

FOR THE RADIO LISTENER

# shortwave magazine

June 1994 £1.90 ISSN 0037 - 4261

## ON HOLIDAY WITH YOUR RADIO

### HOLIDAY LISTENING IN TOUCH WITH HOME

*Plus*

### D-DAY Communications & Broadcasting



*Reviewed*

## WATKINS-JOHNSON HF-1000 - THE ULTIMATE RECEIVER?

## GRUNDIG YACHT BOY 400 - PORTABLE SW RECEIVER

Plus Regular Features Covering  
Airband, Scanning, Junior Listeners, SSB Utility  
Listening, Propagation, Amateur Bands, Long,  
Medium & Short Waves, Satellite TV Reports,  
Weather Satellites and more.





# SCAN IN ON THE ACTION

with **YUPITERU**

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By covering just Civil and Military Airband, receiver performance is optimised allowing reception of long distance signals. The set is easy to use and has excellent audio quality.

- ★ Civil, Military & Marine Band
- ★ 108-142, 149.5-160, 222-391MHz
- ★ AM & FM Modes
- ★ Fast Search
- ★ 100 Memory Channels
- ★ Signal Strength meter
- ★ Supplied with NiCads, Charger, Earphone, Belt Clip
- ★ Optional Leatherette Case available
- ★ Price: £249

## VT-125 CIVIL AIRBAND



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- ★ 108-142MHz
- ★ 30 memory channels
- ★ AM mode reception
- ★ Signal meter
- ★ Supplied with NiCads, Charger, Earphone, Belt Clip
- ★ Optional Leatherette Case available
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## MVT-7100 WIDEBAND WITH SSB

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- ★ 100kHz-1650MHz
- ★ All mode reception
- ★ AM/FM/WFM/USB/LSB/CW
- ★ Supplied with NiCads, Charger, Earphone, Belt Clip
- ★ Optional Leatherette Case available
- ★ Price: £389

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- ★ Rotary or keypad frequency control
- ★ Signal bar graph meter
- ★ Supplied with all accessories
- ★ Price: £325

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This base version of the MVT-7000 incorporates all the facilities of the handheld in a stylish metal case. Again, it can be controlled by either direct keypad or rotary tuning knob. Easy read full function LCD display makes this model a dream to use, and produces stunning results on the air.

- ★ 100kHz-1300MHz
- ★ Direct keypad and rotary control
- ★ 200 memory channels
- ★ Supplied with UK Mains Power Supply and Mobile Mount Bracket
- ★ AM/FM/WFM modes
- ★ The best base available! Price: £369



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**or Fax (0705) 690626**

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## Cover Subject

**Watkins-Johnson  
HF-1000.**

**A receiver to  
whet your  
appetite and  
seriously damage  
your pocket!  
Mike Richards  
discovers more.**

Photo: Craig Dyball



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## SWM SERVICES

### Subscriptions

Subscriptions are available at £22 per annum to UK addresses, £25 in Europe and £27 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 £39 (UK) £42 (Europe) and £45 (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: 021-353 9326.

### Back Numbers and Binders

Limited stocks of most issues of SWM for the past five years are available at £2.00 each including P&P to addresses at home and overseas (by surface mail).

Binders, each taking one volume are available for £5.50 plus £1 P&P for one binder, £2 P&P for two or more, UK or overseas. Please state the year and volume number for which the binder is required. Prices include VAT where appropriate.

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 (0202) 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 (0202) 659950.

# editorial



*Dick Ganderton*  
G8VFH

This issue is the nearest to the 50th Anniversary of D-Day. I felt that it would be appropriate to commemorate this historic event with a couple of features dealing with the essential parts that radio and communications played in the landings. I remember, as a small boy, the army lorries parked nose to tail in every street in the area of Luton that I lived in at the time. I suppose that they were all part of the build-up, even at that distance from the south coast.

### Propagation Tables

Within the 'back end' of this issue you will find a page of Propagation Prediction tables for paths from the UK to various parts of the world. This is by way of an experiment. If there is enough demand for this information, I will try to make it a permanent feature. For this decision to be made, I need some feedback from you, the readers.

### Scanning

Alan Gardner has decided to give up writing the regular Scanning column as from this month. Being a 'columnist' for SWM takes a lot of dedication and spare time as well as knowledge of the subject. I have been fortunate with all my 'columnists' - the magazine would not have become the success it undoubtedly is without their help. I would like to take this opportunity of saying thank you, publicly, to all of them and Alan in particular. I know that you will wish his successor, John Griffiths, an equally successful run.

**Dick Ganderton G8VFH**

# letters

IF YOU HAVE ANY POINTS OF VIEW THAT YOU WANT TO AIR PLEASE WRITE TO THE EDITOR. IF YOUR LETTER IS PUBLISHED YOU WILL RECEIVE A £5 VOUCHER TO SPEND ON ANY SWM SERVICE

The Editor reserves the right to shorten any letters for publication but will try not to alter their sense. Letters must be original and not have been submitted to any other magazines. The views expressed in letters published in this magazine are not necessarily those of *Short Wave Magazine*.

**Dear Sir**

I was a little surprised that Robert Whistler did not point out in his article on Radio and the Lizard Peninsula in the April issue, that British Telecom's Goonhilly satellite earth station can be visited by the public.

The earth station is 12km from Helston on the B3293 and is open to visitors daily (10am to 6pm) from Easter until the end of October. BT shareholders who take their copy of the February 1994 *Report to Shareholders* will be entitled to a £1 discount on the admission price of £3. Having visited the site several years ago, I can thoroughly recommend it.

**J. R. Dean  
Staffordshire**

**Dear Sir**

I've been looking at the range of lower cost short wave receivers and have to say, I'm lost with all the similar model numbers.

If you're about to bring out another *Short Wave* supplement, please could you consider summary info. (as given for scanners) to indicate frequency coverage, user-programmable news, ROM memories, digital/analogue tuning indication etc?

During the course of the year, you could include similar summaries at the end of any receiver reviews too.

**Peter Morgan  
Wrexham**

**Dear Sir**

R. Gallier's letter (SWM April '94) on frequency misprints reminds me of some of the reader's advertisements in 'Trading Post'. Sometimes we see advertisements for equipment stating 'little use' or even 'very little use'. Is that why they are selling it? Some of it is 'hardly used'. I would prefer it to be lightly used. And, what about the equipment which is 'fault free'? At least they are not going to charge you for it!

On a more serious note, these readers who have recently complained about non-availability or high prices for cases for hand-held radios can easily make an excellent one from bubble plastics (two layers, bubbles together) and sticky tape. It is still possible to work the controls through the plastics, so it is rain proof as well! Ideal for airshows.

**J. Wells  
West Sussex**

**Dear Sir**

**PLEASE** can any of your readers help me!

I have a Zenith Transoceanic R7000 and am trying to find:-

- A reliable UK repair agent
- Service manual/circuit diagram
- Where I can obtain parts for it.

As a long time reader of your magazine, can you **please** help!

**R. G. Ison  
South Africa**

# letters

## Dear Sir

I have just completed the reader survey and decided to give you a little background from one who has now been a *SWM* subscriber for about six years and lives abroad, as far as one can get from the UK.

By the way, this letter is being written from an oil rig, the *HAKURYU III*, which is finishing a well some 300km south east of the old French garrison, city of Vung Tau, located on the northern banks of the Merong River, south of Viet Nam. I work as an remotely operated vehicle Pilot/Technician. ROUs are work class remote submarines. By the time you receive this I will be back in NZ for some rest and recuperation with my wife and family at home. My trips away are up to six weeks in duration and therefore I take plenty of reading material, *SWM* included.

I am 45 years old and I have been listening for about 35 years, having one of my few utility stations in the 60s. My equipment, past and present is an 1155 which I wish I still owned, a 760 Eddystone, Kenwood/Trio 300 amateur band, bandspread.

At present I own:

- 2 x Kenwood 5000s
- 1 x Kenwood 1000
- 1 x AOR 3000A
- 1 x Eddystone 680X
- 1 x Realistic 2004
- 1 x Realistic 2006
- 1 x Realistic PRO 32 hand-held
- 1 x Sony AIR 7
- 1 x Sony SW55
- 1 x AEA PK232

At present I use an old XT8086 but a 486 with all that I can fit in and a Universal U8000 will soon be attached. I also have access to a number of JRC NRD515 rigs, Ex NZ GUT, Marine radio, one of which I will soon procure.

Antennas:

- 1 long wire, 55m end fed, via mag Balun
- 1 long wire, 30m end fed, via mag Balun
- 1 80m-10m Amateur Vertical
- 1 10-15-20m Mosley beam
- 1 x D505 and 1 x D707, Diamond 500kHz - 1500MHz
- 1 x Discone, 1 Trombone vert., both 50-700MHz
- Plus mic, 2m beam and ground plane for specific frequencies.

It sounds a lot but years add up also, my specific interests centre around Aviation h.f., Marine h.f. and I dabble in Fax and Data when time allows.

One interest we have here is flights to Antarctica by RNLAf and VSN, these flights are from Christchurch 'Operation Deep Freeze'. I Wonder why!

From early summer until just before winter, frequency 261MHz FLTSAT com or ICAO SP6&7 frequencies out of Auckland NZ mainly 5643-8867-13273, these can be very interesting to follow.

Utility DX is growing in NZ with the availability of receivers and information now, but unfortunately still just a hard core of followers. One suggestion, as yet *SWM* is not available off shelf in book stores, American *Popular Communications* has just appeared, so it might be worth looking into, American *Monitoring Times* is not available yet either.

Finally, congratulations to you Dick and your team on producing such a fine publication. I always eagerly await each month's edition.

**P. Glanville**  
Otago  
New Zealand

## Dear Lorna

There definitely seems to be a need for a s.w.l. club in East Sussex, and I was wondering if I could advertise this fact, with a view to getting one started. Several friends and myself have talked about this venture and would like to take it on.

So, please, would it be possible to put an announcement in your magazine stating our intentions and asking that should anybody be interested would they please ring Tony on (0273) 625887.

**A. Phillips**  
Brighton  
East Sussex

Short Wave Magazine, June 1994

## Dear Sir

I feel congratulations are due to C. M. Lindars for his Single Transistor Reflex published in *SWM* Jan '94. This is a seriously competent receiver!

As is often the case with this type of project, if the parts are available in the 'junk box' one is tempted to have a go just to see if it works, and this one definitely does, extremely well.

Mine was tacked together in an hour or so one evening using a series of 'near equivalents' and worked first time. A few minor adjustments to the coil windings and adjusting the current for the

## Dear Sir

Reference AOR 3030 general coverage receiver.

As one of the early purchasers of AOR's new receiver, I thought that I would pass on the following information with regard to the comparative performance which I feel sure will be of interest to readers of *Short Wave Magazine*.

I compared my new purchase with regard to apparent sensitivity and selectivity with both Kenwood's R5000 and a commercial marine general coverage receiver of modern design. The comparisons were initially on between 100 and 500kHz. Surprisingly, the AOR was as good as the dedicated marine receiver with regard to selectivity and was more sensitive. Although the Kenwood managed satisfactorily at these frequencies observed, performance was noticeably down. Moving up in frequency between 500 and 1.6MHz the AOR and the marine receiver were marginally superior when selectivity was compared with the Kenwood which, however, was in its turn fractionally more sensitive than the AOR and markedly more so in comparison with the other receiver. Above 8MHz the marine receiver was lagging in sensitivity when compared with both the other radios and although managing was noticeably slightly 'deaf'.

All in all, for the price, the AOR put up a good performance. With regard to the b.f.o., I found that it was extremely stable, even at high volume levels where the power supply on some sets becomes overloaded with consequent voltage variation and oscillator frequency change causing wavering resolve of s.s.b. or data. The control was very good at shifting the acceptance window of the receiving pass band, thereby eliminating adjacent frequency interference without too much degradation of the audio (essential for serious DX). The build of the set is good and the front panel controls look and feel as if they will stand up to long term use without failing, nothing wishy washy here (perhaps a standard for other well established manufacturers to copy?).

With regard to several points that I found not so good on the AOR. The audio I found poor in spite of the advertising hype. I was dull and woolly with high register severely attenuated which was only partially cured by using an external speaker. My own personal radio listening station uses a digital audio processor and it was only by using this to accentuate what treble there was in the audio that listening to a.m. broadcast stations became relaxed. When using the internal speaker on this radio at any sort of volume also (because of the high low frequency content?) the metal cabinet resonated. This I found was very annoying and should have been apparent to the designers.

In closing, I found that the AOR was for the price, a receiver with good electrical performance and superbly built with the DDS very clean and stable giving very good resolution of s.s.b. signals and when used in conjunction with marginal a.m. broadcasts on either sideband or with the double sideband synchronous mode it allowed stations to be heard which otherwise would not have been. I shall certainly be hanging onto mine but will watch with interest for some audio chip replacements.

**David Clarke**  
Seaford  
East Sussex

transistor I used, marked F199 (but I suspect is a BF199), took a few more minutes, then lo and behold, 6 to 12MHz at occasionally uncomfortably loud headphone volume from forty feet of poorly sited wire out of the kitchen window in my ground floor flat.

My Brown Type 'F' high-impedance 'phones worked happily in place of the transformer, with no noticeable reduction in volume and with this transistor drawing only 200µA for optimum performance, the PP3 should almost last forever.

My 'junk box', like most, I suspect, contains several items

which are kept for that special project which works really well. This one really deserved the slow-motion tuning mechanism and the multi-turn potentiometer for the reaction control that I had been saving.

I can highly recommend this receiver for the Novice builder looking for his first real home-brew, rather than kit receiver, or even for the more experienced, for a talking point in the shack. It's certainly raised a few eyebrows in Jersey.

**C. R. Eve**  
St. Helier  
Jersey



# grassroots

## 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.

## rallies

**May 29:** The 18th Annual East Suffolk Wireless Revival will be held at The Maidenhall Sports Centre, Stoke Park Drive, Ipswich, Suffolk. Attractions will include vintage radio display, Novice stall, RAIBC, BYLARA, RAYNET. Non-radio stalls and refreshments. Talk-in on S22. Bob Baal on (0394) 271257.

**May 29:** The Plymouth Radio and Electronics Fair will be held at Coombe Dean School, Charnhill Way, Elburton, Plymouth. Doors open 10.30am. Over 25 stalls selling electronic and computer and radio components, many second-hand bargains for the enthusiast. Free parking, Bring & Buy stand, club station on air, bookstall, hot and cold buffet and a grand raffle. Admission £1 at the door. (0752) 364150.

**\*June 12:** The Elvaston Castle National Radio Rally will be held at the showground of the Elvaston Castle Country Park, situated five miles south east of Derby. This is the 25th Radio rally and should be the most spectacular to date. Keith Ellis G1ZLQ on (0332) 662896.

**June 12:** The Royal Navy Amateur Radio Society is holding its annual rally on the sports field HMS Collingwood, Fareham, Hants between 10am and 5pm on Sunday. This site, with its easy road access and good car parking, is a splendid successor to the previous venue. Trade stands, Bring & Buy, flea market, local repeater and radio clubs and also a large arts and crafts exhibition. A full range of entertainment for all the family along with refreshments. Talk in on 144 and 432MHz to guide visitors from the nearby M27 (leave at junction 11 and follow the A27 towards Fareham). Clive Kidd G3VTD on (0705) 3327621 daytime or (0329) 234143 evenings.

**June 19:** Denby Dale & DARS Annual Mobile Rally will be held at Shelley High School. Phil G4FSQ on (0484) 644827.

**June 19:** The 5th Belfast Radio Rally is to be held in the Chimney Corner Hotel, 630 Antrim Road, Glengormley. Starts at 12noon. There will be a Bring & Buy, the usual trade stands and attractions, with a chance to have a drink or a meal in the hotel restaurant. Entrance fee is £1, accompanied children only 50p each. D. Caldwell on (0232) 471370.

**June 19:** The Newbury and District Amateur Radio Society are holding a car boot sale at Acland Hall, Cold Ash, Nr. Thatcham, Nr. Newbury. 9am to 3pm, free admission and parking, talk-in GB4NBS S22. For more information contact George on (0488) 682814.

**\*June 24-26:** Ham Radio '94 Friedrichshafen, Germany. The largest amateur radio show in Europe and well worth a visit. The Flea Market alone is worth the journey and Friedrichshafen, situated on the Bodensee - Lake Constance to the English - and within easy reach of Austria and Switzerland, is a fantastic area for a holiday.

**June 25 & 26:** The Wrexham ARS Mobile Rally and Boot Sale together with Shropshire Astronomical Society's Star Party is being held in conjunction with the Clwyd Veteran and Vintage Machinery Society's 18th Annual Steam Rally at the Plassey, Eytton, Nr. Wrexham. Doors open 10am to 5pm. Ian Wright GW1MVL on (0978) 845858.

**\*June 26:** The 37th Longleat Amateur Radio Rally is being held at Longleat House, Warminster, Wiltshire. £2.50 admission for adults, £1.50 for pensioners and 50p for children. There will be a large trade show with 180 stands, a large Bring & Buy, and craft fair. Shaun O'Sullivan G8VPG on (0272) 860422 (office hours) or (0225) 873098.

**June 26:** The Norfolk Raynet Barford Rally will be held at the Village Hall, Barford on B1108 Norwich-Watton Road. Doors open 10am, there will be trade stands, a raffle and refreshments. Free car parking and talk-in on S22. Further details from Bill G4TWT, QTHR. (0603) 427008.

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

## AVON

**RSGB City of Bristol Group:** last Tuesdays, 7pm. New Friends Hall, Purdown, Bell Hill, Stapleton, Bristol BS16 1BG. May 31 - Half yearly meeting, June 21 - Home-brew Transceivers. Dave. (0272) 672124.

**Shirehampton ARC:** Fridays. May 27 - Final HF NFD preparations, June 4/5 - HF NFD +50MHz Contest, 17th - Longleat Rally preparations. Ron Ford G4GTD. (0272) 770504.

**South Bristol ARC:** Wednesdays. Whitchurch Folkhouse Assoc., Bridge Farm House, East Dundry Rd, Whitchurch. June 1 - 80 metres activity evening, 8th - 'Bulls Eye' darts evening at SBARC, 15th - Test your absorption wavemeter, 22nd - Preparation for the Longleat Rally. For more information ring (0275) 834282 on a Wednesday evening.

## BEDFORDSHIRE

**Shefford & DARS:** Thursdays, 8pm. Church Hall, Amptill Road, Shefford, Bedfordshire. May 26 - Mobile DF hunt, June 16 - VHF NFD planning. Paul G1GSN. (0462) 700618.

## BERKSHIRE

**Maidenhead & DARC:** 8pm, The Red Cross Hall, The Crescent, Maidenhead. June 4/5 - HF field day at Cliveden, 21st - 2m Fox hunt. Neil Savin G0SVN. (0628) 25952.

## DERBYSHIRE

**Derby & DARS:** Wednesdays, 7.30pm. 119 Green Lane, Derby. June 1 - Surplus sale. Mrs Hayley Winfield, 2 Hiltis Cottages, Crich, Matlock, Derbyshire DE4 5DD. (0773) 856904.

## DORSET

**Dorset Police ARS:** 1st and 3rd Thursday at Force HQ at 7.30pm. June 2 - Talk on direction finding by Ted Bain and Clive Hardy, 16th - The 2nd annual DPARS BBQ, 19th - PW VHF Low Power Contest. (0202) 229351.

## EAST SUSSEX

**Hastings Electronics & RC:** 3rd Wednesdays, 7.45pm. West Hill Community Centre, Croft Road, Hastings. June 15 - Talk by Laurie Philip G7MEC on the British Wireless for the Blind Fund. G3YYF on (0424) 830454.

## FIFE

**Dunfermline & DARC:** Thursdays, 7.30pm. The former RAF radio station, Outh Muir, located by the A823 Dunfermline to Crief Road, one mile from the Knockhill Racing Circuit. May 26 - Junk sale. Wallace Shackleton GM0GNT. (0577) 864050.

## GRAMPIAN REGION

**Aberdeen ARS:** Fridays, 8pm. Queen Mother House, Aberdeen. May 27 - Mock FCC Exam, June 3 - NFD briefing, 10th - Junk Sale, 17th - 'Wet String' listening competition, round 4. Gordon Stuart GM7PXW. (0224) 780591.

## GREATER LONDON

**Edgware & DRS:** Thursdays, 8pm. Watling Community Centre, 145 Orange Hill Road, Burnt Oak. May 26 - Constructors' Cup and NFD briefing. Rod Bishop. 081-204 1868.

**Wimbledon & DARS:** 2nd & last Fridays, 7.30pm. St Andrews Church Hall, Herbert Road SW19. May 27 - Surplus equipment sale. 081-540 2180.

## HAMPSHIRE

**Andover ARC:** 1st and 3rd Tuesdays.. Wildhern Village Hall, Hants. June 7 - Natter night, 21st - Planning for v.h.f. field day; RAE classes each meeting at 7pm. G8ALR (0264) 773547 evenings.

## HEREFORD & WORCESTER

**Bromsgrove ARS:** 2nd & 4th Tuesdays. Lickey End Social Club, Alcester Road, Burcot, Bromsgrove. June 14 - Scouts/Novice evening follow-up. Barry Taylor. (0527) 542266.

## HERTFORDSHIRE

**Hoddesdon RC:** Alternate Thursdays, 8pm. Conservative Club, Rye Road, Hoddesdon. May 26 - A talk entitled 'Photography is my profession' by Rod of the Grafton ARC, June 9 - First visit of twelve members to Stanstead (London) Air Traffic Control Centre, 23rd - Operating from Tolmers Scout Camp Cuffley under GB2 RST from 1400, followed by BBQ and VHF DF Fox Hunt from 1900. John G7OCI. (0920) 466639.

## KENT

**Medway AR & TS:** Fridays, 7.30pm. Tunbury Hall Catkin Close, Tunbury Avenue, Walderslade, Chatham. June 10 - Raynet video by Alan Stanley G10MH. Gloria. (0634) 710023.

## LINCOLNSHIRE

**Lincoln SW Club:** Wednesdays, 8pm. City Engineer's Club, Waterside South, Lincoln. June 8 - Junk sale, 12th - Fox hunt, 15th - Walking treasure hunt. Pam G4STO. (0427) 788356.

**Spalding & DARS:** Fridays. Club room, Old Fire Station, Spalding. June 5 - Spalding Amateur Radio Exhibition & Rally at Sparingfields Exhibition Centre. G400, QTHR. (0775) 750382.

## NORTHANTS

**Kettering & DARS:** Tuesdays, 7.30pm. The Electricity Board Sports & Social Club, Eskdail St., Kettering. May 28/29 - Castles on the air GB8RC from Rockingham Castle. C. P. Bourne G4RPG. (0536) 523230.

## NOTTINGHAMSHIRE

**Mansfield ARS:** 2nd Mondays, 7.30pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. June 13 - Evenings on the air. Mary GONZA. (0623) 755288.

## SHROPSHIRE

**Salop ARS:** Thursdays, 8pm. Oak Hotel, Shrewsbury. May 26 - A talk by Dave Gourley G0MJY, the representative for the RSGB, June 2 - Natter night, 9th - Talk on safety equipment by Tony G0RVE, 16th - Foxhunt, chase 3 at the Oak Hotel car park, 7.30pm, 23rd - A talk on telephonic systems by Graham G7LID. Sheila Blumfield G0SST. (0743) 361935.

## SOMERSET

**Yeovil ARC:** Thursdays, 7.30pm. The Red Cross Centre, 72 Grove Avenue, Yeovil. May 26 - Club station on air and committee meeting, June 2 - RSGB videos will be shown, 9th - A QRP booster by G3PCJ, 16th - Aerials for back gardens by G3GC, 23rd - A practical look at aerial matching units by G3CQR. Cedric White, QTHR. (0258) 473845.

## SUFFOLK

**Sudbury & DRA:** 1st & 3rd Tuesdays, Wells Hall, Old School, Great Cornard, Five Bells Public House, Bures Road, Great Cornard. June 7 - Talk by Tony G8LTY 'Using integrated circuits', 19th - Special event station in Halstead, 21st - Natter & Noggin night. Tony Harman G8LTY. (0787) 313212.

## WEST MIDLANDS

**Sandwell ARC:** The Broadway, Warley. RAE class on Monday nights, Morse class on Wednesday nights and RAE Novice class on Thursday nights. Three operating shacks, h.f./v.h.f./u.h.f., Phone, c.w., RTTY, AMTOR, Packet, all bands. Talks, outings, contest and demonstrations. For further information please ring 021-552 4619/021 552 4902.

**West Bromwich Central Radio Club:** Sundays, 7.30pm (talks begin at 8pm). The Sandwell Hotel (upstairs function room), High Street, West Bromwich. June 4 - Special event station Sandwell Valley Reserve, RSPB Reserve, 5th - Annual family activity open day at Tanhouse Avenue, Great Barr, 18th - Annual open day and fete, at Mesty Croft School, St Lukes Road. Ian Leitch. 021-561 2884 (home) or (0902) 353522 ext. 2093 (office).

## WILTSHIRE

**Salisbury Radio & Electronic Society:** Tuesdays, 7.30pm. 3rd Salisbury Sea Scout Hut, St Marks Avenue, Salisbury. May 31 - Talk by Dick G0MZI 'RAIBC', June 7 - Open Forum 'July to December', 12th - RNARS Rally, HMS Collingwood, 14th - HF operating 'B' licensees under supervision, 21st - Construction evening and advice clinic. David Kennedy. (0722) 330971.

**Trowbridge & DARC:** 3rd Wednesday, 8pm. The Southwick Village Hall, Southwick, Trowbridge. June 1 - 2m d.f. 'Foxhunt' 7.30pm, 15th - Natter night. Ian G0GRI. (0225) 864698.

Elaine Richards  
PO Box 1863,  
Ringwood,  
Hants BH24 3XD.

# junior listener

## Back to Basics!

Well, everyone else is using the phrase, so why not me!

I've received a couple of letters this month from readers looking for basic information suitable for the complete beginner. Well, I can point you all in the direction of some really good information and most of it won't break the bank either.

If you're looking for information on radio stations, then there are some excellent sources of good value for money data. Groups like the International Short Wave League, Medium Wave Circle and British DX Club all produce club newsletters for their members. With lead-times much shorter than *Short Wave Magazine*, they get news of station changes into print very quickly.

Many groups such as these also produce booklets on specialised aspects of radio listening. One such booklet is *Radio Stations in the United Kingdom 12th Edition* produced by the British DX Club. In frequency order, the booklet lists all British medium wave a.m. and f.m. radio stations including their location and transmitter power. They also give the postal addresses of these stations. This booklet costs £2.50 including P&P.

Another source of booklets is The Danish Shortwave Clubs International. They have at least two booklets available, the two I can remember offhand are *Clandestine Stations List* and *Tropical Bands Survey*. These usually can be paid for in IRCs (International Reply Coupons - available from the Post Office) the 1993 booklets cost 7 or 9 IRCs respectively for airmail delivery to the UK.

## Useful Addresses

**British DX Club,**  
54 Birkhall Road, Catford, London SE6 1TE.

**ISWL,**  
10 Clyde Crescent, Wharton, Winsford Cheshire CW7 3LA.

**Medium Wave Circle,**  
137a Hampton Road, Southport PR8 5DY.

**International Listeners' Association,**  
1 Jersey Street, Hafod, Swansea.

**The Danish Shortwave Clubs International,**  
Tavleager 31, DK-2670 Greve Strand, Denmark.

**Radio Netherlands,**  
PO Box 222, 1200JG Hilversum, The Netherlands.

## Clarity

I had an interesting letter from John Irvine, who brought to my attention a problem with receiver controls. He's a senior 'junior' listener and finds that black keys against a black key pad makes life a little difficult when trying to see the controls. And when you think of the complexity of some of today's radios that bleep madly at you if you press the keys in the wrong order I can understand this being a problem. Well, John will be changing his radio this autumn, so if any of you have any bright ideas as to which radios he should be turning his attention drop me a line and I'll put together a list of the easiest to operate radios.

## Try A Rally

If you feel adventurous then you could try and attend one of the Radio Rallies that *Short Wave Magazine* is going to over the summer months. This is a good way to have a browse through many of the titles they stock so that you can compare the books and make the right choice. Of course, *SWM* staff on hand are always willing to help you choose the best buy and are there to offer advice.

Also, at a radio rally you can chat to the radio dealers, most of whom are enthusiasts, too. They don't mind chatting to customers if you're not sure which purchase is right for you. Don't be put off by the thought of going to a Rally, they're great fun and often held at venues like Longleat House or Elveston Castle and the like where you can combine the event with a day out for all the family.

If you try out a rally for the first time this year, drop me line with the tale as I'm sure there are others that would be interested to know how you got on.

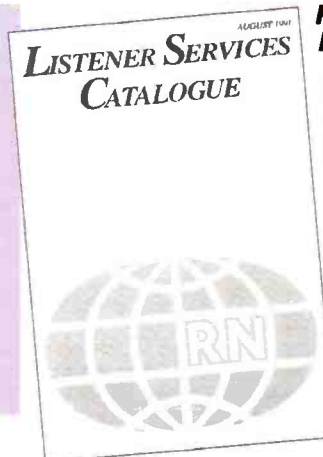
## Receiver Information

The Receiver Shopping List from Radio Netherlands is something like a 74-page A5 booklet detailing all the receivers that they have tested, what they thought of it and what you can expect to pay. This is a very worthwhile booklet to get if you are thinking of changing your radio - the more information you can acquire before you make your choice, the better.

Once you have narrowed your choice down to perhaps a couple of models, there are a couple of other sources of information you can try. Both the organisations who publish the *World Radio TV Handbook* and *Passport to World Band Radio* test and review radios. The *WRTH* organisation have combined all their reviews over the past umpteen years into a useful reference book called *WRTH Equipment Buyers Guide*. This gives advice on antennas, helps you understand the specifications, gives their opinions of all kinds of short wave radios as well guidance on picking the right radio for you.

*Passport to World Band Radio* reviews many different radios each year and these reviews are published in their current edition of the book. Of course, if the radio you want to know about was reviewed in last year's edition, you'll have to try and borrow a copy from someone. Both these books could probably be borrowed from your local library, or you can buy them from the *SWM* Book Service.

*Short Wave Magazine* has also reviewed a large number of radios over the years and they can either supply back copies (if there are any) or a photocopy of a specific review for a nominal sum (£2.00 and £1.50 respectively).



## Free Information

Now to a free source of information. Radio Netherlands produce a booklet called *Listener Services Catalogue* and this gives details of its free information service. They have 15

different publications that you can receive on subjects like *Writing Useful Reception Reports*, *Latin America DXing*, *International Radio Listening*, *The Solar Guide*, *Looking at Loops* and their famous *Receiver Shopping List*.

Finally, they can also supply something called *The Booklist*. This is a comprehensive round up of the Listening Guides, News Stand Periodicals (like *SWM*), Books with a Broadcast Connection, CD & Tape Recordings, Amateur Radio, Vintage Wireless and Specialist Addresses. After reading this there's no excuse for not knowing where to turn for your information and once again it's free.

When you write requesting your information, please contain your enthusiasm and don't ask for more than five different pamphlets per letter and please, use the correct title.



## Frequency Guides

When it comes to commercially printed books of frequency information, you have a large list to choose from depending on where your interests lie. One of the best things you can do is read through the various titles available from the *SWM* Book Service under the heading *Listening Guides*. (Page 71)

Don't go buying guides for the v.h.f. and u.h.f. bands unless you have a radio that covers those frequencies, conversely if you have a v.h.f./u.h.f. only scanner then information on the short wave broadcasts bands won't do you a lot of good either. If you choose your books carefully then there is a lot of information to be found.



## Forestry Anniversary Station

The Scarborough Special Events Group will commence their summer season on the weekend of 2nd - 3rd July when they will be on the air as GB5FC, from a festival site in Dalby Forest, North Yorkshire, to celebrate the creation of the Forestry Commission.

The Forestry Commission was established in 1919, when it became clear that the country was dependant on imports of timber. It now provides 12% of Britain's timber requirements.

A special three day festival has been arranged to show the public how the commission has branched out over the years from its simple role of providing timber for the nation to one of creating woodland for sport recreation and conservation.

Station operation will be around 3.725 and 7.055MHz on 80m and 40m respectively plus 2m and 70cm.

