

SHORTWAVE MAGAZINE

AUGUST 1997 £2.75

BRITAIN SHORTWAVE RADIO MAGAZINE

AMATEUR RADIO AT MORUROA



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The AOR NB7030 Noise Blanker**

Total Eclipse

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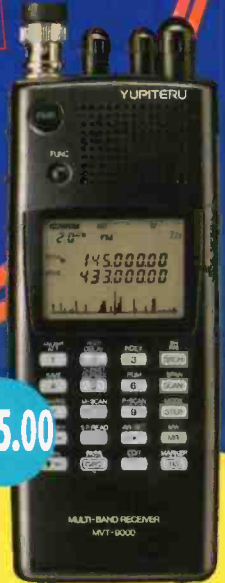
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 offered for sale in advertisements in this magazine
 may have been obtained from abroad or from
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 readers contemplating mail order to enquire whether
 the products are suitable for use in the UK and have
 full after-sales back-up available. The Publishers of
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Cover Subject
Protest communications
in the South Pacific -
Anti nuclear testing
co-ordination on the
high seas using radio.



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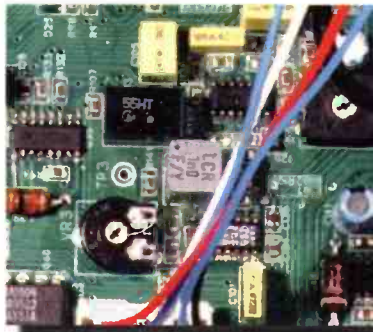
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Communique

Radio & TVDX News

Further pressure is arising in the local press for the GBC, Gibraltar to progress the opening of the long promised GBC-2 TV channel which will include mainly BBC prime programming and additional GBC offerings. Legal go-ahead is awaited from Brussels and the local government administration. Once agreed, GBC will proceed quickly. Updating of the present GBC-1 TV equipment is also in the pipeline, much of it is reported to be valued. There are rumours of a new medium wave transmitter and antenna radiator, the latter "appears that it is tilting a bit" - the present 1kW output on 1448kHz is also to be increased.

A few snippets advise that TV Markiza in the Slovak Republic - the largest commercial network in Slovakia - is testing with teletext. The Finnish 4th TV channel 'Nelonen' has been logged operational at Jyväskylä ch.E41 and Vaajakoski ch. E50 - programme hours 1800-2330 local. German ch.E12 is currently blocked with DAB (digital audio broadcasting) and a spread down to ch.E11 is in the pipeline. The TV Oost (TV East) service near the German border, a Dutch cable programme is to be transmitted on ch.E36 at 50kW e.r.p. at Hengelo from a 125m mast starting 1 October next - programmes 1800-2230 local. And Dutch ROF (Omrop Fryslan) will operate a new 150kW e.r.p. transmitter in October ex-Irnsrum to cover the Friesland region.

'TV Malawi', the first TV channel in that country, opens Autumn 1997 (likely November) in a partnership between Austrian and local companies. Discussions continue whether to use analogue, digital or a mixture of both. At a time when v.h.f. TV is in a decline, Harris Corporation has received a \$20 million order for 44 v.h.f. and a single u.h.f. TV transmitter with associated antennas across Mexico (and one in nearby El Salvador) for the 'TV Azteca' company. Included are several SNG vehicles for outside news operation.

The ITC are advertising for applications re RSL-TV licences. These may be either for a specific event or a 56-day period, or a longer two year span. The period can be extended through a competitive process and subject to channel availability. If you're interested in applying then an initial £500 is needed up front with your application and a further £1500 is demanded once a channel has been identified. An annual fee of £2225 is also required. The first batch of TV-RSL applications must be received by close of business 30 September 1997 at the ITC, 33 Foley Street, London W17 7LB.

Towards the end of this year the Greek government plans to sort out the chaos now present in broadcasting across the country. Over the region some 431 channels are available, state broadcaster ERT will receive 65 channels for its three programmes, seven channels for national (private) coverage; the Attica region will have 29 regional/locals and another 54 local channels



Awards PLUS Additions

The AOR brand name has become synonymous with innovative design with many awards being won for pioneering design standards and fresh ideas. The accolades continued at Ham Radio '97 at Friedrichshafen, Germany, on 27 July 97 with the *funk* magazine readers 'Golden Microphone' award for best in their class.

The AOR AR7030 received the *funk* award for 'Best short wave receiver' with Richard Hillier - UK Sales Director and Jun Oshima - Overseas Sales Director, AOR Japan, jointly accepting the award. This adds to the awards already received from *WRTH* 'Best tabletop receiver 1996/97' and Editors' Choice five star award by *Passport to World Band Radio 1997*.

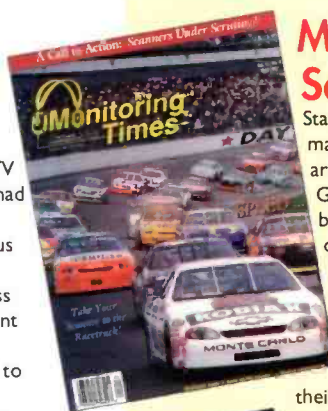
The AOR AR5000 received the *funk* award for 'Best wide band receiver' with Boger-Funk AOR's German distributor accepting the award on behalf of AOR.

Design continues in the pursuit of excellence, the best just got better! New PLUS PERFORMANCE enhanced options have now been released, AOR UK have leaflets and prices available to request...retro upgrades may be possible to existing units.

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Web: <http://www.demon.co.uk/aor/index.htm>

around the country outside of Attica. National licences have been given to TV Macedonia, Star, Sky, Antenna, Mega, New Kanali 5, 902 TV and the ERT. There had been increasing pressure from various Hollywood film companies over gross copyright infringement and it's thought the government reacted to their requests.

TV New Zealand is launching a terrestrial 'youth' channel early July aimed at teens to twenties with content of music, fashion and movies. The TV-1 channel programmes will be revamped and TV2 likewise is increasing domestic content. The funding will be raised by selling five regional stations around the country.



Monitoring Times and Satellite Times

Starting immediately, the popular listening magazines *Monitoring Times* and *Satellite Times* are available directly from PW Publishing Ltd. Grove Enterprises, the American publishers of both titles, has just appointed PWP as an official distributor. Kathy Moore, Subscription Manager at PW Publishing Ltd., is "delighted with the outcome of the negotiations. This means that we will be able to offer our considerable specialist magazine marketing skills to those readers who choose to order their subscriptions through us."

Monitoring Times is a well-established American monthly magazine for the listening enthusiast, covering all aspects of radio listening as a hobby.

Satellite Times, published bi-monthly, claims to be the world's first and only full-spectrum satellite monitoring magazine, covering all aspects of satellite communications - commercial, broadcast, scientific, and governmental.

Anyone who wants to subscribe to *Monitoring Times* and *Satellite Times* can do so through PWP by telephoning: +44 1202 659930 or FAX: +44 1202 659950. E-mail: subs@pwpub.demon.co.uk

Marine Safety Shift

In a recent announcement the Radiocommunications Agency advise us that certain responsibilities have been transferred to the Marine Safety Agency. The transfer includes responsibility for; maritime radio operator examinations and certification, maritime radio performance specifications and type approval of maritime radiocommunications equipment, including compliance with the Electromagnetic Compatibility Directive. The change took effect from 30 June 1997.

John Battle - Minister for Science, Energy and Industry said at the announcement, "This transfer will bring a number of benefits to the maritime community and marine radio industry including rationalisation of seafaring training and certification in the UK. It will also allow resources to be better used and aid consistency in decision taking through single Agency participation at specification setting work at a European level".

Northern Lighthouse Weekend & Lighthouse Lightship Activity Weekend

Two events associated with lighthouses and lightships will be taking place during the weekend of 23 and 24 August 1997. The first event is the Northern Lighthouse Weekend when ten Scottish stations will be established at lighthouses around Scotland. Running concurrently with the Northern Lighthouse weekend is the Lighthouse/Lightship Activity Weekend when stations will be established at lighthouses and lightships around the world.

Both events will be from 0900UTC on Saturday 23 August until 1700UTC on Sunday 24 August 1997. Some of the lighthouses are located in very isolated places far from facilities and cannot be expected to be QRV all night. All stations will however, be QRV 0900 - 1700UTC on both Saturday and Sunday.

There is also the possibility of activity from Norway, Eire, Malta, France, Romania, Northern Ireland, Turkey, Bulgaria, Italy, Greece, Belgium and Brazil. These countries have yet to confirm their participation in the event.

Awards: There are six awards associated with this event. The main awards are The Northern Lighthouse Weekend Award, FYRSKIB XXI Diplom, Feuerschiff Diplom and Diploma Dos Farios De Portugal. QSL Managers are also available if required. Bands in use are all authorised amateur bands and modes.

Stations

GB2LO Lighthouse Orkney. A station will be established in a car park overlooking the Brough of Birsey Lighthouse in the Orkney Islands.

GB2LTH Lighthouse Tiumpan Head. This lighthouse is on the Isle of Lewis and is just to the east of Stornoway.

GB2LCP Lighthouse Corsewall Point. In the very south west corner of Scotland, about 15km from Stranraer.

GB2LBN Lighthouse Barns Ness. This lighthouse is to the east of Edinburgh and is on the south side of the Firth of Forth.

GB2LT Lighthouse Turnberry. If you are a golfer you will have seen pictures of the Turnberry Lighthouse. Just to the south of Ayr.

GB2LTN Lighthouse Tarbet Ness. This lighthouse is north of Inverness on the north east coast of Scotland.

GB2LCL Lighthouse Corran Light. Situated at the entrance to the Great Glen on the Firth of Lorn.

GB2LKH Lighthouse Kinnaird Head. This lighthouse is now part of the Scottish Lighthouse Museum at Kinnaird Head.

GB2LDH Lighthouse Dunnet Head. The most northerly lighthouse on the mainland of Scotland.

GM0KCY Butt of Lewis Lighthouse. The lighthouse keeper, GM0KCY, has confirmed that he will be QRV from his lighthouse on the Isle of Lewis.

Denmark

OZ7DAL Fyrskib XXI, built in 1910, a wooden lightship situated at Edelftoft.

OZ1VYL Motorfyrskib 1, built in 1920, a wooden lightship located at Esbjerg. This will be the first ever amateur radio activity from the vessel.

OZ?DSB Sprogø Fyr. Lighthouse since 1809 and on the Island of Sprogø. Very special permission has been given because the island is closed to the public due to nature conservation.

OZ?SKA 'skagen Fyr. The first lighthouse built in 1560. One of the first three Danish lights ordered by King Fredrick II, 8 July 1560.

OZ1LFA Gedser Fyr. First lighthouse built in 1802 and is at the tip of Falster Island.

OZ4HAM Hammeren Fyr. First lighthouse established in 1802 and is situated on the Island of Bornholm.

Germany

DL0BRF Borkumriff is a lightship that is in the port of Borkum Island.

DL0MF Amrumbank is a steel-built lightship that is now a museum in the port of Emden.

DL0EM Campen lighthouse and at 65m is the highest lighthouse in Germany.

DL0PJ The lighthouse of Norderney Island.

DL0KA This lighthouse is on the Rhine at Cologne.

United Kingdom

G0VOP/P Portland Bill Lighthouse.

GB2MHL Milford Haven Lightship

GB2NFL North Foreland Lighthouse.

GB2SFL South Foreland Lighthouse

Portugal

CS1CRA Clube Radios no Atlantico have agreed to organise, in addition to CS1CRA, three or four stations at Portuguese lighthouses.

Spain

There are about 250 lighthouses in Spain and it is hoped to have some on the air.

Netherlands

PA6NHL The Dutch lightship *Noord Hinder* which is in Hellevoetsluis.

There is a possibility of more activity from the Netherlands.

Sweden

SK7DD The Swedish lighthouse at Kullen is one of the oldest lighthouses in Sweden.

Engineer Of The Year

David Stoney G8PTN, a 35 year old senior consultant engineer who has played a key part in GPT's rise to world leadership in telecoms transmission technology, was recently named GPT Engineer of the Year. The award is made in recognition of his own and his section's outstanding work in developing a semi-custom ASIC chip for telecoms equipment, which helped GPT win two Queen's Awards earlier in the year and has seen the company, with its partner Siemens, capture a third of the world market in its sector.

Working at GPT's Coventry and Beeston, Nottingham sites, David is the leader of a 15-strong team. He enjoys working with state-of-the-art systems and says

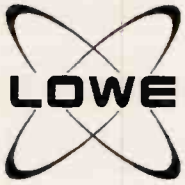
being involved with leading-edge technology is its own reward. His enthusiasm for electronic dates back to childhood and was inspired by his father, also an active radio amateur. There is nothing to beat hands-on experience, he declares.

David collected his award from Tony Cobbe, GPT Managing Director who said "To be Engineer of the Year in a company that lives and dies by its engineering excellence and is busily recruiting more such highly qualified people is a great feat. David's commitment is an outstanding example to everyone that British engineering can set world class standards for others to follow."



New Logo For WACRAL

The World Association of Christian Radio Amateurs and Listeners (WACRAL) have announced the adoption of a new style logo. After nearly 40 years of service, the 'clasped hands of fellowship' badge has been replaced with the well established diamond, so familiar to all amateurs, and showing the Christian symbol of the fish.



Lowwe Elec

JRC NRD345G

JRC need no introduction to most SWL's but their new receiver does! An all-mode receiver, the NRD345G includes synchronous detection as standard, offering low signal distortion and clear sound. Direct Digital Synthesis is employed in a phase locked loop circuit to enhance the carrier to sideband noise ratio. The RF amplifier and the first mixer in the front end stage incorporate 4 low-noise junction-type FETs with excellent cross modulation characteristics respectively to ensure high sensitivity with wide dynamic range. Other features include a variable level noise blanker, clock and timer functions and a built-in RS232 interface for computer control. We'll be writing a driver for our RCON control software just as soon as we have our first European spec samples! This will enhance the NRD345G's 100 memory channels and scanning capabilities. The new receiver offers great value for money at just £749.00 (subject to exchange rates etc.).



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STOP PRESS!

Our first shipment has now arrived and selling fast! The NRD345G is the CE approved model, complete with UK power supply and this is the only version you should consider buying. Beware of *grey imports* which will not have factory approved warranty via ourselves as official JRC distributors for the UK. The NRD345G is available directly from Lowe Electronics and through our dealer network. Give us a call and we'll let you know who your local approved dealer is so you can buy with complete confidence.

Specifications

- Frequency range 0.1 to 30MHz
- Modes AM, Synchronous AM, CW SSB, FAX
- Frequency stability 10ppm or less 5 to 60 min
- Frequency step size 5Hz, 100Hz, 1kHz and 10kHz
- Receiving system Double superhet
- Dynamic range 100dB (500Hz IF bandwidth)
- Image rejection 70dB or more
- IF rejection 70dB or more
- Antenna impedance 50W and 450W
- Antenna input attenuator 20dB
- AGC characteristics AF output varies with 10dB or less for the antenna input of 3 microvolts to 100 millivolts
- AF output 1W or more with 8W load at 10% distortion
- RS232 interface 25 pin D type connector, 4800 baud 1 start bit, 8 data bits, non-parity, 1 stop bit

NRD345 £749.00

AIRMASTER

ACARS DECODING SOFTWARE

The launch of our Airmaster ACARS decoding software took the aviation world by storm and the new V3.0 is selling even better! To access the wealth of aviation data communications, all you need is a reasonable airband receiver tuned to 131.725MHz, and at least a 386 IBM Compatible PC plus AIRMASTER and you are there! Flight numbers, tail numbers, engineering information and other data is all there waiting to be looked at!

AIRMASTER V3.0 £89.95

plus carriage

AIRUP (Upgrade from V2 to V3) £29.95

GARMIN GPS12XL



This model continues to lead our GPS sales. Ideal for use in car, or out hiking or even at sea, the GPS12XL is great for finding your way to places - and back again!

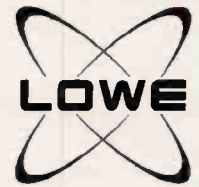
If you want added versatility ...

Low Price

GPS 12XL £219.00



Electronics Ltd



YUPITERU MVT9000



Advanced scanner

Dual watch
Bandscope display
Memory naming

Low Price
£399.00

plus £10.00 carriage

NOW IN STOCK!

High performance low cost scanner antennas!

Designed for optimum performance over a wide frequency range 25 to 2000MHz.

Ideal for Airband, Marine, Ham Radio, Emergency, Paging, Telemetry and cellular. Use with any scanners and frequency counters/sniffers with BNC socket for extra performance

LA801 Standard Gain

Length 210mm, Weight 27g

Price £12.95

plus £1 p&p

LA881 Enhanced Gain

Length 414mm, Weight 60g

Price £19.95

plus £1.00 p&p

YUPITERU MVT7100

All-mode scanner



Wide Range
High speed search/scan
Signal strength meter

Low Price £299.00

plus £10.00 carriage

Frequency Counter

MIC10C28

The MIC10C28 is a new low-cost frequency counter/sniffer that breaks yet another price barrier.

1mhz to 2.8 ghz coverage

Backlit LCD display

High speed 250 Mhz direct count with 1Hz/second resolution

NiCad pack and charger

Low battery indicator

Just £79.95

plus carriage

YUPITERU VT225



Dedicated civil/military airband scanner

High speed search/scan
Great performance
100 memories

Low Price £269.00

plus carriage

LAB

The new improved Lowe Airband Groundplane antenna!

Better materials and better performance.

Just £29.95

plus carriage.

LEP 300

High quality ear-phone

Low price £9.95

Plus loads more receivers, scanners accessories and books!

AT2000 ATU £99.95

CTU8 ATU £49.95

Magnetic Longwire Balun £49.95

MLB Isolator £49.95

T2FD antenna £175.00

SP1 short-wave splitter £65.00

SP2S splitter/attenuator £125.00

SP3 scanner splitter £69.95

Magnetic Transfer Antenna £175.00

AR8000 scanner £349.00

CX201 coax switch £18.95

ICR10 Scanner £349.00

Modemaster decoding software £139.00

RCON radio control software £49.95

NV100 Night Vision scope £299.00

POOLEY'S FLIGHT GUIDE 1996 £7.00

Airwaves 97 £8.95

FERRELL'S CONFIDENTIAL FREQUENCY LIST £19.95

UK scanning Directory £18.50

Klingenfuss Short Wave Frequency

Guide £20.95

Klingenfuss Internet Radio Guide £19.95

Klingenfuss Guide to Utility Stations £29.95

Klingenfuss Guide to Fax Stations £19.95

Klingenfuss Super Frequency List on CD ROM £19.50

Eavesdropper CD ROM £19.50

STOP PRESS!



We've just found this amazing new active antenna for GPS receivers. Works with GPS45's and others and is complete with 5m cable. BNC plug and magnetic base - ideal for mobile applications and the price?

An even more amazing £39.95

Bristol & Wales
79 Gloucester Road,
Patchway,
Bristol BS12 5QJ
Tel 0117 931 5263 Fax
0117 931 5270

North East
Unit 18B
Airport Industrial Estate
Newcastle, NE3 2EF
Tel 0191 214 5424 Fax
0191 214 0761

South West
117 Beaumont Road
St Judes
Plymouth PL4 9EF
Tel 01752 257224 Fax
01752 257225

FREEPHONE
0800
174749
for orders
only

Low Electronics Ltd
Chesterfield Road
Matlock
Derbyshire DE4 5LE

Tel 01629 580800
Fax 01629 580020
Email: info@lowe.co.uk
URL: http://www.lowe.co.uk

Need more info? We've got some great info packs available to help you choose the most suitable products for your needs. Packs of interest to amateur radio operators include HF transceivers, VHF transceivers, Antennas, Data Comms and Amateur accessories. We also have packs dedicated to GPS receivers, scanners and decoding. To order any of our packs, just send us four first class stamps for each pack requested plus your full name, address and telephone number to our Matlock address and we'll do the rest!

Up & Coming RAE Classes

A Novice Licence Course (City & Guilds 7730) is being held by the **Nunsfield House Amateur Radio Group** at Alvaston in Derby. The course takes the form of 20 two hour sessions held on Saturday mornings between 1000 and 1200. The course will begin on **Saturday 6 September**.

Interested parties should contact **Frank Whitehead G4MLL** on (01332) 512080.

The **Bexley College** are planning to hold the City & Guilds Amateur Radio Course (RAE) from **September 1997**. The course will run for an academic year finishing in May 1998, with students able to sit the May '98 RAE.

Interested enthusiasts should contact the **Guidance & Admissions Centre** on (01322) 442331, Ext 3888/3833 and leave their name, address and telephone number and an enrolment form will be mailed to them during the summer break.

This year **Ray Oliver G3NDS** will be running courses for the RAE at both Newbury and Swindon Technical Colleges and a course for the RSGB 12w.p.m. Morse tests will commence in January '98 at Newbury College. The details are as follows:

Newbury Technical College -

Tel: (01635) 35353.

A RAE course commences **Thursday 11 September '97**, 1900-2100, Course No: 99018A. Morse Code for Amateurs (RSGB 12w.p.m.) starts **Tuesday 6 January '98**, 1900-2030, Course No: 99208B.

Swindon Technical College -

Tel: (01793) 498300.

A RAE course commences **Monday 15 September '97**, 1900-2100, Course No: UFF305.

Details are also available from Ray on (01672) 870892.

Courses for the Radio Amateur commencing **September '97 at Stretford Manchester**: RAE on Monday evening 1800-2030 (to sit the December '97 exam), RAE on Wednesday, half day, (unemployed and retired people). Enrolment is 2-5 September '97 inclusive. There will be another evening course starting after the December exam.

Further information from **John Beaumont G3NGD**, North Trafford College, Talbot Road, Stretford, Manchester M32 0XH, **Tel: 0161-886 7070.**

The **Keighley College** are again running their RAE class beginning **Tuesday 16 September** at Harold Town Building, Dalton Lane, Keighley, W. Yorkshire, from 1900-2100. Enrolment is from Wednesday 3 to Saturday 6 September.

Further information from the College on (01535) 618556 or the course tutor **Ralph Turner G3VRX** on (01274) 586882.

WRN to Launch German-language Service

London-based international radio channel World Radio Network announced today that it will launch a German-language service at the forthcoming Internationale Funkausstellung, IFA '97, in Berlin.

The new 24 hour-a-day channel will bring German programmes from the world's leading international radio broadcasters to listeners across Germany, Austria and Switzerland via an audio channel on the Astra satellite system.

The new service, WRN3, complements the existing 24 hour-a-day English-language radio channel, WRN1, which is heard across Europe via direct-to-home satellite and cable systems in key cities, and the multi-lingual service, WRN2, which is also available via satellite.

"The launch of this new service is an important step in World Radio Network's development", said Karl Miosga, Managing Director. "Germany is an important market for international radio stations, and the launch of WRN3 makes it easier for broadcasters who have relied solely on short wave for the past 70 years to reach listeners with high quality sound with their unrivalled mix of high quality radio programmes.

World Radio Network's existing English-language service already carries 24 public radio

stations from around the world, and reaches audiences across Europe, Africa, the Middle East, Asia, the Pacific and North America. We now have the opportunity to serve a more tightly focused audience in the heart of Europe."

WRN3 will be launched at the important biannual consumer electronics fair, IFA, to be held in Berlin from 30 August to 7 September. More than 500 000 visitors from central Europe, with a large proportion from German-speaking countries, attend the spectacular event. IFA '97 will also see the public launch of Digital Audio Broadcasting - DAB - the next generation of radio

transmission. WRN is carried on introductory DAB services in Britain.

"Combining the launches of DAB and WRN3 at IFA '97 puts World Radio Network at the forefront of broadcasting developments," commented Miosga. "WRN is committed to using all possible technologies to reach potential listeners around the world.

Currently our direct transmissions reach all parts of the world except Latin America and the Russian Far East. But our ground-breaking Internet audio services mean that anyone with a computer connected to the World Wide Web can listen in live to our English service.

We will make WRN3, the new German service, available on the Internet as a live audio stream as well".

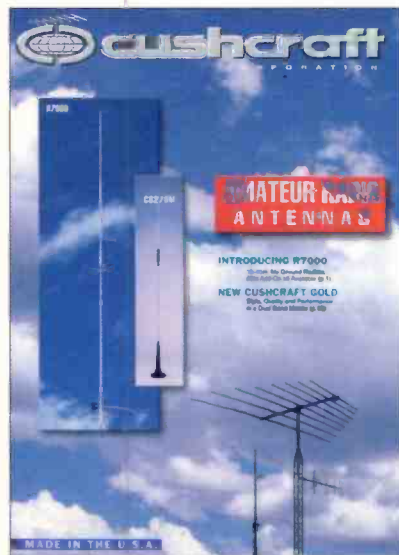
Full details of the programmes on WRN3, and technical reception data will be available in advance of the launch at IFA '97.



Anniversary Success

Back in 1996 the **International Short Wave League (ISWL)** celebrated its 50th anniversary and the special callsign **GB50SWL** made contact with over 9000 licensed amateur and short wave listeners world-wide. The ISWL would like to extend its thanks to all those stations that took the time to work the callsign or send in a reception report helping to make the Golden Jubilee year a resounding success.

If you want to find out more about the ISWL, write to:
The ISWL HQ, 3 Bromyard Drive, Chellaston, Derby DE73 1PF.



ISO9002 & New Cat From W&S

After a period of concentrated effort and organisation Waters & Stanton are pleased to inform us of their recent ISO9002 Quality Assurance Certification for the supply and servicing of radio communication equipment and electronic products.

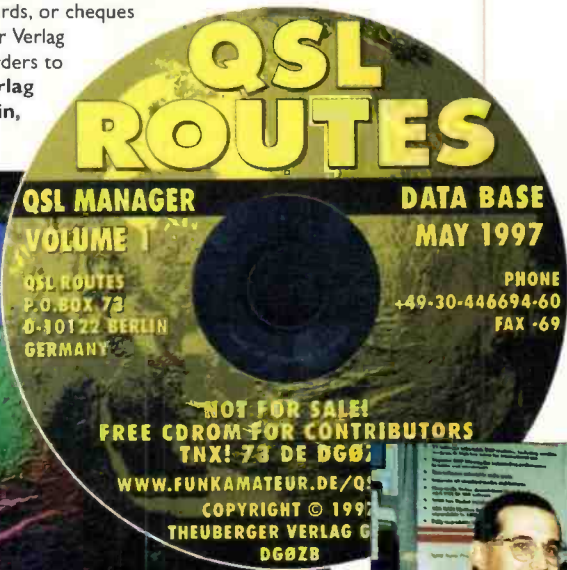
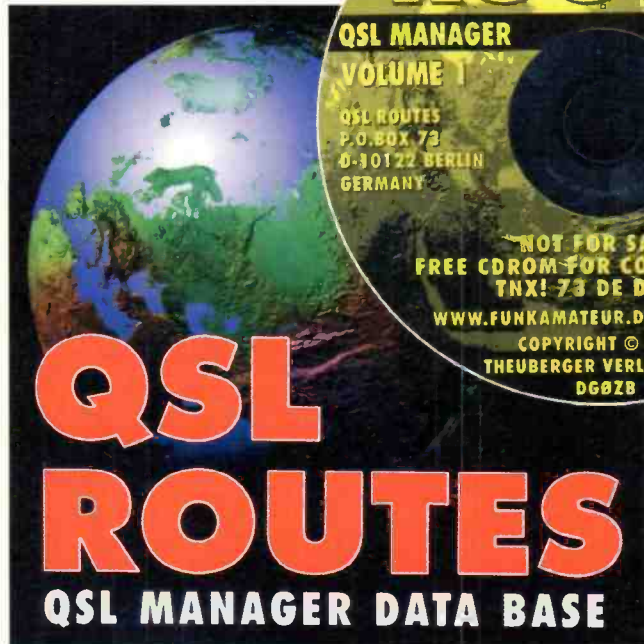
W&S believe that they are the first company in the amateur radio retail field to obtain certification. This achievement, they say, is indicative of their commitment to provide high standards of service to all their customers.

Newly introduced is the latest Crushcraft Antenna Corporation catalogue featuring antenna and accessories. W&S have a supply of freely available catalogues. Telephone (01702) 206835 or FAX: (01702) 205843 or write to **Waters & Stanton, 22 Main Road, Hockley, Essex SS5 4QS** today for your catalogue and price list.

Now On CDROM

The **QSL Routes 1997** is now available on CDROM. In this edition, compiled by DL9WVM DL5KZA, SM5CAK and SM5DQC you will find not only more than 87 000 managers but several thousands of QSL cards of DX stations and numerous detailed information by active DXers from all over the world.

The price of **QSL Routes 1997** on CDROM is \$30 or 40DM, includes surface mail postage and packing. Air mail is \$35 or 50DM. Payment is accepted by Visa, Euro and American Express cards, or cheques can be made payable to: Theuberger Verlag Berlin. The address to send your orders to is: **QSL Routes, Theuberger Verlag GmbH, PO Box 73, 10122 Berlin, Germany.**



Dayton Deal for Nevada

The recent Dayton HamVention held in Ohio, USA, was the setting for the agreement of an exclusive distribution agreement between Nevada and AEA.

Phil Jeffrey, Nevada Commercial Manager, completed the agreement with Randy Gawtry, President of Timewave Technology Inc. - the new owners of AEA - at the world famous, annual stateside radio mecca.

Having recently acquired AEA, Timewave Technology are setting out to improve and develop the AEA range of products and stream line production techniques.

The first benefit of the above is a price reduction for the popular PK12 t.n.c. which will now cost just £99.00. Timewave produced units began shipping in June this year.

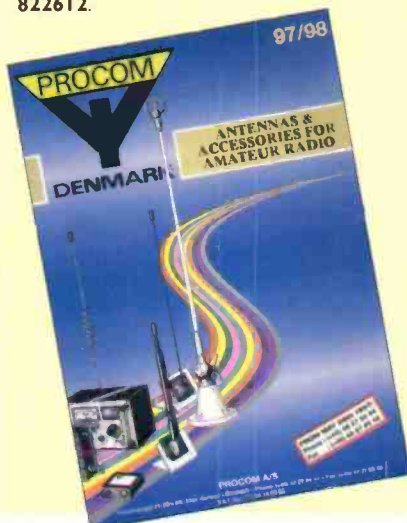
Nevada can be contacted at **189 London Road, North End, Portsmouth, Hampshire PO2 9AE. Tel: (01705) 662145, FAX: (01705) 690626.**



PROCOM Catalogue

Danish antenna specialist PROCOM have just launched their latest antenna and accessories catalogue. Covering both professional and amateur products this superb catalogue is a must.

To obtain your free copy contact **CTS - Communication Technical Services Ltd., Unit 15 The Gatwick Metro Centre, Balcombe Road, Horley, Surrey RH6 9GA. Tel: (01293) 822602, FAX: (01293) 822612.**



National Transmitter News

2 July 1997 Old Coulsdon Surrey. A new television relay station opened, located some 8km south east of Croydon. It is located on a mast at the northern end of St. John's Hill. The relay is designed to bring good television, NICAM and teletext reception to approximately 780 people in Old Coulsdon including Burcott Road, Caterham Drive, Haydon Avenue, Lodge Hill, Old Lodge Lane, Rydons Lane and Waterhouse Lane.

Unlike most television relay stations, Old Coulsdon broadcasts with horizontal polarisation, receiving antennas therefore must be mounted with their elements also in the horizontal plane.

Station Details

Channels:	BBC 1 (South East)	48
	BBC2	64
	ITV (Carlton/LWT)	45
	Channel 4	66
Polarisation:	H	
Antenna Group:	E or W	
ERP:	6W	

Send your news to Kevin Nice at the Editorial Offices in Broadstone.

Editorial



The annual pilgrimage to Ham Radio 97, held, as usual, at Friedrichshafen on the shores of Bodensee, in deepest Germany, has come and gone. I always find this event to be particularly pleasant and interesting, meeting many friends who regularly attend from all over Europe and beyond.

Each year more and more British companies seem to be finding their way over to Friedrichshafen, returning year after year. In spite of the inclement weather - 'English Weather' as the Germans call it - more

visitors turned up for the weekend to enjoy what has become a really international amateur radio social event.

In previous years I have really enjoyed looking round the 'Flöhmarkt' - I always reckon that "what I want must be in there somewhere, if only I knew what it was that I wanted!" But this year I felt just a bit disappointed.

Talking about Fleamarkets, I often wonder just how much of the gear that turns up was bought at a previous Fleamarket with the thought that it would be used for some esoteric project in the

near future. The 'near future', I find, stretches into the middle distance and either technology overtakes it, or I get interested in something else! It would be interesting to know just how many kits and old radio sets bought at rallies remain unfinished or unmodified.

Computers

In my July 'Editorial' I asked you to let me know what computer you had and what you used it for in connection with the listening hobby. Please keep the responses coming, the more information that I get the more reliable will be the results.

Dick Ganderton G8VHF

Dear Sir

I have followed with some dispassion the letters about the background colours to some of the recent articles in SWM. Are we in danger of using computer DTP just for the sake of using it, or perhaps just to show how wonderful the DTP package is rather than remembering the main objective of this fine magazine? That must be to provide interest and information to the reader, to sell copy and hence advertising space. Interesting it is, readable only sometimes with difficulty.

Take page 39 of May '97. Column one was a pleasure to read, but by two, three and four my eyes really did suffer and in my opinion, it spoilt the reading. Similarly, page 49 March '97 was not quite so hard to read, but the background didn't add anything to the article, other than cost. In June '97, page 92, you remove the two-tone blue that makes reading such fine print easy and replace it with black ink on two-tone grey, a wonderful job at camouflage. As I wanted to check some of the spellings on my own log, it proved to be quite difficult and very frustrating, trying to type and hold a magnifying glass at the same time, something I have never had to resort to before. Can we please have the two-tone blue back?

Now, if you really want to add colour to the mag, then let's put it into your 'Propagation Extra' page 60, May '97. I am not really up on the technical side of radio, but would like to learn, so these are the sort of things I find interesting as I am sure they hold the key on where and when to listen, particularly when compared with one's own logs. I found it hard to differentiate Long X-ray from Effective Sun Spot Number on the basis of colour alone and the 3D version in June lost most of the Effective Sun Spot Number, and it was difficult to align the peaks and troughs with the day.

One last comment, with the wonders of DTP, I would hope to see figure numbers tie up with articles, as I have already said, I am keen to learn and read with great interest, articles such as page, 30, 31 and 34 June '97, but I am sure something is really wrong here.

Please see this letter as an honest observation and not just knocking the work that goes on to produce SWM, a magazine which has been an inspiration to me to become part of the world of radio. I hope to see you all at the Leicester show again this year.

Brian Heath
Stapleton
Leicestershire

I am always interested in comments from readers. By now you will have seen that we have redesigned the magazine. Our Art Department has tried to take into

Letters

account the various comments regarding backgrounds and legibility in selecting the new typefaces. We have had problems with the new typeface used for some parts of the magazine being too light, so it has been changed to try to improve matters. SWM was one of the first magazines to use DTP and we have always tried not to get carried away by the ability to do things that were unheard of with the older technology. Ed.

Dear Sir

I have been scanning for three years now and have obtained good advice from *Short Wave Magazine* as needed. I have now established a listening station which seems to be a natural sequence from starting with a hand scanner.

In my earlier days I was a Merchant Seaman and every English ship was equipped with Marconi Marine sets as well as Radio D/F sets, etc. The operator was employed by the Company and the whole was hired out to the ship owner. Sets like *Worldspan*, *Oceanspan*, etc. were used to call all over the world by those highly trained operators.

I have tried to find out what happened to all this equipment, we see Racal equipment, but never any of those excellent Marconi machines. As a Navigation Officer I was well accustomed to the Marconi *Lodestone* D/F set and in a world where Eddystone Receivers still abound, where do I find any source of Marconi sets? Are you able to throw any light on this matter please?

Ronald Howe
Sittingbourne
Kent

Anyone out here able to help Ronald in his quest for the elusive Marconi Marine sets of yesteryear? Ed.

Dear Sir

Re the problems of Chris Sloan of Cupar Muir, Fife, July edition of SWM.

Like Mr Sloan, I am a newcomer to this field, although my interest and involvement in aviation goes back many years. I am now 69 and offer details of my set up from which I get very good results.

On the hf. (oceanic, etc., frequencies) I use a

Lowe HF-250 with a long wire of 15m, 4m above ground level with an approximate orientation of 310/130° magnetic. This terminates in a balun by Lowe Electronics. The output is fitted with an audio noise reduction filter by Lake Electronics, which reduces 'hiss'.

Naturally the reception depends on prevailing climatic/ionosphere conditions, but with this factor in mind, I can clearly receive 4-way transmissions between Gander, Shanwick, Reykjavik and aircraft. Equally, with Santa Maria and New York.

For the v.h.f./u.h.f. I use an AR3000 and an AR8000 coupled to the same discone antenna also at approx. 4m above ground level. The reason for two units is so that I can follow, in succession, transmissions from the approach and the tower of my local airport without the need to keep switching frequencies.

Trusting this will be of some use to Chris Sloan.

J. M. Barrett
Norwich
Norfolk

Dear Sir

Having fairly recently found an interest in radio after initially purchasing a Grundig YB500 receiver, I followed this with an even more expensive v.h.f./u.h.f. scanning receiver, a Tandy 'Realistic' PRO-26.

But having, with its purchase, quite a good coverage from 180m to 1.3GHz, I have been very surprised to be able to pick up stations from around the world, both broadcast and amateur, as well as somehow picking up the BT land line (?) from the nearby telephone pole using the Grundig radio at 1680 and 1780kHz.

Anyhow, in trying to follow some of the more technical details covered in your excellent magazine, which I find extremely interesting, despite being a beginner in the first division. I bought, in good condition, a 1933 book by a Robert Hutchinson on the basic principles of wireless and I was very surprised by the number of new discoveries and applications of wireless that had come about in just that year - a fact the author covers in his preface with some examples, two of the many being Quiescent Push-Pull and Class B amplification, but he also gives auto volume control and many different types of valves such as diode triodes, double diode pentodes, variable MU, "Catkins" and "West-ectors", loudspeaker baffles, iron dust cored coils and more.

It was plain that in 1933 'wireless' was really taking off and I was very surprised at the level of technology of the day. I was wondering if you knew the chronology of all the major developments in

radio from the early part of the 1900s to today - and in particular the ones that made the most difference in improvement? Perhaps you could devote a little column space to this information to help with the enlightenment of the many people who, like myself, are rank beginners, but who, nonetheless, enjoy your magazine a great deal.

PS. Why did you stop giving the details of the types of equipment used by the listeners in the logs in the 'Long, Medium & Short' column? It gives an idea when it comes to the practical performance of various models of equipment, if admittedly a non-scientific one.

Unfortunately the writer of this interesting letter ran out of paper just as he got to his name. The 'Equipment list' in 'LM&S' is only published quarterly so as to save valuable space. Ed.

Dear Sir

I recently bought my first short wave receiver and have been enjoying the time consuming pleasures of listening to broadcasts in English from all over the world. However, confusion is beginning to reign as I receive requested details of broadcast schedules from lots of stations.

All the major stations highlight satellite reception and to some extent play down short wave radio. Radio Austria, Radio Sweden, RTE Ireland, Radio Vlaanderen, Brussels, etc., all suggest satellite reception. Indeed Radio Austria suggests that I buy an Astra Digital Radio (ADR). On top of this I read in the July 'Communique' of the WorldSpace plans to launch a portable satellite receiver.

I even wrote to one of your major advertisers who replied that ADRs, etc., were unknown to them. Who sells them? Are they expensive? Is s.w. doomed? It seems odd to me that what appears to be a major quality means of broadcasting passes almost unmentioned and that none of your advertisers produce appropriate equipment.

Sam Fannin

Murcia

Spain

Dear Sir

With reference to John Wilson's review of the Drake SW2 h.f. receiver, I, as always, enjoyed the article very much indeed. I feel however in fairness to the Lowe HF-150 and HF-225, which are compared to the Drake SW2, that an important point has been omitted.

John fails to mention that the smallest tuning increment on the Lowe receivers is 8Hz while on the Drake it's 50Hz. While this may not be a disadvantage for general short wave listening, it is very much so when used for decoding RTTY and similar signals. This fact has been frequently pointed out by Mike Richards in his popular decoding articles.

If I remember correctly Mike recommends that a suitable receiver for decoding should be tuneable in increments of not more than 20Hz. I have been a short wave listener on and off all of my life until deciding to sit the RAE in my 69th year and fortunately passing.

William Tait MM1BJU
Midlothian

Dear Sir

I have just read with interest the review of the Drake SW2 receiver in your July issue and noted that, again, the manufacturers, not just Drake, have missed out on a simple, but most useful, addition to the remote control handset. It even gets a near-miss mention in the review, where Mr Wilson says the remote can be used to mute the audio so the wife can hear the soaps on the television (or was that another review?)

As a commercially available infra-red link from

a hi-fi to headphones is a simple plug-in accessory, how come nobody has thought of building in the infra-red sender to a radio, putting the receiver in the remote control, and including a standard 3.5mm stereo jack socket, into which can be plugged the user's favourite 'cans'.

I suggest a stereo jack, then when the idea catches on, the standard will be established. Try building a pair of mono headphones in the local, or mail-order shops! Then, also, those receivers fitted with broadcast f.m. will have the ability to provide remote stereo audio.

Thank you for discontinuing the practice of printing text over funny colour backgrounds. I was on the verge of cancelling my newsagent's order, as I couldn't read a fair proportion of the text, making the whole article useless. Now, if you were to make the print a little bolder, as an example, see the text of the ads for Martin Lynch. Although the print size is smaller, it is bolder and more legible. For those of us with old eyes, it is sometimes necessary to resort to a 60W spotlight and the 'helping hands' lens to read the fine lettering, while that of the ads is nice and clear!

Before I wind up, a trivial snippet for your amusement. The only computers in my radio room are the ones between my ears and the ones that run the synthesiser and memories in my scanner. I prefer my ancient old Eddystone EC10 for h.f. with its nice, smooth swoosh-box v.f.o. The Drake may be a nice RX, but it is way beyond my budget, although I am thinking of the AKD Target-3.

And finally (did I hear you sigh "Thank God") the Lake NRF2 really does work! Thank you Mr Lake!

E. Bray
Warrington
Cheshire

PS. If a manufacturer, in the near future, comes up with an IR audio link, you will know where they got the idea!

You will see that we have made the print a tad bolder. I hope that you find it better. Good idea with the infra red headphone link - just sit in your favourite armchair and tune around the bands without even getting up - or in my case, waking up! Ed.

Dear Sir

Regarding your 'survey' of computers used by *Short Wave Magazine* readers, mine is an ICL DRS20 model 100E office model, housed in a floor standing cabinet measuring 100 long x 700 high x 240mm wide. The v.d.u. is a separate, free standing unit hard wired into the cabinet. The cabinet houses both the hard and floppy (8in of course) drives.

The floppy when running, sounds as though it's carving bits and bytes in stone. I use it for log keeping, letter writing, etc. At the moment I am looking for a printer of similar vintage. No, it's never heard of the Internet because the copyright date displayed on the screen is 1986. By the way, I got it for free!

