tuner, DX100u, SB-10u SSB adaptor, stereo amplifier S-99, Berkeley speakers for sale as one lot; some preliminary work done, appears high quality, prefer buyer collects. 0113 258 4903 (Leeds).
E-mail: jrhardcastle@fsmail.net
HF station comprising TS-930S tcvr, MFJ-941D ATU, Kenwood SW200 SWR meter, antenna G2DYM trap dipole, all gwo with h/books, £475. Trio rcvr JR-310 working, plus one for spares, £60 plus carriage or collect on both items. John, G4VPU. 0191 252 2304 (Whitley Bay).
E-mail: johnina@lineone.net
HY-GAIN TH3SNR 3-ele HF beam, gc, refurbished with new trap end caps etc, ready to work DX!! £165. 01792 290 770 (Swansea).
E-mail: philip@gw4hat.demon.co.uk
KENWOOD TS-440SAT, Icom IC-773, Yaesu FT-101B and Icom rcvr R-7000, £500 the lot. 01384 280 390 (Kingswinford).
ICOM 706MkII, UT-86 tone squelch unit, SP-21 external speaker, home made computer interface & software, as new cond, only used on 6m & gen cov receive, extended insurance plan to 10/10/02 (can be transferred). Free shipping UK (been out of box only 7mths), £650. 07941 524 447 (Ware).
ICOM IC-736 HF and 50MHz, boxed with manual. Good condition, £620 ovno. Ask for Graham, 01526 353 093 (Woodhall Spa).
ICOM IC–740 HF tcvr all mode fitted with marker unit IC-EX241, FM unit IC-EX242, electronic keyer unit IC-EX243, filters fitted, CW narrow FL-54, SSB FL-30, plus FL-53. Also matching Icom IC-PS15 PSU, IC-HM7 mic, boxed, man, £475. Revex MS-1 station wave monitor scope, SSB-CW-AM (like Trio), £125 ono. Jaybeam 7047, 4 stacked 70cm dipoles as new, info-sheet, ideal repeater, 400-460MHz, £125. Yaesu FT-757GX HF tcvr, £295. Yaesu FC-757AT auto ATU, £115. CapCo SP-300 ATU, £125. Kenwood TM-732 dual-bander man, boxed, £215. Rubber ducks 2m scanner/air, BNC fittings, £10 each. Icom IC-AH2B boot mount for antenna AH2A-Auto ATU, never used, cost £198, any offers? 01328 710 641 (Norfolk)
E-mail: mac@g4vdc.fsnet.co.uk
ICOM IC-T8E h/held 2m/6m/70cm, fm broadcast and airband. Nicad and charger. New, unused and with manufacturer's warranty, £175, plus postage. Jeff, 01706 648 196. (Manchester).
E-mail: jeff.thorley@virgin.net.
JAYBEAM 2-element tribander, £100 ono. Tony, GW0FMQ. 01446 781 955 (Cowbridge).
KENWOOD TH-79E dual band h/held tcvr spk/mic nicad/dry batt packs fitted, CTCSS, man, gwo, £160. Hora C-408 70cm h/held tcvr, fitted CTCSS, man, gwo, £50 ono. Buyer inspects, collects. G4LKF, QTHR. 01536 260 598 (Corby, Northants).
KENWOOD TH-D7E, standard battery pack PB-38, leather case, SMC-33 programmable speaker mic, PG-3J filtered cigarette lighter cord, PC cable & software, £200. Free shipping UK. 07941 524 447 (Ware).
KENWOOD TS-430S nice cond, fitted all filters, boxed with mans. Selling to upgrade station, £300. Jim, G4PFR, QTHR. 01296 623 802 (Wendover).
KENWOOD TS-930S, AT-230, vgc, offers please. Quick sale wanted, first come first served! G4UOL. 01702 334 014 (Southend).
E-mail: g4uol@btinternet.com
KW109 Supermatch ATU, 1kW rating, covers 10 to 80m in two bands, 50 to 2500 ohms plus SWR meter. G3JAU. 01202 514 078 (Bournemouth)
OFFERS required for following: MA5B TH2 Mosley TW33M Tennamast 10.7m, G650 rotator. M5AAG. 01977 603 096 (Castleford).
E-mail: alan.grant5@btopenworld.com
PAIR G2DYM coaxial traps 7MHz, £20. MFJ-948 Versa Tuner mint, £60. 01639 630 880 (Neath)
E-mail: gw3wwn@onetel.net.uk
RACAL RA17L HF rcvr with man, fully serviced, vgc, £250. Murphy 62B (rare derivative of B40) HF rcvr with man, unused cond, stored by MoD since 1958, £250. Wanted: Racal Speedrace MA275 oscillator coupling unit. Plessey PV318 RTTY terminal unit and man. Nigel, G0UGD. 01327 357 824(W) or 01323 486 822(H) (Eastbourne).
SOMMERKAMP FT-277ZD tcvr, 100W all HF bands inc WARC, FV-101Z VFO £250. Tokyo Hy-Power ATU, £50. Diawa keyer, £35. 2m tvtr, £35. IC-24E dual-band h/held, £90. Motorola MC-80 70cm FM, £25. Trio 2200 2m FM, £10. 0116 223 4611 (eve) (Leicester).
SWAN Cygnet tcvr, 260W PEP, spare valves and h/book, carriage at cost. 01463 241 211 (Inverness).
SYNTHESISER II by VHF Eng USA for transmitter and rcvr designed to replace crystals. Transmitter output 6-8-12MHz, rcvr output 45MHz covers 140-150MHz IF range 100kHz to 30MHz with diode prog, h/book, £30. M5ACP, QTHR. 01702 559 099 (Benfleet).
E-mail: mgood@efaman.fsnet.co.uk
TENNAMAST ground post mount (tiltover) 40ft extended plus masthead and rotatable stub mast, auto brake winch, ready for collection, £80. G3HAC, QTHR. 0151 645 4512 (Bebington).
YAESU FT-100 HF + 2-6-70, very little use. Plus the ATAS mobile auto ATU complete with mounting kit, £625 ono. Bill, G0WWC. 0151 287 0821 (Liverpool).
E-mail: rollers@ukonline.co.uk
YAESU FT-101ZD HF radio CW, FM, SSB, AM, 100W, man, gc, £210 ono. Sommerkamp FT-277ZD SSB, FM, AM, CW, 100W, man, boxed gc, £200 ono. RN Electronics 6m tvtr 144MHz IF, 25W output, working OK, £90. Sommerkamp FC-902, man, ATU, 500W rating, gc, £110. Neil, M0NMD, QTHR. 01332 736 362 (Derby).
E-mail: m1afb@cwcom.net
YAESU FT-726 2m/6m/cm base station, £300. Icom 725 HF 100 watts, £275, both in good condition. 01656 733 729 (Maesteg).
E-mail: luke@btinternet.com
YAESU FT-920 HF rig with matching FP-1030A power supply, both mint cond, very little use, boxed, mans, £795. G4VWB, QTHR. 01332 551 945 (Derby).
E-mail: bob.g4vwb@cwcom.net
YAESU FTV-901R tvtr mainframe with 2m and 70cm modules, cables and manual, £150. FT-7B 50W HF mobile, (15m dead), £150. G0FAJ, 01202 460 174 (Poole).
E-mail: g0faj@freenet.co.uk

SILENT KEYS

WE REGRET to record the passing of the following radio amateurs:

G0AGF	Mr D Linskill	24/08/01
G1BRZ	Mr R H Cooke	27/03/01
G1DXG	Mr J Cross	
G2AHC	Mr R W Bishop	02/01
G2DFL	Mr D Knight	10/07/01
G3ESF	Mr A R Harrower	
G3FGW	Mr M Denny	
G3KQJ	Mr M Sparrow	
G3TYH	Mr M J Cooney	
G3WPZ	Dr J Squire	20/08/01
G3ZBW	Mr J M Ruscoe	16/08/01
G4HJU	Mr L J Graham	
G4HYJ	Mr F Shaw	31/08/01
G4RW	Mr R A Wilson	02/06/01
G4VFW	Mr K C Millar	08/08/01
GM3JDX	Mr W Roger	09/09/01
GM4EHO	Mr J W Sarjantson	26/06/01
GW4YDF	Mr MEP Thomas	13/08/01
M0BTC	Mr W Bailey	06/08/01
M0BWJ	Mr P Edwards	09/09/01
RS30636	Mr A L Dyer	04/01
RS86876	Mr K H Clarkstone	14/08/01

WANTED

4m FM tcvr to use on 70.26 and 70.45MHz, 10W minimum. G3AOZ, QTHR. 01394 275 820 (Felixstowe).
E-mail: g3adz@dhaylock.fsnet.co.uk

CRYSTAL sets and early valve radios wanted; all old equipment, valves, horn speakers, Morse keys, spark Txs. Spy sets are of

interest; keen to find Hallicrafters SX42 or similar rcvr, also Meccano and Bassett Lowke crystal sets. Jim, G4ERU, QTHR. 01202 510 400 (Bournemouth).

AVO valve tester, good price paid. TR McElroy bug key, must be in vgc. Please phone evenings or weekends, thanks. 028 9268 9782 (Hillsborough).

COLLINS KWS-1 with or without PSU, cash or part exchange other Collins equipment. 01379 783 657 (nr Diss).

DISABLED fan of old days seeks unwanted QSLs, log books etc *CQ* pre-1960, *QST* pre-1951, RSGB mags pre-1946 and especially *SWM* pre-1965. Mike, 8 Windsor Road, Reydon, Southwold, Suffolk IP18 6PQ.

HAMM rotator and SB-220 linear. 01392 215 487 (Exeter).

ICOM IC-756PRO. If you are buying a Mk II, may I purchase your Mk I? Colin, G3TA. 01285 821 571 (Cirencester).

PMR to replace the one I have had stolen from my car recently. Prefer Dymar/Tait or similar synthesised 2m set. Will buy in need of conversion with instructions for conversion. Microlab as featured in *Practical Electronics* magazine also wanted for college projects. May buy several Microlab boards if several available. Please call Lee, G0PVO. 01706 842 355 (Oldham).
E-mail: lee.hewitt@bun.com

RACAL RA174S scrap or non-worker for spares. Any cond, will collect, pay cash, WHY? Thanks. Jake Adamson. 01304 373 788 (nr Dover).

SILENT key clearout or just not needed. Wanted for research project, QSL accumulations, old call books etc, can collect. 0113 269 3892 (Leeds).
E-mail: g4uzn@qsl.net

TEN-TEC Century 22 model, 597 boards. Crystal calibrator model 226 and electronic keyer board model 679, also DC circuit-breaker model 1179. For restoration project. Richard, G8ITB, QTHR. 01689 602 948 (Bromley).

TEN-TEC Corsair 2 and PSU with manuals, must be vgc and working, please contact John, M0JLW, QTHR, 01707 329 508 (Welwyn Garden City).
E-mail: jwelford@lineone.net

CONGRATULATIONS

To the following whom our records show as having reached fifty or sixty years' continuous RSGB membership this month:

50 years

G3ISX Mr C J Leal

60 years

G3FVD Mr R K Mildren

GM3CIX Mr L J McDougall

Rallies & Events

3 / 4 NOVEMBER 2001

NORTH WALES RRC Rally 2001 – North Wales Conference Centre, Llandudno Promenade. OT 10am, £2, accompanied under-14s free. C, LB, B&B, DF, TI on S22. Muriel, GW7NFY, 01745 591 704 or www.nwrrcw.org.uk

4 NOVEMBER 2001

NORTH DEVON 21st RADIO RALLY - Holsworthy Memorial Hall. OT 10am. B&B, etc. G8XMI, 01409 241 202.

6 / 7 NOVEMBER 2001

LOW POWER RADIO ASSOCIATION Radio Solutions 2001 - Commonwealth Conference & Events Centre, Kensington. 01422 886 463 or www.lpra.org or e-mail info@lpra.org

10 / 11 NOVEMBER 2001

MARTLESHAM MICROWAVE ROUND TABLE - Adastral Park, Martlesham. Entry is free, but visitors must be pre-booked, so contact Jason, G7OCD, quickly by e-mail to jason.flynn@btinternet.com OT 2pm Saturday, 9am Sunday. C. www.btinternet.com/~jewell

11 NOVEMBER 2001

SOUTH YORKSHIRE REPEATER GROUP Great Northern Hamfest - Metrodome Leisure Complex, Queen's Road, Barnsley town centre (follow the Metrodome signs from all directions). OT 10am, £2.50. DF, TS, SIG, B&B, MT between noon and 3pm (two photos needed), TI on S22. Ernie, G4LUE, 01226 716 339 or 07787 546 515.

SPALDING & DARS Radio & Computer Surplus Sale - Bromley Hall, Pode Hole, Spalding-to-Bourne road (A151). OT 10am. A, C including Helen's bacon butties. John, G4NBR, 07946 302 815 or www.sdars.org.uk

18 NOVEMBER 2001

COULSDON ATS Bazaar - 4th Purley Scout HQ, behind Lion Green Road public car park, Coulsdon, Surrey. OT 10am. Andy, G0KZT, or coulsdon_ats@hotmail.com

MIDLAND AMATEUR RADIO SOCIETY 12th Radio & Computer Rally - New venue, King Edward's Grammar Camp Hill School, Vicarage Road, Kings Heath, Birmingham, at the junction of A4040 and B4122. OT 10am, £1. CP free, C, TS, SIG, local clubs. Peter, G6DRN, 0121 443 1189.

WEST MANCHESTER RC Red Rose Rally - Horwich Leisure Centre, Horwich, Bolton, off M61 jn 6. OT 10.30/11am, £1.50, OAP £1. B&B, C etc. Don, G3BSA, phone/fax 01942 871 620 or e-mail don@g3bsa.freeserve.co.uk

24 NOVEMBER 2001

ROCHDALE & DARS Traditional Radio Rally - St Vincent de Paul Catholic Church, Caldershaw Road, off A680 Edenfield Road, approx 2 miles west of Rochdale. Follow orange arrows from M62 jn 20. OT 10.15/10.30am, £1. TI on S22, CP free, TS, B&B, C. John, G7OAI, 01706 376 204 (eve), or e-mail radars@mbc.co.uk Please note that this is a *Saturday*!

24 / 25 NOVEMBER 2001

LONDON AMATEUR RADIO & COMPUTER SHOW - Lee Valley Leisure Centre, Pickett's Lock Lane, Edmonton, London N9. OT 9.45/10am. TS, B&B, SIG, DF, C, LB, MT, TI on 2m & 70cm, CP, CS, FAM (cinema, swimming, golf, spa). 01923 893 929, www.radiosport.co.uk

25 NOVEMBER 2001

BISHOP AUCKLAND RAC Rally - Spennymoor Leisure Centre. OT 10.30/11am, £1, accompanied under-14s free. Radio, computers & electronics, B&B, TI on S22, TS, CP, C, LB, MT (two photos needed). Mark, G0GFG, 01388 745 353 or Brian, G7OCK, 01388 762 678.

1 DECEMBER 2001

RSGB ANNUAL GENERAL MEETING - Strathclyde Fire Brigade Headquarters, Hamilton. Starts at 12 noon. Refreshments and hot food available. RSGB, 0870 904 7373.

5 DECEMBER 2001

SURREY IEE MEETING - Wates House, University of Surrey. 7pm,free admission. 'The Rise and Fall of the Decca Navigator System', by Walter Blanchard, G3JKV. Stewart, G3YSX, sfbryant@iee.org

8 DECEMBER 2001

WORCESTER Radio, Electronics & Computer Rally - Perdiswell Leisure Centre, Bilford Road, Worcester. OT 10am, £2. CP free, TI on S22, TS, FM, SIG, LB, C, WIN. John, G8MGK, 01527 545 823 or 07762 203 355. www.qsl.net/gb2tcr

16 JANUARY 2002

SURREY IEE MEETING - Wates House, University of Surrey. 7pm, admission free. 'The Small Antenna Controversy', by Prof Mike Underhill, G3LHZ. Stewart, G3YSX, sfbryant@iee.org

20 JANUARY 2002

OLDHAM ARC Rally - Queen Elizabeth Hall, Civic Centre, West Street, Oldham. OT 10.30/11am. TS, B&B, MT (two photos required), TI on S22 via GB4ORC, C, CP free. Steve, 01706 848 092 or m5aeg@btinternet.com

23 JANUARY 2002

SURREY IEE MEETING - Theatre M, University of Surrey. 7pm, free admission. 'UK Space Electric Propulsion', by Richard Blott and Neil Wallace, DERA Farnborough. R Longman, e-mail rlongman@iee.org

30 JANUARY 2002

SURREY IEE MEETING - Theatre M, University of Surrey. 7pm, admission free. 'Channel Tunnel Fire', by Colin Kirkland, OBE. R Longman, e-mail rlongman@iee.org

3 FEBRUARY 2002

SOUTH ESSEX ARS Rally - Brian, G7IIO, 01268 756 331 or www.southessex.ars.btinternet.co.uk

10 FEBRUARY 2002

HARWELL ARS Radio and Computer Rally - Ann, G8NVI, 01235 816 379 or annstevens@compuserve.com

24 FEBRUARY 2002

SWANSEA ARS Amateur Radio & Computer Show - Roger, GW4HSH, 01792 404 422.

6 MARCH 2002

SURREY IEE MEETING - John Stevens, e-mail jstevens@iee.org

17 MARCH 2002

NORBRECK Amateur Radio, Electronics & Computing Exhibition - Peter, G6CGF, 0151 630 5790.

20 MARCH 2002

SURREY IEE MEETING - Abhaya Sumanasena, abhaya@iee.org

6 / 7 APRIL 2002

RSGB Spring Radio & Computer Show (incorporating **RSGB National VHF Convention**) - Jan, 0870 904 7377.

21 APRIL 2002

YEOVIL & DARC 17th QRP CONVENTION – derekbowden@callnetuk.com

27 APRIL 2002

CORNISH RADIO AMATEUR CLUB International Marconi Day - John, G4LJY, QTHR.

19 MAY 2002

MIDLAND ARS Drayton Manor Radio & Computer Rally - Peter, G6DRN, 0121 443 1189 (eve).

22 MAY 2002

SURREY IEE MEETING - R Longman, e-mail rlongman@iee.org

26 MAY 2002

Spalding & DARS Annual Rally - Ray, M0CTM, 01775 711 953, or John, G4NBR, 07946 302 815. www.sdars.org.uk

5 JUNE 2002

SURREY IEE MEETING - John Stevens, e-mail jstevens@iee.org

16 JUNE 2002

NEWBURY & DARS Boot Sale - Mark, M0CUK, 01635 36444. www.nadars.org.uk

30 JUNE 2002

CITY OF BRISTOL RSGB GROUP Longleat Amateur Radio & Computer Rally - Ron, G4GTD, 0117 985 6253 or ronford@g4gtd.freeserve.co.uk www.longleatrally.co.uk

13 JULY 2002

CORNISH RADIO AMATEUR CLUB Radio & Computer Rally - Ken, G0FIC, ken@jtarry.freeserve.co.uk or John, G4LJY, g4ljy@hotmail.com

26 - 28 JULY 2002

RADIO AMATEURS OF CANADA 2002 National Convention - www.rac2002.org/

11 AUGUST 2002

FLIGHT REFUELLING ARS Hamfest - Keith, G1VHG, 01202 577 937 or keithg1vhg@netscapeonline.co.uk

20 / 21 SEPTEMBER 2002

LEICESTER Amateur Radio Show – Geoff, G4AFJ, 01455 823 344, fax 01455 828 273 or e-mail g4afj@argonet.co.uk

KEY

Rallies & Events

TI - Talk-In; **CP** - Car Park; **£** - admission; **OT** - Opening Time - time for disabled visitors appears first, eg (10.30/11am); **TS** - Trade Stands; **FM** - Flea Market; **CBS** - Car Boot Sale; **B&B** - Bring and Buy; **A** - Auction; **SIG** - Special Interest Groups; **MT** - Morse Tests; **LB** - Licensed Bar; **C** - Catering; **DF** - Disabled Facilities; **WIN** - prize draw, raffle; **LEC** - LECtures / seminars; **FAM** - FAMily attractions; **CS** - Camp Site.

GB calls

These callsigns are valid for use from the date given, but the period of operation may vary from 1 – 28 days before or after the event date. Operating details are provided in an abbreviated form as follows:

T = 160m; L = 80 or 40m; H = HF bands (30 - 10m); V = 6 and / or 4m; 2 = 2m; 7 = 70cm; S = satellite and P = packet.

Please send operational details of your special event station to the *RadCom* office at least five weeks before publication.

1 Nov	GB4RN:	Royal Navy, Waterlooville, Hants. TLH27 (G3LIK)
	GB5MB:	Mersey Beat. Merseyside. LH (G3UZU)
5 Nov	GB4YOU:	Youlbury Scout and Guide Radio. Oxford. TLH27P (G0RJX)
	GB4YOU:	Youlbury Scout and Guide Radio. Oxford. TLH27P (G0REL)
10 Nov	GB0MBL:	Malmesbury British Legion. Malmesbury, Wilts. LH2 (G4KJV)
	GB2RAF:	Royal Air Force. Neatishead, Norfolk. LH2 (G4PSH)
17 Nov	GB2TAC:	Turriff Air Cadets. Turriff, Aberdeenshire. LH2 (GM4HWS)

Regional and Club News

Club NEWS

Region1: Scotland West & Western Isles

KILMARNOCK & LOUDOUN ARC

13, ATUs explained, Dr Barry Beggs, GM3YEH. 27, Final preparations for 'Bright Sparks' evening. Steve, GM4OSS, 01560 483800.