Short wave listener reports will be most welcome and the usual full colour souvenir QSL will be issued to commemorate the occasion. Further details can be obtained from the QSL manager, **Roy Clayton G4SSH, 9 Green Island, Irton, Scarborough YO12 4RN.**

## Novice Course at Newcastle Science Museum

Those of you in the Newcastle area will be pleased to hear that a Novice Course will commence on Saturday June 11 and will run subsequent Saturdays at 10am to 1pm at the Science Museum, Blanford Street. The course will run for ten weeks up until the exam in September.

The course is free but there will be a charge for the course book and materials for the four constructional projects to be undertaken during the course.

The Museum is situated 500m from the bus station and 800m from the main line rail and Metro stations

The contact is Michael Stott G0NEE. SAE for further details to:

**Wellview,  
12 Castle View,  
Ovingham on Tyne,  
Northumberland NE42 6AT.**

## Castles on the Air

At least six Castles are expected to be 'on the air' between May 28th and 29th. After previously successful events Kettering and District Amateur Radio Society will operate at **Rockingham Castle** (GB8RC) - contact **Len GORDV on 0536 514544.** They are to be joined by Pembroke Amateur Radio Club - **Pembroke Castle** (GB2OP) and Dragon Amateur Radio Club - **Penrhyn Castle Bangor** (GB2CPC). Other stations will be announced later in the year.

Unfortunately there will be no certificates issued as in previous years but some very attractive QSL cards will be available.

6

## Radio Amateur Courses - The Future?

There has been much recent concern regarding the threat to Radio Amateur courses run around the country, particularly those in Colleges of Further Education.

We are reminded that there are alternatives. **The Rapid Results College** has been providing courses for the Radio Amateurs' Examination courses 588 and 595 to students for a number of years with excellent success.

Courses can be run at any time during the year providing full tuition support to help students achieve exam success. The cost of the course is £145 for an all-inclusive package incorporating a four year guarantee of continued tuition. For more details contact: **The Rapid Results College, Tuition House, 27-37 St. George's Road, London, SW19 4DS. Telephone: 081-947 7272.**

# TRIDENT

## Trident Trio

Three new appearances on the scanning scene are from Nevada Communications own brand **Trident**. The range comprises initially TR980, TR1200 and TR2400 with a fourth model to be announced in September.

Prices begin at £249 for the TR980, with the TR2400 available at £369



### TR2400

Superior wide coverage (100kHz - 2060MHz) including b.f.o. for the reception of Single Side Band. Easy to use direct keyboard control.

- ★ All mode reception, s.s.b., c.w., a.m., n.f.m. & w.f.m.
- ★ Rotary or keypad frequency control
- ★ Selectable step sizes
- ★ 1000 channels, including 10 search banks.
- ★ Includes Nicads and charger, d.c. cigar lead, Earpiece and Carry Strap.
- ★ Optional Leatherette case available.....£369



### TR1200

Fully programmable 1000 channel scanning receiver with coverage from 500kHz to 1300MHz Simple to use on a.m., f.m. & w.f.m. modes.

- ★ 500kHz-600MHz and 800 - 1300MHz.
- ★ Multiple step sizes
- ★ 1000 programmable memories including 10 search banks.
- ★ Complete ready to go. Including Nicads and charger, d.c. lead, Earpiece and Carry Strap.
- ★ Optional Leatherette case available.....£299



### TR980

Superior wide coverage (100kHz - 2060MHz) including b.f.o. for the reception of Single Side Band. Easy to use direct keyboard control.

- ★ a.m., f.m. & w.f.m. modes.
- ★ Five independent search steps.
- ★ Direct keypad /Rotary frequency control
- ★ Supplied with Nicads and charger, d.c. lead, Earpiece and Carry Strap.
- ★ Optional Leatherette case available.....£249

Watch future issues of *SWM* for reviews of these receivers.

## National Channel Transmitter News

*Short Wave Magazine* has recently received details changes to the BBC's national radio network:

**March 31 1994** - Two new Radio 1 f.m. transmitters in Cumbria. **Windamere**, sited 3km west of the town - in addition to Radio 1 - 97.9MHz the transmitter also carries Radio 2, Radio 3, Radio 4 and Radio Cumbria. **Kendal**, sited 2km southeast of the castle carries Radio 1 - 98.6MHz, Radio 2, Radio 3, Radio 4 and Radio Cumbria.

**April 14 1994** - New Radio 1 f.m. transmitter at **Ventnor**, Isle of Wight on 99.0MHz

**April 14 1994** - New Radio 1 f.m. transmitter at **Newhaven**, East Sussex located 1.5km west of the railway station, on 99.3MHz

The television station at **Caradon Hill** Liskeard, Cornwall, and its low powered relay station are now equipped for broadcasting BBC1 television programmes with stereo sound, using the BBC developed Nicam 728 digital system. This system uses an additional transmitted signal, which is quite separate from the normal (mono) TV sound signal. A Nicam service will be introduced later in the year. Cardon Hill serves 500 000 people throughout most of central and east Cornwall and west and northeast Devon.

BBC television started its Nicam stereo service with launch of the autumn programme schedules at the end of August 1991. Twenty three main television stations and over 500 of their relays have now been equipped to transmit the Nicam stereo signal. Now the stereo service is within reach of over 87% of the population.



## Radio And TVDX News

The Thailand parliament is seeking permission from the government authorities to open their own u.h.f. TV channel, this in addition to a low priced leased transponder on Thaicom. The parliamentary channel would be self funding with commercials and would compete against the other five Thai channels. The intention would be to achieve 95% population coverage within 5 years using both fixed and at least 'three mobile broadcasting stations'.

The Estonian TV station is ending transmissions of the main network Ostankino TV service as Moscow has failed to pay agreed transmission fees. Until recently Ostankino had been reduced to a few hours each day and it isn't planned for Eesti to return Ostankino to full time until outstanding debts are settled.

Band 3 will suffer more mobile radio networking soon across Scotland with Motorola selling the network to Signature Industries, and extensions soon with 'SuperScot', a new Band 3 region stretching across Scotland down through the UK to

Lowestoft (East) and Gloucester (West).

If you live near the location of a TV or film production shoot -, or even a TV studio, then check out the following frequencies, which have been approved for radio microphone operation in the UK. The Independent Programme Makers (IPM) licence covers multi v.h.f. - 191.900, 199.700, 200.300, 208.300, 216.100MHz: multi low u.h.f. - 854.900, 855.900, 856.175, 857.625, 857.850, 858.575MHz; multi high u.h.f. - 858.200, 858.650, 860.400, 860.900, 861.200, 861.550, 861.750MHz. Output power is maximum 10mW handheld or 50mW body worn.

Premiera, a new private commercial TV station in the Czech Republic is seeking permission to gain network status from the present regional operation. Autumn will see an MMDS (microwave distribution system) established in Prague and a 20km radius there-from. Kable Net will transmit to over 10 000 subscribers in the capital with programming from European satellite services and five Czech channels.

## 1994 MJF Catalogue

Waters and Stanton, UK distributors of the American MJF range of amateur radio products, announce the latest edition of the *Ham Catalog*. The 32 page 1994 edition includes many new items. Available either in person or by sending two 1st class stamps to: **Andrew Hollick, 12 North Street, Hornchurch, Essex RM11 1QX.**



## 30th Birthday Party for IOTA

Beaumont Conference Centre, Old Windsor Berkshire is to be the venue for the both the RSGB 1994 International HF and IOTA Convention and IOTA's 30th Birthday Party.

Talks confirmed as of 18 March are:

Antenna Circus - Dick Joyce G3WLM  
 Cluster Workshop - John Clayton G4PDQ  
 Computers in the Shack - Don Field G3XTT  
 Contest College - Chris Burbanks G3SJJ  
 First 100 Countries - Andrew Shaw G0HSD  
 Holiday Operations from Islands - Larry McKay K5 MK and others  
 IOTA Directors Address - Roger Balister G3KMA (IOTA Director)  
 IOTA Policy - Questions and Answers with the IOTA Committee  
 LF Antennas - Bob Reif W1XP  
 LF Propagation - Neil Smith G4DBN  
 Phased Arrays for 80m and 40m - Bob Whelan G3PJT  
 RSGB and Other Awards - RSGB Awards and IOTA Committees  
 Transceivers - Peter Hart G3SXX  
 VK9MM Dxpediton - John Linford G3WGV  
 ZD9SXW Dxpediton - Roger Western G3SXW  
 3Y0PI Dxpediton - Peter Casier

Initial enquiries to **G3NUG 'Further Felden', Long Croft Lane, Felden, Hemel Hempstead, Herts. HP3 0BN. Telephone / Facsimile: (0442) 62929.**

## Space Saving VHF/UHF Antennas

Haydon Communications have launched three new compact antennas for the scanning enthusiast and amateur operator.

Recognising the difficulties in obtaining good antennas for the v.h.f./u.h.f. spectrum, Haydon Communications have produced a range which is claimed to be easy to mount in most locations. The range is as follows:



### MSS1300

Magnetic mount mobile unit. Consisting of a nest of dipoles some 410mm in height supplied with 5 metres of coax and fitted with BNC plug.

Frequency range 10-1300MHz receive, 2m/70cm transmit. £44.95

### DSS 1300

Desk version of MMS1300 supplied with low profile mount, 3 metres of coax and BNC plug. Intended for either desk or loft mounting. Height 460mm. £44.95

### BSS 1300

Low profile double nest of dipoles with frequency ranges as above. Height 870mm, supplied with 'four hole', flat, wall

mounting plate and 'U' bolts for pole mounting if required. The antenna can be fixed directly to an outside wall using four screws (not supplied) or to a mast of 50mm maximum diameter. Antenna is supplied with 10m of coaxial cable with a BNC plug fitted. £64.95

For more information contact **Haydon Communications, 132 High Street, Edgware, London, HA8 7EL. Telephone: 081 - 951 5782. Facsimile: 081 - 951 5782.**

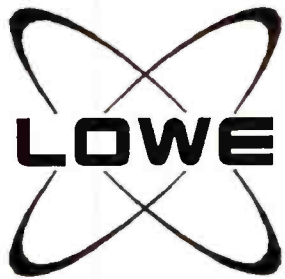
### Geoff Watts

As we closed for press we received news of the death of Geoff Watts - tireless compiler and publisher of a series of very useful prefix and country lists. An obituary will appear in next month's *SWM*.

## New Outlet for Realistic Scanners

Realistic scanners have until recently only been available via Tandy stores and Tandy dealers.

This changed on March 26 1994 when Link Electronics were appointed to distribute to both retailers and distributors in the UK and Europe. This will ensure even wider availability of the Realistic scanner range. Prospective retailers are requested to contact **Gavin Taylor at Link Electronics for further details, at 216 Lincoln Rd, Peterborough. Telephone: (0733) 345731 or Facsimile: (0733) 346770.**



# Lowe Electronics

## EVERYTHING FOR SHORTWAVE

### LOWE RECEIVERS - SIMPLY THE BEST

## HF225



Probably the most cost effective receiver on the market today, our **HF225** gives you the best combination of facilities, matched with performance and price.

- ◆ Excellent sensitivity
- ◆ AM bandwidths: 10, 7 & 4kHz
- ◆ SSB bandwidth: 2.2kHz
- ◆ Audio CW filter: 200Hz
- ◆ 30 memory channels
- ◆ 8Hz tuning steps

**All for just £479.00**

Optional enhancements:

- ◆ B225 Nicad battery pack
- ◆ W225 Whip amplifier kit
- ◆ D225 Synchronous detector
- ◆ KPAD1 Keypad controller
- ◆ C225 Leather carry case

## HF150



The world's most popular short-wave receiver! Our **HF150** is ideal for the beginner or expert alike.

- ◆ Smooth 8Hz tuning steps
- ◆ Synchronous detector fitted as standard
- ◆ Built-in whip amplifier
- ◆ Compact size
- ◆ Excellent audio quality

**All for just £389.00**

Optional enhancements:

- ◆ AK150 Whip, nicads & carry straps
- ◆ KPAD1 Keypad controller
- ◆ IF150 Computer interface
- ◆ RK150 NEW! Rack'n'stack storage system
- ◆ MB150 Mobile / marine mounting bracket

## EUROPA



A "turbocharged '225"! The **HF225 Europa** is probably the best receiver to use if you are a dedicated broadcast band DXer. We've replaced the standard AM filters with 7, 4.5 & 3.5kHz, giving excellent selectivity for winking out those weak tropical band stations. The SSB filter stays at 2.2kHz to allow for exhalted carrier reception. We're also fitting magnetically sheilded coils and low-noise switching diodes in the bandpass filters which reduces residual noise in the receiver. The Europa model includes the KPAD1 frequency controller and the synchronous detector fitted as standard

**All for just £699.00**

## Lowe Electronics Ltd.

Chesterfield Road, Matlock,  
Derbyshire, DE4 5LE

Tel 0629 580800 Fax 0629 580020

**IF YOU WOULD LIKE MORE INFORMATION ABOUT THESE AND OTHER PRODUCTS, JUST SEND US FOUR FIRST-CLASS STAMPS AND REQUEST OUR "SHORTWAVE INFORMATION PACK" WE'LL ALSO SEND YOU A FREE COPY OF OUR FAMOUS LISTENER'S GUIDE!**



# PR150



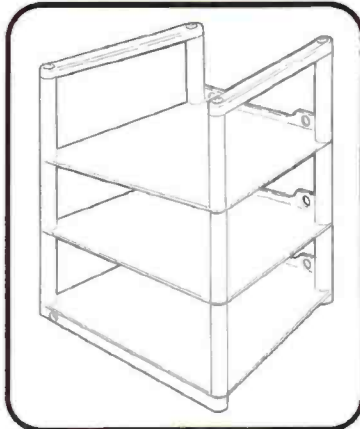
Although initially designed to compliment our own HF150 receiver, the **PR150** can in fact be used with any receiver.

The **PR150** preselector sits ahead of your receiver and pre-selects a narrow range of frequencies from the wide range arriving from the antenna. This can help to reduce image frequencies and spurious signals in a receiver, sometimes resulting in a spectacular improvement in performance! If you're using a scanner like the MVT7100 for short-wave reception, one of these will really make it work!

Try one out today in any of our branches.

**PR150.....£235.00**

# NEW



What a great way to tidy up your HF150 station! Our new **RK150 Stack'n' Rack** provides the ideal solution to storing your HF150 and accessories. Available as a two tier model for the HF150 and PR150 combination, plus you can buy an extension kit to add another layer for your NIR10, NTR1 or FL3 audio filter, or perhaps for our next accessory.....

**RK150.....£75.00**

**RK150EX.....£25.00**

# NEW! MODEMASTER2

Modemaster has fast become the standard software decoding package for the shortwave listener. Covering FAX, RTTY, Morse, NAVTEX and FEC, this will allow you to decode the majority of signals found on the shortwave bands today. With **MODEMASTER 2** you have access to:

- Current and Forecast Weather Facsimile Maps.
- Weather Forecasts.
- Cloud Cover Pictures.
- NAVTEX and Marine Navigation Warning Broadcasts.
- News Broadcasts and Press Photographs.
- Amateur Radio Transmissions

New features in Version 2 include a new map driven front end and ability to apply false colour to fax pictures - great value at the new lower price - it's now just **£139.00!**

**Or upgrade from V1.0 for just £49.00**

**ALL THE GREAT NAMES IN SHORT-WAVE ARE HERE AT LOWE'S...**

**WATKINS-JOHNSON, KENWOOD, ICOM, YAESU, ROBERTS, SONY, RF SYSTEMS, GLOBAL, JRC, AOR, DRAKE,**

## SHORTWAVE ACCESSORIES

Magnetic Longwire Balun	£39.95
<b>NEW!</b> MLB Isolator	£39.95
Magnetic Transfer Antenna	£149.95
<b>DXONE</b> Active Antenna	£289.00
T2FD Low noise receiving antenna	£169.95
Kenwood HS6 Headphones	£32.95
AT1000 Antenna Tuner	£96.95
Datong AD370 Active antenna	£79.95

## DON'T FORGET TO USE YOUR PASSPORT TO VALUE CARD!

**SCOTLAND**  
Cumbernauld Airport  
Cumbernauld  
Strathclyde  
Tel 0236 721004

**BERKSHIRE**  
3, Weaver's Walk,  
Northbrook Street,  
Newbury  
Tel 0635 522122

**YORKSHIRE**  
34, New Briggate  
Leeds,  
Tel 0532 452657

**WALES & WEST**  
79/81 Gloucester Road  
Patchway,  
Bristol,  
Tel 0272 315263

**NORTH EAST**  
Mitford House  
Newcastle Int'l Airport  
Newcastle upon Tyne  
Tel 0661 860418

**SOUTH WEST**  
117, Beaumont Road  
St. Judes  
Plymouth,  
Tel 0752 257224

**SOUTH EAST**  
Communications House  
Chatham Road  
Sandling, Maidstone,  
Tel 0622 692773

**SOUTH COAST**  
27, Gillam Road,  
Northbourne,  
Bournemouth,  
Tel 0202 577760

**EAST ANGLIA**  
152, High Street,  
Chesterton,  
Cambridge,  
Tel 0223 311230

**OPENING HOURS MON - FRI: 9.30 TO 5.00, SAT: 10.00 TO 4.00**

# WATKINS - JOHNSON HF-1000 PROFESSIONAL COMMUNICATIONS RECEIVER

*Every listener dreams of owning receiver like the revolutionary HF-1000 from Watkins - Johnson. Mike Richards takes a close look at one of the first models to arrive on these shores.*

**J**ust one look at the front panel is enough to confirm that the HF-1000 is very much a receiver designed with the professional in mind. The specification confirms this showing that the HF-1000 has an extensive frequency coverage from 5kHz through to 30MHz in 1Hz steps! This is supplemented by a very comprehensive range of receive modes that includes i.s.b. and synchronous a.m. in addition to the normal a.m. and s.s.b. modes.

At the heart of this array of features is some state-of-the-art digital signal processing (d.s.p.). This expensive, but impressive, technology enables the power of modern digital electronics to be harnessed into sophisticated signal processing - more of this later. Among the many advantages of this system is the provision of 58 user selectable bandwidths from 56Hz to 8kHz!

## Advanced Electronics

The advanced nature of the HF-1000's design warrants a more complete description than usual. The early r.f. stages of the HF-1000 use analogue circuitry to provide triple conversion with i.f.s of 40.455MHz, 455kHz and finally 25kHz. Whilst the 455kHz i.f. is made available for external use on the rear panel, the 25kHz signal is passed to the d.s.p. section. Prior to the signal being passed to the signal conversion stages it is filtered with a 32MHz roofing filter with an ultimate rejection of 80dB. There is also a front panel controlled switch to pass the signal direct, boost by 10dB or attenuate by 15dB.

The frequency resolution of these first stages is just 1kHz but the overall stability is controlled by an internal 10MHz reference oscillator with a drift of less than 1p.p.m. If you need greater stability than this, the internal reference will phase

lock to an external reference signal of 1, 2, 5 or 10MHz. This makes it very easy to lock the receiver to one of the many national standard transmissions.

The d.s.p. section handles the clever bits and takes the incoming 25kHz i.f. signal and passes it to an analogue to digital converter chip. This works with a 12.5MHz reference clock and samples the i.f. signal at 100kHz. The resultant output is a 32-bit serial data stream with 16 bits used to represent the digitised i.f. signal.

This data is passed to the specialist d.s.p. device that provides tuning to 1Hz resolution, i.f. bandwidth adjustment, signal strength meter, audio demodulation, noise blanking, a.g.c. and r.f. gain control. The use of digital filters provides superior amplitude and group delay characteristics compared with that available from analogue systems.

The output serial data





# HF-1000 COMMUNICATIONS RECEIVER

stream is passed to an analogue reconstruction device that produces outputs containing the demodulated audio plus a reconstituted 25kHz i.f. which is further up-converted to give an external 455kHz i.f. output.

Whilst the d.s.p. looks after the signal processing, the main processor provides the co-ordination to link all the functions together. The main processor also looks after remote operation of the receiver when this facility is enabled.

Just to complete the internal communications, a slave processor is provided to look after the front panel controls. As you can see there's no shortage of processing power in the HF-1000.

## Layout

As you can see from the photographs, the review model was supplied ready for standard 19in rack mounting. However, the specifications say that a table-top version is also available - this is likely to be the same, but with the rack mounting brackets removed. One of the most surprising features of the HF-1000 is its weight - it's so light. When the Editor brought out this enormous box I was expecting it to be a good 20kg worth of receiver. Instead the HF-1000 clocks in at a modest 6.78kg.

The main front panel is well set up to impress your friends with as there's host of knobs and buttons and no less than four digital displays. Watkins-Johnson have clearly put a lot of thought into the panel layout as the numerous

features were extremely well sign written and logically grouped. I found that I could find my way around most of the features without reference to the operating manual.

The main tuning comprised a substantial 63.5mm free-spinning knob with a finger depression for rapid frequency changing. The excellent balance and weight of this knob meant you could really make it fly if you were in a hurry.

Adjacent to the tuning knob was a well proportioned numeric keypad that could be used to provide the data for many of the receiver's user selectable functions. If you made a mistake with data entry this could be deleted using the CE cancel entry key.

The central display sections were used to give access to the auxiliary control functions of the HF-1000. This included a.g.c., b.f.o., noise blanker, bandwidth, receive mode and squelch. The settings for any of these modes could be adjusted by either toggling the appropriate button, turning the auxiliary knob or using the main

keypad. The resultant setting being shown on the relevant display module. This was a very convenient system of adjustment and left the operator free to choose the most appropriate method.

The remaining display unit was used to handle the memory and scanning parameters. To make all the associated front panel controls obvious they were surrounded by a shaded border. This section used the same operating principles as the auxiliary functions described earlier.

The front panel layout was completed separate headphone and speaker volume controls, manual r.f. gain and the attenuator/pre-amp switching.

Moving on to the rear panel there were standard BNC sockets for antenna input, 455kHz 2nd i.f. output, external reference input and processed i.f. output. There was also a thirteen-way connector carrying a range of audio and control signals.

The mains input was fed through a standard IEC connector but the power unit could handle 47-440Hz supplies in the voltage

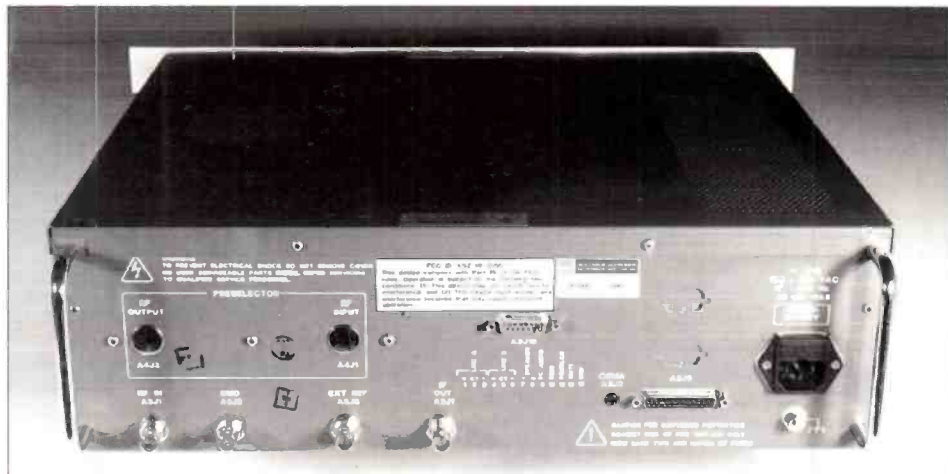
range 90 to 264V a.c. without any need for adjustment.

For those with an interest in remote control the HF-1000 features a standard RS-232 port plus an advanced Carrier Sense/Multiple Access (CSMA) system.

## Tuning

The 1Hz tuning capabilities of the HF-1000 are derived by the d.s.p. circuitry and supported by the 1Hz resolution of the main frequency display. This is most unusual as the display in the majority of h.f. receivers do not normally match the tuning resolution. You may well ask what use are 1Hz tuning steps when 10Hz steps are more than adequate for most signals. If you've ever tried to resolve multi-frequency systems such as Piccolo you will find the very fine tuning steps to be invaluable.

The beauty of the HF-1000 is that you have total flexibility in the control of the size of the tuning steps. The simplest manifestation of this is the step tuning mode which is activated by



a single button press on the front panel. This cycles the tunings steps in decades from 1Hz through to 10MHz. The selected steps being indicated by varying the intensity of the appropriate display digit. This relatively coarse selection systems can be refined by use of the step size control. This enables any step to be entered between 1Hz and 25kHz. This is a powerful feature that's a real boon when tuning around any of the channelised bands such as maritime s.s.b. or even short wave broadcasts.

In addition to the tuning knob you have the option to use the UP/DOWN buttons or the numeric keypad. I found the numeric keypad had a very good feel and I was able to quickly enter new frequencies without error. This is very important as some keypads are prone to errors due to poor mechanical operation.

## Receiver Controls

One of the many advantages of d.s.p. technology is the ability to control the receiver in much greater detail than is economically practical with conventional systems. The HF-1000 has many examples of this.

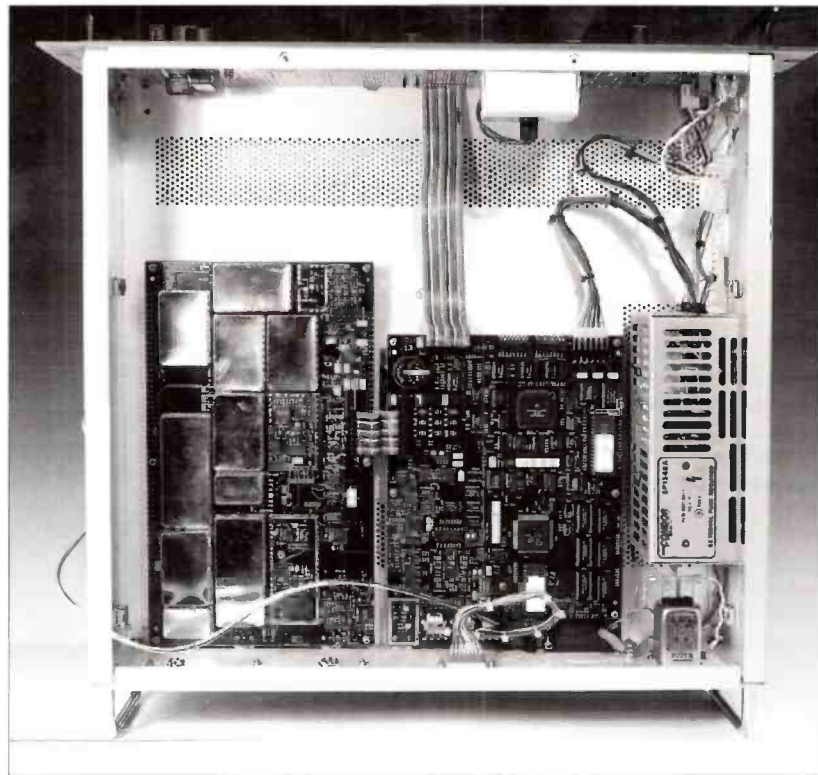
How about being able to precisely set the squelch threshold in 1dB steps between 0 and -135dBm! Most amateur receivers operate with just two or three i.f. bandwidths available whilst some of the more advanced models have additional filters available as optional extras. The HF-1000 has some 58 bandwidths available ranging from an extremely narrow 56Hz through to 8kHz for high quality a.m. reception. The availability of such a massive range of filters means that the operator can use the optimum width for the prevailing conditions. The only limitation on the use of these i.f. bandwidths was when using s.s.b. reception. Here only the 16 bandwidths between 900Hz and 3200Hz were available. This was not a problem as

below 900Hz s.s.b. signals are virtually indecipherable.

In addition to the bountiful supply of i.f. bandwidths, the shape factors were extremely good. A study of the 300Hz filter shows near vertical sides down to the first side lobes at around -90dB. This is truly exemplary performance.

Selection of the required receive mode was done with a single button press that caused the receiver to toggle through the various options which were a.m., f.m., c.w., l.s.b., u.s.b. and i.s.b. For those of you that may not have encountered i.s.b. this is independent sideband transmission and involves the transmission of two channels of information one on the upper sideband and the other on the lower sideband.

To cater for these transmission the HF-1000 has two audio outputs that can either be monitored using headphones or via the twin line outputs on the rear panel. Reception in a.m. mode is always by the synchronous method and the d.s.p. ensures that perfect lock is always maintained so there are none of the low frequency beat notes so often associated with analogue implementations. Despite all this I was a little disappointed with the audio quality and would have expected to see much lower distortion though the speaker and headphone outputs. The review model gave a worst case of 1.01% t.h.d. through the headphone output. Although this was well within the specified 5% limit it was higher than I would have liked. The only



consolation that the line outputs were generally lower with a worst case of 0.5%.

Gain control of the HF-1000 could either be via automatic control with two response setting of fast or slow or by manual control. In this latter mode the receiver gain could be set to any value between 0 and 127dB.

When receiving c.w. transmissions the HF-1000 has a couple of tricks up its sleeve. The first is a fully adjustable b.f.o. that can be set  $\pm 8$ kHz from the default setting. This is far wider than is likely to be used in practice. The narrow bandwidths and adjustable b.f.o. are further complemented with a passband tuning facility. This enables the i.f. bandwidth to be shifted by up to 2kHz so that interfering signals can be placed outside the passband. By careful use of the passband tuning and variable b.f.o. it is possible to eliminate most interfering signals. It's also worth noting that the HF-1000's designers have chosen the c.w. mode for the reception of f.s.k. utility transmissions rather than the more common u.s.b.

Noise blanking is also greatly enhanced by d.s.p. techniques and the HF-1000 features ten noise thresholds for the operator to choose from.

## Comprehensive Scanning

With three processors and d.s.p. technology it's not surprising to find that the HF-1000 boasts an impressive range of scanning facilities. This all starts with the 100 channel memory system. In line with modern practice each of these memories holds not only the operating frequency but all the other receive parameters as well. Selection and programming of these memories was very logical and straight forward involving very few key presses.

One of the delights of this system was the freedom to set all the key scanning parameters. You could choose which channel to start, where to stop and how long to pause on each channel. You could then lock out any intermediate channels and set the squelch threshold to 1dB accuracy. Programming all this information was made extremely simple 14



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thanks to the excellent menuing system operated through the auxiliary displays. These prompted you for the required information at every stage. I found that I could use all the scanning options without reference to the operating manual.

Perhaps the most impressive scanning application was the frequency scan. With this you could scan between any two frequencies in the 5kHz to 30MHz range and manually set the tuning step size and the dwell period following detection of a signal above the squelch threshold. Just to complete this operation you could also lock-out up to 100 individual frequencies in the scanned range. This was a really powerful tool for the h.f. listener and makes light work of much bandscanning. In practice the performance of this feature was excellent and made searching for utilities a real pleasure.

The lock-out in particular was particularly well thought out, as a single button press popped the current tuned frequency into the lockout memory.

## Remote Control

As if all this wasn't enough, the HF-1000 features full remote control operation. Although this may be viewed as a luxury for an amateur receiver, in the professional world it is absolutely essential.

The vast majority of commercial agencies have now centralised their radio officers and are totally dependant on communication links between their console based operators and the remote receivers. As a result, the control system built-in to the HF-1000 is very comprehensive and enables remote control and interrogation of all the main systems. This external control can be accessed one of two communications protocols. The most common is to use the RS-232 interface.