Best wishes to all at SWM.

V. Prier
Colyton
Devon

So you're definitely not in the market for the CD-ROM version of the Call Book, are you? However, I must say that 1986 is quite modern as computers go and, as the Internet has its roots in the early seventies, I'm sure your DRS20, or at least its manufacturer, knows all about it! Ed.

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£5 VOUCHER TO SPEND ON ANY
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SWM Services

Subscriptions

Subscriptions are available at £25 per annum to UK addresses, £30 in Europe and £32 (Airsaver), £37 (Airmail) overseas. Subscription copies are despatched by accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both *Short Wave Magazine* and *Practical Wireless* are available at £45 (UK) £54 (Europe) and £58 (rest of world).

Components for SWM Projects

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

The printed circuit boards for SWM projects are available from the SWM PCB Service, Badger Boards, 87 Blackberry Lane, Four Oaks, Sutton Coldfield B74 4JF. Tel: (0956) 374918 (Mon.-Fri.9am-5.30pm).

PHOTOCOPIES AND BACK ISSUES

We have a selection of back issues, covering the past three years of SWM. If you are looking for an article or review, or whatever that you missed first time around, we can help. If we don't have the whole issue we can always supply a photocopy of the article. Back issues are £2.85 each, photocopies are also £2.85 per article, plus £1.00 for subsequent parts of serial articles.

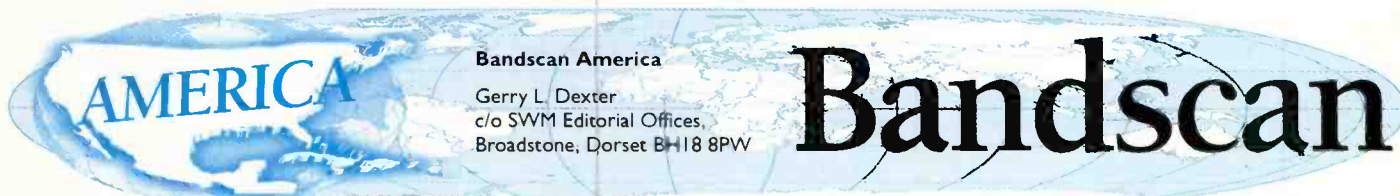
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Orders for back numbers, binders and items from our Book Service should be sent to: PW Publishing Ltd., FREEPOST, Post Sales Department, Arrowsmith Court, Station Approach, Broadstone Dorset BH18 8PW, with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in Sterling.

Credit card orders (Access, Mastercard, Eurocard or Visa) are also welcome by telephone to Broadstone (01202) 659930. An answering machine will accept your order out of office hours and during busy periods in the office. You can also FAX an order, giving full details to Poole (01202) 659950.

Technical Help

We regret that due to Editorial time scales, replies to technical queries cannot be given over the telephone. If you require help with problems relating to topics covered by SWM, please write to the Editorial Offices, we will do our best to help and reply by mail.

**Bandscan America**

Gerry L. Dexter
c/o SWM Editorial Offices,
Broadstone, Dorset BH18 8PW

Bandscan

A new short wave broadcaster is due on the air from the United States before long. WWBS, with headquarters in Macon, Georgia, will transmit from a 50kW transmitter at the town of St. Mary's, Georgia.

The station's owner-manager is Charles C. Josey, operating as 'Oil and Wine Ministries' (PO Box 18174, Macon, GA 31209). They have a January 1998 on-air target date. 11.910 has been given as a likely frequency. Don't expect programming very much different from the stuff one hears on other US commercial short wave stations. The intended main coverage area of WWBS is - Europe!

The well known Christian Science Monitor's Monitor Radio news service is in the process of being sold. A letter of intent has been signed which, if put into effect, would make 'World Times, Inc.' the successor to Monitor Radio. World Times, like the Christian Science organization, is based in Boston. Since 1979 it has published *The World Paper* a weekly newspaper distributed on five continents but not, so far, in the US.

The Christian Science Church also hopes to sell its remaining short wave stations - WSHB, Cypress Creek, South Carolina and KHBI on the Pacific island of Saipan.

The agreement is contingent upon World Times obtaining commitments from enough stations to make taking over the news organisation practical. If things go ahead as planned the 'Monitor Radio' name will have disappeared from the airwaves by the time you read this.

Christian Science will continue to air its religious programming on its short wave stations

until such time as they are sold (or leased) to someone else. After that, the Church will purchase time on various short wave stations around the world.



Engineers work on the transmitter of Christian Science/Herald Broadcasting's WSHB, Cypress Creek, SC. The station, with its sister outlet on Saipan, is for sale.

The owner and founder of WRNO, new Orleans, Joe Costello, passed away back in April. In getting the Federal Communications Commission to grant him a license to broadcast on short wave, Costello was almost singlehandedly responsible for the subsequent explosion in privately-owned short wave stations.

Before that time the United States had only the Voice of America and three private broadcasters which had been on the air for at least 20 years: KGEI, San Francisco (now defunct), WINB, Red Lion, Pennsylvania and WYFR, Florida, which has an ancestry dating back

over decades, owners and call letters. Much, if not all of the religious programming currently on WRNO will probably disappear.

The Voice of America, in co-operation with the Jet Propulsion Laboratory, conducted some tests of digital short wave broadcasts from the VOA's Delano, California site. After an opening identification announcement (in standard amplitude modulation) the rest of the test was not copyable due to the digital transmission mode.

In another VOA note, the Voice of Greece is now being carried 12 hours per day by VOA transmitters in the US providing listeners here with a near-perfect signal most of the time. A new station in Ecuador is Radiodifusora Luciernaga del Condor in Yanzata, Zamora Chinchipe which is now active on 3.569 or a little bit lower. The full schedule is unknown but it has been on the air until past 0200.

Forced To Dismantle

Speaking of Ecuador, HCJB has announced that it will be forced to dismantle its main short wave transmitting site at Pifo. The government is building a new international airport near the site and, needless to say, all those huge antennas would make for quite an air traffic hazard. It will take three or four years for the site to be pulled down (and the airport to be completed).

HCJB's future short wave operations are, at present, open to speculation. The Pifo site contains 11 transmitters and 32 antenna systems, all of which will have to be removed. Also from Ecuador comes news that Radio Luz y Vida (4.850) has been reactivated. It's being heard around 0100 with Spanish language religious and cultural programming.

Rallies

July 26: The Hove Computer Fair to be held in the 'Great Hall' of Hove Town Hall. This 880m² event will be filled with computer stands, with impressive bargains offered for sale, including systems, monitors, printers, an enormous range of business and games software. Doors open at 1000 and the event closes at 1600. Admissions is £2 for adults, OAPs and under 16s £1. Steve Bealch on (01342) 842966.

July 27: The Colchester Radio & Computer Rally with a hobbies and leisure fair is to be held at St Helena School at 10am. This is a family event. Further info. from Frank Howe G3JFJ on (01206) 851189.

July 27: The Rugby Amateur Transmitting Society are holding their 9th Amateur Radio Rally at the BP Truckstop on the A5, three miles east of Rugby, 24 miles NW from Junction 18 on the M1 Motorway. Doors open from 1000 and admission is £1 per car. Facilities include a cafe and toilets. Talk-in on S22 by GB8RRR. Pitches are £7 pre-booked before 14 July or £10 on the day. Arthur M0ASD on (01788) 550778.

***July 27:** The Scarborough Amateur Radio Society is holding its annual Radio, Electronics and Computer Rally in The Spa, South Foreshore. Doors open at 1100. The rally features all the usual traders, radio, electronics, components, computer hardware and software. Morse tests are available on demand, but please remember the fee and two passport type photographs. Further details from the Rally Manager/Secretary Ross Neilson on (01377) 257074 after 1800.

August 2: The Hastings Computer Fair it to be held in the White Rock Theatre, opposite the pier. Computer equipment will be offered for sale at discounted prices. Admission is £2 for adults, £1 for OAPs and under 16s. Doors open 1000 to 1600. Steve Bealch on (01342) 842966.

***August 3:** The RSGB Woburn Rally is to be held at Woburn Abbey, Bedfordshire. Norman Miller G3MNV on (01227) 225563.

August 9: The Worthing Computer Fair is being held at the Assembly Hall in Stoke Abbott Road, which is the centre of Worthing. There will be approx. 80 stands full of computer equipment at very competitive prices. Admission is £2 adults, £1 OAPs and under 16s. Doors open 1000 to 1600. Steve Bealch on (01342) 842966.

***August 10:** Flight Refuelling ARS Hamfest '97 will take place at the Flight Refuelling Sports Ground, Merley, Wimborne, Dorset. The event will run from 1000 to 1700 and will include the usual mix of traders, Bring & Buy, craft exhibitors, car boot sale and field events. Talk-in will be on S22. Richard Hogan G4VCQ on (01202) 691021.

August 10: The Derby & District Amateur Radio Society are holding their 40th Derby Mobile Rally at the Littleover Community School, Derby. More information on (01332) 556875.

August 15: The Cockenzie & Port Seton Amateur Radio Club are holding their 4th Annual Radio Junk Night at the Cockenzie & Port Seton Community Centre, South Seton Park, Port Seton. Doors open 1830 to 2130. Bring along your own junk and sell it yourself. Tables will be provided on a first come first served basis (no charge for the table). Raffle at approx. 2100. Refreshments will be available. Disabled persons access. Entrance fee is £1 for all persons. All money raised is donated to the British Heart Foundation. Further details from Bob Glasgow G4UYZ on (01875) 811723.

August 16: The Crawley Computer Fair will be held at The Hawth Centre, Hawth Avenue, Crawley. The Hawth is signposted around Crawley with brown signs. Usual computer bargains to be had. Doors open 1000 to 1600. Admission is £1.50 adults, 75p for OAPs and under 16s. Steve Bealch on (01342) 842966.

August 17: The Kings Lynn Amateur Radio Club are holding their 8th Great Eastern Computer & Radio Rally at a new venue, this is at Wallington Hall, between Kings Lynn and Downham Market. Features include a spacious indoor area with major exhibitors, outdoor car boot area (unlimited space available). Bring & Buy, free parking, talk-in on S22, refreshments available and easy access for disabled persons. For booking or more information call Ian G0BMS on (01553) 765614 or @GB7OPC Packet BBS or E-mail ian on ian@g0bms.demon.co.uk

August 17: The 2nd Cardiff Amateur Radio & Computer Fair will be held at The Star Sports Centre and Recreation Centre, Splott, Cardiff. Open from 10.30 to 1500. Further details from Stuart Robinson GW0WMT on (01222) 613070.

August 23: The Hove Computer Fair is being held in the 'Great Hall' of Hove Town Hall. This 8000 square foot event will be filled with computer stands, with impressive bargains offered for sale, including systems, monitors, printers, an enormous range of business and games software. Doors open at 1000 and close at 1600. Admission is £2 adults, £1 for OAPs and under 16s. Steve Bealch on (01342) 842966.

August 24: The Torbay ARS are holding their rally at the Torbay Leisure Centre, Paignton. Doors open at 1000. Talk-in on S22 by GB8JA/P. Further details can be obtained from Alan G7UEK on (01803) 214445.

August 24: The Galashiels & District Amateur Radio Society's Open Day & Rally will take place at The Volunteer Hall, St John's Street, Galashiels from 1100 to 1600. There will be traders present along with a Bring & Buy stall, a raffle, refreshments and a bring & sell feature. Talk-in on S22. Tel: (01896) 850245 or (01896) 755943 (evenings only).

August 25: The Huntingdonshire Amateur Radio Rally (held Bank Holiday Monday) is to be held at Enulf Community School, St Neots, Cambridgeshire (near Tesco Superstore on A428). Doors open at 1000 and admission is £1. There will be hot and cold refreshments available. Also features include a car boot sale on handstanding. Talk-in on S22. David Leech G7DIU on (01480) 431333 (between 0900 and 2100).

August 30: The Annual Wight Wireless and Computer Rally will be held at the National Wireless Museum, Arretton Manor, Nr. Newport, Isle of Wight. Open 1000 to 1700. Free entry and plenty of free parking. Free stalls for both private and business use. There will be refreshments, exhibitions and collections for RAIBC. Talk-in on S22. Douglas Byrne G3KPO on (01983) 567665.

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

The Editorial staff of SWM cannot be held responsible for information on Rallies, as this is supplied by the organisers and is published in good faith as a service to readers.

If you have any queries about a particular event, please contact the organisers direct.

Editor

In Colombia, occasional transmissions are being heard from Colmundo Bogota just under 6.064 (nominal 6.065) now using a new five kilowatt transmitter. Try around 0000 to as late as 0600UTC.

Radio Mira has resumed operations on 6.015 Recent activity from Bolivia includes the following:

4.410	Radio Eco	4.875	Emisora Cruz del Sur
4.450	Radio Frontera	4.885	Radio Saranenda
4.472	Radio Movima	4.924	Radio San Miguel
4.552	Radiodifusora Tropic	4.965	Radio Juan XXIII
4.600	Radiomemisora Villa Montes	5.027	Radiodifusora Mineira
		5.952	Radio Pio Doce
4.600	Radio Perla del Acre (also here)	6.015	Radio El Mundo
		6.025	Radio Illimani
4.631	Radio 11 de Octubre	6.105	Radio Panamericana
4.649	Radio Santa Ana	6.085	Radio San Gabriel
4.702	Radio Eco	6.135	Radio Santa Cruz
4.720	Radio Abaroa	6.155	Radio Fides
4.778	Radio ANDES	6.195	Radio Metropolitana
4.855	Radio Centenario	9.625	Radio Fides

So far, there have only been a couple of brief, low power tests from that new Mexican station, XERTA, which is supposed to begin regular operation on 4.800 (an awful choice!). If you should catch this one, the address is: **Apartado Postal 653, 06002 Mexico, D.F., Mexico.**

Radio Mexico International is taking steps to increase its coverage. Soon to be added (perhaps already on the air) are a 10kW transmitter on 11.770 and a 50kW unit to operate on 15.430. Frequency 9.705, currently in use, provides pretty fair reception over much of the day.

Old Timer Reactivated

A real old timer has been reactivated (which is always good news). La Voz de Guatemala has reappeared on its old frequency, 6.180, complete with the marimba music so associated with this country. Try them during the late evening hours. As is always the case, short wave activity from Peru continues to be quite heavy. Here are some stations newly on the air and/or recently logged by North American DXers:

4.050	Radio Cristal, Arequipa
4.568	Radio Gotas de Orlo, Chiclayo, Lambayeque
4.750	Radio San Francisco Solano
4.765	Radio Rural Santarem
4.870	Radio Majestad, Huancayo, Junin Department
4.975	Radio Tupi
5.636	Radio Peru, San Ignacio
5.069	Radio Ondas del Sur Orient, Cusco
5.556	Radio Santa Fe, Santa Cruz, Cajamarca
5.980	Radio LTC, Juliaca
6.130	Radio Aparecida
6.261	Radio JVL
6.520	Radio Ondas del Rio Maranon, Aramango, Bagua
6.536	Radio Huancabamba
6.798	Radio Ondas del Radio Mayo, Nueva Cajamarca
6.998	Radio San Ignacio

The frequencies quoted are variable by a few hundred hertz. While North American-based listeners have two opportunities each day to go 'OA chasing' - the early morning hours around 0900-1100 and in the evenings from 2300 onwards, DXers operating from European locations are limited to the later period and often must trade sleep for their logs.

Stations Merging

Two Uruguayan stations are merging. Radio Libertad Sport (inactive on 6.045) was purchased by Radio Sarandi. The new organisation will concentrate on sports coverage and will be called 'Sarandi Sport', broadcasting on local medium wave, as well as satellite. It may well be that neither of the short wave frequencies of the formerly independent stations will be put to any future use.

Grassroots

AVON

Bristol International RC: Tuesdays, 2000. The Little Thatch Country Club, 684 Wells Road, Whitchurch, Bristol. All visitors are welcome. The club has been formed so that all radio enthusiasts, whether they be Licensed Amateurs, s.w.l.s or CBers can get together and have a good natter and do things that you do in radio clubs. PO Box 28, Bristol BS59 1GL.

RSGB City of Bristol Group: last Tuesdays, 7pm. New Friends Hall, Purdown, Bell Hill, Stapleton, Bristol BS16 1BG. August 19: The Internet - A live demonstration - will the 'Net interest you? Robin Thompson G3TKF on (01225) 420442.

South Bristol ARC: Wednesdays, 1930. Whitchurch Folkhouse Assoc., Bridge Farm House, East Dundry Rd, Whitchurch, July 30 - SBARC Club Bullseye Contest. August 6 - 70cm Activity evening & committee meeting. 13th - HF workshop for newcomers, 20th - 2m challenge - work all Bristol, 27th - Prep. for Bristol Radio Computer Rally. For more information ring (01275) 834282 on a Wednesday evening.

CHESHIRE

Mid-Cheshire ARS: Meetings held every Wednesday, 2000, at Cotebrook Village Hall, North of Tarporley, Cheshire. July 30 - MIDCARS annual BBQ at club HQ with master chef Ian G6DQO. August 20 - VHF on air, G8ZTT plus construction night. 27th - Informal. Ted Bannister GORBA on (01606) 592207.

DEVON

Exmouth ARC: Alternate Wednesdays at the Scout Hut, Marlpool Hill, Exmouth. July 30 - Fox hunt. 1930, starts from Scout Hut, Marlpool Hill. August 13 - Safety in the shack. 1930. 27th - Construction project. D. Fox G0NRR on (01395) 271880.

Torbay ARS: Fridays, 1930. ECC Social Club, Highweek, Newton Abbot. August 15 - BBQ - at the club. Peter G4UTO. (01803) 864528.

EAST SUSSEX

Hastings Electronics & RC: 3rd Wednesdays, 1930. West Hill Community Centre, Croft Road, Hastings. The club runs courses for the RAE and Novices and is approved as an examination centre for City & Guilds exams. Doug Mephram G4ERA. 8 The Close, Fairlight, E. Sussex TN35 4AQ or 'phone on (01424) 812350.

GREATER LONDON

Southgate RC: 2nd & 4th Thursdays. Winchmore Hill Cricket Club, The Paulin Ground, Flrs Lane, Winchmore Hill, London N21 3ER. August 14 - BBQ and d.f. hunt set-up and test. 28th - Radio on the air. Dave Michael G0ASA on 0181-482 6795. FAX: 0181-807 5366.

HAMPSHIRE

Horndean & DARC: 1st & 4th Tuesdays, 1930. Lovedean Village Hall, Lovedean Lane, Lovedean, Hants. August 5 - Natter night, 26th - My shack, video and diary. S. Swain (01705) 472846.

Southampton ARC: Mondays, 1900. This club is now up-and-running after some years of inactivity. New members welcome. Harold McIntyre on (01703) 737715.

HEREFORD & WORCESTER

Malvern Hills RAC: 2nd Tuesdays. Red Lion, St. Annes Rd. August 12 - Fox hunt (2m). Dave Hobro G4IDF on (01905) 351568 evenings and weekends.

HERTFORDSHIRE

Hoddesdon RC: Alternate Thursdays, 2000. Conservative Club, Rye Road, Hoddesdon. July 31 - Chairman's forum. August 12 - Visit to Fire Station, Old London Road, Hertford. 28th - Natter night. Don G3JNJ on 0181-292 3678.

Verulam ARC: 2nd & 4th Tuesdays, 2000. RAFA Club, New Kent Road, St Albans. New members and visitors welcome. August 26 - HF contesting. Ian Forsyth G0PAU on (01923) 222284.

KENT

Bromley & DARS: 3rd Tuesdays, 1930. The Victory Social Club, Kechill Gardens, Hayes. August 19 - BBQ. A. Messenger G0TLK. 0181-777 0420

Dover RC: Wednesdays, 2000 to 2200 during term time. Duke of York's Royal Military School, Dover. Morse classes and Novice Training Courses are also conducted between 1900 and 2000 on the same evenings. August 6 - Mobile operating and BBQ on Walmer Beach, 20th - Mobile operating from Samphire Hoe (this is believed to be the first operation from this area). Brian Hancock G4NPN on (01304) 821007.

Medway AR & TS: Fridays, 1930. Tunbury Hall, Catkin Close, Tunbury Avenue, Walderlade, Chatham, Kent. August 30 - Maritime mobile (visit to Southend by river boat). G3VUN. 40 Linwood Avenue, Strood, Rochester, Kent ME2 3TR. (01634) 710023.

NORFOLK

Norfolk ARC: Wednesdays, 1930. Formal and informal meetings at The Norman Centre, Bignold Road, Off Drayton Road between 'Asda' and Three Mile Cross Roundabout, Norwich. July 30 - Vintage radio evening, bring your oldest piece of radio equipment for all to see. August 3 - Woburn Rally, 6th - Night on the air, construction QRP and Morse practice, 13th - Video by Jack G3NJQ. 20th - Night on the air, construction QRP and Morse practice. Mike G4EOL. (01603) 789792.

West Norfolk Airband Monitoring Group: Regular informal meetings on Thursdays, 1930. Dave on (01485) 578183 for details.

SHROPSHIRE

Salop ARS: Thursdays, 2000. The Telesports Club, Abbey Foregate, Shrewsbury. July 31 - Summer social, August 7 - Night on the air and natter night, 14th - Final 2m fox hunt, 21st - Final preparation for Telford Radio Rally. Ian Davies G7SBD. QTHR or @ GB7PMB.

TAYSIDE

Dundee ARC: Tuesdays, 1900. Dundee College, Graham Street, Dundee. August 12 - Visit to Radio Tay. Allan Martin GM7ONJ, 11 Langlee Place, Broughty Ferry, Dundee, Tayside DD5 3RP.

WARWICKSHIRE

Mid-Warwickshire ARS: 2nd & 4th Tuesdays, 2000. St Johns HQ, Warwick Div., 61 Emscote Road, Warwick. August 12 - Fox hunt, 26th - Genealogy and family trees. G8XDL on (01926) 498115.

Stratford-upon-Avon & DRS: 2nd & 4th Mondays, 7.30pm. Home Guard Club, Main Street, Tiddington, Stratford-upon-Avon. July 28 - Construction competition. The Society are again organising a course of instruction for the Radio Amateur Examination of the City & Guilds of London Institute and further details can be obtained by writing to the Chairman of the Society, Mr J. Harris G8HJS, enclosing a stamped addressed envelope. The address to write to is: 57 Evesham Road, Stratford upon Avon, Warks CV31 2PB.

WEST MIDLANDS

South Birmingham RS: West Heath Community Association, Hamstead House, Fairfax Road, West Heath, Birmingham. August 6 - Visit by John Badger of Badger Boards. Don Keeling on 0121-458 1603.

WILTSHIRE

Trowbridge & DARC: 1st & 3rd Wednesdays, 2000. The Southwick Village Hall, Southwick, Trowbridge. August 20 - Natter night. Ian G0GR1 on (01225) 864698.

Club Secretaries: Send all details of your club's up-and-coming events to: Lorna Mower, Short Wave Magazine, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Please tell us your County and keep the details as brief as possible.

Build a 'Rif-Sniff'

“Just where on earth is that noise coming from?”
How many times have you heard or said that?
Joe Carr K4IPV provides some help for locating
radio noise problems.

Finding some radio frequency - r.f. - noise problems can be a pain in the anatomy. The stuff seems to radiate from everywhere. The trick is to locate the source, and from there you can devise strategies to defeat it.

Not all sources of electromagnetic interference are caused by intentional r.f. generators. Although some devices such as transmitters, induction heaters, and even receiver local oscillators can leak into the atmosphere, they are not the only problem. Almost any electrical device can cause problems.

When I first moved into my present home my h.f. receiver was all but useless because of the high 'hash' level of noise present. The problem turned out to be a 'dimmer' switch that replaced the ordinary light switch. Those devices use a duty-cycle thyristor circuit to lower the power level of incandescent lights, and the truncated waveform they produce is rich in harmonics (well into the h.f. bands!). I replaced all six dimmers with conventional switches.

Some years ago I served as a volunteer technical representative for the local television interference committee. We had the responsibility for finding the source of interference and recommending solutions. The Federal Communications Commission Field Engineering Office often deferred amateur radio and Citizen's Band complaints to the volunteer committee rather than "...making it official" (unless there was a suspicion of illegal radio operations!). During that two-year period I found a large number of non-radio sources of interference to a.m./f.m. broadcast bands, high fidelity audio and television equipment. Included were: electric motors, a microwave oven, loose tie-wires on a.c. mains transformers (on the pole outside the home) and electrical space heaters.

Many different forms of appliance were indicted, including (oddly enough) a dishwasher that has a thyristor controller inside to turn it on and off, a garbage disposal unit under the complainant's sink, a garage door opener, and the most raucous door bell-chime I've ever heard.

During another period of my life I worked installing both CB and landmobile two-way radios, as well as ordinary automobile radios. One of the main jobs for an installer of mobile electronic gear is to locate and suppress interference sources. And vehicles abound in such sources! The ignition and the charging system are

prime culprits, but also causing problems are things like the fuel-gauge sending unit, electric windows, and almost anything else electrical.

Even if your field of interest is limited to eliminating mobile ignition system noise, the task can be daunting. I've seen cases where an ungrounded hood (or is that 'bonnet?') caused massive noise problems. In other cases, noise was induced on the d.c. power lines that pass through the bulkhead from the engine bay to the passenger compartment, where it is re-radiated and picked up by the electronic equipment. In some cases, a non-earthed engine exhaust pipe will re-radiate noise.

All of those things are routinely found. But some are not so routine. Once (if you will permit me a nostalgic regression), I was working after school installing CB sets at the dawn of the CB era - late 1950s. The vehicle was a 1956 Ford Crown Victoria sedan. I tried everything in the technician's bag of tricks, and the CB kept clicking with ignition noise all across the band. The master technician, a rough and ready fellow named Nelson, came down to the garage, determined to "...show that Carr kid how it's done". He inspected my work and could find no fault. He tried a few things himself, and after two hours was still unsuccessful. At that point, weary from lack of success (not to mention a two-hour butt-chewing by Nelson), I leaned my elbow against the chrome roofline of the Crown Vicky. The noise stopped! One of the features that distinguished the '56 Crown Vicky from less costly models was a 8.2m long curved chrome decoration strip around the front of the roof line, continuing on to the two sides of the vehicle. Get the point? 8.2m is quarter wavelength at the 27MHz Citizen's Band, so even minute amounts of radiation would find a resonant situation and re-radiate right into the antenna! Cleaning and resetting the clips and screws that held the chrome strip fast solved the problem.

Bag Of Tricks

The methods of eliminating the noise vary so much from problem to problem that it would take a book to cover them all. The point here is to provide you with some aids to sleuthing the problem, i.e. finding the noise source. Only after the source is located can you effectively devise a strategy to solve the problem (filtering, screening, isolation and three sticks of dynamite at 0300 have all been successfully used - although the latter is beyond my experience).

RF Sleuthing Tools

The correct tool for finding r.f. sources is anything that will permit you to unambiguously determine where the radiation is coming from. We will take a look at several low-cost possibilities.

If you are looking for a source that is out in the neighborhood somewhere, such as a loose power line or a malfunctioning electrical system in another building, then an ordinary solid-state portable radio may do the trick. Open the radio and locate the loopstick antenna. If you rotate the radio through an arc where the loopstick is first broadside to the arriving signal, and then perpendicular to the signal, you will notice a tremendous reduction in signal. Ferrite loopsticks are extremely sensitive to direction of arrival, with a sharp null occurring off the ends.

By noting the direction in which the null occurs - Fig. 1, you find the line of direction to/from the signal source. It is not unambiguous, however. To find the actual direction, from the two possibilities that are 180° opposed, move along the line and note in which direction the signal increases. Except in a very few cases where reflections occur, the signal will become stronger as you move towards the source.

The standard medium wave and short wave loop antenna used by a lot of radio enthusiasts is also useful for finding r.f. emitting sources. A square loop of 300 to

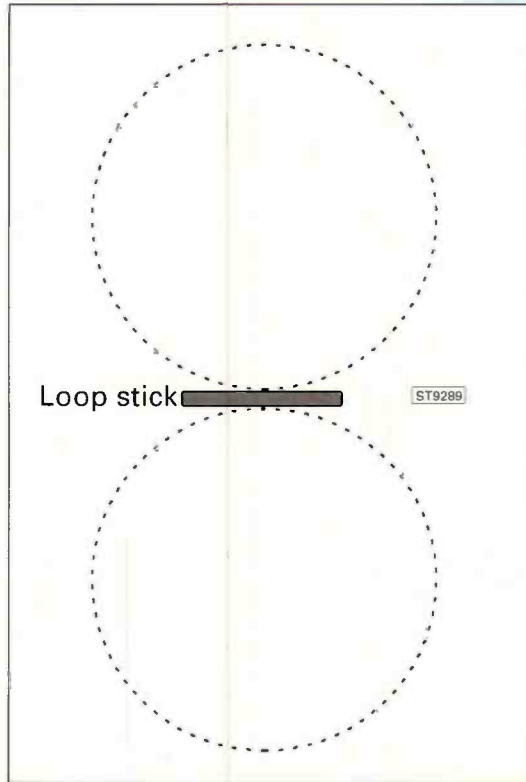


Fig. 1: Directional pattern of a ferrite loopstick antenna.

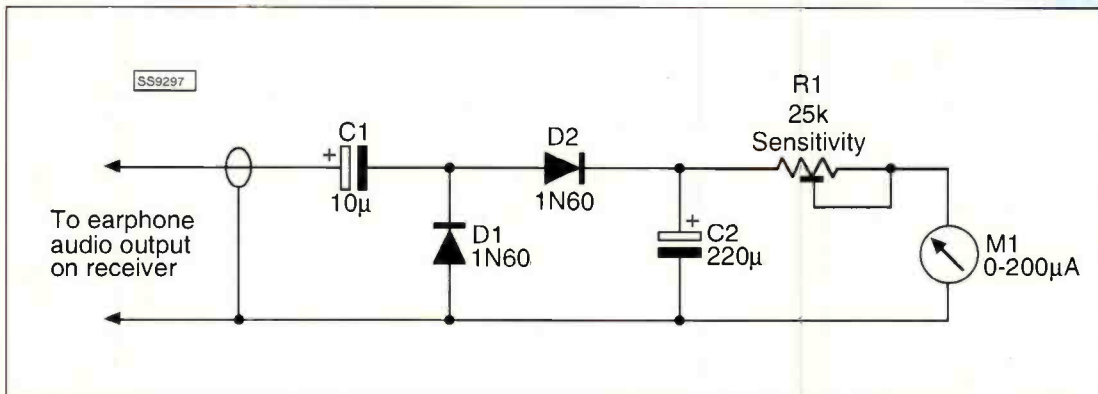


Fig. 2: 'Audio S-meter' for use on earphone-equipped receivers.

900mm to the side is relatively easy to construct, and forms a very directional antenna. Indeed, these antennas are commonly used in radio direction finding. Such loop antennas offer a null when pointed broadside to the signal direction, and a peak when orthogonal to the signal direction.

A portable radio with an 'S-meter' will work wonders in this respect. An *ad-hoc* 'S-meter' can be formed using the circuit in Fig. 2. This circuit plugs into the earphone jack of the receiver. The received audio is rectified by D1/D2 (a voltage doubler), and then applied to a d.c. current meter.

If the noise peaks in the short wave bands, then the radio's loopstick is of little use - it only works on the m.w. and l.w. a.m. broadcast bands. The h.f. antenna in those receivers is a telescopic whip. A loopstick sensor can be fashioned in the manner of Fig. 3. An 180mm ferrite rod is wound with about 20 turns of fine enamelled wire. This wire is connected to a coaxial cable, that is in turn connected to the external antenna terminals of the receiver (if such exists). If there are no

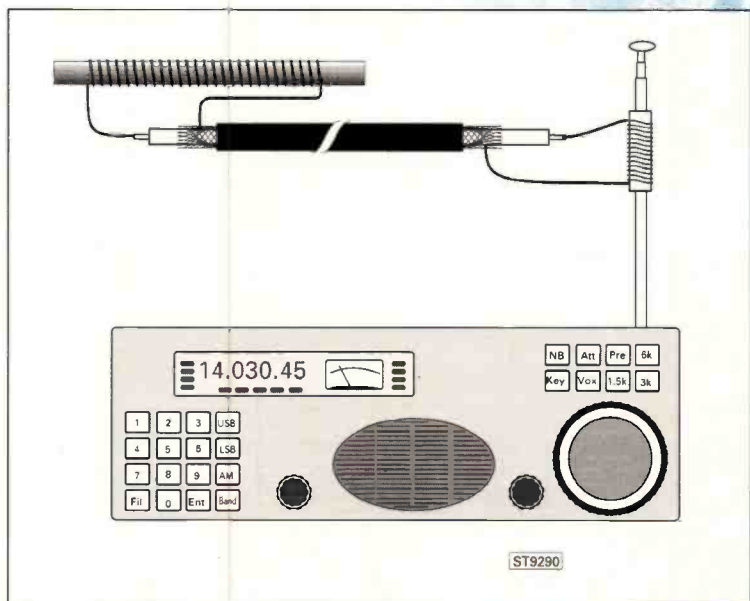


Fig. 3: Using a ferrite rod broadband antenna with a telescopic whip antenna on a receiver.

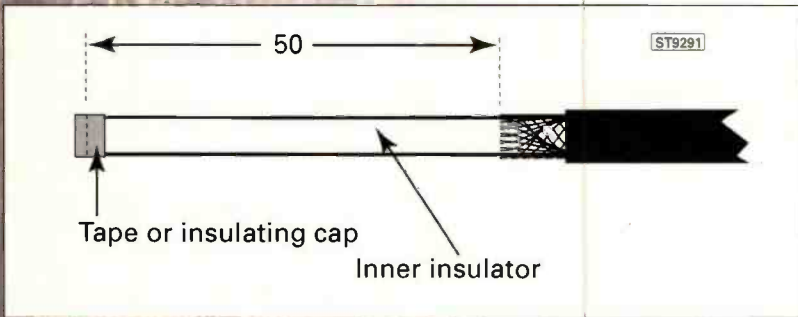


Fig. 4: Simple coaxial sniffer.

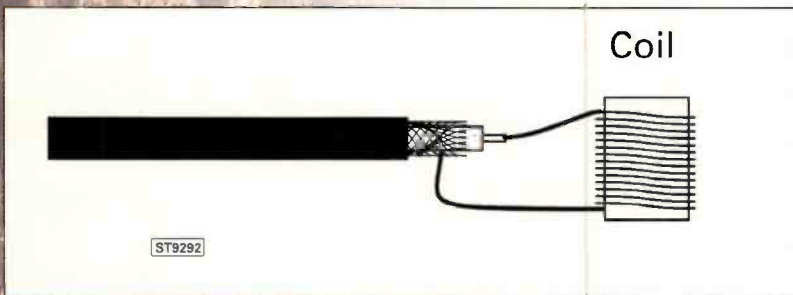


Fig. 5: 'Gimmick' coil sniffer.

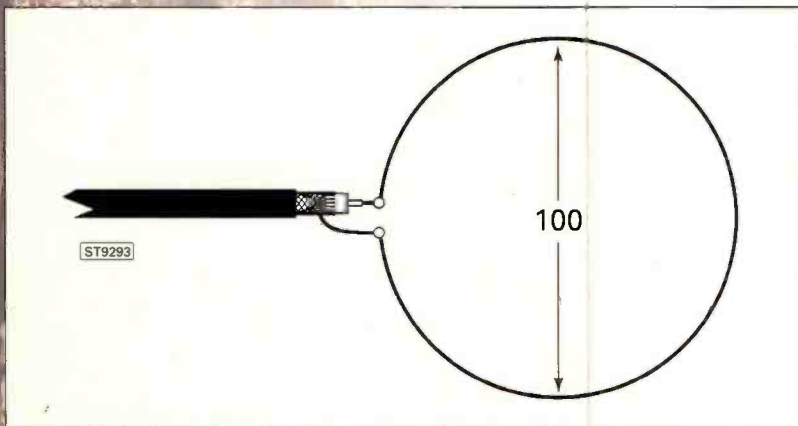


Fig. 6: Single-turn loop sniffer.

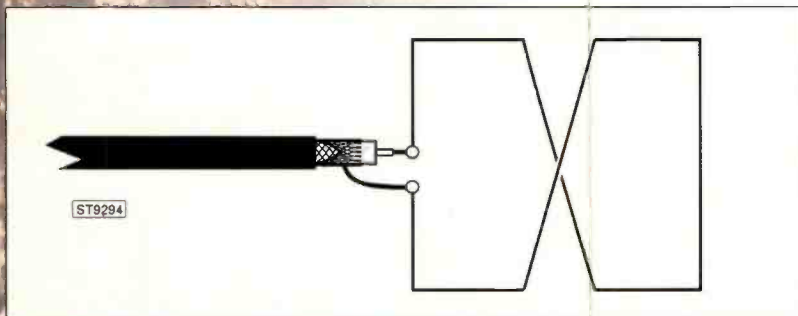


Fig. 7: Two forms of anti-magnetic field sniffer.

external antenna terminals, then a small coil of several turns wrapped around the telescopic antenna will couple signal to the radio. It's a good idea to keep the antenna at minimum height in order to minimize pick-up from sources other than the loopstick. More sensitivity can be had if a resonant loopstick is available, but those also restrict the frequency band.

A **Rif Sniffer** that is popular with mobile radio installers is shown in Fig. 4. Although fancy commercial models exist for a price, the basic form of Fig. 4 can be made with a length of coaxial cable connected to the receiver antenna terminals. The shield is cut back a distance of 50 to 70mm, and then removed. The inner conductor, covered with the inner insulator, becomes the sensor for finding r.f. sources such as ignition noise radiators.

In most cases, some kind of insulating cap is placed over the end of the inner conductor to keep it from contacting voltage sources as it is used to probe for r.f. An accidental contact with the 12V battery of a vehicle can cause destruction of the input coil on the receiver.

A 'gimmick coil' sensor is shown in Fig. 5. The sensor in this case is a solenoid-wound inductor connected to a length of coaxial cable. The coil has a diameter of 25 to 50mm, and a length that is at least its own diameter. The coil consists of two to ten turns of wire, depending on frequency (the higher the frequency, the fewer the turns required). The other end of the coaxial cable is connected to a receiver. When the coil is brought nearer the noise source, the signal level in the receiver will get higher.

A single-turn gimmick is shown in Fig. 6. This sensor consists of a single loop, approximately 100mm in diameter, connected to coaxial cable. It can be used well into the v.h.f. spectrum, as well as at h.f. The loop is made of either small diameter copper tubing, heavy brass wire or rod, or heavy gauge solid copper wire (12s.w.g. or lower). The loop has some directivity, so can be used to ferret out extremely localised sources.

A fault with the single-turn loop is that it is somewhat sensitive to magnetic fields, although not so much as some of the other forms. Figures 7a and 7b show dual-loop sensors that are less sensitive to magnetic field pick-up. In Fig. 7a the loops of the sensor are rectangular, and crossed in the center. The feedline (coaxial cable) is connected to a break in one of the two coils.

The version shown in Fig. 7b is circular. One version that I built was made of 10s.w.g. solid copper wire formed around a 'John McCann Irish Oatmeal' tin. Getting the coils about the right size and reasonably circular is relatively easy given a proper former. The exact size of the coils in Figs. 7a and 7b is not terribly important. The coil should not be too large, however, or it will be less local and may become a bit ambiguous in locating some sources.

Figure 8 shows a method for sensing r.f. flowing in a conductor. This method is used as the sensor in a lot of amateur radio r.f. power meters and v.s.w.r. meters. The conductor is passed through a toroid coil form, essentially acting as a one-turn primary winding of the transformer. The 'secondary' winding is made of



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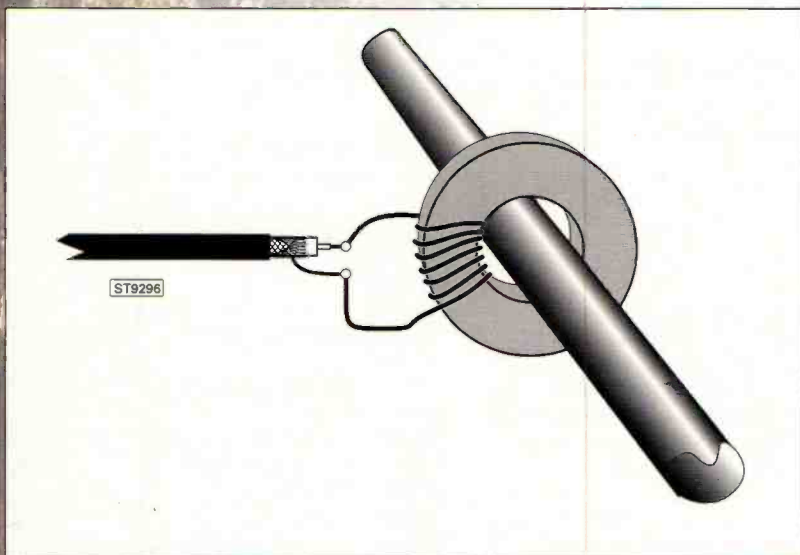
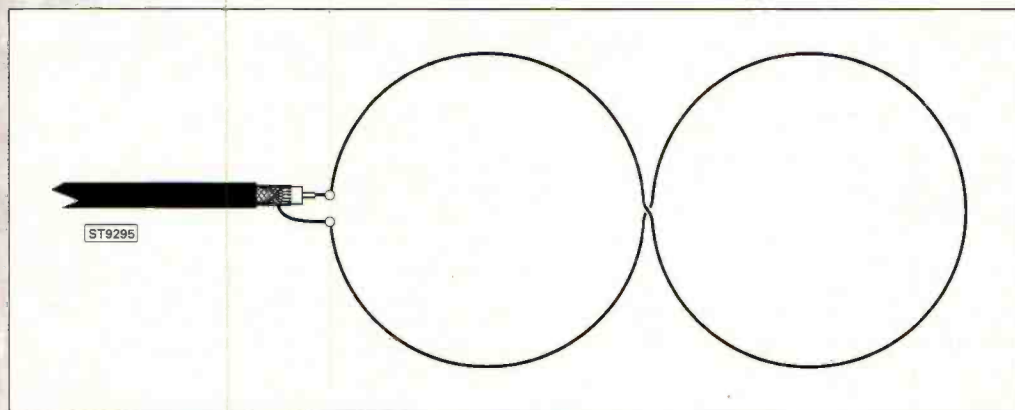


Fig. 8: Toroid sensor for r.f. current carrying wire.

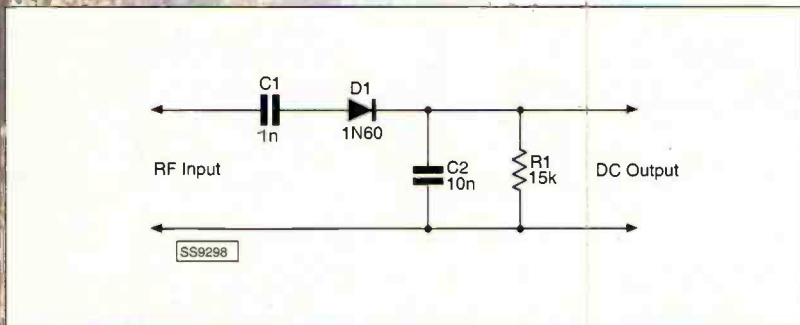


Fig. 9: Detector converts r.f. signal to DC.