PAISLEY (YMCA) ARC

14, 'This is a Morse key, not a door stop.' 28, 'What if the other station does not speak English?' Jim, GM3UWX, 01505 862817.

Region 2: Scotland East & the Highlands

ABERDEEN ARS

2, Junk sale. 9, AGM. 16, Presidential address. Robert, 01224 896142.

COCKENZIE & PORT SETON ARC

2, 'Normal club night'. 16, RNLI Lifeboat Tales, Landles Fairbairn, GM4XZZ, ex-Dunbar Lifeboat crew member. 24, Club Christmas meal. Bob, GM4UYZ, 01875 811723.

DUNDEE ARC

6, 'How Ultra helped from Normandy to the Ardennes', Ken McConnell. Donald, GM0PIV, 01382 455771.

LOTHIANS RS

14, Junk sale. 21, Minitalks: Digital photography, Tommy Menzies, GM1GEQ. Fire prevention, Laurence Calder, GM1BKF. Numbers stations, Toby, MM1BKF. Peter, 0131 446 0155.

Region 3: North West

MID CHESHIRE ARS

14, Talk by UKFM Group Western. 21, Activity night & committee meeting. 28, VHF on air. Niall, G0VOK, 01606 871413.

STOCKPORT RADIO SOCIETY

6, Skills meeting. 14, RSGB regional reorganisation, G7OBW. 20, Skills meeting. 28, Surplus equipment sale. David, M1ANT, 0161 4567832.

THORNTON CLEVELEYS ARS

5, How I became an amateur, Jack, G4BFH. 12, On air. 19, Slide show, Hap, G1TXV. 26, '25 years in the Police', Brian. Jack, G4BFH, e-mail: jack@jduddington.fsnet.co.uk

Region 4: North East

FINNINGLEY ARS

6, Committee meeting. 13, Novice group revision. 20, Quiz. 27, Novice group revision. Eric, G3KPU, 01302 840166.

GOOLE RES

2, Fund raising at the Barnes Wallis Inn. 9, Visit TBA. 16, Pub night at Barnes Wallis Inn. 23, 30th anniversary evening TBA. 30, Radio repeaters, at the Courtyard Centre. Richard, G0GLZ, 07867 862169.

HALIFAX & DARS

20, The future of licensing & the RSGB, Richard, G3XWH. R Nolson, G0PMU, 01274 600297.

HAMBLETON ARS

14, Operating night. 28, Talk. Ian Brickwood, 01609 775598.

HORNSEA ARS

7, Construction night. 14, AGM. 21, Committee meeting. 28, Operating QRP equipment, G0DEB. Andy, G0VRM, 07050 287279.

NORTH WAKEFIELD RC

7, 'On demand' Morse tests. Jim, G3YDL, 01924 824451.

YORK RADIO CLUB (AMATEUR)

1, Test your rig. 8, Morse practice, G4XIV & G0YRC. Tony, G4XIV, 01904 330502.

Region 5: Midlands

COVENTRY ARS

2, Bangers and mash supper. 9, On air, Novice class, CW practice. 16, Beer and skittles (venue TBA). 23, On air, Novice class, CW practice. 30, Quiz, G8SEQ. John, G8SEQ, 024 76273190.

GLOUCESTER AR & ES

5, Contest preparation. 12, VHF propagation. 19, 5WPM Morse practice. 26, On air. Tony, 01452 618930.

HEREFORD ARS

16, SMD reworking, Tim, G0JWJ. Mike, G0WZY, 01981 251743.

KIDDERMINSTER & DARS

6, Building and operating the K2 QRP transceiver, Peter, G4TCQ. Phil, G4SPZ, 01299 403025.

LEICESTER RS & COMPUTER CLUB

5, Tidy up and usual activities. 12, 26, HF, VHF and computer activities. Stan, G3HYH, 0116 2242598.

LINCOLN SHORT WAVE CLUB

7, G5FZ on air. 10, Club Calls Contest. 14, Committee meeting. 21, Construction contest. 28, Illustrated talk by HM Coastguard. John, G1TSL, 01522 793751.

LOUGHBOROUGH & DARC

6, Computer-aided amateur weather observation, John, G8CGW. 13, PSK31 & 23cm ATV demos. 20, On air. 27, Vintage radio & test equipment, bring your examples along. Chris Walker, G1ETZ, 01509 504319.

MID-WARWICKSHIRE ARS

13, Book reviews by members. 27, 'Steam trains 4', Mick Jerome. Bernard, M1AUK, 01926 420913.

RAF WADDINGTON ARC

1, RAE course. 8, Video. 15, 22, 29 RAE course. Bob, G3VCA, 01522 528708.

RUGBY ATS

Meets 7.30pm Tuesdays at Cricket Pavilion, B Entrance, Rugby Transmitting Station, A5 Trunk Road, Hillmorton, Warwickshire. Details: Tony Humphries, G0OLS, 23 Sycamore Drive, Lutterworth, Leics LE17 4TR; tel: 01455 552519 (correcting details published in the 2002 *RSGB Yearbook*).

SHEFFORD & DARS

1, CQWW *post mortem*, or why didn't we win? 8, Radio propagation: what all the indices mean, Gwyn Williams, G4FKH. 15, Video editing on the PC, Ken, G4YRF. 22, Video evening. 29, Items of the Law, Barry Jackson. Derek, G4JLP, 01462 851722.

SOUTH NOTTS ARC

7, On air HF & VHF. 14, Open forum (members only). 21, On air HF & VHF. 28, AROS, Barry Scarisbrick, G4ACK. Details: 01509 569679.

STOURBRIDGE & DRS

19, Annual surplus sale. John, M1EJG, 01562 700513.

TELFORD & DARS

7, Open evening, on air, committee. 14, TBA. Mike, G3JKX, 01952 299677.

Region 6: North Wales

ABERYSTWYTH & DARS

3 / 4 North Wales RRC Rally 2001. 8, Waunfawr Hall TBA. Muriel, GW7NFY, 01745 591704.

DRAGON ARC

5, HF propagation, Stewart Lyon, GW3EIZ. Stewart, GW0ETF, 01248 362229.

NORTH WALES RRC

1, Rally preparation, Novice and Morse. 3/4, North Wales Radio Rally, Llandudno. 8, Rally wind down, Novice and Morse. 15, Post Rally meeting. 22, Antenna dismantling, repair and processing, Novice and Morse. Ted, GW0DSJ, 01745 336939.

Region 7: South Wales

No club details submitted.

Region 8: Northern Ireland

BANGOR & DARS

7, Surplus sale. Mike, GI4XSF, 028 42772383.

Region 9: London & Thames Valley

BRACKNELL ARC

14, *PW*, Rob Mannion. johnellerton@beeb.net

CHESHUNT & DARC

7, Members' forum. 21, AGM. John, G3WFM, 01707 651532.

COULSDON ATS

12, RSGB Deputy Regional Manager Paul Berkley with a presentation on the work of the RSGB, plus video. 18, Bazaar 2001. Steve, G7SYO, 01737 354271.

THE REGIONS AND DISTRICTS

Region 1: Scotland West and the Western Isles
- District 1 – Central, City of Glasgow
- District 2 – Lanarkshire, Renfrewshire
- District 3 – Ayrshire, Dumfries & Galloway
- District 4 – Dumbartonshire, Argyll & Bute, Western Islands

Region 2: Scotland East and the Highlands
- District 5 – Highlands and the Orkney and Shetland Islands
- District 6 – Moray, Aberdeenshire
- District 7 – Perth & Kinross, Angus
- District 8 – Fife, Lothian, Borders

Region 3: North West
- District 9 – Cumbria
- District 10 – Lancashire, Isle of Man
- District 11 – Greater Manchester
- District 12 – Cheshire, Merseyside

Region 4: North East
- District 13 – Northumberland, Tyne and Wear, Cleveland, County Durham
- District 14 – North Yorkshire, East Yorkshire
- District 15 – West Yorkshire
- District 16 – South Yorkshire, NE Lincs

Region 5: Midlands
- District 17 – Shropshire, Staffordshire, West Midlands
- District 18 – Derbyshire, Lincolnshire, Nottinghamshire. Rutland
- District 19 – Bedfordshire, Leicestershire, Northamptonshire
- District 20 – Gloucestershire, Herefordshire, Warwickshire, Worcestershire

Region 6: North Wales
- District 21 – Wrexham, Flintshire
- District 22 – Conwy, Denbighshire
- District 23 – Gwynedd, Ynys Môn (Anglesey)
- District 24 – Powys

Region 7: South Wales
- District 25 – Pembrokeshire
- District 26 – Ceredigion
- District 27 – Carmarthenshire
- District 28 – Vale of Glamorgan, Cardiff, Newport

Region 8: Northern Ireland
- District 29 – North Belfast, Co Antrim
- District 30 – South Belfast, Co Down
- District 31 – Co Armagh, Co Fermanagh
- District 32 – Co Londonderry, Co Tyrone

The RSGB Regional Representation Scheme is designed to allow changes to the district boundaries as required in order to support the membership most effectively, therefore some changes to the districts shown above may take place in the future.

Region 9: London & Thames Valley
- District 33 – London Postal Districts
- District 34 – South Buckinghamshire and former county of Berkshire
- District 35 – Hertfordshire, North Buckinghamshire
- District 36 – Surrey

Region 10: South & South East
- District 37 – Oxfordshire
- District 38 – Wiltshire
- District 39 – East Sussex, West Sussex
- District 40 – Hampshire, Isle of Wight

Region 11: South West & Channel Islands
- District 41 – Cornwall & Channel Islands
- District 42 – Devon
- District 43 – Somerset & Bristol
- District 44 – Dorset

Region 12: East & East Anglia
- District 45 – Cambridgeshire
- District 46 – Norfolk, Suffolk
- District 47 – Essex
- District 48 – Kent

Region 13: Overseas Regions
- District 49 - IARU Region 1
- District 50 - IARU Region 2
- District 51 - IARU Region 3

Breakdown of the RSGB Regions and Districts.

CRAY VALLEY RS
1, PicATUne ATU, Paul, M0CJX. Bob Treacher, BRS32525, 020 82657735 after 8pm & weekends.

CRYSTAL PALACE & DRS
7, SWR bridge project. 16, Table sale, surplus equipment. Bob, G3OOU, 01737 552170 or Victor, 020 86532946.

DORKING & DISTRICT RS
27, Satellites, Craig Underwood of Surrey Satellite Systems. John, G3AEZ, 01306 631 236.

ECHELFORD ARS
8, APRS using *UIView*, Damian Kamm, M0BKV. 28, Changes in the future, Paul Berkley, M0CJX. Robin, G3TDR, 01784 456513.

EDGWARE & DARS
8, The FT-817, Chris Taylor of Martin Lynch & Sons. 22, EMC: avoiding interference, David Lauder, G0SNO. David, G5HY, 01923 655284 (days) / 020 89549180 (eve).

MAIDENHEAD & DARC
1, The RSGB IOTA programme, Roger Balister, G3KMA. 20, Fishing rod antennas. John, G3TWG, 01628 525275.

NORTH HERTS RAYNET ASSN
6, Sandy Scouts Firework Display. Stephen, G8LXY, 01582 615772.

RADIO SOCIETY OF HARROW
2, 'The Good Earth', Eric, G3MHQ. 4, GB2DHH operating day at Mosquito Museum, London Colney. 11, Special event station to mark Armistice Day. 16, Fun to wind down for the winter break. 30, Construction contest. Jim, G0AOT, 01895 476933 / 0207 278 6421.

READING & DARC
8, Discussion evening. Pete, G8FRC, 0118 969 5697.

SILVERTHORN RADIO CLUB
9, Shack closed for cleaning. 30, On air. David, G0KHC, 020 85042831.

SURREY RADIO CONTACT CLUB
5, Digital Audio Broadcasting, Peter Burton, G3ZPB, at RTCG, Whyteleafe CR3 0YY. Ray, G4FFY, 0208 6447589.

VERULAM ARC
26, Kenwood equipment, David Wilkins, G5HY. Walter, G3PMF, 01923 262180.

WELWYN-HATFIELD ARC
5, Visit to RSGB HQ (TBC). 19, Power supplies, Keith Pollard. 26, Construction evening dean@g3wgc.freeserve.co.uk

Region 10: South & South East

CRAWLEY RC
21, Interclub challenge with Horsham ARS. Keith, G3VKW, keith@g3vkw.demon.co.uk

FAREHAM & DARS
7, Club station G3VEF & G8KGI on air. 14, Broadcast radio restorations, Fred, M0FRD, 21, Ron's talk night, G3XPH. 28, Project planning for 2002, Steve G7HEP. Steve, G7HEP, 01329 663673.

FARNBOROUGH & DARS
14, AGM. 28, Chairman's evening. Norman, G0VYR, 01483 835320.

HARWELL ARS
13, 'Phase 3D Satellite', Neill, G4HLX. John, G6LNU, 01235 223250.

HASTINGS ELECTRONICS & RC
21, Nostalgia evening: memories from when times were good. 28, Club executive meeting. R C Gornall, G7DME, 01424 444466.

HORNDEAN & DARC
6, Social evening. 27, Amateur radio awards, Mick, G3LIK. Stuart, G0FYX, 023 92472846.

HORSHAM ARC
1, PSK31, Alister Watt, G3ZBU.

Region	RSGB Regional Manager
1. Scotland West & Western Isles	John Martindale, GM4VPA
2. Scotland East & the Highlands	Tommy Menzies, GM1GEQ
3. North West	Kath Wilson, M1CNY
4. North East	Geoff Darby, G7GJU (temp)
5. Midlands	Vacant
6. North Wales	Liz Cabban, GW0ETU
7. South Wales	Simon Lloyd Hughes, GW0NVN
8. Northern Ireland	Jeff Smith, MI0AEX
9. London & Thames Valley	Roger Piper, G3MEH
10. South & South East	Ivan Rosevear, G3GKC
11. South West & Channel Islands	Richard Atterbury, G4NQI
12. East & East Anglia	Malcolm Salmon, G3XVV

RSGB Regional Managers (as of 2 October).

David, G4JHI, 01403 252221.

ITCHEN VALLEY RC

1, Skittles evening. 9, Introduction to VHF propagation, Paul. 23, SETI. Mike, G6AIQ, mamjh@yahoo.com

MID SUSSEX ARS

1, Surplus equipment sale. 30, Shack operations plus table-top sale. Geoff, G6MJW, 01273 845103.

OXFORD & DARS

8, Talk TBA by Ray, G4FON. Dave, G3BLS, 01865 247311.

SOUTHDOWN ARS

5, Antennas and propagation, Mike Christieson. John, G3DQY, 01424 428064.

SWINDON & DARC

1, Power line transmission, Peter Chadwick, G3RZP. 15, The valve story, Tom Morgan, G3XMM. Den, M0ACM, 01793 822705.

TROWBRIDGE & DARC

7, Judging of entries for G2BQY Memorial Constructor's Cup. 21, Natter night. Ian, G0GRI, 01225 864698 eve / weekend.

WATERSIDE (New Forest) ARS

6, Demo / talk on FSTV, Giles Read, G1MFG. A Horton, G0LKG, 02380 844316.

WORTHING & DARC

7, Video cameras, G0ECW. 14, Discussion evening. 21, PicATUne, M0CJX. 28, Getting the best out of the club transmitter. Roy, G4GPX, 01903 753893.

Region 11: South West & Channel Islands

APPLEDORE & DARC

19, Bring and buy auction. Brian, M0BRB, 01237 473251.

CORNISH RAC

2, Bring and buy in Main Hall. 5, Committee meeting. 12, Computer section. Robin, G0MYR, 01209 820118.

SOUTH BRISTOL ARC

7, Christmas Raffle, Steven, G0UQT. 14, Bring & buy sale, Len, G4RZY. 21, AGM. 28, On air. Len, G4RZY, 01275 834282.

TORBAY ARS

23, Torbay Amateur TV Group ATV demo. John, G3RMA, 01803 556425.

WEST SOMERSET ARC

6, Use of spectrum analyser. Alan, M0AOJ, 01643 707207.

YEOVIL ARC

1, Operation from DX locations, G3KSK. 8, Manufacture of early valves, M0ARO. 15, Old communication receiver overhaul, G7LNJ. 22, Practical fault finding, G3TSK. 29, On air. Derek, M1WOB, 01935 414452.

Region 12: East & East Anglia

BRAINTREE AR & CCC

5, Extraordinary General Meeting. Keith, M0CLO, 01376 347736.

BROMLEY & DARS

20, Chilean DXpedition video, Colin Westwood. Alan, G0TLK, alangm2@clara.net

BURY ST EDMUNDS ARS

20, Talk by Clive M5CHH / VE5CHH. George, G3LPT, 01359 259518.

CAMBRIDGE & DARC

2, Shooting at Bisley, Ian, G4AKD. 9, Discussion evening. 16, Update on SETI project. 23, Building an Aircraft, Keith and Vanessa. 30, Video. Morse class at 7.30pm. Ron, G3KBR, 01223-501712.

CAMBRIDGE UNIVERSITY WIRELESS SOCIETY

A introductory evening meeting for anyone interested in amateur radio will be held at the end of October. For further details contact Dominic Smith (Girton College), e-mail: dnas2@cam.ac.uk or Martin Atherton, G3ZAY, e-mail: g3zay@btinternet.com

CHELMSFORD ARS

6, 'Over the Horizon HF Radar', Ken Parry. David Bradley, M0BQC, 01245 602838.

FELIXSTOWE & DARS

12, Speaker from Microwave Round Table. 26, RSGB video. Paul, G4YQC, 01394 273507.

GREAT YARMOUTH RC

9, 23, Operations night. A D Besford, G3NHU (no contact details supplied).

HARWICH AR INTEREST GROUP

14, Digital cameras, Ron, G4JIE. Eugene, G4FTP, 01206 826633.

IPSWICH RADIO CLUB

7, Surplus equipment sale. 28, Morse practice, John, G4BAV. Keith, G7CIY, 01394 420226.

LEISTON ARC

6, AGM, boot sale. Lisa, 2E1HBF, 01728 833202.

MAIDSTONE YMCA ARS

2, Club junk sale. 9, RAE power supplies. 16, RSGB scheduled Morse test (TBC). 23, RAE semiconductors. 30, Lecture. Andy, M0CST, 01622 661035.

NORFOLK ARC

7, Morse practice and instruction. 14, GPS Systems, Malcolm, G3PDH. 21, Morse practice and instruction. 28, The RSGB under the microscope: open discussion. Peter, G3ASQ (no contact details provided).

CLUB NEWS IN BRIEF

PHOENIX CLUB RISING

WHEN LISTENING on the bands all too often stations are heard talking about dwindling numbers at their local club - sometimes only two or three people turn up at a club night. This is far from the case at the Phoenix ARC, M0CGG. Bev, M0CBP, kindly lets local amateurs use his premises, Phoenix Communications, in Birtley, Tyne & Wear as their meeting place. The club has access to all the facilities and test equipment at the shop and has recently put together a club 'shack' there. Gatherings now reach 18 - 20 operators each club night.

Ray, M5ABT, runs an RAE course for the club, and this has already helped 15 members to pass the exam. Another six students recently started the course leading to the May 2002 exam. Morse lessons are also available with 'fun learning': George, G1UWX, called in to the shop just to buy an antenna and ended up as M5GHT!

Members of the Phoenix ARC gather at Phoenix Communications in Tyne & Wear.

Bev, M0CBP, comments, "It's a great club with a great set of lads and Janice, M5ETP ('Extra Tea Please'). I only supply the premises, it's the members that make the club and promote radio in the area. Long may it continue."

MORE CLUB NEWS OVER THE PAGE ☛

CLUB NEWS IN BRIEF

POLDHU MARCONI CELEBRATIONS

ON 12 DECEMBER it is the Centenary of the sending of the first trans-Atlantic radio signal from Poldhu in Cornwall to Canada. Work on a new 'Marconi Centre' at Poldhu is well under way; this will provide a permanent commemoration of the historic site. It will be part radio club house and part exhibition hall, and will be opened on 12 December 2001. On that day the club will be linking up with London, Canada, USA and Italy.

Nearly four years ago, Carolyn Rule, M0ADA, then Chairman of the Poldhu Amateur Radio Club, was entrusted with the task of accomplishing the dream of securing a permanent radio club house on the wireless site at Poldhu. Carolyn writes, "I am pleased to say that from that first idea, a strong and friendly partnership has evolved between Marconi plc, the National Trust (as landowners) and Poldhu Amateur Radio Club... The Marconi Centre, a specialist designed base for the Poldhu Club and Interactive exhibition hall is now being built on the wireless field.

The 'Marconi Centre' building work nears completion at Poldhu.

This innovative building will be owned by the National Trust and leased to Poldhu Amateur Radio Club who will manage it and open the facility to the public regularly during the summer season. In addition the Poldhu Club will continue to meet here every Tuesday and Friday evening throughout the year."

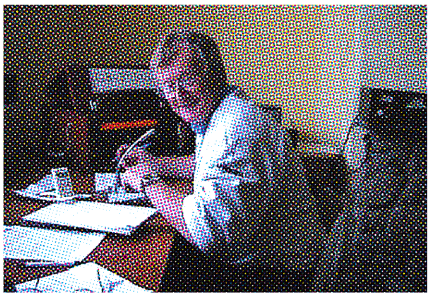
The building consists of three purpose-built radio rooms, office / committee room, toilets and kitchen, and large interactive exhibition hall equipped by Marconi plc. The latest pictures of the building progress are available on the club's web site at www.mulliononline.com

G0JVR taking his own photograph with a radio-controlled camera under a kite at the Poldhu site.