The HF-1000 uses a

## ABBREVIATED SPECIFICATION

<b>Frequency Range:</b>	5kHz to 30MHz (tuneable to 0Hz with degraded performance)
<b>Tuning Resolution:</b>	1Hz
<b>Internal Reference Stability:</b>	Better than 1p.p.m.
<b>External Reference:</b>	Accepts 1, 2, 5 or 10MHz $\pm 1$ p.p.m or better at 200mV
<b>Synthesiser Lock Time:</b>	<10ms
<b>Antenna Input:</b>	50 $\Omega$ BNC +30dBm max
<b>3rd Order Intercept:</b>	+30dBm typical
<b>2nd Order Intercept:</b>	+60dBm typical
<b>Detection Modes:</b>	Synchronous a.m., f.m., c.w., u.s.b., l.s.b.& i.s.b.
<b>Sensitivity:</b>	1.58 $\mu$ V a.m. 0.56 $\mu$ V s.s.b. 0.35 $\mu$ V c.w.
<b>AGC Attack Time:</b>	15ms
<b>AGC Decay Time:</b>	25ms (fast), 4s (slow)
<b>1st Image Rejection:</b>	90dB min
<b>IF Rejection:</b>	85dB min (>90dB typical)
<b>LO Phase Noise:</b>	-110dBc at 1kHz offset
<b>Internal Spurious:</b>	< -114dBm
<b>Line Outputs:</b>	Centre tapped balanced 0dBm into 600 $\Omega$
<b>Speaker Output:</b>	1W into 8 $\Omega$
<b>Distortion:</b>	< 3% at 1W
<b>Headphone Output:</b>	10mW into 600 $\Omega$
<b>Remote Control:</b>	RS-232 or CSMA
<b>Baud Rates:</b>	75, 150, 300, 600, 1200, 2400, 4800 & 9600
<b>Operating Temperature:</b>	0-50 $^{\circ}$ C
<b>Storage Temperature:</b>	-40 to +70 $^{\circ}$ C
<b>MTBF:</b>	in excess of 10000 hours
<b>Power Requirements:</b>	97 to 253V a.c. (47 to 440Hz)
<b>Power Consumption:</b>	35W typical
<b>Weight:</b>	6.78kg
<b>Dimensions:</b>	133.6 (h) x 482.6 (w) x 508mm (d)

standard implementation with software flow control (XON/XOFF) eight data bits and baud rates from 75 through to 9600.

The command structure used for remote operation was very straightforward with the same basic command being used for interrogation as setting. For example FRQ? produced a response giving the current receive frequency, whilst FRQ 11.25 set the frequency to 11.25MHz. ■

## Summary

The HF-1000 is certainly a top of the range performer with a very impressive array of features. The combination of state-of-the-art digital signal processing combined with high quality analogue sections gives excellent technical performance. Despite all this technology the HF-1000 remains a very easy receiver to use. This is particularly true of the more advanced features which were all usable without reference to the manual. This is a remarkable achievement as the converse is usually the case.

The only down side to this high performance is the price, which at £4995 puts it out of reach of most listeners. If you would like to order yours or get more details, the HF-1000 is imported by **Lowe Electronics Ltd., Chesterfield Road, Matlock, Derbyshire DE4 5LE. Tel: (0629) 580800.** My thanks to Lowe for the loan of the review model.

## Abbreviations

%	percent	h.f.	high frequency
a.c.	alternating current	Hz	hertz
a.g.c.	automatic gain control	i.f.	intermediate frequency
a.m.	amplitude modulation	i.s.b.	independent sideband
b.f.o.	beat frequency oscillator	in	inches
CSMA	Carrier Sense/Multiple Access	kg	kilograms
c.w.	continuous wave (Morse)	kHz	kilohertz
d.s.p.	digital signal processing	l.o.	local oscillator
dB	decibels	l.s.b.	lower sideband
dBc	decibels reference 1	MHz	megahertz
dBm	decibels reference 1mW	mm	millimetres
f.m.	frequency modulation	ms	milliseconds
f.s.k.	frequency shift keying	MTBF	mean time before failure
		mW	milliwatts
		r.f.	radio frequency



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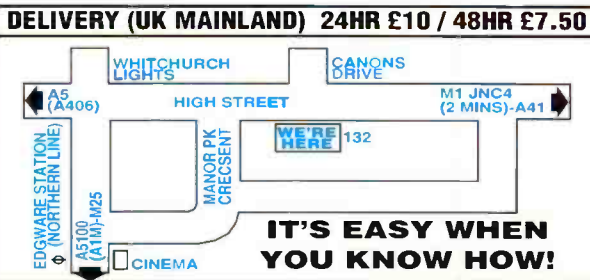
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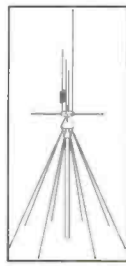


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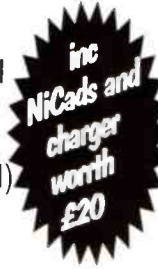
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# Radio on the Move

*Planning a motoring holiday might mean being out of touch with the world while you are on the move as most car radios provide only medium wave and f.m. reception. That is, unless you want to upgrade your car hi-fi, as Peter Shore explains.*

**U**nlike the Continent, in Britain, car manufacturers tend to decide what sort of radio receiver is best for particular models. The more you pay for the car, the better the specification of the set you will find mounted in the dashboard. In models badged with a simple 'L', it is likely to be a standard sort of medium wave/f.m. cassette player. Move up to a GTi or equivalent, and you may well discover an RDS f.m. set with medium wave, cassette player or even a CD, together with sophisticated six speaker sound output.

But nowhere will you find a radio with short wave offered as standard. Travel to Germany, however, and it is an altogether different picture. The German car makers such as BMW and Mercedes do not even fit a radio, despite the high price of the car. They leave the choice of car hi-fi up to the individual. And the German radio manufacturers have for many years produced one of the largest ranges of in-car stereo equipment, including a number that offer short wave bands.

## Standard Slot

So what is the solution here in Britain? You will find that whether you drive a brand new Citroën or a more elderly Ford, it is possible to have short wave on the move - at a price. If you have a standard slot in the dashboard, then one of the half dozen receivers that include short wave can be fitted. But the equipment is not cheap, tending to be around the £300 mark. If you are thinking of upgrading your car audio and you are a keen short wave listener, then maybe this is not too great a price to pay.

Blaupunkt offers a very good, and sophisticated, short wave, medium wave, long wave, f.m. radio with cassette player. The Bremen RCM 43 covers the 25, 31, 41 and 49 metre bands (although its frequency range excludes a principal BBC World Service

frequency of 12.095 MHz). On f.m. there is advanced Radio Data System (RDS) that provides a readout of the programme type (news, drama, classics etc.), and allows the automatic search and selection of the type of programme you want to hear, provided that it is on the air.

Frequencies can be entered directly on each of the bands, and there is automatic search on all bands, too. The large liquid crystal display can be switched from green to orange to match your car's instrument panel, and individual settings of everything from the bass and treble of the front speakers can be memorised onto one of two 'keycards'. If he likes lots of bass on the rear speakers, he can program his card accordingly. If she prefers more treble at the back, she can program her card to her choice. No more lengthy fiddling with controls to get the settings right when your partner has been using the car!

The keycard also provides a security device: remove it and the radio is completely disabled. A flashing l.e.d. on the front panel indicates that there is no card in the set and it is therefore useless to a thief. Comforting, particularly if it deters a potential thief from smashing the window and causing damage to your vehicle.

You can hook a CD autochanger to the comprehensive connectors at the rear of the set, not to mention a myriad of loudspeakers and of course an automatic electric antenna. Reception on short wave is good. I've tried listening to the World Service in the UK and France, and it seems to me that Blaupunkt have got the a.m. bandwidth about right for dealing with the crowded European short wave bands. The Voice of America also came in well, and as for Radio Moscow, passengers in neighbouring cars in the queue for the Calais-Dover ferry must have wondered what was going on in my car.

The downside, simply the

price. It retails at a rather expensive £549.00 here in Britain. But you do get a lot of radio for that, and one that should last you for a very long time.

## Simpler

Going down in price, to a mere £440.00 here in Britain, is the Grundig WKC 4871. This is an altogether simpler radio, but still it offers long wave, medium wave, f.m. with RDS and the 25, 31, 41 and 49 metre short wave bands (including 12.095MHz for the BBC). Security protection is two fold: the bottom half of the front panel is removable, and a four figure PIN number needs to be keyed in to activate the set. The Grundig can control a separate CD autochanger and there is a built-in cassette player.

Thirtysix memory channels are available, although only six of these are on the short wave bands. The f.m. tuner can be selected to switch automatically to stations that transmit travel flashes, interrupting whatever other station you are listening to at the time. Reception on f.m. and short wave is excellent, and overall this offers reasonable value for money.

## Ultimate

What's the ultimate when it comes to short wave car radios? It has to be the Philips DC777. You may find difficulty tracking an example down, as car audio dealers that stock Philips products tend not to sell this particular model - for the simple reason that they do not comprehend what it is! The DC777 offers continuous short wave coverage from 3.20 to 21.85MHz, as well as stereo f.m., medium wave and long wave. The radio has been cleverly designed with a hidden keypad that swings down from the bottom half of the set. Frequencies can be directly entered using the numeric buttons, just like a conventional portable digital short wave radio, but it is not advisable to tap in frequencies whilst driving! There is capacity for storing 20 short wave frequencies in the set's memories, and further frequencies on the other three bands.

Manual tuning is possible

with up and down buttons, and reception is very good. Indeed, Michael Murray, Secretary-General of the European DX Council, has one of these receivers fitted to his car and finds it easy to use and good for short wave listening on the move.

There is a cassette player, although without Dolby noise reduction which is standard on almost every other piece of kit from the Philips company. That seems to be a shame. And there is no RDS on f.m., although the German ARI traffic information system is included, proving that the DC777 is firmly aimed towards the German market.

Here in Britain, the set retails at around £275, so it has to be the star of the three sets I have mentioned - provided you can get hold of one.

## Ultimate Status Symbol

Finally, the ultimate holiday status symbol for caravanners or even those off to south-facing apartments on the Mediterranean: a portable satellite receiving kit. It is now possible to acquire a small 470mm dish antenna with a suction foot, a mini-receiver and all the necessary cables and connectors to tune in to the Astra satellite and watch and listen to satellite TV and radio channels.

Here in Britain, Scan-Terieur imports such a travelling kit from an Italian manufacturer. It will set you back around £280, but allow you to tune in to everything from The Movie Channel to Radio Vlaanderen International from the three co-located Astra satellites as you pitch your caravan beside the River Loire, or sit on a baking balcony in Malaga. Just point the small antenna in the right general direction and align it using the special device included in the kit, hook it up to the small satellite receiver that comes in the handy carrying case, connect that to the TV set and fiddle with the dish a bit to get rid of the final sparklies. Then you'll have two weeks of unadulterated entertainment from 36000km away in space. It's the very last word in getting away from it all while keeping firmly in touch with the reality of satellite TV. ■

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A very useful accessory for the scanner enthusiast. These low noise preamps help improve the reception on many brands of base/mobile and handheld radios.

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- Non-Volatile Memory
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### Options

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**£995**

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- Scan delay
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Top of the range with a triple conversion receiver. Selectable AM/FM.

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- Frequency coverage: 68-88MHz, 118-174MHz, 220-512MHz, 806-999.99MHz
- Selectable AM/FM
- Scan delay
- Search function.....**£249.95**



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# Holiday Listening

*Peter Shore has some advice on the types of radio receiver you'll need to keep in touch with home as you travel on your summer holiday.*

**The latest from Sony - the ICF-SW100 portable radio. High performance in a miniature package.**

**Y**ou have decided where to go on holiday, you've worked out how much local currency you'll need to get in advance of your departure, bought enough Factor 24 sun cream. But then it strikes you! Your short wave receiver is really far too bulky to fit into a suitcase along with all those T-shirts and bikinis, and simply too heavy. What's the solution? Spending a little money on a new portable.

## Baggage Allowance

There may be several ways of tackling this problem. Firstly, you may need to convince your partner that you really need to buy a new lightweight portable set. Point out that a 20kg baggage allowance simply does not go very far when it comes to packing these days. All those blockbusters or detective stories needed to keep you entertained on a distant beach, for example, weigh lots!

Then, of course, your normal short wave equipment does not have f.m., so how are you going

to get the benefit of all the local stations and enjoy the culture in your destination? And then, of course, once you've got this new piece of kit, it should last for years, so really it is a long term investment.

Phew, now that's settled, lets take a look at what is available.

## Portability

The key to radio sets suitable for holiday travel is portability. If you are setting off on a motoring holiday around France, weight and size is not going to matter quite as much as if you are going on a biking trip around eastern Europe when every extra ounce matters.

The size of sets is diminishing quite dramatically as manufacturers find ways of shoe-horning more into smaller packages, particularly in digitally tuned receivers. The latest model from Sony, the ICF-SW100, is about the size of an audio cassette and is probably the ultimate in high quality portable receivers. Like several other recently introduced sets, it has frequencies of major short wave stations programmed at the factory, doing away with the need to carry round umpteen different schedules.

A number of analogue sets - in other words ones that have traditional tuning dials - are available in similar sizes. Tuning in stations on analogue sets is more difficult. The calibration of the dials tends to be less than accurate, so you will spend longer searching for the station you want than with a digitally tuned set. Of course, you may find that that is half the fun of being on holiday! The calibration problem is particularly

marked on the very cheap models that are advertised in the weekend newspapers and colour supplements. I would recommend you avoid those altogether. Another disadvantage of the analogue sets is that frequency coverage can be less than satisfactory. Check that the frequencies of the stations you are most likely to want to receive are covered. In Europe, for example, can the set receive the BBC World Service on 9.410 and 12.095MHz? Many sets on the market, including some from the big makers, cannot get those two channels.

There is, however, a price premium on digitally tuned sets. They range, in the majority of cases, from around £100 to £300. Analogue sets can be bought for as little as £30. You will get what you pay for, though. To help you decide between an analogue and digital set, I have listed pros and cons for each type in the table.

## Spare Batteries

Whichever type of radio you take with you on holiday, remember to take at least one spare set of batteries, particularly if you are going to less developed parts of the world. Whilst in France batteries tend to be a little cheaper than in the UK, if you are going to parts of the eastern Mediterranean, or to Africa and some Caribbean islands, you may find that batteries are hard to come by and are very expensive. Many sets are supplied with mains adapters, but these tend to be large and heavy - although lighter weight adapters are available, they are more expensive to produce, so manufacturers persist with cheap, cheerful and bulky ones - and so are not practical for the traveller



most of the time.

Let's take a look in more detail at the sets I suggest are worth buying for holiday listening. The lists are not exhaustive, and are based on my own personal preferences and what I have used on overseas trips in recent months.

## Analogue Receivers

**Sony ICF-SW15:** Seven separate short wave bands (13 metres to 49 metres, but the new 22 metre band is not included) as well as medium wave and f.m., in a set that weighs 375 grams including batteries and measures 95 x 160 x 33mm. It does cover the BBC's out-of-band frequencies such as 9.41 and 12.095MHz. The SW15 needs three AA size batteries. A 'hold' button prevents the set being turned on accidentally in luggage. UK price is around £59.99.

**Sony ICF-SW22:** A slightly smaller model that again offers seven short wave bands, but no 22 metre band, together with medium wave and f.m. Just 203 grams including the two AA size cells, its dimensions are 73 x 115 x 28mm. There is a 'hold' button. UK price: £69.99.

**Grundig Yacht Boy 205:** The smallest Grundig, with f.m., medium wave, long wave and nine short wave bands from 120 metres to 13 metres and including the 22 metre band. Some out-of-band frequencies are not covered. The set weighs 340 grams without batteries. UK price around £30.00.

**Grundig Yacht Boy 206:** A larger version of the 205 with the added benefit of a digital clock. The same frequency range is provided in a package weighing 480

grams. The clock has an alarm function and sleep timer. In the UK, the 206 retails for a little under £40.00.

**Grundig Yacht Boy 222:** Similar in many respects to the YB 205 and 206, offering the same nine short wave bands, plus medium and long wave, as well as f.m.. The difference is that stereo is available when listening to f.m. on headphones. The volume is controlled by an electronic push button rather than conventional slide control. The YB 222 retails in Britain at around £55.00.

**Roberts R101/Siemens RK 622:** A nine band set, with seven devoted to short wave. There is stereo via headphones on f.m.: unusual for an analogue set. The 22 metre band is included, but watch out for missing 9.41MHz. Just 280g including the two AA size batteries, and measures 125 x 71 x 263mm. Retail price of the Roberts model is £59.99 in Britain.



The Roberts costs around £120.00 in the UK.

**Sony ICF-7600:** A set with a long heritage. The original 7600D came out almost a decade ago, although today's model has moved on immeasurably. It offers stereo f.m., long wave and medium wave and, of course, continuous short wave coverage, including single sideband. It is well built, audio quality is good through the built-in speaker and operation is straightforward. Reception quality is excellent, and all in all the 7600 offers good

**Sony ICF-SW100:** Reviewed in last month's edition of *Short Wave Magazine*, this is the new all-singing, all-dancing pocket receiver from those clever Sony people. It looks like a very small version of a laptop computer, with a lift-up lid that protects the l.c.d. and keypad. Stereo f.m., single sideband, preprogrammed station frequencies and additional personal frequency storage. A super set, but one of the more expensive at £200. Should last for donkeys' years, though.

ANALOGUE		DIGITAL	
<b>Pros</b>	<b>Cons</b>	<b>Pros</b>	<b>Cons</b>
Less expensive	Tuning difficult	Tuning easy	More expensive
Light weight	No stereo	Stereo	Use more power
Use less power	(in most cases)	(in many cases)	Alarm clock

## Digital Receivers

**Roberts R808/Siemens RK761:** A popular digital set the size of a small paperback book: 196 x 125 x 36mm and weighing in at 570 grams without the six AA batteries. Continuous coverage from 150kHz to 30MHz. Large easy-to-read liquid crystal display showing time and frequency, as well as providing a bar signal strength meter. Stereo f.m. through headphones, and there is an external antenna socket. Works well on short wave, providing adequate reception on both strong and more DX type signals.

value, all in a box that is just 191 x 118 x 32mm in size and weighs 615 grams including the four AA cells. The retail price in the UK is around £180, but it is often possible to find this model discounted through various outlets.

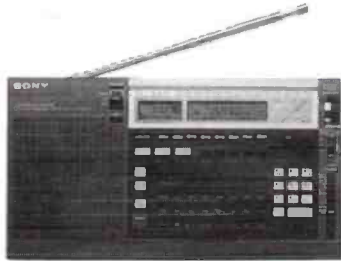
**Sony ICF-SW1:** The smallest digital set for many years, now superseded by the SW100 (see below). Continuous coverage from long wave through to the top of short wave, stereo f.m. through headphones. Dimensions: 11.8 x 71.4 x 23.7; weight: 230g with two AA batteries. Retails around £180, but check for better deals.

**Grundig Yacht Boy 500:** One of the most expensive of the sets that I've chosen. It offers the most of all though, with RDS on f.m., together with continuous a.m. coverage from 150kHz to 30MHz. Pre-programmed station memories for the main European broadcasters. Fantastic audio quality when you use a booster amplifier with the built-in loudspeaker, stereo f.m. through headphones. External antenna socket, single sideband. More details in the review in the April edition of *SWM*. UK retail price around £190.00. ■



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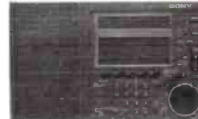
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## RC818 (SSP £219.99)

### Multi-band Digital Preset Stereo World Radio with Cassette Recorder

This flagship model demonstrates the leading edge of Roberts technology. With a clear LCD display of all functions, it has 5 tuning methods, 45 preset stations, dual-time display, standby and clock/alarm plus a cassette section for timed recordings from the radio. Provision is made for single side-band and CW transmissions as well as stereo FM on headphones and stereo record/playback of cassettes.

Comes complete with a mains adaptor.

- 5 Tuning methods – direct frequency keying, auto-scan, manual scan, memory recall and rotary
- 45 memory presets
- SW metre bands from 120m to 11m
- BFO control for reception of CW and SSB
- FM stereo on headphones
- AM wide/narrow filter
- Waveband coverage: LW 150-519 kHz; MW 520-1620 kHz; SW 1.621-29.999 MHz; FM 87.5-108 MHz
- Radio standby function



- Pre-programmable radio to tape recording
- LCD display
- Signal strength and battery condition indicator
- Sleep timer
- Safety lock switches
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## R817 (SSP £189.99)

### Multi-band Digital Preset Stereo World Radio

Offers all the outstanding features of the RC818, minus the cassette section.

An unequalled combination of value, quality, technology and choice....in short....

# ROBERTS

## R808 (SSP £119.99)

### Multi-band Digital Preset Stereo World Radio

The R808 has all the advanced features of the R817 with the exception of BFO (Beat Frequency Oscillator) but in a more compact case specially designed for the regular traveller.

## R621 (SSP £69.99)

### 10-Band Compact Stereo World Radio (FM/MW/SW1-8)

All the functions of a much larger model are combined in this compact radio with clock/alarm. Easy SW bandspread tuning with LCD tuning/stereo indicator and FM stereo on ear or headphones. The clock/alarm shows dual time on a backlit display with up to 60 min sleep timer and snooze with wake to radio or buzzer. Comes complete with soft carrying pouch and stereo earpieces.



## R101 (SSP £59.99)

### 9-Band Miniature World Radio (FM/MW/SW1-7)

Exceptional sound quality and facilities in a truly pocket-sized, ultra-light receiver. Easy to tune with featherlight touch-band switches. LED tuning/stereo and waveband indicators. Wide SW bandspread tuning with stereo FM via ear or headphones. Complete with soft carrying pouch and stereo earpieces.



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# Grundig Yacht Boy 400



*Good all-round compromise is what you get with the recent mid-range introduction from the Grundig stable - the Yacht Boy 400. Kevin Nice has been taking a look at this portable short wave radio.*

**B**uild quality exudes from the Yacht Boy 400. It is a pleasant radio to use, look at or just hold. All very well, but what does it offer?

In exchange for your £120 you get 650 grams of portable radio with which to listen to the world. I found that after only a short period with the Yacht Boy 400 I didn't look forward to giving it back.

Unpacking the radio reveals a soft carrying

pouch, a fishing line style external antenna, the radio itself and two substantial volumes, a user guide covering both German and English language and a short wave listening guide. The user guide is not quite written in the Queens English but it's easy enough to understand.

### Buttons Knobs and Sockets

Like many of its contemporaries the Yacht

Boy mouldings are satin anthracite in colour with control legends screen printed in a contrasting colour. Tuning and power controls are featured on the front right of the set, along with the display. The speaker grill takes up the remainder of the front. Rotary controls are used for fine tuning and volume located together with the two position tone control and b.f.o. slide switch on the right hand edge. The left side accommodates sockets for the external antenna, stereo headphones and external 9V input. A dual function slide switch provides either stereo/mono selection for f.m. use or wide/narrow band width for a.m. bands. a two stage attenuator (DX and Local) switch is also provided.

The remaining controls are on the top, here you will find a large snooze button and a smaller button for the l.c.d. backlight. At the other end tidily folding away along the full length of the set is the seven stage 900mm long telescopic antenna, which can be folded and rotated.

Coverage is from 500kHz to 30MHz with the addition of the v.h.f. f.m. broadcast band at 84-108MHz, in stereo through headphones.



# Portable Radio

## Clock

Two time zones are available, with the one displayed being shown in the top centre of the display with either TIME I or TIME II. In the off state time is displayed on the right-hand side of the l.c.d., whilst when in use this area is used to display the frequency, the time moving to the top left of the display. The radio can be set to automatically switch on or sound an alarm by use of the auto on feature. This is very useful if you want to catch an elusive bit of DX at an early hour of the morning or simply wish to wake up to go work. Other alarm clock features provided are sleep and snooze.

## Display

Frequency, time, band, step size and signal strength are shown on the clear, easy-to-read, l.c.d. display. One grumble here is the back light. This is operated by depressing a large button on the top edge of the radio, but does not create much of a shadow, hence the display is not easy to read in the dark. The light remains on for about 8 seconds but can be cancelled

sooner if the backlight button is pressed again, good for battery life.

## Listening to Stations

Like many other radios in this category, the YB400 features electronic tuning with direct frequency entry and variable step, incremental, manual and search tuning.

You can either select the 'metre' band that you want listen to or enter the frequency directly. If you choose the former then the receiver sets the frequency to the lowest edge of the band, displaying the frequency and the metre band in smaller digits below. Entering the

frequency directly results in the frequency displayed as above and the wave band (if a valid band) displayed below.

On the short wave bands there is a b.f.o. to resolve c.w. and s.s.b. A rotary fine tuning control is supplied for use in this mode, as the minimum tuning step available from the keyboard is 1kHz. A nice touch is that

there is a central 'home' point in the range of the fine tune roller that is located on the upper right edge of the set, ensuring that the digital display is correct.

Various tuning steps of 1, 5 and 9kHz are selectable in conjunction with the a.m. bands. For long and medium wave the choice is 1 or 9kHz for short wave the options are 1 and 5kHz.

It was possible to resolve many amateur stations with a wide a range of strengths. In fact there weren't any stations audible on other fixed station equipment with a long wire antenna, that couldn't be also heard on the Yacht Boy 400, albeit with a much reduced signal to noise ratio.

The 77mm internal speaker produces excellent audio on the f.m. band with the option of stereo via headphones.

Favourite frequencies can be stored in memory there are 40 stores available which can be used for any of the bands.



## SPECIFICATIONS

Frequency Coverage:	l.w.	144 to 353kHz
	m.w.	520 to 1710kHz
	s.w.	1.711 to 30MHz
	v.h.f. f.m.	87.5 to 108MHz
IFs:	1st:	55.85MHz
	2nd:	10.7MHz
Connectors:	External 9V d.c. power supply	
	Stereo headphones (3.5mm jack)	
	External antenna (compact antenna supplied)	
Power source:	Six AA size cells	
	9V d.c. external adapter (optional)	
Size:	200 x 120 x 38mm	
Weight:	650g including batteries	

## Good Solution

In the end this is a receiver that can easily slipped into a breifcase or overnight bag and therefore can give you the ability to listen to the h.f. spectrum when away from home. If you this is your desire then this radio is definity a good solution.

Thanks go to:  
**Grundig International,**  
**Mill Road,**  
**Rugby,**  
**Warwickshire CV21 1PR**  
 for the loan of the review model.





# The New Concept

## AR8000UK receiver

By the time this advert is published we hope to see the first shipments of The New Concept AR8000UK wide band world band hand held receiver. The AR8000 UK is the brain child of AOR's long term ambition to produce a new breed of radio receiver which combines full computer compatibility with advanced wide-band radio receiver technology. With the introduction of the new AR8000 UK, AOR have broken the mould of conventional radio receiver design.

At first glance the AR8000UK in it's static form may look no different to any modern hand-held scanning receiver, but the similarity ends there... just as soon as the receiver is switched on!! Initially you are greeted with the opening welcome message on the AR8000 UK multi-function liquid crystal display "WELCOME TO THE WORLD OF AR8000 RECEIVER", in a similar way to a sign on message displayed by your personal computer.

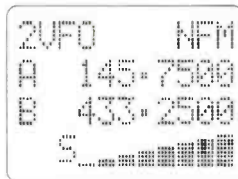
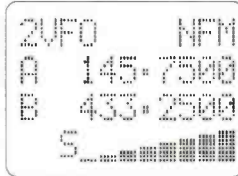
The AR8000UK is a highly sensitive hand-held receiver boasting the widest frequency coverage of 500kHz to 1900MHz without gaps in the range (actual acceptable frequency input from 100kHz). Step size is programmable in multiples of 50Hz for smooth tuning. The all-mode reception provides AM, USB, LSB, CW, NFM and WFM. As you might expect from a radio receiver of this calibre, an independent 2.4kHz 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 1.5kHz). A custom manufactured ferrite bar aerial is neatly internally installed at the top of the receiver's cabinet to enhance receive performance on the lower bands such as Medium Wave.

The LCD is of a new dot matrix format which enables many new facilities to be used, many of which have never been seen before especially on a hand-held design. Two VFO frequencies may be displayed on the LCD simultaneously, one providing a stand-by frequency available for quick transfer (similar to commercial aviation built-in radio transceivers). When frequencies are entered into memory, ALPHANUMERIC comments may be stored along with frequency, mode, step size, step offset & attenuator status simplifying the job of recalling and identifying memory channels. The LCD provides four lines of display so that additional facilities may be provided and displayed at the same time, these include a signal meter bar graph indication and a band-scope showing band occupancy.

The AR8000UK is equipped with almost every conceivable operating feature thanks to a massive new microprocessor. A total of 1000 memory channels are provided which are divided into 20 banks, each having 50 channels. The AR8000UK will search and scan at a maximum speed of approximately 30 increments per second.

You may even enter "special" frequencies into memory banks where they may only be recalled by entering a user definable PASSWORD... this will stop prying eyes.

The AR8000 UK is truly a button pushers delight but operation need not be difficult. As well as a comprehensively illustrated operating manual, the AR8000UK has two operating modes: NEWUSER and EXPERT. As already mentioned, the multi-function LCD provides many new facilities but the receiver has a few more tricks up it's sleeve. Not only can you connect the AR8000 UK to an external computer for remote control (optional small interface required), you may connect two AR8000 UK receivers back-to-back so that data may be copied from one to another.



**New AR8000UK**  
Please phone or send a SAE for full details

# WORLD RADIO CENTRE



Adam Bede High Tech Centre, Derby Road, Wirksworth, Derby, DE4 4BG, ENGLAND

Following on from the success of AOR UK LTD which is now in it's fourth year, a retail facility and display has been established to help cater for the needs of listeners whether they be interested in shortwave, VHF or UHF. The retail facility will operate under the title "World Radio Centre" and customers are invited to visit, phone or fax to discuss specific requirements and to view the latest in receiving equipment. Opening times are Mon-Fri 9.30 - 5.00, Sat 10.00 - 4.00.

The World Radio Centre will offer a range of products, of course the AOR range will be on display but other popular brands will be available including ICOM, DRAKE, LOWE and YUPITERU. It will be possible to compare various makes and models side by side away from the hustle and bustle. Trade-in of certain models will be welcome and should quickly generate a good collection of tested, clean used equipment (please check suitability / availability before travelling).

Subject to availability we will be offering special packages including end of line and ex-demonstration equipment... please phone for a list or call in to have a chat. For those unable to visit, a fast next day mail order service is available. We accept VISA, ACCESS, MASTER, EURO and DELTA/CONNECT cards.

"World Radio Centre" is a retail division of AOR UK LTD. All equipment is genuine U.K. specification and procured from the official distributors so is fully supported. All specifications taken from manufacturers figures and all trade marks are acknowledged. E&OE.

The current full range of AOR products are available and on display including:

### The New Classic AR3030

General Coverage Receiver 30 kHz ~ 30 MHz using DDS. All mode AM, S, AM, NFM, USB, LSB, CW & FAX. Fitted with the Collins 6 kHz AM mechanical filter as standard, also has Murata 2.4 kHz SSB and 15 kHz NFM filters. TCXO is also fitted as standard. Other options available. £699.00 inc VAT (carriage free)



**AR3000A** Super wide band high performance base / mobile receiver. Frequency coverage is a stunning 100 kHz ~ 2036 MHz without gaps. All mode reception AM, NFM, WFM, USB, LSB & CW. 400 memories and rapid scan of up to 50 increments per second.

The popular **AR2000** hand-held receiver is still available and very much in demand. Frequency coverage is 500 kHz ~ 1300 MHz (reduced sensitivity below 2 MHz). Modes are AM, NFM & WFM. 1000 memory channels with priority, scan, search etc. Supplied with a comprehensive set of accessories as standard.

The **AR1500EX** is the latest in the series and generally offers the features of the AR2000 but in a smaller case with the addition of a BFO for SSB reception. Also supplied with a comprehensive set of accessories as standard.

**YUPITERU** - Among those available will be the **MVT-7100** multimode hand portable receiver 100 kHz ~ 1650 MHz with true carrier re-insertion. **MVT-7000** hand-held receiver with 200 memories. Frequency coverage is 100 kHz ~ 1300 MHz without gaps. **VT-125** civil airband hand held AM receiver 108 ~ 142 MHz with good sensitivity and 30 memory channels. **VT-225** civil / military airband hand held AM/FM receiver 108~142, 149.5~160 & 222~391 MHz.

**ICOM** - On display will be the IC-R1 hand held receiver and the IC-R7100 all mode base receiver with other models such as the IC-R72, IC-R9000 and IC-R100 plus accessories available to order.

From the USA will be the **DRAKE R8E** and new SW8 General Coverage receivers and from the U.K. the **LOWE HF150** and **HF225**.

As business further develops so other leading brand names will be added to those already on offer from the World Radio Centre

Please forward a large SAE (36p) for the World Radio Centre short form catalogue and price list. Individual leaflets containing further details are available for most products so please specify which are required.