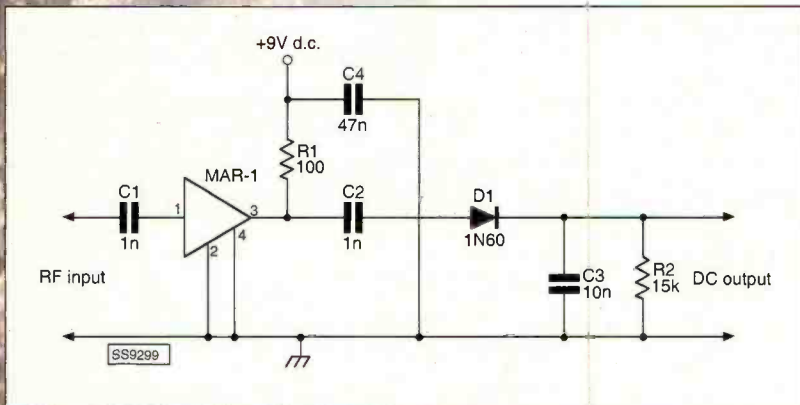


Fig. 10: Amplified r.f. detector.

24s.w.g. to 34s.w.g. wire wound over the toroid. About 6 to 20 turns are used, depending on frequency.

One popular method for constructing the sensor in Fig. 8 is to order a toroid core that has an inside diameter a little less than the outside diameter of a rubber grommet. Mount the grommet in the centre hole of the toroid core, and then pass the wire through the centre hole of the grommet. The two ends of the secondary winding are connected to the inner conductor and screen of the coaxial cable to the receiver.

RF Detectors

The r.f. output of the sensor coils can be routed to a receiver, and for low-level signals may well have to be so treated. For higher power sources, however, an r.f. detector probe is used. Figures 9 and 10 show two forms of suitable r.f. detector probe.

The r.f. detector in Fig. 9 is passive, i.e. it has no amplification. It can be used around transmitters and other r.f. power sources. The input from the sensor if applied to C1, a small value capacitor, and then is rectified by the 1N60 diode. The 1N60 is an old germanium type diode, and is used in preference to silicon diodes because it has a lower junction potential (so is more sensitive). The junction potential of germanium devices is 0.2 to 0.3V, and for silicon it is 0.6 to 0.7V. The pulsating d.c. from the rectifier is filtered by capacitor C2. Resistor R1 forms a load for the diode and is not optional.

An amplifier version of the r.f. detector circuit is shown in Fig. 10. In this version the same r.f. detector circuit is used, but it is preceded by a 15 to 20dB gain amplifier. In this particular circuit the amplifier is a Mini-Circuits MAR-1 device. It produces gain from near-d.c. to about 1GHz. Other devices in the same series will work to 2GHz, and in the related ERA-x series up to 8GHz. Clearly, any of these devices is well suited to the needs of most readers. The cost of the MAR-1 device is very low (in the UK it is about £2 from Cirkit).

Conclusion

Sleuthing out r.f. emitters that are causing problems can be a daunting task. But that task is made a lot easier by having some means for unambiguously locating the source of the offending r.f. signals. The sensors discussed in this article fit that bill. Once the source is found, a suitable strategy for eliminating the problem can be found.

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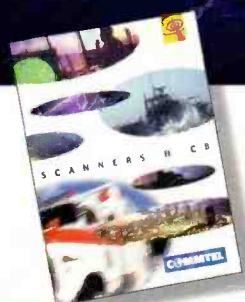
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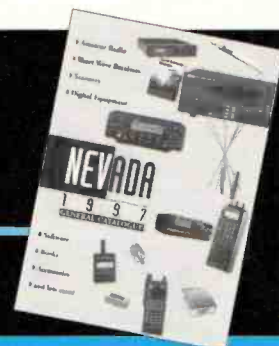
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Plastic coated flex weave wire74p per metre

GSRV FOR THE PERFECTIONIST
- uses 450Ω ladderline & balun for coax feed.

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20 meter s/w receive end fed wire antenna. Balun fed, uses high quality "Flex Weave" copper wire. 1-30MHZ.

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Matches end fed long wires to 50Ω coax, helps on rec. to reduce noise & interference. Transmits up to 100W. Fully moulded for full weather protection.

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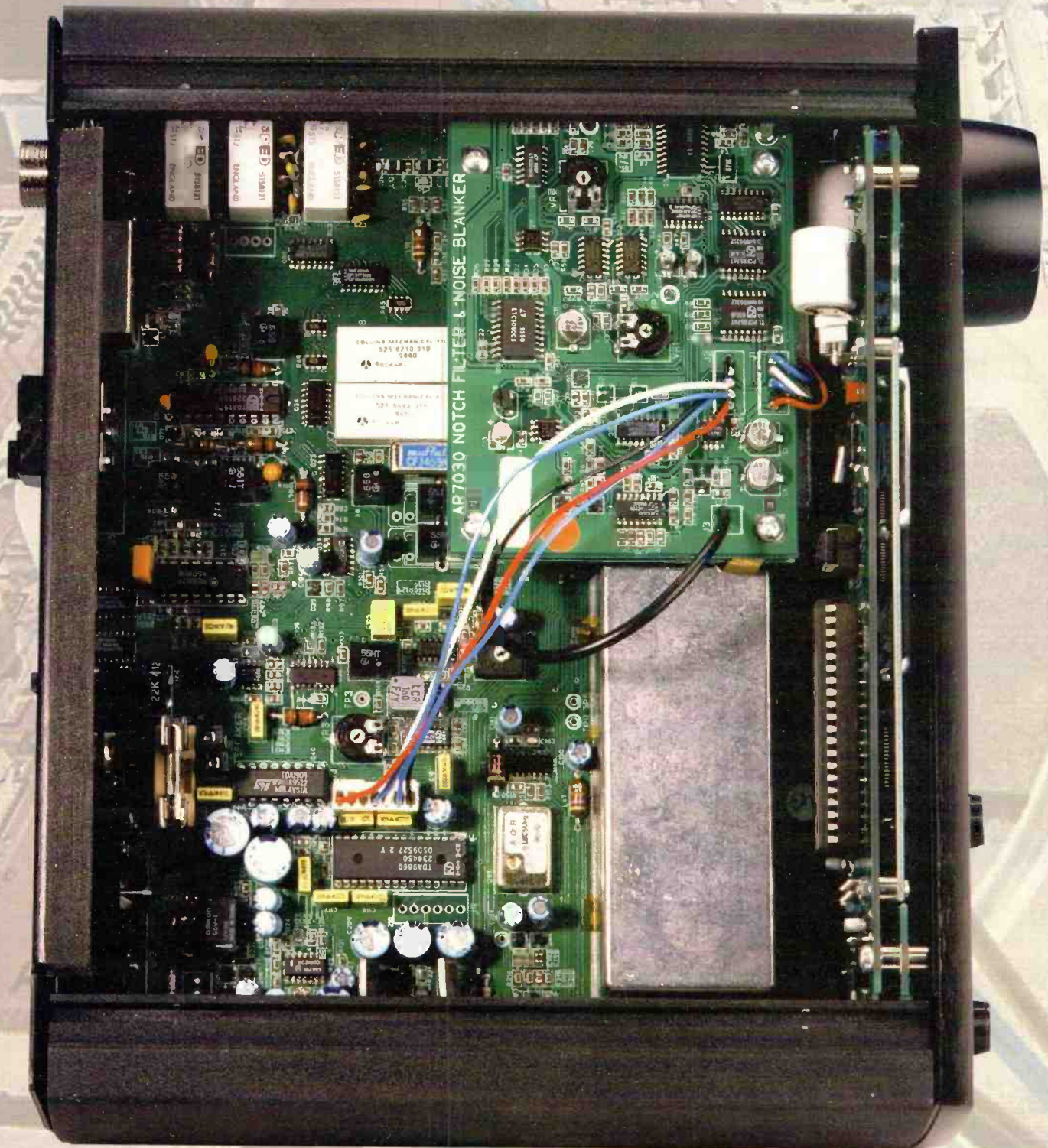
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Better?

JW fits an extra board to the Editorial AR7030. Does the latest 'noise blanking accessory' from AOR prove its worth?

It's surprising to find that it is more than a year since I reviewed the astonishing AR7030 and my regard for this receiver has not changed one bit. At the time of that review I was aware that the AR7030 was designed from the beginning to be a platform for other accessory units to extend its facilities and I'm pleased to be able to report on the new NB7030 and how I found it. In the spirit of being a guinea pig for *Short Wave Magazine* readers, I was presented with an AR7030 receiver and a box containing the NB7030 and asked to fit one to the other...real test for an ageing hobbyist like me. AOR call the NB7030 a noise blanker accessory, but it's much more than that because when fitted it gives you a noise blanker with selectable blanking widths and variable threshold, a notch filter which can be manually tuned or will auto track an interfering signal, extended timer and clock functions and memory channels extended to 400, each storing not only a mass of receiver information but also a text identifier to remind you of the station name. With the current state of my short term memory perhaps I should ask AOR to send me a JW7030 kit so that I can remember how to get home from the office. Did the additional facilities enhance the receiver? I have to say a large 'Yes' and a small 'Maybe'. Read on:-

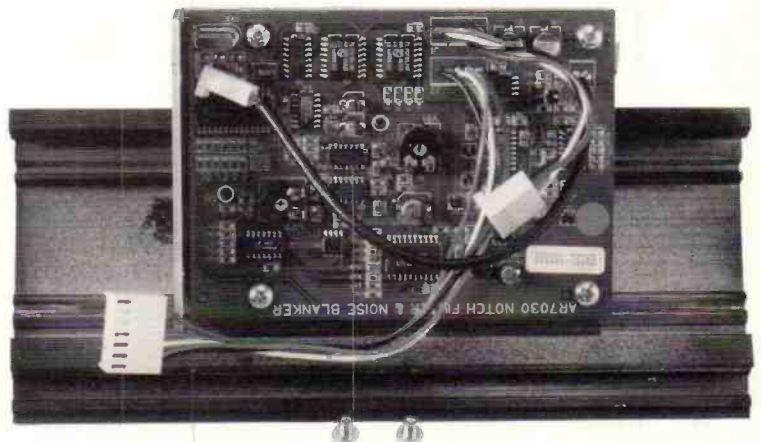
The NB7030 box contained a new processor chip, a new EEPROM, sundry bits of bracketry and screws, the all important noise blanker and notch filter printed circuit board and two lots of written instructions. Starting with the smaller sheets I read how to remove the receiver covers and fit the new processor and EEPROM. There were explicit warnings about the dangers of static electricity damage to the two integrated circuits, and advice on how to handle the devices so as to minimise the risk. Getting the old processor chip out was moderately easy but required a good deal of very careful prising with a screwdriver (this is what AOR told me to do in the instructions), but those of you who like me have handled long(ish) chips before will know that fitting a brand new processor into an in-line socket is initially impossible because the device pins are set to a wider span than the distance between opposite rows of socket holes. The technique I use to get the spacing right is to lay the chip on its side with the complete row of pins against a flat metal surface and rock the chip so as to bend all the pins together so the chip will fit the socket - but if you are not familiar with the technique, it's best not to try it. I think AOR are a bit optimistic if

they intend to issue the kit as an owner fit option, because not all owners will have the experience to do the job correctly - and there will be tears before teatime.

Having fitted the processor and EEPROM, the rest was reasonably easy, although the illustrations in the fitting instructions were printed in stylish black on black, making the arrows showing connector locations completely unidentifiable. Perhaps it was a cunning test for my eyesight, but application of *kaizen* suggests that a white circle around the connector titles would help here. However, despite my groaning, the fitting instructions are actually very well written, unambiguous and easy to follow, which makes a pleasant change from some I've seen. A final section in the installation instructions tells you how to re-configure the receiver to incorporate the new facilities, and this takes only a couple of minutes.

Vesti la giubba

I started the test by tuning to the 80m amateur band where I knew that I would find s.s.b. nets being interfered with by strong carriers 'tuning up' alongside the frequency in use. Sure enough there was a large net in progress and the inevitable loud whistle from a nearby carrier. Engage the AOR notch filter and down went the heterodyne to an insignificant level. The AOR specification says that the notch depth is >40dB, with a typical real figure of >50dB attenuation, and I can vouch for the fact that it works. However, being a 'JT' design, I didn't expect that the cleverness would end there, and reading the instructions revealed that I could





AOR (UK) LTD

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★★★★★ Table top receiver of the year 1996/7 - World Radio TV Handbook
★★★★★ Awarded Five Stars - Passport to World Band Radio 1997
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AR7030



★★★★ Four star rating - Radio Netherlands / World Radio TV Handbook
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AR3030



AOR AR7030 & AR3030... a wider choice of short wave listening

AR7030 - High dynamic range short wave receiver £799

The AR7030 has established itself at the top end of the high performance short wave receiver league as "the" set to have and operate. UK designed & built to high standards, 0 - 32 MHz, all mode, built-in RS232 port and more. Innovative features include auto-tune synchronous detector and automatic filter alignment.

PLUS Higher performance is now available in the form of the 'AR7030 PLUS', enhancements which surely make **excellent** into the **ultimate**.

- ✓ Increased balance of the mixer for greatest IP2 & IP3
- ✓ High tolerance 0.1% components if DDS ladder for low noise
- ✓ Enhanced RF attenuator operation for minimal intermod
- ✓ Higher spec wire aerial input transformer for minimal mixing products
- ✓ Ceramic metal cased 4 kHz (displayed) AM filter fitted as standard
- ✓ Bourns optical encoder for the smoothest DX tuning
- ✓ Features CPU fitted, 400 memories, multi timers & alpha tag

If you already have an AR7030 receiver, our UK workshop can upgrade your existing unit so that you are not left behind in the race for the ultimate DX performer, please phone for details and prices.

AR7030 £799

AR7030 'PLUS' £949

Please phone regarding retro-upgrades

AR3030 - Short wave receiver 30 kHz - 30 MHz £499

The AR3030 receiver combines a classical appearance on the outside using aluminium extrusion & cases with a high-tech low noise DDS (Direct Digital Synthesizer) design inside with the legendary Collins 6 kHz AM mechanical filter fitted as standard, the result is the short wave "CLASSIC" from AOR.

Due to its continuing success, you can now own a "CLASSIC" for only £499. If you are looking for an easy to use quality short wave receiver, look no further!



At the German Ham-Fest at Friedrichshafen on 27th July'97, readers of the magazine "funk" voted two AOR receivers "best" in their class, the awards being the GOLDEN MICROPHONE... AR7030 short wave, AR5000 wide band receivers.

Short Wave Column: Sounding Good?

Here at AOR, we really have gone overboard to get the best audio quality. But all AM broadcasters are now using some form of audio processing to improve the signal-to-noise ratio. There was a time when the quality of the sound from your radio was determined by how much you were prepared to pay for it. Now, in world radio, audibility is the key. And, to be honest, it can sound dreadful - even on an AOR.

The problem lies in the audio processing that has slowly changed the sound balance since Abba were in the charts. It started with wide-band compression. The BBC lead the field with a limiter that gently reduced the dynamic range of all audio frequencies present by the same amount, giving an overall impression of loudness enough to counter reasonable domestic noise. Then came the active systems.

A bank of filters carve up the audio into anything up to six pass-bands. These are then compressed at different rates pre-set by the broadcaster, the reconstituted audio then going for transmission. As processing has no musical analogy, it can lead to listener fatigue simply due to the saturation of the sound.

Engineers say processing is here to stay. Radio marketing men will tell you that he who shouts loudest gets the largest audience and so gets to keep the money. That's fine up to a point but with the CD and Digital Audio Mass Storage setting new standards for source programming and radios improving markedly with each generation - this must be the time for the broadcasters to reassess their use of processing to allow the final level of fidelity to align with the listeners level of investment in equipment. In other words, you'll get what you pay for.

With the 7030, you'll hear what they are sending. What have you heard? Mail me at bob@aor.co.uk.

©Bob Ellis 1997

funk - Golden Microphone award 1997

AR5000

Cyber Scan®



AR5000 £1495 AR5000+3 £1749

Government departments on both sides of the Atlantic have carried out extensive trials against rival units and we are pleased to find they are placing orders for the AR5000, good sensitivity at frequency extremes, excellent range of facilities, compactness & light weight leading to great flexibility in operation. Features include **automatic electronic preselection** between 500kHz - 999.999999MHz. 'True receive' throughout it's range, not an up-converter above 1GHz.

PLUS Capabilities have been further increased with the launch of the **AR5000+3** providing three enhanced facilities: **A.F.C.** switchable automatic frequency control for accurate tracking of unusual bandplans, **noise blanker**, switchable to help reduce the effects of ignition noise especially while mobile, **synchronous AM**, featuring double and selectable sideband with an easy to use wide lock range.

AR3000A Evolution at its very best

It all started in 1983 with the AR2001 which represented the world's first "no-gaps" high performance wide range receiver. In 1985 the AR2002 became the worthy successor extending the frequency coverage into the UHF band. In 1989 AOR released the revolutionary AR3000 providing all mode receive AM, NFM, WFM, USB, LSB & CW with smooth tuning in 50 Hz steps and unbroken coverage from 100 kHz - 2036 MHz... Building on this success AOR continued the EVOLUTION to bring the AR3000A to the market in 1992, smooth tuning, faster scan / search rates & more. The AR3000A became an overnight success and demand continued to steadily increase, to-date over 70,000 units have been sold worldwide. Simply there has never been a serious competitor to the range anywhere close to the price... truly excellent value for money. Even the world's armed forces including the largest Airforce and Navy has employed the AR3000A in its up-to-date high-tech hardware for backup purposes, performance, quality, reliability and performance-cost-factor being excellent...

Now is YOUR chance to own an amazing AR3000A receiver at the extremely attractive price of £799



See the full technical review in **HAM RADIO TODAY** magazine, Vol.15 No.6, Chris Lorek concludes "...I must admit that I'm a fan of AOR's receivers, and having tested the AR5000, even more so. If I could afford the £1,749 price tag, there would be one in my shack. For the keen listener, or indeed the professional monitor, this receiver is worthy of very careful consideration..."

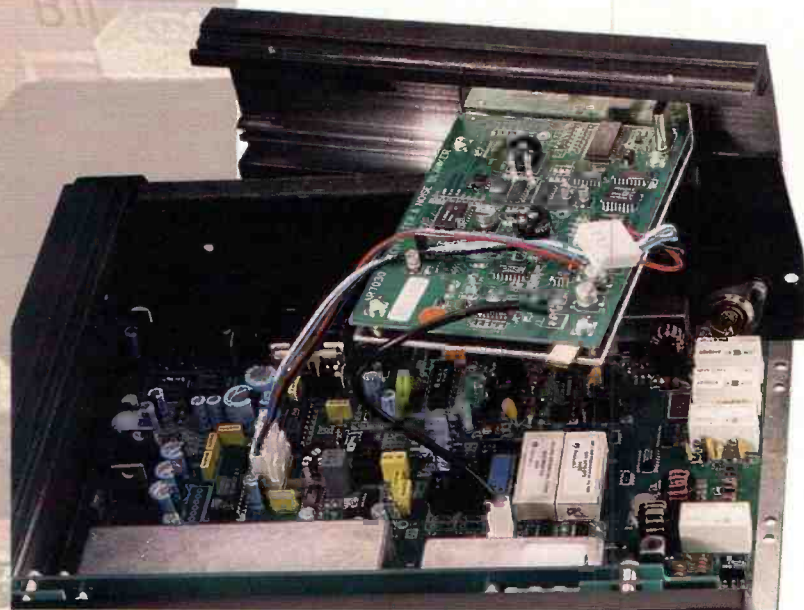
- Very wide frequency coverage 10kHz - 2600MHz
- All mode reception: AM, FM, USB, LSB & CW
- Automatic electronic preselection of the front end
- Excellent strong signal handling
- NCO (Numeric Controlled Oscillator) with tuning steps down to 1Hz
- TCXO fitted as standard
- Multiple I.F. bandwidths 3, 6, 15, 30, 110 & 220kHz (500Hz optional)
- Auto mode bandplan selection
- Multi-function LCD with 8 character alpha-text comments
- Extensive search & scan facilities
- "Cyber Scan" fast search & scan speeds up to 45 channels / increments per second
- Analogue S-meter
- 1000 memory channels and 20 search banks with EEPROM storage
- Auto memory store
- Extensive RS232 command list
- Sleep timer / alarm
- Standard DTMF decode / display
- Optional CTCSS search & decode
- Two aerial inputs with programmable switching from the front panel
- Flexible BANK LINK menu with enhanced features such as DELAY, PAUSE, VOICE etc
- Built-in squelch tone eliminator
- Audio and discriminator out plus tape recorder control
- SDU ready
- More, more, more...!

AR8000UK wide band hand held receiver

The **AR8000UK** provides a frequency coverage from **500 kHz to 1900 MHz** without gaps in the range (actual acceptable frequency input from 100kHz). The AR8000 combines full computer compatibility with advanced wide-band radio receiver technology. The all-mode reception provides AM, USB, LSB, CW, NFM and WFM. An independent ± 2.0 kHz SSB filter is fitted as standard and the USB/LSB modes use true carrier re-insertion with correctly calibrated frequency read-out (not offset by 1.5 kHz). Step size is programmable in multiples of 50Hz for smooth tuning. A custom manufactured ferrite bar aerial is neatly internally installed at the top of the receiver's cabinet to enhance receive performance when listening in population centres to Medium Wave services. The high visibility dot matrix LCD provides great detail including a signal strength bar meter, band-scope, twin VFO frequencies displayed simultaneously, ALPHANUMERIC comments stored along with frequency, mode & attenuator status simplifying the job of recalling and identifying memory channels, password protection etc. **Computer control** and clone of data between two AR8000UK receivers (optional interface required).



£349



manually tune the notch frequency using the 'soft' rotary encoder on the front panel as well as allowing the notch to auto tune itself to the offending frequency. The notch 'kill' range is 150Hz to 6kHz so it's useful on all modes and particularly good at 5kHz when knocking out adjacent channel heterodynes in the short wave broadcast bands. Another very clever feature is that even when in auto tune mode, if the offending signal ceases, the notch remains on the same frequency. Why is this clever? Because it means that the notch can kill an offending c.w. signal even when it is keyed on and off. Other auto tune systems start to hunt when the incoming signal is removed and thus drift off a c.w. signal. I tried this out at the bottom end of 40m and was impressed by the way I could copy a weak c.w. signal whilst notching out a stronger signal close by the frequency.

A further useful idea is that you can be listening happily to a wanted signal and by pressing the Notch Search button start the auto track sweeping from its lowest frequency to find and kill a heterodyne when it appears. This one button press is really effective and I found myself using it all the time. I can't think of any operating mode which has not been included in the comprehensive specification. And as a final comment, it is clear that 'Golden Ears' were employed in listening tests because this is one notch system which doesn't sound like a 1960s guitar 'phaser' when being tuned, and hardly makes any change in the received audio apart from knocking out the interference.

Similar thought obviously went into the noise blanker which operates by detecting noise pulses and using them to punch a hole in the incoming signal before the noise pulse has reached the end of the i.f. chain. As far as the operator of the receiver is concerned, the noise pulse just disappears, and because the blanking is done at the i.f., the pulse never reaches the a.g.c. system thus removing that annoying paralysing of

the receiver when a loud 'crack' is received. As with the notch filter, every operating need has been catered for, with selectable blanking pulse widths and a fully variable blanker threshold which allows you to set the precise point at which the blanker operates. The exact blanking threshold is shown on the main display as a percentage of the signal level, and the blanking pulse width is automatically adjusted according to the mode in use. As it states in the instructions "the noise blanker can be left switched on with little ill effect", and as a final touch, all noise blanker settings are retained when the receiver is switched off. Brilliant.

I found the blanker extremely effective on all modes, and very easy to adjust. Having set the threshold to remove noise pulses, switching the blanker on and off was a revelation - I simply couldn't believe that big noise pulses could disappear so effectively, and as suggested in the instructions, I just left the blanker switched on all the time with an occasional touch on the threshold setting whenever I needed it.

*"Tis in my memory locked.
And you yourself shall keep the key of it"
Hamlet.*

And some key it has to be with the increase from 100 to 400 memories which the NB7030 bestows upon the happy owner - and not just your common or garden memories, but comprehensive stores of information about the receiver which I believe to be a unique feature of the AR7030. Each memory channel stores operating frequency (obvious), receive mode (been there, done that), i.f. filter choice (yawn), Pass Band Shift setting (now that's unique), a.g.c. setting (getting interesting), and the squelch setting (this is great). Why is saving the squelch setting great? Let me enlighten you.

The biggest problem with memory scanning facilities on a short wave receiver is that each frequency scanned has a different noise threshold, and with a single squelch control you may be able to set the squelch level at say 2MHz, but by the time you get to 5MHz the band noise has changed and the squelch remains open, thus stopping the scan. Similarly, setting the squelch (or more correctly, scan stop level) at 5MHz will be a waste of time when the receiver gets to the quiet open spaces of the 21MHz broadcast band because the receiver will merrily skate across the quiet frequencies and not stop on weak signals. The perfect solution would be to have a separate squelch control for each frequency in memory, and this is exactly what the AR7030 provides - a definite 'first' as far as I am aware. Now it gets even better, because the NB7030 upgrade gives you the facility to enter a 14 character text string to each memory channel so that you are told the name of the station to which you are listening as soon as the memory is either selected by you or selected on scan. Not only that, if you are idly twiddling the dial and come across an interesting sounding broadcast, you can ask the receiver to search for an 'ident' and it will automatically search all frequencies stored in the memory banks to find one that is a close match to the frequency to which you are tuned (within about 1.5kHz). If a match is found, the associated text identifier is displayed for about ten seconds to tell you

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what the station is - simply superb.

Could there be more? Yes there could. There is also an 'Ident Preview' function which shows the test identifier for each memory as the channel is selected, and an easy to use copy and paste facility for easy transfer of information from memory to memory.

In all the receivers I have had the pleasure of testing, none has had the comprehensive memory management facilities offered by the AR7030/NB7030 combination, and the careful thought which has gone into the operating features of the memory system is very evident when you use the receiver.

And just when you thought I had finished - AOR have extended and improved the clock and timer functions so that the clock now contains date and month, which then extends the timer functions to include ten one-year multi timers which allow you to record several different programmes from several different stations...what can I say.

Conclusions

To call the NB7030 a noise blanker option is to hide its true value. Considering the operating features which it adds to the AR7030, the price of £179 seems quite reasonable, and as with the receiver itself, each feature and function perform flawlessly at all times. Does the Notch Filter work - a large yes; how about the Noise Blanker - a large yes; the memory facilities - a large yes; the timer and clock improvements - a large yes. So, what about the little 'maybe' with which I opened this review? There are actually two 'maybes'; the first being that *maybe* it would be wiser to recommend that a competent engineer fits the option; the second being that *maybe* the operation of the AR7030 is becoming too complex, certainly for anyone of my age. I have always said that I like receivers to have clearly labelled controls, and it is quite literally true that due to the clever use of 'soft' controls each function of the AR7030 is clearly

labelled - when you get to it. The difficulty I found when meeting the AR7030 for the second time is that I had forgotten how to use it, and had to refer to the menu tree contained in the operating manual. In fact I copied the 'tree' and kept it by me until I had re-familiarised myself with the receiver, which took a couple of days. I have to temper these observations with the fact that I have to turn to the instruction manual when my wife asks me to set the video recorder in advance, whereas my teenage son can do it easily, and it may simply be a sign of my failing mental powers - but I can make a receiver like the NRD-345 or Drake R8A dance to my tune without ever needing an instruction manual, whereas my son wouldn't know where to begin.

The AR7030 is so far ahead in its design and performance that it stands out above the rest. With its added facilities it is even further ahead, and it is possible for a skilled user to tailor it to perform minor miracles, so if you are in that league of operators there is no other choice - you simply must have a '7030. However, if I were still laying down future design targets I would be suggesting that the AR7030 married to either a larger front panel, or better still the kind of computer software control given by the WinRADiO would make, at least for me, the perfect receiver for the millennium. How about it AOR?

And So To Other Things

I committed a terrible sin in my review of the Drake SW-2 receiver last month, when I totally ignored the Yaesu FRG-100 from the £400 to £500 price bracket. My sincere apologies to Yaesu, for whom I was the UK Distributor for many years, and for whom I designed a modification package for the venerable FR-50B in days of old. Receivers do seem to have long product lives, and perhaps it is time to take a second look at some of the not so recent models such as the FRG-100 or the HF-225 to see how they are standing the test of time - I'm sure that this would be of interest to those readers who are looking at the second user market and can't find any of the original reviews. What do the readers think? Going even further back, I do have a fair collection of operating manuals for older receivers and would be happy to have them copied (but not for free) if anyone needs assistance. Let me just warn you that the Collins R-388 manual weighs about the same as a gold brick, and probably costs that much to photocopy...

Happy Listening!

Watching total eclipses of the moon can be fascinating stuff. Here, Lawrence Harris tells us how he first got interested in astronomy.

During the last thirty-odd years I have attempted to watch several total eclipses of the Moon. Some were successful, many were rained or clouded out. Not so for April's eclipse. A little background information sets the scene.

Back in the late fifties, I first became fascinated with astronomy after hearing the news of the launch of the first satellite - Russia's *Sputnik-1*. No-one could tell me anything about satellites, so curiosity led to my reading books on the topic of space in the main library in Plymouth city centre. Fascinating stuff for a lad of twelve years old or so.

Then I started to learn about planets and constellations, then the Moon. I saw my first eclipse around 1961, and this prompted me to buy my first pocket-money priced telescope, a 1.5in refractor costing £1.50 (in today's money). This allowed me to see craters on the Moon; these days a pair of good quality binoculars would show more.

A few years later I obtained a partly-made 8.5in reflecting telescope and at about the same time, was able to organise the repair of a 10in reflector at school.

First Eclipse

My first eclipse was the one in December 1964 and it was superb with all the trimmings. Clear, mild weather in Plymouth and no school the next day!

Using my telescope and a new single-lens-reflex (SLR) camera, I obtained a set of photographs which I offered to the local press - and was stunned to see them on the front page of the paper that evening! Over thirty years later, I circulated (faxed) notice of the April eclipse to our local media which responded by inviting me to describe the events on the various local channels.

Perfect Weather

The weather was perfect for this eclipse. Several days of clear skies allowed me to watch and take images of comet Hyakutake (discovered at the end of January and pronounced YA-KOO-TAH-KAY), though the increasingly bright Moon was limiting visual observations of the comet.

Using a Starlight Express CCD (a very sensitive charge-coupled device), fitted in turn to a wide-angle lens (45mm focal length), a telephoto lens (135mm) and my 250mm Schmidt-type reflector, I obtained a set of comet images each night.

Astronomer's Dream

The night of the eclipse was an astronomer's dream! Which way to look!

High in the southern sky the eclipse started around 2210UTC. (To be precise, the penumbral eclipse starts earlier, but that produces only a slight reduction in light as the Moon enters the outer part of the earth's shadow. The central - umbral - part is the one seen by eye.)

Meanwhile, the comet was in the north and sinking towards the horizon (as it rotated anticlockwise around



Total Eclipse

continued on page 36

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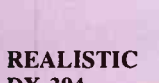
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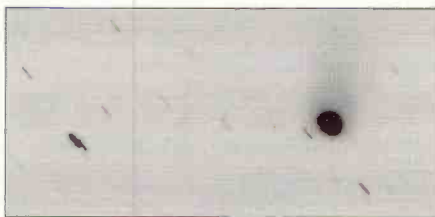
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Comet Hyakutake on 29 March at 2027UTC using a CCD (electronics imager) fitted with a 45mm lens.



Comet Hyakutake on 1 April at 2035UTC (image reversed to reveal faint stars and tail extension).



Comet Hyakutake on 29 March at 2005UTC, again reversed to reveal faint stars.



The eclipse is underway as the Moon slowly moves into the Earth's shadow.



By 2213UTC the Moon is deeply into the Earth's shadow.



The Moon is almost entirely in the Earth's shadow at 2309UTC.



Only a tiny part of the Moon remains in sunlight at 2326UTC.



The Moon is now totally eclipsed as it enters the central umbra of the Earth's shadow at 2331UTC.



Still in totality but a little scattered red light illuminates the Moon at 0019UTC on 4 April.



At 0100UTC on 4 April the Moon starts to emerge from totality. A thin crescent can be seen.



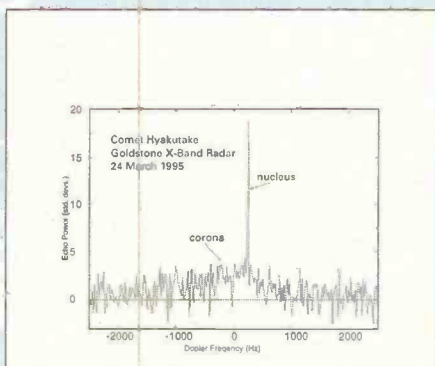
This image is the same as the previous, but is enhanced to show more detail.



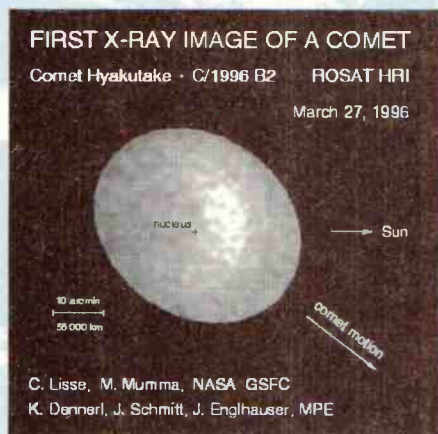
By 0120UTC on 4 April an increasing part of the Moon is emerging from the shadow.



By 0137UTC most of the Moon has left the central umbra and is glowing with a reddish hue.



A radar signal was bounced off the comet at 16 million kilometres, allowing Goldstone scientists to measure the size of the nucleus.



C. Lisse, M. Mumma, NASA GSFC
K. Dennerl, J. Schmitt, J. Englhauser, MPE

The first x-ray image of a comet, made by the ROSAT satellite. The bright crescent appears to be emitting the x-rays.

continued on page 38



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Polaris). When it became swallowed in mist I turned all my attention to the eclipse. My wife Marion came out to watch for a few minutes - she had already been impressed by the comet.

Optimum Image

With the CCD camera providing realtime images to the computer, one can instantly adjust exposure times and aperture ratios to obtain an optimum image. I did this during the progress of the eclipse, feeling amazed at the clarity of the images.

I gazed through the telescope to watch the shadow crossing the Moon's surface. It is a wonderful sight, using a magnification of about 150 the Moon's movement can be watched. It represents the Moon's true orbital motion taking it anticlockwise around the earth, and sedately into the shadow, which is a huge cone of darkness projecting into space. The Moon normally passes above or below this shadow - but not tonight!

I watched the shadow, noticing that it had a tinge of redness, this is often the case. Light reaching the Moon's surface during the onset of an eclipse, originates from the Sun, so is essentially 'white'. As the Moon moves into the earth's huge shadow, this light traverses a considerable thickness of the earth's atmosphere and is scattered by suspended dust and even by components of the earth's upper atmosphere.

Scattering is not uniform across the spectrum, blue light (shorter wavelength) is scattered more than red light, so an increasing amount of blue light is removed from the original white light leaving more red light, hence the colouring effect.

When the quantity of suspended dust is substantially increased, as is often the case for many months following volcanic eruptions, little light may get through the atmosphere. The result is a very dark eclipse. This effect has been witnessed during some recent eclipses - so I have read!

Progress & Finale

The pictures show the progress and finale of the eclipse. As the darkness extended across the Moon, I increased the lens speed (F-ratio).

For those interested in the technical details, the lens was originally set to about F22 (a low-ratio suitable for the Full Moon). Exposure times were then about 0.02s.

Towards totality, the lens was opened to F4 and the exposure lengthened slightly. During this fascinating period when the Moon was nearly invisible to the naked eye, I carefully took several images of different exposures, which were then enhanced to reveal the eclipsed Moon itself.

The details were remarkable. I have never had such facilities to experiment with during an eclipse. On the last occasion of an eclipse, my only tool was a conventional camera to supplement my telescope, and it was days before I was in a position to have the film developed! Now I had the results one minute after taking the exposure!

In addition, I was able to feed the images directly to a video recorder so that the whole event could be watched on television - minus the colour. This also allowed the later insertion of processed images.

Without any doubt this was the best total eclipse that I have seen since that first one back in 1964.

Comet Hyakutake

The close approach of comet Hyakutake provided a rare opportunity to bounce radar signals off its nucleus. This was achieved by the Goldstone ground station on 24 March when a powerful X-Band signal was successfully transmitted to and received from the comet's nucleus.

Jet Propulsion Laboratory radar astronomer Steven J. Ostro reported that the nucleus of the comet was observed by radar at a distance of 16 million kilometres on March 24 and 25, and is apparently 1-3km across. "This is the first and, so far as I know, only direct detection of the nucleus of comet Hyakutake," he said in a press release.

The observations were made with the 70m antenna at the NASA/JPL Goldstone Deep Space Communication Complex. The radar telescope also detected particles flying away from the nucleus at speeds of at least 10ms^{-1} (22mph).

Several transmit-receive cycles were made on each of the two nights. The echoes were received an average of 104s after the 480kW X-Band radar signal was beamed at the comet. The power in the echo received from the comet was less than one billionth of a billionth of a milliwatt.

Radar Echoes

The radar echoes reveal that the comet's coma, the large visible cloud, must contain a great many particles not much smaller than 10mm. Ostro noted that there seems to be about ten times as much radar echo from these particles as from the nucleus itself.

The radar astronomy sessions were sandwiched between radio communication passes for the Galileo and Voyager missions, and were limited by system difficulties and the weakness of the radar echoes. The Goldstone antenna is part of the Deep Space Network, developed and operated for NASA by JPL.

X-rays Detected

X-rays were also detected from the comet. A team of US and German astrophysicists made the first ever detection of x-rays coming from a comet. Their discovery of a strong radiation signal was made 27 March, during observations using Germany's orbiting ROSAT satellite.

In the image, the x-rays from the comet seem to come from a crescent-shaped region on the sunward side of Comet Hyakutake. Unlike the visible light from the comet, the nucleus or solid body is not only not the brightest point in the comet, in fact, the scientists say, the nucleus does not show up in the x-ray image from ROSAT.

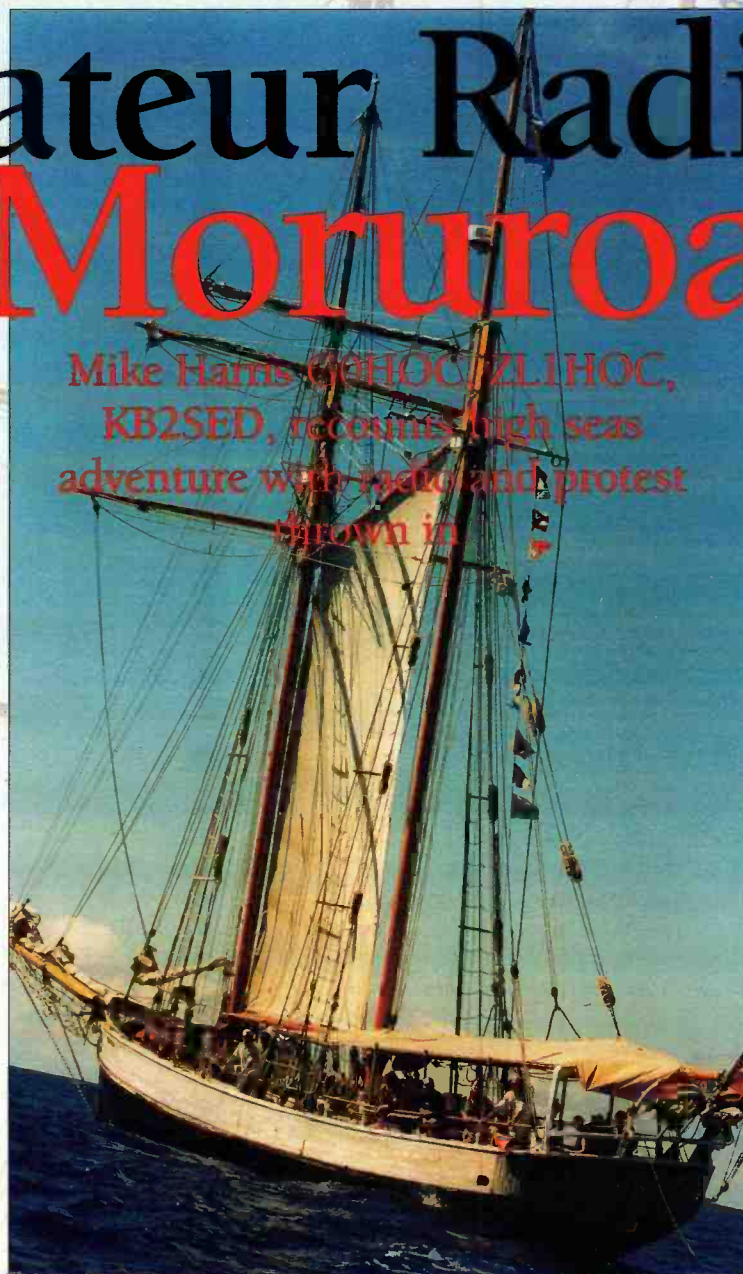
Word Of Thanks

My thanks to NASA/JPL, GSFC planetary scientists Lisse and Mumma, along with Drs. Konrad Dennerl, Jakob Englhauser, Jrgen Schmitt of the MPE, and the German and US ROSAT Project Scientists, Professor Joachim Trmper of MPE and Dr. Petre (GSFC), respectively for this information.



Amateur Radio at Moruroa

Mike Harris G0HOC/ZLHOC,
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The R Tucker Thompson, skippered by Russel Harris, on station at Moruroa.

P. Williams

On 5th August (Hiroshima Day) a flotilla of some 15 yachts began leaving New Zealand to stage a peaceful demonstration against the resumption of French nuclear testing at Moruroa atoll. Their intention was to arrive at the test site and stay as long as possible, whilst maintaining respect for international law by remaining outside the 19.2km territorial exclusion zone. With a return trip of at least 9600km and every possibility of bad weather at some stage, the voyage demanded not only commitment to the cause but a strong, competent crew and most thorough preparation.

New Zealand to Moruroa

The distance is comparable to crossing the Atlantic and, as a good part of the journey was spent pushing into the trade winds, this was certainly no pleasure cruise. At the end there would be no comfortable anchorage for unwinding, no relaxing beaches and certainly no shoreside welcome. Just a cool reception from the French navy and the chilly prospect of possible arrest

and seizure of the boat. However, in New Zealand, the flotilla attracted huge public support. Local firms sponsored boats, donated food or loaned equipment and the government added its voice by sending a naval vessel, HMNZS *Tui*, to provide logistical support. Flotilla boats and crews came from all backgrounds. A mixture of factory built, home constructed, ancient and modern designs. Monohulls and multihulls, sailed by people from professional, academic, retired and working backgrounds. Few had much history of political protests, but most had a fair amount of sea-going experience of one sort or another.