It is proposed that on 12 December Poldhu club members will be on the air from the centre from 0800 using the special callsign GB100GM. Other radio clubs in Cornwall have also been invited to take part in the celebrations. "During the day we will welcome members of the general public, VIPs and the media for a tour. The official opening ceremony and the link-up and exchange of greetings with our sister station in Newfoundland, VO1AA, will take place in the afternoon", says Carolyn. "It has been very hard work getting to this stage and we are extremely grateful to both John Hooley of Marconi and Nick Lawrence of NT, without whose help the project would not have been a success. We look forward to welcoming as many of you as are able, to the new Marconi Centre in the future. If you cannot be with us physically then please join in 'on air' when you hear us."

SETTLE CARLISLE LINE

GB125SCL WAS operated by members of the Central Lancs Amateur Radio Club over the weekends of 26 / 27 August and 1 / 2 September to commemorate the 125th anniversary of the founding of the Settle Carlisle Line. The event took place from Ribblehead station 1000ft up in the Yorkshire Dales National Park, and close to the famous Ribblehead viaduct. Almost 1000 QSOs were made, mainly on 40 metres. Those taking part included Jack, G0FQN; Bill, G3NQX; Peter, G3UCA; Mark, G1PIE; Pam, 2E1HQY; Robin, G3RJQ; Ken, G0LBT; Bill, G4YIA, and Peter's wife, Chris, who helped with logging. The group thanks Phil, the stationmaster at Ribblehead and his wife Wendy, and the Settle Carlisle Trust for supplying the QSL cards.



Peter Sinclair, G3UCA, operating GB125SCL.

KEIGHLEY'S TRAINING GROUP

KEIGHLEY AMATEUR RADIO Society's Training Group is changing the start of its RAE course from January 2002 to **Wednesday 7 November 2001** for the May 2002 RAE. The Training Group meets at Ingrow Cricket Club, Hainworth, Keighley, West Yorkshire on Wednesdays at 7.30 - 9.30pm (please note the normal club meetings are at the same venue at 8.00pm on Thursdays.) The course is free but there is a small charge to cover costs of books, CDs etc. Details from Ian Townson, M1BGY, tel: 01274 723951; mob: 07769 731182, or see www.qsl.net/m1bgy/index2.html

CLUB WEB SITES

THE **GREAT YARMOUTH Radio Club**, G3YRC, has recently rebuilt its web site at www.qsl.net/g3yrc The site is being enlarged on a weekly basis with free ads, UK repeaters page, callbook listings from 73 countries, on-line logbooks including the log for GB100CS, free weather reports including solar weather, world prefix listings and more.

The **Silverthorn Radio Club's** club magazine is available in an on-line version on its web site at www.silverthornradioclub.org.uk The club was one of the first in the UK to launch a web site.

CHILDREN IN NEED

THE MOORLAND and District Amateur Radio Society (MADARS) will be doing a sponsored 24 hours on the air for the Children in Need charity.

It will take place from the club's radio room from 7.00pm on Friday 16 November until 7.00pm on the Saturday. Last year the club raised over £900 for Children in Need and it is aiming to break that figure this year. Club members say they need many radio contacts to keep them going through the long night! Further details from Paul Stevenson, M5DAD, MADARS Secretary, e-mail: paulm5dad@aol.com

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Regular Feature

VHF/UHF

NORMAN FITCH, G3FPK
40 Eskdale Gardens,
Purley, Surrey CR8 1EZ.
E-mail: g3fpk@compuserve.com

SPORADIC E propagation continued throughout August and into September on 50MHz with a late brief opening on 144MHz as well. For meteor scatter (MS) operators, WSJT mode [see 'VHF / UHF', *RadCom* October 2001 - *Ed*] is catching on in a big way in Europe.

All times are in UTC, ODX indicates best DX and QTHR signifies that the operator's address is in the current *RSGB Yearbook*. An asterisk (*) after a callsign denotes a CW contact, (SN), (FK) etc refers to the postcode area and (IO93), for example, is the Maidenhead grid.

PUBLICATION

THE FRONT COVER of the August issue of *Six News*, the quarterly journal of the UK Six Metre Group, is a photograph of the late Major Ken Ellis, MBE, G5KW. A brief obituary to Ken was published in the August *RadCom* and there is a more detailed tribute to him by Ken Willis, G8VR, in this issue of *Six News*. To perpetuate the memory of member number one of the UKSMG, the Committee has announced the inauguration of the Ken Ellis, G5KW, Memorial Trophy to be awarded annually to the contributor of the best original article in *Six News*.

Clive Davies, G4FVP, has 14 pages of 'What's on Six' and 'Late News'. On the technical side, there is a review of the Kenwood TS-2000 transceiver by Kerry Rochester, G0LCS, while Ian Williams, M0BCG, describes how to convert the Bremi BRL200 27MHz citizens' band amplifier to operate on 6m. There are two articles by Swiss amateurs on vertical antenna polarisation. The All-Time 50MHz Operating Table occupies four pages and there are 245 entries. Chris Deacon, G4IFX, edits *Six News* and the UKSMG has a good web site - see the list.

SOLAR ACTIVITY

SOLAR ACTIVITY WAS reasonably high in the 30 days to 10 September. From 4 September the 2.8GHz radio flux exceeded 200 units with a peak value of 250 on the 8th. The minimum value was 143 on 16 August giving an average of 185.9. The SESC sunspot number average was176.4 with a minimum of 132 on 25 August peaking to a maximum of 291 on 9 September. 39 new sunspot regions were recorded and on 21 days their daily areas in millionths of the visible disc exceeded 1000. On five of those it was in the mid-2000s. These figures suggest we might be heading for a second peak in this cycle.

On the geomagnetic front the mid-latitude A-index at Fredericksburg exceeded 10 on 11 days with a maximum 'sub-storm' value of 27 on 17 August. Things were livelier at College in Alaska peaking at a 'storm' level of 60 on that day and which produced a widespread aurora. These data can be found on the NOAA web site - see the list.

The July issue of *SunMag* starts with articles on the Earth's orbit around the Sun, meteorites and the then-imminent Perseids meteor shower. There are the usual daily solar, geomagnetic and particle data, sunspot group data and a solar flare list. This publication is compiled and distributed by Neil Clarke, G0CAS (QTHR), whose e-mail address is neil@g0cas.demon.co.uk

The June issue of *The Six and Ten Report* analyses Es activity on 6m and the conclusion is that it was a disappointing month for the mode. There are four pages of data covering Es propagation to Europe, North Africa and the Middle East and sections on MS and tropo events. The table of solar and geomagnetic data is followed by several pages of detailed reports of 6m activity from around the world. The *Report* is an activity of the RSGB's Propagation Studies Committee (PSC), and is edited by Dr Steve Reed, G0AEV, and Prof Martin Harrison, G3USF. Subscription inquiries should be addressed to Steve (QTHR) whose e-mail address is g0aev@explore.force9.co.uk

Peter, PY5CC, hands over one of his 6m QSLs to Rob, PE9PE, during a recent visit to the Netherlands. Rob was one of operators on the February D68C Comoros DXpedition which made 405 QSOs on 6m.

BEACON NEWS

GEORGE GASKIN, ZB0AA, has established a 6m beacon in Gibraltar. ZB0AA is on 50.035MHz from IM76HD. It runs 10W to a horizontal 4-ele Yagi at 20m ASL beaming north-east. The CW message reads "ZB0AA IM76HD" and the operating time is 1000 - 2200. George would welcome reports, which can be e-mailed to: georgeg2@gibnynex.gi

The 2m trans-Atlantic beacon project is going well according to John Wilson, G3UUT. The allocated callsign is GB3SSS and it will operate on 144.407MHz. The Poldhu ARC has an agreement with the Marconi Company to locate the transmitter on its site and the aim is to have it operational in time for the 100th anniversary of the first trans-Atlantic transmission on 12 December.

Initially the transmitter will run 25W to an 8-over-8 element Yagi but John intends to apply for a 100W licence when the Poldhu ARC acquires a suitable PA. The site clearance form and licence application are with the Radiocommunications Agency (RA).

MOONBOUNCE

HOWARD LING, G4CCH (IO93), was operational (QRV) on 23cm over the 8/9 September activity weekend and completed 25 QSOs. K1RQG was his 156th new station or initial, as such are known. Conditions were good and he was able to hear his own echoes with only 10W most of the time. On the 8th he made eight CW and two SSB contacts and next day 11 CW and four SSB QSOs.

David Hilton-Jones, G4YTL (IO92), is running his legal limit to four 5-wavelength DJ9BV Yagis on 2m. Recent new initials are C31TLT, KB8RQ, F8DO and G0RUZ, bringing his totals to 247 initials and 52 DXCC countries on the mode. He runs his legal limit on 70cm to six 11-wavelength DJ9BVs and is now up to 51 initials and 21 countries. His latest initial was Doug MacArthur, VK3UM, writer of the definitive Moon position software, and who has just returned to the band from his new QTH.

3/4 November is the next sked weekend when London latitude stations will have 30.5 hours of Moon time. The declination ranges from +18.22° to +23.45° and the 144/432MHz sky temperature varies from 412/29K to 575/44K. The signal degrada-

METEOR SCATTER

WSJT MODE IS really catching on in Europe as well as in North America. The debate about where the mode should go on 2m seems to have been settled by operators themselves with 144.370MHz becoming the centre of activity with a ±15kHz spread. It seems to me that we can live with that.

Claudio Maracci, I4XCC, was QRV in the Perseids and on 11 August completed on CW with EI4VWY (IO54), LY2CI/P (KO15) and LZ1KWT (KN21). Next day brought CW QSOs with EU6MS (KO45), DK8ZJ (JO54), DK5WO and LA8KV/P (JP62) at 2027km. SSB completions were with DK3EE (JO41), G4PBP, LA0BY/P (JP40) and SM1SBI (JO97). His tally on the 13th comprised DL/UT8AL (JO43) on CW and PA9KT (JO33), DF9QX (JO42) and PA5DD (JO22) on SSB.

Philip, G0ISW (IO94), downloaded the WSJT software on 6 August and shortly afterwards worked PA3GST (JO21) on 50.270MHz using 20W and a Create log periodic antenna. He writes, "I am totally hooked on this mode. It is so easy to use provided your computer clock is calibrated daily. Using 30-second periods the program does most things automatically and is user friendly." He has been corresponding with Dr Joe Taylor, W1JT, who has incorporated some of his suggestions in version 1.0.0, which can be downloaded from Philip's web site - see the list.

G4YTL reckons the Perseids, " . . . ain't like they used to be." David says the peak was not very well defined and, although there were a few long bursts, they weren't very frequent. He found that 144.200MHz was a mess and, if only operators would spread out, a lot more QSOs would be completed.

He is all for Novices joining in but implores them to learn the proper procedures and reminds us that if you *don't* give the other station's callsign as well as your own, it isn't a QSO. Finally he asks that people set their clocks accurately: that couldn't be easier with cheap MSF radio-controlled clocks, BBC pips, the talking clock, not to overlook the Teletext digital display on your TV screens. On 4m on 21 August he completed on SSB in a 15s burst with GM4ODA/P (IP90) and he wished more 4m devotees would try MS. On 2m CW he completed with LA/DL3YEL (JP42) on 10 August, ES0SM/3 (KO19) on the 11th and ES5PC (KO38) on the 19th.

John Lemay's, G4ZTR (CO), recent MS completions on 2m were with IM0/IK0BZY (JN40) on WSJT, and on HSCW EA6IB in JM08 and JM09 and SV/DH7FB (KM09). On 6m, Jamie Ashford, GW7SMV (NP) completed on WSJT with PA3GST but it took 45 minutes. The next significant shower is the Leonids and the OH5IY software suggests the peak could be around 1130 on 17 November. It's anybody's guess whether or not this shower will be average or better this year, so give it a try.

tion, referred to perigee, ranges from -1.06dB to -0.63dB. The second leg of the ARRL International EME Contest is on the 10/11 November weekend and the data for this are 27.6 hours of Moon time, +13.27º to +4.47º declination variation, 227/17K to 310/23K sky temperature range and 0dB to -0.07dB degradation. The contest rules are on the ARRL's web site - see last month's list.

BAND REPORTS

50MHz

David Gilligan, G1OGY, reports on his brief *ad hoc* operation in Cyprus as 5B/G1OGY/P from KM75AA on an unspecified date. He used an FT-847 running 100W to a 20ft triangular delta-loop wire antenna with the apex at the top and fed at the bottom through 15m of RG58 coaxial cable. The supporting 'mast' was a wind surfer sailboard mast wedged through the window of a 4x4 off-road vehicle. The site was scrubland 100m ASL. In the period 0700 - 1045 he completed 13 QSOs with stations in I, IT9, LZ, UR, YU, 4N and 9A, ODX being IW0BET/IT9 (JN77) at 2098km. All e-QSLs have been loaded on to a web site - see the list.

Terry Chaplin, G1UGH (IP), heard Italians in JN53, 54, 63 and 90 on 26 August during an Es opening. On 2 September he worked I0SNY (JN62), I5XDL (JN52), YO2II (KN06) for a new grid, IK5RLP (JN52) and IC8/IN5KME (JO60) on Ischia island. On the 9th SP4NI (KO13) was another new grid.

David Long, G3PTU, was QRV from Brittany during July and August under a variation of his CEPT licence. He writes that the rules as to where you can legally operate on 6m in France are very complex, ranging from forbidden to 100W. He was granted a 5W permit although he was only 4km from a 100W area. Antenna polarisation had to be horizontal and /M and /A operation were not allowed. In some instances, prohibition is down to village level and a *gite* address seems to help. He reminds us that the French 6m allocation is 50.200 - 51.200MHz, thus missing out where most of the action is.

Derek, G8TOK (BR), reports that his best contact recently was with GU6AJE/MM (IM39) on 24 August. Three unusual Norwegian squares were provided by LA2IM (JP43), LA7GM (JP65) and LA5QFA (JQ90), his ODX to the north and way north of the Arctic Circle. John Armstrong, GW3EJR (SA), has finally got into computers and on to the Internet to e-mail his latest grid total, eight new ones bringing his tally to 260. His QTH is in a river valley, not ideal for VHF operation.

In the 18 August to 5 September period GW7SMV worked some good DX including LW1DZ and LU9AEA (GF05), GM4ODA/P, ZD7VC (IH74), GU6AJE/MM (IM25), GB5FI on Flatholm Island, IW2KWI/8 (JM79), LU9HUP (FF76), ES1QD and ES6DO.

From his home QTH in August Ted Collins, G4UPS (EX), worked GU6AJE/MM (IM39) at 1235 on the 24th for a new grid. Italians were worked in the morning of the 26th. The 27th was a productive day with stations in DL, EH6, HB9, I, IS0, OK, OM, SP, S5 and 9A heard or worked. At 1350 he contacted HB0LL (JN47). There was strong Russian in-band TV QRM on the morning of the 30th in among which Ted contacted several SPs and later on DL/UT8AL and OZ3ZW (JO54).

In the 4 - 21 August period Ted operated portable from his caravan in IO92 running 100W to an HB9CV antenna 5m AGL. There was lots of European activity on the 4th, countries available including EH, F, I, OE, S5, SP, T9 and 9A. FM5WD/IV3* (JN66) was an unusual Venetian contact at 1508. The evening of the 5th brought an opening to North America and at 1933 he worked VE1ZZ* (FN84). The event ended by 2005. Further Es openings to the Mediterranean, Iberia and North Africa occurred on 6 - 9, 12, 14, 19 and 21 August. On the 12th, TT8JE* (JK72) was his 163rd DXCC country and at 0820 on the 21st Faeroes beacon OY6SMC was copied at S8. Ted reports that EI3IO was QRV from 4U1ITU in the 27 - 31 August period when Dave made 49 QSOs including 5B4FL, 5 GMs, a GW and a G.

70MHz

G4YTL had been stuck on 51 grids for a couple of years. David has caught most of this year's Es openings to Slovenia working S51DI (JN76) every time. In flat conditions on 10 August he worked EI4VWY* (IO54) on tropo and would like to thank the team for taking 4m gear. G8TOK says that the opening to S5 on 27 August was one of the best he can remember. Derek contacted S53X, S51CN, who is new to 4m and only running 2W, and S59F (all JN65) and S59MA (JN76). No YUs were heard.

144MHz

G4YTL is missing some grids in Spain and asks if anyone knows of any activity from IM69, 86, 89, 97 and IN60, 62 and 70? He has e-mailed a few stations listed as QRV on CW MS without any replies. GW7SMV caught a short

ANNUAL VHF/UHF TABLE - JAN TO DEC 2001

	50MHz		70MHz		144MHz		430MHz		1.3GHz		Total
Call	Dist	Ctr	Dist	Ctr	Dist	Ctr	Dist	Ctr	Dist	Ctr	Pts
G4ZTR	35	26	38	7	91	28	13	5	-	-	241
G3FIJ	31	39	21	3	57	12	15	4	6	1	189
G4DEZ	30	55	14	5	59	13	8	4	-	-	188
G4APJ	6	15	-	-	60	11	21	7	-	-	120
G6TTL	10	35	-	-	34	8	14	4	-	-	105
G7CLY	7	14	-	-	28	8	4	1	-	-	62
G1UGH	1	15	-	-	8	9	-	1	-	-	34

The District Codes are the 124 listed on page 53 in the October 2000 *RadCom*. Up to 6 different GI stations and up to 3 different GM stations in each Scottish district may be counted. Countries are the current DXCC ones plus IT9. The deadline for the next issue is 6 November.

surprise Es opening at 1357 on 27 August and Jamie worked I7FML (JN80).

David Dodds, GM4WLL, braved the gales on the 1/2 September weekend to operate in the Trophy Contest from IO85NR. UK activity was disappointing and he suggests that may have been because many stations were not aware that portable operation was back on the agenda [see *RadCom* September 2001 page 6 - *Ed*]. Due to amplifier problems he entered the 25W section, making 68 QSOs to seven countries and 25 grids.

In spite of the low power, a quarter of the contacts were over 500km and half of those were over 600km. Top three ODX were ON6ZT/P (JO10 at 696km), PI4GN (JO33 at 677km) and PA6C (JO33 at 645km). GM0EWX on Skye was worked for the first time. The station comprised a TR-9130, 14-ele Yagi and masthead preamp at 38ft and an 8-over-8 slot-fed Yagi plus preamp at 15ft.

430MHz

G4YTL still needs many grids in the British Isles so would appreciate skeds with stations in IO51 - 55, 64 - 68, 70, 72, 73, 75, 77, 78, 86 - 88, 95, 97, 99 and IP90. David has EME capability. He is QTHR and can be reached via e-mail at: david.hilton-jones@clneuro.ox.ac.uk.

1296MHz

G4YTL is contemplating getting going on 23cm so asks anyone who has any suitable unwanted gear to contact him. He is thinking about a DB6NT or SSB Electronic transverter, a new or nearly-new Yagi and a PA. He has EME in mind eventually.

GM4WLL has been working on his web site - see last month's list - so was looking forward to see if there would be any effect on activity in the contest on 2 September. The wind was too strong at the Lauder Common site for the 35ft mast so he used a 67-ele Yagi at 6m AGL fed with 18W. David very quickly worked G4BRK (IO91 at 460km), G0HNW and G6DER (IO93), GM8BDX and GM0FMW (IO85) and GM6CMQ and MM1CXE (IO86), the last on FM. Stations heard were G8OHM/P (IO83), G0ODQ (IO91), and GD4GNH. GM6CMQ worked GM3WYL (IO75) and GM0BRJ (IO76) so 11 stations were QRV in the northern half of the UK. There is a GM-23 web site - see the list.

DEADLINES

THANKS TO ALL those who met the early deadline. The all-important date for January 2002 is **6 November** and for the February issue it's *very* early on **4 December**. For those of you on CompuServe, my ID is simply g3fpk and the telephone answering and fax machine is on 020 8763 9457. ♦

WWW.

UKSMG:	http://www.uksmg.org
Solar data (NOAA):	gopher://solar.sec.noaa.gov/
G0ISW (WSJT s/w):	http://www.qsl.net/g0isw/
5B/G1OGY QSLs:	http://www.eqsl.cc
GM-23 (GM4WLL):	http://www.qsl.net/gm4wll/23/23index.htm

CONTEST

TIM KIRBY, G4VXE
11a Vansittart Road,
Windsor SL4 5BZ
E-mail:tim@timkirby.net

MANY READERS may be aware that there has been something of a backlog in the publication of results recently. This has been due to a variety of factors, but the editor and I worked together closely to speed up the publication process as much as possible and cleared the backlog completely last month. Another glut of results has now just appeared and we'll also do our best to get these to you as quickly as possible!

In the meantime, a quick reminder that you can find RSGB contest results on the web. VHF results are published at www.blacksheep.org/vhfcc and you can find some HF results on the RSGB Members Only site at www.rsgb.org

CONTEST CALENDAR

I HAVE RECEIVED some enquiries recently about how to find dates for upcoming events. The RSGB '2002 Contesting Guide' will be published in the January 2002 *RadCom* (dates for the remainder of 2001 were published in the 'Contesting Guide' in *October 2000*). The Contest Calendar in this column contains a selection of contests which are liable to be of interest to readers. It is comprehensive in terms of RSGB and major contests, but of course it is impossible to include everything.

If you want a good comprehensive list of HF contests, I recommend the SM3CER contest pages on the Internet which you can find at www.sk3bg.se/contest

A comprehensive list of VHF / UHF events is actually harder to find, but I recommend the one on the UBA (Belgian national society) site at www.uba.be/VHF/calenvhf.htm

INTERNET DISCUSSION GROUPS

WHEN A QUERY arose recently about how to subscribe to the VHF Contests reflector, I realised that we hadn't published any details of how to do it for quite some time! Just as a reminder, a reflector, in Internet parlance, is a mailing list which you can subscribe to. Then, when someone posts a message to the reflector everyone receives a copy of it. There are two reflectors of primary interest to UK contesters.