Tel: 0629 ~ 825926

Fax: 0629 ~ 825927



# In Touch With Home

*It was to keep the expatriates of the British Empire informed about Britain that the BBC first started broadcasting internationally back in 1932. Today, with 130 million listeners each week to the English and 38 other language services, it reaches every part of the globe. Peter Shore investigates what it offers the holiday maker and business traveller.*



**Bush House - home of BBC World Service.**

**A**t 59 minutes and 32 seconds past every hour, a continuity announcer on the 7th floor of Bush House, the central London home of the BBC's World Service, opens a microphone fader and speaks those three immortal words: "This is London." Then the familiar tune of *Lilliburlero* starts to play from a digital store, followed by the Greenwich Time Signal. "Fifteen hours, Greenwich Mean Time," says the announcer. Then, in another studio next to the newsroom one of the twenty or so newsreaders starts one of the 200 or so news bulletins that are produced from Bush House every day.

In countries across the world, millions of people are listening on short wave, by satellite, or on local f.m. stations to the news from London. And it is a comforting thought that however far you are from

home, it is possible to keep in touch with what is going on back home, and even sometimes, just down the street. Peace-keeping forces in Bosnia, aid workers in Rwanda, journalists in the Middle East: all rely on signals from London to keep them in up-to-date with developments around the world. For business people and vacationers, too, the World Service of the BBC offers an unrivalled link with home.

## **Extensive Network**

Whether you are travelling to the Dordogne in France, going on safari in East Africa, island hopping in the Caribbean, or taking the Trans-Siberian railway, if you pack a short wave radio in your luggage you can tune in to London, thanks to the BBC's extensive network of short wave transmitting stations that span the globe. Three

stations in Britain - Rampisham in Dorset, Skelton in Cumbria and Woofferton in Shropshire - send BBC programmes up towards the ionosphere to reach listeners throughout continental Europe, Scandinavia, parts of North Africa and the eastern parts of North America.

In addition, relay stations on Cyprus, in Oman, on Ascension Island, Antigua, Hong Kong, Singapore and the Seychelles ensure that World Service reaches listeners in more distant parts of the planet. And recently agreed exchanges with broadcasters like NHK Radio Japan, Radio Australia, Radio New Zealand and Radio Korea, and more long standing ones with the Voice of America and Radio Canada International, give World Service access to transmitters that improve reception in even more remote places. In fact, the BBC World Service is the

radio station that gets to parts others fail to reach!

## **Soothing Voices**

For the international business traveller, hopping on and off planes, crossing countless confusing time zones, and arriving at destinations completely disorientated, the soothing voices of the Bush House continuity announcers prove an absolute godsend. Combine that with up-to-the-minute news that might have a direct bearing on the business he or she is about to conduct, as well as regular programmes on financial markets, and the World Service business listener is probably one step ahead of the commercial game of nerves and wheeling and dealing.

Stepping off a jumbo jet in Manila with a couple of hours before a meeting to clinch a major deal worth millions of pounds, the



British businessman could do worse than to tune in to *World Business Report* at 0905UTC, particularly if he discovers that the Phillipine peso has crashed against the US dollar since he boarded the plane in London! *World Business Report* airs three times a day, Monday to Friday, at 0905, 1705 and 2205, and at 0905UTC on Saturday. In addition, financial news is carried at around 25 minutes past the hour in Newshour, on the air at 0500, 1300 and 2100UTC. A review of the previous week's events in business and finance can be heard in *World Business Review* on Sunday at 0905, 1705 and 2205UTC.

## Business News

Holiday makers sunning themselves on a beach might also benefit from keeping an ear to business news from back home. Has the forklift truck factory you work for suddenly gone into receivership? If it has, perhaps it would be worthwhile planning to avoid Britain a little longer - or maybe for good!

But seriously, the World Service offers more than news and business reports. There is sport, with Saturday afternoon's *Sportsworld* between 1401 and 1700 GMT including coverage of all the major British sporting events from the 2000 Guineas at Newmarket to Rugby League and Premier League football. And of course there are the classified results so you can check whether you've become a multimillionaire. Five times every day there is a fifteen minute *Sports Roundup* with news from around the world, from Golf in Augusta to speed skating in The Netherlands, not to mention the cricket Test Series in Britain and overseas.

Ardent listeners to Alistair Cooke's *Letter from America* can stay in touch as it is heard at 1015 on Saturday, with repeats on Sunday at 0615, 1645 and 2230. And each month



**Paddy Feeny presents *Sportsworld* on BBC World Service.**

there is a compilation of Radio 4's *Weekending in Two Cheers For June* (or whatever the month happens to be). Tune in at 1530 on the last Wednesday of the month, or at 1030 and 2330 on the last Thursday.

## Jazz Fans

Even Dave Lee Travis, deposed from Radio 1, continues on the World Service. His *A Jolly Good Show*, with requests and pop music, airs for 45 minutes on Saturday at 0815, and is repeated on Tuesday at 0015 and 1515. For jazz fans there is *Jazz for the Asking* at 2215 on Saturday and again at 0630 on Sunday and 1030 on Wednesday. *The John Dunn Show* - without the mystery voice - goes out at 0030, 1130 and 1830 on Sundays.

## Classical Music

Enthusiasts in the field of classical music can tune in to *Music Review* at 0015, 0815 and 1515 on Friday, and *Concert Hall* at 1515 on Sunday, 0815 on Tuesday and 0015 on Wednesday features recordings by the top performers across the whole classical spectrum from opera to symphonic works to chamber music. As you gaze up to the stars in the balmy evening of

your beach holiday and see the sky from a new geographic location, you can remember to tune in to *Seeing Stars* on the first Sunday of the month at 0430, 0915 and 2215 when Heather Couper and Nigel Henbest provide a guide to the night sky in both

hemispheres. And if you can't bear to leave the world of international radio and the media behind, there is *Waveguide* each Thursday at 0130 repeated on Saturday at 0715 and 1030 GMT.

## Something For Everyone

So there's just about something for everyone - except when it comes to *Archers* addicts. You, I am afraid, must get the neighbour to record the Sunday omnibus and catch up with the Ambridge gossip when you get home. Tuning in to London should

# Tuning In

Time (UTC)	Frequency (MHz)
Spain, Portugal, Southern France	
0900-1615	17.705
0800-2215	15.070
0700-2215	12.095
0400-2215	9.410
2000-2215	7.325
0400-0730, 1900-2215	6.195
Greece	
0800-1500	17.640
0600-2030	15.070
0400-0730, 1500-2215	12.095
0300-0500, 1700-2215	9.410
0300-0630, 1800-2200	6.180
0300-0730, 0900-2315	1.323 (Greek Islands)
Southern Africa	
0800-1700	21.660
1400-1600	21.470
0500-1400	17.885
1400-2030	17.880
0600-1615	11.940
0300-2030	6.190
0300-0600, 1615-2200	3.255
0000-0700, 1300-2400	1.197 (from Lesotho)
East Africa	
0500-1400	17.885
0500-0700, 1300-1400, 1615-1900	15.420
1615-1745, 1830-2030	9.630
Eastern USA and Canada	
1400-1615	17.840
1500-1715	15.260
1200-1400	15.220
2200-0330	9.915
1100-1715	9.515
0000-0330	7.325
2300-0330	6.175
0000-0330	5.975
Australia and the Pacific	
0500-1030	17.830
2100-0100, 0600-0915	11.955
1030-1515	9.740
0500-0815	9.640

prove easy just about wherever you are. I have listed key frequencies for popular holiday destinations. More comprehensive listings are available direct from the BBC World Service in the free programme guides, or in the monthly magazine *BBC Worldwide*. That is available on news stands at airports in many parts of the world (including Gatwick and Heathrow, for example), or on subscription. Write to *BBC Worldwide*, BBC World Service, Bush House, London WC2B 4PH.

0702  
206835

# Waters & Stanton Electronics

## NRD-535 Short Wave Receiver

£1549 Carriage £6 *Great Value*



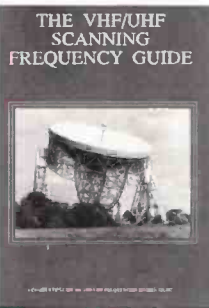
This receiver offers exceptional performance and is probably the ultimate sub-£2000 receiver. We like it a lot and have no hesitation in recommending it to the serious enthusiast. Features 100kHz - 30MHz, 200 memories, superb dynamic range, Variable Bandwidth 2.4 kHz - 500Hz, Notch Filter, RS-232 option, 1Hz step tuning, 1F tuning, Noise Blanker, SSB CW AM FM, Squelch control, built-in 230V AC supply. Send for colour brochure.

## VHF/UHF Scanning Frequency Guide

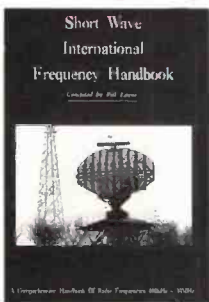
- \* 26MHz - 12GHz
- \* Full Frequency Info.
- \* Duplex Info
- \* Masses of Data
- \* 160 A4 pages!

£9.95

Carriage £2



## Short Wave International Frequency Directory



"Best Value & Accurate!"

- \* 500kHz - 30MHz
- \* SSB/CW/DATA/FAX
- \* Military & Civil
- \* Aviation & Marine
- \* Call signs & times
- \* Duplex and Channel Info.
- \* Editorial & Review
- \* Station details
- \* 192 A4 pages!

£9.95

Carriage £2

## MFJ-1024 HF Active Aerial

100kHz - 30MHz inc. 50ft coax and external whip. Ideal for small gardens. Requires 12V DC. £149.95



## Datong FL-3 AF Filter



- \* Auto Notch
- \* LP & HP Filters
- \* Bandwidth 100 - 1750Hz
- \* 2 Watts Output
- \* 12V Operation

£149.95

Carriage Free

## ERA Microreader MK-II £189.95

CW - RTTY - Amtor - CW Tutor Carr. £4.50

Ever wondered what all those strange sounds were on the short wave bands? Now you can read them on the built-in LCD panel. 12V operation with 232 output



The complete range from stock!

- R5 ..... 5 band no radials 20 - 10m ..... £299.95
- R7 ..... 7 band no radials 40 - 10m ..... £399.95
- AV-3 .... 3 band vertical 20 - 10m ..... £99.95
- AV-5 .... 5 band vertical 80 - 10m 2kw ..... £179.95
- AP8A .... 8 band vertical 80 - 10m 2kW ..... £239.95
- A3S ..... 3 band 3 element beam 2kW ..... £395.95
- A4S ..... 3 band 4 element beam 2kW ..... £495.95
- ARX-2 .. 2m Ringo Ranger 6dB vertical ..... £49.95

Free Carriage if ordered before 30th June



## DJ-X1D Scanner

200kHz - 1300MHz  
AM - NFM - WFM

"A real gem of a receiver - fits easily into the pocket!"

- \* No gaps
- \* 100 Memories
- \* Battery Saver
- \* Ni-cads & Charger
- \* Fully programmable
- \* Helical whip
- \* LCD readout
- \* Rotary tuning knob

£349

£299

Offer ends 30th June

Maplin £50 cash back. Pay £349 at any store between 1/3 and 30/4 and send receipt to us.



## Optoelectronics 3300

£169.95 Carriage £4.50

LED's Are Out!

No problem in daylight  
Lower battery consumption

1MHz - 2.8GHz

Handheld counter with new LCD readout that can sniff a handheld transceiver frequency up to 150ft away! Just switch on and read the frequency. 6 gate measurement periods, ultra accurate, ni-cad, charger and aerial included, display hold feature, ideal for scanner owners, service engineers etc.



## Low HF-150 Receiver

Short Wave 30kHz - 30MHz AM - SSB - CW

£389

Carriage Free

"The best of British!"

inc. AC supply & Internal Battery Hod

Great Value



## Yupiteru With UK warranty cards

Plus the proper chargers!

## MVT-7100

SSB-NFM-WFM-AM  
530kHz - 1650MHz

12 Month Warranty

£389.95 Carriage £4.50

Factory direct supplies from Japan mean you get the latest model from us with our own service engineers to give you added reassurance. We introduced Yupiteru to the UK as the first appointed distributor. Nothing much has changed apart from our prices!



Latest Versions

## MVT-7000

NFM-WFM-AM  
100kHz - 1300MHz

12 Month Warranty

£329.95 Carriage £4.50

A great value receiver that covers the entire spectrum of HF, VHF and UHF. Its reliability and sensitivity are outstanding and at this special offer price you have an absolute bargain! We don't know of a more sensitive receiver. Full 10 days approval.



Great Value

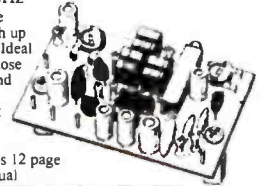
## Ramsey Kits - USA

### SA-7 RF Pre-Amp £19.95

Carriage £1

100kHz - 1.3GHz

Superb low noise performance with up to 20dB of gain. Ideal for perking up those older scanners and short wave receivers. Uses 2 stage feedback design for ultra stability. Includes 12 page educational manual



### AA-7 Active Aerial £29.95

1.6MHz - 400MHz Carriage £2

A set-top active aerial kit that features dual amplifiers to meet the differing needs of HF & V/UHF. You get a low noise MOSFET and a microwave bipolar device. Includes rf gain control, selector switch, and telescopic antenna. Needs 9V battery. Matching case CAA £14.95



### AT-1000

SWL ATU

£89.95

Carriage £4.50

The ultimate atu for all aerial systems 0.5 - 30MHz

- \* Long Wire
- \* Balanced Feed
- \* Coax feed



### MFJ-16010

£49.95

Carriage £4.50

Random Wire Tuner

An amazing little atu that matches any length of wire, perfectly to your receiver or transceiver. 1.8 - 30MHz. Peter Waters, G3OJV regularly uses one /P running QRP or 100 Watts!



## MFJ-959B £109.95 Carr. £4.50

HF Receiver Pre-selector



Two for the price of one! You get a pre-selector to hot up your receiver plus an atu! Covers 1.6 - 30MHz. Requires 9 - 15V DC

## Wideband Scanning Aerials - The Best!

D-707 ..... £129.95

D-505 ..... £99.95

Great Value

HX-7000 ..... £20.95

HX-9000 ..... £32.95

D-707 1MHz - 1300MHz 96cm long fibre glass SO-239 plus junction box. Needs 12V 150mA

D-505 Mobile whip 1MHz - 1300MHz 75cm SO-239 inc cigar lead junction box.

HX-7000 100 - 950MHz whip 19cm BNC

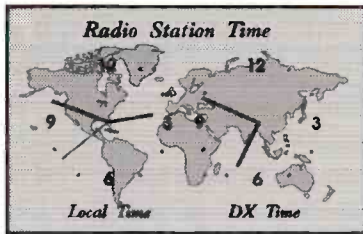
HX-9000 100 - 950MHz whip 47cm BNC



# UK's Centre For Listeners

**0702  
206835**

**DT-1 Dual - Time Quartz  
Station Clock** **£24.95**  
Carr. £2.50



This smart dual-time clock gives you local and DX time. Measures 10" x 8" with brushed alloy "world-map" panel mounted in wood hanging frame. Requires 2 AA batteries.

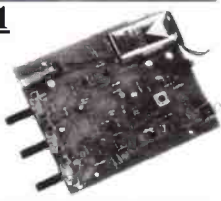
**NEW MFJ Short Wave  
Regenerative Receiver Kit**



**AM/SSB/CW/RTTY Super Sensitive**  
As reviewed in QST. Amazing value and sensitivity. Just 10ft of wire will bring in the DX and you can build it yourself. **£71.95** Carr. £4.50

**Ramsey AR-1  
Airband  
Receiver Kit**

**£29.95** Carr. £2  
As reviewed in Maplin Magazine. You get everything you need to build this receiver. Features squelch and loudspeaker output plus AGC and superhet circuit. All you need to add is a PP3 battery. Covers 108 - 136MHz AM



**Yupiteru VT-125  
VHF Airband Scanner**  
**£189.95** Carr. £4.50



Probably the best dedicated scanner there is for VHF airband monitoring. Covers 108-142MHz AM with 30 memories and steps of 25, 50, 100, kHz. Ultra sensitive, we thoroughly recommend this one!

**Hornchurch Branch**  
12, North Street, Tel 0708 444765  
Close to M25 Junction 29

Open Mon. - Sat. 9am - 5.30pm

Second Hand Stock | Latest Gear & Accessories

**Sangean ATS-803A  
Short Wave Receiver** **£128.95**  
Carriage: £6

150kHz - 30MHz SSB, CW, AM. Runs from 6 x AA cells and gives digital frequency display to 1kHz. 10 memories, built-in clock and alarm make this ideal for those who want to keep in touch with the world



**New! 24 Hour Clock**



**£24.95** Carr. £2.00  
This new clock from MFJ gives you a true 24-hour readout with sweep second hand. Powered from an internal AA cell (not supplied) and measuring 26cm, it will grace the wall of any radio shack. **Order: MFJ-105B**

**W9GR Digital Audio Filter**



**299.95**  
Carr. £4.50

**Reduces: \* Static \* Power Line Noise  
\* Ignition Pulses \* TV Time Base \* Computer Hash**  
**The top seller in USA. Need we say more!**  
There's a full review in our catalogue.

**MFJ-8400 2m Rx Kit** **£79.95** (£4.50)

Build this 2m FM monitor kit with dual IF's and built-in speaker. Also squelch control, slow motion vernier dial, Packet audio output and SO-239 socket. Runs off PP3 or ext. 12V



**New Items Arriving**

- \* MFJ-DSP filter
- \* 20 Amp variable power supplies. Fully metered £89!
- \* QRP 9 band SSB - CW band transceiver. £T.B.A.
- \* Watkins Johnson HF Receiver £Phone.

**Free! 1994  
New Catalogue**

**Best  
Ever!**

- \* 64 Pages
- \* Hundreds of Items
- \* Photos & Ideas
- \* Discount Vouchers
- \* Fully Indexed
- \* Technical Gen
- \* New Products

**Just send two first-class stamps**



**SONY ICF-SW55**  
~~£279~~ **£239**  
Carriage £6

*Great  
Value*



This top range portable gives you a complete station in a single package. On-board computer lets you store frequency and station name. You direct dial your frequency for high quality SSB or AM reception. Includes mains AC supply etc.



**AOR AFB-125  
Airband Receiver Filter**

Dramatically cleans up spurious responses in any scanning receiver when operated between 118 - 137MHz **£24.50**  
Carr. £2

**Magnetic Longwire Balun**



**MLB £39.95** Carr. £2  
100kHz - 30MHz, lets you feed your long wire receiving antenna with coax cable. Reduces noise and improves matching automatically.

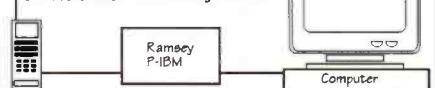
**Yaesu FRG-100 Receiver**



On demonstration. Call in and hear it on a decent aerial. Let us give you a good PX on your old receiver or a cash deal. Phone today.

**Packet on a Budget! P-IBM Kit**

**£59.95!** Carr. £2.00  
Hand-held or Base Station **Free Software!**



This Ramsey kit can be put together in an evening. Self powered from IBM computer RS-232 port. Just connect to scanner or transceiver audio output and watch the data appear on the screen. Also can be used to transmit Packet.

**"On-Glass" Scanning Aerials**

- 30 - 1200MHz Black Finish
  - \* 22" whip
  - \* 17ft Coax
  - \* BNC plug
  - \* Screw-on whip
  - \* High performance
- IGSP**  
**£32.95**  
Carr. £4.50

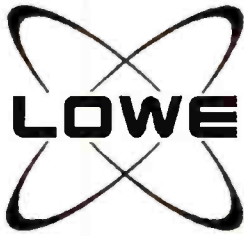
Just the job for scanner owners. Gives superb reception and fits the modern car in seconds.

Shop and Mail Order: 22 Main Road, Hockley, Essex. SS5 4QS. Tel: (0702) 206835/204965 FAX: 205843  
Branch Shop: 12, North Street, Hornchurch, Essex. Tel: (07084) 44765

**VISA**

MAIL ORDER To Hockley - 24 Hour Answerphone and Fax. Open 6 Days 9am - 5.30pm

**ACCESS**



# Lowe Electronics

## AIRBAND & SCANNER SPECIALISTS

**JUST A SMALL SELECTION OF OUR POPULAR SCANNERS, RECEIVERS AND ACCESSORIES  
-ALL THESE AND MORE IN EACH AND EVERY BRANCH**



**MVT7100  
£389.00**



**MVT7000  
£319.00**



**VT225  
£269.00**



**SIGNAL R537S  
£79.95**



**WIN 108  
£139.00**

### JRC NRD535 -

#### The best receiver you can buy for under £2000?

In the course of a day I get asked many questions about shortwave receivers but the most common is "Should I spend more money - what will I get if I do?" I've always believed that the more you pay, the more you should get and in receivers, this doesn't strictly mean you'll hear more stations - a popular misconception! Spending more money will normally get you a receiver designed and manufactured to a much higher standard. In the case of the NRD535, this starts with the fact that it is made by the Japan Radio Company. They've been in business far longer than some of the other household names and as most of their other products (HF transceivers, radars, marine electronics) are used professionally, you can be assured of the pedigree.

A more expensive receiver can normally be upgraded to suit the needs of listeners who may have very different needs. For example, the IF filters fitted are excellent giving good selectivity that will probably suit most people but optional SSB and CW filters can be fitted to tailor the receiver to your particular needs. The CW buff may fit the 500 or 300kHz filter and the datacoms purist may want the 1.8 or 1kHz SSB filter. Personally, I'd rather fit the CFL243W Bandwidth Control Unit as it gives me a continuously variable IF bandwidth right down to 500kHz - superb for the wide range of listening that I do, coping with weak SSB signals, both data and voice, suffering badly from strong stations on adjacent channels.

In its basic form, it is an excellent receiver which will more than please most listeners. However, if the type of listening you do changes or perhaps if you become more experienced, the fact that you can upgrade without having to trade in will protect your investment. To help protect your investment, we are now offering a full two-year warranty on JRC receivers purchased from ourselves.

**NRD535.....£1695.00**

PS We are aware of a quantity of these in circulation with incorrect mains transformers for the UK market, and with Japanese manuals.





# D-DAY COMMUNICATIONS

*With the 50th anniversary of the D-Day Landings in Normandy, Ron Ham looks back at the almost impossible demands placed upon valved wireless communications equipment in wartime.*

**E**arly on June 6th 1944, thousands of Allied soldiers and their equipment were landed on the beaches at Normandy to begin the mammoth task of freeing Europe from German occupation. This operation was code named 'Overlord' and the date was called D-Day or Deliverance-Day. Ships and planes from many nations supported the invasion forces by shelling and bombing inland targets, landing armour, artillery and general military supplies as well as dropping airborne troops and delivering equipment to the local resistance networks. Obviously good communications between all concerned was essential for the successful outcome of the operation.

When all this happened there were no transistors, microchips or satellite

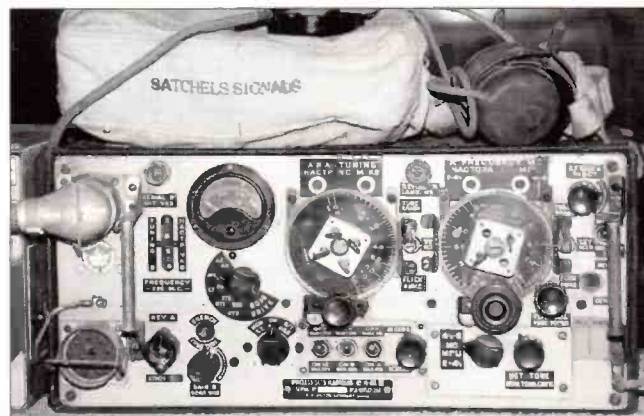


Fig. 1: 19 set.



Fig. 2: 19 set p.s.u.

communications, therefore, all the wide variety of wireless sets used throughout the campaign were based on the fragile and current-hungry valves and all the hefty batteries, leads and connectors associated with them.

### Ships And Planes

It's fair to say that the wireless equipment aboard ship, in the air and at the base stations in the UK had adequate power supplies and maintenance arrangements, so, with this in mind, let's concentrate on those sets that had to be hauled about by man and vehicle and used on the move and often under enemy fire.

### Armoured Vehicles

So much had to be thought about when wireless went to war, especially in armoured cars and tanks which were generally fitted with the '19' set, (WS19), Fig. 1. The model generally used for the Normandy landings was the 'Canadian' MK III. These were mainly built in North America and, because they were also supplied to the Soviet Army, their front panels were engraved in English and Russian.

The combined rotary transformer and vibrator power unit, Fig. 2, is on the left of the main set, Fig. 1 and the

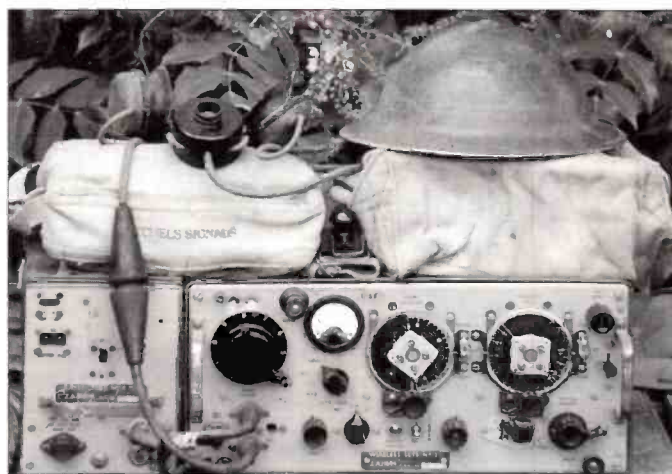


Fig. 3: 22 set.

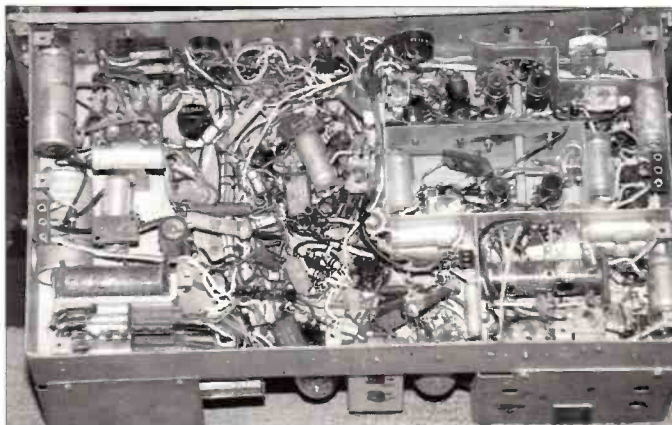


Fig. 4: Underside of the 22 set.

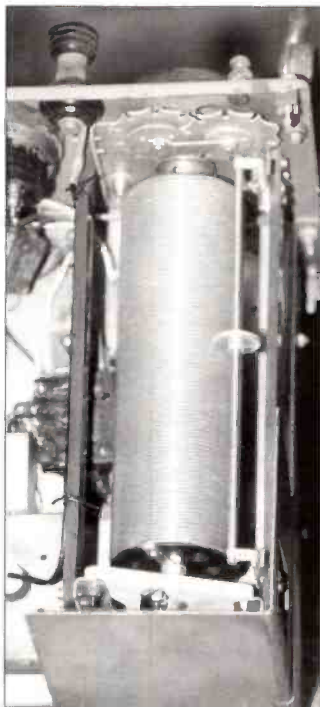


Fig. 5:  
22 set  
roller  
coaster..

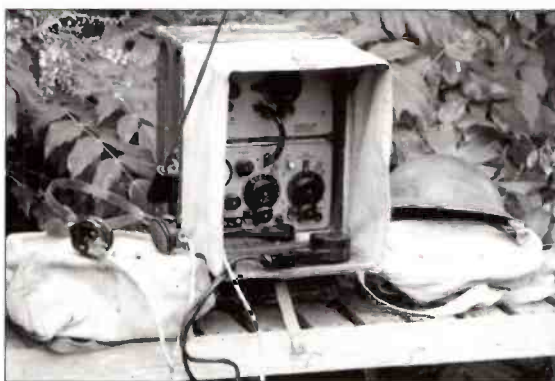


Fig. 6:  
WS 18.



Fig. 7: Side of WS 18  
showing antenna rods.

vehicle's rod antenna matching unit, a variometer, is housed above it. The vehicle's engine had to be suppressed to stop electrical noise blotting out reception on both the 'A' and 'B' sections of the '19' set. The 'A' set, tuned by the two large dials on the right, covered 2-8MHz and the v.h.f. 'B' set, adjusted by the thumb wheel on the left of the meter, worked around 235MHz. The latter had a short range and was used like a telephone between tanks in action.

The power unit for the MK III, (Fig. 2) had a separate 550V generator for the transmitter, which was started by the press-to-talk switch on the microphone. Apart from enemy fire, engine roar and the tank's own gunfire noise was a problem for the crew so, in addition to padded headphones (top right, Fig. 1) an intercom amplifier was built into the set.

### Airborne

It was no effort for armoured cars and tanks to carry weighty wireless equipment, but when a powerful set was wanted in advanced positions and had to be carried by men along with other equipment, or dropped from the air in a parachute container, the lighter '22' set (WS 22) was selected. Fig. 3 shows WS 22 with its vibrator power supply unit (left) and accessories. The Morse key, between the satchels, can be strapped to the operator's upper leg for use in the field with the '22' set or inside a tank with the '19' set. The under chassis wiring and components connecting the 12 valves employed in the '22' set can be seen in Fig. 4. Whereas the '19' set has a variometer, (top right Fig. 2) for antenna matching, the '22' set has an internal 'roller coaster', Fig. 5. This is adjusted by the large knob on the left of the main set (Fig. 3). WS 22 was also fitted to Jeeps used by the airborne forces.



Fig. 8: 38 set.

### Infantry

The '18' and '38' sets were the two dry-battery operated transmitter receivers mainly used by the infantry. WS18, Fig. 6, a back-pack set, had a greater range than the '38' and could handle R/T and W/T traffic. The rear casework of the '18' was shaped to fit on one soldier's back, Fig. 7 and the microphone and headset leads (Fig. 6) were long enough for a second man to operate the set while the troops were on the move. A canvas weather protection cover (Fig. 6) was fitted to the front of WS 18 and a number of short copper rods, which plug together to make the antenna, are stored in slots near the angle-adjustable socket, Fig. 7.

WS 38, Fig. 8, is normally carried, in a webbing harness, about chest level on the operator with the rod antenna protruding over his right shoulder. The antenna socket, (top of set panel, Fig. 8) can be rotated to allow a thinner and shorter rod to be inserted.

Two satchels are hung around his neck and a pair of antenna rods are carried in a 'rifle like' sling from the shoulder. The '38' top panel has just two controls, a combined on/off and send/receive switch and a large tuning knob (bottom & centre in Fig. 8, respectively). Both the

transmitter and receiver can be tuned, between 6 and 9MHz, on that one centre knob for ease of operation.

Some infantry units were issued with the Canadian '58' set, Fig. 9, which used a range of relatively low consumption miniature glass valves. The 58's frequency range of 6 to 9MHz, tuned by the two large dials, is compatible with the other sets in use. The Canadian military stamp is visible in the lower centre of the lid. A mechanical arrangement for operating the send/receive switch, (bottom centre of set Fig. 9) in action, when the case is closed is prominent in the centre and on the left of the lid. A vibrator power unit, driven by two rechargeable 'wet' accumulators was carried in a back-pack and a lead from this pack plugged into the switch box on the left of the set.

### Signals Satchels

Component failure with new equipment was unlikely, but sets could be damaged in battle

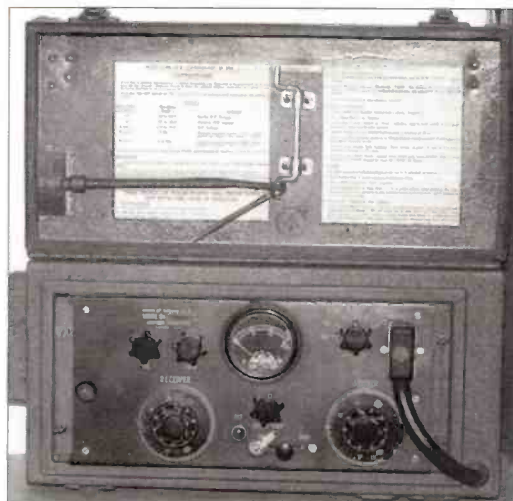


Fig. 9: Canadian WS 58.