Flotilla Communications

With such variety and only a very few weeks in which to prepare for the event, good communications and understanding between participants were vital to the success of the venture. Unfortunately, radio equipment was almost as varied as the crews themselves. All carried marine v.h.f. but, with its effective range limited to around 48km, this was only likely to be of use at the

TABLE 1.

Yaesu FT-757GX HF transceiver:

I bought this second hand 10 years ago. Since then it's done sterling service aboard my own boat where it's used on an almost daily basis.

Kantronics KAM data decoder:

Chicony 486 laptop computer:

Atlas amateur transceiver:

Taken as a spare.

A multi-band, helical whip antenna:

On loan from Howard Martin ZL1BAO.

Daiwa CNW 418 antenna tuner:

Also on loan from Bob Stewart ZL2AMI.

Headphones:

Many thanks to the Mount Wellington Ladies Bowling Club for selling them to me for \$1 at their 'bring and buy' sale.

TABLE 2.

Net/operator	MHz	UTC
Pacific Maritime Net	14.315	0300-0400
ZK1DB APLINK	10.128	0530-0615
UK Maritime Net	14.303	0800-0900
Tony's Net	14.315	2100-2200

atoll itself. On h.f., a few carried fully synthesised, single side band marine band transceivers but these were exceptional and most of the fleet had very limited frequency coverage. Almost half used crystal controlled sets, often of low power and it seemed that each had a unique selection of frequencies with few in common. Keeping boat crews in touch with each other, with the flotilla organisers and with relatives and friends at home seemed a formidable task. Fortunately, most boats were able to use 4.445MHz which, in New Zealand, is a private channel allocated to KeriKeriRadio. This is a North Island commercial station which for many years has been operated by John and Maureen Cullen. It is run as a type of club, providing local mariners with weather forecasts and a reporting service in return for an annual subscription. For flotilla boats, the nightly scheds proved a great success and helped keep the fleet in touch for much of the trip. Communication needs were not entirely solved by this means however, as 4MHz propagation tended to fade out at extreme range and also because KeriKeri is a busy station with little spare capacity for anything more than basic safety traffic.

Amateurs Fill The Gap

For several years the New Zealand amateur radio licence has allowed amateurs to handle non-commercial messages on behalf of non-amateurs. Shortly before the flotilla set sail, a group led by John Lane - ZL2ARF, met to consider ways that amateur radio might be used to support the flotilla by helping to keep crews in touch with concerned relatives and friends at home. This was the start of 'Moruroa Net' but, initially, the idea showed every sign of falling flat as no flotilla boats carried a licensed amateur and all efforts at getting one installed as crew came to nothing. Eventually, the solution was provided by Arnold Gibbons - ZK1DB, living on the

island of Rarotonga in the Cook Islands. For several years, Arnold has operated a commercial radio station, NicauRadio. Positioned almost midway between New Zealand and Moruroa, his station was ideally placed for relaying messages. Also, by giving accommodation at his home to another amateur assistant (Rib Compier - ZL1AJQ), the link between amateur and marine bands was complete. Over the following weeks Arnold and Rib operated a roll-call net with the flotilla boats at the atolls. They established an AMTOR data link with the Moruroa Net and exchanged short, personal messages with the families and friends of boat crews, who very much appreciated being able to keep in touch.

Radio Aboard HMNZS Tui

The HMNZS *Tui* is one of the smallest ships in New Zealand's navy and has served principally as a research vessel. For the Moruroa mission its tasks were to show the government's concern over the resumption of nuclear testing and to provide logistical support for the flotilla boats. *Tui* made two separate trips to the atolls, each of about three weeks duration, carrying MPs and TV, radio and press journalists. It was for the second of these deployments that I was invited aboard to report on flotilla events for the yachting press. The idea that I might operate an amateur station from the ship was suggested by a friend but at first it seemed hardly worth a second thought. Though the US military frequently use amateurs on active service, I had not heard of this happening in New Zealand. I could not imagine that a civilian and in my case, a foreigner, would be allowed to operate his own private radio transmitter. However, to appease my friend and on the principle that if you don't ask the question you won't know the answer, I made a few tentative inquiries and was amazed not to have the idea turned down flat. Instead I was given other

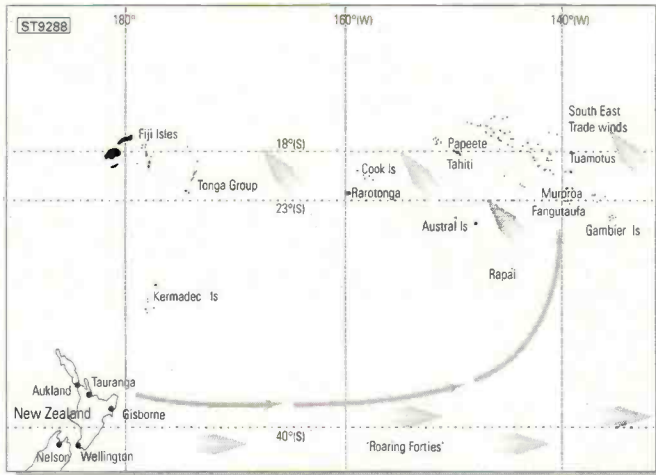


Fig. 1: The South Pacific route: New Zealand to Moruroa.

inquiries to make and, following several weeks of letters, 'phone discussions and FAXs, a very welcome letter of approval arrived about a day before I was due to embark. From the outset it was made clear that I would not have access to the ship's radio equipment so would have to gather all equipment myself. Fortunately, several people helped with the loan of gear and the final list was as shown in Table 1.

An early morning flight aboard an RNZAF Hercules took me and the radio gear from Auckland to the tropical heat of Rarotonga. In company with the crowd of foreign yachts normally present at this time of the year, *Tui* lay berthed in Avarua, the island's main harbour. Once aboard, it was a relief to meet with Lt. Cdr. John Campbell, the Captain of HMNZS *Tui*, and learn something of the conditions under which I would be living and working for the next few weeks.

With a day to spare before departure, I set up the gear on the corner of a work bench in a laboratory area where a ventilator gave easy access for a coaxial connection to a whip antenna which was taped to a corner post on the deck above. The potential concern here was to prevent any harmful interference from my equipment being propagated through the ship's power lines and affecting other radio or navigation systems.

By running all of my equipment from rechargeable batteries it was easy to assure that this would not occur. Also, since the amateur bands I would be using were well spaced from military or marine channels, in principle, I should not be competing with the ship for the same frequencies. However, to guard against the possibility of out of band transmissions, I had taken the precaution of having my transceiver checked over before leaving and took the Daiwa tuner to act as a tight notch filter, so keeping the risks of out of band interference to a minimum. In the receive mode the tuner also gave some 20 to 30dB of attenuation of unwanted r.f. from the ship's main transmitter and was valuable protection for my receiver front-end.

Moruroa's Coffee Shop

After five days at sea we arrived at Moruroa and joined a company of New Zealand Flotilla boats, boats from the environmental group Greenpeace and boats from other countries involved in the protest. The 19.2km exclusion zone declared by the French for the duration of nuclear

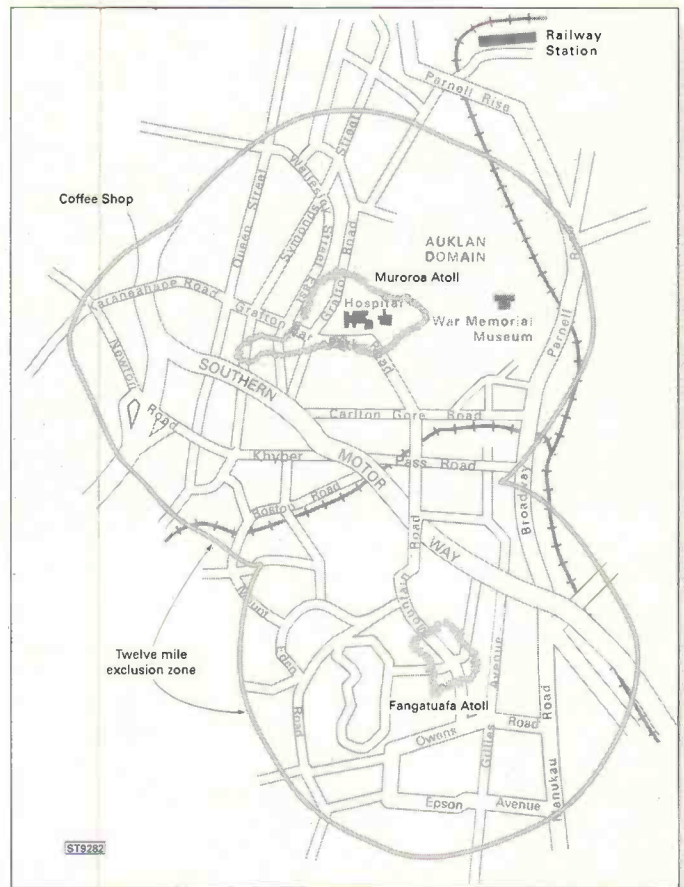


Fig. 2: Tactical street plan of Moruroa and Fangataufa atolls.

testing encircles the twin atolls of Moruroa and Fangataufa. Outside the area, save for a few distant towers and the loom of lights at night, there's little to see. It's a lonely spot with absolutely no shelter from winds or ocean swell.

To discourage intruders, the zone is heavily patrolled by warships and aircraft, able to monitor the area with radar and infra-red image enhancing equipment. Foreign vessels sailing into the zone risked prompt arrest and seizure so, find its 256km perimeter or meeting at a favourite spot off the North west corner known as the 'coffee shop'. This had the advantage of being close to Moruroa's entrance channel so ships entering and leaving could be easily observed and, since it was down wind, protest boats were not at risk of inadvertently drifting into the zone. "We came in from nothing and found a floating village" said Denis Johnson aboard the yacht *Joie*. "It became like home; we visited people, had parties and barbecues." To add to the illusion, some boats used a chart of Moruroa overlaid with a road map and referred to positions by road names. Initially, the idea was to conceal tactics from French radio monitors, though it was never widely used for this purpose. Instead it added a homely touch to a hostile environment and reports of "shopping in Queen Street" or "just cruising along 'K' road" (Auckland's Red Light District) took on a new depth of meaning.

Radio contacts from offshore Moruroa Table 2 lists my daily listening scheds aboard the *Tui*, though sadly, poor propagation often made working conditions difficult.

Propagation on 20m, to Hawaii was good for much



Replenishment at sea (RAS). Gemini Galaxsea receives supplies of fresh water and diesel from HMNZS Tui.



Protest crew of the catamaran Sudden Laughter.



Wharam catamaran Sudden laughter on station at Moruroa.



The Cook Island Vaka prepares to leave Rarotonga.

P. Williams



David Moxon, Anglican Bishop of Waikato, delivers a message from Polynesian churches to yachts and French radio monitors at a ceremony following the second nuclear test.



Eye in the sky. French helicopter get pictures of flotilla.

P. Williams

of the day, but the east/west route to New Zealand was more difficult. A good opening to the ZK1DB APLINK in Rarotonga occurred regularly at sunset but was short lived. With many other users queuing up, getting in before conditions deteriorated required patience and some smart button pushing. None-the-less, perseverance paid off and some form of communication back to New Zealand was possible on most days and included relaying news reports for amateurs in New Zealand, Australia, Tonga, the United States and United Kingdom, reporting wildlife sightings and the reception of daily positions of yachts from ZK1DB's AMTOR bulletin board.

Effects of the Tests

Though no one could predict when tests would be carried out, the presence of an extra warship amongst the flotilla on October 1st, plus additional air activity gave us an inkling that something was afoot. I spent the morning visiting flotilla boats and returned to the Tui at lunch time. Shortly after coming aboard, the news arrived that a test had been carried out whilst I was



Amateur gear installed aboard HMNZS Tui.



Phosphate glass dosimeters issued to Tui's crew monitor cumulative exposure to gamma radiation.



Sudden Laughter receives supplies of fresh water and politicians from the Tui. (Front left to right wearing life jackets labour MP Pete Hodgson and Nationals John Carter).



Cat among the pigeons. The ubiquitous French warship among protest boats.



Multiband whip antenna taped to an upper deck stantion.



French patrol boat La Moqueuse.



The yacht Anna with Lars Forberg at the helm.



HMNZS Tui - on station at Moruroa.

away. An underground blast of 96 kilo tonnes had taken place just 80km away beneath the neighbouring atoll of Fangataufa yet not one of us had seen or heard a thing. No flash, no explosion, no mushroom cloud, no electromagnetic pulse. But I guess the trio of sharks and humpbacked whale that had recently appeared near the ship were better placed observers. Better still were the listeners in New Zealand where the shock waves arrived almost an hour later.

Bombs are still being tested so was it all worth it? "Unreservedly, yes" was the general opinion from flotilla crews. In being at the focal point of such strong opposition they felt a useful contribution had been made to creating a climate where the development of nuclear weapons would in future be unacceptable.



Aquila d'Oro, skippered by Peter Williams, leaves Auckland.

P. Williams



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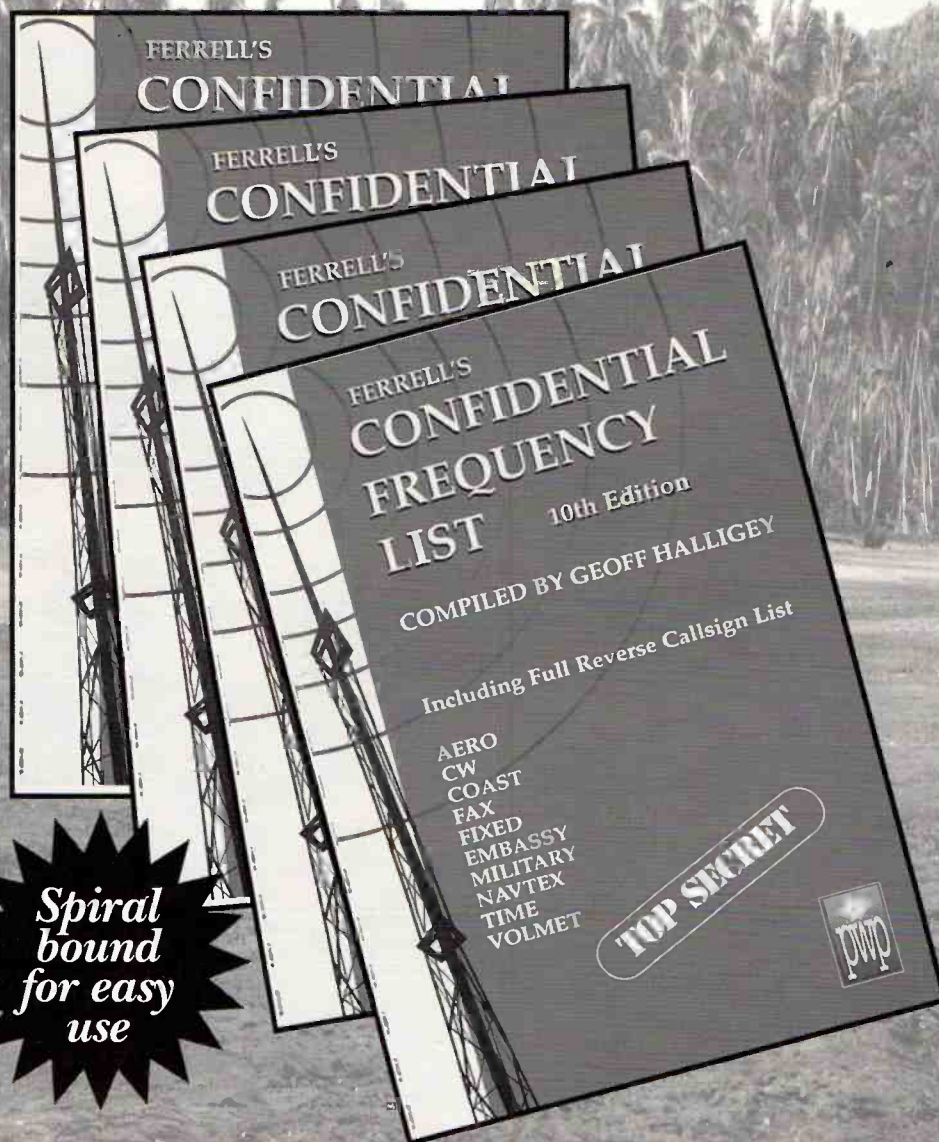
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73 from Dave G4KQH, Technical Manager.

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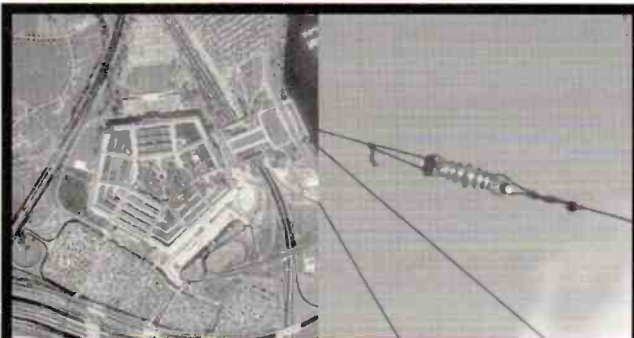
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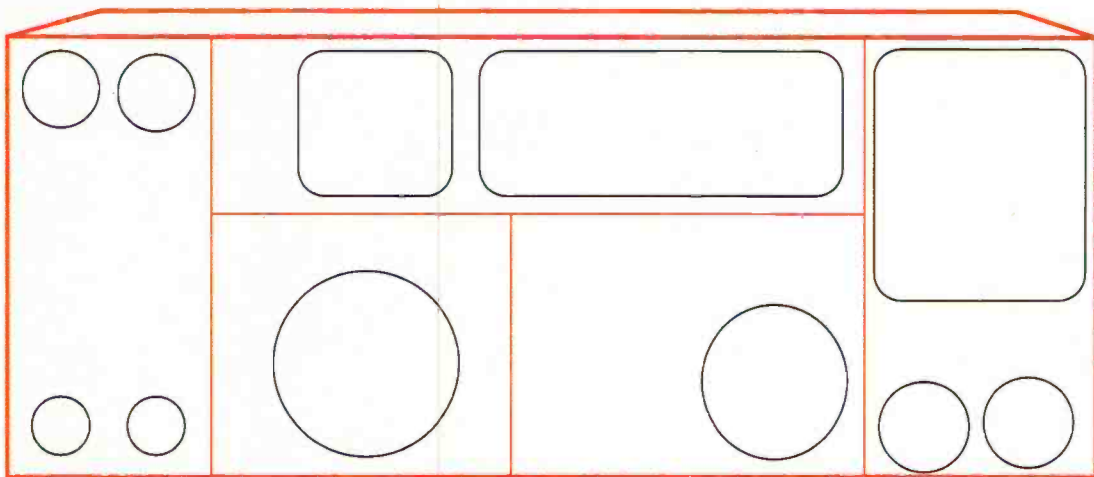
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Match each feature with the correct receiver! The list gives features that have appeared on several recent h.f. receivers. Simply place a tick in the corresponding box to identify which features have been available on which receivers as part of the standard package.



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Send your completed table, together with the answers from Part 1 of the competition in last month's issue (you can use the outline above to mark your answers), to SWM, NRD-345 Competition, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. If you don't want to cut up your copy of SWM you can send a photocopy of the table, but you **must** also send the corner flash from this page as well. The Editor's decision is final and no correspondence will be entered into regarding this competition. Copies of the July '97 issue of SWM containing Part 1 of this competition can be obtained from the above address price £2.85 including post and packing. Closing date for this competition is 31 August 1997.

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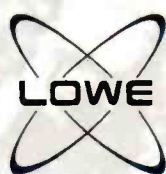
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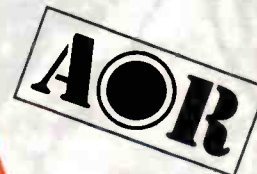
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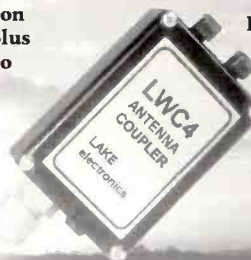
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Cyprus - Land of Aphrodite & Good Reception!

Looking for a holiday destination this year and want to play radio too? Then how about Cyprus? Nick Williams thoroughly recommends it as an excellent place for reception.

Since my article 'Listening On Holiday On Malta' was published in *SWM* back in June 1993, I have had several more trips abroad, but I've generally been disappointed with the results of tuning around. Probably the poor reception was due either to being stuck in the middle of a concrete jungle of high rise holiday accommodation, or being screened by mountains, or both! However, a recent holiday in Cyprus proved the exception, with results well beyond my best expectations.

Central Position

I deliberately chose Limassol for its position on the central southern coast of the island with a clear sea path to much of the Middle East, and I knew beforehand that even if long distance reception proved elusive, then at least I would have quite a range of local stations to listen to.

Our apartment included a TV and amongst the channels available was an, at times, snowy but watchable SSSVC, British Forces Television. This satellite service is re-transmitted at u.h.f. to cover the two British bases on the island and it is also accessible via cable for the UN Forces in Nicosia.

The station SSSVC broadcasts a *pot-pourri* of material taken from all four of the UK's terrestrial services, including all the British and Australian soaps, game shows and quizzes, popular series and documentaries, together with live BBC and ITN newcasts, but with very few films, presumably for copyright reasons.

This proved a tremendous boon as my wife could keep up-to-date with her favourite programmes, leaving me feeling less guilty about spending large chunks of time twiddling my receiver in the bedroom and on the adjacent balcony!

Picked Up & Identified

Using the *World Radio TV Handbook* and the digital read-out of my Roberts RC818 receiver, after dusk I picked up and identified quite a number of medium wave stations. Although reception came from a large geographical area, there are perhaps just half a dozen local languages used for broadcasting in that region, including Greek, Turkish, Hebrew and, above all, Arabic.

If I had dwelt longer on the Arabic language frequencies, I might have confirmed my reception of a particular country by listening out for certain references to that country, but my curiosity at having so many audible stations to plough through generally got the better of me

and I quickly moved on. Because the Arabic languages by far outnumbered all the others put together, the non Arabic ones were easier to confirm.

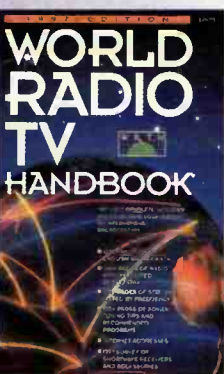
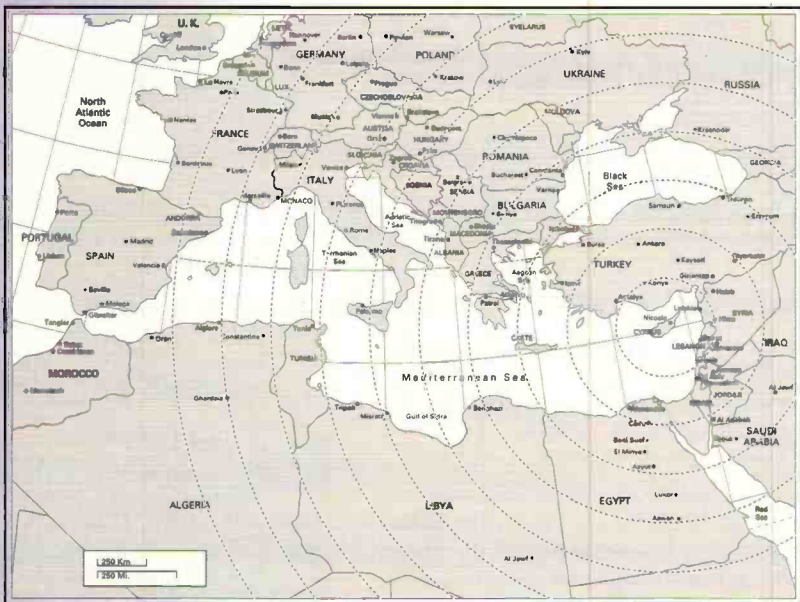
International Broadcasters

Of the major international broadcasters in the area, I heard both of the Voice of America relay stations in Greece, the one at Rhodes having been inaudible during a holiday in that country in the autumn of 1995, but then Rhodes is rather tucked away under Turkey and Greece is very mountainous!

I also heard for the first time the VoA transmitter at Kuwait. Of course, all the transmissions from the BBC relay stations on Cyprus came booming in and I was able to confirm weak reception of the BBC from Masirah Island, off the coast of Oman, by comparing its output



Freq. (kHz)	Station	Country	Power (kW)	Comment
567	Adra	Syria	1000	weak*
576	Tel Aviv	Israel	200	very good
585	Riyadh	Saudi Arabia	1200	v good*
603	Nicosia (CyBC 3)	Cyprus	100	excellent
612	Amman	Jordan	200	weak*
621	Batrah	Egypt	1000	weak*
639	Limassol (BBC Arabic)	Cyprus	500	exc
648	Jeddah	Saudi Arabia	2000	good*
657	Tel Aviv	Israel	200	exc
693	Limassol (CyBC 1)	Cyprus	10	exc
720	Limassol (BBC Arabic)	Cyprus	500	exc
729	Athens	Greece	150	good
738	Tel Aviv (Arabic prog)	Israel	1200	only fair
774	Abis	Egypt	500	v good*
792	Kavalla (VoA)	Greece	500	v good
801	Amman	Jordan	2000	fading
819	Batra	Egypt	1000	v good*
846	Jamming of Iraq, by Iran?			inaudible
855	Bucharest	Romania	1500	good
900	Qurayyat	Saudi Arabia	1000	exc*
963	Nicosia (CyBC 1)	Cyprus	100	good
990	Shiraz	Iran	400	good
1044	Limassol (CyBC 3)	Cyprus	10	exc
1134	Sulaibiyah	Kuwait	100	v good*
1188	Szolnok	Hungary	135	exc
1206	Haifa	Israel	50	exc
1233	Cape Greco (Radio Monte Carlo Middle East, in Arabic)	Cyprus	600	exc
1260	Rhodes (VoA)	Greece	500	exc
1287	Tel Aviv (Forces stn)	Israel	100	v good
1323	Zygi (BBC in English)	Cyprus	100	exc
1341	Cairo ?	Egypt	100	good
1359	Batra	Egypt	450	v good
1377	Jamming of Iraq, by Iran?			inaudible
1413	Masirah Island (BBC)	Oman	750	weak
1422	Heussweiler	Germany	600	weak
1440	Damman	Saudi Arabia	1600	exc*
1494	Yeni Eskelle	N Cyprus	10	exc
				(in Arabic from Turkish occupied northern Cyprus)
1512	Jeddah	Saudi Arabia	1000	v good*
1548	Kuwait City (VoA)	Kuwait	100	exc



with the same programme going out from Cyprus.

My table shows the stations which I definitely heard together with those which I probably heard marked with an asterisk. Thus one can see that Cyprus is an excellent vantage point for medium wave reception from all over the Middle East, the Balkans and beyond.

Overall, I would have been more than satisfied with just the results of tuning the medium wave band there on its own, but reception on the f.m. broadcast band was for me personally to prove even more interesting.

Naturally, BFBS came in loud and clear from the nearby base at Akrotiri providing us with some general entertainment and news, and all of the other BFBS transmissions on the island were audible. CyBC 2, Cyprus Broadcasting Corporation's second network, includes in addition to Greek, programmes in other languages, the English block being from 6pm to midnight local time.

There are numerous local commercial stations on the air playing a wide range of music although none in English in the Limassol area, but according to the newspapers there are three on the Greek Cypriot part of the island which I have included in my second table.

Freq. (kHz)	Station	Location	Country	Comment
87.8	Bayrak R 2	Kantara	Northern Cyprus	*
88.7	Skyline music	Limassol	Cyprus	local, in Greek.
89.7	BFBS 1	Nicosia	Cyprus	exc in Limassol
89.9	BFBS 2	Akrotiri	Cyprus	*
90.9	Radio Napa	Ayia Napa	Cyprus	*
91.1	CyBC 2	Mount Olympos	Cyprus	English, 6pm to midnight
91.9	BFBS 2	Nicosia	Cyprus	
92.1	BFBS 1	Akrotiri	Cyprus	exc
92.4	CyBC 2	Larnaca	Cyprus	English, 6pm to midnight
94.6	CyBC 2	Paralimni	Cyprus	English, 6pm to midnight
95.3	BFBS 2	Dhekelia	Cyprus	
96.5	CyBC 2	Pahos	Cyprus	English, 6pm to midnight
99.6	BFBS 1	Dhekelia	Cyprus	
100.5	Hit FM	Beirut	Lebanon	usually exc
100.5	?	?	Israel	
105.0	Bayrak R 2	Nicosia	N. Cyprus	*
105.5	?	?	Israel	
?	Kiss FM	Nicosia	Cyprus	rock music*
?	Radio One	Nicosia	Cyprus	*

Stations marked with an asterisk are ones which I did not hear personally, but I have included them as they broadcast for at least some of the time in English.

French Language

Whilst tuning around one evening I heard the French language which took me by surprise as it seemed so unexpected in that part of the Mediterranean on listening further it then switched to English and included the announcement: "Hit FM, 100.5".

I immediately concluded that it must be a local station unlisted in the WRTVH, perhaps broadcasting in various languages for tourists, until later on when I heard advertisements for businesses in The Lebanon and, to my delight, it turned out to be coming from Beirut. The station, which from various remarks lead me to believe that it wasn't legally licensed, although its presentation was professional enough, put out an interesting mixture of commercials and announcements in English, French and Arabic.

The station also played a wide range of western popular music from golden oldies to current hit parade material, the music being linked by a Lebanese DJ who spoke excellent English with an American accent, as did most of the teenagers who 'phoned in'.

Reception Varied

Reception varied from day to day from being inaudible to superb. Was this deep fringe reception? Beirut, also on the coast, is about 150 miles south east of Limassol, or perhaps reception enhanced by the weather? But then every day we were in Cyprus, the weather was consistently sunny!

At times, by pointing the aerial in a different direction, an Israeli station could be heard on the same frequency, and as will be seen from my table below, I also received another f.m. station from that country.

Anti Turkish Propaganda

In the southern, Greek Cypriot, part of Cyprus, there is much anti Turkish propaganda to be seen and heard. I have no desire to become embroiled in that debate, but I would have liked to have heard something in English from the Turkish part of the island, but I was not successful, hearing only on medium wave Bayrak Radio in Arabic.

I tended to stay with the very interesting output from Hit FM in Beirut, therefore my f.m. list is incomplete because, as with the Arabic language stations on medium wave, in most cases I didn't attempt to dwell on the local Greek language stations to positively identify them.

My successes on both medium wave and f.m. left me with little time to explore the short waves, we were only there a week! However, I did note jamming of Iran by Iraq (presumably) on 6.175MHz and strong reception of three Mossad numbers stations: PCD on 4.271MHz, SYNC on 5.630MHz and VLB2 on 6.661MHz.

Excellent Place

In conclusion, I can thoroughly recommend Cyprus as an excellent place for reception, whichever parts of the frequency spectrum you are interested in.

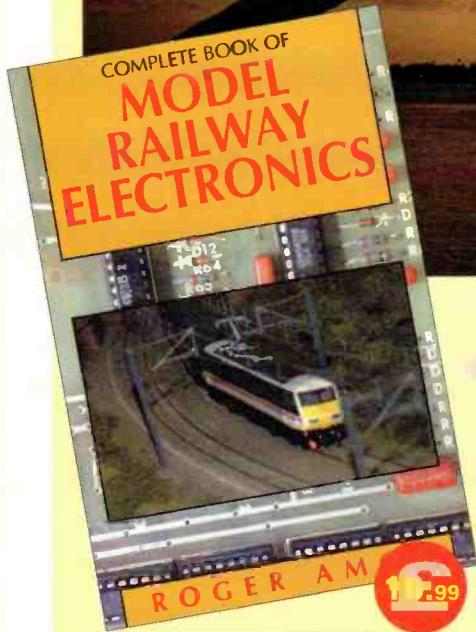
Consider also the many areas I was unable to explore because I did not have my scanner with me. For example, the presence of British, Turkish and UN Forces on the island must provide some interesting traffic, also Cyprus lies at a junction of three continents and is close to several areas of unrest.

Apart from all that, it's got some nice beaches as well!

Books for Summer

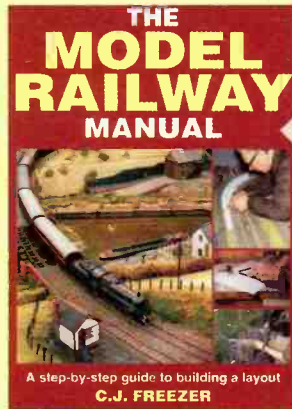
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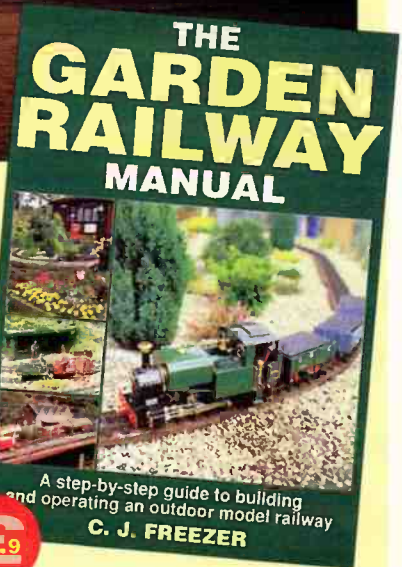


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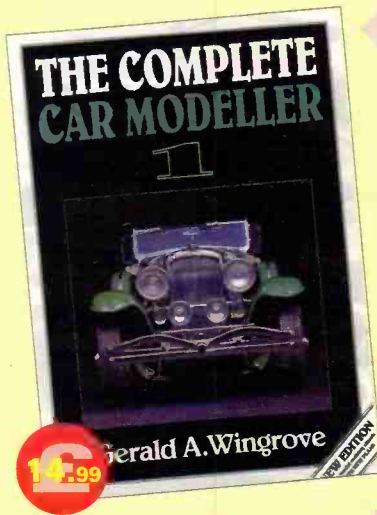
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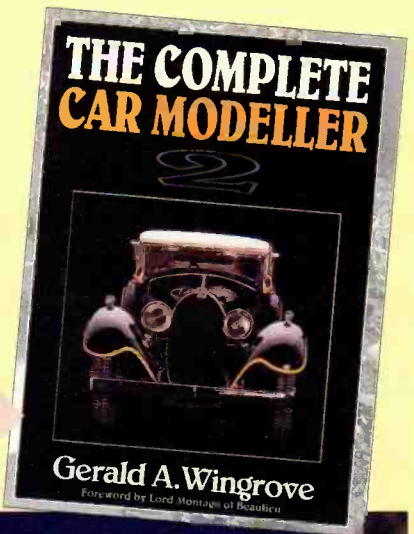
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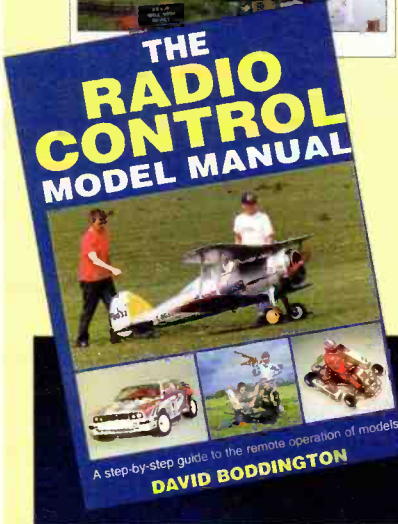
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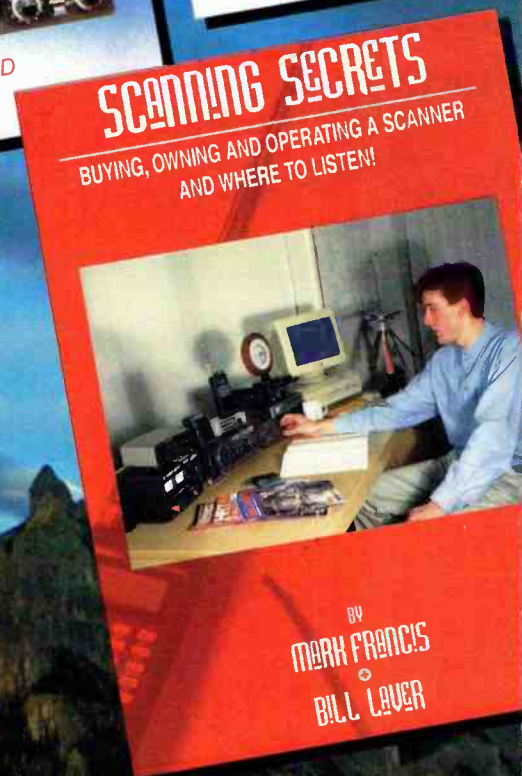
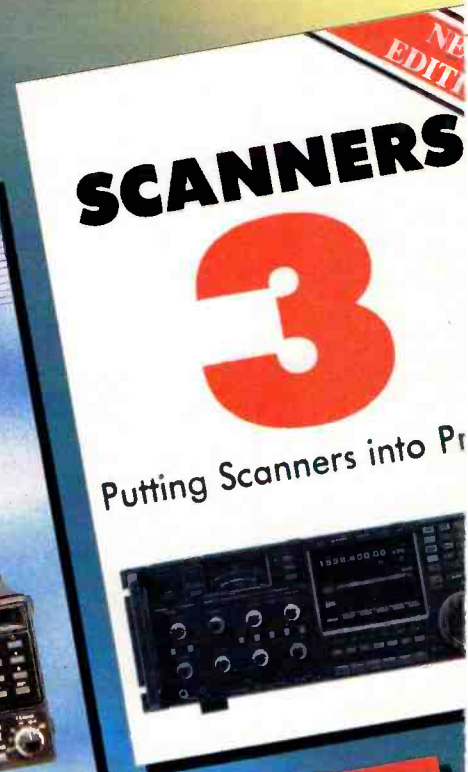


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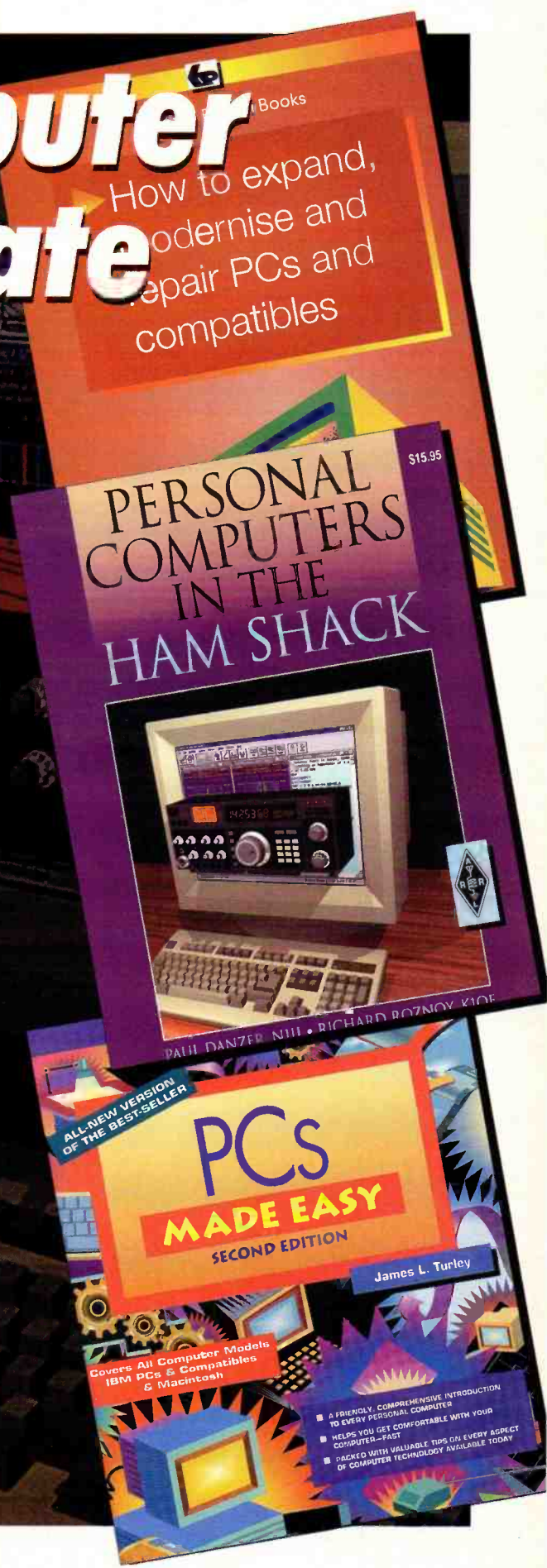
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Amateur Bands

Round-up

■ PAUL ESSERY GW3KFE

PO BOX 4

NEWTOWN

POWYS SY16 1ZZ

An interesting month just completed - starting with snow, then rain and running through a heat-wave to the combination as I write - hot sun cooled by a young gale! It's no wonder so many radio amateurs and s.w.l.s lose sleep worrying about their antennas. Of course, those of us who have beams will be wondering whether the brake gear in the rotator will stand up or whether the gear-teeth will be stripped by the eternal thrashing the wind dishes out. All I can say from forty years of painful experience is that a rotator lacking brake gear is as much use as a nine-bob note when dealing with an amateur array - though they might survive under a TV antenna in a less windy district than mine. On the other hand, the smoothed numbers have at last confirmed what we already knew in our hearts - that the sunspot count is now rising.

One of the problems of amateur radio reception is that we have not yet contrived - and probably never will - a receiver 'front-end' that cannot be overloaded by the incoming signals our antenna collects. The problem is simple - our first tuned circuit is damped by fifty-ohms-worth of antenna which does the Q no good at all. Hence the receiver input is, as we say, as broad as a barn door. So - we can't get rid of the big signals alongside our wanted one. Fine, we must so design things that the most vulnerable stage - usually the mixer - is as 'bomb-proof' as possible, and feed it with of an oscillator that's as clean as possible.

If all that fails us we have an overload problem. Maybe thousands of signals are reaching the receiver antenna terminals, of which we want just one. The Big One causing us problems may not even be in our band, but he nevertheless manages to overload our poor mixer. The mixer grunts and falls over, so all the hundreds of signals beat on the input door mixing with each other and with the receiver oscillator: the result is noise - at a level large enough to swamp all the smaller stuff.

The only answer, then, is to put an attenuator between the antenna and the first mixer; sometimes a fixed attenuator, sometimes a reduction by using the 'RF Gain Control', provided that the latter doesn't in fact operate as a combined 'RF/IF Gain Control'.

The attenuator is the best solution as it retains the receiver's full performance, but alas most receivers only have a fixed attenuator. Just recently I built a switched attenuator out of the junk-box, giving me anything from 1 to 40dB. Quite an interesting problem stopping it 'leaking' by fiddling with the layout incidentally.