The first is the UK-Contest reflector, which passes traffic mostly, but not exclusively, of HF contests. VHF postings are welcome, but tend to be in more of a minority. To subscribe to this reflector, send an e-mail to majordomo@contesting.com with the words subscribe uk-contest in the body of the message.

Secondly, there is a VHF Contests reflector, which is exclusively about VHF contests. It is not solely UK-based and you will see some interesting postings from other European stations. To subscribe, send an e-mail to majordomo@blacksheep.org with the words subscribe vhf-contests in the body of the message

WRTC 2002

A MONTH OR TWO ago, I was able to include some details of the next World RadioSport Team Championship (WRTC) to be held in Finland sometime in 2002. This month, I'm pleased to announce that the team to represent the UK has been selected. The team members are Andy, G4PIQ, and Fred, G4BWP.

Andy and Fred both have a wealth of contest experience and a CV of excellent results to take with them to the event. I am sure that all readers will join with me on congratulating them on their selection. As more details of the WRTC event emerge, I'll be publishing them. If you're a keen contester, you might consider going to the event to lend your support to the UK team and also to participate in the social events surrounding the competition. More details on that when we have it.

One of the UK's top international contesters, Steve Cole, GW4BLE, in his Newport, Gwent, shack.

First Slow Speed Cumulatives, 2001

THERE WAS AN increase of entries over last year's event and it was good to see a few new callsigns included in the logs. Quite a few entrants said they missed the other two sessions, and there was also a request to bring the 'exchange' up to an ordinary contest format, include the serial number, and have all contacts scoring the same points.

Congratulation to the following winners of the sections: Leading Novice to Bob MacDonald, 2E0ATZ, with his Ten-Tec Argosy at 5W and a LW antenna, first Class A/B Licensee to Peter Herbert, M5ABN, using an Icom IC-746 and 10W to a G5RV, first Class A was Peter Clegg, G3TTB, with a TS-180 at 10W and a LW antenna.

The 'First Time Certificate' goes to Andy Levy, M5ALG, who was guest operating the G0VQR station, an FT-1000MP at 10W to a G5RV.

Derrick Webber, G3LHJ

First Slow Speed Cumulatives, 2001

Posn	Call	5 Apr	11 Apr	19 Apr	Total
1*	M5ABN	CKL	420	612	1032
2	M5ACR	CKL	301	306	661
3+	M5ALG	-	200	400	600
4*	2E0ATZ	294	254	CKL	548
5*	G3TTB	234	CKL	268	502
6	G3LIK	240	245	-	485
7	G3YAJ	CKL	240	240	480
8	G0RAF	CKL	205	265	470
9	G3ZGC	210	CKL	205	415
10	G0VYR	188	-	209	397
11	G2HLU	148	235	-	383
12	G3ISR	-	171	195	366
13	GW0ETF	150	180	-	330
14	G0VDZ	168	-	151	319
15	G3ZDD	CKL	153	163	316
16	G4XPE	CKL	160	145	305
17	GW4LZP	CKL	140	155	295
18	G3VNG	150	CKL	120	270
19	G0VQR	250	-	-	250
20	G4BLL	-	-	201	201
21	G4KEW	110	-	90	200
22	OK1FVD	CKL	104	85	189
23	G0TST	-	80	105	185
24	G4BIM/P	-	115	-	115
25	G0FYX	-	-	110	110

* = Certificate of Merit. + = First time entrant in RSGB Contest.

Club Calls Contest, November 2000

ON A NIGHT OF generally heavy rain with high winds reported, following on after weeks of heavy flooding in some areas, it is was a surprise to see nearly the same number of entrants in this year's event as last year. Some antennas, understandably, were reported to be much lower than they would normally have been. In spite of this, and with conditions reported poor with heavy static and fading, contacts were made nation-wide by many stations, but all Scottish stations had difficulty most of the time.

The Ariel Trophy and Certificate of Merit goes to the leading club station, Harwich Amateur Radio Interest Group, G0RGH/P, which used three operators, M0CGE, G4YJQ and G0DVJ. A certificate of merit goes to the leading individual club member Richard Marshall, G4ERP, a member of the Cheltenham Amateur Radio Association, who used an inverted-V antenna at 55ft and also won the certificate last year.

The David Hill, G4IQM, Memorial Trophy is awarded to the club having the highest aggregate score of five members. For the third year in succession the trophy goes to the Cheltenham Amateur Radio Association. Can nobody stop them?

All electronic logs submitted (approved or otherwise) were used, greatly assisting log checking. Missing /P from callsigns results in loss of all points for the contact, which occurred in some logs. Another point loser were contacts with stations not appearing in any other entrant's log (General rule 4b). Individual details of results scoring can be given, if requested by entrants, to g3gms@thaynemk.freeserve.co.uk or by posting an SASE to G3GMS (QTHR).

Many thanks to Martin Snow for sending in a checklog from GW4TTA, the Dragon Amateur Radio Club on Anglesey. This contest was very closely matched amongst the top contestants and the checklog was very useful for cross checking logs.

Mike Thayne, G3GMS

Note from G4VXE: Particular apologies to those of you who have been awaiting these results for some time, and to Mike, G3GMS. Mike sent me the results listing prior to my leaving for the D68C DXpedition and when I returned, I managed to lose them in the hundreds of e-mails waiting for me. Apologies. My fault. Don't blame the editor or the HFCC!

2nd 70MHz, 2000

AGAIN, COMMENTS were mostly aimed at conditions, or rather the lack of them. QSO counts were down this time but the number of entries remains consistent. Most entrants are looking forward to the day when more of our European friends are allowed on the band, but saying this, no Slovenian stations were active this time, leaving the best DX column looking a little sorry. Congratulations go to all section winners and runners up - all will receive certificates.

Martin Platt, G4XUM

2nd 70MHz, 2000

Pos	Call	Score	Loc	QSO	Power	Antenna	Best DX	km
				Multi-Operator				
1	GW5NF/P	4280	81KR	31	10	5	GD4GNH	287
2	G7RIH	1413	91RR	15	12	3	GD4GNH	383
				Single Operator Fixed				
1	GD4GNH	12842	74QD	42	160	5	G0GCI	474
2	G4ZTR	5663	01KW	28	150	8	EI3IO	495
3	G1OGY	4680	01GR	28	50	5	GD4GNH	441
4	G0GCI	4135	01ED	24	100	4	GD4GNH	474
5	G3JCU	4128	91QE	32	150	6	GD4GNH	425
6	G3MEH	3795	91QS	33	150	6	GD4GNH	377
7	G4JJI	3320	92SD	30	60	6	GD4GNH	356
8	G3NKS	3157	81XU	24	100	6	G4CAY	312
9	G3LVP	3029	81WV	26	25	7	EI3IO	308
10	G1KHX	2898	81MI	18	90	5	GD4GNH	330
11	G1EHF	2208	91LH	17	50	4	GD4GNH	397
12	G3XPU	1880	92HM	15	50	3	GD4GNH	282
13	G4OLT	1266	92AT	9	10	3	GD4GNH	230
14	GM4DEI	600	85IW	4	50	4	G0DPS	362
				Single Operator, Other				
1	M0AFC/P	6249	84SA	31	20	5	G0GCI	373
2	G3UUT/P	5482	92XD	36	100	6	EI3IO	427
3	GW8ASA/P	4641	81FP	30	8	3	G4ZTR	306
4	G0WJR/P	3198	83RO	18	15	5	G0GCI	337
5	G4XRV/P	1990	91RU	17	10	5	GD4GNH	374

Club Calls Contest, 2000

Pos	Call	Club	Status	Stns	Members	No Club	QSOs	Score
1=+	G0RGH/P	Harwich	S	31	64	5	100	1395
2	M5ARC/P	Wisbech	S	29	62	4	95	1320
3+	G4ERP	Cheltenham	M	32	51	3	86	1301
4	G3NKS	Cheltenham	M	33	45	3	81	1290
5	G3ASR/P	Edgware	S	29	59	4	92	1287
6	G3VER	Verulam	S	28	58	7	93	1266
7	G4TSH/P	Echelford	M	28	60	3	91	1255
8	G4ZRR/P	Echelford	M	29	51	3	83	1202
9	G3RAL/P	Loughborough	S	29	52	3	84	1192
10	G4ENA	Cheltenham	M	31	39	3	73	1189
11	G3GWB	Northampton	S	29	46	2	77	1186
12	G0RAF	RAF Waddington	S	27	51	6	84	1182
13#	G4AHG	Shirehampton	S	26	57	9	94	1178
14	G3WOR/P	Worthing	S	30	39	1	70	1125
15	G4AYM/P	Gloucester	S	28	42	3	73	1120
16	G3SAD/P	Stevenage	S	25	52	2	79	1119
17#	G3WOL/P	Newbury	S	29	45	5	79	1098
18#	G3TA	Cheltenham	M	28	46	4	78	1081
19	GW4CC	Swansea	S	23	51	9	83	1064
20	G4CXT	Martlesham	M	26	38	3	67	1035
21#	G3XTZ	Echelford	M	23	30	6	79	979
22#	G5FZ	Lincoln	S	24	54	4	82	935
23	G3JFH	Cheltenham	M	27	22	3	52	914
24	G3YAJ	Colchester	M	25	24	1	50	895
25	G3TNO	Horsham	M	22	33	2	57	859
26	G3SWC	Horsham	M	24	23	1	48	850
27	G0VQR	Reading	M	21	27	2	50	789
28*	G3ZME	Telford	S	22	21	1	44	787
29*	G0DZM	G QRP	M	23	17		40	780
30	G3SZS	Cheltenham	M	22	20	1	43	776
31	G4TPO/P	Horsham	M	20	25	3	48	763
32	G4HRS/P	Horsham	S	18	28	3	49	734
33	G3SNU	Torbay	M	22	19	1	42	720
34	G3YDD/P	Hereford	S	19	22	1	42	711
35*	G0VYR	Farnborough	M	21	15		36	708
36	M0EEE	Reading	S	19	22	1	42	699
37	G3UES/P	Echelford	S	18	24		42	693
38	G4FBS	Horndean	S	21	14		35	691
39	G3MA	Gloucester	M	21	17	1	39	688
40	MM0CPS	Cockenzie&PortSeton	S	21	12	2	35	687
41	G3WWT	Echelford	M	20	15		35	671
42	M0AJM	Echelford	M	19	17	1	37	668
43	GM3TKV/P	Morayfirth	S	17	26		43	663
44	G4FQR	Horsham	M	19	16		35	660
45	G3CO/P	Colchester	S	18	19	1	38	659
46*	G4DDX	Stevenage	M	18	18		36	648
47	G4ADV	Newquay	S	19	14		33	644
48	G0ICI	Wythall	M	18	16		34	632
49*	G0MTN	Wythall	M	19	10	1	30	615
50	G3VTS	Cheltenham	M	16	19		35	597
51	G5HK	Cheltenham	S	16	15		31	568
52	G3NDJ	Worthing	M	17	8		25	537
53	G4VTO	Torbay	M	16	11		27	536
54	M0CUH	Stevenage	M	15	15	1	31	534
55	G3NJA/P	Torbay	S	14	15		29	509
56	M0COP	Wythall	M	15	10		25	500
57	G3SIE	Edgware	M	14	13		27	496
58*	G4KIT	Worthing	M	16	4		20	480
59*	G3LGF	Cheltenham	M	13	11		24	452
60*	GM0CLN	Cockenzie&PortSeton	M	15	4		19	452
61	G2HS	Echelford	M	12	10		22	416
62*	G4RFU	Cheltenham	M	11	12	1	24	407
63	G0OUR	Open University	S	12	7	1	20	395
64	G4SLE	Worthing	M	12	8		20	394
65	G0WRS	Warrington	S	8	10		18	304
66#	GW0VIS/P	Mid Glam	S	21	51	13	85	271
67	G3HBZ	Echelford	M	5	6		11	188
68	G3IFB	Cheltenham	M	3	11		14	166
69	M0AJT	Stevenage	M	5	4		9	163
70*	G4UEL	Farnborough	M	4	4		8	144
71*	M0ADY	Worthing	M	3	1		4	92
72*	G3VQO	Horsham	M	2	3		5	80
73	G3UIL	Echelford	M	1	6		7	76
74*	M0AEI	Wythall	M	1	2		3	44

+ = Trophy Winner + Certificate Winner * Perfect log # Unmarked dupes

CONTEST CALENDAR

HF Contests

Date	Time	Mode	Contest	Bands	Exchange
9/11 Nov	2300-2300	SSB	JA International DX	3.5-28	Report + CQ Zone
10 Nov	2000-2300	SSB	RSGB Club Calls	1.8	Report+Serial+Club affiliation
10/11 Nov	0000-2359	Digital	WAE RTTY	3.5-28	Report+Serial
17/18 Nov	2100-0100	CW	RSGB 2nd 1.8MHz	1.8	Report+Serial+District
24/25 Nov	0000-2359	CW	CQ WW CW	1.8-28	Report+CQ Zone

VHF Contests

Date	Time	Mode	Contest	Bands	Exchange
3/4 Nov	1400-1400	CW	RSGB 144MHz CW	144	Report+Serial+Locator
4 Nov	0800-1400	CW	RSGB 144MHz CW (6hr)	144	Report+Serial+Locator
5 Nov	2000-2230	ALL	RSGB 1.3/2.3GHz Cumulative #3	1.3/2.3	Report+Serial+Locator
6 Nov	1800-2200	ALL	Nordic Activity 144MHz	144	Report+Serial+Locator
6 Nov	2000-2300	ALL	RSGB 144MHz Activity	144	Report+Serial+Locator
13 Nov	1800-2200	ALL	Nordic Activity 432MHz	432	Report+Serial+Locator
13 Nov	2000-2230	ALL	RSGB 432MHz Cumulative #3	432	Report+Serial+Locator
18 Nov	0500-1100	ALL	Courte Duree 144MHz (F)	144	Report+Serial+Locator
20 Nov	2000-2230	ALL	RSGB 1.3/2.3GHz Cumulative #4	1.3/2.3	Report+Serial+Locator
27 Nov	1800-2200	ALL	Nordic Activity 50MHz	50	Report+Serial+Locator
28 Nov	2000-2230	ALL	RSGB 432MHz Cumulative #4	432	Report+Serial+Locator

Microwave Contests

Date	Time	Mode	Contest	Bands	Exchange
25 Nov	0900-2100	ALL	RSGB All Bands Activity Day	All	Non-competitive

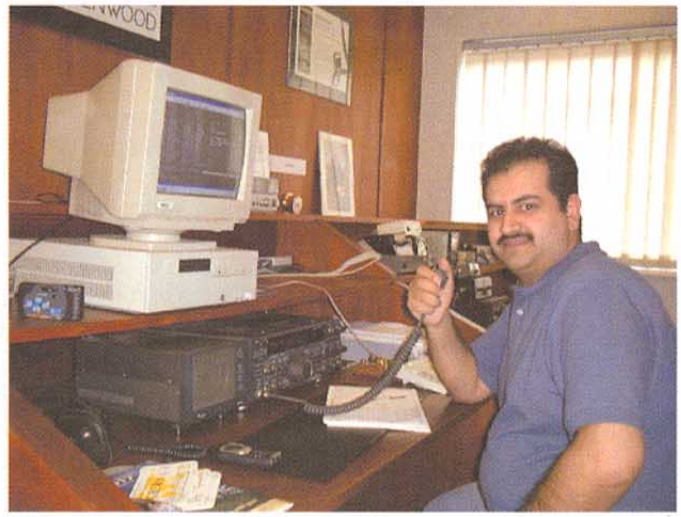
The full rules of RSGB HF and VHF/UHF contests were published in the RSGB Contesting Guide in October 2000 *RadCom*. Brief rules for non-RSGB contests, which are listed in italics above, can often be found in the 'HF' and 'VHF/UHF' columns. The HF and VHF Contest Committees both have web sites from which comprehensive details are available. These are www.g4tsh.demon.co.uk/HFCC/index.htm and www.blacksheep.org/vhfcc

HF HF HF HF

DON FIELD, G3XTT
105 Shiplake Bottom, Peppard Common, Henley on Thames, RG9 5HJ.
e-mail: hf.radcom@rsgb.org.uk

AS WE MOVED into September, HF conditions started to improve as expected. G3SXW and G3TXF headed off again (but announced too late for inclusion here), this time to **Chatham Island, ZL7**. They were workable from the UK on all bands from 10 to 80 metres. Indeed, as I write this, mid-evening, ZL7/G3SXW is loud and easily workable on 10m, while ZL7/G3TXF is equally workable on 12m. At the same time, Californian stations are booming in on 10m. Roberto, EA4DX, reports that he worked 7800 QSOs as H40DX from **Temotu** and 18200 QSOs as H44DX from the **Solomon Islands** and that logs are now on line at his web site. QSLs go to his home address (QTH Corner). ZK1QMA (**North Cook Islands**) was worked on several bands, as were PA3AXU (September 'HF') from his stops as **T30XU** and **C21XU**, and PA3GIO (also September 'HF') as VK9XV (**Christmas Island**).

Looking forward, the big one this month, if all goes to plan, will be a potential new counter for DXCC awards. Assuming Pitcairn Island's application to join the IARU is successful (Pitcairn is currently represented in IARU matters by RSGB), this opens the way for **Ducie Island**, which is sufficiently remote from other islands in the Pitcairn group, to become a new DXCC 'entity' in its own right. Ballots are due in by 15 November, so Ducie could be added to the list as of 0000 on 16 November. In anticipation of this, VP6TC (Tom Christian, a descendant of Fletcher Christian) will lead a multinational team to Ducie island (IOTA OC-182), to commence operations on **16 November**. Further information will be made available on JA1BK's web page. Support for this DXpedition is being provided by Yaesu (Vertex Standard), Create Design, and Suzuki Motors. The QSL Manager will be Garth Hamilton, VE3HO, and the pilot station will be Dr Bill Avery, K6GNX.



Hamad J al-Nusif, 9K2HN, a very active HF operator, was a recent visitor to the GB3RS club station at RSGB HQ.

As with any new or very rare one, expect the pile-ups to be fierce for the first few days. But I would imagine the operators will aim to focus their efforts on putting as many different stations in the log as possible (as against giving out lots of band slots to the 'big guns'), probably by operating round the clock on either 20 or 15m. VP6 is actually quite a good path from the UK as, unlike most of the Pacific, signals do not have to cross the auroral zone, so you should be able to have a good crack at this one, around dawn on 40 and 20, and perhaps late afternoon on 15 and 10.

DX NEWS

DL5NAM AND DF4RD are planning a return trip to **Eritrea**, taking OE2VEL and DK7YY to boost the team. They were due to start up on 17 October, running through to 3 November, probably operating from one of the offshore islands. Callsign will again be E30NA. There will be particular emphasis on the low bands. QSL to DL5NAM.

Jim, N6TJ, will be back on **Ascension** from 20 November for three weeks, and is likely to be 10m single-band in the CQWW CW Contest. QSL, as always, to VE3HO.

Terry, BD7NQ, announces the formation of a **China DX net**, with the hope that it will allow DX stations to work China and enable Chinese DXers and Novices to work overseas. The net will run on Saturdays on 21410kHz, starting at either 1300 or 2300. While I wouldn't normally recommend nets as a way of working DX, I recognise that many Chinese Novices are relatively inexperienced and have limited command of English, so this net may help them to get established on the HF bands.

Johnston Island in the Pacific, site for the September K3J operation.

Alan, F6BFH, will sign XU7ABW from **Cambodia** until 10 November. There is a possibility he will go to Koh Poa Island (AS-133). QSL via F6BFH via the bureau.

Antoine, 3D2AG, was due to return to **Rotuma** as 3D2AG/P sometime during October / November, following his very successful operation from there earlier this year.

For IOTA enthusiasts, **Whale Island** (OC-201) off the coast of New Zealand will be activated 23 - 26 November. Look for ZL6WI.

Mike, GM0HCQ, who operated as VP8SGK from South Georgia (AN-007) in late March-early April, writes that he will be back in the South Atlantic later this year. His itinerary will include **South Georgia** (VP8SGK) again and Signy Island (VP8SIG) in the **South Orkneys** (AN-008). Operations are expected as follows: 17 - 22 November VP8SIG, 24 - 30 November VP8SGK, 5 - 8 January 2002 VP8SIG, 10 - 11 January VP8SGK, January VP8SIG, 27 February - 2 March VP8SIG, 4 - 6 March VP8SGK.

Roger, G0SWC, will be returning to **East Falkland** on 1 November for a month. Roger will sign VP8DBR, working mainly SSB 40 to 10, including the WARC bands and PSK31. The operating location will be at the Mount Pleasant airport, about half way between Port Stanley and Darwin. Roger will post regular updates on the Guildford and District Radio Society web site.