Fig. 10: Left to right, WS 22, WS 18, WS 38 and WS 58.

by enemy fire or by mechanical shock and vibration. Obviously, glass items like valves, fuses and pilot lamps were the most vulnerable, so, such spares were supplied, with basic fitting instructions, in the signals satchels dedicated to each type of set. Replacement vibrators were often packed inside the casing. For instance, the power pack for the WS 19, Fig. 2, has a spare vibrator and rectifying valve fitted in unwired sockets on the chassis. The spare vibrator for the WS 58 is packed, with a set of spare valves and fuses, in the lid of the back-pack power unit. The satchels for WS 18, Fig. 6 and WS 38, Fig. 8, contained, a headset, hand or throat microphone, case of spare valves, (left Fig. 8) and replacement dry batteries. The satchel for WS 58 had two pairs of combined headphones and microphone to allow two operators to use the set at the same time.

## Accessories

Much thought was given to ease of use, because wireless operators were often called upon to defend their positions with a firearm and would need their hands free and their heads protected. The headphones for the '38' set (front Fig. 8) were designed to go under a steel helmet and the leads had a good length. The '38' set's battery plug/junction box (centre Fig. 8), has different size 'jack' sockets to prevent the headset and microphones from being accidentally interchanged. Provision was made on most sets for the wireless operator to check the electrical condition of his set and batteries, by taking voltage, current and transmitter output readings on an internal meter.

The meters for this purpose are prominent on the front panels of WS 18 (Fig. 6), '19' (Fig. 1), '22' (Fig. 3) and '58' (Fig. 9). With this information to hand the operator could quickly identify the cause of any problems with his equipment. The correct meter readings for the various sections of WS 58 are listed on the left and right of the lid. (Fig. 9)

Looking from left to right, Wireless Sets '22', '18', '38' and '58', with some of their accessories, are the subject of Fig. 10.

## The Resistance

It was an offence, punishable by death, to own a wireless set that could receive programmes from stations outside of the occupied countries. However, within these countries there were groups of resistance fighters who needed to get information from London, especially as D-Day drew near. Their instructions were often concealed and/or coded within entertainment broadcasts produced by the European service of the BBC. In general the pre-war wireless sets, capable of long distance reception, were confiscated by the occupying forces and replaced with a German 'Volks Empfänger' (people's receiver) that could only receive their propaganda stations. To overcome this a miniature communications receiver known as the MCR 1, Fig. 11, was made in the UK, packed inside a Huntley & Palmers 2lb biscuit tin and dropped by parachute for clandestine use. The package comprised the set, (front, Fig. 11) a power unit (rear, Fig. 11) that could work on most continental mains voltages, four plug-in tuning coils (right Fig. 11) to cover the international

broadcast bands, a pair of 'small' headphones, a special dry-battery and a hank of antenna wire. The 4-pin plug could be withdrawn from the left hand end of the mains power unit and pushed into the battery if no public supply was available. Five miniature glass valves and a host of other components, were used inside the receiver which, like the mains power unit, is about the size of a standard building brick. Some Allied agents and resistance groups, who needed to talk back to England, were issued with the transmitter/ receiver type 'B2' which was concealed in a suitcase.

## German Equipment

On the other side, the Germans, also using valve technology, had their problems with heavy wireless equipment. One of their battery operated, military back-pack, communications receivers, the Torn E.b, Fig. 12, was made by Telefunken in 1941. Its full name is Tornister Empfänger b. The set was supplied with a similar sized battery case which all fitted in a back-pack harness.

## D-Day News At Home

Between the outbreak of war in September 1939 and its end

in July 1945, the British radio industry worked for the war effort and no domestic wireless sets were made. However, the only mass contact that the government had with the people was through the press and the news broadcasts from the BBC. Obviously, during a five year period, the authorities realised that many of the pre-war sets would break-down and might have to be replaced. In view of this a number of 'Civilian Wartime Receivers', Fig. 13, were produced in utility styled cabinets. The battery version in Fig. 13 had medium-waves only with the positions of the 'Home' and 'Forces' programmes marked on the dial.

Everyone at home and, where possible, in occupied Europe and throughout the Commonwealth listened anxiously to the BBC's news bulletins to learn about the progress of the invasion.

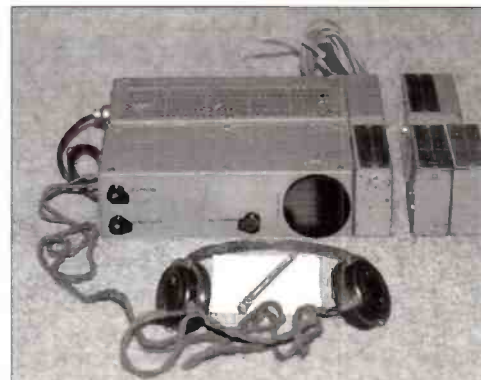


Fig. 11: MCR 1.

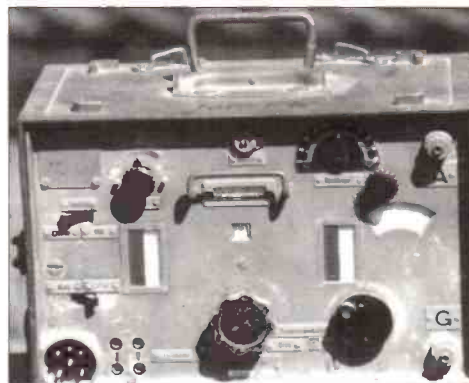


Fig. 12: Thorn E. b.



Fig. 13.

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**73 from Dave G4KQH, Technical Manager.**

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Weight: 1.3kg (less batteries).



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Photo: Courtesy of the Imperial War Museum.

# D-DAY BROADCASTING



**Michael Reynolds, a BBC correspondent reporting from liberated Venice in April 1945, using the portable recording equipment of the day.**

*The first news of the Normandy Landings was brought to listeners at home and abroad by the BBC. The European Service of the BBC, broadcasting to the occupied countries of Europe, played a vital part in ensuring the success of Operation Overlord. Peter Shore looks back.*

It was six years after the establishment of the BBC Empire Service in 1932 that the Corporation started to broadcast in foreign languages to audiences overseas. Italy had begun broadcasting Arabic on short wave as early as 1935 in readiness for its invasion of Ethiopia, and to try to influence parts of the Middle East where Britain had strong interests, such as Egypt and Palestine. The programmes were not without their propaganda element aimed at causing resentment against the British, alleging atrocities carried out by British forces and using phrases such as "Eden is a clown in the hands of the Freemasons" - Anthony Eden was Foreign Secretary at the time - and "The Empire of the British is Decadent".

In 1938, Germany joined the fray with equally strong anti-British sentiments in its broadcasts. The Ministry of Propaganda in Berlin viewed radio as one of its most potent weapons. A Professor of Military Science at Brunswick Technical College, Ewald Banse, had written as early as 1934: "It is essential to attack the enemy nation in its weak spot, to undermine, crush, break down its resistance, and convince it that it is being deceived, misled and brought to destruction by its own government...The originally well-knit fabric of the enemy nation must be gradually disintegrated, broken down, rotted, so that it falls to pieces

like a fungus when one treads on it in a wood."

Whereas Churchill believed war could only be won by deeds, Hitler thought that words could play a vital role. The Zeesen short wave station, just south-east of Berlin, had been expanded by the Nazis shortly after they came to power. Listeners overseas were wooed with competitions, and stations abroad were encouraged to re-broadcast programmes supplied by Berlin - a practice still employed by international broadcasters today. The British needed to respond to this threat on the airwaves. The Foreign Office wanted to start broadcasts in Arabic and planned to construct a medium wave transmitter on Cyprus which would transmit British propaganda into the Middle East.

The BBC was divided: Director General John Reith believed that all overseas broadcasting should be in the hands of the BBC and that only the Corporation had the expertise necessary to make it succeed. Others in the Corporation thought that it should stick to broadcasting only English as it might be forced to transmit propaganda in foreign languages and thereby undermine the whole of the BBC's credibility. Eventually it was agreed that the BBC should start broadcasting in Arabic, but that the government would meet the cost and that it would have the same freedom that the

Home and Empire Services enjoyed. Prestige, Reith argued, depended on broadcasting which was simultaneously truthful and comprehensive. (It is interesting to note that Reith had been offered the position of Director General of the Ministry of Information, a job he declined to accept).

The Arabic Service started on 3rd January 1938. On 27th September, the BBC started French, German and Italian services, although in a completely unplanned way. The government asked the Corporation to broadcast the text of a speech by Neville Chamberlain, the Prime Minister. It was a chaotic start. One man who could read German was summoned from a cocktail party. He had never broadcast before and was handed the speech page by page. When war broke out the following year, the BBC was broadcasting in seven foreign languages as well as English. As the war intensified across the continent, the number of listeners grew dramatically as local news sources came under the control of the invading Axis forces.

## Historic Broadcasts

The European services had started in Broadcasting House but moved to Bush House in 1941. Security at the time meant that its name could not be mentioned, even in Parliament, where it was referred to as 'the Black Hole of Tooting Bec', reflecting perhaps

the extreme overcrowding in the building. A number of historic broadcasts were made during the War. General de Gaulle rallied French soldiers when he addressed the nation at the time of the French surrender in 1940. Studio S5 in Bush House from which de Gaulle broadcast still exists today. The Free French were allowed to make their own programmes, and the leaders of almost every occupied country broadcast back to their homelands via the BBC from Bush House and its Daventry short wave transmitters and by medium wave.

At the start of hostilities, the European Service used three synchronised transmitters on 1149kHz, one at Brookmans Park, one at Moorside Edge and another at Westerglen. In October 1939, the very powerful Droitwich long wave transmitter was converted to 1149kHz and joined the group and a fifth transmitter at Washford on the Bristol Channel was added in November.

A new antenna was developed at Start Point in Devon that prevented enemy aircraft from using the station as a navigational beacon. A similar antenna was installed at Droitwich which from February 1940 became the only transmitter on 1149kHz, the others having moved to 804kHz. By the end of 1940, with Start Point operating on a different frequency, the European Service had three separate frequencies, allowing



# Scanners & Receivers

## AOR 8000UK

FIRSTLY, let me apologise for my rather flippant remarks made last month. AOR always lead with technology in scanner design and every time details are 'leaked' to the press, the phone doesn't stop ringing for months. A detailed specification sheet is now available for this truly amazing item and is available to those of you who call in or phone. Stocks will be limited but I am assured of a limited quantity from June onwards. The price? I'm told around the region of £440. A deposit of only £50 will secure your 8000UK and payments in the region of £33 a month are given as a reasonably accurate estimate.



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three different languages to be broadcast simultaneously.

A new high-power long and medium wave station was developed at Ottringham in Yorkshire designed to provide reception throughout the day in northern Germany and even as far as Berlin during the night. Four 200kW Marconi transmitters were installed which could operate on long and medium wave. Flexibility was the keyword for the Ottringham station: the transmitters could operate either singly, in groups of two, three or four. With all four 200kW transmitters operating as a single 800kW unit, it was the most powerful transmitting station of its time.

Meanwhile short wave developments continued. At Start Point, a medium wave transmitter was converted to short wave as a standby lest



**BBC war correspondent Stanley Maxted at Arnhem records his despatch on a 'midget' recorder.**

Daventry should be taken out by enemy action. Another m.f. transmitter near Bristol was also converted and simultaneously four more short wave senders were installed at Daventry.

By the end of 1940, BBC engineers had achieved the remarkable feat of almost doubling the number of transmitters that had existed when war broke out. But more facilities were needed to meet the growing needs of the programme output. Approval was received to build three more stations to provide a further 18 short wave transmitters. One site was constructed at Woolfferton in Shropshire, kitted out with six RCA 50kW transmitters. Two other stations were built within about one mile of each other at the Cumberland site of Skelton. This had six STC and six Marconi transmitters. All three new sites were operational by November 1943, when the BBC boasted a total of 43 short wave transmitters in Britain.

## Aspidistra

A further medium wave transmitter was built at Crowborough in Sussex - known as *Aspidistra* - for 'black' propaganda broadcasts

from the Political Warfare Executive. Three transmitters were installed with outputs that could be combined to provide a 500kW signal. The BBC used this when it was not needed for government sponsored 'black' broadcasts.

## Beethoven

Victor de Laveleye, Belgian programme organiser, introduced the Morse signal for V of three dots and a dash - coincidentally the same rhythm as the opening notes of Beethoven's *Fifth Symphony* - which was used in various ways including the opening of programme services. Even today, Vs can be selected on Bush House studio desks from a digital store. The V campaign must be judged a success as the Germans tried hard to take it over, suggesting that V stood

for Viktoria and was the rallying cry of all European peoples against Bolshevism. If you are able to visit the Imperial War Museum's fascinating exhibition *From D-Day to Victory* you will see a postcard bearing the flags of all the Allied countries and a musical

stave with those four notes superimposed over a giant 'V', testimony to the impact of the campaign.

## Reliable Channels

The European services provided succour for the peoples of occupied Europe, and news and inspiration for the minority in Germany opposed to the Nazi war campaign. But importantly the BBC provided a reliable channel for getting messages to the resistance movements, particularly in France. The Special Operations Executive used the French Service to send coded messages to Resistance movements throughout the country. They included details of the safe arrival of documents and agents, warnings of impending operations and instructions to groups of the Maquis. As D-Day approached, advice was broadcast in the French Service on a huge variety of subjects: people living in towns were advised to leave if possible; country dwellers were asked to give shelter to people from towns; people were urged not to obey German instructions, or those from the despised Vichy Militia, to attend at designated places, and other means to

From: Director of European Broadcasts  
Subject: FRENCH MESSAGES FOR SUNDAY, DECEMBER 12th, 1943  
To: Mr. Williams Copy to: Miss Anderson  
1930 and 2115 BST

- (1). ♪ Le DIABLE jongle avec les âmes, nous disons.....
- (2). ♫ Le capitaine jalonne la route, nous disons.....
- (3). > La peinture jaunâtre se fane au soleil, nous disons....
- (4). ♪ La Parodie du kangourou se chante le soir, nous disons...
- (5). ♫ Le mousquetaire joyeux lève son verre, nous disons....
- (6). ♫ Misere, ta kermesse se terminera un jour, nous disons.....
- (7). ♫ La montagne jette son ombre au loin, nous disons....
- (8). ♫ Mandoline tes accords langoureux me font rêver nous disons....

## Coded messages broadcast by the French Service to resistance movements.

avoid mass deportations; about getting to know the state of country roads and forests and thereby aid Allied troops; and about digging trenches as protection against air raids.

The number of the messages personnel from SOE read out increased, too, as preparations for Operation Overlord reached a peak. On the evening of 4th June, a veritable flood of messages was read out. More than seventy messages were broadcast, lasting a full twenty minutes. This was vastly more than was usual, but they contained the full set of instructions for all Resistance groups in France to go into action simultaneously, to an agreed plan. It is doubtful whether Overlord would have been the success it was without the French Service having provided the channel for routing messages to the Resistance.

De Gaulle broadcast to France in the afternoon of 6th June: "The supreme battle has started...It is not just the Battle of France, it is France's own battle...For the sons of France, wherever and whoever they may be, the simple and sacred duty is to fight the enemy by every available means...The instructions given by the French Government and the French military leaders appointed for the purpose must be carried out to the letter." The reports from Pierre Bourdan and Pierre Lefevre in the field and at the microphone in Bush House provided the French population with a means of knowing that liberation was at hand as they breathlessly followed the progress of the Allied

Expeditionary Force through Normandy. Throughout the dark days of the occupation, and despite German attempts to jam broadcasts, the BBC French Service had never failed to tell its listeners that liberation would come. Now it was happening.

## Exciting

The story of the BBC European Service and its role in the Second World War is immensely exciting. It is fifty years since the tide turned in the most costly conflict the world has ever endured. Many of the people involved are now in their 80s and yet can recall with crystal clarity their part in what, to them and millions of others, was a vital operation in providing truth, light, hope and inspiration when it seemed that nothing could relieve the gloom of occupation and oppression.

## Commemorative Events

There are many commemorative events planned to mark this 50th anniversary of D-Day. One will take place on Friday 27th May at the Royal Victoria Country Park at Netley, just south of Southampton. Hampshire Remembers D-Day will mark the build up to Overlord, with 10000 civilian and military veterans expected. The BBC World Service will be taking part, and veteran broadcasters from the English, French and German Services will be there. If you have the opportunity, go to Netley and meet them - and others involved in Operation Overlord itself.



**The scene outside Bush House on 30 June 1944 after a flying bomb had fallen.**



# Propagation

It's well-known that the propagation of radio waves can change many times during the course of a day due to the earth's spin, its restless atmosphere and the condition of the sun. At present and for a few years to come solar activity is expected to be very low, which means that the fewer solar related openings in the h.f. bands are more noticeable. It also means that because these events are isolated we are more likely to be able to relate the cause, like a flare from a large sunspot, to the effect, such as a total blackout of the h.f. bands and perhaps an aurora.

It is not possible for anyone to sit by a radio or television receiver, or watch a solar projection screen throughout the day. However, we do get a reasonable coverage in this column because our dedicated observers, astronomical or radio enthusiasts, do what they can when they can.

## Solar

In February, **Ron Livesey** (Edinburgh), using a 2.5in refractor telescope and a 4.0in projection screen, identified one active area on the sun's disc on most days and two, in separate periods on days 9-11 and 22-24.

At his observatory in Bristol, **Ted Waring** counted 15 sunspots on his projection screen on March 2 and two on the 10th. From Selsey, **Patrick Moore** kindly sent a drawing of a lone sunspot group, **Fig. 1**, that he projected early on the 14th and 16th. He tells me that the sun's disc was clear on the 27th, 29th, 30th and 31st. "Solar Flare?...real drop out today," wrote **Ern Warwick** (Plymouth) on his 28MHz beacon log for March 3, see **Fig. 2**.

## Auroral

The auroral co-ordinator for the British Astronomical Association, Ron Livesey, received reports of visual aurora described by observers as 'glow or patch' during the overnight period on February 2/3, 10/11, 11/12, 14/15; 'quiet arc of band' on 8/9, 9/10, 10/11, 11/12, 14/15 and 24/25; 'rayed arc of band' on 10/11; 'ray bundles or veils' on 4/5 and 21/22; 'active movement,

flaming, flickering or pulsating' on 7/8, 8/9, 9/10, 10/11, 11/12, 12/13, 13/14 and 21/22 and 'coronal structure' on 7/8. Almost all descriptions were seen during the two major events, that I mentioned last month, on 5/6 and 6/7. These reports, from dedicated sky-watchers, reached Ron from Canada, North America and the northern areas of the UK as well as the Met. Offices at Kirkwall, Machrihanish and Sumburgh.

## Magnetic

The various magnetometers, used by **John Fletcher** (Tuffley), **Andy Hollis** (Winsford), **Tony Hopwood** (Upton-On-Severn), **Karl Lewis** (Saltash), Ron Livesey, **David Pettitt** (Carlisle) and **Tom Rackham** (Goostrey), between them recorded magnetic storms on February 4-11, 14 and 21.

## Propagation Beacons

As usual my thanks are due to **Gordon Foote** (Bristol), **Cmdr Henry Hatfield** (Sevenoaks), **Ian McDermid** (Comrie), **Ted Owen** (Maldon), Ted Waring, Ern Warwick and **Ford White** (Portland) for their 28MHz beacon logs for the period February 26 to March 25 from which I prepared the 28MHz

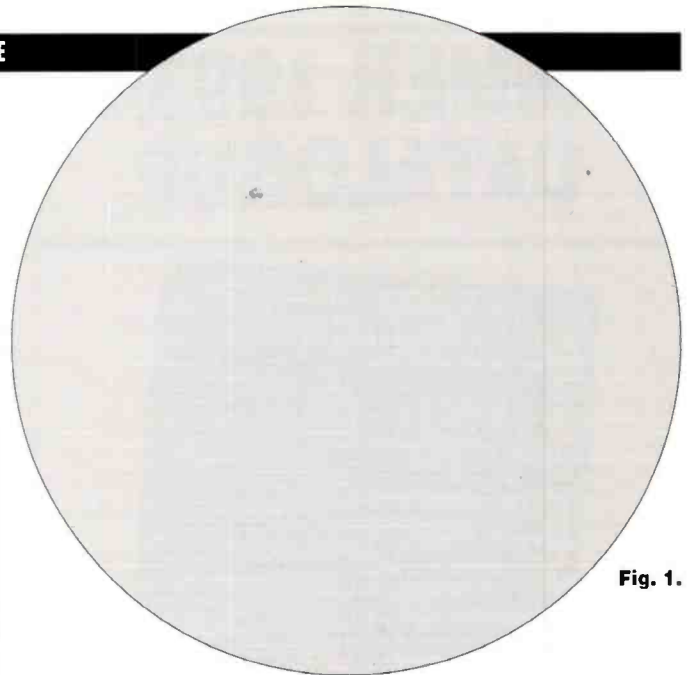


Fig. 1.

beacon chart in **Fig. 2**. Signals from the South African Beacon Z21ANB, returning after and absence, were added to the chart this time by Ted Owen, Ern Warwick and Ford White, on those days indicated in **Fig. 2**.

"I'm afraid its a bit sparse again," said Gordon Foote and added, "The frustrating thing is hearing vague signals where you know a beacon to be, but not quite being able to put 'hand on heart' and include it in the list!"

FM and Horizon Radio. At 1155 on the 12th he heard Leicester Sound FM and the following weekend he caught GLR and BBC Radio Sussex & Surrey. Arthur concluded the month's DX bag on the 26th by listening to a sports programme from Minx FM

The daily changes in atmospheric pressure for the period February 26 to March 25 can be seen in my DXTV column elsewhere in this issue.

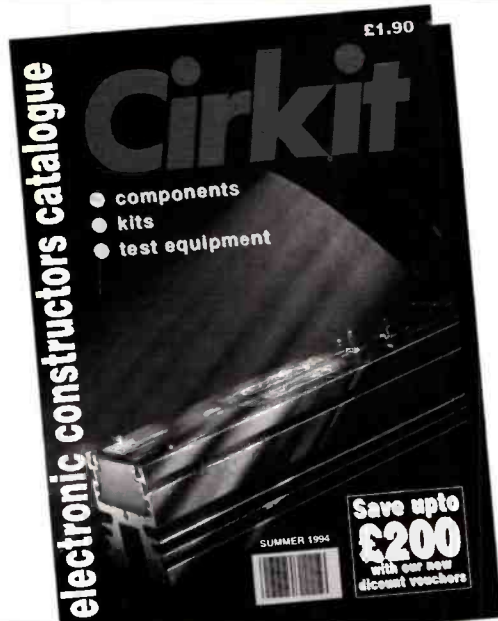
## Band II

"March got off to a bad start with some really foul weather, making DXing difficult," wrote **Arthur Grainger** (Carstairs Junction). However, at 0732 on the 5th he heard Radio Lancashire on 104.65MHz. At 0800, around the same spot, he added Radio Gloucestershire and next day, for the first time he logged Hallam

Fig. 2. 28MHz beacon chart.

	February					March																						
Beacon	26	27	28	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
DF0AAB								x																				
DLOIGI			x													x	x											
EA3JA	x	x			x					x						x	x	x									x	
HG5GEW											x							x										
IK1PCB																		x										
IY4M			x		x						x	x	x					x	x			x						
KD4EC		x	x		x																							
KF4MS		x	x																									
LA5TEN																												x
OH2TEN	x	x	x	x	x		x		x	x																		
OH9TEN	x	x	x	x	x																							
SK5TEN		x	x	x						x																		x
SV3AQR	x	x	x	x	x		x			x																		
S55ZRS			x											x	x			x										
VK5WI			x																									
VK6RWA																												x
WA4SLT			x																									
W3VD			x																									
ZS1J	x	x	x	x	x	x				x					x	x	x	x	x	x	x	x	x	x	x	x	x	x
ZS1LA	x	x	x	x	x	x	x	x		x			x			x	x	x	x	x	x	x	x	x	x	x	x	x
ZS5VHF		x	x												x													x
ZS6PW		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Z21ANB							x	x	x	x	x	x	x			x	x	x	x	x	x	x	x	x	x	x	x	x
5B4CY	x	x	x	x	x	x	x	x	x	x	x	x	x			x	x	x	x	x	x	x	x	x	x	x	x	x

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# Amateur Bands Round-up

## Listening to the Amateurs

What, I am asked, is the advantage to be obtained by replacing a random length antenna by a suitably resonated job such as for example a correctly-fed half-wave dipole?

A dipole is independent of earth and its losses, at least insofar as the receiver is concerned; that is **not** to say that the nature of the ground beneath our dipole has no effect. About its chosen frequency it looks resistive. Our end-fed random antenna works against its 'image' in the ground, the image being a fundamental part of the circuit.

A random wire is unlikely to be resonant at our chosen frequency. This implies that some of the signal energy fails to reach our receiver.

The first point can be helped by attention to earthing and/or counterpoises if we must use an end-fed; the rule here is the more the merrier! For the second, one needs an antenna tuner. Thus, our dipole is essentially a single-band device, while an end-fed wire and tuner can be made to work more generally.

Having made or bought our tuner, we can now find where the boot pinches!

A radio amateur simply tunes his transmitter via an s.w.r. meter into a 50Ω dummy load and then transfers to the tuner feedline. By twiddling the tuner knobs only the s.w.r. falls to unity and he has a match.

The listener tunes up by ear. I have experimented with two tuners and two different antennas recently. At no time did 'peaking' by ear alone give quite the same ease. On one band and antenna, the bought tuner was so sharp that one could completely miss the resonance. On each band both my random wires showed a profit of a couple of S-points or more whether tuned on transmit or receive; that means that a signal that was 2 S-points below noise has now been made audible.

In summary, with an end-fed antenna, use a tuner, and work hard on the ground side of things!

### Here and There

Rockall has been activated legally, for 4 hours on March 30, with a possibility of more activity in May. There had been past activity there by a pirate believe it or not! There was once a time when there was serious intent to turn it into a new DXCC country but it is now a part of Scotland. GM4SXU/P made 243 contacts.

The EU, EV, EW prefixes belong to the Republic of Belarus; EV is reserved for 'memorial stations' Club stations have the first letter of the suffix as W, X and Z. As for the numeral, 1 is Minsk City ex UC2A; 2 is Minsk Region ex

UC2C; 3 Brest Region ex UC2L; 4 Grodn Region ex UC2I; 6 Vitebsk Region ex UC2W; 7 Mogilev Region ex UC2S; and 8 Gomel Region ex UC2O. 5 and 9 are not used, while 0 is reserved for visitors. The Belarus Bureau address is now POB 50, Minsk-50, Republic of Belarus.

I was saddened to hear of the passing of Charles Young G2AK. Older readers will recall that for years every issue of the amateur radio magazines carried an advert, adorned by two towers and an antenna, for Charles Young's shop in Dale End, Birmingham. It was here that one Saturday in the late 1940s I went to buy my very first receiver, which was a 'surplus' BC348. I remember vividly how Charles took time out to explain to a very green s.w.l. - me - what it was all about, while many another customers waited to be served. And - how right he was! - he told me that BC348 'would feel twice as heavy by the time I got home.' It wasn't so bad on the bus, but that half mile from the terminus to home: oh dear!

### Letters

Let's make a start with **Gerald Bramwell** in Swinton, Manchester; Gerald's list is a tiny bit shorter than usual, thanks to a 286 computer that has recently invaded his home. On 3.5MHz we see the Ws of course, VE1, VO1s, VE9, VK6LK, JA5AQC, TA4A, 9V1XQ, 7X2JF, 5B4ADA, HH2PV, V44KM, FH/DJ7HH, 7X2DS, 7X4DR, PY0FM all on sideband, plus UZ9CLA on RTTY and of course Europeans, c.w., RTTY and s.s.b. At 7MHz we find UA0AP, 9G1MR, EA8AMN, TU2JL, PT7CB, OD5MZ, CR3R, HZ1AB, FH/DF9PG, OD5WS, 9K2MU, YV5APF, VP2ET, KP2JL, PJ2MI, all on sideband, plus teletype from 4X6UO and N2DL; the Europeans being logged on all three modes. Next 14MHz; the usual enormous crop of DX here, with all W call areas, many South Americans, CN8EC, ZS6BEW, 9Q5TH to stand for Africa, VK, ZL, VP8 for Down Under, and a nice assortment of other choice DX. In addition, there were twenty-three RTTY stations while on the European front there was a fine collection in all three modes. 18MHz also served quite well, everything logged being heard on sideband, while for 21MHz some thirteen RTTY operators were copied, with calls like 4X/OK1FGC, FH/DJ2BW, 9K2USA, HH2PK and the Ws, but strangely enough - possible an antenna quirk? - no Oceanic stations on sideband. As for 24MHz, outside Europe was represented by EA8BYR and CN8EC plus the odd European. As for 28MHz - Zilch!

A nice chatty first letter came from **Ian Macalister** in Crosshill, a village not a thousand kilometres from Maybole in Ayrshire, who says he

much prefers h.f. to Satellites or Decode, and, which is even more surprising he reads both my columns! (Mr Editor, please note!!). Ian has some 35 metres of wire, SW/NE and about 10m up, fed by a Magnetic Long-wire Balun to an NRD-525 receiver. Ian's main interest is in hunting countries of which he has logged some 229 so far. Recent goodies included the Juan de Nova and Europa expeditions, and the log shows many another, notably VP2EEE in Anguilla. Ian sticks to sideband for his listening.

Incidentally, Ian Macalister is interested in the DX Nets around the world, as he listens to several. The usual source of such information is the listing produced for several years by Dieter Konrad OE2DYL, Roseng 1, A-5020 Salzburg, Austria. Contact him direct with an addressed envelope and IRC for the details. The price in USA is \$4 including airmail, but I don't have the European price.

In Trelewis, **Leighton Smart** seems to have got over his aversion to radio after a rest from the hobby. At the moment he is making me quite green with envy as he discusses how he has raised his Top band antenna from 9 up to 18m, with the help of one catapult and a seven-year old son. Why I am I green with envy? (a). my grandsons are twice that age, (b). my catapult elastic is broken and seems irreplaceable, and (c). in any case I haven't got a suitable tree nearby!

**F. Lennon** writes from Hyde in Cheshire and notes that he has a switching arrangement between a G5RV and an end-fed wire; and he can also switch from one side to the other of the ribbon feeder of the G5RV.

Perhaps the best way to do this is to use two antenna tuners, so that you can switch from one to the other and be sure both are equally well matched. I recall Tommy G6QB showing me how his system worked; he had a couple of end-fed Zepps, one of 132 feet and one 66, in different directions. On 14MHz Tommy had 'pruned' one of them so that they each resonated at exactly the same settings on the single antenna tuner. Tommy could in fact switch instantly from antenna to antenna to combat any QSB during a contact. Incidentally, G6QB will be recalled by older readers as Howard Thomas modulating many tens of kilowatts at the console of the old BBC Cinema organ.

Back to reader Lennon; he managed to log, on 3.795MHz, VK3PA as early as 2028UTC on March 1. On Top Band he hears most of Europe, and on 14MHz of course he can listen to the world, by way of PT7BI, ZS6ABV, 4Z5DG, LU1NH, VK6UE, ZL5APW, JA9AA, UN5P, 9L3AD, ZL4PD, W0KC, and on 21MHz he found 5Z4PL, N7PIB for a rare part of the States, W0CP for

another rare one (Colorado), N6GJL, VP2EC on Anguilla, PT7SY, T12CC, and finally back to 14MHz for ZD8Z on Ascension.

Next we come to **Mark Borthwick** in Hawick. Mark looked at Top Band for various Europeans including SV3KH, while on Eighty he noted GB4CGB, GB4MWG, GB0BG, GB2BDG, GB4WBG, GB2WCNW, 7X2JP, JW5NM, 9H1EL and PJ2MI. Down to 7MHz where GB2CG, GB0WBG, GB4SDG, GB2EVB, GB0CDG, GB0BOG, GB0TDG, GB2KGB, GB2WGC, GB2CWG, GB4TOD, GB4RBB, GB0CG, GB2BUH, GB2BDG, GB2CEG, GH3DVC, GB2GG, GB4BGG, GB2SDD, plus D2SA, ZS6ARF, ZS6MG, Y11MH, JW5EBA, WP4U, KP4FJT, 9Y4IBN, VE9ST, K3LR, W3BGN, K8PO, A71AC, PY7ZZ, PY0FM on Fernando do Noronha, VK5BC and VK6CHI for Cheyne Is IOTA OC 193. These gave me a feeling that Mark found the Guides Thinking Day on the Air! As for 14MHz, VU2FD, JR6SVW (Okinawa), JA7DXX, JH3CUL, JA7BJS, JA4AO, JR2BPV, JG3MKO, VR2GO in Hong Kong, XX9AS, YB0ARN, YB5AQQ, 9M2HB, 9M8DB, A71BH, 3A/F5IUU, 4K3DFS, CT3CU, CU3AV, 9K2ZC, Ws, VKs including the Cheyne Is station again, and VS6WV. Just a few 18MHz loggings included 4X4DK, JO1DZA, JA1NVF, CU3GD, W4UWC, W9WVP, N0AFW and K0EOU. Finally, 21MHz where we must prune all the Ws out to leave us 9K2ZC, PT7BZ, FY5GJ, ZS6TIM, ZS6AQD, ZS4MG, 5U7K, HC1DAZ, JW0G, HL2MDS, FG/KA3DSW, VE30MU, 4X6TS, CN8ST, 7Q7JL heard via RS12, KP4RV, P40J, V51BX (Namibia), VP2EJA in the Leewards, EA8IN, 6D2X for Mexico, 4S7DA and the aforementioned great gaggle of Ws from all the call areas.