To cut a long story short, I put the attenuator in front of my old TS-520S, and compared it against my TS-440S and its fixed level of attenuation. No doubt about it, the switched attenuator proved its worth, particularly on the l.f. bands where overload problems are at their worst. However, I doubt we'll ever see such a switched attenuator in a commercial receiver, if only because of the long period of time involved in persuading it to meet specification.

Letters

Let's make a start on the mail by opening the one from **Ted Trowell** in Sheppey; Ted is quite pleased with himself, as his last hospital visit gave him a good report and the garden plants were doing their thing to order. Once again Ted notes that the Contests - WPX this time - seem to cause 28MHz to open up, with EA6BH, D2M, ZW2L, FG5FR, 9H0A, LU3HIP through the afternoon, plus at 2000 a couple of LUs and KP2J. Around 1800z on 21MHz 6V6U, ZD8Z, LU8HSO, LU1EVL, CE3F, 4X/OK IJR, and TU4FF were noted. At 1100z on 18MHz JM1KFD was logged and after lunch 7N2PTB, 5X1P, EA6ZY, 4X4WF, A71CW, HZ1AB, 9M2AX, 7X2RO, VQ9VK, IS9/OK IRR, VP8CTR, PT7VWX, leaving teatime for 6W6/K3IP. 7MHz at 0500z caught W1CV, and 10MHz at 1900 9H3ZA. The rest were on 14MHz, afternoon through to early evening, by way of JA7SSB, KL7HF, K7QQ, 9V1YC, ZL4OK, JA7OYF, JA2DHF, TA2BS/MM (a 12000-tonne bulk coal carrier), JY5IN, JY9QJ, VE7XD, JH1INQ, VU2AVG, 9M2TO, TR8BAR, AA7JV, TT8DX, FY5YE, and finally 9Q5BQ. All on c.w. of course, even the JA7SSB!

On now to **Colin Dean** in Barnsley, who mainly used 7 and 14MHz. The former band gave him AP2MAM, A45ZN, A92BE, BV5BG, D55RNM, ET3BN, HZ1CCA, JA1, JA4, JA6, JT1FBV, R1ANT, R1FJR, R0/UR8LV, SV2ASP/A, UN7JX, VK3, VK4, VQ9KH, VU2SWS, YB6, YB0, YK1AO, ZL1PB, ZS6P, Z2ZJE, and 4S7BRG; as for 14MHz the crop here included A61AN, A71EF, A92C, AL7O, BV4, BV5, BV6, BV7, BV9, EK4JJ, ET3BN, EZ8BD, HS2CRU, JW7QIA, J83ZB, TR8IG, VQ9LV, VS97KM, ZD7HI, 4F1IX, 4J8YL, 4K6D, 4S7SW, 5A1A, 7Z1IS, 9J2FR, 9K2/SQ5DAK, 9M2SH, 9M8QQ, and 9V1VWV. A rare foray on 18MHz enabled Colin to log AP2JZB, BV5BG, K4YT/EY8, TA1E, TK5BF, VP2EY, Z21CS, 4L5A, and 9K2QQ.

Ted Hearn in Newcastle, Staffs, noted in his covering letter that he was eagerly awaiting his holiday, and Yours Truly admits to a similar feeling! On 3.5MHz Ted noted F5VCR, GX0WMR, MM0AXL, PA3FAD, TI2AIA, YU1XA and M0ARUJ.

A tour of 7MHz wasn't quite so successful, with DL4YT, F5LTT, F6JJX, LA6VWEA, SO3QL, S59A and ZB2FX. As usual in these low-sunspot times 14MHz was the place for paydirt, among which we note A41LZ, A71AED, BV2KI, CN8MB, CT1EYF, an assortment of EAs, EA7/M0AHB/MM, ER9V, IS0DVB, IT9VPT, KP4YA, LA8WF, LY2FG, LZ1CJU, OD5RZ, OH7AA, OE6GMD, PP1BG, PY1FB, PY1BIM, PY2BEV, PY2FJJ, RA3RIU, S52HA, SM5MIX, a few SPs, TK/DL4VCR, UA0SOS, VE3LDT, VQ9KH, 4J3M, 5X4F, 5Z4M, 9A4ZZ, 9A9A, 9A2AA, 9K2MU and 9V1VWV. Finally, at 18MHz for DJ2IB, NB5S, WIKJD, WA2PZV, 4X1FQ, and 4X4FR.

It was 'A' Level time for **Karl Drage** at the time he wrote, from Woodford, near Kettering. By and large he's fairly happy, save for the maths. On a different tack, Karl is puzzled by some of

the 'propagation' oddities he is beginning to notice. Quite apart from the presence of a propagation path between A and B, one also requires that the places are not in a skip null. The only control over the actual angle of launching of the antenna is, basically, height, the other variations are due to the bending of the propagation path.

We talk glibly of reflection by the ionosphere, but in fact it is refraction. Hold a pencil in water, and observe how it looks bent; now ruffle the surface and watch how the bend in the pencil seems to move. That's how it is with ionospheric refraction.

Looking at Karl's log, on 3.5MHz we find c.w. from EA8CO, and sideband from AD4OQ, CO6XN, CP5NU, JA6JBT, LU8AQE, LU8EMM, N2CPR, PU9AAF, TI2MKK, UA2FB, VE1DMS, VE1JBL, VE1PZ, VO1XT, and ZP5YOE. The morse signals logged on 7MHz included EA8/DJ9HD, ER5WU, IS0OMH, K4NV, KA4DXR, PS7ESF, PW8LF, TF3DX, TM9CMN/MM, UA2FL, VE1DBN, and ZP5ADG while sideband produced 9J2TF (his QSL address is via JA2BOV), BV5BG, CE1LDS, CE8EIO, CO6HF, DU6LN, EA8JC, HJ8RLS, HK6KKK, JA5AQ, LU3ANN, LU3HYS, LU8AQE, LW9DYN, PY2BW, PY3JZ, PY6WO, RA0QQ, SV2ASP/A, TA2IJ, V31HU, VO1BD and YY5OFU.

The 14MHz list is far too long for this column, alas, but here we note some RTTY signals, from 4Z4TA, 7K4QOC, 9H1CC, CN8GB, EK6OCM, EO5FI, ER3KS, EW8OF, J87GA, JR5JAQ, K0BX, K3MM, K4GMH, K5IC, K6KQD, K9RRB, KC1YF, LU9VET, OH0WJL, RN3QN, SV1DAR, VE4COZ, VE6RA, VE7OR, VO1OMB, W0IZ, WD6L, and WP2SN. On c.w. Karl noted some forty-odd signals in all continents.

As for sideband, the question of LU7DID/Y is raised - does anyone out there know? - perhaps they'd drop a line and put us all out of our misery!

On to 18MHz where in summary we find 4JX4s, 5B4AFN, 5H3ES, 5Z4RT, 7K2s, D55RYB, ET3BN, a bucketful of JAs, various Ws/K stations, including KL7AC, OK1DAR/BY1BJ in Beijing, PJ8AD, PYs, R0/UR8LV on Dickson Island, RA9FEL, and ZS6GF.

On 21MHz just one sideband by way of PY2SPB, but quite an assortment of c.w. signals including another crop of JAs, a brace of Ws and smaller fry. Finally 24MHz where there were three EAs, possibly due to Sporadic-E, or the fact that on that day the flux was quite high.

Closedown

That's it for another time. As always, letters to reach me by the beginning of the month please, addressed as ever to me at Box 4 Newtown, Powys SY16 1ZZ. Meanwhile, the garden calls - at S9-plus!!

Scanning

■ JOHN GRIFFITHS
 ■ 22 FFORDD BEIBIO
 HOLYHEAD, GWYNEDD
 NORTH WALES
 LL65 2EH

First off, an apology. **Richard Barnes** of **Interproducts** - who publish radio books - has been in touch to ask me to put right a comment made in the May column. Interproducts produce the excellent *UK Scanning Directory* and I made reference that PROMA would be proof reading the 6th edition of a directory which had, unfortunately, the same title name.

This is a mistake. PROMA have absolutely nothing to do with Interproducts and I point out that the *UK Scanning Directory* published by Interproducts is **not** the same as the same title published by PROMA! I apologise and if you're confused, then have some sympathy for me...!

Would **MT** of Newcastle, who supplied the Metro Radio frequencies, please get in touch with **Steve B** (Tel: (0802) 889134) for the exchange of local frequencies? There is a local issue here and the sharing of information may be of benefit to both of you.

Frequencies now from **SP** of Bristol. He informs me that the 'Flying Eye', which is on air between 0700-0900 and 1600-1800 operates on a ground up-link of 141.140. There are also two down-links - 468.800 and 468.950 for live and pre-recorded info to the studio. More comes via Severn Sound Skyhawk, Dragonfly, Flying Eye, GWR FM, Thunderbird 1, Soundwaves Big Brother, Talk Radio Travel Eyewitness, Touch and Virgin which also use this service.

The area covered appears to be from Bristol to Gloucester, Swindon to Cardiff and surrounds. Mr. SP asks for details of PROMA, I did print their address in the July column with details on how to get in touch, so please look back to last month.

Legal Question

A good, informative letter from **TT** of Staffs poses the legal question again, and this is followed by a letter from an elderly gentleman who says he feels like a criminal. TT states that the law is a bit heavy in the UK as compared to Australia where scanning is legal, but areas such as cellular telephones are banned.

TT does point out that the 1949 Wireless Telegraphy Act governs scanners - but that, in 1949, scanners weren't available! I agree, but point out that the Interception of Communications Act short-circuited your observation!

In short, scanning comes under this and it is, therefore, illegal to listen in to any transmission you are not authorised to. However, the authorities do turn a blind eye in the main, although they can get heavy. Which leads me to the next bit in that heavy was how Leek Magistrates viewed a recent case.

A scanner owner was apprehended by police listening in a lay-by in his car, the scanner was found to contain 15 police channels - and it went to court. He was charged under the Wireless Telegraphy Act 1949, fined £800 plus £50 costs and the Crown Prosecution Service asked for the equipment to be destroyed. Interestingly enough, the scanner was, apparently, switched off at the

time of the police seizure.

The letter from the gentleman, **Mr. HF** of Stoke-on-Trent, informs me that he now feels like a criminal and is uncertain as to where he stands on scanning. As previously, I'll say again: In the privacy of your own home, and by keeping frequencies in your head and not in memory banks, you are quite safe.

Likewise, at air displays and in discreet locations, you are relatively safe. However, if you broadcast your ownership or flaunt it, say by driving with the window down and the volume up so everyone can hear you, you're asking for trouble!

In truth, there are no rules. The best thing to do is to be discreet and to be careful. As I've said before, it is a hobby and you can do no harm if you listen in on your own and don't boast about it to anyone.

However, there are exceptions to the rule and, despite all the clippings I get on prosecutions, I believe I get half a story. Use common sense and discretion and you should be okay - but no guarantees!

Internet

Some URLs for the faithful now - and thanks go to TT for these.

euro-scanner-request@grid9.net - Euroscanner Listserv. Send mail "Subscribe".

<http://www.termcon.demon.co.uk/> - Euroscanner home page.

<http://homepages.enterprise.net/nissan/scanner.html> - Scanner frequencies as previously reported.

<http://www.users.zetnet.co.uk/homeland/> - UK site but not a lot on screen as yet. Could get better.

<http://www.davee.com/adar.htm> - Scanner voice only recording software. Needs a soundcard.

<ftp://ftp.termcon.grid9.net/pub/es/> - Download POCSAG pager decoder. Needs soundcard.

If you get any results, please let me know what the sites are like.

Video Senders

UHF Channel 36 - as reported in use by CCTVs - are also used by video senders. Illegal over here, they are in use and can shout their presence in that, if your neighbour is using one, you can receive pictures on your TV. Who said scanning was just about radio?

Maximum Usable Frequencies

MD of Aston asks if anyone can help with a query regarding when the m.u.f. - Maximum Useable Frequencies - starts to creep above 25MHz and into low v.h.f.? He also asks whether anyone has frequencies for bus and coach ops in the Birmingham area? Answers to me please at the column address for forwarding.

Antenna Building

MD also has sent me details on on of his antenna projects which he has recently built. The antenna comprises of an extended telescopic whip measuring some 1.3m this has been extended by using a 430mm length of aluminium rod. Six radials are employed each 1m in length. Using London VOLMET on 135.375 as a reference it seems that whole system works better with the radials vertical!

Frequencies Heard

Frequencies heard at low band v.h.f., by MD, are as follows:

All in French - 35.050, 35.090, 36.025, 39.220, 39.490, 40.025, 40.315, 41.625
 German - 30.075, 30.300
 Italian - 40.090
 Portuguese - 40.015, 40.020, 40.060, 40.100, 40.140, 40.160, 40.180, 40.200, 40.220, 40.7404, 41.325
 Eastern European - 45.015, 45.065
 Unidentified Languages - 30.100, 35.175, 35.975, 40.110, 40.350, 40.820, 40.930, 45.045, 45.300, 45.840

Some ID is needed on these, but I'm sure that aficionados of low v.h.f. will write in to give some clues! This is the time of year when low v.h.f. band signals do tend to propagate further and there is a cult following of such signals amongst scanner owners out there.

Air Shows

Summer is now here and that means air shows! If you're going, listen out for new call signs and report them in to Mr. Bond or myself. I will not stray into airband but I'm interested anyway!

Also, keep your paranormal/supernatural/UFO etcetera stories and cuttings coming in. I'm extremely interested in this area and do write the odd article elsewhere on this form of phenomena so all of your accounts help.

Until Next Month

Right! End of the line at college for me now, qualified and so on. It's time to hunt for jobs and make some dosh to pay back all those loans I took to finance my way through college (groan!). Ah well, what's cheap nowadays?

Have a good summer, keep scanning discreetly and get your news in. Don't forget to send an s.a.e. if you want a reply and please do allow for time for me to reply.

Until next month.



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WATSON

- * 500kHz - 30MHz
- * 6 Band Positions
- * "Q" Control
- * Long wire systems
- * Coax feed systems
- * SO-239 output
- * Size 84x55x60mm



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£59.95

This new short wave antenna tuner will enable you to get the best out of your antenna system. Just connect between long wire or coax fed system and receiver and hear the improvement. Includes our own design "Q" selector which much improves front-end performance.

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WATSON

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Great Value

FREE batts. and case

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The very latest model from Garmin. You won't find better value. A complete navigation system for car, boat or walking!

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As supplied by us to the Police in UK! Active antenna gives superb positioning data whilst mobile.



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Nearfield Receiver
30MHz - 2GHz FM

SAVE £170

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Locks onto any local signal in less than 1 second. Built-in speaker and deviation meter. Auto tune and next channel nudge features. Listen to any FM signal. No need to know the frequency. As supplied to the Police!

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- * 153kHz to 30MHz
- * FM Broadcast
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- * 306 Memories
- * Alphanumeric storage
- * 1kHz dial readout
- * RDS Built-in
- * Pre-set BC stations
- * Built-in whip
- * Ext. Antenna socket
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- * Powered from AA cells

AOR AR-7030



W&S
£694.95

- * 0 - 32MHz
- * SSB CW AM FM Data
- * AM Synchronous
- * 100 Memories
- * 4 filters fitted
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- * Passband tuning
- * Enhanced AGC
- * Noise spike compression
- * Six level attenuator
- * Bar S-meter
- * AC adaptor included

AOR-7030 PLUS - Should be in stock by the time you read this - PHONE for DEAL

KENWOOD R-5000



W&S
£885

- * 100kHz - 30MHz
- * SSB CW AM FM
- * 100 Memories
- * 10Hz steps
- * 3 IF Filters
- * Analogous S-meter
- * Dual AGC
- * Dual Noise Blanker
- * Wide dynamic range
- * Notch filter
- * IF shift control
- * Built-in timer
- * Built-in AC supply
- * Ext. 12v DC operation

Icom ICR-8500

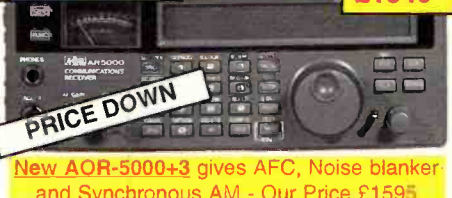


W&S
£1449

- * 100kHz - 2GHz
- * SSB CW FM WFM AM
- * 1000 Memories
- * 4 IF Bandwidths
- * Alphanumeric
- * Analogue S-meter
- * RS-232 interface
- * IF shift & Audio filter
- * Keypad entry option
- * Min tuning step 10Hz
- * Sleep timer & record
- * 12v DC supply

AOR AR-5000

SAVE £400



W&S
£1349

- * 10kHz - 2.6GHz
- * SSB CW FM AM
- * 1000 Memories
- * 2100 Pass channels
- * 5 Independent VFOs
- * Alphanumeric
- * 6 IF bandwidths
- * 45 ch. per sec. scan
- * Duplex monitor mode
- * RS-232 Port

New AOR-5000+3 gives AFC, Noise blanker and Synchronous AM - Our Price £1595

- AS-5000 Auto 4-way ant. switch £82.95
- CT-5000 CTCSS decoder for AR-5000 £72.95
- DS-8000 Speech inverter (also for AR-8000) £64.95

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W&S
£158

- * 30kHz to 30MHz
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- * 1kHz steps
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- * 1kHz readout
- * Lovely display
- * S-meter included
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- * Very easy to use

New HF-3M in stock £199

Icom IC-R10



W&S
£349

Special

- * 500kHz - 1300MHz
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- * Real-time bandscope
- * 1000 Memories
- * Alphanumeric display
- * Improved front-end design
- * Voice scan function
- * Large clear LCD
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- * 100Hz resolution
- * Noise blanker

Price Match

Yupiteru MVT-9000



W&S
£399

Star Scanner

- * 530kHz to 2039MHz
- * 1000 Alphanumeric Memories
- * Duplex monitoring & tracking
- * USB LSB CW AM FM
- * Channel spectrum scope
- * Blistering scanning speed
- * Good performer on the SW bands
- * Totally programmable
- * Multiple tuning steps
- * Extremely sensitive front-end
- * Good strong signal performance
- * Includes AC charger and Ni-cads

Price Match

We can supply any ham radio item - phone for deal 62

W&S

Welz WS-1000 Scanner

July Special

£299

£229



- World's smallest scanner
- FM, WFM, & AM
- 500kHz - 1300MHz
- Fast scanning speed
- Clear LCD readout
- 400 Memories
- Super sensitivity
- Good strong signal handling
- Runs from just 2 x AA cells
- Battery saving mode

Ham Radio Today Review says "Lovely little set - very sensitive receiver"

OFFER ENDS 31st JULY

Accessories:

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- CSA-401 AC charger£36.95
- WSC-1000 Soft case£14.95

AOR AR-8000 Scanner

Special

W&S £299



- 500kHz - 1900MHz
- WFM, NFM, SSB, AM
- 1000 Memory Channels
- 20 Search Banks
- 30 ch. per second search
- Band Scope Display
- Password Protect
- Computer control outlet
- Signal Strength meter
- Illuminated Display
- Programmable Steps
- Ni-cads and AC charger.

Price Match

Yupiteru MVT-7000 Scanner

Special

W&S £249



- 100kHz - 1300MHz
- WFM, NFM, AM
- 200 Memories in 10 banks
- 20 channels per second speed
- Programmable Steps
- Illuminated Display
- Audio and Carrier Search
- Signal Strength meter
- RF attenuator switch
- Ni-cads and AC charger

Price Match

Yupiteru MVT-7100 Scanner

Great Value

W&S £269



- 100kHz - 1650MHz
- NFM, WFM, SSB, AM
- 1000 Memories
- Signal Strength Meter
- Illuminated keypad - display
- 500 Ch. pass memories
- 30 Ch. per second speed
- Unique mode scan
- Ni-cads & AC Charger

Price Match

Yupiteru MVT-7200

Special

W&S £359



- 100kHz - 1650MHz
- WFM, NFM, SSB, AM
- 1000 Memories
- Illuminated keypad - display
- Signal Strength Meter
- Built-in ferrite AM aerial
- Narrow band SSB filters
- Improved SW reception
- Improved selectivity & batt drain
- 30 ch. steps per second
- Ni-cads & AC Charger

Price Match

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Check our pages for the latest hot news.
<http://www.monitor.co.uk>

AT-2000 Listener ATU



W&S £99.95

For the very best in ATUs the AT-2000 has to be the choice. Hundreds in use around the UK - it's the best.

MFJ-784B DSP filter



W&S £239

- Works with any receiver or transceiver
- This filter is fully programmable with memories
- 16 factory pre-set positions for easy use
- Plugs directly into the headphone socket
- Drives speaker or headset to good volume
- Requires 12v DC at approx. 500mA.

OptoElectronics Scout

- 10MHz - 1.4GHz
- 400 Memories
- 255 hits record
- Auto store/ recall
- Interfaces with AR-8000
- Ni-cads and charger

The sure way to get frequencies

OptoElectronics Xplorer

- 25-1300MHz
- Nearfield Monitor

- Complete FM Receiver
- Spectrum scan in 1 second!
- Reads out exact frequency
- Records "hits" and multiples
- Shows tones and deviation
- Computer interface option
- Ni-cads & AC charger

FC-128 Counter

1MHz - 2.8GHz

This new model has a wide frequency range and is powered by internal ni-cads. External BNC socket with aerial makes it very sensitive. Supplied with AC charger, it is very well built. Don't be fooled by the price!

QS-400

- Mounts handy or GPS on dash grill
- The safe way to go mobile
- Quick release feature.
- Doesn't use nasty adhesive!

QS-300 Desk Stand

- Handheld Desk Stand
- Firmly holds handheld
- Adjustable angle
- BNC plug to SO-239 socket
- Superbly made unit.

Portable Antenna

- 1.8 - 30MHz
- Unwinds to 28ft, supplied with 3.5mm plug and whip clip adaptor. Winds back in seconds. Great for portable use, indoors etc. Connects to any receiver

WATSON BNC Scanning Whips



Watson Super Scan Whips

No other models offer the same features and performance. Beware of copies that only "look the same!" You can rely on Watson to give you the kind of performance and quality that is synonymous with the name. The most popular scanning antennas in the UK. - Fact!

- 25MHz to 1900MHz
- Fully flexible with BNC fittings
- Out-perform all others

- Tele-Gainer** 41cm long rigid telescopic whip with knuckle joint £14.95
- Regular-gainer** 21cm flexible whip that is ideal as replacement whip £12.95
- Super-Gainer** 40cm flexible model for the ultimate in gain £19.95

WATSON WSM-1900 Antenna

Mini-Magnetic Scanner Mobile Antennas

W&S £29.95

Airband Civil & Military model WSM-225

- 25MHz to 1.9GHz Car Antenna
- 29cm super magnet that really sticks!
- Low profile 400mm long black whip
- 2.75m of coax fitted BNC plug
- Out-performs all others
- Scanning whilst on the move

WATSON WMM-1 Modem

Lowest Price Ever! Money Back Warranty

W&S £69.95



The best value in data decoders!

- Packet, AMTOR, CW
- SSTV, Fax, RTTY
- NAVTEX, SYNOP
- Transmit and receive
- Needs PC 286 or better
- Includes software
- No external power required
- Connects to RS-232

WATSON GPS Active Antenna



- 1.6GHz GPS ant.
- Low profile for car
- Magnetic mount design
- 6dB gain design
- Guarantees improved range
- BNC terminated coax.
- OK for Garmin etc.

W&S £39.95

WATSON WEP-400 Earpiece



- Improved
- Soft pad
- Left/right fit
- 8-Ohm driver
- Extremely comfortable
- Fitted with 3.5mm plug

W&S £14.95

WATSON WSC-2 Belt Case



- Combined quick release spring clip and belt loop. Self adjusting, fits all handys.

W&S £14.95

SSB Utilities

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 ■ 64 ATLEE ROAD
 HAYES, MIDDLESEX
 UB4 9JE
 ■ E-Mail:
 graham.tanner1@virgin.net

From 30th May 1997 British Telecom withdrew from Niton on the Isle of Wight. This will result in some frequencies being no longer used.

The 500kHz WT service from Niton has gone, and the m.f. RT service has also disappeared. This means that channel UNIFORM (2.628/ 2.009MHz) is no longer used from here. Niton Radio was the only station operating on Channel Uniform, so I do not know what will happen to these frequencies now.

There are still two frequencies which will remain active from Niton. These are the broadcasts of weather and navigational warnings on 1.641MHz controlled remotely from either Landseid (GLD) or Humber (GKZ), and the NAVTEX transmission (broadcasts [S] and [K]) - but this has always been remotely controlled from Portishead Radio. As you will have read in last month's magazine, readers **David Bailey** used to be based there, and his article gives a superb insight as to the workings of a typical coast radio stations.

Hurricanes

The summer months in the northern hemisphere are prime times for hurricanes to appear, and 1997 is no exception. The 'season' officially starts on June 1, and lasts for six months. As ever, in the USA, the NOAA (National Oceanic & Atmospheric Administration) will be sending their aircraft up to investigate and track hurricanes as they approach the USA. They will be assisted by a special USAF squadron with aircraft equipped to track and fly through the storms, attempting to study the complex weather patterns in and around a hurricane.

For many years, all hurricanes were named in an alphabetic sequence of female names (I guess that it's something to do with their 'unpredictability!'). In the early 1980s, the NOAA

decided to bow to pressure, and changed the naming sequences, and now they alternate between male and female names. Hurricanes on the Pacific coasts run in the sequence male, female, male etc., and those in Atlantic run female, male, female, etc. Then, in the following year, the sequence swaps the other way. The names used for hurricanes in the Atlantic for 1996 and 1997 are as shown to the left.

As a tropical storm develops, once it reaches a certain stage it is allocated a 'name' from the list. By late June, tropical storm 'Carlos' was being tracked, so the season is off to a good start already.

The NOAA has a web-site, but it is more suited

to those who want to know about the NOAA itself. I could not find any links from NOAA to hurricane related web-sites, but I did manage to find a huge quantity of information by doing a web-search for 'Hurricane'. While surfing the FEMA site (see later), I did come across a link to a NOAA site belonging to the National Hurricane Centre (<http://www.nhc.noaa.gov>), and this gives a brief forecast of the weather situation in the Atlantic and eastern Pacific.

The web-site of the US governments 'Federal Emergency Management Agency' (<http://www.fema.gov>) has links to all sorts of emergency related items, the 'link' to follow is the one to 'tropical storms'. This is updated on a daily basis (and sometimes even an hourly basis) with information about the location and intensity of likely hurricanes. The FEMA web-site is a very good place to start when you hear about any natural disasters in the USA, as the web-site contains all kinds of useful information.

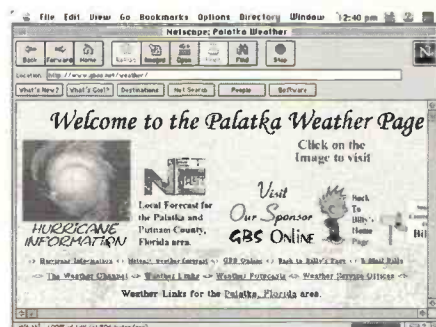
Two of the best sites were as follows. Firstly <http://www.bluecrab.org/environment/hurricane.htm> is a site with a very good text about hurricane hunting, the aircraft and people who venture inside them, and a brief history about the early days of flights into the 'eye' of the storm.

The site at <http://www.gbso.net/weather/hurricane.htm> contains a vast selection of pages and pictures, and a lot of links to other related sites. Some of these are forecasts of where a hurricane is expected to reach land, and there are also satellite images of hurricanes in progress. This site also has some software for tracking hurricanes, but I have not tried a copy yet myself.

Another 'hurricane' related web-site is that belonging to the USAF's 53rd Weather Reconnaissance Squadron, based in the southern USA, on the borders of the Gulf of Mexico. This particular squadron is known as the 'Hurricane Hunters', and their web-site is <http://www.hurricanehunters.com/welcome.htm>. This site includes a 'cyberflite' into Hurricane Opal, which caused \$3 billion in damage and nine deaths in the USA. By following some of the links on this page, you can get an up-to-date weather satellite map of the Atlantic and Pacific oceans.

Oil

The WUN (World Utility Network) Newsletter recently contained an article about oil-drilling operations around the world, and the way that they use h.f. frequencies for keeping in touch. One surprising entry was for an un-named company operating in and around the UK. It mentioned a single frequency used by them, but gave no further details. The frequency listed was 7.863MHz u.s.b. The article did not mention anything about transmission schedules, or who the company was. I wonder if any readers of this column have encountered any signals on this frequency. It is listed in *Ferrell's CFL* (10th Ed.) as 'Walton-on-the-Naze, North Sea oil-rig traffic'. I do love a good mystery, and I hope that somebody out there can tell me (and you!) some more.



Rescue

For the past few years the last remaining yellow Wessex 'Rescue' helicopters have been based at RAF Valley on Anglesey. They were operated by 'C Flight' of 22 Squadron, RAF. By the time that these pages are read, they will all have moved-on and been replaced by Sea King helicopters.

For the past few years, the Wessex helicopters were gathered together at Valley for the training of SAR aircrew, but were available for rescue missions if necessary. Last month's 'Heaven!' article by John Griffiths contained some good information about how SAR crews are trained, and also has some nice pictures of them in action. They were always a familiar site around north Wales and Merseyside. The RAF has recently taken delivery of new Sea King helicopters, allowing the Wessex to be retired. They used to use the callsign prefix 'SRD' when using h.f. (the Sea Kings use 'SRG'). Of course, when they were on a 'rescue' missions they used the callsign 'Rescue'.

Letters

What has happened to all your letters this month? I have only received one letter this month (thanks B.H.). Earlier in the year I mentioned that people had asked me to bring back the 'Traffic Log' section, but if I receive no letters and logs, it is very difficult to fill this page. Perhaps I am covering the wrong subjects - so what subjects would you like me to cover? I look forward to receiving your letters and suggestions.

Pacific	Atlantic
Andres	Ana
Blanca	Bill
Carlos	Claudette
Dolores	Danny
Enrique	Erika
Felicia	Fabian
Guillermo	Grace
Hilda	Henri
Ignacia	Isabel
Jimena	Juan
Kevin	Kate
Linda	Larry
Marty	etc
Nore	
Olaf	
Pauline	
Rick	
Sandra	
Terry	
Vivian	
Waldo	
Xavier	
York	
Zelda	

Satellite TV News

■ ROGER BUNNEY
 ■ 35 GRAYLING MEAD
 FISHLAKE
 ROMSEY, HANTS
 SO51 7RU

Project Utopia' was perhaps one of the largest and most expensive corporate TV hookups seen on satellite television. Our Isle of Wight satellite reporter **Roy Carman** found late morning June 9th and into early morning June 10th, unfolding a mixture of live outside broadcasts building up from countries around the World and using Telecom 2D as a main distribution feeder into the UK. The BBC, along with Maxsat, were actively involved with organising the event as witness the caption 'Utopia BBC/Globecast London' on Telecom 2C. Undoubtedly the event included VTR playouts but in total input (seemingly live) was received via Telecoms 2C, 2D, Eutelsat II F2 and Intelsat K from Warsaw, Bangkok, Paris, Hong Kong, Sydney, JFK New York + one other US airport, Victoria Falls, Munich and Berlin. Project Utopia transpired to be a mega no-expense spared corporate event for British Airways in celebration of their new logo and multi-coloured tailplane! Interesting to note the OB facility company ex Sydney 'Zero Zero Outside Broadcasts'. The multi-national feeds were eventually edited onto a master tape and then played out many times over-air.

Perhaps more inspiring to our younger readers was the visit by Michael Jackson to Phantasialand, Germany, which was widely reported June 14 with Orion Atlantic 37.5°W carrying traffic and packages backhauling into the 'States (12.667 + Intelsat K 11.470GHz H). A more metallic corporate was a Rolls Royce offering via Eutelsat II F2 (10°E 11.670GHz H) mid afternoon of the 15th concerning a new large aircraft engine for the A340 - the competitor to Boeing's 747. The live feed was brought to Eutelsat courtesy of the Optex UKI 178 SNG unit.

John Locker has successfully extended his satellite reception to digital using a modified Nokia 9500 (via Bentley Walker, Hayling Island). One characteristic is that revising the receive parameters for a given signal will wipe out any previously programmed in data. Investigation has revealed that the 'red menus' within the Nokia beast run to over 20 data retainable memories. It's been possible therefore to program in the channel package M/bit + FEC rates to suit the many MPEG news feeds regularly encountered and access the respective memory giving give very rapid lockup of incoming digital video signals.

Picture quality is superb - a strong signal is necessary or nothing locks up!

In the warmer climate of Sri Lanka reader **Bandula Gunaskera** has found both an Egyptian channel and perhaps more exciting a new Iranian TV channel on PAS-4 (68.5E) in C-Band - 4.034GHz horizontal together with Madagascar TV via an out of orbit Gorizont 19 @ 96.5°E 3.825GHz right hand circular - the signal is in SECAM and suffers low chroma levels. One of the problems with C-Band is that many Intelsat/Gorizont craft use circular polarisation - left or right hand - where-as other satellites use conventional linear - vertical or horizontal. Circular can be optimised using an in-feed PTFE slab though it needs twisting through 90° to select left or right. More recent entries into Ku-Band circular operation have been series in-feed depolarisers operated from the receiver though no C-Band equivalents have been seen, normally using the traditional mechanical polariser for linear discrimination.

At long last I have a tracking satellite dish operational at my new address, my last satellite reception being late January. It's a prime focus supplied by Unicorn Satellite Systems at Farnham on a specially made stand, Racal magnetic polariser and Chaparral LNB, the dish also appears as a 'Reference' model in Chaparral installations. It's also my first experience with horizon to horizon motor drives, having grown old with conventional actuator arms. An experienced antenna engineer lined up the dish across the Clarke Belt taking only 30 minutes - an impressive demonstration with an accurate result using an inclinometer, protractor, spirit level, ruler and a GPS unit. Number 2 dish was also aligned accurately and initially will be fired up in Ku and as time allows will be retrofitted into C-Band. The H to H is driven via a Pace MSP-200 positioner. The operator's manual is a total of 23 A4 sides of instructions, programming, etc. - my earlier Drake actuator arm control unit instructions were on two sides of A4! But the Drake only had an East and West plus on/off buttons - life was simple then. On firing up my system I found that the polariser was inoperative. Checking cables, polariser itself the problem was eventually identified as an open circuit phono plug on the back of the LNB/polariser power supply. A very unusual fault.

Within two days of my dish being in full

operation a knock at the door and the local council's planning enforcement officer had arrived, my new dish was in breach of the 1992 DOE satellite dish regulations, etc., etc., in that a second dish wasn't allowed on my property. Since four out of five sheds within 30m in neighbouring gardens exceed both the height and size of my dish is an interesting observation and I suspect permission wasn't sought for those. How the plot thickens and develops will continue.....

Good to hear from **Cyril Willis** at Kings Lynn, earlier problems with his dish have been resolved and a new catch has been the Scandinavian Thor-2 satellite at 0.8°W, this slot is becoming Scandinavia's hot spot in the sky not unlike Astra is to Central/Western Europe.

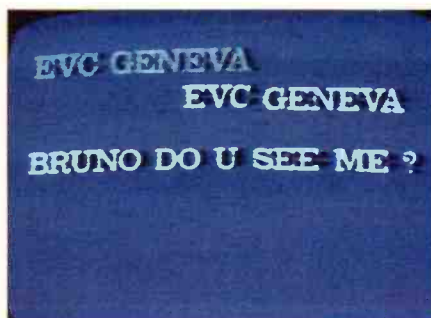
My only offering to this column early into the life of my new dish includes numerous news feeds ex the 'Denver Summit of the Eight' via Orion-1 37.5°W weekend of the 21/22 June and a 17th June sighting on Eutelsat II F3 @ 16°E with a 'London Teleport HBO Test'. HBO being an American cable programmer might suggest that a new programme source could be available soon - though I'm sure in an encrypted MPEG variation...having been off the Clarke Belt for over four months it was pleasing to find that tuning across the sky didn't reveal an analogue desert - there are lots of signals available!

And the final epilogue, the New Zealand *SatFACTS* magazine has offered in the June '97 edition thoughts that this year's forthcoming *Leonids* meteor shower might just be 'the one'. Apparently every 33 years or so the annual shower peak becomes extremely intense and as such one particle or larger may just hit and damage/destroy any given satellite in orbit - odds are put at 357 to one for a hit a particular craft. I recall the *Leonids* in 1966 when Band 1 resembled a major Sporadic-E opening. Make a date for November 17 @ 1100UTC to see the action.

News In Orbit

For those that combine satellite with multi-media and computer interests then good news from Eutelsat with the start of the first DVB based-Internet service from mid-summer 1997. Based around a 600mm dish, feeding into a DVB-MPEG-2 card for the PC speeds up to 40Mbits/transponder can be used. More when information arrives from Eutelsat.

Canal+ and decoder maker Seca are



'Well, I did!' via Eutelsat II F4 @ 7°E.



Via Orion Atlantic fex Peru for Madrid.



The daily Asian news feeds via 7°E for Europe.

DX Television

by Keith Hamer and Garry Smith

■ Keith Hamer &
Garry Smith
■ 17 Collingham Gardens
Derby DE22 4FS

What a month May has been! Most enthusiasts reported a slow start with only a handful of small openings yet collectively, reception reports indicate that Sporadic-E activity was present most days at least somewhere in the United Kingdom. Days 15, 16 and 30 were the most productive days with a deluge of signals from all over Europe.

Sporadic-E Reception Reports

Calum Macleod (Isle of Lewis) noted his first Sporadic-E opening on 7 May with signals from Switzerland (DRS), Spain (TVE-1), Hungary (MTV-1) and the Czech Republic (TV Nova).

On 27 May, pictures of churches and the Pope were identified on Channel R2 as Poland by **Simon Hockenhull** (Bristol). At least we know that TVP-1 still has an outlet in Band I!

It is always exciting to see what changes the various services have made to captions, clocks, test cards, etc. Not surprisingly these affect mainly the former CIS countries. Now if only they would use individual test cards rather than the ubiquitous Russian G-204 with its meaningless identifications!

On 15 May, **Stephen Michie** (Bristol) saw a G-204 test card and caption on Channel R2. This was followed at 1225UTC by a clock with a black background and white letters below the face. Stephen thinks this could be the Ukraine or Belarus. Stephen adds that the Lithuanian clock has changed its style from last year. Also on May 15, the G-204 test card from Lithuania was shown for a few seconds after closedown.

A mystery π or 'II' logo in the top-left of the screen was observed by **Tom Crane** (Hawkehill, Essex) on Channel R2 at 0850UTC on May 16. Two Italian private stations were identified by Tom on the 22nd: TVA on Channel IA and the 'VIDEO' shopping channel, just below E2 at 47.873MHz. **Joop Prosée** (Netherlands) suggests that the 'V' in the logo is really an 'X' and the station should be called 'XIDEO'. Recently the signal has been clear enough for a more detailed examination. It is definitely 'VIDEO'; the 'V' is stylised and adjoins the letters 'I' and 'D'.

Over four hours of solid DXTV reception on May 16 was clocked up by **Peter Barber** (Coventry). Spain (TVE-1) on E4 was the first signal to be logged at 0711UTC. By midday, Rumania (TVR) R2, Ukraine (YT-1 and YT-2) R2 and Norway (NRK-1) E2 had been logged. At 1639UTC on Channel R2 there was a discussion programme with the logo 'CST-1' in the bottom right-hand corner of the picture. This seems to suggest the Czech Republic as the origin of the signal but CST-1 no longer transmits in Band I. It has been replaced by 'TV Nova'. Belarus with the 'bT' logo inside a rectangle was seen shortly after 1800UTC. Nearly five hours of reception occurred on the 30th commencing at 0738 with Iceland (RUV) on E4 with programme schedules. Other signals noted later in the day included Norway, Ukraine, Portugal, Spain and Slovenia.

On May 28 at 1800UTC, **Chris Howles** (Birmingham) discovered a mystery PM1544 test card which was co-channel with RAI UNO on Channel IA. This seems rather late for normal

test transmissions so perhaps there is a new Italian private station on test.

Some tropospheric reception occurred on 30 and 31 May with several Danish TV-2 u.h.f. outlets being received by **Andrew Burfield** (Essex). These were Odense E22, Hadsten E26 and Viborg E56.

Logo Change

Shaun Taylor (Howden, East Yorks.) has identified several European countries so far this season including Portugal, Italy, Spain, Belarus, Ukraine and Russia.

The Russian logo seems to have changed (originally a 'I' inside a circle) and consists of a 'I' superimposed over an oval shape. Shaun noticed the letters 'ORT' just before an advert. **Lt. Col. Rana Roy** (India) has also seen this logo many times on Channel R1 this season. Most of the reception has appeared between 0530 and 0800UTC.

Reception In Finland

Pertti Salonen (Finland) witnessed his first Sporadic-E signals on May 3 with Moldova (TVR-1) on Channel R1 and Austria (ORF-1) on E2a at 0835UTC followed later by Italy (RAI UNO) on IA. A midday opening on the 7th produced signals from Germany (ARD-1) on E2 and Italy (RAI UNO) on IA. Germany was identified again on the 14th, 17th and 18th.

Arabic DX

In Derby on Channel E2 at 0700UTC on the 15th, a flag with stars was seen followed by the inside of a mosque. There was no obvious identification and the signal faded at this point. TV Nova (Czech Republic) was roaring in on R1 at the time.

Weak Channel E2 signals from the Syrian 2nd network were received around 0700UTC on June 1. By 0725, pictures were strong and clear consisting of waterfall scenes and a line of Arabic text towards the bottom-right of the picture. It is interesting to note that the distinctive 'Syria' logo was not displayed until 0730.

FM Reception Reports

Finnish DXers encountered Italian signals as high as 108MHz on 7 May between 1230 and 1330UTC, according to **Pertti Salonen** (Finland). On the 16th, **Mike Gaskin** (Cornwall) noted signals from Eastern Europe including 'Fun Radio' on 87.70MHz which sounded Rumanian. The 20th and 22nd produced openings into Spain with an Arabic-speaking station on 87.60MHz. This is not listed but Mike is convinced it is Morocco. **Andrew Jackson** (Birkenhead) has heard a new Irish station on 100.90MHz from Kippure. The RDS readout displays 'IRELAND'. During the late May tropo, **George Garden** (Edinburgh) identified Manx Radio (Isle of Man)

on 103.70MHz using his NAD 414 stereo RDS tuner.

Equipment

Shaun Taylor (Howden) has erected a VF-100 compact v.h.f. array covering Bands I, II and III (see Fig. 3). This feeds a D-100 converter with narrow bandwidth i.f. which in turn feeds a 12in black and white portable (Fig. 4).

Ian Moody (Surrey) recommends using a video processor unit when recording Sporadic-E signals. The processor strips the original syncs and re-inserts new ones thus stabilising messy signals. The drawback is the cost - almost £1000!

Wayne Simpson (Blaydon-upon-Tyne) has acquired a second-hand Roadstar portable but wonders if the v.h.f. tuner is working. The usual lines and bars over Channel R1 and p.m.r. signals throughout Band III are present so it seems to be alright. All that is needed is a good dose of Spanish TVE to confirm whether the telescopic rod antenna is effective, or not!