BHUTAN

THE BHUTAN AMATEUR Radio Club (BARC) was due to be inaugurated on 26 October under the presidency of the Director of the Bhutan Telecommunications Agency. JH1AJT and W0GJ are Honorary / Founding Members, and have been is-

CQWW CW 2000 UK RESULTS

Single-Operator

ENGLAND

Call	Category	Points
G4BUO	**A**	**5426826**
G0IVZ	**A**	**3882900**
G3MXJ	**A**	**3549840**
G4BJM	A	1016262
G3VPS	A	729008
G0LZL	A	555345
G3UFY	A	81225
G0ORH	**28**	**247080**
G5G	**21**	**498636**
(op:G0LII)		
G4IUF	21	23464
G0CKP	**7**	**375089**
***G3WGV**	**A**	**2126736**
***G4IIY**	**A**	**1420608**
*G5LP	A	963475
*G3NKS	A	930176
*G0WKW	A	638118
*G3KKP	A	389553
*G4KFT	A	370077
*G6QQ	A	365579
*M2W	A	317892
(op:G0PZA)		
*G4OWT	A	311400
*M0BKB	A	268332
*G0TYV	A	224910
*G3GGS	A	201450
*G0UKX	A	163930
*G4ZRR	A	135935
*G3VQO	A	115995
*G4SLE	A	87438
*G4ZME	A	74335
*G0WHO	A	70250
*2E0ATS	A	3850
***G3KWK**	**28**	**143500**
*G8A	28	82859
(op:G3RTU)		
***G3RSD**	**21**	**113960**
*G3VKW	21	16808
*G0MRH	21	6357
***G0MTN**	**14**	**235840**
*M3C	14	22914
(op:G0VQR)		
***G4TSH**	**7**	**161895**
*G3JKY	7	34517
*G4VGO	1.8	9681
*G3XWZ	1.8	3850

GUERNSEY

***MU0FAL**	**A**	**243070**

JERSEY

***MJ0ASP**	**14**	**102691**
(op: F5SHQ)		

NORTHERN IRELAND

GI4KSH	**A**	**187941**
GI0KOW	**28**	**1023930**
***GI4SNC**	**A**	**944590**
***GI0KVQ**	**21**	**106110**

SCOTLAND

GM3POI	**A**	**3471182**
GM7V	**A**	**3444584**
(op: GM3WOJ)		
GM0F	A	2628180
(op: GM4AFF)		
GM3W	A	772080
(op: GM3JKS)		
GM4YXI	**28**	**506152**
GM0AZC	28	164566
GM2T	14	29670
(op: MM0CCC)		
***GM4SID**	**A**	**780402**
*MM0BQI	A	91476
***GM3CFS**	**28**	**153583**

WALES

GW3JXN	**A**	**955392**
***GW3NJW**	**A**	**1541548**
***GW3KDB**	**A**	**1478820**
*GW3KJN	A	233244

QRP

G4FDC	**A**	**141678**
GW0VSW	**A**	**120109**
GI0GDF	**A**	**91504**
GW0KZW	A	9076
G0KZO	A	8918
G4EDG	**28**	**161460**
G3LHJ	**14**	**85916**
G3VPW	**7**	**49172**

Assisted

GM0GAV	**A**	**4152636**
M0SDX	**A**	**2279178**
G3TMA	**A**	**1065015**
G3LZQ	A	996996
G4RCG	A	265356
G4OBK	A	78858
GW4BLE	**A**	**41125**
G3XTT	**7**	**223880**

Multi-Single

GJ2A		**8078520**
MU2K		**6558786**
M4T		**11076**

Note: an asterisk indicates low power; those entries in bold are certificate winners.

sued special lifetime callsigns of A51A and A51B respectively. The primary purpose of the club is to foster amateur radio interest in the young Bhutanese and also to enable the club members to be active on the air. To celebrate the formation of the BARC, A50A will be active as a multi-multi entry in the CQWW Phone Contest. A team of US operators will be helping the licensed Bhutanese amateurs (namely A51AA, A51KC, A51PK, A51PR, A51YL and A51WD) learn to operate in a contest environment from the Bhutan Ham Centre. Before and after the contest the US operators were due to concentrate on the low bands, WARC bands and new modes.

The WP2Z station in the US Virgin Islands which is available for rent (see text).

CONTESTS

RESULTS OF LAST year's CQWW CW contest appear in the table. Particular congratulations to G4BUO (2nd in Europe, single-op, all-band), GI0KOW (2nd in Europe, 28MHz), G0MTN (4th in Europe, 14MHz), and GM0GAV (4th in Europe, Assisted). It is interesting that the CW contest seems to bring out more single-op entries but fewer multi-ops than the Phone event. This year's contest takes place on 24/25 November, and many contest operations have already been announced. I expect to be joining the Voodoo Contest Group for a multi-multi operation from **Burkina Faso** (XT2), while here are details of some other planned operations:

NH0S, multi-multi, from Saipan, **Northern Mariana Islands**, with possible activity outside the contest. Dennis, K7BV, will sign NP2/K7BV (but **WP2Z** in the contest) 21 - 25 November, entering the contest as a 15m single-band. The WP2Z site is available to rent, and is active in almost all major contests. Details appear on the web site. QSL K7BV's activities via KU9C. K4BAI will be once again use his 8P9Z call from **Barbados**, single-op all-band. He will be there 20 - 27 November, and can be reached for schedules or QSL requests via his e-mail address: k4bai@worldnet.att.net A large team will activate HC8N multi-multi from the **Galapagos Islands**. K1XM will sign 5H1X from **Zanzibar**. The Slovenia Contest Club will be multi-multi from the **UAE** as A61AJ. C56/DL5XAT will be a multi-single operation from the **Gambia**. The Marconi Contest Club will operate as D44TC from **Cape Verde**. N0KE will be TI5X from **Costa Rica**. A US group will sign PJ2T from the **Netherlands Antilles**. AA3B will be V26K from **Antigua**. W2OX will be V47KP from **St Kitts**. K3TEJ will be VP5G from **Turks and Caicos**. And N6NT will be ZF2NT from **Grand Cayman**. There will be many others!

And as this should arrive with you before the CQWW *Phone* contest on 27 / 28 October, Laurie, G3UML, says he will be joining a team to operate as YN2EJ from **Nicaragua**, which is quite a rare one these days. QSLs from UK stations can be sent directly to Laurie (QTHR) or via the bureau.

Here are some other UK results in international contests, passed on by G4OGB. In the 2000 **Ukraine DX Contest** single-op all-band M0SDX (op: UT5UDX) scored 776150, GW3NJW 383322, G3RSD 330804, G4OGB 319960, G3UFY 26235, G0MTN 18232 and G3VQO 13806. On 20m, GM3CFS 71120, M0EEE/P 53991 and G0MRH 5967. On RTTY, G0NWY 27698.

In the 2000 **WAE CW Contest** (asterisk denotes low power), G5G 276048, G3TXF 61030, G3SXW* 39006, GB3RS 35448 (op M0SDX), G3RSD* 18786, G5LP* 8835, G3UFY 6474, G6QQ* 4672, G3VQO* 4550, G3ZRJ 4402, GM/PA0INA/P* 1372, G0MTN* 638; Multi-op single transmitter M5X 653410. In the 2000 **WAE SSB Contest**, GB3RS 808808 (op M0SDX), G3UFY 32448, GM4ELV 3960 (1 watt), G0MTN 1292; multi-op single transmitter G5W 4794. In the 2000 **Worked All Germany Contest**, G0LII 159669, GW3NJW 68904, M0EEE/P 44400, G4OGB*

QTH Corner

3D2AG	Antoine de Ramon N'Yeurt, PO Box 14633, Suva, Fiji Islands.
A50A	Bhutan Amateur Radio Club (BARC), PO Box 88, Thimphu, Bhutan.
BI4F	PO Box 538, Nanjing 210005, China.
DL5NAM	Chris Sauvageot, Guttenburg 19, D-91322 Graefenberg, Germany.
DL7DF	Sigi Presch, Wilhelmsmuehlenweg 123, D-12621 Berlin.
EA4DX	Roberto Diaz, Doce de Octubre 4, 28009 Madrid, Spain.
EA4URE	Union Radioaficionados Espanoles, Box 220, E-28080 Madrid, Spain.
KU9C	Steve Wheatley, PO Box 5953, Parsippany, NJ 07054-6953, USA.
OA4DKC	Tony, LZ1JZ, PO Box 43, Harmanli - 6450, Bulgaria.
ON4QM	Marcel Dehonin, Eversestraat 130, B-1932 Saint-Stevens-Woluwe, Belgium.
VE3HO	Garth Hamilton, PO Box 1156, Fonthill, Ontario LOS 1EO, Canada.
V73GJ	PO Box 1050, APO AP 96555, USA.
VK4FW	(new) Bill Horner, PO Box 1343, Maroochydore, 4558, Australia.
YC9BU	Kadek, PO Box 106, Singaraja 81100, Bali, Indonesia.

COUNTRIES WORKED, 2001

(sorted this month by SSB totals, where declared)

CALL	CW	SSB	RTTY	MIX
M0CTQ	36	240	0	260
G0VHI	0	240	0	240
M0AWX	0	231	0	231
M0BZQ	38	218	0	235
G4DUW	182	210	0	256
ZC4BS	136	194	49	209
M0LLW	0	170	0	170
G0TSM	186	146	14	223
MU0FAL	138	133	0	164
GM0VIT	126	127	2	187
G3JFS	153	127	114	184
MM0BQI	85	116	101	155
M0CAL	0	115	0	115
M5PLY	0	111	0	111
G4OBK	223	109	76	250
G3MDH	0	103	0	103
G4FVK	45	92	0	101
G3XTT	157	88	2	174
G4IRN	91	85	0	119
G4YWY/M	0	85	0	85
ZC4DW	148	82	80	165
M5AEF QRP	20	77	0	79
G4MUW	0	75	0	75
G3LHJ	185	72	51	196
G3YVH	126	67	1	161
G4DDL	54	35	18	66
GI0NQC	0	15	41	49
GM4OBK	110	10	0	116
G3TXF	193	1	1	193
G0NXX	244	0	0	244
G3SXW	217	0	0	217
G3IGW	210	0	0	210
G0ARF	0	0	136	136
GW4SKA	0	0	66	66
G3WP	46	0	0	46
M0BIB				231
G0CAS				165
M0CNP				118
GM4ELV				107
GM4FAM				102
M0ASJ				55

37587, G3RSD 19470, M0BZU 9933, G5MY 6804; and QRP G3VGR 38160, G4FDC 17010.

I have also been asked to mention the **International Police Association Radio Club (IPARC) contest** which takes place on 3 November (CW, 0600 - 1000 and 1400 - 1800UTC) and 4 November (SSB, same hours). Exchange RS(T) and serial number. IPARC members also give their membership number. I can provide further details on request.

Other contests of note this month include the WAE RTTY contest and the OK/OM DX Contest, both of which take place on the weekend of 10 / 11 November, and the LZ DX Contest on 17 / 18 November.

PROPAGATION

RICHARD G3CWI, QRP backpacker, writes that the third in his series of handouts titled *The Ionosphere - Quiet Sun* is available for download at his web site.

QSL INFORMATION

KADEK, YC9BU, IS the QSL manager for the stations listed below. When sending QSLs to him please do not send $ as they are being pilfered. IRCs are fine: YB9ZBI (OC-022), YC4FIJ (OC-144), YC7URA (OC-088), YC8RRK (OC-210), YC8SHQ (OC-224), YC9BU/P (OC-241, OC-148), YC9ID (OC-150), YC9MKF/P (OC-241), YC9WZJ/P (OC-239, OC-241), YC9XJ (OC-034), YE8XM (OC-070, OC-221, OC-224).

'QTH Corner' appears again this month, after a couple of months' absence due to shortage of space. With so much possible QSL information, it is hard to know what to include, so I tend to focus on those operations which have been mentioned in this column. A huge amount of QSL information is readily available via the web.

Tim, G4VXE, writes that he has developed a piece of software which allows callsign lookups across the Internet, useful for finding QSL addresses. Tim has also built in a function which allows the user to see the eQSLs that he has sent on the eQSL.org system. The program is free and there's some information and a download available at Tim's web site. Alternatively, even without this type of facility, putting the required callsign into one of the popular search engines such as Google or AltaVista will frequently do the trick. Finally, I am always happy to try to help when other options fail or are unavailable. Drop me a letter or e-mail (as, indeed, many of you already do).

THANKS

SPECIAL THANKS GO to the authors of the following for information extracted: *OPDX Bulletin* (KB8NW), *The Daily DX* (W3UR) and *425 DX News* (I1JQJ). Please send items for the **January** issue (including table updates) by **9 November** (please note another early deadline this month). ♦

WWW.

3W2EA/G4IOV:	www.qsl.net/3w2ea
Bhutan:	www.qsl.net/a51aa
E30NA:	www.qsl.net/e30na
EA4DX:	www.qsl.net/ea4dx/
G3CWI:	www.AdventureRadio.org
G4VXE:	www.tim.ukgateway.net/ecall.htm
Guildford & DARS:	www.gdrs.net
JA1BK:	www.iijnet.or.jp/JA1BK/index2.html
QSL info for China:	www.chinaqrz.com
WP2Z:	www.qth.com/Windwood

HF F-Layer **Propagation Predictions** for **November 2001**

	7.0MHz	10.1MHz	14.0MHz	18.1MHz	21.0MHz	24.9MHz	28.0MHz
Time	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220
(UTC)	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020
*** Europe							
Moscow	8892..289889	438644788546	..7888897...	..79999972.2	..5999996...	...88984....	...6888.....
*** Asia							
Yakutsk	52.....56777	867656789899	525888567546	...884..3...	...87.....	...65.....	...33.....
Tokyo	.....1111.	...1...1111.	...2.....	...2.....	...2.....	...2.....	...1.....
Singapore	56453	587543	.....18872..	.....5884...	.....1688....	...45787....	...55675....
Hyderabad	.....	.....	.....1...	.....241...	.....144....	...33576....	...45673....
Tel Aviv	879....58888	9295..289699	7.6976898267	...888882...	...88887....	...89996....	...68875....
*** Oceania							
Wellington	...699999...	...999999...	..59999995..	...899995...	...79998....	....69997....	....9986....
Perth	.....2333.	.....26622.	.....574...	.....3885...	.....5772...	...35788....	...45776....
Sydney	.....1332..	.....6741..	.....5872...	.....68982...	...17897....	...68996....	...68894....
Honolulu	.3473..7....	363987695...	...767.87...	.....56...	.....4...	.....	.....
W. Samoa	...75.27....	...999992...	...799996...	....99985...	....8987....	....788.....	....687.....
*** Africa							
Mauritius	4.....1333	2.....13433	1.....44211	.....63...	.....162...	.....25....	...11122....
Johannesburg	99.....7999	99.....29999	988....99999	8.8877899988	..89999999..	..79999997..	...999999...
Ibadan	.....	..1.....	.....	...5....1...	...631111...	...877661...	...877771...
Nairobi	.1.....	12.....1	511....11123	2.61...23412	..641.135211	..46534651..	..2766672...
Canary Isles	8897....8888	88882..38888	654976678985	32.99888995.	...99899973.	...8768883..	...748887...
*** S. America							
Buenos Aires	8879.....57	7759.....55	23.9.....131	...94...242.	...9632343..	...765454...	...665563...
Rio de Janeiro	3334.....23	3327.....132	1..8.....21.	...96..2672.	...9754676..	...886576...	...676675...
Lima	21.5.....1	11.7.....	...71.....	...864..11..	...757543...	...3.7663...	.....7763...
Caracas	2222.....12	3415.....22	11.14....1..	....62..11..	....65333...	....58888...	.....9887...
*** N. America							
Guatemala	3325.....1	33.71.....1	...5.....	.....3.....	.....32.....	.....6774...	.....4773...
New Orleans	6556.....5	66.85.....46	...8.5...2..	...7.98885..	...5.7999...	.....7999...	.....5998...
Washington	88881.....88	99597....688	66.667..6854	.....88887..	.....98895..	.....9999...	.....7998...
Quebec	88682....888	32.75...3621	...553.262..	...5598983...	...339998...	.....9997...	.....8996...
Anchorage	99997..68788	86.876678777	....6...8...	6...76.79...	.....8...	.....6...	.....
Vancouver	2111.....	11.21.....1	.....	.....66...	.....66...	.....55...	.....33...
San Francisco	2212.....	11.1.....	.....	.....54...	.....64...	.....63...	.....5....

Key: Each number in the table represents the expected *circuit reliability*, eg '1' represents reliability between 1 and 19% of days, '2' between 20 and 29% of days etc. No signal is expected when a '.' is shown. **Black** is shown when the signal strength is expected to be low to very low; **blue** when it is expected to be fair and **red** when the signal is expected to be strong.

The RSGB Propagation Studies Committee provides propagation predictions on the Internet at www.g4fkh.demon.co.uk The page is updated monthly. The provisional mean sunspot number for September 2001 issued by the Sunspot Data Centre, Brussels, was 150.7. The maximum daily sunspot number was 200 on 24 September and the minimum was 103 on 1 September. The predicted smoothed sunspot numbers for November, December and January are respectively: (SIDC classical method – Waldmeier's standard) 102, 100, 98 (combined method) 94, 93, 90.

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E-Mail: brs32525@compuserve.com

SWL

I HAVE referred in recent columns to 'dubious' QSLing tactics used by some SWLs. I can now report that the UK Six Metre Group committee has taken the unprecedented step of informing one SWL that they will not in future accept award claims or contest entries from him because it was proved beyond doubt that the listener in question had falsified a QSL claim in a manner which left no doubt about its intent. In my opinion, the committee has been brave, but taken the right decision.

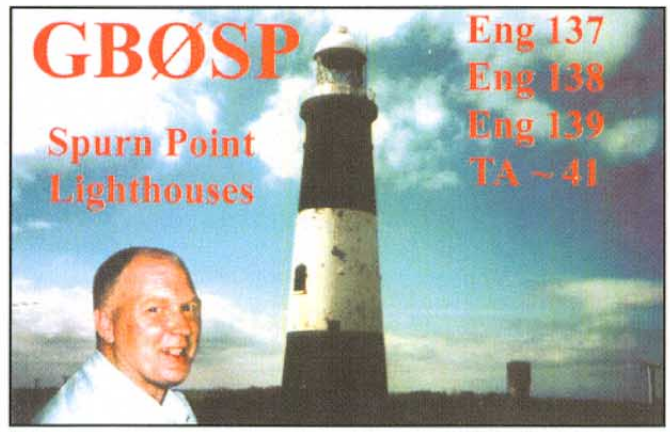
Had it let the matter go by without action, it would have signalled to the holders of UKSMG awards that even in the face of hard evidence, it was not prepared to speak out against cheating. I hope this action will act as a stark reminder to other listeners who might be sending false SWL reports. The message is clear - keep your reports accurate and above all, honest.

GB QSLS

MANY SWLs are very keen to listen for, and send reports to, GB special event stations. Some special event stations complete cards for the stations they contact at the time of the QSO and so do not send envelopes for incoming cards to the RSGB GB Sub-Manager. This means that SWLs who have heard the special event station and would like a QSL card will never receive it because his card will sit with the Sub-Manager.

Mike, MW0CNA, is the RSGB QSL Bureau Sub-Manager for GB*A** - M** series of callsigns and is concerned at the number of incoming cards that he is contemplating destroying because he has not received envelopes from many of the special station organisers [see *RadCom* October 2001 p6 - *Ed*]. Mike wanted SWLs to have an opportunity to look at his Internet site [see below - *Ed*], and contact him if they had sent cards to special event stations and not had a reply. He has cards dating back to 1985.

My local radio society, Cray Valley RS, has organised three special event stations this year - GB2SJS, GB2FB and GB8ST. In each case, envelopes have been sent to the GB sub-manager, which means that all SWL reports will be replied to.



Steve Bryan, G0SGB, is always pleased to receive SWL reports for his GB station activities.

Another who is keen to answer SWL reports is Steve Bryan, G0SGB. He activated GB0SP (Spurn Point) and GB0WIT (Withernsea) during this year's Lighthouse Weekend and he has already received and answered a good many SWL reports. Steve has asked me to remind SWLs that his web site offers views of some of the lighthouses that he has activated. Additionally, Steve offers a free certificate in full colour to any SWL (and licensed amateur) who hears (works) him from 10 different lighthouses.

CQ WORLD WIDE

A BRIEF MENTION that the CW leg of the ever popular *CQ* World Wide contest takes place during the weekend of **24 / 25 November**. As usual, I have organised the CQWW SWL Challenge over the same period. Over the years the CW leg tends to attract fewer entries, but the weekend is a sure-fire way of adding to your CW DXCC entity score. Why not take a listen this year and send in a log of what you hear?

QSLING

NO, THIS IS NOT another treatise about how to send SWL reports, it is about never giving up. Bill, BRS88921, sent me a QSL card he received from R1ASP on Kotlin Island (EU-133) for a report sent in 1997. The card was an interesting one as it depicted Alexander Stepanovich Popov, a Russian scientist purported to have invented radio. I hear of many SWL reports that get confirmed eventually. Indeed, I can add my own experience as, in a recent batch of cards from the bureau, was one from KB4CRT in reply to a 50MHz report sent in 1989!

28MHz SWL CONTEST

FOLLOWING THE successful event organised by Dutch SWL, Lambert Wyshake, NL-10175, last year, he is providing another SWL contest to coincide with the ARRL 28MHz contest on 8 / 9 December (put a note in your diary now!) The rules will be in next month's column. The winner in each category will receive a plaque, while the country winners will receive a certificate. Contest activity amongst British SWLs seems to have dropped alarmingly, so it will be good to see a few British SWL callsigns in the results.

DX SNIPPETS

ONCE AGAIN, thanks to Robert Small, BRS8841, and David Whitaker, BRS25429, for this month's DX input. It would be good to hear from other SWLs about what you're hearing. Why not make an early New Year's resolution and let me have your news for the next SWL feature?