Finally a note for you v.h.f. listeners out there. The Western Isles and NW Scotland VHF DX-pedition group, of G7BXA, G7HSP, G7DKX, GONES and abrace of s.w.l.s will be on Mull on June 12, S Uist on 17th, Benbecula on 18th, N. Uist on 19th, with Skye on 15th and 22nd, plus Ardnarnurchan Point on 24th. Try the 145MHz calling frequency or 144.222MHz, while on 50MHz they will be using 50.122/50.222MHz. If there is any energy left, Ben Nevis might be climbed too. There is a certificate to be had for working or hearing two or more islands, profits to go to the very worthy WAB/RNLI appeal. More details from G7BXA on 0532 563462 or G7DKX or G7GBY on packet.

### Finito!

That's it for yet another month. Keep 'em coming! Deadline as usual to Box 4, Newtown, Powys SY16 1ZZ by the beginning of the month.

# Satellite TV News

The Latest from the Clarke Belt

Yugoslavia continues to hit the headlines, more so in recent days with the first NATO bombing, the loss of a British Harrier and the siege/bombardment of Gorazde. The EBU Sarajevo uplink via the 34°W Intelsat 603 has worked overtime providing TV news feeds back into Europe for immediate transmission or the first hop prior to trans-Atlantic Intelsat linking to the 'States and elsewhere.

The feed is up early (UK am) and is generally available all day through to 2300 with late news programme inserts. Single one-way news packages often end with the newsmen giving two wind-ups e.g. 'Fred Bloggs, Sky News' and 'Fred Bloggs, ABC News'. Thus a common news item is transmitted by two broadcasters each using his appropriate ending. The 16°E uplink was also pressed into service ex-Sarajevo mid April with the Serbian aggression developing, night of the 20th saw 12.538GHz vertical offering news injects into ABC and Sky News programming. Off screen comments indicated that their Immarsat sat-phone was working most of the time - this their means of two-way talkback communication and reverse programme audio.

The other hot-spot has been the pre-election demonstrations across South Africa with the 'EBU Johannesburg Path 1' open for European redistribution via Eutelsat II F4 at 7°E though generally using sound in syncs and with unstable pictures. The primary news feed link northbound is via Intelsat 502 21°W at 3.93GHz. April 17 saw more bloodshed in Athlone, West Cape at a Nelson Mandela gathering.

**Bob French** in Warwickshire has been decoding the C Band (4GHz) M-NET Irdeto scrambled transmissions via Intelsat 601 27°W - 3.650GHz - using a basic RTL-4 decoder though with difficulty at times due to inverted video swings. Audio in recent weeks has been without scrambling. Bob has also seen a mystery continuous carrier at 4.03350GHz LH for some weeks that defies identification. The new GAL-S Ku Band Russian satellite at 44°E, visible in Norway on a 1.8m dish though requiring a much larger antenna in the UK. Certainly Bob's dish will not resolve signals.

**John Locker**, well-known satellite enthusiast and *SWM* reader from Merseyside has just returned from a holiday at Lanzarote, a barren volcanic island. What he

found odd was at Costa Teguisse a large 7 - 8m dish complete with C Band LNB constructed of wood and metal mounted on a concrete plinth aimed upwards and southerly, this erection on waste ground with no apparent reason for it being there! Thoughts of a past (demolished) holiday complex spring to mind, if there are any Lanzarote readers out there with an answer please let us know! John on his return to the cold UK monitored the launch of the *Endeavour* Shuttle mission Saturday April 9 via Intelsat K at 21°W via a Reuters transponder lease, an adjacent trdr also carrying another PAL feed for CNN into Europe.

It's a depressing fact but, with the onwards march of technology, so the EBU news feeds on Eutelsat II F4 7°E are tending to use encrypted digital compression. The scrambling is addressable using the Nokia LS-250 system that all but renders our monitoring impossible. Gradually the Nokia system will be introduced over the next six months, this in an attempt to prevent unscrupulous broadcasters from lifting news and sporting items for their own transmissions.

Thailand reader **Alan Smith** (Si Racha) has been attempting Ku band reception from the newly operational Thaicom 1 bird. Already two transponders have been received though at low signal strengths. Using a dual band C/Ku band feed horn assembly, Alan is uncertain why the low signal strengths. I feel that dish alignment may possibly be the cause, the large dish will be far less critical at C Band resulting in head alignment that may be 'off' though giving rise to little loss in C Band. With a large dish +3m at Ku the beamwidth may be under one degree and very careful alignment will be necessary, far more than in C Band. The outside broadcast covering the opening of the Friendship Bridge between Thailand and Laos April 8th was received in Ku band but with poor signal strength - at least Alan has a signal to work with.

A query from a reader concerning the TV transmissions from the American Shuttle flights and if it's possible to receive them. I am advised that the Shuttle downlinks f.m. video at 2250.00MHz for her in-orbit TV operations and that it is 'easily received on a receiver with an f.m. video demodulator like the Icom R-7000'. I have no more information, but if any readers have experience of direct Shuttle reception please write in with any details.

## Satellite News

MTV Europe (as received in the UK from Astra/Eutelsat) may encrypt from this autumn using Videocrypt, available to those subscribers to the Sky programme package for no extra charge.

The Chinese Channel now transmitted via Astra 1C will encrypt in the autumn using Tandberg's Cryptovision, another form of line shuffling but departing from the Videocrypt norm of UK-based Astra channels. With Videocrypt having been completely hacked and illegal cards easily available (I'm told) Chinese Channel have opted for the different system that is unlikely to be hacked by mass production pirate decoder manufacturers due to the limited interest.

A new TV satellite will be operational at 13°E - Eutelsat II F6, also known as 'hot Bird Plus' will offer high level signals from Moscow down to the Gulf and across to the Canaries, including all of Europe. Downlinking will be in the FSS and DBS bands (10.95-11.7 and 11.7-12.5GHz) using linear polarisation.

A new satellite over the UK horizon is GALS-1, a Ku band Russian craft at 44°E spotted into the CIS itself though having been monitored in Norway on a 1.5 metre dish and the UK on an 11 metre (!) dish. Small dishes in the UK stand no chance of receiving anything!

In the press release mail Eutelsat/NTL at the Olympia Satellite Show week demonstrated simulcast digital and analogue TV signals on a single 36MHz transponder thus proving that both types of signal can be transmitted through the system at high quality and enabling a gradual phased hand over from the old to the new technologies. Brunei has been welcomed into Intelsat as the 132nd member.

Over the next 18 months from October '94 3 CIS 'Coupon' satellites will be launched to slot at 55°E, 9.2°W and 162°E to provide global coverage with a wide ranging menu of C and Ku band transponders and steerable beams. Downlinking at C Band will be between 3.7-4.18GHz and Ku band 10.96-11.20 and 11.46-11.70GHz linear. EIRP will be variable between 38-50dBW - suggesting home reception on the higher EIRPs. The Globostar Satellite Communication System using the Coupon craft is based in Moscow and will offer competitive leasing and hire fees.



**Fig. 1: The Polish test card via Eutelsat II F3 16°E received by Berry Habekotte (Holland) using a 1m dish.**



**Fig. 2: The dramatic test transmission logo on 16°E 11.575GHz horizontal.**



**Fig. 3: Recent bombing flights over Yugoslavia take off from Aviano, Northern Italy. Here an Italian news man files his report, note the SNG truck in the background using Eutelsat II F2 10°E (John Locker, Merseyside).**



**Fig. 4: The oft seen news circuit ex Sarajevo airport on Intelsat 34°W.**



**Fig. 5: An American outside broadcast unit insert their identification within the field blanking pulse as received via Intelsat 601 at 27°W.**



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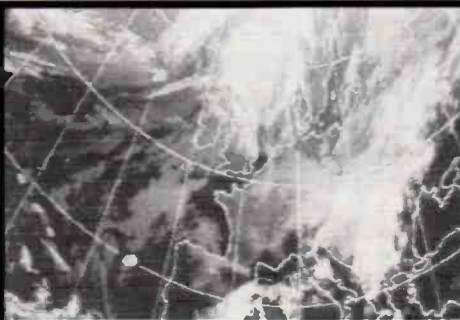


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|---|--|---|

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# DXTV Round-up

Up to the time of writing this column in mid-April, there have been very few real openings on any of the three television bands to talk about. However, in addition to the weather, there is a growing interest in allied subjects, like equipment and computing that I plan to include as and when space permits. This should assist new readers to get the maximum benefit from their interest in these scientific subjects.

## Getting Started

I am often asked by newcomers about suitable receivers and antenna systems for the reception of long distance (DX) television signals. My

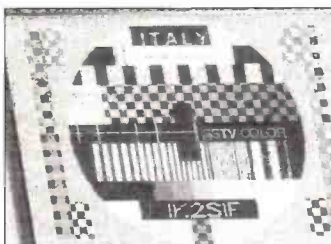


Fig. 4: Italy.



Fig. 5: Finland



Fig. 6.



Fig. 7:

usual advice is don't spend a fortune until you are sure that the subject is right for you.

It is not just a matter of installing a large antenna and pointing it in the right direction to receive television programmes from abroad. It's important to keep in mind, that signals from television transmitters, using Bands I and III, from outside the UK, arrive here at random while some form of atmospheric disturbance is in progress. If your particular interest is programmes from overseas then you need a satellite system and a consultation with a local dealer.

## DXTV

First, you must have a 625-line receiver, **Fig. 1**, or a convertor that covers the v.h.f. Bands I and III and the u.h.f. Bands IV and V. Although the majority of TV sets currently being sold in the UK are u.h.f. only, specialist dealers, like Aerial Techniques, 11 Kent Road, Parkstone, Poole, Dorset BH12 2EH and HS Publications, 7 Epping Close, Derby DE3 4HR, stock sets and/or convertors that include the v.h.f. bands.

The dial on the Yoko receiver in **Fig. 1**, has three TV bands on the left and three radio bands - long, medium and v.h.f. on the right. The markings for Band I (48-68MHz) are the European Channels E2, 3 and 4 that represent 48.25, 55.25 and 62.25MHz respectively. Also in there are the I and R channels, Ia (53.75MHz) and Ib (62.25MHz) and R1 (49.75MHz) and R2 (59.25MHz). Band III (175-230MHz) has 8 channels and is scribed E5 (175.25MHz), E6 (182.25), E7 (189.25MHz), E8 (196.25MHz), E9 (203.25MHz), E10 (210.25MHz), E11 (217.25MHz) and E12 (224.25MHz).

The u.h.f. band covers the standard Chs. 21 to 69. For more precise details about international stations and frequency allocation, reference should be made to the latest edition of the *World Radio TV Handbook*. This is available from the book sales department of *Short Wave Magazine*.

Give DXTV a try for six months, using a horizontal dipole and see what it's all about. If you buy a suitable receiver and then decide against adding this mode to your station your money has not been wasted because the set can still be used domestically on the u.h.f. bands.

Fig. 3.



## Antennas

I suggested starting with a dipole because this antenna is reasonably cheap to buy, or make, and easy to mount in a loft or outside on a wall, pole, or chimney. Briefly, the dipole, **Fig. 2**, is the basic part of much more complicated v.h.f. and u.h.f. arrays. For example, its rods are 'folded', second from the left, in the six-element Yagi in **Fig. 3**. In this case, the rod behind the 'folded' dipole is called the **reflector** and the four in front are known as **directors**. Relative to the basic dipole, **Fig. 2**, the Yagi, **Fig. 3**, has high gain and is very directional. Such figures are normally quoted in technical literature and antenna catalogues.

Please keep in mind that when mounted vertically the dipole on its own is omni-directional but horizontally, the length of the rods (**Fig. 2**) must face the incoming signal for maximum performance. Wind and water are real enemies to the outside antenna, so make sure that the insulator block (**Fig. 2**) cover is securely in position and the feeder entry (**Fig. 2**) is at the bottom to prevent rain entering at these points.

In addition to high winds that may create mechanical troubles and water that can cause corrosion, the antenna is subjected to extremes of temperature and chimney smoke. To avoid the latter the dipole in **Fig. 2** should be on the left side of the mast away from the direct line of the smoke. Periodically, inspect your installation from the ground with a strong pair of binoculars. Watch out for rust or 'fraying' on the chimney lashings (**Fig. 2**), pole mounting brackets and corner plates.

If you take the antenna down for repairs, connect a low resistance continuity tester between the tip of each a rod and the corresponding end of the feeder. Should the instrument show any resistance check for corrosion at all points around where the rods and the feeder meet (**Fig. 2**). Poor



Fig. 1.

connections inside this block, or a breakdown of insulation in the feeder will ruin the performance of your set.

## Satellite TV

My thanks to **Alan Stevenson** (Budapest) for telling me that the photograph of the satellite caption, showing TV5 europe (Fig. 6 March *SWM*), that I suggested came from Finland, is an identifier for TV cing, a French satellite station. "The logo photographed is part of a link where various European country names spin around the broadcaster's name," said Alan and pointed to 'finlande' and 'espage' that are nearly visible in our picture.

## Weather

In general, I found March windy with small amounts of rain. During the month I recorded 2.47in of rain compared with 1.30in for the same period in 1993. Amounts of 0.30, 0.35, 0.25, 0.40 & 0.28in fell on days 2, 13, 21, 23 & 28 respectively.

The atmospheric pressure readings for the period February 26 to March 25, **Fig. 10**, were taken daily at noon and midnight from the recording chart on my own barograph.

## Tropospheric

"I have enjoyed picking-up out-of-area ITV stations," wrote **John Escolme** (London). While in Arundel he logged signals from BBC TV East and South-West and from the independent network, HTV, TSW and occasionally Tyne Tees Television. John now lives in one of the highest spots in London where he is already receiving Anglia TV. However, he is looking forward to better DXing with a Sony multi-system receiver and a new antenna system.

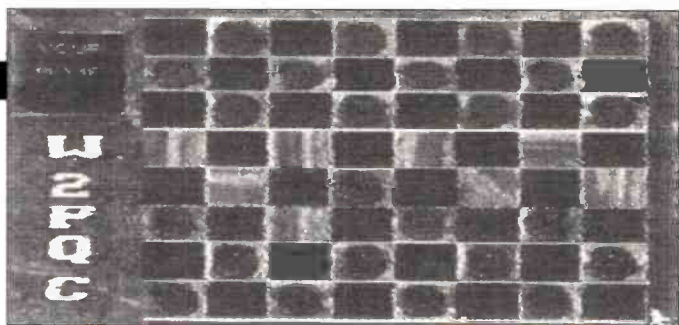


Fig. 8.

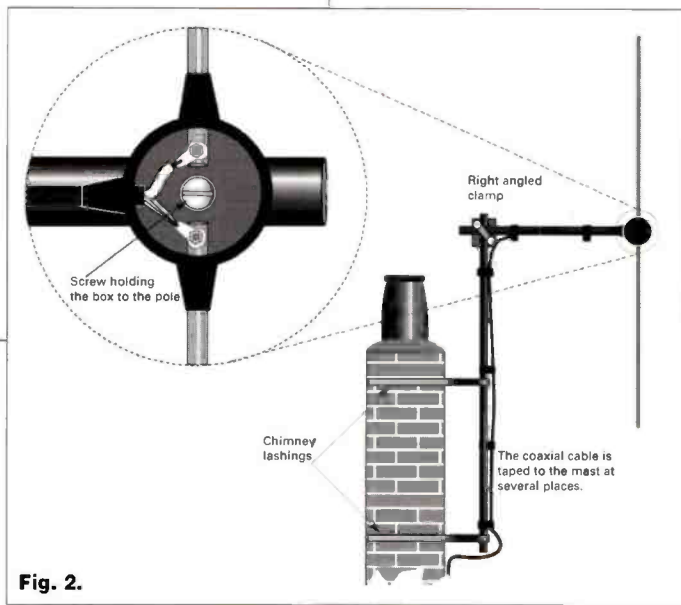
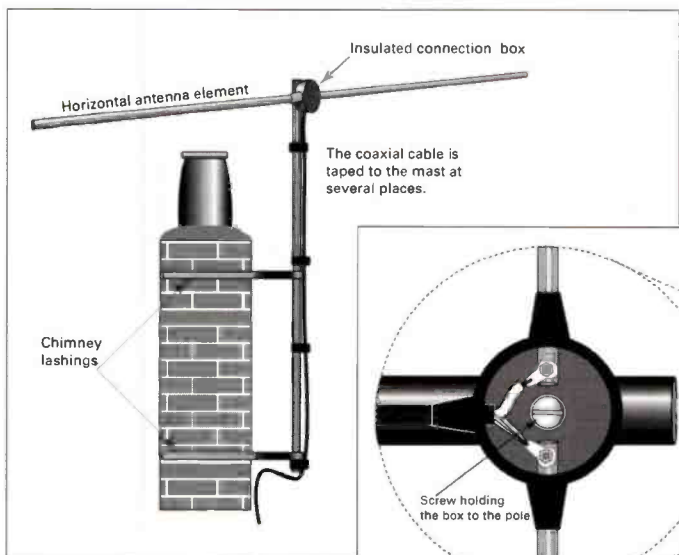


Fig. 2.

### 'Judder'

My first piece of paying journalism was way back in the 1950s when I wrote about an intermittent fault that I had located in the time-base circuits of a Dynatron television. Periodically the picture frame on this 17in receiver would 'judder' for a few seconds and then not do it again for several hours.

Having ruled out valve trouble and 'dry' joints in the circuit, I unsoldered all the resistors concerned and tested each one with the appropriate range on an AVO test meter. Although all were within tolerance and in good mechanical condition, i.e. no signs of cracks or swelling in the component or loose end connecting wires, I decided to replace them with new ones for good measure. Afterwards, I tested the original resistors again on the bench with a 500V insulation tester and one of them, a 'smart' looking 100kΩ momentarily broke down to about 50kΩ under the high voltage test. Intermittent faults are time wasters, they always have been and always will be a 'pain'. The Dynatron's picture was rock steady with the new parts.

### Word Processing

I wrote the piece about 40 years ago with a then elderly Underwood typewriter well lubricated with 'Three In One' oil.

As work increased the Underwood was replaced with a Smiths portable followed a few years later with a Brother portable. This was succeeded by an Olympia office machine with a large carriage. My 'mechanical' word bashing days ended with a Smiths 'Corona' electric machine. Each one of my typewriters gave excellent service and would have lasted me for years except for that temptation for a new one with some later frills. The change to 'electronic' writing began with a Tatung Einstein computer and a Silver Reed, daisy wheel printer. Then came an Amstrad PCW and later the IBM compatible PCs, with a variety of word processing software.

### Spelling

Some say a spell-checker built into a word processor is unnecessary because a writer should be able to spell or have a good dictionary on the shelf. For me, a spell-checker is necessary if only to save my Editor from going 'pop' when he reads my print-out. Not only does it check the word against its own dictionary, it highlights typing errors like 'andthe' being joined together and extra letters in words like 'loose' and 'please'. Existing users will know that in addition to the main dictionary, a 'users' dictionary is supplied in which to put all those special and technical words dedicated to the writer's own particular subject and are not

included in the program's dictionary.

My thanks to **Walter Farrar** (Pontefract) for sending me an amusing cutting on this subject from the *Sunday Times* (27.03.94). Briefly it reports that while Patrick Leggatt was checking a piece that he had written for the British Vintage Wireless Society, his program offered to replace "Philus superheterodyne" with 'Phallus superheater' and "Brown Bros." with 'Brown Bras'. I believe that most good word packages offer a 'near miss' if it cannot find the word it has been asked to check.

Walter's letter reminded me of a few 'howlers' that have come up on my work. Having written "Blandford", I was offered 'blindfold', "Brian" - 'brain', "CONFIG.SYS" - 'codfishes', "Elaine" - 'Ealing', "Grundig" -

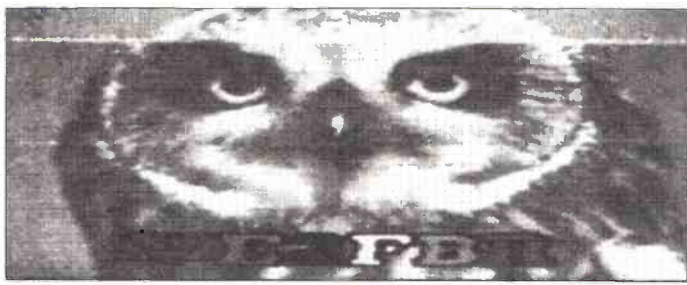


Fig. 9.

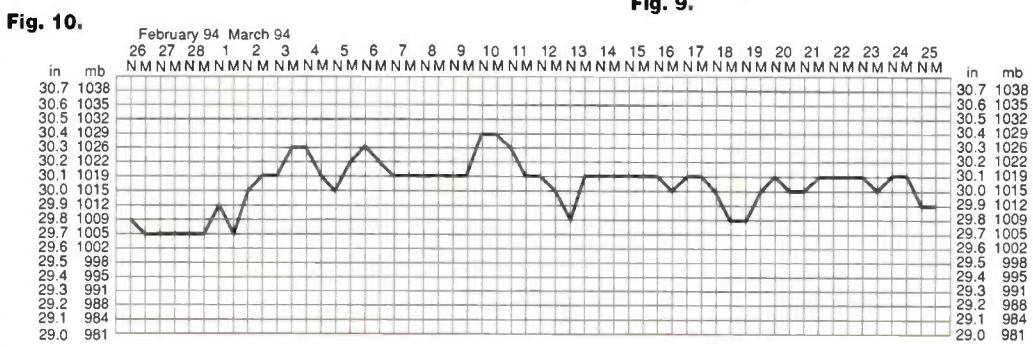


Fig. 10.



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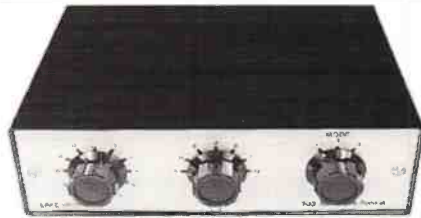
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# Bandscan

## Australia

The nights are beginning to be crisp here on the south coast of New South Wales. As I have noted in this column before, at this time of year my mental marker of summer, the constellation Orion, is on its way out of view and my mental marker of winter, Scorpius is beginning to dominate the night sky. With the demise of daylight savings time a couple of weeks ago, our evenings are suddenly longer. This all adds up to more time for listening around the dial of course. As a cold weather lover and self confessed radio head that is all to the good.

## Magazines

**Sean Doherty** from County Cork in the Republic of Ireland has written asking me for information on Australia's short wave and broadcasting magazines.

There are two commercial magazines here that cover radio and broadcast matters for the aficionado. They are *Amateur Radio Action (ARA)* and *CB Action (CBA)*. Both are published by Syme Magazines in Melbourne. The postal address is GPO Box 628E, Melbourne, Victoria 3001, Australia.

*ARA* comes out every four weeks, i.e. 13 times per year. It runs to about 64 pages of amateur radio news and costs \$A3.75 (approximately £1.80) an issue or \$A37.70 (about £18) on subscription. As well as the standard amateur radio articles *ARA* has a regular column on short wave affairs. The concentration in this column is, of course, on the stations that can be heard from Australia rather than on Australian broadcast matters. The editorial and news columns, however, often contain items for those with an interest in Australian broadcasting matters.

*CBA* comes out six times a year. It runs to about 56 pages and also costs \$A3.75 an issue and \$A18 (about £8.50) on subscription for six issues. Despite its title, *CBA* presents a broad range of Australian broadcast news. The March/April 1994 issue, which I have in front of me as I write, has columns Bandspread (CB around the world in this issue), DX Logbook (SW heard from here), Question & Answer, Scanning (f.m. v.h.f. and u.h.f. heard from around Australia), Online 1994 (computer program reviews and discussion) as well as some historical pieces and equipment reviews. Previous issues have included Uplink, a column covering satellite television.

The amateur radio fraternity's umbrella body the Wireless Institute of Australia (WIA) puts out a monthly magazine as part of its services for

members. It is called *Amateur Radio*. Annual subscription to the WIA varies depending on which state branch you join but is somewhere in the order of \$A50 - \$A60 per year (about £24 to £29). Naturally it has a heavy amateur radio bias including the usual sorts of construction projects. The address of the WIA federal body is PO Box 300, Caulfield South, Victoria 3162, Australia.

## Ministerial Musical Chairs

With the late December 1993 resignation of Australia's Treasurer came the need and opportunity for a federal government ministerial reshuffle. In this rearrangement Senator Bob Collins and David Beddall were both moved from ministerial responsibility for the huge Department of Transport and Communications (DoTC) with some commentators putting this down to the ongoing pay television fiasco.

In the process, the megadepartment was split into its component parts again with electrical engineer Michael Lee being sworn in as minister responsible for the new Department of Communications. My count at the time made Mr Lee the ninth communications minister since 1987. Among many other things the new minister was charged with sorting out the mess that is Australia's implementation of pay television.

But that was not the end of the story. More political games followed in February and March as a gaggle of other ministers resigned from ministerial responsibility or from parliament. The wash out from this was another ministerial reshuffle. In this, the arts component of the old Department of Arts and Administrative Services went to - you guessed it - Michael Lee who now heads the Department of Communications and the Arts. The abbreviation DoTC gave way briefly to DoC. I have been doing some work with this department recently. The bureaucrats there don't know what the current abbreviation is but I guess DCA will do despite its possible confusion with the long defunct Department of Civil Aviation.

No doubt the government will be hoping desperately for some stability in the period leading up to the next election. Well, who knows? If the past is any guide to the future then stability is not an option.

## Digital Audio Broadcasting

In *Short Wave Magazine* for December 1991, I reported that Australia's

Communications Laboratory was testing digital audio broadcasting. Field tests for what has been dubbed Digital Sound Broadcasting (DSB) have now started in Canberra. Transmissions are taking place in the L band frequencies of 1452-1492MHz from the Telecom Australia Black Mountain Tower.

Identical transmissions are simultaneously conducted using f.m. to enable listener comparisons. Laboratory staff are using a specially equipped bus to tour the city while listening to these broadcasts. The idea is to draw comparisons between the clarity and effectiveness of both forms of broadcasting while they are in different parts of the city.

Minister Michael Lee has stated that the government will not make a decision on the digital system to be adopted for Australia or the timing of its introduction until the issue of competing technologies has been clarified. His department does say, however, that the selection of an international standard is one of the key factors in selecting a DSB system for Australia and in determining the implementation timetable.

In light of the ongoing political rather than technological struggle between pay television delivered by satellite and pay television delivered by ground based microwave systems my feeling is that more than technology may come into the decision making process.

## Ethnic Radio

I reported last year that the Special Broadcasting Service (SBS) was in the process of expanding its radio services throughout Australia. Now comes the news that ethnic radio broadcasters across the country are unhappy with the SBS plans. These existing ethnic broadcasters are typically community based and rely for their funding on local subscriptions. The stations claim that as SBS Radio becomes more widely established their subscription base will decline. They fear that this will make their operations unviable and eventually lead to forced station closures.

## Australian Callsigns

For those new to the art of short wave listening I include here a list of callsigns they might hear on tuning around the dial. Australian callsigns are generally from the block VH - VN with VK probably being the most widely heard. VK0 call signs are from the Antarctic territories including Heard Island and MacQuarie Island, VK1 are from the Australian Capital

territory (ACT), VK2 from New South Wales (NSW), VK3 from Victoria, VK4 from Queensland, VK5 from South Australia, VK6 from Western Australia, VK7 from Tasmania and VK8 from The Northern Territory. VK9 is from the other territories including Lord Howe Island, Mellish Reef, Norfolk Island, Christmas Island, Cocos-Keeling Island and Willis Island.

Interestingly local a.m. medium wave broadcasters from the ACT use callsigns from the NSW sequence. Thus the ACT has radio stations 2XX and 2CA rather than 1XX and 1CA; ACT amateur radio operators use VK1 calls.

As well as the VH to VN block Australia also has callsigns from the block AX - generally used for special events - and VZ. Our local bushfire brigade network uses a VZ callsign; I am quite used to using it on my stints as base radio operator conducting tests with our forty or so mobiles. My patter begins: "This is VZ2AL Tallaganda Bushfire Control operating on 168.55MHz conducting tests with mobiles in the area." Tallaganda is the name of our local shire.

## Other News

Australian amateur radio operators are expressing concern at the allocation by Fiji authorities of the frequency 146.100MHz for an f.m. broadcast station link frequency. This frequency is in the middle of the amateur 145MHz band and is used throughout Australia and New Zealand as a repeater input frequency.

ABC Television has penetrated the Chinese domestic market with the signing of an agreement with China's Minister for Radio, Film and Television. The agreement is expected to lead to separate negotiations with telecasters in China including around 500 cable operators. The Australian Financial Review says that this will expose Australian programming to a huge audience as the ABC progressively negotiates arrangements with provincial telecasters throughout China.

And for those waiting for news on Australia's pay television saga you will have to wait until next time. I am sure that by then some other totally outrageous occurrence will have happened.

I welcome any news and comments. In particular, I am interested in any s.w.i. information on Australian stations heard by *SWM* readers so I can chase up more details and interesting snippets from this end. My address is PO Box 208, Braidwood, NSW 2622, Australia. For personal replies please send two IRCs.



# SSB Utility Listening

## HF Sideband

A few months back I mentioned the Air Training Corps (ATC), and mentioned in passing the Sea Cadet Corps (SCC). This has prompted a couple of letters with details of the h.f. 'circuits' (as they call them) used by the SCC. As with the ATC, the SCC is a national voluntary organisation aimed at teenagers, and encourages an interest in adventure, sport and all things marine and maritime. I am not sure of the breakdown of the SCC into regions and areas, but it is probably similar to that of the ATC. The SCC also use various h.f. s.s.b. 'circuits' for training the cadets in communications procedures.

The following s.s.b. frequencies are used by the SCC (all in MHz):

- 2.1225 RTTY/c.w.
- 2.695 c.w.
- 3.660 d.s.b.
- 6.805 RTTY/c.w.
- 6.875 s.s.b.
- 6.9925 s.s.b.
- 8.1755 RTTY/c.w.

The various modes listed should be treated as a guide only, as I have heard SCC operations in s.s.b. (actually, u.s.b.) on 6.805MHz. The final frequency is listed as the 'National Net', so that would be a good place to start listening for them. All Nets are active on Sundays from 10.00 until 13.00 (probably local time, **not** UTC). I think that they are also active on an *ad-hoc* basis during weekday evenings. Unfortunately, I do not know of any example callsigns to listen for on these frequencies, but I suspect that they are five characters long and start with 'M' (similar to some ATC callsigns).

Incidentally, looking back at the list of ATC frequencies given a few months back, I have listed channel 'A1' as 4.610MHz. **Geoff Chance** writes to say that this frequency is used by the Met Office at Bracknell to transmit FAX pictures 24 hours a day.

### Photos

**Chris Haigh** sends an extensive log full of airliners flying here and there around the world. He also sends a photo of his 'shack', which is shown here. Chris is lucky enough to have two superb receivers, a Lowe HF-225 and a Drake R-8. These are connected to a pair of external long-wire antennas via the a.t.u.s in the picture. Chris has had a lot of success receiving signals from all over the world, and

in one day during March heard aircraft over all five continents.

I have used a number of items from Chris' logs later in the Traffic Log, and I would like to remind you that I am still hoping to receive a copy of your logs for inclusion in the list.