Channel 5 Update

The tentative start dates of the Channel 35 transmitters are as follows:-

Station	kW	Polarisation	Date
Bilsdale	50	H	27 August 97
Darvel	100	H	2 July 97
Fenton	10	V	6 July 97
Hannington	60	H	16 July 97
Kilvey Hill	10	V	18 June 97
Ridge Hill	100	H	23 July 97
Sudbury	50	H	10 September 97
Waltham	250	H	16 July 97
Wrekin	100	H	22 June 97

Service Information

Pertti Salonen (Finland) advises that the new Finnish fourth television channel is called 'Nelonen' and opened on June 1 using Channel E41. The main transmitter is located at Jyväskylä and there is a low-power repeater on E50 at Vaajakoski. Coverage will extend to Eastern Finland later this year.

In Germany, the Wesel-Büderich transmitter on Channel E59 has resumed broadcasting 'WDR-TV' programmes. 'VOX-TV' was using this channel. The transmitter is located very close to the border with the Netherlands.

Finally, in Estonia, 'TV 1' is now operating in Tallinn on Channel E45 using the PAL colour system with 5.5MHz sound-carrier spacing.

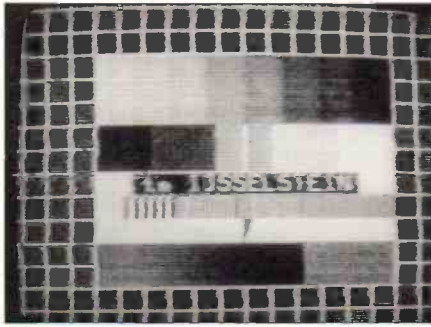
Keep On Writing!

We've been overwhelmed with letters this month! Thanks to all the readers who have written in. Please send DXTV reception reports, equipment news, off-screen photographs and general information for future columns to arrive by the 3rd of the month to:-

**Garry Smith,
17 Collingham Gardens,
Derby DE22 4FS,
England.**

Continued on Page 67

DXTV continued from Page 65.



The Dutch FuBK test card with unusual identification. The network is not known. This was received during a tropospheric opening by Stephen Michie.



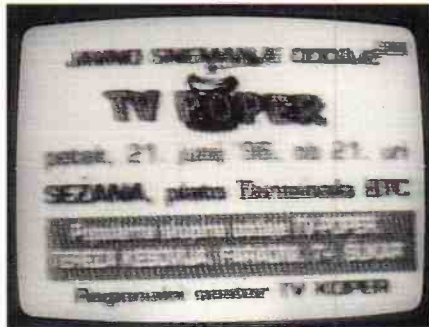
RAI UNO newsreader via Sporadic-E, received in Bristol.



Shaun Taylor's compact all-channel v.h.f. antenna, mounted on a rotator.



Shaun's shack showing his D-100 DXTV converter, portable TV and f.m. radio. The radio allows the various TV sound systems to be heard via the D-100.



Slovenian text page received on Channel E3 by Stephen Michie.



This month's visit down memory lane. This mechanical Globe symbol was used in 1965. Does anyone remember it?

complaining to the EU after the Spanish government restricted sales of C+ decoders (Mediaguard) in support of encryption technology of a rival digital group. They comment the restriction of the encryption standard in favour of the state sponsored TVE is breaching the EU's policy of free trade under the Treaty of Rome. Things are not too happy with TVE, who have suffered a ratings slump with audiences favouring new comers Antena 3 and Tele5.

Finnish TV channel 'Channel Four Finland (Nelonen) hit the satellite air waves replacing the PTV-4 network that closed end May. Initially the service will distribute via cable and satellite pending construction of the terrestrial network covering 75% of the population by early January '98. The channel initially airs 1800-2300 local and targets open minded urban folk seeking new ideas and stimulation!

July will see the new Indian broadcasting bill discussed again and high on the agenda is the foreign ownership of Indian TV stations. The government favours Indian interests taking significant partnerships with Indian based foreign broadcasters such as Discovery, MTV etc for

continuance of Indian soil uplinking. Carlton/Pearson plan to reduce their holding in the Indian channel 'Home TV' after the expected legislation and may join the News Corporation's India Sky Broadcasting (ISkyB) package once encryption problems can be resolved. Many satellite broadcasters targeting India uplink from bases in Singapore, Hong Kong etc. The Hong Kong government (outgoing) renewed Star TV's satellite uplink and downlink activities until 2003.

Indian state broadcaster Doordarshan has decided to drop plans for a 3-channel DTH satellite service (relaying three terrestrial channels) though private broadcaster ZEE TV has registered interests in a Ku-band downlink via INSAT 4D after launching.

Problems south of the equator with the Australian Broadcasting Commission (ABC) reducing funding to all radio and TV service including the foreign services of both Radio Australia and Australia Television, the latter popular across SE Asia. Financial cuts of 1997 total £26.2 million (A\$55m), 700 jobs to go and 4% cut in all programme budgets.

Media mogul Rupert is expanding his musical

aspirations with plans for a global music channel in competition to MTV. Based around the successful Star TV music channel 'Channel V', plans are for regionalised versions of Channel V for the Middle East, Japan, Australia, Europe and the 'States. The 'States Channel V may be delayed after a recent failure to agree terms with Echostar over the combined channel to cover America with a mass of digital channels.

NileSat launches Autumn with on-air anticipated November from 7°W. A contract has been awarded to Philips/DVS to provide the complete system for coding, uplinking a 42 channel digital service over six transponders into a downlink footprint across North Africa, the Middle East and Southern fringes of Europe. And in Italy a new nag racing channel via the 13°E Teletu digital package called 'SNAISAR' on-air 12 hours daily but time shifted 15 minutes after each race to avoid conflict with betting shops that show the races live.

Maori language TV tests were carried out in New Zealand mid-late May and plans into 15 sites are to continue tests with up to 800 sites on-line later this year. Uplinking for the initial tests was oddly out of Canada.

Finally the EBU may soon be using Eutelsat II F4 @ 7°E in a digital capacity rather than the present SIS (sound in syncs). The EBU announced over two years ago that they were going digital but nothing seemed to happen, now things are moving ahead. A £6 million order has been awarded to the UK 'NDS' company for MPEG-2 encoding gear for offering digital transmission on European distribution services. As such throughput capacity will be increased up to 20 channel availability. If you're thinking of buying an EBU SIS decoder it may be perhaps wise to reconsider...



A digital test card via Hispasat 30°W (receiver Nokia 9500).



BBC TV Centre, London up on 7°E using SIS (sound in syncs).

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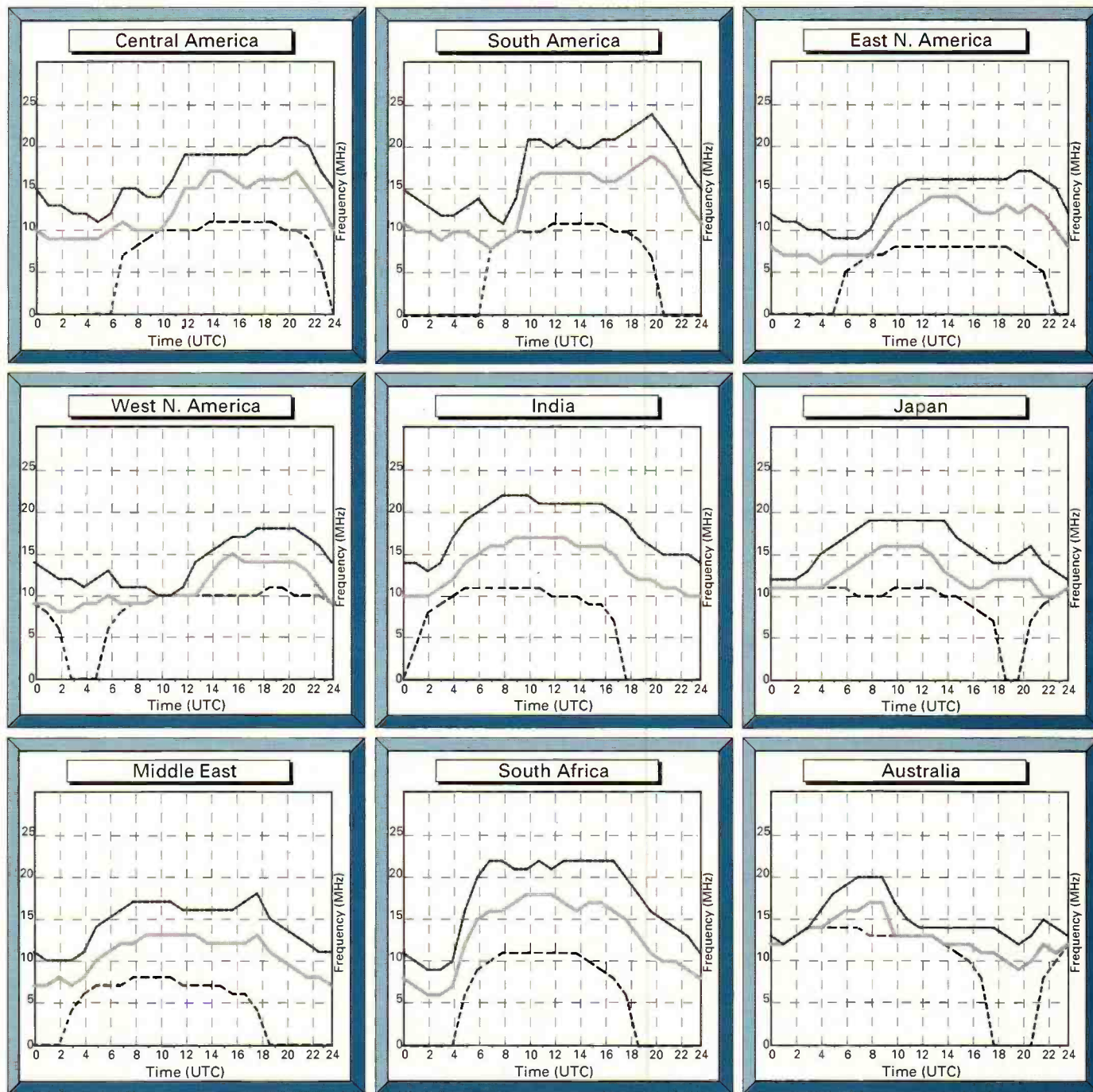
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World Propagation Forecasts

JACQUES D'AVIGNON
VE3VIA

August 1997
Circuits to London



How to use the Propagation Charts.

The charts contain three plots. The lower dashed line represents the lowest usable frequency (LUF), or ALF (Absorption Limiting Frequency). The chances of

success below this frequency are very slim.

The middle line indicates the optimum working frequency (OWF) with a 90% probability of success for the particular path and time.

Lastly, the upper dashed line, represents the maximum usable frequency (MUF) a 50%

probability of success for the path and time.

To make use of the charts you must select the chart most closely located to the region containing the station that you wish to hear. By selecting the time chosen for listening on the horizontal axis, the best frequencies for listening can be

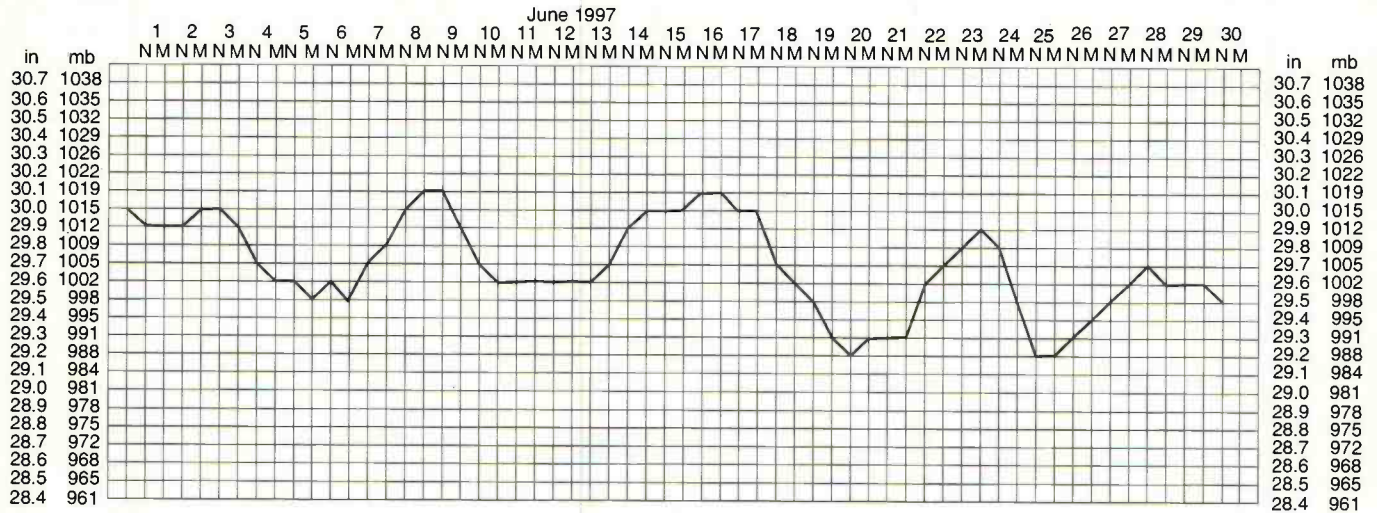
determined by the values of the intersections of the plots against frequency.

Good luck and happy listening.

Propagation Extra

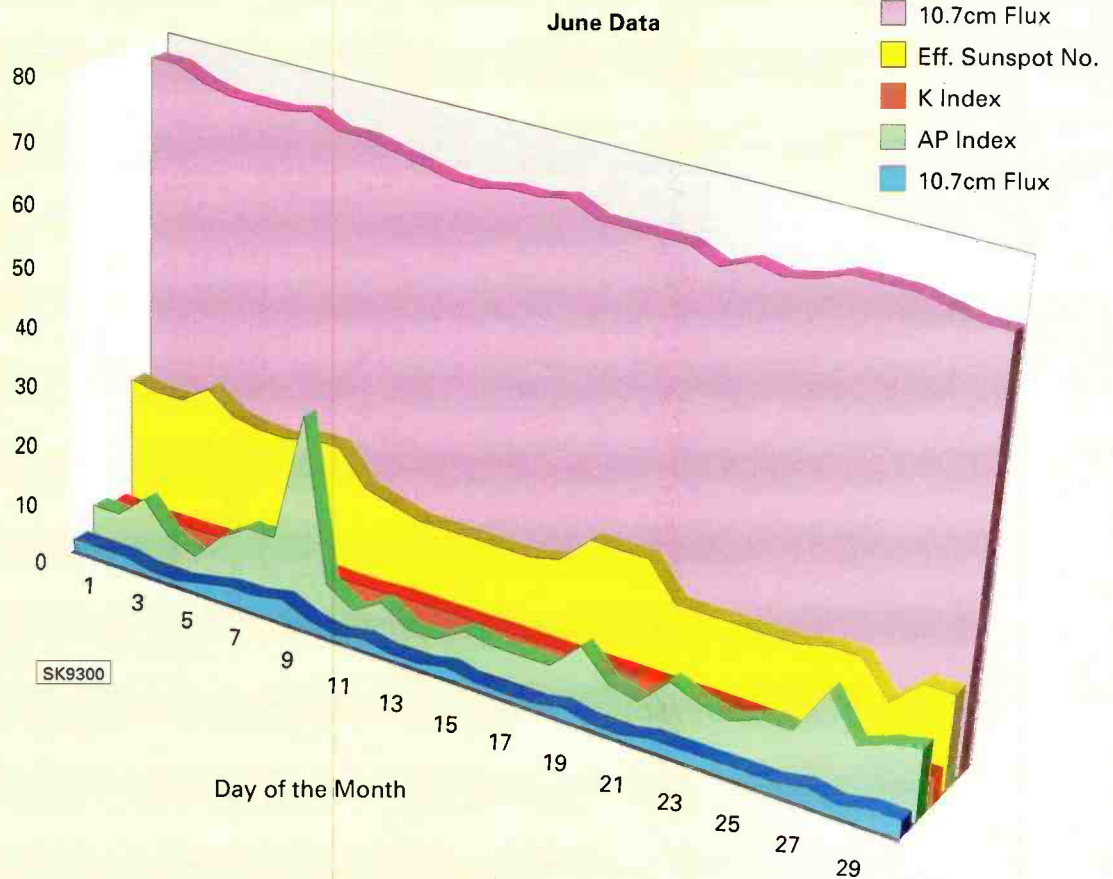
■ KEVIN NICE
 ■ G7TZC
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 EDITORIAL OFFICES
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Ron Ham's barometric pressure chart, taken at Storrington, W. Sussex, June 1997.



Guide to the Chart

The 10.7cm solar radio flux is used as an indicator of the general level of solar activity. The K and AP indices are measures of geomagnetic activity. The K index ranges from zero (very quiet) to nine (severely disturbed). K values of five or greater correspond to geomagnetic storm conditions that can relate to poor propagation conditions. The AP index ranges from 0 to 400. An AP of 30 is the threshold for geomagnetic storm conditions.



Airband

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Vulcan XL391 in a sorry state at Blackpool. Christy, M. N. 1987

August 1987 was the first issue of *SWM* to carry 'Airband', so this is the tenth anniversary. Not that you'll notice much different about this issue, with good reason.

Over the years, all of you have seemed to maintain the interest in my offerings. Because of that, I think that I must have the balance largely correct and so I don't intend to alter it!

Some readers would like the column to be different, but there are limits. For example, long lists of frequencies, loggings, airshow visitors or airline fleets would not fit the space available and they are readily obtainable elsewhere. That brings me on to reminding ourselves as to the purpose of this column.

Unlike material published elsewhere, I try to explain why things happen. For example, the background information that enables you to understand why pilots and controllers say particular things. Or, another case, how can an aircraft's position be determined from information exchanged over the radio?

I also try to keep up-to-date with important frequency and other operational changes, but don't forget that it takes some weeks for the final product to appear on the newsagents' shelves.

To everyone who has been with me during the years, to all new readers just coming aboard: thanks, because it's your column as much as mine. My duty is to explain whatever seems to be puzzling you at any given time.

So as to be fair, I only supply answers in print. That way, everyone can learn something. I also try to run a Museum and you're welcome to visit (quote an evening telephone number if writing to me to arrange this).

Looking after a project of this size has placed a great demand on my time and hence I must be honest and state that I would not be able to write direct replies to letters and am unable to provide a telephone answering service. I know you all understand the reasons why this is.

Follow-Ups

Who flies the Extras mentioned in the introduction to my June column? Probably Brian Lecomber, well known on the airshow scene for unlimited aerobatic displays. Presumably still trading as Firebird Aerobatics, I believe his aircraft carry advertisements for Rover.

Why anyone would buy a product just because they saw the brand name at an unintelligible angle on an aircraft, I'll never understand. I'll just sit back and enjoy the display!

Chartwork

Under this heading in June, **John Richards** (Glastonbury) asked why the RAF print some airways in maroon whereas civil chart publishers

don't distinguish them. **George Sutcliffe** (Dorset) is an air traffic controller and tells me that these are conditional routes. I'll explain what these are.

At the end of the War, former allies fell out with each other and maintained vast military forces, each side holding the paranoid belief that the other was intent on nuclear destruction. At last, we're all friends again and our armed forces have been vastly trimmed down - what they call the 'peace dividend'. Certain military airspace is thus redundant or, at least, less heavily used.

If the military don't want these airways, the growing civil transport sector does. So they've agreed to share on the following basis.

The characters following the route number, George tells me, are as follows: 1 - permanently plannable; 2 - not permanently plannable; 3 - not plannable but becomes available at short notice (if you're lucky); # - weekend only, when the military seem to get time off but the civil pilots earn their money! As an example, the busiest day of the year for passenger flights from the UK is the second Saturday in August, you have been warned!

Concerning routes that are shared by intensive military users, hence not permanently plannable, the joint civil/military Airspace Management Cell coordinates release of this airspace with Eurocontrol's Central Flow Management Unit. This should create more room, hence less delay, for holiday flights subject to flow management restrictions at busy times.

Navigation

Still operational in the UK is the Decca Navigator. Although he's interested in this system, **Jacques d'Avignon VE3VIA** (Ontario) is out of reception range of this low-frequency system. As he compiles our 'Propagation Forecasts' column, he's only too aware that he's missing out!

As an example, the English Chain (Master) is on 85kHz with slaves as follows: Red 113.333, Green 127 and Purple 70.833kHz.

Whereas Decca will continue for many years to come, Consol seems to have vanished - forever? These beacons came to prominence for U-Boat navigation in the War.

During the ensuing peace, they were available for aircraft navigation. All you needed was a receiver and a set of tables; counting the number of dots and dashes transmitted by the station gave you a bearing from it. The last remaining station, Stavanger (LEC 319kHz), seems to have stopped radiating Consol signals.

Your Aeronautical Experiences

Andrew Green (Barnsley) thought he'd investigate Netherthorpe Aerodrome. Right next to the control tower is a viewing area complete with picnic tables - sounds ideal!

The Air/Ground operator on 123.275MHz may not issue instructions, only information. If an aircraft is ready for departure, the operator can respond "No traffic on finals, surface wind..." but is not allowed to say "Clear take-off" or even (strictly speaking) "Take-off at your discretion." All responsibility rests with the pilot.

There is also therefore no mandatory requirement for the radio to be operational. If pilots receive no reply, they continue to transmit 'blind' position reports, just in case another aircraft is in the area. It helps if the operator broadcasts something like, "All stations, Netherthorpe going off radio."

Andrew is also interested in heavy traffic. On h.f., stations such as Shanwick will change frequency during the day according to propagation. A rule of thumb is that higher frequencies are more successful during daylight when the sun illuminates the ionosphere. Lower frequencies are better at night.

Some transmissions, especially from older aircraft, have a high-pitched whine (actually 400Hz) in the background. The domestic mains frequency is 50Hz and occasionally this low buzzing noise gets in to badly-wired or faulty hi-fi sets and can be heard.

Aircraft power is at 400Hz, a frequency that enables smaller/lighter transformers to be installed in airborne electronics. Sometimes, this frequency also gets in to equipment just like 50Hz mains hum on a hi-fi set. This is then heard on radio transmissions and even in the cabin when a public address announcement is made.

Information Sources

Airband Factsheet issue 6 already needs amendment. As far as I can tell, CAA Printing and Publication Services no longer exists and all its previous business (as well as all services provided by the old Chart Room) is now handled by **Westward Digital Ltd., 37 Windsor Street, Cheltenham, Gloucestershire GL52 2DG, Tel: (01242) 283100**.

Again, it's hard to understand why it was necessary to move to a new address but perhaps an insider might let me know?

Aerad also come to the end of an era. Their business has been taken over by **Racal Avionics Ltd., Hershams House, Lyon Road, Walton-on-Thames KT12 3PU, Tel: 0181-946 8011**. So far it hasn't been decided to whom cheques should be made payable and I don't know if the range of products will change.

Not that it's up to me how a business is run, but I can't see why British Airways would want to pay another company (profit implied) to sell products back to it that it originally produced internally at cost price. Perhaps one of Bob Ayling's staff will read this and explain!

Why do you need the *Factsheet* and how do you

MilAir

Last month's 'MilAir' column was hurriedly re-written twice to include the u.h.f. frequency changes made during early June. Since then, further changes have been made and several amendments to the initial changes have also been implemented to accommodate such problems as interference. At present a mass change round of the frequencies has not occurred but by mid/late June the number of new or amended frequencies was increasing steadily. Because of the additions and amendments, I have decided to reproduce an amended and expanded version of last month's list in full. Again my thanks go to Photavia Press for the information.

Other UHF Changes

In the two weeks running up to the Brilliant Invader exercise, (last week in May), it was reported that some changes had apparently been made the UK Air Defence frequencies. Not only have some frequencies been changed but also reports indicated that others might be completely new allocations. I have already been sent a few pieces of new information but I would like to hear from anyone who has can add to this information so that we can collate it for future inclusion in this column.

Emergencies

I am in debt to the several readers including **PM** and **Mike** from Oxfordshire who sent in a mixture of information regarding the emergency I mentioned in the May SWM. Without going into too much detail their combined comments were as follows. The use of a non-emergency frequency for a practice pan is normal ATC practice, particularly at airfields and is basically a matter of logistics and safety. Operationally, as an airfields Air Traffic

needs to be in contact with an aircraft to ensure control and separation is maintained it would not be helpful to pass it to another frequency. The two distress frequencies, (121.5/243.0) are reserved for actual emergencies and it may not be desirable for the frequency to be in use by practice aircraft when a live incident was in progress. Also, as one reader points out, with military pilots often monitoring more than one channel, including the guard frequency there is a possibility that a practice call on the emergency frequency could possibly be misinterpreted or misheard as the real thing. Having written the above, I have heard two practice pans during the first two weeks of June, both aircraft called London Military for diversions into the nearest airfield with a barrier and both used the emergency frequency 243.0! It appears that the emergency frequency is much more likely to be used for a practice pan when using middle or upper airspace whilst under the Control of either London or Scottish military.

Callsigns

A new recruit to the military airband world has written to ask if I know the destination or type of the aircraft using the callsign 'Reach Eleven Sierra One/Two'. From his home in Essex he has heard this callsign in use regularly during 1997. A word with friends in East Anglia soon provided the answer. This is a regular Air Mobility Command cargo flight between Mildenhall, Ramstein and Aviano. The aircraft used is usually a C-141B but a KC10A has also been noted in use on this route. Also, a callsign query from **Steve** in Cheshire. Whilst listening to London Military on **292.525**, (April 28th), he heard a weak call from a flight of two aircraft inbound he thinks to Valley. He believes their callsign was 'Flashdance' but this is unknown to both of us. Can anyone identify this flight?

Because of the frequency changes I have once again held over replies to some of your letters until next month - Keep sending the information - See you next month.

PETER BOND

c/o EDITORIAL OFFICES

BROADSTONE

UHF Airband frequency changes noted 2 - 22 June 97.

Airfields

		New	Replaces
Brize Norton	Tower	396.7	381.2
Boscombe Down	Tower	386.7	370.1
	Approach	362.65	380.025
	Radar	336.15	381.125
Colerne	Tower	258.975	344.6
Coltishall	Approach	315.325	379.275
Cottesmore	Approach	388.525	380.95
Cranwell	Radar	356.925	383.475
Culdrose	Radar	388.0	358.7
	Tower	386.525	380.225
	ATIS	282.1	372.3
Farnborough	Approach	376.9	336.275
Leeming	Ground	386.525	338.85
Leuchars	Tower	259.125	258.925
	Radar	259.925	268.775
	Ground	297.9	259.85
Linton on Ouse	Radar	277.625	381.075
Llanbedr	Tower	387.75	380.175
Manston	Approach	231.6	379.025
Marham	Approach	268.875	291.95
St Athan	Radar	372.375	380.125
St Mawgan	Radar	387.45	336.55
Shawbury	Approach	362.475	276.075
	Tower	340.35	269.1
Topcliffe	Ground	387.45	241.85
Valley	Ground	356.75	386.9
	Radar	258.825	268.775
Waddington	Tower	388.225	285.05
Wattisham	Tower	358.6	343.425
West Freugh	Approach	260.025	383.525
Wittering	Approach	388.525	380.95
	Radar	396.85	383.225

Control Centres

		New	Replaces	
London Military	Area Radar	254.275	231.625	ICF
(LJAO)		299.8	230.05	North/West
		291.075	235.05	Dover/Lydd
				London
				Upper High

Airband

get it? Basic information (like, where's my nearest airway and what frequency is it controlled on) is best obtained from the same official sources that pilots rely on. All are sold by mail order to the public. Suppliers are listed on the *Factsheet* to enable you to check the latest prices.

Send a reply-paid, self-addressed envelope, to hold two A4 sheets, to the Broadstone Editorial Offices (not to me!). Mark it clearly, *Airband Factsheet* please. As a bonus, I include the only supersonic routes chart intended for the enthusiast.

Frequency and Operational News

Thanks to AIC 64/1997 from the CAA I can now reveal the frequency of Sheffield Aerodrome (EGSY) to be 128.525MHz. A new danger area in the Solent region is D060, information on 120.225MHz.

Thanks to **Martin Sutton** (CAA) for more *Aeronautical Information Publication* amendments. As usual I've extracted those that directly interest readers, but pilots are advised to consult the unabridged original documents.

At Clacton Aerodrome, now allotted the ICAO four-letter locator EGSV, runway 12/30 has been withdrawn, there is no longer an Air/Ground service and so I'm not sure if 135.4MHz is still



Cessna Chancellor. Christine Mlynek.

operational. Gloucestershire's runway 18/36 is back in existence, length 800m.

Jersey has new Standard Terminal Arrival Route Jersey 1N via the JSY beacon. London (Heathrow) and Northolt have new Detling SIDs for departures to Brussels/Amsterdam airspace. North Ronaldsay gets ICAO locator EGEN.

Now the airways. W70 has been extended from Biggin Hill v.o.r. via Detling v.o.r. to a new reporting point, VAXEL, on the boundary with Brussels airspace. New route W71 is from Dover v.o.r. also to VAXEL, accessed by SIDs from Biggin Hill, London (City), London (Gatwick), London (Stansted) and Southend. UW536, originally from Aberdeen v.o.r., has been withdrawn along with its reporting point SNIPE.

If you want to know what a particular squawk code means, write in as I've got the latest list. My airways frequency list is now correct to late June, again write to me if you want a specific frequency.

Bernard Depledge (Manchester) tried to take

up this offer but, I'm sorry, Bernard, you didn't specify which airway you wanted. This meant that I had to spend ages researching the area of interest: Wirral and Lakes LATCC sectors.

Now, I've done it this time so as to show an example of the way frequencies are allocated but, for future reference, please would readers specify which airways, and for which part of those airways, that they want the frequencies. Lists by LATCC sector (unlike Scottish Airways) don't exist!

So here are examples for (U)A1, (U)B1, UN590, UP6, UR4 and W2D; they are on: 118.775, 120.025, 124.2, 125.1, 126.65, 127.1, 129.1, 129.2, 130.925, 131.05, 131.125, 133.6, 135.575 and 136.4MHz. Note the example of an allocation in the new 136-137MHz extension.

The next deadline (for topical information) is August 18. Replies always appear in this column and it is regretted that no direct correspondence is possible.

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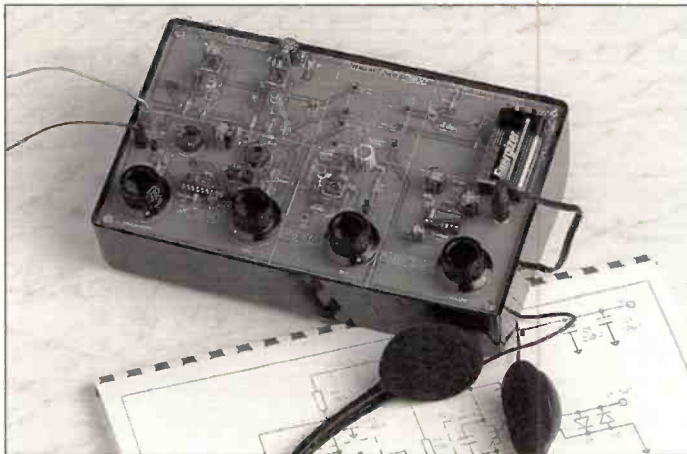
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The Chinese WXSAT programme took a giant leap forward in June with the successful launch at 1201UTC (2001 Beijing time) on 10 June, of FENGYUN-2B (Object number 24834, catalogue 1997-029A), its new geostationary WXSAT. The announcement was a little too late for inclusion in last month's 'Info'. In this edition I am able to provide more information on China's WXSAT programmes - both geostationary and polar. The programme of development continues and the latest available information is included this month.

Current WXSATs

During most of May and early June I assumed my role of examinations marker - yes, I am one of those unseen people who hide away in a room, buried under literally hundreds of candidates' papers. For two 'marking' weeks I monitored few WXSAT passes. By the end of the period I knew what the phrase 'cold turkey' means when applied to WXSAT monitoring!

METEOR 3-5, NOAAs 12 and 14 remain the only polar orbiting WXSATs regularly transmitting a.p.t. (weather pictures). I have not heard from either SICH-1 or OKEAN 1-7 for some time. Reception of the 137MHz band at my home - QTH if you prefer - seems to have degraded somewhat. My METEOR 3-5 images are not as good as they were several weeks back, but I am uncertain whether this is due to the satellite itself or to a possible degradation of my main antenna. My NOAA-14 images are not brilliant either. A summer mast servicing seems likely!

GOMS Images Flow

The Planeta-C Meteorological Space System includes the Geostationary Operational Meteorological Satellite (GOMS, launched on 31 October 1994) which is located in geostationary orbit at 76°50' E. GOMS resumed routine transmissions following a maintenance period, and by mid-June at least some of the scheduled GOMS slots on METEOSAT-6 have been transmitted.

These WEFAX images are good quality and the resolution allows close examination of the Far East which was under clear skies during these scans.

I have received correspondence (both E-mail and letters) from people setting up WEFAX receiving stations (portable and 'domestic') requesting information about GOMS and GMS. For those able to monitor GOMS directly from its geostationary orbit, there are a number of frequencies officially designated for various transmission utilities:

Frequencies allocated for data collection and transmission from GOMS:
 1.76GHz - TV- and geophysical information data transmission to data receiving and processing centres, and DCPs (data collection platforms);
 7.5GHz - TV- and geophysical data transmissions as above; 1.7GHz - transmission (relay) of digital, alphanumeric, and facsimile information processed at the centres;
 470MHz - transmission of call signals from a spacecraft to DCPs;
 402MHz - data transmission from DCP;
 2.1GHz - receipt of processed alphanumeric and facsimile information;
 8.2GHz - receipt of processed TV (or any

multizonal) information to be transmitted to other centres.

As always, I am grateful to Dr Michael Zakharov for clarification of Russian terms, and for the use of CIS information.



Fig. 1: GOMS 19 June 1202UTC courtesy Planeta-C. (obtained using my WEFAX system).

Correspondence & Pictures

With several WXSAT image decoding software and hardware products around, those entering the hobby for the first time can be forgiven for finding the choices bewildering. For those with deep wallets and purses, there are some very good products available from British (and foreign) suppliers. Companies such as **Martelec Tel: (01420) 82752**, and **Timestep Tel: (01440) 820040** can provide a variety of hardware depending on your precise aim - literally!

One reader who lives in Louth (Lincolnshire) is using a 486 computer, the Timestep PROscan (WXSAT) receiver, a crossed dipole (recommended) feeding a pre-amp (probably not now recommended because of pager interference). Using the Martelec JVFAX interface, and JVFAX software (the latter is available from me and other sources), he is seeing images which do not synchronise properly - they slope. This is normally fairly straight forward to fix; synchronisation relies on the correct settings being made, after consulting the included document file, some 150Kb (about 68 pages). Recognisable

Table 1 Channel	Wavelength (µm)	Primary use
1	0.58-0.68	Daytime cloud, ice and snow, vegetation
2	0.84-0.89	Daytime cloud, vegetation, WV calibration
3	3.55-3.95	Night cloud
4	10.3-11.3	SST, day/night cloud
5	11.5-12.5	SST, day/night cloud
6	1.58-1.64	Soil humidity, ice/snow separation
7	0.43-0.48	Ocean colour
8	0.48-0.53	Ocean colour
9	0.53-0.58	Ocean colour
10	0.90-0.985	Water vapour

images can be received without the settings being correct, so it is necessary to optimise the software after installation.

Gary Cooper of Barnstaple in Devon tells me that he is new to WXSAT monitoring and uses an Icom IC-R7000 receiver, with a Uniface 2000 demodulator from Spectrum Communications. I have not heard of this device before. Gary has a high specification computer used for monitoring. From a selection of several images I extracted a view of Britain from an image of his taken during late May.

Roger Ray is using the earlier version of Timestep's PROsat for Windows and sent me a large selection of images from which I extracted a close-up of Britain as seen by NOAA-14 in March. Roger has invited me to pop in next time I am near Telford; problem is I am invariably travelling by coach!

China's WXSAT programme

Polar Orbiters: FENGYUN-1C and D
 Mike Kenny works at Satellite Engineering, Bureau of Meteorology, Melbourne, Australia, and recently provided some more information about developments in China's meteorological satellite program. This information was presented to the CGMS XXI meeting held in Beijing, China. (CGMS = Committee of Geostationary Meteorological Satellite operators - ESA, USA, Japan, India, China).

China has decided to continue with the experimental polar orbiting satellite programme it started with FENGYUN-1 A and B in 1988 and 1990. FENGYUN-1 C and D are scheduled to be launched in the last half of the 1990s. There will be some changes to the imaging instrument and the data transmission format.

MVISR

Multichannel Visible and Infra Red Scan Radiometer will be a ten channel sensor with four visible-light, three near infra-red, one short infra-red and two long infra-red channels - see **Table 1**. The infra-red field of view will be 1.2 mrad (milli-radians) with a nadir (the ground immediately below the satellite) resolution of 1.1km. The scan rate is still 6 lines/second and the total number of pixels per line is 20480.

Channel 1 is the visible-light band in which data consists of sunlight reflected from the Earth and cloud formations. Channels 4 and 5 are infra-red (thermal) data, which consists of 'heat' radiation emitted in the 'atmospheric window', available day and night. The temperatures of cloud, land and oceans can be determined from these data. For sensitivity, the detectors have to be cooled in the spacecraft.

FENGYUN-1 C and D (CHRPT)

High Resolution Picture Transmission from FENGYUN-1 C and D. As the Multi-channel VISR is now ten channel instead of five, the bit rate has been increased to 1.3308Mbps, exactly twice the current HRPT bit rate. The scan rate is 6 lines/sec with 2048 10-bit words per channel per line. The modulation will be PSK and the bit format is split phase. The transmission frequency has yet to be determined. Mike reports that there will no a.p.t. (low resolution, 137MHz band image transmission) on either FENGYUN-C or D (shame!).

Chinese Geostationary WXSAT

The other part of the Chinese WXSAT programme is that of the FENGYUN-2 series.

Vladimir M. Agapov of the Ballistic Centre of the Keldysh Institute of Applied Mathematics RAN Moscow, Russia, has kindly provided the following information which was released by BEIJING XINHUA.

The satellite called the FENGYUN-2, is a second-generation meteorological satellite developed by Chinese scientists. It was launched by a Long March 3 carrier rocket at the Xichang satellite launching centre in south-west China's Sichuan province. Twenty-three minutes after the launching, the satellite and the rocket separated, and the satellite went into its predetermined orbit. This is the 45th time that a satellite has been launched by a Long March carrier rocket. The premier Li Peng has showed great concern for the launching, and inquired about the progress of the launching several times. Liu Huaqing, standing committee member of the political bureau of the Chinese communist party central committee and vice-chairman of the central military commission, came to the launching site to examine the preparations for the launching.

The FENGYUN-2 satellite was developed mainly by the Shanghai Aerospace Technology Research Institute under the China Aerospace Corporation. Weighing 1.38 tonnes, the satellite is equipped with a scanning radiometer, a cloud coverage information system, and a data collection translator. The satellite is designed to have a life span of three years.

It is different from the two FENGYUN-1 synchronous solar orbit meteorological satellites launched in 1988 and 1990; FENGYUN-2 is a meteorological satellite that is in synchronous orbit with the earth. FENGYUN-2 can cover about 100 million km² of earth surface, keeping China at the centre. It can also provide meteorological information such as cloud maps, temperatures, and wind movements over China and its neighbours. The satellite will help improve medium- and long-term weather forecasts, and those for natural disasters in the country. It is reported that the satellite has been operating normally, and the Xi'an satellite control centre and marine surveying ships will track and control the satellite, which will be positioned over the equator at 105° east longitude.

Soundcard Decoding

Last month I mentioned that **Steve Bonnett** of Highcliffe in Dorset had sent me a program which, like WXSAT (written by **Christian H. Bock**), utilises a sound card in a computer to decode a.p.t. and WEFAX signals from a receiver, and converts them to images. Steve's program is comprehensive, even including a satellite tracking program which can simultaneously monitor six satellites. A comprehensive help file is included as an option on the main menu. The other options are File, Tracking, Prediction, Tuning, Monitor, Image, TLE, Set-up.

The program operates on WAV files (which contain digitised sound information) and can convert them to BMP graphical files for use in graphics software. The Tuning option produces a display and acquires data from the sound card, displaying it graphically in the window. The data is normally displayed as a plot of frequency against amplitude, as in a spectrum analyser, but it can display data as time against amplitude, as in an oscilloscope. When data is displayed as frequency against amplitude, the band used to calculate the presence of the 2.4kHz sub-carrier (used in WXSAT signal modulation) is marked on the window as two vertical lines.

Steve's program has many more features and his readiness to provide it as freeware makes it a 'must

try' for anyone with a computer fitted with a sound card. My thanks to Steve for providing the program. To obtain a copy, refer to the section below.

Software

After my mammoth examinations marking session ended I continued my tests of new programs for review. A new version of *PROsat* for Windows has been released by Timestep. This product is currently under rigorous testing and a full review should be available soon. It is a significant upgrade on the DOS product and includes new features of an extremely impressive nature; no more until the review!

Also under the microscope is a WXSAT decoding program sent to me to try, obtained by Brian Dudman. He bought this from abroad, and kindly forwarded it to me for a quick look. Brian recently obtained the METEOSAT PDUS decryption unit, so I hope to hear about its performance!



Fig. 2: N14 from Gary Cooper.

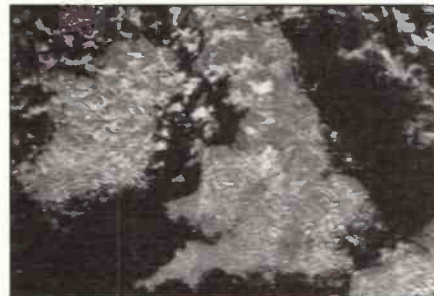


Fig. 3: Britain N14 from Roger Ray.

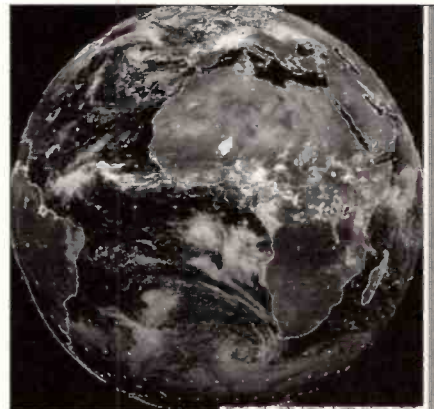


Fig. 4: NOAA-14 from Steve Bonnett.

Some readers have asking about obtaining certain programs, but have not given reply addresses! For readers' convenience, I obtain the latest versions of all decoding and tracking software (freeware and shareware) that is used in WXSAT monitoring and associated utilities such as image processing. Current programs include *JV FAX*, *STS*

Plus (9650), *Trak401*, *Winorb33*, *PC Track 3.1*, *Trackstr2*, *WST* (uses the sound card), and Steve Bonnett's program, and Gordon Train's tracking program for older computers *WST4-7f2* (latest version as of late June). I also keep associated non-commercial software, such as image processing and display programs available for readers. Feel free to contact me if you are looking for a general or specific application - and remember to identify your operating system - DOS, Windows 3.1 or 95.