I shall start with Robert's view of the month. He felt that after several poor weeks, things were beginning to look up, the last few in August having provided more DX than the rest of the month put together! He even heard H44RD on his last day of operation, and heard the PA boys from J3. 14MHz had been the best band both early and late in the day. He referred to catching good signals from 9M6TBT, ZA/IZ7DOO, KL7AK/P (NA-053), VP8CTM and EM1KCC (Antarctica). However, 21MHz had provided the best DX. The highlights from Robert's log were 5X1GS, HL0Y/2 AS105, TY0CDX, KH0/JR1PIO, KH0/JR1PIO, S21DM, D44AC, J8/PA3EWP, TY22DX, A52KR, 5U7AH, H44RD and KH2/WX8C. Robert closed with a very accurate 'warning' for the next month: "with the nights now drawing in, we should see a general improvement on all the bands, after all we are still near the peek of the sunspot cycle".

David Whitaker, BRS25429, echoed Robert's sentiments and referred to days with solar flux numbers at 250 and A and K indices both low. This sharp rise had led to the improvement in band conditions. David had heard 260 DXCC entities so far this year. Since early September, David offers these 'goodies' and says, "it's good to be retired!" - D6/WB4MBU, VK9XV, 5R8GT/P, KH2/WX8C, T88MO, 3D2AW, V73MJ, T30XU, 3W2B, 5A32, V63OO, 9M2TO, FW5ZL/P (OC-118), YJ0AXC, VP6MW and VP8CTM. Looking at this list, it's a pity that I've not retired! ♦

WWW.

Steve Bryan, G0SGB: www.g0sgb.freeserve.co.uk
Mike, MW0CNA: www.midglam.cjb.net/

ATV

TREVOR BROWN, G8CJS
E-mail: chairman@batc.org.uk

FIRSTLY, thank you all for your feedback, both direct to me and via the BATC web site forum. I have had much discussion about ATV and model aircraft, along with a few queries on the legality of such ideas under the amateur licence. Aircraft are excluded from ATV operations, but there is no mention of model aircraft. I have not pursued this further, because I hope to keep this column confined to news of technology innovations and developments. I leave rules and regulations to others, as I find this a less than interesting subject.

UK's FIRST 13cm ATV REPEATER, GB3VW

THIS EAST Yorkshire repeater was switched on by Bill, G3RMX, before he rushed off to a meeting of the Hornsea Amateur Radio Club on Wednesday, 29 August. This was the 30th anniversary of the club, and they hoped that, by coupling the two events together, it would be an anniversary to remember.

GB3VW is located at South Cave near Hull (IO93RS), and has an input of 2330MHz and a output of 2435MHz. The mast is 152m above sea level, and the receiving aerial is 22m above ground level. GB3VW is the first repeater to be licensed in the 13cm band, and is the only ATV repeater in Europe to have an input and output in the 13cm band.

The South Cave aerial farm.

The two aerials are Alford slots made out of 20mm copper pipe, and were purchased from Stuart Marshall at the BATC rally earlier in the year with the slots already machined in them. Stuart has also made the slotted waveguide aerials and filters for GB3XY in the past and is well worth contacting. The 'feed' was made using ideas from the *RSGB Microwave Handbooks*. Two interdigital filters were purchased from the BT Microwave Round Table. One of the advantages of this filter source was that the equipment was available on site to test the filters and to make sure they were suitable for ATV.

The receiver comprises a Low Noise Block Converter (LNBC) that was purchased from DB6NT. It has a built-in 23cm notch filter. This is mounted at the top of the mast with the receive filter in a 2ft length of 4in soil pipe filled with foam, located just under the receive Alford slot. This then feeds a converted satellite receiver via high-quality satellite cable. The receiver is configured to power up on the correct channel as a precaution against power failures, and has been modified for the correct ATV deviation.

The transmitter uses an exciter from RSE from Belgium. These are very high quality modules using mainly surface mount components and consists of three units.

1 ATVS1320PRO 13cm ATV transmitter.
2 BBA-20 base-band, audio board.
3 Phase-locked loop unit.

This exciter is followed by a 9W PA purchased from Philip Prinz, DL2AM. This in turn drives a converted PCS high-power base station amplifier, running 40W. This is connected via a 33m length of Westflex and transmit filter to the Alford slot at the top of the mast.

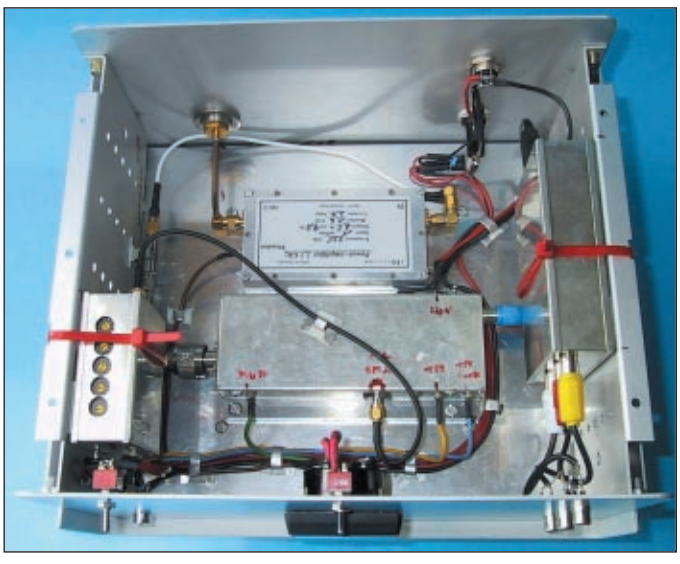
The logic and software was produced by Bill, G3RMX, and is basically the same as in the GB3XY 3cm repeater. This uses a PC and a few PICs to control the repeater test card, sync detection, video switch and the Morse tone generator. An excellent article on the repeater logic can be found in *CQ-TV* 187.

The GB3VW logic and transmitter units.

This new 13cm ATV repeater is controlled by the East Yorkshire Repeater Group. GB3VW is shared with the GB3XY 3cm ATV repeater, the GB3HS 2m audio repeater, and the GB3HU 70cm audio repeater. Since the repeater went on-air, Richard Parkes, G7MFO, has managed to receive it at his home QTH using a LNBC and a folded dipole over a distance of 22km with a P4.5 report, pointing the dipole out of the shack window! This is a full P5 on the main shack aerial. This project cost over £1000 to fund and was made possible by the help and generosity of local amateurs (two in particular) and enabled the project to come to fruition without drawing on any of the repeater group funds. Any reports of sightings of GB3VW would be welcome and should be e-mailed to Richard Parkes, G7MFO. ♦

WWW.

BATC Forum	www.batc.org.uk
RSE	www.rse-electronics.com
Philip Prinz	www.dl2am.de
DB6NT	www.db6nt.com/
Stuart Marshall	g6nhg@qsl.net
Richard Parkes	richard@g7mfo.karoo.co.uk
40W amplifier	www.qsl.net/dl4mea/13ss/13ss.htm



The GB3VW ATV transmitter.

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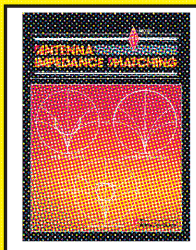

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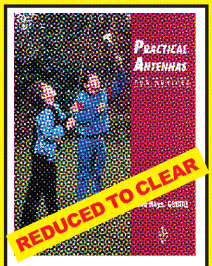

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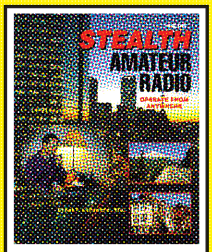

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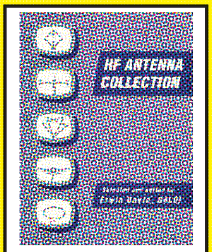

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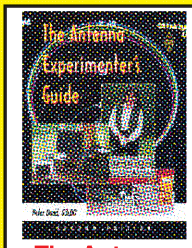

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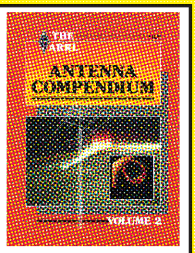

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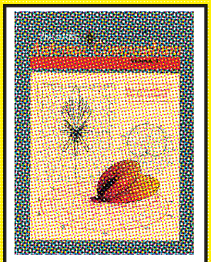

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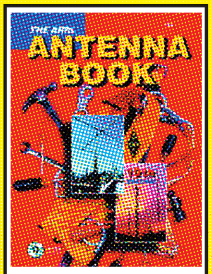

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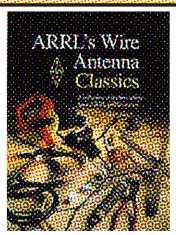

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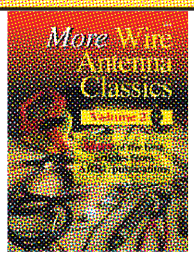

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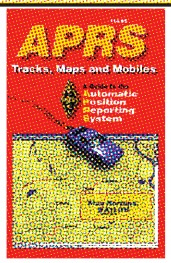

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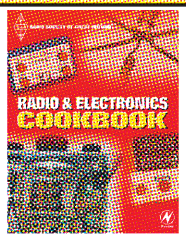

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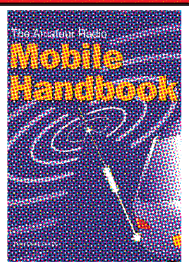

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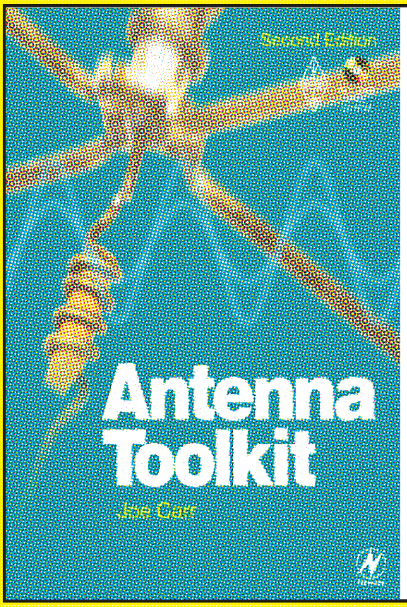
ANTENNAS



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The complete solution for antenna design

Joe Carr's latest book provides radio amateurs with the definitive design guide for sending and receiving radio signals.

Together with the powerful suite of **CD software included** with this book, the reader will have a complete solution for constructing or using an antenna – bar the actual hardware! The software is based on Joe Carr's own Antler program, which provides a simple Windows-based aid to carrying out the design calculations at the heart of successful antenna design. All the user needs to do is select the antenna type and set the frequency – a much more fun and less error prone method than using a conventional calculator to solve formulae!

The new edition has been revised from the original to include further cases of propagation, additional antennas and new chapters on Small Loop Antennas and Yagi Beam Antennas.

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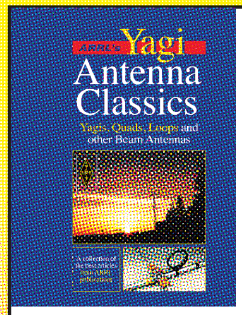

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Enjoy this collection of some of the very best articles from *QST*, *QEX*, *NCJ* and other ARRL publications. The beam antennas covered in this book will provide the reader with a historical perspective, new and ambitious ideas, and computer-optimized designs for all-around best performance.

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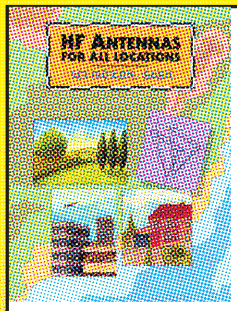

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A thought provoking book which has been a major contribution to the state of the art from an acknowledged expert. It explains the 'why' as well as the 'how' of HF antennas, and takes a critical look at existing designs in the light of latest develoments. This edition has been completely revised and greatly expanded, there are more novel antenna designs, including beams which cover more bands with fewer problems, and much more.

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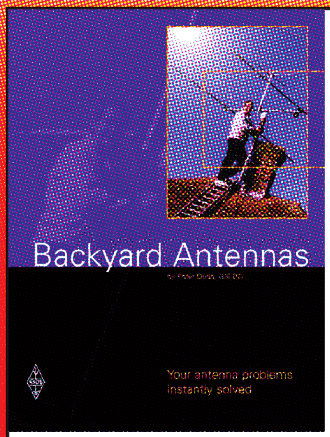

Backyard Antennas

Radio amateurs and shortwave listeners all want to chieve the very best from their HF and VHF equipment. Receivers and transmitters are available to professional standards, but very few people have the real estate to erect the sort of antenna used by a commercial radio station. Antenna guru Peter Dodd explains how, by using a variety of simple techniques, it is possible to achieve very high performance from a compact antenna. Also detailed is how to make an antenna efficient on several bands at once.

208 pages

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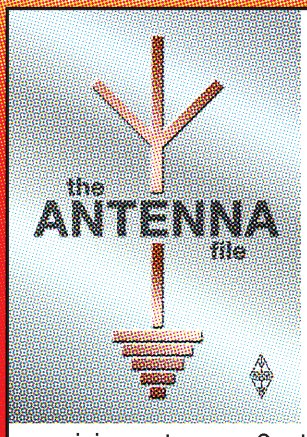

The Antenna File

The Radio Society of Great Britain produces some of the best works on antennas and this is a collection of that work from the last ten years. This book contains 288 pages of articles drawn from the Radcom magazine and includes:

50 HF antennas, 14 VHF/UHF/SHF antennas, 3 receiving antennas, 6 articles on masts and supports, 9 articles on tuning and measuring, 4 on antenna construction, 5 on design and theory, and 9 Peter Hart antenna reviews and much more. In fact everything you need to know about antennas and how to get the best out of them.

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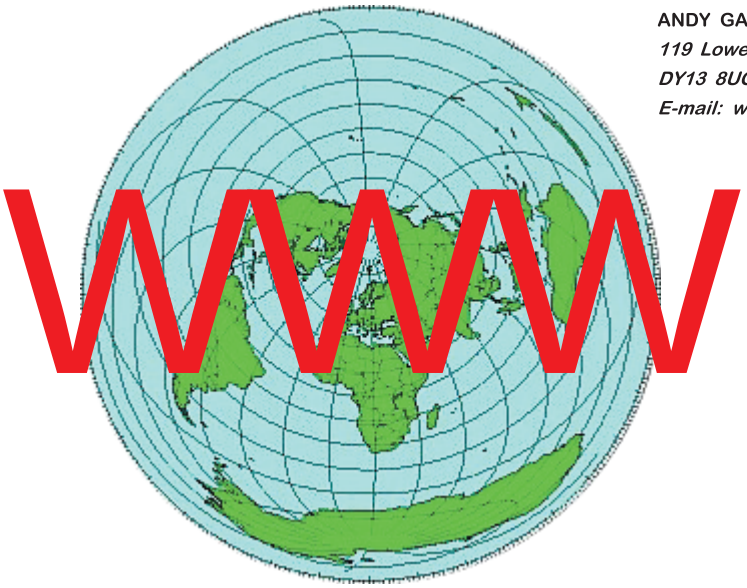


ANDY GAYNE, G7KPF
119 Lower Lickhill Road, Stourport-on-Severn, DY13 8UQ.
E-mail: www.radcom@rsgb.org.uk

THE ONSET OF the winter months is traditionally a time for amateur radio enthusiasts to start thinking about construction, and perhaps study some of the more technical aspects of the hobby. One web site that will help with both of these activities is that of Ian Purdie, VK2TIP (1), which resides under the banner 'An electronics tutorial radio design site, to learn about electronics, discussing the basics and principles of design then the construction of electronic projects'. Recommended by Darren Hobbs, the VK2TIP site will keep even the casual visitor busy for quite a long time.

All of the electronic tutorials are related to RF subjects, starting off with the basics of terminology and electrical units, then moving on to more advanced subjects such as the design of amplifiers, oscillators and filters. Construction projects range in complexity from a simple power supply to a spectrum analyser, some being designed by Ian and others supplied by additional contributors. All projects are presented in the same well thought-out format, concentrating on explaining the theories of the designs so as to make them a learning experience rather than just an exercise in soldering. Clear circuit diagrams are accompanied by friendly text and supporting drawings, with mathematical formulae being introduced as required.

Constructional tips and suggestions are provided and, in some cases, feedback from readers who have built the projects has also been included. Much of the site seems to be migrating to a new URL (2) although, when viewed in September, the opening page of the new site was not compatible with my browser - all the text attempted to move 2ft to the right! So if you experience similar problems, the original URL is probably the best portal to use.

WWW.	
(1) VK2TIP's Projects & Tutorials	http://my.integritynet.com.au/purdic
(2) VK2TIP alternate URL	www.electronics-tutorials.com
(3) ePanorama	www.epanorama.net
(4) Modifications site	www.mods.dk
(5) Eagle Light	www.puresoft.co.uk
(6) Target 3001	http://ibfriedrich.com/english

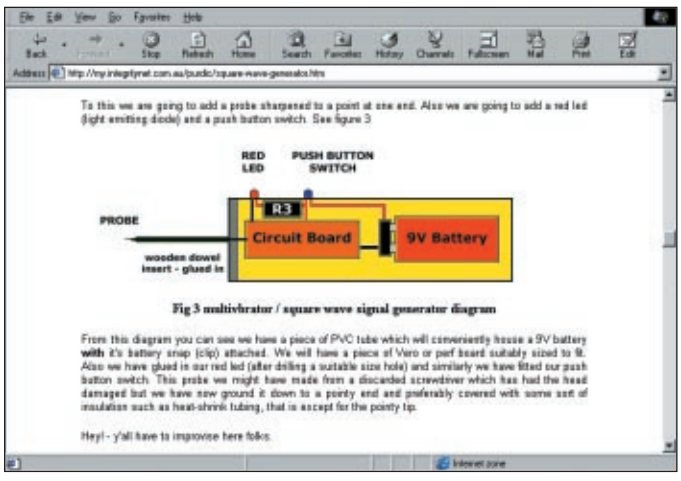
ELECTRONICS DIRECTORY

A MOST USEFUL resource for electronics information of a more general nature can be found at ePanorama.net (3). Developed from the popular 'Tomi Engdahl's Electronics Info Pages', ePanorama.net is principally a comprehensive directory of links to sites with electronics-related content. Organised by subject, the link directory is immensely useful in its own right, with topics such as audio, computers, motor control and robotics plus, of course, radios.

Buried within the site you will also find a number of constructional projects for audio, video and power supplies, amongst others, together with a variety of reference data documents and FAQs. This is not the most elegant of sites, but it is easy to navigate and is crammed full of useful links and data, so is well worth bookmarking.

MODS GALORE

IF MODIFYING EX-PMR equipment is your preferred method of hands-on activity, a visit to www.mods.dk (4) is essential. Since I first reviewed this site in January 2000, it has continued to grow and now boasts more than 2100 different modifications for over 620 models of radio and TNC. The clutter-free three-frame format of the site is a pleasure to use, making locating the information you require quick and simple. Not all of the modifications are for PMR conversions, so there's something here for just about everyone who owns a commercially-built transceiver, if you feel confident enough to delve inside.



Improve your knowledge and construction skills at VK2TIP's tutorials site.

PCB DESIGN

ONE OF THE most common uses for PCs within the professional electronics industry is for printed circuit board design. Numerous software packages are available, but almost all are very highly featured and consequently are prohibitively expensive for the home constructor. Many of the PCB software houses are now realising that the hobbyist and student market is an ideal place to promote interest in their software, and have released restricted versions of their products, which are generally free to use for private and non-commercial purposes.

Two good examples of this are Eagle Light (5) and Target 3001 Discover (6), which are available for download from their respective web sites. Eagle Light is available in Windows and Linux versions, and restricts the user to a maximum board size of 100mm x 80mm, with a maximum of two copper layers and a single sheet for the circuit schematic. Apart from these limitations, the software is fully functional and comes with a very comprehensive library of components. An online help manual and tutorial can also be downloaded, which are essential to get you going with this type of complex software package.

The Target 3001 Discover package is of German origin, although the software and its web site are presented in English. The restrictions for this demo version are a little different, in that the circuit can have a maximum of 100 component pins, although this still gives plenty of scope for small radio related projects. An added feature of the Target package is the inclusion of a simulation module, which the web site states is fully functional even in the demo version. I have yet to use either package in anger, but as an experienced user of another high-end PCB design package it is clear to me that both of these PCB design programs offer the home constructor some very powerful design tools at the lowest cost possible! ♦

QRP QRP QRP QRP QRP

REV GEORGE DOBBS, G3RJV
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E-mail: g3rjv@gqrp.com

THE American QRP ARCI group has a current motto on its publication, the *QRP Quarterly*, which states 'The Thrill is Back'. The point it makes is that, for many amateur radio operators, especially those who have been licensed for a long time, the initial thrill of the hobby has faded. They suggest that QRP operating, with its special challenges, is a way to recapture that thrill.

I had an e-mail from Nigel, ZL2TX, who enjoyed a particular QSO. It was his first two-way QRP QSO with England. Nigel writes: "On 5 September 2001 at 1830UTC I had a two-way QRP contact with M5AJO on 14.059MHz. This QSO was incredible and very special to me as it contains all the 5s. Let me explain: my birthday was 5 September, and I turned 55 years of age. M5AJO happened to be my first ever contact with an M5 station and I couldn't resist trying 5 watts output. As if this wasn't enough, M5AJO was also running 5 watts into a G5RV antenna. What a birthday present, one I will never forget!"