**T Ford** from Sheffield writes, and asks for assistance in identifying the users of a series of frequencies that he has monitored recently. The main frequency appears to be 4.9735MHz u.s.b., and they use typical military tri-graph callsigns ('A52' and 'Z97' were both heard in one session). They also use several other frequencies, with each one allocated a two-letter code; 'AM' is 4.480MHz, 'TC' is 5.343MHz and 'CT' is 5.346MHz. Two other frequencies are 'XE' and 'VE', but the exact frequency tie-ups remain unknown. Does anyone know who they are, where they are operating from, and what they are doing?

### Marine

In the March issue I mentioned monitoring shipping and maritime traffic. This produced a letter from **Brian Faulkner** who is the Station Manager at Lands End/Niton Radio. I am pleased to see that these

words are read in such high places! Brian points out that most shipping nowadays uses satellite technology for ship-to-shore communications (i.e. INMARSAT) rather than having to rely on s.s.b. links. Many ships, including the *GEII*, do not carry Radio Officers as such, they are now known as Electronics Officers. Brian recommends that you monitor 2.182MHz for ships calling coast stations, and that you follow them to their assigned working channels.

Brian also kindly provided a large reference chart of BT Maritime Services that details the changes made to the m.f. maritime mobile

bands with effect from April 1992. The information in the chart updates the listings in *Shortwave Communications* by Peter Rouse and available from the SWM Book Service.

I am not going to list the information here, as it has already appeared in *SWM*; instead, I will direct you to the excellent article in the February 1994 issue titled 'UK Coast Radio Stations in the 1990s'.

### Chris Haigh's shack.



### Traffic Log (frequency in MHz, all u.s.b. unless indicated)

- 3.026 Neatishhead ARDU and station 90G doing comms checks on frequency WM. They both QSYed to frequency CY.
- 4.510 Coastal Control working ship GV. This should be channel 34 - ship transmit.
- 4.703 Station 'Pink Tiger' working 'Masterpiece' for a radio-check. 'Masterpiece' then called 'Country Song' and 'Clean Table' for further radio-checks with them.
- 4.742 Kittyhawk 4 (a Queen's Flight BAe146 VIP jet) calling Architect, but getting no reply.
- 5.649 Pakistan Navy F.27 maritime patrol aircraft AR-NZV calling Shanwick for a radio-check, but getting no reply.  
Speedbird Concorde 4 working Shanwick with a position report and a Selcall check on BD-FH; closely followed by Speedbird Concorde 3 with its own position report and Selcall check on BD-FC.
- 5.680 Two US amateurs discussing a boat that one of them was buying(!) on the recognised world-wide SAR frequency.
- 6.556 Monarch 966 calling Monarch Ops at Luton from overhead Lisbon, Portugal. No reply from Ops. Also, many other airlines working far-eastern ATC stations including Singapore, Darwin, Bali, Kuala Lumpur and Jakarta. Many were suffering QRM from Radio Pyongyang (N Korea) on 6.560MHz.
- 6.688 Navy 622 and Navy 338 working Portland Naval Base, passing their ETA for Guernsey as 09.15. The two 'Navy' callsigns were Royal Navy Lynx helicopters.
- 6.736 UN Layoune working UN Samara, passing messages for AU037 and AU038. Both stations changed to channel 30 (?). This is the Australian armed-forces operating for the UN in the Western Sahara.
- 8.924 Unidentified KLM aircraft working KLM Ops in Amsterdam.
- 10.048 Federal Express flight working Honolulu ATC, requesting a Selcall check on AL-BP.
- 10.069 Alitalia 8548 working Berne Radio while flying between Rome and Moscow. '8548 was told that their secondary frequency was 18.023.
- 11.173 Station Bookshelf talking with another unheard station. They both QSYed to another frequency which they named as 'Push 28'. After a while, they both returned here, and then QSY'ed to 'Push 108'. Bookshelf is the callsign used by the Airborne Command Posts operating for the UN forces in Bosnia. They are operating from the base at Aviano in northern Italy.
- 14.615 Reach 102CS working Ascension with a phone-patch to HILDA EAST. This frequency is used by Ascension for morale phone-patches and MARS operations.

# Airband



CFM Shadow Microlight.

Photo: Christine Mlynek

Economics exert strange, sometimes artificial, effects on any industry and aviation is no exception. In the last winter there were diversions during fog because the aircraft weren't operating at Cat. III minima. Not that they weren't equipped - perhaps deferred defects restricted them to Cat. I, or perhaps the crew weren't currently cleared for low visibility operations. Which is cheaper: ensuring that Cat. III, where fitted, is usable - or having aircraft and passengers finish up in the wrong place?

## Your Flying Experiences

It must have been frightening when **Simon Lippitt** (South Wirral) watched a serious error by a light aircraft. Instead of back-tracking, it took off; another light aircraft was 3 miles out on final approach at the time, so a head-on collision seemed possible. The controller issued an immediate turn to the departing aircraft. Simon asks why the approaching flight wasn't told to go-around. Well, when one aircraft climbs headlong towards another there is a possibility of opposite-direction collision because the flight paths cross each other at some particular altitude. Even if the approaching aircraft had stopped its descent, the confliction hadn't been safely resolved. By turning the outbound, its path was taken safely away from the arrival. Also, by allowing the arrival to continue, its path remained predictable and it would soon be on the ground and out of the way.

One other point to remember is that the outbound flight would disappear under the nose of the approaching aircraft when the latter started to pitch up and climb. On one light aircraft flight I remember trying to stand up in my seat to keep another aircraft in view; it was passing beneath us at the time.

I'm sure **Stuart Terry** (Canterbury) enjoyed holidaying in Egypt. He went sub-aqua diving. In case any other readers are tempted to try this on holiday, I will explain a safety tip (that I expect Stuart already knows). Never dive in the 24 hours before a flight. Diving exerts the opposite pressure effect compared with flying; increased pressure causes increased nitrogen absorption in the bloodstream. After a dive, the excess takes time to be released. If, soon after surfacing, the diver flies, a further pressure decrease occurs: equivalent to climbing rapidly up a 6000ft mountain, an unfavourable change of nearly another quarter of an

atmosphere. The excess nitrogen starts to bubble out of the bloodstream more rapidly - and can cause the start of a bend.

But if you're really unlucky and cabin pressure is lost, then the change is equivalent to perhaps four-fifths of an atmosphere and a severe bend can result! In other words, a dive that was safely 'within the tables' can be converted into a case of the bends if you fly soon afterwards. This even applies to 'no-stop' dives. The extra pressure decrease means that the diver experiences a change of greater than 1 atmosphere even if the dive was to shallower than 10m!

Anyway, what about the flying? Hurghada was on 119.6 and Ras Nasrani (Sharm El Sheik) on 118.9MHz. When Stuart says control passes to Cairo above FL10, I think he must mean FL100 as transition levels aren't usually that low. Also, I have a listing of Cairo Radio on 126.0MHz which suggests that there is no actual control. Do you know if you were asked to squawk? This might clarify if a radar service was being provided. Stuart was indeed lucky enough to inspect operations in the Excalibur A.320's cockpit.

Calls back to base were on h.f. via Portishead and Stuart observed the crew selecting 11.306MHz. Another 'box' was tuned to 15.964MHz that baffled Stuart but I do assure him that this is another Portishead frequency. Air traffic control was v.h.f. throughout, even for the 200km Cairo-Hurghada leg. Assuming a change of ground station halfway along, 100km isn't too long a range at v.h.f. whilst cruising at great altitude.

## Follow-Ups and Foul-Ups

Going back to 'Flying : What Do the Numbers Mean?' (March *SWM*, page 30) I regret that an obvious error crept in despite proof-reading. Under 'Frequencies,' D&D should be on 121.5MHz as spotted by **J. Harris** (Gloucestershire) and **Ted Crease** (Bradford). Interestingly, Ted found that his air traffic controller friends didn't recognise ONE - just as I predicted in the March article! I'm pleased that Ted wants to use *SWM* as an aid to teaching, and simply ask that copyright be respected in the usual way - see the masthead on page 1 of any issue. Or, how about a visit to my Museum? Telephone number at end of article. Ted has flown to Elstree - less than 5km from me.

Recently, a reader suggested that anecdotes would be interesting and so I recount the tale that Ted told me. He saw a light aircraft burst a tyre on

landing. Immediately, engineers raced out to the runway that the aircraft was blocking. They changed the wheel there and then, enabling the aircraft to taxi back just 4 minutes after the accident! You see, they knew that the next inbound wasn't due for 10 minutes and the engineers had a reputation for pit-stop wheel changes!

## Frequency and Operational News

The CAA's March *GASIL* was current at the time of writing. Significant aerodrome changes include the closure of Bedford (military, not Castle Mill) with the loss of all frequencies. ATZ and Military ATZ (MATZ). Another MATZ withdrawal is at Honington. Humberside's a.t.i.s. is now on 124.125 (previously 121.775MHz). Lakenheath and Mildenhall have combined their MATZs. Luton Tower is now 132.55 (was 119.975MHz). Macrihanish loses its MATZ. Old Sarum Radio is now 123.2 (was 123.575MHz).

On to the beacons and Bournemouth's n.d.b.s (HRN, 401.5 and BMH, 339kHz) have been replaced by BIA that is in a new position despite retaining 339 as its frequency. Some of the previously-reported n.d.b. closures were postponed, as noted in the case of Strumble (STU, 400kHz) by **Peter Kay GW4GCB** (Colwyn Bay). Unfortunately, there's a 6 weeks lead time from arrival of news to its appearance in 'Airband' and I can't communicate short-term changes of plan. Once they decide to withdraw an n.d.b. the message that has to get through is: don't rely on its being there from now on! Thanks for writing for the first time, Peter.

## Information Sources

Thanks also to **Peter Wade** (Sevenoaks) for the latest details of airways. Peter was lucky enough to obtain a copy of this information in the UK *Air Pilot* (now more correctly known as the *Aeronautical Information Publication*). This is a definitive source - and if you can afford it, the CAA will sell it to you. For a cheaper summary, though, try the Aerad charts. Whichever you choose, the supplier is

listed on 'Airband Factsheet', which is yours if you send a self-addressed stamped envelope, capable of holding an A4 page, to the Broadstone Editorial Office.

May I commend the Factsheet to **John Vining** (Andover)? Yes, RAF *En Route Supplements* are available to the public by post. To calm your fears, I don't think that there's anything in this material that terrorists wouldn't find out in some other way. You can't hide an airport! I'm sorry that there isn't room in 'Airband' to print long frequency lists, as requested by Stuart Terry; that's what the *En Route Supplements* are for. Remember that when a flight leaves one frequency, the pilot always reads back the next one so that the controller can check for mistakes.

## Oceanic Tracks

The next item on the You Asked For It' list is a description of North Atlantic navigation. Many readers told me that they were interested in this when answering the Christmas Quiz, and John Vining prompts me to cover this subject now.

Each day, flights cross the Atlantic both ways by one of two main navigational routes. Although John asks about commercial h.f. news, the operation is a well-practised routine and little changes. Some flights (especially military and business jets) choose so-called random routes, but most scheduled passenger aircraft stick to the Organised Track System. Increasingly, extended twin-engine operations are taking commercial aircraft to the north, clear of the tracks, never more than 120 (or sometimes 180) minutes from landing (in case an engine fails).

Twice a day, a set of about half-a-dozen routes (tracks) are fixed across the North Atlantic; each track is identified by a letter (e.g. Track Alpha). The routing is decided by weather considerations, especially the high-altitude wind. The h.f. control centres are situated on both sides of the Atlantic and one set of tracks is worked out at Gander, Canada, the other by Shanwick over here. Most eastbound flights leave America to arrive in the UK by our late morning and the returns begin in late afternoon.

Having obtained the Airband



Factsheet (mentioned previously), send off for a North Atlantic chart such as Aerad NAT 1/2. Now that you know the tracks to vary twice daily, you won't be surprised that they're not plotted on the chart. That's down to you, once you know the latitude/longitude co-ordinates defining the route. These are broadcast during part of the day on 133.8MHz, which is only audible in some areas of the country. The oceanic airspace begins and ends at boundaries that are clearly marked on the chart; along these boundaries, various airways terminate at reporting points. As there are more reporting points than tracks, only a few reporting points are in use by flights at any one time. A reporting point that forms the start of a track is, understandably, an Oceanic Entry Point.

Flights initially work v.h.f. over land, but when close to the Oceanic boundary they are told which h.f. channel to call. On first contact with the h.f. authority, the ground station asks for the aircraft's Selcall code in order to test the system. Selcall - Selective Calling - is equipment that enables the aircraft radio to be silent through most of the journey. When the controller wishes the crew to activate their receiver in order to hear a message, a tone code is first transmitted. This code causes an alerting bleep and warning light to activate in the cockpit. The code is defined by four letters, and when you know an aircraft's four-letter Selcall (as

announced by the crew on first h.f. contact) you can look up the actual registration in *High in the Sky* (a book sold by The Aviation Hobby Shop, 4 Horton Parade, Horton Road, West Drayton, Middlesex UB7 8EA, Tel: (0895) 442123).

As to the frequencies, they are listed in the Aerad and RAF supplements (see Airband Factsheet) but I also commend *World HF Aeronautical-Mobile R/T Frequency Allocations* from Isolethics, 157 Mundesley Road, North Walsham, Norfolk NR28 0DD; UK price £6.99. To help understand these documents, let me explain that Shanwick is a combination on Prestwick (where the controllers are, i.e. at the Scottish Air Traffic Control Centre) and Shannon (where the transmitters are). The voice heard on Shanwick is that of a radio operator at Shannon. The operators receive their instructions from, and then pass received information back to, the Prestwick controllers. Radar cannot see across the Atlantic so control is procedural, relying on accurate position reports from airborne inertial navigation systems.

The next three deadlines (for topical information) are June 17, July 15 and August 5. Replies always appear in this column and it is regretted that no direct correspondence is possible. Genuinely urgent information/enquiries: 081-958 5113 (before 21:30 local please).

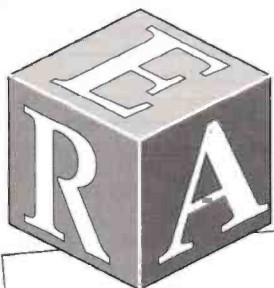


Grub Motor-Glider

Photo: Christine Mlynec

## Abbreviations

A	Airbus
a.t.i.s.	automatic terminal information service
ATZ	Aerodrome Traffic Zone
CAA	Civil Aviation Authority
Cat.	Category
D&D	Distress & Diversion
FL	flight level
ft	feet
GASIL	General Aviation Safety Information Leaflet
h.f.	high frequency
kHz	kilohertz
m	metres
MHz	megahertz
n.d.b.	non-directional beacon
nm	nautical miles
QNE	altimeter pressure setting, reads flight levels
v.h.f.	very high frequency



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# Scanning

The subject of radio communications being used to control national sporting events such as the *RAC Rally*, *Round Britain Yacht Race*, etc., feature fairly regularly in your letters to me. **Tom Bruce** of Ayrshire is a cycle race official who also has an interest in radio. If you are a regular reader of this column his name may already be familiar to you.

## Tour de France

Tom has been kind enough to send me an update on preparations for the *Tour de France* cycle race which is due to visit the south east of England in July.

The visit is the culmination of several years lobbying by a London based sports promotion company 'Sport for Television', and is due to arrive in Kent on the 6th of July after travelling through the Channel Tunnel (providing it is open by then). As well as the 180 riders and their support teams there will also be an entourage of 800 journalists, a further 1500 official vehicles and an escort group of French police who will accompany the race at all times.

The English portion of the route is to start at Dover castle on the 6th of July and will visit Folkestone, Canterbury, Ashford, Royal Tunbridge Wells and Ditchling Beacon. On the following day it will visit Bishop's Waltham, Winchester, Andover, Basingstoke, Petersfield and Havant before finishing in Portsmouth. With such a large number of people involved in the running of the race it is not surprising that the logistics of moving the equivalent population of a small town around the countryside will involve a lot of radio communications.

One factor which further complicates the issue is the requirement for frequencies which can be used in both France and Britain throughout the duration of the race. This should make very interesting listening to anyone within range of the Tour, which is likely to make use of repeater stations installed in aircraft which will circle the race route in order to provide wide area communications. In previous years this has been used to provide a continuous update service known as *Radio Tour* for journalists and race officials on a frequency of 153MHz. However this frequency is unlikely to be allocated in the UK as it is used by paging services, but apparently the DTI Radiocommunications Division is

being very co-operative in trying to find suitable channels for all the participants, including all the press, TV and radio companies, race officials, air ambulances, police (both French and British) who will be in attendance.

All of this activity should be an ideal monitoring opportunity if you live in the south east of England, although judging from previous events such as the *RAC Rally*, I would imagine that some of the aircraft-based communications may be heard as far away as Birmingham - if you have a reasonable antenna system.

My thanks to Tom for his very interesting letter, if you do decide to visit the event or monitor any of the activity why not share your experiences with the rest of us.

## From the Postbag

**Richard Acres** of Dorset lives in a cottage and wonders if he could make use of the wire netting currently protecting the thatching as some form of antenna. Although resourceful, I'm not sure that it would be particularly effective in its own right, as the poor electrical insulation properties of the straw would almost certainly severely reduce the efficiency of such an array. However it does strike me that it would make an ideal ground plane for any vertical antenna you chose to mount on top of it, especially on the h.f. bands. Has anyone else used a similar arrangement?

**J.M. Hinton** of Kent has a Tandy PRO-34 scanner and he wonders if it could be modified to receive outside its current frequency ranges, in particular the band 174-380MHz. This is a fairly common question to be asked and my standard answer is no. Most of the non-continuous coverage scanners cannot be persuaded to operate outside their normal frequency range because they do not incorporate the appropriate r.f. circuits. It is sometimes possible to fool the microprocessor controller to operate outside the standard frequency limits set by the manufacturer, but because the r.f. circuits will only tune over the existing ranges you are very unlikely to actually hear anything outside the standard bands. I'm afraid to say that the easiest way to obtain extended coverage is to trade the receiver in for a more sophisticated model. This is why (unless you have found a real bargain) I only recommend continuous coverage

models, as most receivers originally designed for the American market are not entirely suited to the UK frequency allocations.

**Ian Macdermott** of Essex wonders how the continuous race commentaries heard in betting shops reach the premises and if radio is used in any way. Well until recently the commentaries used to be relayed by private post office circuits, but times change and the need to send live video pictures from races meant that the old method could no longer be used. Satellites came to the rescue and I think that if you look carefully you will find a BT owned receiving dish tucked away somewhere near the property. Incidentally the supermarket chain ASDA also use a satellite link to distribute 'ASDA FM' to its premises throughout the UK.

## New Contributor

When I first started writing this column in 1987 it would have been difficult to forecast just how popular scanning was to become. At the time the Realistic PRO2004, AOR AR2002 and ICOM IC-R7000 receivers were relatively new and Cellular telephones still considered to be a 'Yuppie' plaything (and a secure means of communication). However times change and unfortunately so do work commitments. I now find that I can devote less time to the hobby and in particular the task of regularly producing this column. So I have reluctantly decided to hand over to **John Griffiths**, who will be taking over from next month.

## Scanning Progress

With this in mind I thought that would be worth recounting some of the items which I have featured during the past six or so years and which I consider to be 'milestones' marking the progress of the hobby.

The first column began in December 1987 with a review of Private Mobile Radio, at the time Band III trunked networks were becoming established due to the government policy of releasing two large chunks of the radio spectrum, formerly used by v.h.f. TV networks, for other purposes. This was partially intended to relieve some of the pressure for radio channels in large urban areas such as London, where the mid-80s boom in the economy had brought about a huge increase in the need for mobile

communications. The DTI Radiocommunications division was also undergoing major changes in its organisation and the publication of a colourful annual report shed a new light on many of its activities.

April 1988 saw Trio launch the RZ1, AOR the AR800 and Uniden the 50XL handheld. Computer control of the AR2002 with the Aircastle interface was also mentioned. I wonder if you remember some of these products as vividly as I do?

Speech scrambling was featured in the October 1988 with my prediction that increasing use would be made of such techniques during the next few years.

January 1989 included constructional details of a disguised handheld antenna which many readers found to be a useful accessory. I can recommend making one of these if you want to discreetly use your scanner in public places, but use miniature 10µH chokes not 1mH as shown in the diagram at the time. I wonder why no one sells ready made versions?

In February 1989 I started on a popular series of features entitled 'What Can I Hear?' this was a review of the radio spectrum starting at 25MHz and finishing several months later at 2GHz. As well as describing who could be found in various portions of the spectrum the articles also attempted to outline some of the types of unusual propagation conditions that may occur, producing long distance reception.

The equipment manufacturers had been busy and in April 1989 the AOR AR3000 got its first mention, followed next month by the ICOM IC-R9000 and the Standard AX700E both of which featured spectrum analyser type displays.

Antennas and pre-amps became popular subjects for discussion over the next few months with several new designs of active antennas challenging the more usual discrete designs. In October 89 we were introduced to Yupiteru for the first time with the introduction of the Jupiter II handheld. This featured a first i.f. of 705MHz much to the amazement of one reader!

Icom responded with the IC-R1 handheld, which still remains the smallest model available. A popular series of readers' modifications for various scanners started to be featured.

The expansion of personal communications systems was mentioned in the February 1990 column, which heralded the



development of cheap mobile radio systems operating at frequencies above 1GHz.

Interference problems became more prevalent as enthusiasts started using bigger antennas with wideband coverage handheld scanners. The construction of various notch filters to help reduce some of these problems were featured in the December 1990.

The increasing popularity of scanning as a hobby resulted in several newspaper reports of people being convicted of illegally listening to police and cellular telephone systems. This provoked quite a lot of discussion throughout the next couple of years, as did the publication of the *UK Scanning Directory* in mid-1992, which led to intense press interest in scanning culminating in the 'Dianagate' fiasco at the end of the year.

The September 1993 column included the announcement of fellow *SWM* columnist Peter Rouse's death. This was a shock to many readers who, like myself, knew Peter personally and who recognised what a major contribution he had made to the hobby with his series of *Scanning* books.

Over the past six years equipment has become much more sophisticated with readers pushing forward new boundaries by combining the use of personal computers and domestic satellite

receivers with their scanners. The current state of the art includes the new AOR AR8000 which includes some of the features, like the dual frequency display, mentioned by readers during the AOR sponsored scanning competition held by *SWM*. Not forgetting the new AOR searchlight control program, which allows the digital recording and logging of speech.

What can we expect over the next few years? Well I would imagine that the introduction of wide scale speech scrambling by the emergency services, the gradual move to data rather than voice communications and the introduction of secure digital cellular personal communications systems will reduce the general popularity of the hobby, although those retaining an interest will generally be much more sophisticated than their predecessors. Only time will tell.

### And Finally

Well that's the end of my regular contribution to *SWM* - although time permitting I may be able to present occasional articles in the magazine. I hope that you have enjoyed the topics mentioned in past issues and that you will continue to support my successor. It only remains for me to thank all the people who have helped to produce

this column. Special thanks go to my wife **Elaine**, who is a much more accurate and user friendly spell checker than my computer, and to all those readers who have generously contributed items to the column, many of whom have become regular correspondents.

All future communications concerning the column should be addressed to:

**John Griffiths, 9 Rhos y Gaer Avenue, Holyhead, Gwynedd LL65 2BE**, but I still intend to visit the occasional amateur radio rally, so why not say hello, or alternatively you can send personal messages to my FAX/Answerphone on (0703) 262246.

73s de Alan

VA



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# Info In Orbit

My postbag shows there is considerable interest in the general satellite scene, as well as WXSATS. A new service for the large number of people wanting Kepler elements starts this month.

## Recent WXSATS

There have been few changes in the WXSAT scene during early spring. METEOR 2-21 (137.40MHz) was switched off in early March and METEOR 3-5 (137.85MHz) has remained transmitting during its sunlight hours. NOAA 9 (137.62MHz) was routinely switched off for the few weeks during March when its passes coincided in part with NOAA 11 (also 137.62MHz), which takes priority. It resumed operations from April 8 as expected.

Contrary to information published elsewhere METEOSAT-5 (not 4) is the operational geostationary WXSAT using 1691.0MHz. The change-over happened on February 4 following a sudden degradation of METEOSAT-4 images.

Other satellites logged during recent weeks include NIMBUS 4 transmitting on 136.50MHz, a signal that I had long been trying to confirm. PROSPERO (X3) is on 137.56MHz, TEMISAT on 137.72MHz, TRANSIT on 136.65MHz and MAGION 3 on 137.85MHz.

## Future Launches

The TASS News Agency announced in late March that a new weather satellite launch is planned for next year. TASS correspondent Veronika Romanenkova described the new satellite - classified as METEOR-3M (Modernised) - as carrying a radiation balance radiometer scanner, designed by Russian and French specialists.

*The aim of the project is to obtain information about the land-atmosphere radiation balance; this is necessary for studying the tendencies of climate changes and for increasing the accuracy of weather forecasts* said a press release issued by the Russian Space Agency. The final paragraph of this release seems so ambiguous that I have not included it.

## And Postponements

The Feng Yun 2A (FY-2A) geostationary meteorological satellite was officially due for launch sometime after 15 April 1994;

however an announcement early in April advised that launch had been postponed indefinitely. The spacecraft will be eventually be located at 105° East.

## Letters

**P Marshall** of Welling has been tuning his AR-3000 to listen to the WXSATS but wondered what was the best mode with which to hear them. He points out that with a choice of a.m., a.m., w.b.f.m., u.s.b., l.s.b. and even c.w. he was not certain of the best option. Assuming that an external antenna is connected to the receiver, the nearest choice is f.m., but I feel that it is a poor option. Those modes are really only applicable to standard utility transmissions from earth-based stations. Each mode has a bandwidth carefully matched to the normal signal characteristics of the mode, e.g. c.w. (continuous wave - used for Morse code) has an exceptionally narrow bandwidth.

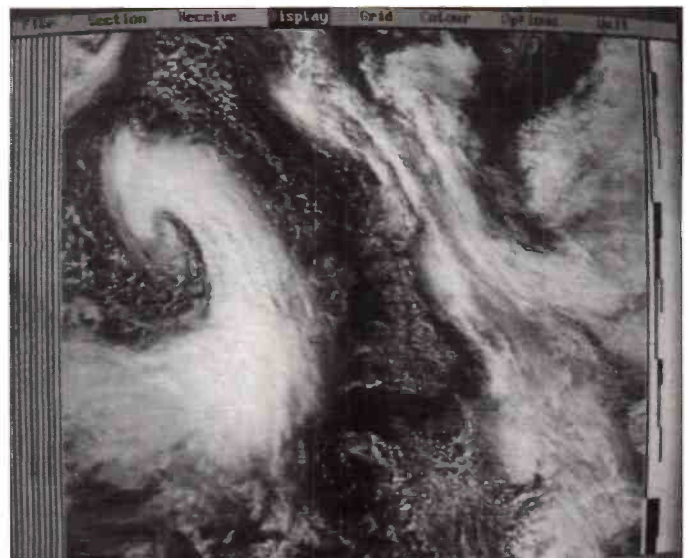
Our WXSATS have a unique signal construction - an r.f. carrier in the 137MHz band frequency modulated (f.m.) with a sub-carrier of 2.4kHz, itself amplitude-modulated (a.m.) by the dark or light image data. The ideal bandwidth (depending on the satellite) is between 35 and 50kHz. There is not normally such provision on a standard general purpose receiver. The nearest mode is narrow-band f.m., which should enable the listener to hear WXSAT signals from satellites passing reasonably high over the horizon.

**Ken Ayre G3DPR** of New Milton tells me that at 71 he is very willing to learn about Kepler elements, despite being a complete beginner to computing. Age is irrelevant Ken!

Some readers have provided descriptions of their experiences in setting up WXSAT receiving systems and obtaining their first pictures.

**T Lane** of Bideford got his first picture in April last year - METEOR 3-3. His good quality image showing Britain and the approaching weather depression of that date can be seen in **Fig. 1**. The right side of the picture shows METEOR aperture bar indicators. These white and black bars represent binary code indicating the degree of opening of the sensors. The bars on the left are the phasing bars, used to indicate the start of an image line.

**Quentin Hordle** of Poole sent me another selection of large format prints from METEOSAT. **Fig. 2** was



**Fig.1: Meteor 3-3. 1300UTC 4 April 93.**

**T Lane.**

taken on February 3 at mid-day and shows the rapid approach of the vigorous weather system that hit the south-west, bringing strong gales. The picture shows the shower clouds that followed the spell of rain, and marked the approaching front. Quentin has not provided any details of his set-up, but he has obviously got a good printer!

## WXSAT Equipment Suppliers

Many new readers of this column have asked me for information about manufacturers of all types of WXSAT receiving hardware and software. I usually refer correspondents to advertisers in *SWM* but I do know that some suppliers do not currently advertise here despite the column's apparently large readership. The following might be of interest:

Comar Electronics, Unit 3, Medina Court, Arctic Road, Cowes, Isle of Wight PO31 7XD; Tel: (0983) 200308.

Martelec Communication Systems, The Acorns, Wyck Lane, East Worldham, Alton, Hants GU34 3AW; Tel: (0420) 82752.

Spacotech, 21 West Wools, Portland, Dorset DT5 2EA; Tel: (0305) 822753.

TH2 Imaging, 34 Princes Gardens, Margate, Kent CT9 3AR; Tel: (0843) 223831.

Timestep, PO Box 2001, Newmarket CB8 8XB; Tel: (0440) 820040.

This list - in alphabetical order! - refers to companies normally retailing completed products - not kits, and it may not be comprehensive. Suppliers often specialise in certain areas e.g., they may concentrate on non-IBM computer interfaces. Some suppliers (not necessarily those above) barely admit their existence and even some well-known names do not always keep me updated with information about their new products.

## New Products

As intimated previously, I hear about recent WXSAT products from various sources. Martelec Communication Systems have supplied details of their JVFX interface unit. For those readers wanting to try the JVFX program covered last month, but who do not wish to construct the hardware that connects the WXSAT receiver to the computer, this unit may be worth considering. Contact Martelec as before.

## Computer Specifications

**David Banks** of Cumbria is one of several people looking for advice on computers suitable for WXSAT decoding. I did a special feature on that some months back, but to summarise, virtually all current IBM clones, the 386 and 486 versions, even standard 286s are more than qualified. I would recommend a minimum of 4Mb RAM and SVGA monitor. A co-processor is not essential, but speeds up some mathematically intensive operations.

One normally buys a PC for other applications so I do always suggest ensuring that these are catered for - satellite decoding is less demanding. The 4Mb RAM is the minimum for normal Windows usage, and allows several METEOSAT images to be held in memory for animating. Correct RAM memory configuration is also important.

## Non-IBM computers

Requests for information on non-IBM computers such as the Commodore Amiga 1200 are still received.

**Andrew Jackson** writes from Google enquiring about hardware and software for his Amiga. A letter from **Adrian Largford** of Redditch asks about WXSAT products for his Sinclair 128 Spectrum. Unfortunately the very small RAM memory of the Spectrum makes it impractical to use for WXSAT operations, though



**Fig.2: METEOSAT. Noon, 3 February 94.**

**Quentin Hordle.**

satellite tracking software might exist.

A letter from **S Ince** enquired about the Amstrad CPC 464 for use in WXSAT operations. I believe that Maplins still provide kits for this computer, though a considerable amount of test gear may also be needed. If anyone has any details about sources I will be happy to pass it on via this column.

**Peter Knight** works at Marlborough College as a Senior Physics Technician. He is one of a number of people who continue to report problems from pager interference. This is transmitted from a variety of sites around the country, and uses a number of frequencies including one or two adjacent to the 137MHz WXSAT band. Peter picked up an old Unilab 137MHz WXSAT receiver, complete with BBC decoder. Close examination revealed ceramic filters that he swapped for narrower crystal equivalents - and now gets good results. Some other modifications were needed, and his next plan is to interface it to a computer - IBM clone type.

## BBS

Those readers who have modems may already be aware of the number of BBSs (bulletin board systems) carrying information on space matters. Some are devoted to astronomy, others to satellites of one or more types. Several of you have asked for a list of BBS:

1: Dartcom provide a variety of files including Kepler elements updated once per month. It is on (0822) 88249.

2: Prometheus was set up by Barry Spencer in 1985, which now includes radio astronomy, rockets and Kepler elements - courtesy AMSAT-UK. To use the system you need a terminal/micro running the Viewdata emulation. The number is 081-300 7177.