Shuttle Launch Schedule

STS-85 Discovery is scheduled for launch on 7 August into a 57° inclination orbit.

STS-86 Atlantis is scheduled for launch on 18 September for the 7th docking with MIR, for delivery of a Space Hab double module.

STS-87 Columbia is scheduled for launch on 19 November into a 28° inclination orbit.

A considerable re-organisation of the Shuttle launch schedule took place recently, mainly because of the delays announced in the delivery of the Russian-built components of the International Space Station. Consequently, I have had to make extensive revisions to my *Shuttle Pack*!

The new version again includes a comprehensive listing of all planned Shuttle flights and payloads, together with associated information on h.f. reception, both direct from the Shuttle and re-broadcasts. It is available from me as the *Shuttle Pack*. Please include a £1 and stamped s.a.e. for the A4 booklet.

MIR and ISS

Radio amateur traffic: As requested by radio-amateurs in the USA the 'downlink frequency' of the v.h.f. station in MIR's base block has been changed from 145.800 to 145.985MHz. This change took place on 15 June, as spotted by Colin Knight, a regular MIR-watcher.

International Space Station: I have been compiling notes from NASA and Russian sources on the building schedule and plans for the construction of the ISS. In a short time I shall be making this available as a printed pack, similar to my *Shuttle Pack*. This follows several enquiries from readers asking for information.

Kepler Elements - MIR and Shuttle

- 1 For a print-out of the latest WXSAT elements, MIR, and the Shuttle (if in orbit), send a stamped addressed envelope and secured 20p coin. Transmission frequencies are given for operating WXSATs. This data originates from NASA. I always send Kepler elements by return-of-post.
- 2 I also send monthly Kepler print-outs to many people. To join the list please send a 'subscription' of £1 (secured, plus four self-addressed, stamped envelopes) for four editions.
- 3 You can have the data as a computer disk file containing recent elements for the WXSATs, and a large file holding elements for thousands of satellites. A print-out is included, identifying NASA catalogue numbers (for the WXSATs, amateur radio satellites, and others of general interest), ideal for automatic updating of your tracking software. Please enclose 50p with your PC-formatted disk and a stamped envelope.

Frequencies

NOAA-14 transmits a.p.t. on 137.62MHz
 NOAA-12 transmits a.p.t. on 137.50MHz
 NOAAs transmit beacon data on 137.77 or 136.77MHz. METEOR 3-5 (or 2-21) use 137.85MHz. OKEAN-4 and SICH-1 use 137.40MHz when operating. METEOSAT-5 (geostationary) uses 1.691 and 1.6945GHz for WEFAX. GOES-8 (western horizon) uses 1.691 GHz for WEFAX
 MIR 145.985 and 143.625MHz.

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Decode

This year is really turning out to be a bumper year for interesting new software. The latest to come my way follows a tip off from Peter Halls. The program's called *DSP Blaster* by Brian Beezley (K6STI) and creates a really smart DSP filter system using just your PC and a standard 16-bit SoundBlaster card. The processing is done in real-time, so you can use it to filter the audio from your receiver as you tune around. The filters provided include highpass, lowpass, bandpass, peaking, automatic notch, LMS noise reduction and coherent c.w.

In order to use the program you need a reasonably fast PC and the author recommends a 486DX or better with a VGA display, DOS3.0 or later and a 16-bit Creative Labs soundcard. Don't be tempted to run it with other cards - it won't work. This is because the programs directly access the hardware on the card and doesn't use the standard PC interface sub-routines. Because the program has been written entirely in machine code it is remarkably slim line and the main program file is just 18Kb. In fact the manual is nearly twice this size at 30Kb. In addition to all the powerful filtering, *DSP Blaster* includes an excellent graphics display that shows the spectral amplitude from 0 through to 3kHz (0-1.5kHz c.w.). Not only is this great for optimising the filter's performance but you can use it to make sure you are making best use of your receiver's internal filter systems.

If you want to run other programs such as decoding software you need to run *DSP Blaster* in its TSR mode so that it can continue to process the signal in the background. I haven't had time to experiment with this, but would be interested to see if it can live with the popular decoding systems such as *RadioRaft*, *HAMCOMM* and *JVFAX*. If anyone has tried this please let me know how you got on. If you want to download a copy try <http://www.megalink.net/~n1rct> for a the latest version. If you like it please remember to register it to encourage more development.

Pervisell Updates

Phil Perkins of Pervisell has just sent me samples of their latest interface units. Regular readers will know that Pervisell have been looking after 'Decode' readers for many years now and always offer good value. The latest release is a full transmit and receive interface suitable for use with *HAMCOMM*, *JVFAX*, *RadioRaft* and *DL4SAW* SSTV systems which includes a special adjustable hysteresis option to facilitate POCsAG decoding. The transmit audio level can also be adjusted via a screwdriver slot in the top of the case. The second release is a receive only unit with the same adjustable hysteresis control.

As with all Pervisell products, the build quality is excellent with a high quality p.c.b. using the latest surface mount components for high reliability. The transceive version costs just £24.99 and the receive only unit costs £19.99. For latest prices and more information contact **Pervisell at 8 Temple End, High Wycombe, Bucks HP13 5DR. Tel: (01494) 443033**. You can also visit their Web site at <http://www.pervisell.com> - my thanks to Phil for supplying the review units.

RadioRaft - Top Tips

RadioRaft has understandably caused a lot of interest since I mentioned it last month and I've already received lots of queries from readers asking for tips and tricks on how to make the best of this powerful program. Bearing in mind I'm new to it myself, here are a few of the gems that have either been sent in by readers or I've worked out for myself. Let's start at the very beginning as many of you have got somewhat confused as to what type of interface to select in the Settings menu. When describing the interfaces Francois uses three terms namely 'AF-Interface', 'Comparator' and 'Modem'. There are in fact only two options available and the 'AF-Interface' and 'Comparator' are just different names for the same interface. So if you're using a *HAMCOMM/JVFAX* type comparator interface you need to set *RadioRaft* to 'AF-Interface' in the Settings menu to make it work properly. This is also the only interface that

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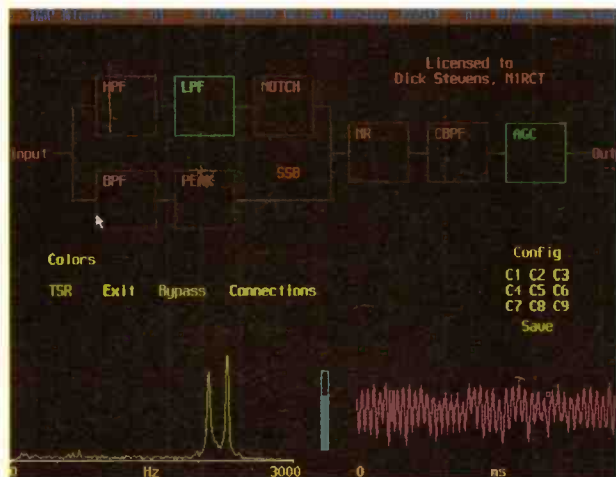
Internet weather site from the new Klingenfuss Guide.

will let you use the very informative frequency display. This really is the best and most practical type of interface for most listeners.

So when would you want to use a modem and what is it? I've described it here before, but a modem, in this context, is an electronic box of tricks that takes an incoming audio signal, typically from a RTTY type station, and converts it into a logic signal ready for decoding by the computer. The only types worth considering are those that use what's known as the filter system. These operate by employing a pair of special narrow band filters - one for each of the two tones of the RTTY signal. The output of the two filters is combined in a detector circuit to create the digital signal that can be fed to the PC.

This system can provide excellent performance under very difficult reception conditions, but suffers one or two disadvantages. The most significant is the loss of *RadioRaft*'s automatic tuning and the shift detection system. This means that you have to accurately tune the receiver to match the filters in the modem and you need to know the shift of the signal and set the modem to the same settings. For most listeners this is a serious enough downside to make them stick with the more simple interface. However, if you are seriously interested in one or two of the specialist modes it could still be well worth considering using a modem. But don't be tempted to use one of the phase locked loop modems as their performance is just about equal to the simple 'AF-Interface' so you wouldn't gain anything for your efforts.

If you do decide to give a modem a try, you'll be pleased to know that you can leave both the modem and 'AF-Interface' connected at the same time. To change between the two systems you just select the desired option from the 'Settings' menu. A good way to do this and get the best of both worlds would be to use the diagnostic



DSP Blaster screen shot of a Pactor signal.

power of *RadioRaft* with the 'AF-Interface' to analyse the shift and tune the signal. Then you could change over to the modem for better decoding. I haven't tried this yet, but it looks feasible from the manuals. If anyone out there has succeeded and has any further advice, please let me know.

Whilst on the subject of interfacing, I can't stress enough how beneficial it is to place some audio filtering between the receiver and the 'AF-Interface'. The reason for the filtering is to take out as much unwanted signal as possible so leaving just the data signal for the computer to deal with. This gives the decoding routines the best possible chance to both identify and decode the signal with minimum error. As to what type of filter to use, there are lots of different systems on the market. Probably the most useful feature to look out for is a tuneable band pass filter with a separately adjustable bandwidth setting - something like the now discontinued FL series from Datong. The centre frequency should have a range of around 600 to 2400Hz with a bandwidth variable down to around 100Hz.

As the name suggests, a tuneable band-pass filter has a number of controls so that the operator can select a centre frequency for the filter and then adjust the range of frequencies that will be allowed to pass through to the 'AF-Interface'. The trick with this system is to start with the filter at its widest setting and gradually 'home-in' on the required setting. With a bit of practice you can do this by ear for most RTTY-like signals.

The required technique is to gradually narrow the bandwidth until one or other of the two tones reduces in volume or disappears. You then adjust the centre frequency to bring it back again. You will finally get to the point where the filter is so narrow that any change of the centre frequency will drop-out one of the RTTY tones. At this point it's usually best to just widen the filter width slightly otherwise any frequency drift either from the station or your receiver will cause errors in the decoded signal.

Once you've been through this process you will be amazed at how you can improve reception of some signals. The technique I've described here works equally well with the older analogue filters as it does with the latest d.s.p. filter systems. Another point you need to be aware of is the limitations of *RadioRaft*'s automatic decoding when attempting to decode stations that are just idling. Because many of the data links on h.f. are used as back-up systems, they are often left idling for quite long periods. When a data system is idling it normally sends a combination of what are called alpha and beta characters just to keep the link alive. This is required because the more complex synchronous systems rely on a stream of data to keep the transmitting and receiving stations synchronised. When there's no real data available the systems generate their own traffic by using the idle characters. In order to reliably identify the type of transmission *RadioRaft* needs some genuine traffic, so you may find that it will incorrectly identify a station that's idling.

If you are sat listening to an idling station and you hear the rhythm change the chances are that real traffic is being sent. When this happens and *RadioRaft* has clearly selected the wrong mode, don't panic - just press F5 and the program will

re-evaluate the data and find the correct mode. In fact, the F5 is a really useful one to remember as you can use it at any time to 'nudge' *RadioRaft* back into its analysis mode.

Another way you can help the automatic mode detection is to fix the baud rate where it's known. If you've spent some time listening to utility signals you will find you gradually develop an ear for baud rates and I can usually detect the common baud rates quite quickly. Probably the easiest one to recognise is the 100 baud FEC mode when it's idling. If you do hear a signal where you're pretty sure of the baud rate then you can save *RadioRaft* some time by manually setting the baud rate to that value. The program then has far less analysis work to do and so will probably identify the mode that much quicker.

Final tip for this month is the use of the 'Edit' mode. This is selected either from the 'File' menu or simply by pressing the Esc key. The mode provides access to *RadioRaft*'s receive buffer and is extremely useful for back-tracking and finding some interesting information that's just scrolled off the top of the screen! When receiving data *RadioRaft* stores all the decoded information in a 64Kb block of memory that's called a receive buffer. Once this buffer is full-up the oldest information effectively drops off the end. That way you always have access to the last 64Kb of received information. Once you enable the 'Edit' mode you can use the Page-up and Page-down keys to scroll through to find any items of interest. You can also choose to print or save all or part of the buffer.

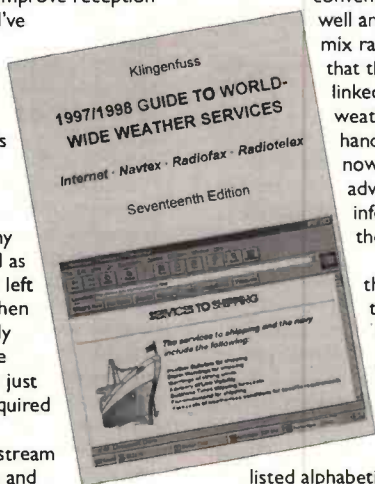
That's about enough on *RadioRaft* for this month, but please drop me an E-mail if you have any queries or useful hints on how to get the best from this program.

Klingenfuss Guide

The latest release to come from Joërg Klingenfuss is a complete restructure of his very popular *Guide to Facsimile Stations*. The scope of this book has been increased somewhat and it has expanded to keep up-to-date with the changing requirements of the readers. Whilst monitoring conventional h.f. weather FAX is all well and good, many readers now mix radio and computing so closely that the two become inextricably linked. The general interest in weather data that goes hand-in-hand with radio enthusiasts can now be expanded to take full advantage of the additional information that's available via the Internet.

Those of you who monitor this column will have noticed that this re-launch is happening with most of Joërg's books as the influence of the Internet grows. *The Guide to World-Wide Weather Services* presents the main data

listed alphabetically in country order. With each country's entry are full details of all the active FAX stations. This includes not only the frequencies and callsign, but also the detailed transmission schedules for most stations including NAVTEX stations. This data has now been supplemented by listings of the Internet addresses for all that countries weather services that maintain a Web presence. With many of the entries the Web sites carry the full frequency schedules so you can see there's some real benefit in having both systems side-by-side. This section of the book is complemented by a



similarly ordered listing that contains lots of sample pages and details of what can be found on all the main Web sites. Whilst it may seem a little odd to print pages that are freely available via the Web, it's still considerably quicker to flick through a book than to try and download all those pages!

Next major change is the main frequency listing. Whereas previous editions restricted the coverage to just active FAX stations, the new guide lists all stations that transmit weather information. This is a really useful and logical addition for anyone with an interest in weather data. Included within this listing were a wide range of modes and included any station with a high content of weather related data. The final section included full details of the global NAVTEX transmission timings along with a very useful list of abbreviations. If you're into weather data and have or are likely to have an Internet connection you will find this new guide a real asset in the shack. The latest, seventeenth edition is available from the SWM Book Store priced £25. My thanks to Joërg Klingenfuss for supplying the review copy.

If you'd like a copy of *HAMCOMM/JVFX*, etc. I've arranged a very special offer with the Public Domain and Shareware Library (PDSL). They have put together a library set of all five disks for just £12.00, all inclusive. Using PDSL also makes ordering simpler as they accept all the usual credit cards so you can order by 'phone - you don't even have to write a letter.

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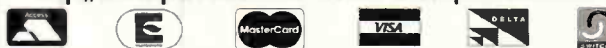
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The extensive alterations which many of the international broadcasters made to their short wave transmission schedules in March were followed by some making further changes in May.

If your favourite s.w. broadcasters have vanished from their usual frequencies perhaps the information herein, which is based upon actual reception, will help you to locate them.

Long Wave Reports

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT).

Unless otherwise stated, all logs were compiled during May.

Whilst searching the band on May 11, **Sheila Hughes** (Morden) heard a broadcast from Romania via Bod on 153kHz, under co-channel DLF via Donebach. At 2205UTC it was peaking SINPO 21222.

On May 15, **Tony Stickells** (Thornton Heath) picked up a broadcast from Turkey (TRT-2) via Agri on 162kHz (1MW), which rated 23222 at 2342UTC. Usually it is masked by the RFI 2MW outlet at Allouis on 162 but that was off-air at the time! On several occasions he received TRT-2 via Polatli, Turkey on 180 (1200KW) - a typical rating was 24132 at 2318.

Medium Wave Reports

The whole of the path over the Atlantic was in darkness for only a short period during each night in May and few of the broadcasts from m.w. stations in E.Canada and E.USA reached our shores. Those from CJYQ in St.John's, NF on 930 were heard by **John Slater** (Scalloway, Shetland) during the nights of May 8, 9, 10 & 13. Between 0200-0325 they rated SIO333-223. He also heard on the 13th WBBR New York, NY on 1130 (SIO322 at 0320) and WNRB Boston, MA on 1510 (SIO333 at 0325).

Despite frequent checks **Robert Connolly** (Kilkeel, Co.Down) could find no trace of transatlantic signals during May. On April 30 he logged CKVO in Clarendville, NF on 710 as 23332 at 0125 and CHAM in Hamilton, ON on 820 as 22222 at 0140. Tony Stickells also found the conditions very poor, with only four stations logged: CJYQ, WBBR, WTOP in Washington, DC on 1500 and WNRB.

In contrast, the broadcasts from quite a few of the m.w. stations in the Middle East and N.Africa reached the UK after dark - see chart. On May 14 **George Millmore** (Wootton, IoW) heard for the first time Tayebad, Iran (400KW) on 720. At 2040 it was peaking SIO222. A broadcast from VOA via a relay in Kuwait City on 1548 was received at 0002 on May 21 by **Brian Keyte** in Bookham. He logged it as 33423. The VOA 100kW relay in Sao Tome on 1530 was heard at 2006 by Tony Stickells on April 29. He tried to receive it during May without success.

In Hove, **Andrew Tett** heard for the first time the Bayerischer Rundfunk 0.2kW outlets at Hof & Wursburg on 520. With his Lowe HF-150 receiver set to lower sideband he logged them as SIO222. Whilst listening to R.Bleu from Paris on 864 with a Sony Walkman SRF42 he got the impression that the transmission was in a.m. stereo.

The ground waves from the new ILR 'Yorkshire Dales Radio' on 936 & 1413kHz are reaching places well beyond the intended service area! Over in Co.Down **Robert Connolly** noted

them as 44444 and 43443 respectively at 1400.

Listeners who have difficulty in receiving ILR Valleys Radio via the Ebbw Vale transmitter on 1116kHz (0.5kW) can now try the alternative outlet at Aberdare (Cefn Pennar) on 999kHz. During tests, which commenced in January, the e.m.r.p. was only 0.080kW but it was increased to 0.3kW when it was brought into full service in early June. Bryan Keyte was suprised by the good signal he received from Aberdare at 0600UTC. No doubt Valleys Radio will be interested in reports on reception and they would be very welcome here too.

Short Wave Reports

As expected, the **25MHz (11m)** band remained 'silent' during May. Until the propagation conditions improve it is unlikely to be used for broadcasting.

The propagation conditions in the **21MHz (13m)** band varied from day to day during May. However, it was often possible to receive R.Australia's broadcast to Asia via Darwin on **21.725** (Eng 0630-1100) in the UK. Typical ratings in the reports were 25333 at 0853 by **Tony Hall** in Freshwater Bay, IoW; 25542 at 1001 by **David Edwardson** in Wallsend.

Other broadcasters using this band during the morning include RAI Rome **21.520** (It to Africa 0600-1300), rated 25443 at 0835 by **Fred Pallant** in Storrington; R.Prague via Litomysl **21.705** (Cz to Australia? 0830-0858) 22222 at 0858 by **Thomas Williams** in Truro; DW via Julich? **21.680** (Eng to S.E.Asia 0900-0950) 45544 at 0901 by **Darren Beasley** in Bridgwater; DWV via Wertachtal? 21.600 (Eng to Asia, Pacific 0900-0950) 44444 at 0915 in Scalloway; UAER, Dubai **21.605** (Eng to Eur 1030-1055) 44444 at 1035 by **Bill Griffith** in W.London; R.Portugal Int via Sines? 21.720 (Port to Brazil? 0900-1100?) 55555 at 1045 by **Norman Thompson** in Oadby; BBC via Ascension Is 21.660 (Eng to Africa 1100-1700) 33443 at 1200 by **Stan Evans** in Herstmonceux.

After mid-day they include UAER, Dubai 21.605 (Eng to Eur 1330-1355), noted as 35443 at 1330 by **Ross Lockley** in Galashiels; R.Portugal Int via Sines **21.515** (Eng to M.East, India 1300-1400) 33323 at 1340 by **Bernard Curtis** in Stalbridge; BBC via Ascension Is 21.490 (Eng? to Africa 1500-1645) 34443 at 1555 in Kilkeel; BBC via Cyprus **21.470** (Eng to E.Africa 1400-1700) 44344 at 1606 by **Peter Pollard** in Rugby; RFI via Issoudun? **21.685** (Fr to M.East, Africa 1600-1900) 24332 at 1647 by **Rhoderick Illman** in Oxted; WYFR via Okeechobee, USA **21.745** (Eng to Eur, Africa 1600-1730?) 34433 at 1725 by **Vic Prier** in Colyton; Voice of Russia **21.870** (Eng [W/S]) 25332 at 1911 in Storrington; HCJB Quito, Ecuador **21.455** (Eng, u.s.b. + p.c.) 14332 at 1922 by **Tim Allison** in Middlesbrough; WYFR via Okeechobee, USA **21.525** (Eng to Eur, Africa 2000-2300?) 44444 at 2018 by **Tom Winzor** in Plymouth.

As mentioned last month, the **19MHz (15m)** band is being used by Monitor Radio to reach listeners in Europe, M.East and Africa. Their a.m. transmisson from WSHB in Cypress Creek, USA on 18.930 (Eng 1600-1900) was rated 35333 at 1758 in Bridgwater.

Despite daily propagation variations in the **17MHz (16m)** band broadcasts from several continents usually reach our shores. During the morning R.Australia via Darwin? **17.715** (Eng to

LONG WAVE CHART

Freq (kHz)	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	D*
153	Donebach DLF	Germany	500	B*, C, D*, E, F
153	Bod	Romania	1200	B*, F*
162	Allouis	France	2000	A, B*, C, D, E, F
162	Agri	Turkey	1000	F*
171	Nador Medi-1	Morocco	2000	D*, F*, G*
171	B'shakovo etc	Russia	1200	C, F
177	Oranienburg	Germany	750	B*, C, D, F
180	Polati	Turkey	1200	F*
183	Saarlouis	Germany	2000	A, B*, C, D, E, F
189	Caltanissetta	Italy	10	F
198	Droitwich BBC	UK	500	A, B, C, E, F
207	Munich DLF	Germany	500	C, F*
207	Azilal	Morocco	800	D*
216	Roumoules RMC	S.France	1400	B, C, D, E, F
216	Baku	Azerbaijdzhan	500	G*
225	Raszyn Resv	Poland	?	B*, C, D*, E, F
234	Beidweiler	Luxembourg	2000	A, B, C, D, F
243	Kalundborg	Denmark	300	A, C, D, F
252	Tipaza	Algeria	1500	B*, C*, D*, F*
252	Atlantic 252	S.Ireland	500	A, B*, C, D, E, F
261	Burg(R.Ropa)	Germany	200	C, F
261	Taldom Moscow	Russia	2500	F*
270	Topolina	Czech Rep	1500	B*, C, D*, F
279	Sasnowy	Belarus	500	B*, D*, E*, F

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

Listeners:-

- (A) John Eaton, Woking.
- (B) Sheila Hughes, Morden.
- (C) George Millmore, Wootton, IoW.
- (D) Fred Pallant, Storrington.
- (E) Tom Smyth, Co.Fermanagh.
- (F) Tony Stickells, Thornton Heath.
- (G) Andrew Tett, Hove.

Asia, Pacific 0500-0800) was rated 35533 at 0530 in Wallsend; R.Australia via Darwin? **17.880** (Eng to Pacific 0500-0830) 44434 at 0600 in Morden; R.Japan via Ascension Is **17.815** (Eng, Jap to C/S.Africa 0700-0900, 0930-1000) 33433 at 0725 in Herstmonceux; R.Slovakia Int **17.570** (Eng to Australia 0830-0857) 34443 at 0830 in Galashiels; SRI via Schwarzenburg? **17.515** (It, Eng, Fr, Ger, Port to Australia 0830-1100) 44323 at 0900 in Truro; Voice of Russia 17.610 (Eng [W/S]) 34344 at 0900 by **Clare Pinder** in Appleby; R.Austria Int via Moosbrunn **17.870** (Ger, Eng to Australia 0800-1100) 44444 at 0934 in Rugby; Africa No.1, Gabon 17.630 (Fr to W.Africa 0700-1600) SIO333 at 1030 by **Philip Rambaut** in Macclesfield; AIR via Bangalore **17.387** (Eng to Pacific areas 1000-1100) 43343 at 1045 in Oadby.

After mid-day the BBC via Skelton & Woofferton, UK 17.640 (Eng to E.Eur, M.East, E.Africa 0700-1600) was logged as 44444 at 1300 by **Martin Cowin** in Kirky Stephen; Israel R, Jerusalem **17.545** (Heb [Home Sce rly] to W.Eur, N.America 0700-1730?) 34433 at 1315 by **John Eaton** in Woking; RCI via Sackville, Canada 17.820 (Eng to Eur, Africa 1330-1400 Mon-Sat) 44444 at 1350 in Middlesbrough; BBC via Antigua, W.Indies **17.840** (Eng to N/C.America 1400-1700) 32332 at 1600 in Kilkeel; Vatican R, Italy **17.550** (Eng to Africa 1730-1800) 43444 at 1730 in Colyton; VOA via Tangier, Morocco **17.895** (Eng to Africa 1600-1900) 33323 at 1740 in Stalbridge; BBC via Ascension Is 17.830 (Eng to W/C.Africa 0730-2100) 44444 at 1800 by **Vera Brindley** in Woodhall Spa; R.Netherlands via Bonaire, Ned Antilles **17.605** (Eng to S/E/W.Africa 1830-2025) SIO222 at 1830 by **Tom Smyth** in Co.Fermanagh; WYFR via Okeechobee, USA **17.555** (Eng to Eur 1600-2200?) 54444 at 1900 in Plymouth; RCI via Sackville 17.870 (Fr, Eng to Eur, Africa 1900-2058) was 'just audible' at 1941 in Oxted; VOA via

Ascension Is? **17.755** (Eng, Fr to Africa 1600-2130) 44434 at 2127 in Freshwater Bay; VOFC Taiwan via WYFR **17.750** (Eng to Eur 2200-2300) 25322 at 2215 in Bridgwater.

Broadcasts from many areas can usually be received in the **15MHz (19m)** band. Before noon the BBC via Masirah Is, Oman **15.310** (Eng to S.Asia 0300-0915, 1000-1400) was 25542 at 0540 in Wallsend; R.Japan via Moyabi, Gabon **15.230** (Eng 0700-0800) 33222 at 0700 in Appleby; RAI Rome **15.240** (It to Africa 0600-1300) 33554 at 0835 in Storrington; Monitor R.Int via KHBI Agangan Pt, N.Mariana Is **15.665** (Eng to E.Eur? 0800-0900) 32222 at 0850 in Stalbridge; AIR via ? **15.050** (Eng to NE.Asia 1000-1100) 33333 at 1011 in Plymouth; UAER, Dubai **15.395** (Ar to Eur 1055-1330) 34433 at 1100 in Oadby; R.Pakistan, Islamabad **15.465** (Eng to Eur 1100-1120) 35433 at 1109 in Bridgwater.

During the afternoon the BBC via Rampisham & Skelton, UK **15.575** (Eng to Eur, M.East, W.Asia 0600-2100) was 44444 at 1247 in Kirkby Stephen; R.CI via Sines, Portugal **15.325** (Eng, Fr to Eur, M.East, Africa 1330-1500) 44444 at 1330 in Truro; R.Tashkent, Uzbekistan **15.295** (Eng to Asia 1330-1400) 34433 at 1335 in Galashiels; Israel R, Jerusalem **15.650** (Eng to Eur? 1400-1430) 44444 at 1405 in Morden; BBC via Ascension Is **15.400** (Eng to Africa 1500-1930) 35333 at 1603 in Woking; China R.Int via Mali **15.130** (Eng to E/S.Africa 1600-1657) 34443 at 1645 in Kilkeel; Africa No.1, Gabon **15.475** (Fr to W.Africa 1600-1900) 43444 at 1700 in W.London; VOA via Botswana? **15.445** (Eng to Africa 1600-1800) SIO544 at 1733 in Macclesfield.

Later, VOA via Morocco **15.410** (Eng to Africa 1600-2200) was 33343 at 1809 in Woodhall Spa; WINB Red Lion, USA **15.715** (Eng to Eur, N.Africa 1600-1900) 54444 at 1830 in Colyton; RNB Brazil **15.265** (Port, Eng, Ger to Eur 1630-2020) 34322 at 1838 in Middlesbrough; R.Nederlands via Bonaire **15.315** (Eng to S/E/W.Africa 1830-2025) 34333 at 1959 in Oxted; Voice of Vietnam, Hanoi **15.010** (Eng to Eur 2030-2100) 44334 at 2035 in Rugby; RCI via Sackville **15.325** (Eng to Eur, M.East, Africa 2000-2129) 44444 at 2114 in Freshwater Bay; R.Africa 2, Eq.Guinea **15.186** (Eng to Africa 1700-2300) Mon-Fri) 44333 at 2152 in Scalloway.

In the **13MHz (22m)** band Vatican R, Italy **13.765** (Eng to Africa 0630-0700) was 44444 at 0630 in Morden; R.Austria Int via Moosbrunn **13.730** (Ger, Eng, Fr, Sp to Eur 0400-1800) SIO333 at 0732 by Francis Hearne in N.Bristol; UAER, Dubai **13.675** (Eng to Eur 1030-1055) 44444 at 1035 in Woodhall Spa; R.Norway Int, Oslo **13.800** (Norw [Eng Sun] to Asia 1200-1230) 44444 at 1200 in Truro; R.Kuwait via Kabd 13.620 (Ar to Eur, N.America 0930-1605) 55555 at 1431 in Plymouth; WHRI South Bend, USA **13.760** (Eng to E.USA, Eur 1500-2057) 34433 at 1620 in Kilkeel; VOA via Selebi-Phikwe, Botswana **13.710** (Eng to Africa 1600-?) 44544 at 1621 in Woking; Voice of Turkey **13.695** (Eng to Eur, Africa 1830-1925) 33233 at 1830 in Appleby; SRI via Sottens? **13.635** (Ar, Eng to N.Africa 1845-2030) SIO444 at 2000 in Co.Fermanagh; R.Damascus, Syria **13.610** (Eng to Eur 2005-2105; to N.America 2105-2205) 44423 at 2020 in Freshwater Bay; Monitor R.Int via WSHB Cyprus Creek, USA **13.770** (Eng to Eur 2000-2157) 33323 at 2040 in Stalbridge; RCI via Sackville **13.650** (Fr, Eng to Eur, M.East, Africa 1900-2200) 34433 at 2108 in Rugby; WWCN Nashville, USA **13.845** (Eng to E.USA 1300-0100?) 34322 at 2215 in Middlesbrough; Monitor R.Int via WSHB **13.770** (Eng to S.America 2200-0000) 34433 at 2329 in Bridgwater.

Noted in the **11MHz (25m)** band during the morning were the BBC via Skelton & Woofferton, UK **12.095** (Eng to Eur, N/W.Africa 0400-2230),

LOCAL RADIO CHART

Freq (kHz)	Station	ILR (kW)	e.m.r.p	Listener
558	BBC Spectrum, London	B	0.80	G,I,L
585	R.Solway	B	2.00	B,G
603	Cheltenham R.	B	0.10	B,G,I,L
603	ImvictaSG, Litt'brne	B	0.10	F,G,I,L
630	R.Bedfordshire(3CR)	B	0.20	E*,F,G,I,L
630	R.Cornwall	B	2.00	B,G,I
657	R.Clywd	B	2.00	B,G,I
657	R.Cornwall	B	0.50	G,I
666	Gemini AM, Exeter	I	0.34	B,E,G,I,L
666	R.York	B	0.80	B,E,G,H
729	BBC Essex	B	0.20	F,G,I,L
738	Hereford/Worcester	B	0.037	G,I,L
756	R.Cumbria	B	1.00	B,H
756	R.Maldwyn, Powys	I	0.63	G,I,L
765	BBC Essex	B	0.20	F,G,I,L
774	R.Kent	B	0.70	B,F,G,I,L
774	R.Leeds	B	0.50	B,G
774	3 Counties SG, Glos	I	0.14	G,I
792	Classic Gold 792	I	0.27	F,G,I,L
792	R.Foyie	B	1.00	B
801	R.Devon & Dorset	B	2.00	B,D,G,I,L
828	Classic Gold 828	I	0.20	G,I*
828	Magic 828, Leeds	I	0.12	B
828	2CR CG Bournemouth	I	0.27	I
828	Townland R. Ulster	I	0.80	B,J
837	R.Cumbria/Furness	B	1.50	B
837	Asian Netwk Leics	B	0.45	D,F,G,I,L
855	R.Devon & Dorset	B	1.00	G,I
855	R.Lancashire	B	1.50	A,B
855	R.Norfolk	B	1.50	F,G,I,L
855	Sunshine 855,Ludlow	I	0.15	D,G,I,L
873	R.Norfolk	B	0.30	F,G,I,L
936	Brunel CG, W.Wilts	I	0.18	G,I
936	Yorkshire Dales R	I	?	A,B,C,H
945	S.Coast R, Bexhill	I	0.75	G,I,L
945	Derby (Gem AM)	I	0.20	B,G,J
954	Gemini AM, Torquay	I	0.32	G,I
954	Wyvern AM, Hereford	I	0.16	G,I
963	Asian Sd,Manchester	I	0.80	B
963	963 Liberty (Viva)	I	1.00	A*,G,H*,I,L
990	R.Devon & Dorset	B	1.00	B,G,I,K
990	Gt. Yks G, Doncaster	I	0.25	G
990	WABC, Wolverhampton	I	0.09	G
999	Gem AM, Nottingham	I	0.25	G
999	Red Rose 9-99 P'stn	I	0.80	B,G,J
999	R.Solent	B	1.00	F,G,I,L
999	Valleys R. Aberdare	I	0.300	G
1017	WABC, Shrewsbury	I	0.70	B,G,J,L
1026	R.Cambridgeshire	B	0.50	G,I
1026	Downtown, Belfast	I	1.70	B,J,K
1026	R.Jersey	B	1.00	G,I
1035	RTL Country 1035	I	1.00	G,I,L
1035	N.Sound, Aberdeen	I	0.78	A*,B,G*,H
1107	Moray Fth,Inverness	I	1.50	H,K
1116	R.Derby	B	1.20	B,G,I
1116	R.Guernsey	B	0.50	G,I,L
1152	Amber, Norwich	I	0.83	G
1152	Clyde 2, Glasgow	I	3.06	H,J
1152	GNR, Newcastle	I	1.80	H
1152	LBC 1152	I	23.50	G,I,K*,L
1152	Pic'ly 1152,Manch'r	I	1.50	B
1152	PlymSnd AM, Plymouth	I	0.32	J
1152	Xtra-AM, Birmingham	I	3.00	G
1161	R.Bedfordshire(3CR)	B	0.10	G,I
1161	Brunel CG, Swindon	I	0.16	B,G,I,L
1161	Southern Counties R	B	1.00	G,I,K*,L
1161	Tay AM, Dundee	I	1.40	B,G*,H,J
1170	Amber SGR, Ipswich	I	0.28	G,H*
1170	GNR, Stockton	I	0.32	B,F,H
1170	SCR, Portsmouth	I	0.50	F,G,I,L
1170	Swansea Snd,Swansea	I	0.58	B,J

1170	1170AM,High Wycombe	I	0.25	G,I
1242	InvictaSG,Maidstone	I	0.32	G,I
1242	IoV Radio, Wootton	I	0.50	G,I,L
1251	Amber SGR,Bury StEd	I	0.76	G,H*,I
1260	Marcher G, Wrexham	I	0.64	H
1260	SabrasSnd,Leicester	I	0.29	G
1260	R.York	B	0.50	B,G
1296	Radio XL,Birmingham	I	5.00	G,H,I,J,L
1305	Big Easy Magic AM	I	0.15	B
1305	Premier via ?	I	0.50	G,H*,I,K,L
1305	Touch AM, Newport	I	0.20	I
1323	S.Coast R,Southwick	I	0.50	F,G,I,L
1323	SomersetSnd,Bristol	B	0.63	B,D,G
1332	Premier, Battersea	I	1.00	B,G,I
1332	CG 1332, Peterbor'	I	0.60	F
1332	Wiltshire Sound	B	0.30	G,I
1359	BreezeAM,Chelmsford	I	0.28	F,G,I
1359	CG 1359, Coventry	I	0.27	G
1359	R.Solent	B	0.85	G,I
1368	R.Lincolnshire	B	2.00	G
1368	Southern Counties R	B	0.50	E*,G,I,L
1368	Wiltshire Sound	B	0.10	D,I
1377	Asian Sd,Manchester	I	?	H,I
1413	Premier via ?	I	0.50	G,H*,I,L
1413	Yorkshire Dales R	I	?	B,H
1431	Breeze AM, Southend	I	0.35	G,H*,I,L
1431	CI.Gld via Reading	I	0.14	G,I,L
1449	R.Peterboro/Cambs	B	0.15	G,I
1458	R.Cumbria	B	0.50	B
1458	R.Devon & Dorset	B	2.00	B,G,I
1458	1458 Lie AM Manch'	I	5.00	H,J,K
1458	Sunrise, London	I	50.00	G,I,L
1458	Asian Netwk Langley	B	5.00	D,G
1476	CountySnd, Guildford	I	0.50	B,G,H*,J,I,L
1485	CI.Gld via Newbury	I	1.00	D,G,J
1485	R.Humberside (Hull)	B	1.00	G
1485	R.Merseyside	B	1.20	B,H,I,J,K,L
1485	Southern Counties R	B	1.00	E*,G,I,L
1503	R.Stoke-on-Trent	B	1.00	B,E*,G,H,I,L
1521	R.1521 Craigavon,NI	I	0.50	B,K
1521	Fame 1521, Reigate	I	0.64	G,I,L
1530	R.Essex	B	0.15	G,I,L
1530	1530 AM W.Yorks CG	I	0.74	G,H,J
1530	Wyvern, Worcester	I	0.52	G,I
1548	R.Bristol	B	5.00	G,I,J
1548	Capital G, London	I	97.50	G,I,K,L
1548	Magic 1548 Liv pool	I	4.40	B,G*,J
1548	Forth AM, Edinburgh	I	2.20	G*,H
1557	R.Lancashire	B	0.25	B,E*
1557	Mellow, Clacton	I	0.8	G,L
1557	CG 1557, N'hampton	I	0.76	G,H*,J,L
1557	S.Coast R, So'ton	I	0.50	E*,G,I
1584	KCBC, Kettering	I	0.04	G,H*
1584	London Turkish R	I	0.20	G,I,L
1584	R.Nott'ingham	B	1.00	E*,G,H
1584	R.Shropshire	B	0.50	B,G,I
1584	Tay, Perth	I	0.21	G,H
1602	R.Kent	B	0.25	G,I,L

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

Listeners:-

- (A) Tim Allison, Middlesbrough.
- (B) Robert Connolly, Kilkeel.
- (C) Martin Cowin, Kirkby Stephen.
- (D) Francis Hearne, N.Bristol.
- (E) Sheila Hughes, Morden.
- (F) Rhoderick Illman, Oxted.
- (G) Brian Keyte, Bookham.
- (H) Ross Lockley, Galashiels.
- (I) George Millmore, Wootton, IoV
- (J) Chris Ridley, Co.Sligo, Eire.
- (K) Tom Smyth, Co.Fermanagh.
- (L) Tony Stickells, Thornton Heath.

rated 35433 at 0810 in Middlesbrough; Monitor R. via KHBI N.Mariana Is **11.550** (Eng to Pacific 0800-0900) SIO111 at 0830 in Macclesfield; RS Makedonia, Thessaloniki **11.595** (Gr to Eur 0600-2255) 44333 at 0900 in Scalloway; R.Jordan via Al Karanah **11.690** (Eng to W.Eur, E.USA 1000-1630) 54354 at 1105 in Kirkby Stephen; R.Sweden via Horby? **11.650** (Eng to N.America 1130-1200) 43443 at 1140 in Herstmonceux.

During the afternoon WWCN Nashville, USA **12.160** (Eng to N.America, Eur 1400-2300) was 33333 at 1438 in Plymouth; RTV Malienne, Bamako **11.960** (Fr to W.Africa 0758-1757) 33333 at 1445 in Woking; China R.Int, Beijing **11.825** (Eng to S.Asia 1400-1500) 33333 at 1445 in Morden; R.Australia via Darwin **11.660** (Eng to Asia 1430-1800) 32222 at 1530 in Truro; R.Pakistan, Islamabad **11.565** (Eng to M.East 1600-1630) 32332 at 1605 in Bridgwater.

Later, AIR via Bangalore **11.620** (Eng, Hi to Eur 1745-2230) was 45554 at 1808 in Wallsend; China R.Int, Beijing **11.515** (Eng to W/N.Africa 1900-1957) SIO222 at 1900 in Co.Fermanagh; R.Romania Int, Bucharest **11.940** (Eng to Eur 1900-1955) 45444 at 1913 in Woodhall Spa; R.Nederlands via Flevo **11.655** (Eng to Africa

1730-2025) 32332 at 1929 in Oxted; HCJB Quito, Ecuador **12.015** (Eng to Eur? 2000-2157?) 32222 at 2000 in Appleby; REE via Noblejas, Spain **11.775** (Eng to Eur, Africa 2000-2100) 55555 at 2015 in Colyton; R.Kuwait, via Kabd **11.990** (Eng to Eur, N.America 1800-2100) 55555 at 2100 in Oadby; R.Prague, Czech Rep **11.600** (Eng to Africa, Asia 2130-2157) 34333 at 2134 in Freshwater Bay; R.Ukraine Int **12.040** (Eng to ? 2100-?) 43444 at 2125 in Rugby; BBC via Ascension Is **11.835** (Eng to W.Africa 1900-2300) 43333 at 2250 in Stalbridge; China R.Int via Mali **11.715** (Eng to N.America 0000-0057) 34333 at 0045 in Kilkeel.