Another delighted, and new QRP operator, is Michael Clarke, formerly MI1MTC. Michael was introduced to QRP operating by attending the Celticon QRP Convention in Dublin. He was beginning QRP from scratch, but is now caught up with new enthusiasm. Michael writes: "A year ago at Celticon I had a B licence and was beginning to learn CW. I took the 5WPM test in December and A/B licence in 2001. Early this summer, I got a present from Roy, GI4CBG, of an old HW7 and HW8 that had been in his loft for years. I fiddled about cleaning them up and got the HW8 going - then knocked it out by connecting 12V wrong polarity! I set them aside for the summer and went sailing to forget, but went on trying to increase CW reading speed (learning when older is slower!). I spent the last weekend working on the HW7, which had had lots of modifications. The main problem was dirty switch contacts in two of these. After removing a shorted Zener diode and rewinding a burnt RF choke, I got the HW8 going again. Then high delight on Saturday evening - my first proper QRP 2W QSO with M5AAF in Leyland, near Preston, from Fermanagh, on about 7030kHz. I have heard and read about the QRP thrill - and it is true. You can do plenty with little - and it is far more fun that way."

Remember that the HW7 and HW8 are simple pieces of equipment, available at cheap prices (in Michael's case for nothing). It is possible to have a lot of enjoyment in amateur radio without spending a lot of money and by using simpler items of equipment.

AUSTRALIAN QRP PROJECT BOOK

ONE OF THE great experimenters in QRP radio construction is Drew Diamond, VK3XU. Drew has a long history of writing lucid articles about easy-to-build equipment for various Australian publications. One of my favourite radio books of his is *Radio Projects for the Amateur*. This book is completely DIY. Drew designed and built all the equipment. He wrote the text of the book, all the circuits are beautifully hand-drawn by him and he took all the illustrative photographs. The book is not only a one-man job but it is also full of interesting, and buildable ideas.

I was pleased to hear that Drew has recently produced a second book which follows on from *Radio Projects for the Amateur*. The book offers "more plans for the construction of receivers, transmitters, antennas, test equipment and some handy workshop hints and tips" in a style and presentation similar to Volume 1. It contains details of about 30 projects including power supplies, a three-HF band superhet receiver, low-power CW transmitters, a 40W MOSFET linear amplifier, 'swinging-link' HF antenna coupler and several useful items of test equipment. The workshop section includes details of a neat little sheet-metal bender for radio/electronics and modelling work. It is 132 pages, in A4 format. Currently the book is available direct from the author: Drew Diamond, VK3XU, 45 Gatters Road, Wonga Park, 3115, Australia. The price is A$24.95 (Australian dollars), which includes airmail to Europe.

For those who may wish to obtain *Radio Projects for the Amateur* Volume 1, it is still available from the G QRP Club. The G QRP Club members' price is £6 (£7.50 for non-members) plus UK postage of £1.25 per book. Order from Graham Firth, G3MFJ, 13 Wynmore Drive, Bramhope, Leeds LS16 9DQ (Cheques made payable to G QRP Club).

YEOVIL QRP CONVENTION, 2002

EACH YEAR in this column, I announce the annual Yeovil QRP Convention. This year it has reached the 18th Convention. Because it is on a Sunday, I have only managed to attend the event once, but I can commend it as a worthwhile event for anyone interested in QRP or radio construction. Apart from the fine array of QRP kits and equipment, the event draws traders with components and surplus items.

The Convention will be on Sunday 21 April 2002, with the annual QRP Dinner on the evening before. Details can be had from Peter Burridge, G3CQR, 9 Quarr Drive, Sherborne, Dorset DT9 4HZ.

G QRP CLUB IN THE USA

AN UNSUNG HERO of QRP in the USA is Bill Kelsey, N8ET. At the beginning of the 1980s, the G QRP Club mounted its first visit to the Dayton Hamvention. Following a kind offer from N8ET, the club members stayed at his home in Ohio prior to the event and he helped to run the first-ever G QRP Club booth. Since that time, N8ET has become the G QRP Club representative in the USA. The G QRP Club has had continuous representation at Dayton since the mid 1980s, and N8ET has been the facilitator and keeper of the Club's equipment and stocks for the event. Without his help, the continuing presence at Dayton would have been much more difficult.

Bill has also been instrumental in the distribution of QRP Kits in the USA. In the early 1990s Bill founded Kanga-US, designed to import and sell the British Kanga Kits in the USA. Since that time Bill has expanded the range to include Hands Electronics' kits (from Wales), some kits from the designs by Rick Campbell, KK7B, and has made kits for the articles by Wes Hayward, W7ZOI, a doyen of QRP design.

Bill has worked hard to maintain links between British and American QRP operators and to provide an interesting range of kits for the QRP project builder. It is worth looking at the Kanga US web site on www.bright.net/~kanga Incidentally, Bill is also an amateur pilot and keeps goal for a veteran's ice hockey team! ♦

Bill Kelsey, N8ET, USA representative of the G QRP Club.

Regular Feature

LF

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ACCORDING TO the Northwest European Loran-C System (NELS) web-site, the 100kHz transmissions, which affect 136kHz reception in north-west Europe, could close at the end of 2005 when the current agreement expires. NELS is publicly funded by several European countries, and provides a positioning system for shipping in the North Sea and Eastern Atlantic. It has largely been rendered obsolete by GPS systems and a new *raison d'être* for the system has to be found.

The transmitters affecting reception in the UK are located in Lessay in Normandy, Sylt in Denmark, Vaerlandet in Norway and Ejde on the Faeroe Islands. Most run about 250kW to large vertical aerials and it is the modulation system that causes us problems. Each station sends out a very accurately timed train of pulses from which a special receiver can triangulate its position relative to three transmitters. The transmission has a characteristic 'clackety clackety' sound, sometimes described as 'galloping horses'. The sideband energy is tailored to fall off quickly either side of 100kHz but, as the fundamental is so strong, there is still appreciable energy at 136kHz.

There was the danger of an additional station being set up on the Irish west coast at Loophead, but this now seems unlikely.

OH1TN BACK ON THE BAND

REINO, OH1TN, ONE of the pioneers of long-distance 136kHz operation, has returned to the band with a new aerial. He now has his 500m long wire up at 31m at its highest point. No wonder he puts out such a good signal! Reino was suffering from some local noise earlier this year, which kept him off the band. Look out for him.

EI0CF ALSO BACK

FINBAR, EI0CF, has been conspicuous by his absence over the past few months; he has been in the process of building a new house right on the coast of Donegal near Malin Head in north-west Ireland. He has now shaken the plaster dust from his beard, constructed a new aerial and earth system and re-appeared on the band. The new location is much quieter than the old one just down the road, and Finbar should be able to work stations which he was previously unable to hear.

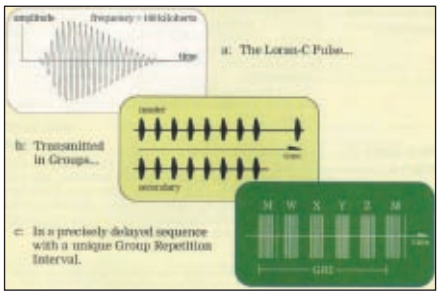
He now has a 60-foot tower supporting a vertical wire antenna with four top-hat wires. A 1950µH coil brings it to resonance on 136kHz. The earth system consists of several radials, some of which are grounded on the beach beside the house. The transmitter is a homebrew MOSFET design driving a homebrew valve linear amplifier.

SOLDERING LITZ WIRE

MAL, G3KEV, passes on this useful tip for soldering the ex-Decca Litz wire which has become available recently. Litz wire exhibits better Q in LF tuned circuits than solid wire and consists of hundreds of individually lacquered copper strands. The older type of non-fluxing lacquer is difficult to remove without damaging the fine strands. Mal suggests you dip the exposed end in paint stripper for a few minutes, then use a toothbrush to remove the dissolved enamel insulation. Finally, dip it in white spirit and wipe dry.

Solder the exposed bare copper end in the usual way.

The new EI0CF QTH - you can just see the tower behind the car.



The Loran-C pulse modulation system.
Source: NELS

73kHz TRANS-ATLANTIC TESTS

LAURIE, G3AQC, has been putting out test transmissions from his location in Chichester in the hope of his DFCW signals being received across the 'pond'. One of his early tests did seem to have been detected, but no definite decoding of a callsign has been achieved at the time of writing. In the spirit of co-operation so typical of LF, Peter, G3LDO, loaned Laurie his Decca transmitter when Laurie's amplifier failed.

SXV GONE

I'VE HAD REPORTS from a few Greek LFers (I hesitate to use the American term 'lowfer', what do you think?) that the Greek Navy station which used to be a permanent fixture on 135.8kHz, has moved frequency. It certainly wasn't there when I listened for it. Whether this is a permanent move we don't yet know, but it does mean that the sideband noise has gone and Greek enthusiasts can now listen for DX signals on the band.

LIGHTHOUSE ACTIVITY

THERE WAS some LF activity during the Lighthouse weekend of 18/19 August. Unfortunately, it appeared that long-distance conditions were not very good that weekend. The most prolific station was DF2BC from the Campen lighthouse on Borkum Island off the north-west German coast. Ali had used this site before and had made some improvements since his earlier trips. He was putting out a good signal into the UK and even managed to work Steve, GW4ALG, who was operating without his balloon aerial due to windy weather.

OH1AH was active, as planned, from the island of Utö in the south-western archipelago of Finland, but the activity only resulted in two contacts (with OH1BS and OH1TN). The antenna current was 3A with a transmitter power of 100W. They had some interference on their initial frequency of 137.0kHz so they moved to 136.6kHz. They will make another attempt next year.

THE M0BMU RECEIVER

THERE HAS BEEN quite a bit of interest in Jim's electro-mechanical receiver, mentioned last time. Some more information, including the circuit, is available on my web site. [A full *RadCom* article on the receiver is planned soon - *Ed.*]

VA3LK

AFTER HIS SUCCESS last winter, Larry has been sending regular test transmissions from his excellent station in eastern Ontario. He is hoping to get a signal into New Zealand or Australia, but has so far not succeeded. By the time this is published, we will have passed the autumn equinox (spring in VK and ZL), and conditions over that path should have peaked. Larry's transmission is on 137.7894kHz, usually sending *very* slow CW. If he keeps up the regular tests, they will be good indicators of trans-Atlantic conditions. ♦

WWW.

NELS www.nels.org
M0BMU receiver www.wireless.org.uk/mechrx.htm

ROGER BALISTER, G3KMA
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E-mail: g3kma@dial.pipex.com

WINNERS OF the three IOTA trophies awarded for DXpedition performance in 2000 were announced at the RSGB HF & IOTA Convention at Windsor in October. The trophy for the 'Most Courageous IOTA DXpedition of 2000' was awarded to the team of 10 Argentinian amateurs, led by LU2NI, from the Santiago del Estero Amateur Radio Club, who activated AY0N/X from Pinguino Island (SA-087).

This team faced amazing difficulties in seeing the operation through. In addition to the logistical problem of getting to this island off the coast of Patagonia - their home town was thousands of miles away in northern Argentina - they faced major setbacks throughout the operation. An accident to one of the landing craft following a sudden change of weather meant that almost no food and water were off-loaded for their stay. Immediate rationing of the little they had was necessary - by the end of the operation the reserves had dwindled to one can of tuna and a gallon of water. Conditions on the island, even in the long-abandoned lighthouse, were far from comfortable - the signs and smell of the resident wildlife population were everywhere. Changing constantly, the weather reserved its worst for the end making it a titanic challenge to get off the island. Sufficient to say, transferring to the pick-up boat was an extraordinarily hazardous operation. All made it safely but some support equipment had to be left . . . to provide a pleasant surprise to the next team to venture an operation.

The trophy for the 'Most Outstanding IOTA DXpedition in 2000 in Africa, Asia and Europe' went to the team of 29 (yes 29) operators, led by HS0GBI and HS1CKC, from the Radio Amateur Society of Thailand and the Thailand Group 1996 for their E29DX operation from Nu Island (AS-145). That for the 'Most Outstanding IOTA DXpedition in 2000 in North and South America and Oceania' was awarded to the team of KL7AK, KL7TG, W0GLG and KF6XC for their KL7AK operation from the Kudiakof Islands (NA-216) - see page 26 of the July *RadCom* for pictures.

In addition, a special award was made to the team of UT8LL, UR5LCV and UY5XE in recognition of their three island operation as EM5UIA from Kalanchakskiye EU-179, Lebyazh'i EU-180 and Poludennyy EU-182, all in the Black Sea.

Congratulations to all the winners and, as always, our appreciation goes to IOTA expeditioners everywhere. Without their efforts IOTA would not be the popular award programme it is today.

Three members of the AY0N/X DXpedition in their insalubrious surroundings!

The stand at the August Japanese Ham Fair provided RSGB IOTA information.

LAST IOTA IN CHINA

THE 1997 *IOTA Directory* listed 17 groups for China but only two with IOTA numbers. Who would have thought that little more than four years later they would all have been activated, some several times?

September saw the last unnumbered group to fall when BI4F fired up from Fu Rong Island in North West Shandong Province.

This IOTA group has very few qualifying islands. The island selected for the operation would not be everyone's first choice as it is used as a military bomb-dropping range and, with unexploded bombs, is about as dangerous as they come! An advance party of BA1 stations did a 'recce' visit, under guidance from the Chinese military, before giving the go-ahead for the other team members to land.

In the event they had to make an earlier than planned departure on learning of a bombing practice scheduled for the following day! An island, a few hundred yards long and wide, was not the place to be.

Yes, they found an unexploded bomb, and they have a picture to prove it! Scary as this may all sound, I'm assured that the team took the greatest care and were supervised at all times by the military personnel.

LIGHTHOUSE OPERATIONS

FOLLOWING THE recent Lighthouse Activity Weekend we would like to remind participants about IOTA requirements for acceptance of contacts with lighthouse stations on islands. QSLs will normally count if they confirm that the operation took place on-shore from an island listed as qualifying in *IOTA Directory 2000* or on the list of Additional Qualifying Islands on the IOTA Manager's web site mentioned below. The island name must be printed on the card in addition to that of the lighthouse.

Lighthouses off-shore that rise sheer from the sea do not count for IOTA. QSLs for contacts made with vessels within the beam-range (the light footprint) of island lighthouses should not be submitted for IOTA credit.

IOTA ON 6 METRES

AS AN UPDATE on comments made in the September column, I found the openings on 6 metres far fewer this time and consequently the pickings rather sparse. However there were some new ones, the best by far being C98RF on Quirimba Island (AF-061). Working 100 IOTAs on 6m is clearly going to be a challenge! ♦

RSGB IOTA Programme, PO Box 9, Potters Bar, Herts EN6 3RH; e-mail: iota.hq@rsgb.org.uk

NEW REFERENCES

AS-160/Pr	BY4	Shandong Province North West group
SA-090	YV5-7	Anzoategui State/Sucre State West group*

Pr = provisional * see explanation in May *RadCom*

WWW.

RSGB IOTA Programme: www.rsgbiota.org
IOTA Manager's web site: www.eo19.dial.pipex.com/index.shtml

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E-mail: uwave.radcom@rsgb.org.uk

MICROWAVE

WINTER IS always a time for construction and thoughts for next year's activities, and this year should be no different. The column this month carries some news of increased activity on some of the more under-used microwave bands available to us. Perhaps your plans should include a move towards activity on another band? News of the changes to the licence schedules for Novice holders may increase activity levels even further and we should be doing our bit to encourage newcomers.

G3WDG DOWNCONVERTER

THE G3WDG Mode-S Downconverter has now completed beta testing and is in production. This unit has been very popular and following the mini-review in the last 'Microwave' column, I have been inundated by people looking for kits. To order a kit please contact Charlie, G3WDG, at the Microwave Component Service. Please do *not* contact me as I do not supply them. I am simply another satisfied customer as well! Charlie can be contacted on charles.suckling@ntlworld.com

AO-40 ON 24GHz

FOLLOWING THE NEWS of the still unexplained 'incident' aboard the spacecraft, it was unclear if any additional transponders would function. I am pleased, therefore, to be able to publish details of some K-band transponder tests carried out recently.

UK microwavers were at the forefront of these tests, and our own millimetre-man Charlie, G3WDG, was in the thick of it! He writes; "K-Band still going strong this evening (17 Sept), despite rain again. I made a few one-ways to K-band, and first two-way for me (with DB6NT). I think I was his third such QSO". He goes on to say "The offset dish used measures 22 x 18cm and is fed with a rectangular waveguide horn designed for 0.6f/D ratio. The dish is on the top of the (previously) mast-mounted 24GHz transverter, which was propped up with pieces of wood to adjust elevation.

"The receiver was an IC-202 (one indoors, one outdoors for dish peaking).Did some sun noise tests this morning - reasonably clear sky. The 20cm dish produces just detectable sun noise (of the order of 2dB estimated),certainly less than cold sky to ground. Also then tried a 60cm perforated ex-Astra sat-TV offset dish. This produces a lot more sun noise (sounds like about 6-7dB) than the 20cm dish and there are going to be many more tests in the near future, so we will try this dish and attempt some telemetry collection.

"After that, will see about a CP feed, either a dielectric-loaded WG horn, or a helix. We made the beacon frequency about 24048.070MHz, but not claiming any great accuracy". Well done all - a fine achievement! Tests will continue and perhaps we may yet see additional transponders in the microwave spectrum being activated. Michael Fletcher, OH2AUE, has also been active (see photo) and details can be found on his web site.

SOFTWARE UPDATE

RECENT DISCUSSIONS on the Internet newsgroups revealed the source of an interesting microwave design package called *SABOR*. It is a useful design tool for simulating primary-focus, Cassegrain, Gregorian, offset and dual-offset dishes, as well as pyramidal, sectoral, conical and corrugated horns. The software is available from the *SABOR* web site.

It is also worth noting that Paul Wade, W1GHZ, supports an excellent on-line antenna design information database and antenna handbook on his web site, which has recently been updated by Paul.

For those readers who own Palm OS powered handheld devices, a new distance/bearing calculator is available. *GL* is designed for hilltop operation and will run on any PDA that uses the popular Palm OS. Written by Rex, KK6MK, it is available free - see the list.

ROUND TABLES

MARTLESHAM Radio Society will again be hosting a Microwave Round Table in November at Adastral Park, Martlesham near Ipswich. Thanks to Sam, G4DDK (and weather permitting), we expect to have an antenna test range for 10GHz available on the afternoon of the Saturday and again on Sunday morning, so bring along your dishes and get them checked over. The timetable is as follows.

Saturday 10th November

1400 - 1700	Antenna test range and test equipment available
2000	Dinner

Sunday 11th November

0900	Round Table opens
0930 - 1230	Antenna test range and test equipment available
1000	Bring and Buy sale
1045 - 1245	Lecture programme
1245 - 1345	Lunch break
1345 - 1530	Lecture programme
1545 - 1630	UK Microwave Group AGM
1700	Close

The AO-40 test setup of OH2AUE.

The lecture programme is currently being finalised; we are hoping to persuade some well-known European amateurs to speak, and the Microwave Contest Forum will also be included. For the most up to date information please visit the web site of Sam, G4DDK. Tickets and details of the Dinner and accommodation bookings will be handled by Jason Flynn, G7OCD, who can be contacted by e-mail to jason.flynn@btinternet.com or by post to Jason at 32 Church Road, Felixstowe, Suffolk IP11 9NF.

Admission is free, but all visitors must be pre-booked for security reasons, so please contact Jason in plenty of time. Refreshments will be available courtesy of Iain, G0OZS.

We are also expecting to be able to offer guided tours of BT's new Internet Network Management Centre at Adastral Park, which will be opening shortly. More details will follow on the web site. Adastral Park is located adjacent to the A12 to the east of Ipswich. Maps can be found at the site on the list.

For further information see Sam's web page or contact John Quarmby, G3XDY, at g3xdy@btinternet.com ♦

www.

OH2AUE web site
www.oh2aue.pp.fi/24048.htm
SABOR software
www.gr.ssr.upm.es/sabor.htm
W1GHZ antenna design
www.w1ghz.cx
Distance / bearing calculator
www.dnai.com/~rexa/Projects/gl_dist.html
G4DDK's web site
www.btinternet.com/~jewell
Adastral Park maps
http://innovate.bt.com/adastral-park/travel.htm

JOHN HEATH, G7HIA
'Chestnuts', Desford Lane, Kirkby Mallory, Leicester LE9 7QF.
E-mail: g7hia@amsat.org

SPACE

WE ARE ALL familiar with satellite communications as a result of the popularity of satellite TV. These giant TV satellites, weighing several tonnes, are parked at 35,800km out in space so that their orbit is synchronised with the rotation of the Earth. The result - a fixed position in the sky, and fixed ground antennas for reception. Amateur radio satellites are completely different.

Firstly the size - anything from experimental 'pico-satellites', the size of a pack of cigarettes, through to AO-40 at about 650kg.

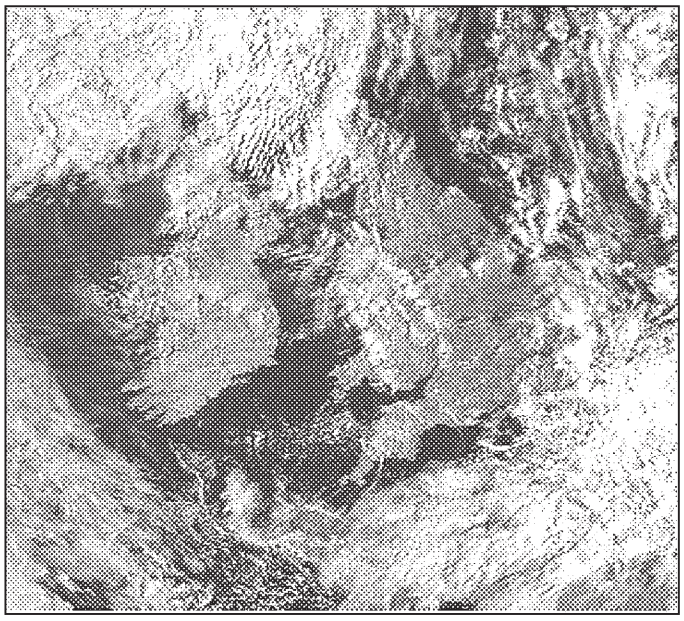
Secondly - the orbit. Most of the current amateur radio satellites are in circular orbits, which pass over each pole. This is a slight simplification, as the orbits are not exactly circular, and they do not pass exactly over the poles; however it's a good working model in trying to visualise the situation.