Reception from some areas has been good in the **9MHz (31m)** band. In the morning AVR via Slovakia **9.440** (Eng to Eur 0700-0755) was 44444 at 0700 in Morden; KNLS Anchor Point, Alaska **9.615** (Eng to F.East 0800-0900) 43333 at 0845 in Scalloway; R.Vilnius, Lithuania **9.710** (Eng to Eur 0830-0900) 43433 at 0845 in Herstmonceux; R.Nederlands via Bonaire, Ned.Antilles **9.720** (Eng to Pacific 0730-0925) SIO333 at 0850 in Macclesfield; SRI via Sarnen **9.535** (Eng, Ger, Fr, It to SW.Eur 1000-1300) 34343 at 1013 in Middlesbrough; R.Prague via

MEDIUM WAVE CHART

FreqStation (kHz)	Country	Power (kW)	Listener
520 Hof/Wurzburg (BR)	Germany	0.2	L*,M*
526 Vatican R.	Italy	5	L*
531 Ain Beida	Algeria	600/300	D*,L*
531 Leipzig	Germany	100	G*,L*
531 RNE5 via ?	Spain	?	G*,L*
531 Beromunster	Switzerland	500	L*
540 Wavre	Belgium	150/50	B,E,G,L,N*
540 Solt	Hungary	2000	L*
540 Sidi Bennour	Morocco	600	G*,L*
540 Vitoria(EI)	Spain	10	L*
549 Les Trembles	Algeria	600	D*,G*,L*
549 Thurnau (DLF)	Germany	200	G*,L*
558 Espoo	Finland	00	N*
558 Tirgu Jiu	Romania	200	G*
558 RNE5 via ?	Spain	?	E,G*
567 Volgograd	CIS	250	L*
567 Tullamore(RTE1)	Ireland (S)	500	C,E,F,G,K,L,N*
576 Muhlacker(SDR)	Germany	500	G*,L*
576 Barcelona(RNE5)	Spain	50	G*,L*
585 Paris(FIP)	France	8	E,G,L
585 Riyadh	Saudi Arabia	1200	L*
585 Madrid(RNE1)	Spain	200	G*,L*
585 Gafsa	Tunisia	350	L*
585 Dumfries(BBCScot)	UK	2	F,I*
594 Zagreb	Croatia	20	L*
594 Frankfurt(HR)	Germany	1000/400	G*,L*
594 Oujda-1	Morocco	100	G*,L*
594 Muge	Portugal	100	G*,L*
603 Sevilla(RNE5)	Spain	50	G*,L*
603 Newcastle(BBC)	UK	2	F
612 Athlone(RTE2)	Ireland (S)	100	F,G,L
612 Sebaa Aïoun	Morocco	300	G*,L*
621 RNE1 via ?	Spain	10	L*
621 Wavre	Belgium	80	B,E,G,L,N*
621 Orava(H.Lehota)	Czech	14	L*
621 Batra	Egypt	2000	L*
621 RNE1 via ?	Spain	10	L*
621 Barcelona(OCR)	Spain	50	G*
630 Vigra	Norway	100	L*
630 Tunis-Djedeida	Tunisia	600	D*,G*,L*
639 Praha(Liblice)	Czech	1500	G*,L*
639 RNE1 via ?	Spain	?	G*,L*
640 RNE1 via ?	Spain	10	L*
648 Orfordness(BBC)	UK	500	D*,G*,L,N*
657 Napoli	Italy	120	G*,L*
657 Madrid(RNE5)	Spain	20	G*,L*
657 Wrexham(BBCWales)	UK	2	F,K,L,N*
666 Messkirch(Rohrd(SWF))	Germany	150	L*
666 Lisboa	Portugal	135	G*
666 Barcelona(COPE)	Spain	10	L*
675 Lopik(R10 Gold)	Holland	120	D,E,G,L,N*
684 Sevilla(RNE1)	Spain	500	G*,L*
684 Avala(Beograd-1)	Yugoslavia	2000	G*,L*
693 Tortosa(RNE1)	Spain	2	L*
693 Droitwich(BBC5)	UK	150	G*,L,N*
693 Enniskillen(BBC5)	UK	1	K
702 Flensburg(NDR)	Germany	5	L*
702 Monte Carlo	Monaco	40	G*
702 Slovensko 1 via ?	Slovak Rep.	?	L*
711 Rennes 1	France	300	E,G,L
711 Heidelberg	Germany	5	L*
711 Laayoune	Morocco	600	G*,L*
711 Murcia(COPE)	Spain	5	L*
720 Tavead	Iran	400	G*
720 Lisnagarvey(BBC4)	Ireland (N)	10	G,K,N*
720 Norte	Portugal	100	L*
720 Lots Rd.Ldn(BBC4)	UK	0.5	F,G,L
729 Cork(RTE1)	Ireland (S)	10	F,G*,L*
729 RNE1 via ?	Spain	?	G*,L*
738 Paris	France	4	E,G
738 Poznan	Poland	300	G*,L*
738 Barcelona(RNE1)	Spain	500	G*,L*
747 Flevu(Hiv2)	Holland	400	D,E,G,L
756 Braunschweig(DLF)	Germany	800/200	G*,L*
756 Bilbao(EI)	Spain	5	G*,L*
756 Redruth(BBC)	UK	2	F,G,L*
765 Sottens	Switzerland	500	G*,L*,N*
774 Abis	Egypt	500	L*
774 Agadir	Morocco	50	L*
774 RNE1 via ?	Spain	?	G*,L*
783 Leipzig(MDR)	Germany	100	G*,L*
783 Miramar(R.Porto)	Portugal	100	G*,L*
792 Limoges	France	300	G*,L*
792 Lingent(NDR)	Germany	5	G*,L*
792 Sevilla(SER)	Spain	20	G*,L*
792 Londonderry(BBC)	UK	1	K
801 Munchen-Ismaning	Germany	300	G*,L*
801 RNE1 via ?	Spain	?	G*,L*
810 Madrid(SER)	Spain	20	G*,L*

810 Westerglen(BBCScot)	UK	100	A*,F,G*,K,L,N*
819 Batra	Egypt	450	G*,L*
819 Toulouse	France	50	L*
819 Trieste	Italy	25	L*
819 Warsaw	Poland	300	N*
819 S. Sebastian(EI)	Spain	5	L*
828 Hannover(NDR)	Germany	100/5	L*
828 Rotterdam	Holland	20	E,L
837 Nancy	France	200	G*,K*,L
837 COPE via ?	Spain	?	G*,L*
846 Rome	Italy	540	G*,L*
855 Berlin	Germany	100	G*,L*
855 RNE1 via ?	Spain	?	G*,L*
864 Santah	Egypt	500	G*,L*
864 Paris	France	300	E,G,L
864 Socuellamos(RNE1)	Spain	2	G*,L*
873 Frankfurt(AFN)	Germany	150	A*,F,G*,L,N*
873 Lakihegy	Hungary	20	L*
873 Zaragoza(SER)	Spain	20	G*,L*
882 COPE via ?	Spain	?	G*,L*
882 Washford(BBCWales)	UK	100	D,E,F,G,K,L
891 Algiers	Algeria	600/300	D*,G*,L,N*
891 Huisberg	Netherlands	20	G*,L*
891 Vila Moura	Portugal	10	L*
900 Brno(CRo2)	Czech Rep	25	G*
900 Milan	Italy	600	L*
900 Qurayyat	Saudi Arabia	1000	G*,L*
900 COPE via ?	Spain	?	L*
909 B'ness Pk(BBC5)	UK	140	B,G,L,N*
918 Plimved(Sloven nR)	Slovenia	600/100	G*,L,N*
918 Madrid(R.Int)	Spain	20	G*,L*
927 Wolvertem	Belgium	300	B,E,G,L,N*
927 Zakynthos	Greece	50	L*
936 Bremen	Germany	100	G*,L*,N*
936 Venezia	Italy	20	G*,L*
936 RNE5 via ?	Spain	?	L*
945 Toulouse	France	300	G*,N*
954 Brno (Cro2)	Czech Rep.	200	L*
954 Madrid(CI)	Spain	20	G*,L*
963 Pori	Finland	600	G*,N*
972 Hamburg(NDR)	Germany	300	G*,L,N*
972 RNE1 via ?	Spain	?	L*
981 Alger	Algeria	600/300	D*,G*,L
981 Megara	Greece	200	L*
990 Berlin	Germany	300	G*,L,N*
990 Potenza	Italy	10	L*
990 R.Bilbao(SER)	Spain	10	G*,L*
990 Tywyn(BBC)	UK	1	F
999 Madrid(COPE)	Spain	50	L*
1008 SER via ?	Canaries/Spain	?	L*
1008 Flevu(Hiv-5)	Holland	400	E,G,L,N*
1017 Rheinsender(SWF)	Germany	600	G*,L,N*
1017 RNE5 via ?	Spain	?	G*,L*
1026 SER via ?	Spain	?	L*
1044 Dresden(MDR)	Germany	250	L*
1044 Sebaa-Aïoun	Morocco	300	G*
1044 S. Sebastian(SER)	Spain	10	G*,L*
1053 Zaragoza(COPE)	Spain	10	L*
1053 Talk R UK via ?	UK	?	G,K,L
1062 Kalundborg	Denmark	250	G*,L,N*
1062 R.Uno via ?	Italy	?	G*,L*
1071 Bilbao(EI)	Spain	5	G*,L*
1071 Talk Radio UK via ?	UK	?	L*
1080 Katowice	Poland	1500	L,N*
1080 SER via ?	Spain	?	G*,L*
1089 Talk Radio UK via ?	UK	?	G,K,L
1098 Nitra(Jarok)	Slovakia	1500	G*,L,N*
1098 RNE5 via ?	Spain	?	G*,L*
1107 AFN via ?	Germany	10	L*
1107 Rome (RAI)	Italy	6	L*
1107 RNE5 via ?	Spain	?	L*
1107 Talk R UK via ?	UK	?	G,K,L
1116 Bari	Italy	150	L*
1116 Pontevedra(SER)	Spain	5	L*
1125 La Louviere	Belgium	20	G*,L*
1125 Deanovec	Croatia	100	L*
1125 RNE5 via ?	Spain	?	G*,L*
1125 Ulandrindod Well	UK	1	F
1134 COPE via ?	Spain	2	G*,L*
1134 Zadar(Croatian R)	Yugoslavia	600/1200	G*,L,N*
1143 AFN via ?	Germany	1	F,G*,L,O
1143 R.Due via ?	Italy	?	L*
1143 Bolshakov(Mayak)	Russia	150	L*
1143 COPE via ?	Spain	2	G*,L*
1152 Cluj	Romania	950	L*
1152 RNE5 via ?	Spain	10	L*
1161 Strasbourg(Fin)	France	200	G*,N*
1179 SER via ?	Spain	?	L*
1179 Solvesborg	Sweden	600	E,G*,H,L,N*,O*
1188 Kuurne	Belgium	5	G,L
1188 Reichenbach(MDR)	Germany	5	L*
1188 Szolnok	Hungary	135	G*,L*
1197 Munich(VOA)	Germany	300	L*

1197 Virgin via ?	UK	?	G,K
1206 Wroclaw	Poland	200	L,N*
1215 COPE via ?	Spain	?	L*
1215 Virgin via ?	UK	?	G,K,L
1224 Lelystad	Holland	50	L*
1224 COPE via ?	Spain	?	L*
1233 Liege	Belgium	5	L*
1233 Virgin via ?	UK	?	K,L
1242 Marseille	France	150	E,L
1242 Virgin via ?	UK	?	L*
1251 Marcali	Hungary	500	L*
1251 Huisberg	Netherlands	10	E,L
1260 SER via ?	Spain	?	L*
1260 Guildford (V)	UK	0.5	E,G,L
1269 Neumunster(DLF)	Germany	600	G*,L,N*
1269 COPE via ?	Spain	?	L*
1278 Strasbourg	France	300	L*
1278 Dublin/Cork(RTE2)	Ireland (S)	10	A*,D*,F*,G*,L
1287 RFE via ?	Czech Rep.	400	E,G*,L
1287 Lerida(SER)	Spain	10	L*
1296 Valencia(COPE)	Spain	10	L*
1296 Orfordness(BBC)	UK	500	F,K,L,N*
1305 RNE5 via ?	Spain	?	L*
1314 R.Due via ?	Italy	?	L*
1314 Kvitsoy	Norway	1200	A,E,G*,L,N*
1323 Zyrn(BBC)	Cyprus	200	A*,L*
1323 W'brunn (V.Russia)	Germany	1000/150	D*,L
1332 Rome	Italy	300	G*
1341 Lakihegy	Hungary	300	L*
1341 Lisnagarvey(BBC)	Ireland (N)	100	F,G*,K,L
1341 Tarasa(SER)	Spain	?	G*,L*
1350 Pecs	Hungary	10	L*
1350 Cesvaine/Kuldiga	Latvia	50	L*
1359 Arganda (RNE-FS)	Spain	600	G*,L*
1368 Foxdale(Manx R)	I.O.M.	20	D*,F*,G*,J,K,L*
1368 Krakow	Poland	60	L*
1377 Lille	France	300	G*,L*
1386 Athens	Greece	50	L*
1386 Bolshakov	Russia	2500	G*,L,N*
1395 Flitke	Albania	1000	G*,L*
1395 Lopik	Netherlands	120/40	G,K,L
1404 Brest	France	20	G*,L*
1413 RNE5 via ?	Spain	?	G*,L,N*
1422 Heusweiler(DLF)	Germany	1200/600	G*,L,N*
1440 Marnach(RTL)	Luxembourg	1200	G,K,L,N*
1440 Moscow via ?	Russia	?	L*
1440 Damman	Saudi Arabia	1600	L*
1467 Monte Carlo(TWR)	Monaco	1000/400	G*,L,N*,O
1476 Wien-Bisamberg	Austria	600	L,O*
1485 AFN via ?	Germany	1	L*
1485 SER via ?	Spain	?	L*
1494 Clermont-Ferrand	France	20	G*,L*
1494 St.Petersburg	Russia	1000	G*,L,N*,O*
1503 Ardabil	Iran	50	L*
1503 Stargard	Poland	300	D*,G*,L*
1503 RNE5 via ?	Spain	?	G*,L*
1512 Wolvertem	Belgium	600	D*,G*,H,L,O*
1512 Jeddah	Saudi Arabia	1000	L*
1521 Duba	Saudi Arabia	2000	G*
1530 Vatican R	Italy	150/450	G*,L
1530 Penheir(VOA)	Sao Tome	100	L*
1539 Mainflingen(ERF)	Germany	350(700)	G*,L
1539 SER via ?	Spain	?	L*
1548 ?(VOA)	Kuwait	600	F*
1557 Nice	France	300	L*
1566 Sarnen	Switzerland	300	G*,L
1575 Genova	Italy	50	L*
1575 SER via ?	Spain	5	G*,L
1584 SER via ?	Spain	2	G*,L*
1593 Holzkirchen(VOA)	Germany	150	F,G*,L,N*
1602 SER via ?	Spain	?	L*
1602 Vitoria(EI)	Spain	10	G*,L
1611 Vatican R	Italy	15	L*

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

- Listeners:-
- (A) Tim Allison, Middlesbrough.
 - (B) John Eaton, Woking.
 - (C) Francis Hearne, N.Bristol.
 - (D) Sheila Hughes, Morden.
 - (E) Rhoderick Ilman, Oxted.
 - (F) Brian Keyte, Bookham.
 - (G) George Millmore, Wootton loW.
 - (H) Clare Pinder, while in Appleby.
 - (I) Vic Fryer, Colyton.
 - (J) Chris Ridley, Co.Sligo, Eire.
 - (K) Tom Smyth, Co.Fermanagh
 - (L) Tony Stickells, Thornton Heath.
 - (M) Andrew Tett, Hove.
 - (N) Norman Thompson, Oadby.
 - (O) Thomas Williams, Truro.

Litomysl 9.505 (Eng to Eur 1030-1057) 44444 at 1032 in Woodhall Spa; R.Nederlands via Nauen 9.860 (Eng to Eur 1030-1225) 55545 at 1037 in Kirkby Stephen; R.Mediterranee Int via Nardor, Morocco 9.575 (Fr, Ar to N.Africa, S.Eur 0500-0100) 44343 at 1130 in Oadby; BBC via Cyprus 9.750 (Eng to Russia? 1100-1230) 34343 at 1145 in Oxted.
 Later, VOA via Gloria, Portugal 9.760 (Eng to M.East 1700?-2200) was SIO444 at 1700 in Co.Fermanagh; R.Australia via Shepparton 9.580 (Eng to Pacific 1430-2058) 33333 at 1710 in W.London; R.Omdurman, Sudan 9.200 (Eng 1800-1900) 34443 at 1803 in Wallsend; R.Tirana,

Albania 9.570 (Eng to Eur 1845-1900) 44444 at 1845 in Truro; R.Romania Int, Bucharest 9.690 (Eng to Eur 1900-1955) 44444 at 1900 in Galashiels; TWV via Meyerton, S.Africa 9.510 (Twi to W.Africa 2030-2057) 35444 at 2040 in Storrington; Voice of Greece, Athens 9.380 (Eng [News] to Eur 2000-2010) 44434 at 2000 in Colyton; R.Finland via Pori 9.855 (Eng to Eur 2000-2030) 54444 at 2012 in Plymouth; Voice of Vietnam, Hanoi 9.840 (Eng to Eur 2030-2100) 32222 at 2050 in Stalbridge; R.Ukraine Int, Kiev 9.550 (Eng to Eur 2100-2200) 54444 at 2100 in Appleby; R.Romania Int, Bucharest 9.690 (Eng to Eur 2100-2155) 53443 at 2143 in Bridgwater;

BBC via Sackville, Canada 9.590 (Eng to E.America 2200-0000) 45444 at 2259 in Woking; HCJB Quito, Ecuador 9.745 (Eng to N.America 0030-0500) 34443 at 0040 in Killeel.
 Quite a few of the broadcasts in the 7MHz (41m) band are intended for listeners in Europe. Some come from Monitor R.Int via WSHB Cypress Creek, USA 7.535 (Eng [Various Sat/Sun] 0400-0958), rated 44444 at 0709 in Oxted; BBC via Rampisham, UK 7.325 (Eng 0430-0915, also to M.East, Africa) 45444 at 0730 in Middlesbrough; Croatian R, via Deanovec 7.165 (Cr, Eng 0600-2300) 45554 at 0803 in Wallsend; R.Prague, Czech Rep 7.345 (Eng 1030-1057) 35443 at 1048

in Bridgwater; R.Tirana, Albania 7.270 (Eng 1845-1857) 53422 at 1845 in Galashiels; Israel R. Jerusalem 7.465 (Eng 1900-1925, also to USA) 34443 at 1910 in Plymouth; R.Thailand via Udorn Thani 7.210 (Eng 1930-1958) 32222 at 1945 in Truro; R.CI via Skelton, UK 7.235 (Eng 2000-2130, also to Africa) 43333 at 2056 in Woodhall Spa; R.Ukraine Int, Kiev 7.240 (Eng 2100-2200) 54344 at 2100 in Appleby; R.Budapest, Hungary 7.250 (Eng 2100-2130) 44444 at 2100 in Morden; Voice of Russia 7.125 (Eng [WSJ]) SIO444 at 2226 in N.Bristol; AIR via Aligarh? 7.410 (Hi, Eng 1745-2230) 44545 at 2230 in Oadby.

Some to other areas originate from RFPi Costa Rica 7.385 (Eng 24hrs), logged as 34333 at 0630 in Herstmonceux; WEWN Birmingham, USA 7.425 (Eng to E.Canada 0800-1400) SIO433 at 0840 in Macclesfield; R.Nederlands via Talata Volon, Madagascar 7.120 (Eng to S/E/W.Africa 1730-2025) 33343 at 1645 in Colyton; R.Australia via Darwin? 7.330 (Eng to Asia 1900?-2100) 34333 at 2015 in Rugby; Voice of Nigeria, Ikorodu 7.255 (Eng to W.Africa 2000-2100) 33443 at 2041 in Storrington; VOA via Selebi-Phikwe, Botswana 7.415 (Eng to Africa 1900-2230) 32223 at 2045 in Stalbridge; WRNO New Orleans, USA 7.355 (Eng to E.USA 2300?-0400) 44433 at 0020 in Kilkeel.

Many more for Europe may be received in the 6MHz (49m) band: R.Japan via Skelton, UK 5.975 (Eng 0600-0700), rated 55555 at 0650 in Herstmonceux; Sueddeutscher Rundfunk, Muhlacker 6.030 (Ger) 43332 at 0715 in Oxted; HCJB Quito 5.865 (Eng 0700-0900) 43333 at 0820 in Stalbridge; WEWN Vandiver 5.825 (Eng 2100-1000) 25322 at 0910 in Bridgwater; R.Estonia, Tallinn 5.925 (Eng 1515-1530 Mon-Fri) 32332 at 1515 in Morden; SRI via Lenk 6.165 (Fr, It, Ger, Eng 0400-2000) 53333 at 1900 in Appleby; Bayerischer Rundfunk, Germany 6.085 (Ger) 44534 at 1930 in Colyton; R.Austria Int, via Moosbrunn 6.155 (Ger, Eng, Fr, Sp 0400-2300) 55555 at 2000 in Oadby; R.Pyongyang, Korea 6.576 (Eng 2000-2050, also to M.East, Africa) 33323 at 2000 in W.London; R.Korea via Kimjae 6.480 (Russ, Ger, Ar, Sp, Eng 1700-2200) 33333 at 2005 in Rugby; Polish R, Warsaw 6.095 (Eng 1930-2025) 54333 at 2022 in Middlesbrough; R.Sweden 6.065 (Eng 2130-2200) 34333 at 2135 in Truro; R.Prague via Litomysl 5.930 (Eng 2000-2027) 54444 at 2000 in Galashiels; China R.Int 6.950 (Eng 2000-2157) 44444 at 2040 in Woodhall Spa; RCI via Skelton, UK 5.995 (Fr, Eng 1900-2200, also to M.East, N.Africa) 53344 at 2100 in Freshwater Bay; Croatian R. via Deanovec 5.895 (Cr, Eng [News]) SIO322 at 2205 in Co.Fermanagh.

TROPICAL BANDS CHART

Freq (MHz)	Station	Country	UTC	DXer
2.310	ABC Alice Springs	Australia	1956	H
2.325	ABC Tennant Creek	Australia	1955	H
2.390	Voz del Rio Arauca	Guatemala	2345	B
3.230	SABC Meyerton	S.Africa	1954	H
3.240	TWR Shona	Swaziland	0320	L
3.255	BBC via Meyerton	S.Africa	2045	H,J,K,L
3.270	SWABC 1, Namibia	S.W.Africa	1953	B,H,L
3.290	Namibian BC,Windhoek	S.W.Africa	1913	B,H,L
3.300	R.Cultural	Guatemala	0050	B
3.306	ZBC Prog 2	Zimbabwe	1836	B,H,L
3.315	AIR Bhopal	India	0050	B
3.316	SLBS Goderich	Sierra Leone	1950	B,H,L
3.320	SABC (RSJ) Meyerton	S.Africa	1914	B,H,L
3.325	FRCN Lagos	Nigeria	1953	B,H,L
3.330	Christian Voice	Zambia	2020	L
3.345	AIR Jaipur	India	0050	B
3.365	GBC R-2	Ghana	1918	B,H,J,K
3.380	NBC Blantyre	Malawi	1949	B,H,L
3.395	ZBC Gweru	Zimbabwe	0316	L
3.915	BBC via Kranji	Singapore	2100	D,K,M
3.955	BBC via Skelton	England	0500	F,O
3.955	R.Budapest	Hungary	1900	F,I
3.955	Nexus, Milan	Italy	2000	A,L,N
3.965	RFI Paris	France	0055	B
3.970	R.Korea via Skelton	England	2100	L,N
3.975	R.Budapest	Hungary	2112	A,F
3.985	Nexus, Milan	Italy	0553	G
3.985	China R via SRI	Switzerland	2100	M
3.985	SRI Beromunster	Switzerland	2130	F
3.995	DW via Julich	Germany	2000	B,C,F
4.005	Vatican R.	Italy	1953	A,B,G
4.330	Xinjiang BS, Urumqi	China	0005	B
4.735	Xinjiang, Urumqi	China	2350	B
4.755	R.Educ CP Grande	Brazil	0055	B
4.760	TWR Manzini	Swaziland	0300	L
4.765	R.Integracao	Brazil	0215	B,L
4.765	R.Rural, Santarem	Brazil	0135	B
4.765	Brazzaville	Pep Rep.Congo	1845	H,L
4.770	FRCN Kaduna	Nigeria	1844	F,H,L
4.777	R.Gabon, Libreville	Gabon	2002	F,H,L
4.783	RTM Bamako	Mali	1845	B,H,L
4.785	Caiari Porto Velho	Brazil	0110	B
4.790	Azad Kashmir R.	Pakistan	1750	B,L
4.790	R.Atlantida	Peru	0210	B,L
4.800	AIR Hyderabad	India	1651	L
4.800	LNBS Maseru	Lesotho	1843	H,L
4.805	R.Nac.Amazonas	Brazil	2350	R
4.815	R.diff TV Burkina	Ouagadougou	2015	C,H,L
4.820	La Voz Evangelica	Honduras	0125	R
4.828	ZBC R-4	Zimbabwe	2024	H,L
4.830	R.Tachira	Venezuela	0015	B,L
4.832	R.Peloj	Costa Rica	0507	D,L
4.835	R.Tezulutlan, Coban	Guatemala	0310	B,L
4.835	RTM Bamako	Mali	2003	B,C,G,H,J,L
4.840	AIR Bombay	India	1722	B,L
4.845	R.Fides, La Paz	Bolivia	0415	L
4.845	ORTM Nouakchott	Mauritania	0055	B
4.850	R.Yaounde	Cameroon	2029	B
4.850	AIR Kohima	India	0115	B,L
4.860	AIR Delhi	India	1921	G,H,L
4.865	PBS Lanzhou	China	2150	B,F
4.870	R.Cotonou	Benin	2025	H,L
4.885	R.Clube do Para	Brazil	2305	F,L

4.885	R.Difusora Acreana	Brazil	0120	B
4.885	KBC East Sea	Nairobi	1832	H,L
4.890	RFI Paris	via Gabon	0422	L
4.890	R.Por. Moresby	New Guinea	2022	H
4.895	Voz del Rio Arauca	Colombia	0110	B
4.905	R.Nat.N djamena	Chad	1923	C,G,H,L
4.905	R. La Oroya	Peru	0120	B
4.910	R.Zambia, Lusaka	Zambia	1852	H,L
4.914	R.Cora del Peru,Lima	Peru	0310	L
4.915	R.Anhanguera	Brazil	0120	B,L
4.915	PBS Guangxi, Nanning	China	0005	B
4.915	GBC-1, Accra	Ghana	2028	B,H,L
4.915	KBC Cent Sce Nairobi	Kenya	1831	H
4.920	R.Quito, Quito	Ecuador	0518	D,L
4.927	RRI Jambi	Indonesia	1646	L
4.935	R.Capixaba, Vitoria	Brazil	0300	L
4.935	KBC Cent Sce Nairobi	Kenya	1830	H,L
4.940	AIR Guwahati	India	1645	L
4.945	R.Progresso	Brazil	0115	B
4.950	R.Nacional, Mulvenos	Angola	1830	H
4.950	AIR Srinagar	India	1700	L
4.950	VDA via Sao Tome	Sao Tome	1936	F,G,H,I,L
4.955	R.Nac. de Colombia	Colombia	0258	L
4.960	VDA via Sao Tome	Sao Tome	0315	L
4.960	Hanoi 2	Vietnam	2210	L
4.970	PBS Xinjiang	China	0010	B
4.975	R.Uganda, Kampala	Uganda	1946	H,L
4.980	Ecos del Torbes	Venezuela	2325	B,F,L
4.990	R.Ancash, Huaraz	Peru	0307	L
5.005	R.Nacional, Bata	Eq.Guinea	1946	H,L
5.009	R.TV Malagasy	Madagascar	1848	H,L
5.010	R.Garoua	Cameroon	0005	L
5.010	AIR Thiru.puram	India	0040	B
5.020	PBS-Jiangxi Nanchang	China	0045	B
5.020	Xizang-Tb, Lhasa	China	2355	L
5.020	La V du Sahel, Niamey	Niger	1854	C,F,H,L
5.025	R.Parakou	Benin	2045	H,L
5.025	R.Rebelde, Habana	Cuba	0025	B,L
5.025	R.Uganda, Kampala	Uganda	1950	H
5.030	AWR Latin America	Costa Rica	0115	B,L
5.035	R.Aparecida	Brazil	0240	L
5.035	R.Bangui	C.Africa	2026	C
5.045	R.Cultura do Para	Brazil	0020	B,L
5.047	R.Togo, Lome	Togo	1947	H,L
5.050	AIR Aizawl	India	0120	B,L
5.050	R.Tanzania	Tanzania	1948	H,L
5.055	RFO Cayenne(Matoury)	French Guiana	0010	B,L
5.060	PBS Xinjiang, Urumqi	China	0025	B,L
5.075	Caracol Bogota	Colombia	0020	B,L
5.100	R.Liberia, Totota	Liberia	2210	F

DXers:-

- (A) Tim Allison, Middlesbrough.
- (B) Robert Connolly, Kilkeel.
- (C) John Eaton, Woking.
- (D) David Edwardson, Wallsend.
- (E) Bill Griffith, S.W.London.
- (F) Sheila Hughes, Morden.
- (G) Rhoderick Illman, Oxted.
- (H) Fred Pallant, Storrington.
- (I) Claire Pinder, while in Appleby.
- (J) Peter Pollard, Rugby.
- (K) Vic Prier, Colyton.
- (L) John Slater, Scalloway.
- (M) Tom Smyth, Co.Fermanagh.
- (N) Thomas Williams, Truro.
- (O) Tom Wintzor, Plymouth.

Whilst beaming to others areas WHRI South Bend, USA 5.745 (Eng to USA 2100?-0300?) was 34333 at 2257 in Woking; BBC via Antigua, W.Indies 5.975 (Eng to S/C.America 2100-0700) 43443 at 0040 in Kilkeel; R.Nederlands via Ned.Antilles 6.165 (Eng to N.America 2330-0125)

SIO444 at 0051 in N.Bristol; R.Satellite, Santa Cruz, Peru 6.725 (Sp 2300-0300) 34333 at 0300 in Scalloway; WVVC Nashville, USA 5.935 (Eng to USA 0100-1400) 54444 at 0458 in Plymouth.

QUARTERLY LIST OF EQUIPMENT USED

LM&S for \$May, #June, *July/97

- * Tim Allison, Middlesbrough: Lowe HF-225 + r.w.
- \$#* Darren Beasley, Bridgwater: Yaesu FRG-100 + a.t.u. + 15m wire.
- \$#* Vera Brindley, Woodhall Spa: Sony CRF-320 or Sangean ATS803A + r.w.
- \$#* Robert Connolly, Kilkeel: JRC NRD-525 + Datong AD370.
- \$#* Martin Cowin, Kirby Stephen: Hitachi TRK-5854E + built-in whip.
- \$#* Bernard Curtis, Stalbridge: Grundig Satellit-2100 + r.w. or Tatung TMR7602 or TMR7037.
- * Martin Dale, Stockport: Grundig Satellit 3000 or Sangean ATS803A or Codar CR70A + a.t.u. + 23m wire.
- \$# Ron Damp, Worthing: JRC NRD-525 + Mag Balun + 14m wire.
- \$#* John Eaton, Woking: Lowe HF-225 + Datong AD270 or a.t.u. + r.w.
- \$#* David Edwardson, Wallsend: Trio R-600 + Pi-Balun + invert V trap dipole or m.w. 2.5m X 2.5m loop.
- \$#* Stan Evans, Herstmonceux: Kenwood R-2000 + Balun + 11m wire in loft.
- \$#* Michael Griffin, Ross-on-Wye: Lowe HF-225 + a.t.u. + 45m wire.
- \$# Bill Griffith, W.London: JRC NRD-535 + 20m wire.
- # Bill Griffith, while in Valencia, Spain: Sony ICF-SW55.
- * Bill Griffith, while in Delphi, Greece: Sony ICF-SW55 + 5m wire.
- \$#* Gerald Guest, Dudley: Roberts RC818 + r.w. (location 300m a.s.l.)
- \$#* Tony Hall, Freshwater Bay, IoW: Yaesu FRG-7 + r.w. or RF845
- \$#* Francis Hearne, N.Bristol: Sharp WQT370 + r.w.
- \$#* Sheila Hughes, Morden: Sony ICF-7600DS or Panasonic DR48 + 15m inverted L wire.
- \$# Nicola Hutchings, Wellington: Sony Walkman.
- \$# Rhoderick Illman, Oxted: Kenwood R-5000 + r.w. or AN-1, Sony ICF-7600DS.
- \$# Brian Keyte, Bookham: CA117 car radio + loops.
- * Brian Keyte, while in Invergarry: CA117 car radio + loop above car sunroof.
- \$#* Ross Lockley, Galashiels: Realistic DX-300 + a.t.u. + 40m wire or Sangean ATS803A.
- \$#* Eddie McKeown, Newry: Tatung TMR 7602.
- \$#* George Millmore, Wootton, IoW: Rascal RA17L + converter + loop or Sangean ATS803A.

- \$#* Fred Pallant, Storrington: Trio R-2000 + Howes CTU8 a.t.u. + r.w.
- # John Parry, Larnaca, Cyprus: Yaesu FRG-7700 or Realistic DX-400 + r.w.
- # Roy Patrick, Derby: Lowe HF-125 + 22m wire or inverted V.
- \$#* Claire Pinder, while in Appleby: JRC NRD-525 + a.t.u. + r.w.
- Claire Pinder, Glasgow: Sony ICF-2001 + r.w.
- \$#* Peter Pollard, Rugby: Sony ICF-20010 + r.w.
- \$#* Vic Prier, Colyton: Rascal RA17L or Redifon R551N + 19m horizontal loop or active vertical with ground plane, both mounted in roof.
- \$#* Philip Rambaut, Macclesfield: Int.Marine Radio R.700M + r.w.
- \$#* Harry Richards, Barton-upon-Humber: Grundig Satellit 700 + AD270 or r.w. or Grundig Yacht Boy or Matsui MR4099.
- \$# Chris Ridley, Co.Sligo, Eire: Morphy Richards R-124 + loop or Philips R242 car radio.
- \$# Eric Shaw, Chester: Lowe HF-225 + 7m wire.
- \$#* Chris Shorten, Norwich: Matsui MR4099 + 10m wire.
- \$#* John Slater, Scalloway, Shetland: Lowe HF-150 + a.t.u. + 20m wire.
- \$#* Tom Smyth, Co.Fermanagh: Sangean ATS803A or Morphy Richards R197.
- \$# Tony Stickells, Thornton Heath: Yaesu FRG-7700 + 20m wire or loop.
- \$# Tony Stickells, Thornton Heath: ADR AR7030 + 20m wire or loop.
- \$#* Norman Thompson, Oadby: Matsui MR4099 + 20m wire in loft.
- # Phil Townsend, London: Lowe HF-225 + preselector + r.w. or loop.
- \$# Mahendra Vaghjee, Rose Hill Mauritius: Lowe HF-225E + Dressed ARA 60 or r.w.
- \$# Ted Walden-Vincent, Gt.Yarmouth: Sangean ATS803A or Grundig Satellit 3400.
- \$# John Wells, E.Grinstead: RCA AR880 + Loop.
- * E. Wiles (Bedford) while in Malta: AKD Target HF-3 + r.w.
- \$#* Thomas Williams, Truro: Gundig Yacht Boy 206.
- \$#* Tom Wintzor, Plymouth: Kenwood R-1000 or Eddystone 840C + Miller ant.

Shackware

And still we haven't moved! Feel free to continue to send mail to the address listed above. I'll let you all know in good time when we find a house we like, can actually afford and have a new address.

Your Letters

In something of a departure for this instalment of 'ShackWare' I'd like to publish a few of the very many E-mail letters I receive from correspondents via the Internet. First off the electronic welcome mat then is **Frederic Collin**, an old silicon buff and dedicated s.w.l. who, rather exotically, is a French reader of *SWM* living in Japan. You might, in fact, have noticed a letter of his published in the June issue of *SWM* wherein he was very kind about this very column. Frederic writes: "Paradoxically, Japan isn't a good place to find good cheap short wave-related material perhaps because the Japanese have a chronic need for space and don't like to keep old radios and computers - they always hunt for the latest versions!"

That said, Frederic regularly scours "...Tokyo's famous Akihabara electric town" and found there a 1950s Toshiba short wave set which he's connected to an "MFJ-784B digital sound processor - an unusual marriage but it works like crazy!" Until recently, Frederic fed the output from his receivers into a 286PC running Windows 3.1 and says "contrary to the author's statement, *HAMCOMM* works perfectly on Windows 3.1 and Win95. I've tried it successfully on three different computers, however *JVFAX* crashes on anything less than a 386. Everything in my shack - computers, radios, filters, recorders, antennas and the Internet is interconnected which makes for a fabulous monitoring tool and gives me many hours of enjoyment and headaches!" Readers who'd like to correspond with Frederic can reach him at frederic@highway.or.jp.

Past correspondent, Atari ST man and user of several excellent receivers including the IC-R72 and PRO-44, **Carl Hender** writes from Ipswich with details of a newly updated satellite tracking program for STs written by Bill Penner and available at

<http://www.eskimo.com/~bpenner>. The program is, I believe, good for those who like to make visual contact with satellites as well as by the signals they transmit! The former is a hobby which has just hooked Carl and one which I'm desperately trying to avoid in order to steer clear of the divorce courts - ahem.

Cecil Garson of Orkney has just acquired a +D disk drive for his Spectrum 128 but it came without a manual. He's itching to use it and wonders whether any 'ShackWare' reader can help be lending or selling him a suitable manual? Contact Cecil at **63 Grieveship West, Stromness, Orkney KW16 3BQ** or at cjgarson@compuserve.com.

Finally, **Robert Barclay** of Sunderland writes

to say that he "...didn't realise that you could use old computers in a practical way until I read 'ShackWare'." Glad to have helped! Robert tunes the bands with an HF-150, AT-2000 coupler and an AOR AR8000 but is yet to buy a computer. He says he's seen what look like some pretty good bargains at boot sales and asks therefore, which one he should plump for in order to get started with decoding? Always a tricky question this - especially given my (rather extreme) interest in old computers but I really have to put aside my true loves and say the good old PC.

Whereas Atari 8-bits, STs, BBC Bs, C64s and the rest are all perfectly capable of producing excellent results when decoding FAX, RTTY, c.w. and the like (especially with fabulous software such as Dave Miller's *FaxCode ST* and *STarComms* - contact him at 106510.3054@compuserve.com), nothing can beat the PC for sheer depth and quality of software - and that's ultimately what makes or breaks a computer. So let's combine the answer to Robert's question with the Quarterly Computer Cameo and have a closer look at PCs and compatibles.

QCC

In fact, the venerable PC has been around a lot longer in its various guises than many of the 8- and 16-bit 'home' computers to which I'm partial, and even the oldest versions can still be useful workhorses. Launched at the beginning of the 1980s, the IBM PC remained the choice of business and north American buyers (i.e. those with lots of cash!) until the mid 80s when Alan Sugar saw fit to offer the UK buying public his Amstrad PC1512. At a price counted in hundreds rather than thousands of pounds, the Amstrad PC compatible featured three (if memory serves) expansion slots, a CGA screen and a two-floppy or floppy-and-hard drive option all housed in a neat cream plastics box. Bundled with the machine was a mouse and a copy of the then innovative graphical user interface GEM from Digital Research. Like Sinclair's Spectrum some years before, it was an instant and spectacular success, and it paved the way for small-time PC-compatible manufacturers to launch a thousand and one copies in its wake. Competition increased acceptance and brought the price down even further, and nowadays, the PC reigns supreme.

Second-hand examples are exceptionally good buys at the moment, especially the old 386s which will happily run the legacy versions of Windows (i.e., those which appeared before Windows 95) and make mincemeat of utility signals pulled in by *HAMCOMM* and *JVFAX*, *WXSAT* or whatever you care to throw at them. As I've mentioned before, my own 386 cost just £35 for the base unit, though a screen, keyboard, mouse and so on took the price to around the £100 mark. That was two years ago and today, you'd get the whole system for £75 - less, if you're willing to hunt around.

■ JERRY GLENWRIGHT
 ■ 23 DOWNLAND AVENUE
 SOUTHWICK, WEST SUSSEX
 BN42 4RF
 E-mail: j.glenwright@ndirect.co.uk

The only 'duff' machines are the IBM PS/2 and lookalikes which are best avoided because they have hybrid and now unsupported expansion slots which won't accept industry standard sound cards (you won't be able to run the excellent *WXSAT!*). That said, they're exceptionally cheap and far better than no machine at all.

Principle among the available software are *HAMCOMM* and *JVFAX* which are both superb, rival commercial software in their range of features and are available as shareware so you can try before you buy. *HAMCOMM* decodes the 'text' modes - RTTY and stalemates as well as Morse, and *JVFAX* plucks SSTV and FAX pictures from the ether. Both use the same simple 'comparator' interface which can be built at home by a complete novice for just a few pence.

So for all those who haven't yet committed themselves to a computer I say: plump for the PC, you really can't go wrong.

And Finally...

Passing my local branch of Tandy I noticed a Netset PRO-2029 base scanner for sale at 60 quid which seemed a bargain. I'd been looking for a back-up for my ARI500 so it was the work of a minute to step into the shop and ask to see it. I was asked rather abruptly what it was I wanted to listen to and then told that it "...didn't cover air or marine bands, just police frequencies".

Temporarily thrown (and not being much of a one to stand up to belligerent sales assistants) I smiled sweetly and passed out of the shop. Walking away however, I got to musing on the reason for the set having the legend 'AM/FM' silk-screened on the case if it didn't cover airband. Resolve strengthened, I marched back inside and fortunately, was helped by another assistant (female) who went off and brought me a photocopy of the manual (it was such an old set they'd lost the original) which showed that the scanner covered bands from 30 to 512MHz with gaps.

Now for the interesting bit. I bought it, took it home and, in the course of exploration (read 'play'), kept getting errors every time I tried to type in a frequency in the lower bands. After much messing about, I figured out that it doesn't actually cover the stated 30-50 and 50-54MHz bands but starts at the 68-88MHz band. Here's the question: it's definitely a PRO-2029 and the manual is the right one (at least, it's a manual for a PRO-2029), so can I access those lower bands - by trickery if not by obvious means? Were there different versions of the set for the UK and USA? What's the explanation? Your help would be greatly appreciated.

Until next time, good listening.

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ABC - AIR TRAFFIC CONTROL (6th Edition). Graham Duke.....	112 pages. £6.99
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AIRWAVES EUROPE.	124 pages. £9.50
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WORLDWIDE AERONAUTICAL COMMUNICATIONS FREQUENCY DIRECTORY 2nd Edition. Robert E. Evans. 260 pages. £19.95	
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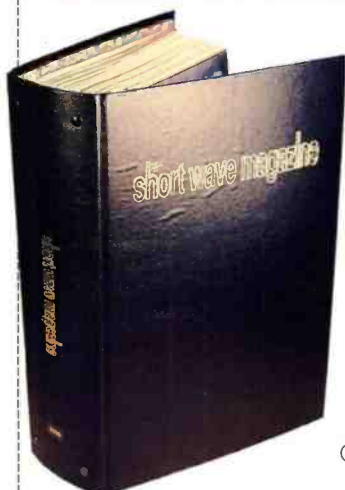
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If you want to hear everything that's going down on the streets, then the R8500 is for you. Covering 100kHz-2GHz in all modes the R8500 gives you the chance to be a REAL nosey-parker! The R8500 includes IF shift, APF, direct RS-232C computer compatibility and will appeal to professionals and serious listeners who demand top performance - but not top prices.

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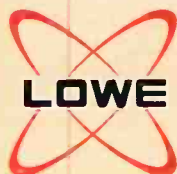
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