Thirdly - the distance from earth. AO-10 and AO-40 are in elliptical orbits which take them far out into space and back, about 40,000km out for AO-10 and 60,000km for AO-40. All the other amateur radio satellites orbit fairly close-in to the Earth at around 1000km or so, hence the term Low Earth Orbit. The Russian satellite RS-12 is a typical polar LEO with an orbital period of 104.782 minutes.

ENTER THE COMPUTER

TO RECAP, the satellite is speeding around its orbit once every 100 minutes or so, and our QTH is 1000km below on a rotating Earth. The shack computer is just the tool to work out where the satellite is relative to our QTH. There is plenty of easy-to-use computer software producing attractive map screens showing the positions of satellites in real time together with their azimuth and elevation so that we can point our antennas.

This can get as sophisticated as you wish, with fully-automatic antenna tracking, and the rig under software control. On the other hand, it's quite appropriate for some satellites to go for the simplest approach and use omni-directional antennas. Whichever you choose, you need to know when the satellite is in radio range of your QTH. There is software to run under Windows, DOS, Unix and Linux. My personal favourite, from AMSAT-UK, is *InstantTrack* by N6NKF, maintained by Paul Williamson, KB5MU. The cost is £26 including UK postage. Running in DOS, it has the great benefit of working very well on older PCs, like the 386 or 486 which can often be bought for a few pounds. I find it very handy to use an old PC so that I have the main shack computer free for other tasks.



NOAA weather satellite image from G8ATE using an FT-847.

WEATHER-WATCH

WITH 12 or so analogue and digital satellites currently operational, there is plenty of scope for making contacts and experimentation, including receive-only and, since this is the 'Space' page, we can consider weather satellites also. You probably have much of the equipment you need to get real time images from the polar-orbiting weather satellites. Your fixed-elevation 2m beam can pick up the NOAA satellites as they pass near Greenland. "But my 2m beam is resonant on 145MHz, and the NOAAs use 137.500MHz FM. It won't work." Oh yes it will; try it.

Here is another good example of trying out what equipment you have already. The IF bandwidth of the Yaesu FT-847 is too narrow for weather satellites; theory says that it may degrade the signal. Have you tried it? G8ATE did. It took some experimentation, and very careful tuning to keep the signal smack in the middle of the receiver passband, but take a look at the result. Not quite as good as a dedicated weather satellite receiver perhaps, but not bad, and there is the satisfaction of achieving something with existing equipment. [This performance cannot be guaranteed but, yes, it *is* worth trying - *Ed.*]

I hope this conveys effectively one of my main messages - always be prepared to give things a try with the gear you already have. Results may not be perfect, but you can always work on improvements. This way you build up your knowledge, have some fun, and frustrations and, importantly, when you do want to buy some serious dedicated gear for a particular aspect of space radio, you will have a clear idea of what you are buying.

EQUIPMENT

IF YOU HAVE a VHF/UHF multimode, you can work most of the current satellites, analogue and digital. Even with fixed antennas, you will be able to work some passes each day. If you have an FM station with 2m and 70cm, you can work the 'easy-sats' AO-27 and UO-14. If you have a receiver on 10m SSB, you can receive RS-12, and with a few watts on 2m to a vertical or small beam you will be able to make some contacts.

I hope I have raised your interest in 'space radio'. I plan to get down to some of the practicalities next time. ♦

FURTHER READING

The Radio Amateur's Satellite Handbook, by Martin Davidoff, K2UBC (ARRL), available from the RSGB Shop.

WWW.

AMSAT-UK (amateur radio satellites)
www.uk.amsat.org
Remote Imaging Group (weather satellites)
www.rig.org.uk

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PROGRAMMED PROMS, PMR & MORE Details: www.atlantacomms.co.uk or S.A.E.: Atlanta Communications (RC), PO Box 5, Chatteris, Cambridgeshire PE16 6JT.

THE RF KIT CATALOGUE. Send 2 x 2nd class stamps or browse www.rf-kits.demon.co.uk. Hands Electronics, Tegryn, Llanfryrnach, Dyfed SA35 0BL Tel: 01239 698427.

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the last Word

Early Radar

I am sure many other readers greatly enjoyed the first part of the series on the 'Birth of Radar' by Brian Kendal, G3GDU (October 2001). He is quite correct in stating that the origins of radar preceded WWI. The first patent for a practical radiolocation system was for the "telemobiloscope" lodged by Christian Hulsmeyer in 1904. It was capable of detecting a ship at ranges of up to 3000 metres.

Marconi was working on direction finding at Poldhu in 1903 (see the Marconi Archive at www.marconicalling.com). By 1916 a large number of DF stations had been set up by the War Office across the British Isles and the Western front using this system.

The history of advances in telecommunications and their interdependence on technical developments such as the coherer, the thermionic valve and the cathode ray tube is a fascinating part of our hobby. I look forward to Part 2 of the 'Birth of Radar' and let us have more of such articles!

C D Stephens, G3MGS

QSL Work Appreciated by Many

Having reluctantly, due to ill health, had to retire as QSL bureau sub-manager of the G3E to H calls after many years, I should like to thank all the many people who took the trouble to write and phone expressing their thanks and appreciation for the service. It was a pleasure to find that so many people do care and my wife and I really appreciate the thoughts. Sorry I am unable to reply to everyone, so please accept this note of appreciation.

It is nice to know that there is action and activity the other side of the Post Office letterbox, and proves the services provided by the RSGB are well used. I know I am only one of many people doing this job, and am sure that other managers are equally well thought of.

Again, very many thanks to all. Now I can relax and spend the rest of my time with my family and this wonderful Northern scenery.

Eric L Simpson, G3GRX

The New Licensing Structure

Just a note to congratulate you on the new UK licensing structure. I believe you have taken a real-world view of what amateur radio requires to remain viable and attractive. I particularly applaud the expanded access to HF. You will be nurturing a more well-rounded crop of amateurs. Here in the States, new hams' perceptions are shaped by VHF / UHF handie-talkies and repeaters. This is an overly simplified and much too narrow introduction to radio communications. Many of those who do earn expanded privileges seem to have great difficulty grasping basic fundamentals of HF equipment, modes and operating technique, most of which can be self-learned with early access to HF. Best of luck with your new programs. I suspect they will set a new standard.

Michael Wingfield, W8MW

. . . The RSGB is to be congratulated on the long overdue changes to the amateur licensing structure. You and the RA seem to have struck the balance just right. It certainly shows the RSGB is capable of new thinking. I'm sure the Foundation licence will prove extremely popular. Well done.

Trevor, M5AKA

. . . Having just read the statement re new licensing structure, I must say how disappointed I am. I am a class B licence holder, with no interest in Morse at all, yet I am restricted to operate at 50MHz and above. I have taken the same RAE exam and am qualified to operate a radio station, yet due to archaic rules am not allowed to use below 50MHz even for SSB, PSK31 etc.

Yes, we know that Morse will probably be scrapped in 2003, this is two years away, and to be honest I doubt I will still be interested in amateur radio by then as to my mind there is nothing to interest me on 2 metres. The RSGB should find a way of allowing B licensees full HF access before 2003.

Steve Brainbridge, M1SWB

RSGB President Don Beattie, G3BJ, replies:

"We've had many comments about the new licence structure - many have been complimentary, others (from Class B licensees) have argued that we have not done enough for them. The RSGB has for some time made clear that it no longer views a Morse qualification as an appropriate criterion for an HF licence. However, we need to remember that at present it remains an international requirement to have a Morse capability for HF band access. The CEPT has defined this at 5WPM, and that is why the Full licence requires a 5WPM test. For the Foundation, we have agreed a more basic test, recognising that this licence is the first rung on the amateur radio licence structure, and has limited power privileges.

"Although this is not the way to look at things, if for a moment we look at 'who got something out of the changes', we can see:

- Class A: Nothing
- Class B: Opportunity to get on HF 400 watts with 5WPM Morse (was 12WPM) and to gain a Foundation licence through special transition arrangements
- Class A/B: Increase in power from 100 watts to 400 watts PEP
- Novice A: Increase to all bands and power (to 50 watts). No longer need 12WPM for a full licence (just RAE)
- Novice B: Increase in number of bands and power to 50 watts and opportunity to gain a Foundation licence through special transition arrangements
- Non-amateurs: An additional path into amateur radio through the Foundation licence with a relatively short period of study, and the scope to progress up the licence structure from there.

"I am pleased to say that we have now concluded the discussions with the RA which we have been having for some time about the special transition arrangements for Class B licensees referred to above, and these details are set out on page 5 of this edition of *RadCom*. I hope that, on reflection, members will recognise these changes for what they are - a step towards a structure of progressive licensing which will be fully in place once, hopefully, the Morse requirement is removed internationally at WRC 2003."

Help for New CW Ops

We have been surprised recently to read of the number of newly-qualified CW operators who have not been able to find other amateur radio operators willing to work them on the bands at or around the speeds of the new Morse tests.

The Morse Enthusiasts Group Scotland (MEGS) specialises in taking newly-qualified CW operators under their wing, whether they are members of MEGS or not. One of the 'aids' which we offer on a weekly basis is an 80 metre net. This specialises in encouraging new operators to 'have a go' and then gradually to improve their Morse skills until they are able to work CW at speeds nearer to the average heard on the bands.

If you are able to 'key' on 80 metres on a Monday and / or Thursday evening between 7.00 and 8.30pm, here is what to do. Have a listen at around 3530kHz for the Group's club station GM0RSE calling "CQ MEGS" at speeds of around 15WPM. He will be delighted to get a call from you at your chosen speed and a contact can then take place at your speed. There is no need to feel embarrassed about your Morse skills, or the lack of them. That is one of the reasons that MEGS exists, to help improve the Morse skills of all operators. Within a few kilohertz of GM0RSE you will find a number of other MEGS operators also calling "CQ MEGS" but using their own callsigns. These operators are likewise looking for other operators (whether members of MEGS or not) to work at their chosen speed, whatever that may be.

MEGS is aware that many new operators do not have facilities to put out a good signal on 80m. We also (just like you) have problems with 'fishfone', QRN, etc on this band, so should you be unable or unwilling to try 80, give me a call and we will arrange a sked to suit you in time, frequency and Morse speed.

George Allan, GM4HYF, MEGS Secretary (QTHR, tel: 0141 634 4567, or e-mail: george@allan99.freeserve.co.uk)

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RU-45	70cms 3-15W in / 45W max out	£165.95 B
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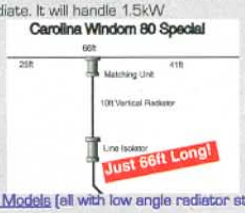
CAROLINA WINDOMS

CW-80 Special

Just 66ft long yet covers 80m - 10m. It will out perform a G5RV and give lower angle of radiation because of the 10ft vertical section which is forced to radiate. It will handle 1.5kW



Other Models (all with low angle radiator stub)

CW-160	160 - 10m 171ft long	£129.95 C
CWS-160	160 - 10m 133ft long	£125.95 C
CW-80	80 - 10m 133ft long	£95.95 C
CW-40	40 - 10m 66ft long	£89.95 C
CW-20	20 - 10m 34ft long	£77.95 C

80-40-20m Mini Dipole

The "80 plus 2" Mini - Dipole was designed by our Director Peter Waters, G3OJV. Just 52ft long, it uses linear loading - no tuned traps. It can be directly fed without ATU and also operates at 2.5:1 VSWR on 15m. Amazingly efficient, it handles 400 Watts and is balun fed. Erect it as an inverted V and it takes up less than 40ft of space. If you have a small garden, don't miss out on the LF bands anymore.

£79.95 Carr. £6.00

THE TOUGHEST JAPANESE ROTATORS

These are tough rotators that weigh almost twice as much as similar priced units and have great turning capacity. Made by Create of Japan, they will handle 4 element HF yagis with ease. Our own Create model has been on our roof for 12 years turning a 4-element HF beam. We wouldn't use anything else!

RC5-1	Standard control box, OK for 4-el Yagis - needs 7-core cable	£349.95 C
RC5-3	Control box features pre-set or manual control. Otherwise the same as RC5-1 above	£449.95 C
MC-2	Lower mast clamps	£49.95 B

CASE FOR FT-817 £9.95

Plus £2.00 Carr.

We have a quantity of cases made by Motorola, that are ideal for the FT-817. They will house the radio, microphone, spare battery and our ATX whips. Can be configured as as waist band or lengthened as shoulder strap.

HEAD OFFICE
22 MAIN RD, HOCKLEY, ESSEX, SS5 4QS ▪ ENQUIRES: 01702 206835/204965 FAX: 01702 205843
MIDLANDS + NORTH SHOP
BENTLEY BRIDGE, CHESTERFIELD RD, MATLOCK, DERBYSHIRE, DE43 5LE ▪ ENQUIRES: 01629 582380 FAX: 01629 580020
SCOTLAND + BORDERS SHOP
20, WOODSIDE WAY, GLENROTHES, FIFE KY7 5DF ▪ ENQUIRES: 01592 756962 FAX: 01592 610451-CLOSED MONDAYS

MFJ PRODUCTS

MFJ-914 Auto ATU Extender £59.95 Plus £8.00 Carr.

Match into that G5RV or similar

If your internal auto atu is having trouble matching your G5RV or similar antenna, this should solve the problem. Just place it in series with the coax feed to the rear of your transceiver. Magic!

MFJ-934 + MFJ-931 ARTIFICIAL GROUNDS

MFJ-934 £169.95
MFJ-931 £89.95
Plus £8.00 Carr.

Removes RF hot spots and offers a true ground, even when operating upstairs.

If you operate upstairs or well away from an earth, you will know that trying to use an end fed long wire is a problem!

Now MFJ have solved the problem. With the MFJ-931, you just run out a random length of wire and connect it to the transceiver chassis via the MFJ-931. Then adjust as per instructions and you have guaranteed zero RF potential at the chassis and a good antenna earth. Can also be used with an external counterpoise. The MFJ-934 operates exactly the same but also includes a built-in HF ATU for wire, coax and balanced feed. Maximum power is 300W.

MFJ-962D ATU £259.95 Plus £8.00 Carr.

1.8 - 30MHz 1.5kW "T" Match

For use with medium linears. Using the famous "T" Match design, this ATU will cope with any antenna whether it be coax, end fed wire or balanced feed. You can monitor your power (average or PEP 200W or 2kW max) and VSWR. Antenna switch selector is included for two antennas. Size 270 x 375 x 115mm.

MFJ-941E HF 300W Budget ATU £109.95 Plus £8.00 Carr.

Matches all types of antennas.

At this price there is no excuse for not having an ATU and offering your transceiver a perfect match. Covering 1.8 - 30MHz, rated at 300W and having built-in VSWR and power meter: it will match wires, coax systems and balanced feed.

MFJ-989C ATU £349.95 Plus £8.00 Carr.

3kW 1.8- 30MHz "T" Match

This design has a roller coaster coil and a 4:1 balun to match balanced line. Ideal for coax, end fed wires and open wire feeder. Features PEP or RMS power measurement: VSWR, antenna switch, bypass, built-in dummy load etc. Size 270 x 375 x 115mm.

MFJ-986 ATU £319.95 Plus £8.00 Carr.

3kW Differential 1.8 - 30MHz

One less knob to twiddle, but all the facilities of the MFJ-989C

MFJ-1025 "Local Noise" Canceller £119.95 Plus £8.00 Carr.

Kills local noise, but lets signals through. Handles electrical noise, TV time-base etc. Short length of wire picks only local interference and cancels it out.

MFJ-1026 As MFJ-1025, but has active whip antenna for picking up noise signals (as illustrated above). £159.95 Carr. £8.00

MFJ-616 Speech Intelligibility Enhancer £169.95 Plus £8.00 Carr.

HEAR SIGNALS BETTER

Designed to enhance the audio of your transceiver. MFJ President, Martin Jue suffers with deafness and said that this has put the enjoyment back into radio for him!

MFJ-418 £69.95 Plus £8.00 Carr.

The easy way to learn CW

Unlike other tutors, this one sends true text and full length QSOs, just like the real test. The massive database avoids frequent repeats too! Will also send groups and displays the text.

MFJ-269 and MFJ-259B

The most advanced antenna analysers

MFJ-259 £249.95 Carr. £8.00
MFJ-269 £329.95 Carr. £8.00

Connect it to your antenna and get all the information you need to optimise it for best performance including resonance, VSWR and impedance. Totally portable (using AA cells), you can work right up by the antenna. The MFJ-259 is the basic design covering 1.8 - 170MHz. The MFJ-269 has extended coverage up to 470MHz and gives an extremely wide range of measurements, even indicating where a break is in a coax cable.

MFJ-1704 4-way switch £62.95 Plus £6.00 Carr.

DC - 500MHz 2.5kW

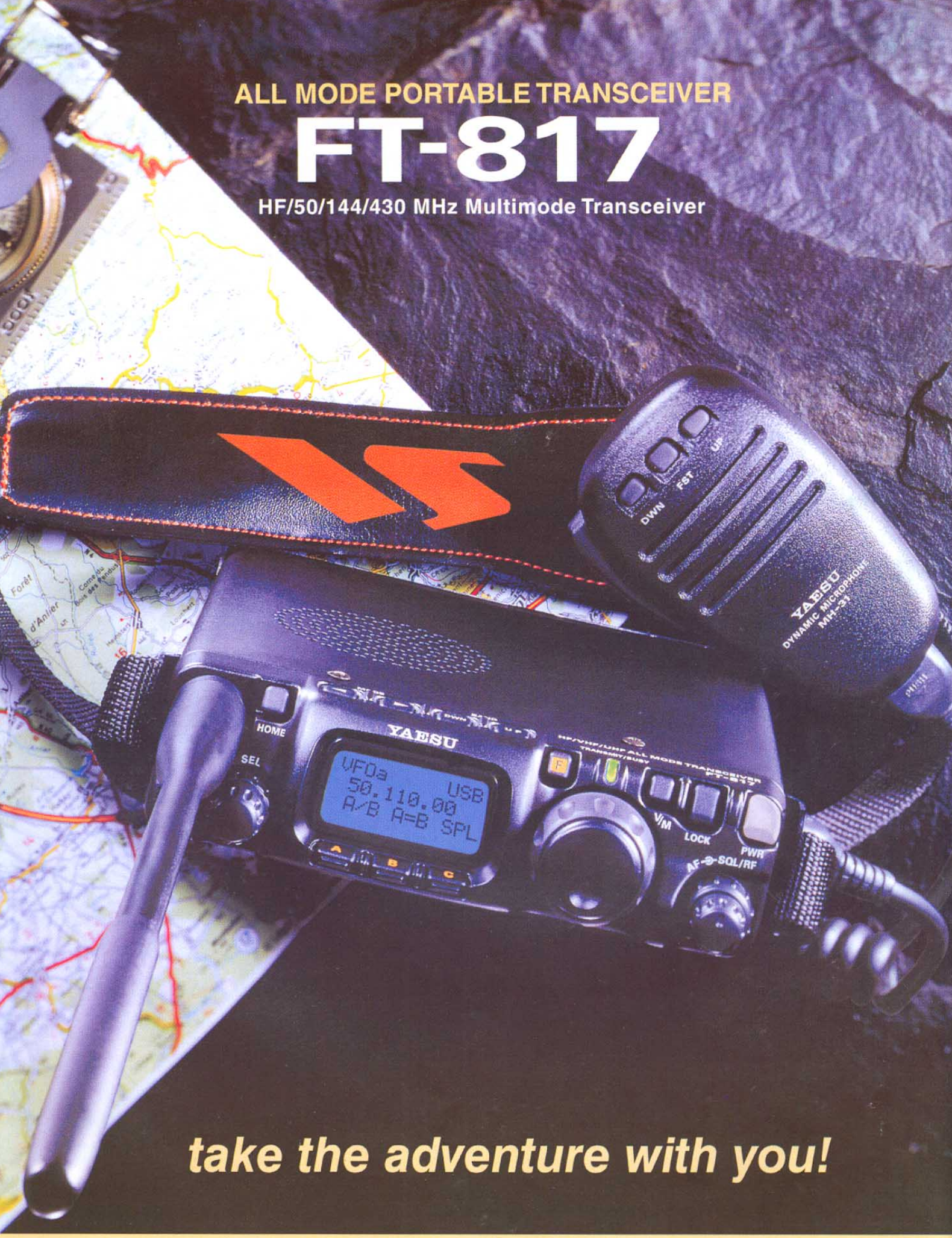
This is a heavy duty die-cast 4-way switch with SO-239 sockets, central earth position and built-in static discharge protector. Makes changing antennas a breeze!

MFJ-392 Mono Padded Communications Earphones £22.95 Plus £3.00 Carr.

These are purpose designed communications padded headphones that are ideal for all the modern transceivers and receivers. Suits 3.5mm and 1/4" jacks - adaptor provided.

MFJ Dummy Loads

MFJ-264 or MFJ-264N
1.5-150MHz 1.5kW £64.95
"N" version of above £69.95
MFJ-260C or MFJ-260CN
1.5 - 150MHz 300W £32.95
"N" version of above £39.95
Carr. £8.00



YAESU