3: RIG (Remote Imaging Group) BBS contains recent Kepler elements plus a good selection of programs and files available for downloading. It is on (0945) 85666.

4: NASA Spacelink: the very latest Keplerian elements to track the American Shuttle are available, with other elements, from their computer information system BBS (205) 895-0028 and the ARRL BBS (203) 666-0578 - all in the USA!

5: Starbase1 is devoted to astronomy and space matters. It is a messaging BBS so you can leave me a message if you wish! Kepler

element files are available, as are thousands of space-related files. It is currently on 071-733 3992 and 071-738 7225.

6: Timestep's BBS normally contains the latest Kepler elements for the WXSATs and a few other items. It is on (0440) 820002.

There are also different networks which carry space-probe images from NASA probes and satellites, regularly updated. **James Salisbury** of Huddersfield mentioned Internet in a recent letter. Internet can be accessed via Compuserve (0800) 289378, which is a monthly subscription service. For those wanting to see examples of such images I would strongly recommend dialling up Starbase1. In addition, for those who do not have a modem, I am planning to make a selection of these images available via post to me, at minimal cost. Full details in a future column.

## Printing WXSAT images

Software to decode and display WXSAT pictures often includes a printing option. Pictures may contain fairly high resolution information, so to reproduce them without losing this detail, one needs both a good printer and a good (software) driver. This often specifies just one printer.

By saving an image in a recognised format, such as GIF or PCX, one can import the image into other software, such as desk-top-publishing (DTP) or similar programs. These usually provide a range of alternative printers not included with the original WXSAT decoding software. Various shareware programs such as GWS and VPIC provide further options.

Using this method you can print your image with a 9 or 24-pin dot matrix, bubblejet, or laser printer. The quality of the final result largely depends on both the driver and the printer. Dot matrix technology often produces a striped result because of the ribbon. Text printing can be of high quality, but large areas of shade may show up badly. This is why, in the absence of either bubble-jet or laser printers, we have to use screen photography.

A number of correspondents have sent me very impressive headed letters, using weather pictures as part of the header. **Phil Layton** and **Mark Pepper** each sent such a letter. Phil printed a compact picture of one of the first images from METEOR 3-6 in his

letter, when requesting its Kepler elements!

## Pictures

As indicated, I am very impressed with the pictures of outstanding quality from 'Info' readers. During the last year or two, quality has increased with the expanding use of laser and bubblejet printers, combined with image enhancement and format conversion software.

**Laurence Patton** of Luncarty in Perth sent me a large format image transmitted by METEOR 3-5 when passing over the Kola Peninsula and White Sea. Excellent - one of the most impressive I have seen. The Gulf of Bothnia is completely frozen over, and sheets of ice surround the Kanin Peninsula.

Laurence uses a RIG crossed dipole feeding a Dartcom receiver, with PROsat2 running on his 386 computer (similar to my set-up). As he points out, the image resolution of METEOR passes is such that large pictures can be obtained without the pixels becoming obtrusive. Laurence has a friend recently back from the Olympics, who comments that the icebreakers have been working hard to keep the channels open this year.

## NOAA High Resolution Telemetry

As a new feature to this WXSAT column, I am proposing to run occasional items on high resolution imagery. Having already introduced some features of METEOSAT Primary Data systems in recent months, I'm now providing an introduction to NOAA high resolution picture transmissions (h.r.p.t.). Comments from readers are very welcome. The idea is to provide background information on this subject, particularly as the price of hardware drops towards amateur levels.

It is worth realising that one can obtain selections of these images at minimal expense, from a number of sources. Clubs such as RIG (see elsewhere in this column) include such images in their databases; certain BBSs (again see details) store numerous high-res images, and I am proposing to make some examples available on disk in due course, using various sources.

However, there is a growing wish to install local, low-cost ground stations that can receive and process high resolution picture transmission data from the NOAA WXSATs in realtime. The main features of such a system must include several individual facilities:

The tracking antenna (a dish to receive the 1700MHz band) must be easily installed and maintained:

Its control system should be compact and operate from a desk-top computer

The receiver should be connected to, and operated by your 386/486 PC

High quality image processing of satellite pictures should be available,

using software compatible with common operating systems

The system should be easily adapted for various investigative projects

It must be user friendly, reliable and easy to maintain without the need for expert programmers

Users should be able to expect upgrades to become available at minimal charge to correct unforeseen software/hardware bugs and to enhance the current equipment, should the user so require.

This list is not exhaustive, but covers major considerations to be made before any system is selected. I have not applied these criteria to any currently available system. Subject to readership response, I shall cover these areas more deeply in the months to come.

## Kepler Elements

Different options are now available:

1: I will send a print-out of the latest WXSAT elements upon receiving a stamped, self-addressed envelope and separate, extra stamp (towards data retrieval costs). All WXSATs plus MIR are included, together with transmission frequencies if operating. This data originates from NASA.

2: To join my list of people receiving automatic monthly Kepler print-outs please send a 'subscription' of £1 (plus four self-addressed, stamped envelopes) for four editions.

3: For those readers who have requested a disk service, I now provide files containing recent elements for the WXSATs, and a massive 0.5Mb ASCII file holding elements for many hundreds of satellites. This option includes a print-out identifying NASA catalogue numbers (for the WXSATs, Amateur Radio satellites, and others of general interest), in both launch and object format - ideal for computer data retrieval. The current offer includes an already extracted WXSAT file. This option is constantly being improved and notes are provided. Please enclose cash, a cheque, or PO for £3 with your PC-formatted disk and s.a.e. Foreign correspondents should ensure that they enclose sufficient IRCs to cover postage. Further suggestions for improvement will be welcomed.

## Sorry

Some readers have written letters requesting volumes of information and help. I am afraid that I simply do not have the time to respond significantly to such requests.

## Frequencies

NOAAs 9, 11 a.p.t. on 137.62MHz; NOAAs 10, 12 on 137.50MHz; NOAA beacons on 136.77 and 137.77MHz and METEORs (currently 3-5) use 137.30, 137.40 or 137.85MHz.



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# Decode

## All the Data Modes

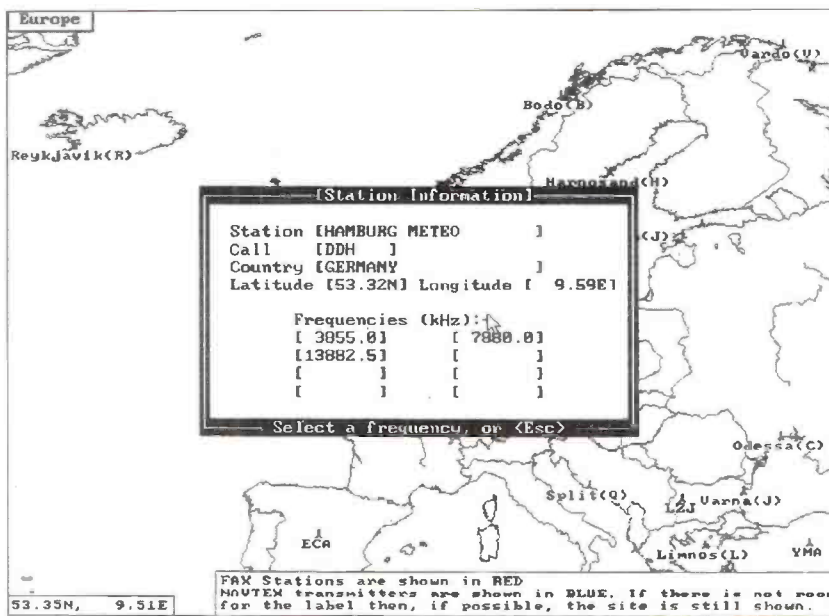
Things are beginning to hot up on the Digital Signal Processing front thanks to the steady advance of modern technology. The HF-1000 reviewed elsewhere in this issue is a classic example of how d.s.p. (digital signal processing) can revolutionise familiar areas of our hobby - who would have thought 58 i.f. bandwidths would be feasible. It's important to note that we are just at the tip of the iceberg and there's lots more to come.

Just to illustrate this, Tom Crosbie of Lowe's recently sent me a couple of their latest noise reduction units for evaluation. You may well have seen them in their latest adverts and like me been surprised by the price. It was not until I took a closer look and found that d.s.p. was the active ingredient that I saw the reason for the price tag. The first unit to be connected to my shack was the NTR-1 wide band noise and tone remover. The unit is presented as a small (4.3 x 16.6 x 12.8mm) black metal box with just four push buttons and a phone jack. The rear panel was equally simple with phono sockets for audio in and out and a coaxial power socket.

The power requirements were just 11-16V d.c. at about 800mA. The audio input is designed to be taken from the external speaker socket of the receiver, whilst the audio out connects to an external speaker. To overcome the limitations of so few controls, there are a number of internal jumpers that can be set to optimise the NTR-1's performance for different listening requirements.

This basically involved setting the overall bandwidth of the noise reduction circuitry. As you would expect, the wide setting is for broadcast use, whilst the narrowest was optimised for s.s.b. and c.w. The great beauty of d.s.p. in this sort of application is that it does all the work for you - no more fiddling about with an array of knobs to get the best performance. With this unit pressing the NOTCH button simply eliminates any tones that are present in the audio signal. This not only applies to single tones but it can take out several tones without any intervention by the operator. If you tune-in a two tone RTTY signal and press this button the sound changes to a series of clicks representing the keying clicks. The RTTY tones are reduced to the point where they're virtually inaudible. The quoted typical reduction was about 50dB for one

### Modemaster Navmaps display.



to four tones. This was a very impressive start - at least for the broadcast listener.

Operating the Bandwidth switch changed the audio bandwidth from around 6.6kHz down to 3.4kHz, which is more suitable for utility listening. Probably the most impressive function of all was the noise reduction mode. When the narrow bandwidth was set this reduced the level of white noise by between 10 and 20dB. When I first tried it I could hardly believe my ears, it was such a striking reduction.

The second model sent to me was the NTR-1's bigger brother the NIT-10. This featured a wider range of both operator control and noise reduction features, than the NTR-1 - hence the higher price. Control of the noise reduction is through a pair of three way toggle switches and a rotary control. For speech signals there's a general noise reduction mode where the degree of reduction is determined by the setting of a rotary control. This was set-up to tackle white noise by eliminating everything it didn't recognise as speech. This could be combined with the notch filter to remove heterodynes.

As with the NTR-1 the d.s.p. could effectively remove several heterodynes. For utility listeners, the peak facility was particularly effective and automatically adjusted the pass band to accept all coherent signals. This was good for both RTTY and c.w. signals. Perhaps best of all for utilities was the bandpass mode. This had three bandwidth settings marked narrow/medium/wide and was ideal for handling all types of utility signal. I tried both of these units with a number of popular decoding systems and there appeared to be no unpredictable effects on the data signals.

I also took the opportunity to look inside the NIT-10 to check out the build quality. This was of a very high standard with a solid

aluminium case and high quality glass fibre p.c.b. The 68-pin d.s.p. chip was socket mounted, as were the EPROMs containing the processing software.

Before you all rush out to buy one of these, I ought to point out that there's no magic in this unit and it cannot perform miracles. It's performance has been optimised to deal with the types of noise encountered on the h.f. bands. As a result you cannot reasonably expect it to reduce all types of noise. For example, if you're suffering computer interference you should address this at source and not by noise reduction systems such as this. Having said that both of these units are well worth investigating look out for them at your local Lowe dealer or radio rallies (I'll also badger the Editor for a full review). (*I thought that was why I delivered them to you! Ed.*) My thanks to Lowe Electronics for the loan of the review models.

### Modemaster Update

Another new release from Lowe's is version 2 of their Modemaster decoding system. This latest version has added a number of useful extras. One of the most important is the addition of a range of control modules that enable many popular receivers to be controlled directly from within the program. In the first version of Modemaster only the HF-150 receiver could be controlled directly from within the program.

One of the most impressive additions is what they've called Navmaps. This is an ingenious combination of map and database with links to your receiver. Although the program is accessed via Modemaster, it is in fact a stand-alone system that can be run under Windows if necessary. You can set your own position in Lat and Long and then display an assortment of maps from around the world. These

can either be from the built-in wide selection or you can generate your own. With each of the maps you can then determine what additional information should be displayed.

The options available were Database stations, Nav Areas, NAVTEX transmitters and Ship areas. The real gem was the ability to simply click on a station with the mouse and be presented with a list of all the available frequencies. If you have the appropriate remote control module for your receiver installed, you just click again to set your receiver to the chosen frequency. This was just about the most convenient way I've come across for finding the best FAX signals. I was able to quickly dart around the world checking out the signal strengths of a wide range of stations. Although the system is supplied set-up for FAX stations using the Modemaster FAX database, the basic idea is so good it can be applied to all areas of short wave listening. I'm sure the authors (Skyview Systems) will be quick to capitalise on this system.

Other enhancements for version 2 were LPT2 and XMS memory support plus improved Autolist information. For more details contact Lowe Electronics.

**J. Salisbury** of Huddersfield has a few tips to help JVFX users. He runs his version on a Toshiba notebook (T1800 -386 with MS-DOS 5) PC using a simple comparator interface and a Lowe HF-225 receiver. Although these tips are for a Toshiba, they are likely to be relevant to most laptop PCs. First of all he suggests you disable the auto resume feature as this can clash with JVFX and cause a crash.

Next to go is the expanded memory driver EMM386, which can be done by putting rem in front of the EMM386 line in the config.sys file. Finally you need to disable the Advanced Power Management. The command lines for this are:



power off  
jvfax  
power adv.reg

He also recommends that you remove any unnecessary command lines from your AUTOEXEC.BAT file. This can be done quite neatly by entering a line with the statement PAUSE just before the non-critical lines. When this line is encountered during boot-up you just press Control C to stop the extra lines loading. Pressing any other key will continue the load as usual.

If you're building the simple comparator circuit, it's worth replacing the 741 chip with either a CA3140E, LF351Nor LF411CN. If you have one of the ready-built Pervisall units you don't have to worry as they've already thought of that trick.

Having provided a number of tips, he has a problem with his own FAX reception. His favourite station of late is Hamburg met on 7.88MHz but he's recently been suffering interference from a c.w. station. He asks how can he overcome this problem. The normal way to handle this is to use some additional filtering to separate the FAX signal from the interference. However, the success of this technique depends how close the interfering signal is both in terms of signal strength and frequency.

If it's right on top you may be able to use a narrow notch filter such as the Datong FL3 to remove it, though you'll have to experiment to balance interference rejection with the effect on the wanted signal. If the interference is close but not on top of the signal than you can probably use a bandpass filter. Here you need to balance the centre frequency and bandwidth to give the best overall result. For FAX signals you ought to keep the bandwidth as wide as possible or you'll start to lose detail.

His final question concerns the shift figures that I quote in the frequency list. He uses a BARTG

Multiterm which has a 425Hz shift whereas I often quote 400Hz in my list. He wonders if this difference is likely to cause receive problems. There is a myth lurking here as most people used to think that commercial stations used a shift of 425Hz - mainly because the 425Hz setting of their decoder gave the best results. With many modern decoding packages now able to measure the shift, the truth is that most stations do in fact use 400Hz shifts. But you don't need to worry about the effect on your decoder, as the filters are not normally narrow enough to worry about this fairly small error.

Now a plea for Amiga users. **John Foot** of Jersey and **Ron Shilvock** of Halesown both have Amigas and are struggling to find a source of decoding software for their machines. Whilst these programs were fairly plentiful a few years ago, they seem to have all but dried up. Can anyone out there help? If so please write to the address at the head of the column.

**Peter Thornton** of Thames Ditton writes with a tip for decoding DCF49 on 129.1kHz. According to Peter, this transmission uses 200 baud 450Hz shift with an eleven bit frame comprising 1 start bit 8 data bits 1 even parity bit and 1 stop bit. The transmission comprises bursts of data every six to ten seconds with the indent 'DCF49 TEST' about every 30 seconds. Assuming your decoder can handle this you will need to set the alphabet to ITA5.

### Special Offers

Over recent months I've put together a number of special offers designed to help utility enthusiasts get

the most from the hobby.

The latest in the line-up is Wilhelm Schroder's Hamcomm 2.2 as recently reviewed in Decode. For those interested in FAX and SSTV reception I also have the latest versions of JVFAX i.e. Version 6 revision 931201. Frequency listings can be supplied in two formats - *Decode or Day Watson Beginners' List*. The Decode list is a compilation of logs sent in by Decode readers and is generally around three to four pages long. The Day Watson list is designed for the new listener and contains reception advice plus a time indexed listing of a number of reliable utility stations. The object being to ensure the newcomer can find something decode without too much searching around the bands.

The ordering details and prices for the various combinations are as follows.

JVFAX or Hamcomm: For each program send a blank

formatted 3.5in disk (720Kb or 1.44Mb) plus 50p and a self addressed sticky label.

Beginners list or Decode list - 50p and a self addressed sticky label.

Both lists plus JVFAX or Hamcomm send a blank formatted 3.5in disk (720Kb or 1.44Mb) plus £1.00 and a self addressed sticky label.

**Buenos Aires Press  
9.243MHz**



### Frequency List

Now for this month's selection of frequencies supplied by Decode readers. The following are just a few who have contributed: Day Watson, **S. Workman, Geoff Crowley, Chris Durkin** and **Steve Walker**.

My thanks also to everyone who has written in with information for the column. As you will have already realised I'm way behind with my letter replies. This is because of the combination of a house move, holidays, a demanding full-time job and the overwhelming response to my JVFAX and HAMCOMM software offers. To make my life a little easier it would help if you could make any questions you want answered very clear and to the point. Wherever possible I will attempt to group together common questions and answer them through the column.

Freq (MHz)	Mode	Speed	Shift	Call	Time	Notes
0.1342	FAX	120	576	DCF54	1804	Offenbach Met
4.271	CW	-	-	OFJ	2207	Helsinki
4.633	CW	-	-	SVB2	1953	Athens
6.415	CW	-	-	7TF4	1902	Boufarik Algeria
6.919	FAX	120	576	ECA7	1952	Madrid Met
7.76	FAX	60	576	RGH77	1715	Arkhangelsk Met
7.808	RTTY	75	400	DFZG	1525	MFA Belgrade News
7.88	FAX	120	576	DDK3	0945	Hamburg Met
8.02	RTTY	50	400	HMF 46	1930	KCNA News
8.049	RTTY	50	400	9BC25	2029	IRNA Tehran
8.08	FAX	120	576	NAM	0113	USCG Meteo
8.474	CW	-	-	SUP	1738	Port Said Egypt
8.629	CW	-	-	WCC	2207	Chatham USA
8.686	CW	-	-	CNP	2215	Cassablanca
9.045	FAX	120	576	5YE	2005	Nairobi Met
9.133	RTTY	50	500	ZAA6	1200	Albanian Press
11.424	SITOR B	100	170	SOL242	1845	Warsaw Radio
11.536	RTTY	50	200	HMF 49	1900	KCNA News
12.211	RTTY	50	400	-	1610	Tanjung News
12.228	RTTY	75	400	SNN299	1613	Warsaw News
12.229	RTTY	75	425	BZR62	1440	Xinhua
12.922	CW	-	-	URD	1707	St Petersburg Russia
13.373	RTTY	50	240	5YD	2050	Nairobi Air
13.399	RTTY	75	425	DFZG	1525	MFA Belgrade
13.4245	T/PLEX	100	170	-	-	Pakistan Embassy Ankara
13.9645	ARQ	100	170	HBC88	-	ICRC Geneva
14.367	RTTY	75	425	BZP54	1100	Xinhua
14.3741	Packet	300	300	AFA3	-	USA MARS
14.405	SITOR A	100	170	4UZ	1450	UNHCR
14.4545	RTTY	50	500	HMF 57	-	KCNA Pyongyang
18.22	RTTY	50	425	CNM76X9	-	Morocco
18.264	RTTY	53	440	XVN48	-	Hanoi
19.0769	RTTY	50	400	CLP7	-	Cuban Embassy
19.294	RTTY	50	425	-	1425	Department of Information Cuba
20.3	FAX	120	576	NKW	-	USN Diego Garcia

### PIAB Schedule

Regular readers will have noticed that the gremlins managed to erase this from last month's column. So here we go again with the full schedule as captured by **Day Watson**. The transmission mode for all stations is FEC A 96 baud with a 400Hz shift.

Time (UTC)	Direction	Frequency	Call sign
0645-0845	Europe	123.7kHz	DCF42
0830-1030	Nahost	16.0138MHz	DGQ2115
0830-1030	East Africa	20.4985MHz	DGU5012
0830-1030	West Africa	13.5709MHz	DGN57L1
1200-1400	Sam North	20.5006MHz	DGU50H1
1200-1400	Sam South	23.691MHz	DGX6912
1345-1445	Europe 2	123.7kHz	DCF42
1345-1445	Europe 2	11.1235MHz	DGL20H3
1430-1630	Mam North	18.7024MHz	DGS70H3
1430-1630	Mam South	20.0224MHz	DGU20H3
1500-1700	Singapore	7.916MHz	DGG91L2
1600-1800	Central Asia	11.112MHz	9VE
0230-0430	Central India	16.05MHz	9VF253
0230-0430	South India	16.15MHz	9VF205
1600-1800	North Asia	7.9MHz	9VF39

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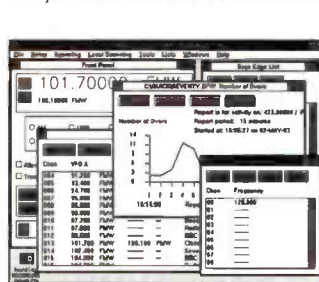
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# Maritime Beacons

Some remarkably distant beacons were logged at night by listeners in the UK during January, February and March. The sky waves from the beacon at Prins Christian Sund, Greenland (OZN) on 372.0 were picked up by **Robert Connolly** in Kilkeel! His log, and those from **Jim Edwards** (Bryn) and **Steve Cann** (Southampton) included beacons in Iceland, the Faroes, Scandinavia, Arctic Russia, Latvia, Lithuania, Corsica, Majorca, Morocco and the Canaries!

Beacons along the coastline of Norway, Sweden, Denmark, Belgium, France, Ireland, Spain and Portugal as well as the UK were logged during the evening by **Leslie Biss** (Knaresborough), **Gerry Haynes** (Bushey Heath), **Peter Polson** (St. Andrews), **Peter Rycraft** (Wickham Market) and **Peter Wade** (Sevenoaks).

Although **Robert Moore** (Holywell) logged fifteen beacons during the period 2115-2253 on March 19, reception of all but the strongest signals was impossible the following night due to a high level of local electrical interference. Interference of a different kind was encountered by **Peter Pollard** in Rugby. Checks revealed that his Sony AN-1 active antenna was producing spurious broadcast signals in the beacon band. After disconnecting it he logged thirty-eight beacons!

The ground waves from beacons around our shores and some further afield were received during daylight by **Darren Beasley** (Bridgewater), **Kenneth Buck** (Edinburgh), **Bernard Curtis** (Stalbridge), **Ron Damp** (E. Worthing), **John Eaton** (Woking), **Albert Moore** (Douglas, IoM), **John O'Halloran** (Harrogate), **Fred Pallant** (Storrington), **Tom Smyth** (Co. Fermanagh), **Phil Townsend** (E. London), **John Wells** (E. Grinstead) and **Peter Westwood** (Farnham).

Despite repeated checks, **John Stevens** (Largs) was unable to hear the Butt of Lewis beacon (BL) on 289.0 or Duncansby Head (DY) on 290.5. Those on the Orkney and Shetland Is were also inaudible.

Whilst searching the band, **Kenneth Buck** noticed that the Flamborough Head beacon (FB) is now on 303.0. Its old frequency of 302.5 carries a data signal. He also found that the Hammerodde beacon (MN), listed on 289.0 in the March chart, is still operating on 289.5.

The first reports from **Clive Boutell** (Dovercourt), **Clare Pinder** (Appleby) and **Eric Rutter** (Fleetwood) made interesting reading. Clive was surprised by the number of

Freq kHz	Call sign	Station Name	Location	DXer	Freq kHz	Call sign	Station Name	Location	DXer
284.5	LZ	Lizard Lt	S. Cornwall	A, D, E, F, H, J, L, M, P, R, Y	303.0	FB	Flamborough Hd Lt	Yorkshire	B*, E, F, I, K*, L, M*, O*, R*, S*, U*, W
284.5	MA	Cabo Machichaco	N. Spain	F*, J*, O*, R*, Y*	303.0	FV	Falsterborev Lt	Sweden	D, F*, J*
285.0	NO	Cabo de la Nao Lt	S. Spain	F*, J*, Y*	303.0	YE	Ile d'You Main Lt	France	D, E, F*, J*, L, P, W, Y
285.0	NP	Nieuport W. Pier	Belgium	F*, G, J*, K, N*, W	303.4		Cape St. Vincent	Portugal	U*
286.0	TR	Tuskar Rock Lt	S. Ireland	A, O, E, F, K*, L, M, N*, O*, R*, U*, W*, Y*	303.5	BJ	Bjomsund Lt	Norway	D, F*, J*, U*
286.5	AL	Almagrundet Lt	Sweden	R*, U*, W*, Y*	303.5	FN	Feistein Lt	Norway	D, O*
286.5	BY	#Baily Lt	S. Ireland	F*, J*, O*, Y*	303.5	IA	Llanes Lt	N. Spain	E, F*, J*, Y
286.5	FE	Cap Frehel Lt	France	B*, F, M, V*	303.5	VL	Vieland Lt	Holland	D, F*, J*, Y
286.5	FI	Cala Figuera	Majorca	L, O	304.0	PS	Pt Lynas Lt	Anglesey	B*, O, E*, F, K*, M, N*, O*, R, W, Y
286.5	FT	Cap Ferret Lt	W. France	F*	304.5	MY	Cabo Mayer Lt	N. Spain	E*, F*, Y
286.5	NK	Inchkeith Lt	W. France	B*, E*, F*, J*, K*, O*, Y	305.0	C	Cabo Priorino Lt	N. Spain	J*
287.3	IB	I. Berleaga	Portugal	O, S*	305.0	FP	Fife Ness Lt	SE. Scotland	B*, O, E*, F, O, Q, S*, U*, Y
287.3	LE	Leba Rear	Poland	F*	305.0	GL	Ile de Giraglia Lt	Corsica	F*
287.3	MD	Cabo Mondego	N. Spain	F*	305.5	AL	Pt d'Ailly Lt	France	A, C, O*, E*, F, G, H, I, K*, L, M*, O*, P, R, U*, W, Y, Z
287.3	SE	Sete	France	F*	305.7	AK	Table d'Oukacha	NW. Morocco	C*, F*
287.5	DO	Rosedo Lt	France	F*	305.7	DA	Oalatangi Lt	Iceland	E, J*, S*
287.5	FR	Faerder Lt	Norway	B*, O, F*, J*	306.0	EC	Elizabeth Castle	Jersey	LY
288.0	HH	Hoek van Holland	Holland	F*, U*, V*, Y*	306.0	FN	Walney Is Lt	Off Lancs	B*, O, F, K*, M, N*, O*, R, T, W, Y
288.0	KL	Skiinna Lt	Norway	D*, F*	306.0	TN	Thynboron	Denmark	O, J*, S*
288.0	OH	Old Hd of Kinsale	S. Ireland	E*, N*	306.5	GJ	Le Grand Jardin Lt	France	Y
288.5	FI	Cabo Finisterre Lt	NW. Spain	B*, O, E*, F*, J, P, R*, S*	306.5	KL	Kolkasrags	Estonia	F*
288.5	YM	IJmuiden Front Lt	Holland	O, F*, O, U*, Y	306.5	KR	Kubassaar	Estonia	F*
289.0	BY	Baily Lt	S. Ireland	D, E*, F, L, M, N*, O, V*, Y	306.5	MV	Morzhovskiy	Arctic	H*, J*, Y
289.5	KY	Oksoy Lt	Norway	D, E*, F*, J*	306.5	OR	O. Qamussaar	Estonia	F*
289.5	LO	Landsort S Lt	Sweden	O*, F*, R*, S*, Y*	306.5	RS	Ristna	Estonia	F*
289.5	MN	Hammerodde	Denmark	D, F*, J*	306.5	SY	Sorve	Estonia	F*
289.5	SN	Ile de Sein NW Lt	France	E*, F*, J, L, R*, Y	306.5	UT	Utsira	Norway	O, E*, F*, J, O*, R*, S*, U*
290.0	BS	Port en Bessin Lt	France	L, V*, Y	307.0	GL	Eagle Is Lt	Ireland	D, F*, S*, V
290.0	FD	Fidra Lt	F of Forth	D, F*, S*, Y*	308.0	RC	Cabo Roca	Portugal	E*, F, J*, M*, O
290.5	DY	Duncansby Hd Lt	NE. Scotland	O*, F*, R*, S*, U*	308.0	RD	Roches Douvres Lt	France	A, E*, F, G, H, I, K*, L, O, P, R, W, Y, Z
290.5	LL	Hallo Lt	Sweden	D*	308.5	NZ	St Nazaire	France	E*, F*, J*, Y
290.5	SB	S. Bishop Lt	Pembroke	A, D, E*, F, G, L, M, N*, O, P, R*, U*, V*, W, Y	309.5	BA	Punta Estaca Bares	N. Spain	A, B*, E*, F*, J, L*, M*, O, P, R*, S*, U*, V*, W, Y
290.5	VI	Cabo Villano Lt	N. Spain	B, C*, F*, J*, K*, L, P, R*, S*, U*, V*, W, Y	309.5	FH	Fruholmen Lt	Norway	D, F*
291.5	CK	T. Navolokskiy	Arctic Russia	F*	309.5	MA	Marstein Lt	Norway	D, E*, F*, J, O*, R*, S*, U*, Y*
291.5	OR	Orskar Lt	Sweden	F*	310.0	ER	Pt de Ver Lt	N. France	E*, F*, J, K*, L, P, W, Y, Z
291.5	SU	South Rock LV	Co. Down	A, O, E*, F, K*, M, N*, O, R*, U*, V*, W, Y	310.5	BO	Bokfjord Lt	Norway	F*, O
291.9	IT	La Isleta	Canaries	E*, F*, J*	310.5	SG	Sjaellands N Lt	Denmark	F*, J
291.9	MR	Montedor Lt	Portugal	F*	311.0	GD	Girdle Ness Lt	NE. Scotland	D, F*, O, S*, Z
291.9	NA	Punta Lantaila	Canaries	E*, F*, J*	311.0	NF	N. Foreland Lt	Kent	C*, E*, H, I, K*, L, O*, P, R, U*, W, Y
292.0	MH	Mahon, Minorca	Baleares Is	J*	311.5	LP	Loop Hd Lt	S. Ireland	E*, F, N*, Y*
292.0	SJ	Souter Lt	Scotland	B*, D, E, F, M, O, Q, R, S*, W, Y	312.0	HO	Tenholmen Lt	Norway	F*
292.0	TO	Torungen Lt	Norway	D	312.0	OE	Oostende	Belgium	C, E*, F*, J, J*, K*, L, O, P, R, U*, W, Y
292.5	SM	Pt St. Mathieu Lt	France	A, E*, F, J*, K*, R*, W, Y	312.0	UH	Eckmuhl Lt	France	F*
293.0	CP	St. Catherine's Lt	IoW.	A, E, G, H, I, K*, L, O, P, R, U*, W, Y, Z	312.5	AK	Akmenrags	Latvia	F*
293.0	RN	Rhinos of Islay Lt	IoW.	O, F, M, N*, V	312.5	BK	Baltiskj	Latvia	F*
293.0	SY	Svinoy Lt	Norway	D, F*, S*	312.5	BT	Mys Taran Lt	Latvia	F*, J*, S*
293.5	RO	Cabo Silleiro Lt	N. Spain	C*, O, E*, F*, J*	312.5	CS	Calais Main Lt	France	C*, F*, J
294.0	KU	Kullen High Lt	Sweden	B*, C, D, E*, F*, I, K*, L, O, R*, U*, W, Y, Z	312.5	FV	Ostrov Belyi	Arctic Russia	J*
294.0	PH	Cap d'Alprech	France	R*, U*, W, Y, Z	312.5	KA	Klaipeda Rear Lt	Lithuania	F*
294.5	BA	#Black Hd Lt	N. Ireland	F	312.5	LB	Liepaja	Latvia	F*
294.5	FP	#Lymouth Fland Lt	N. Devon	O	312.5	VS	Cabo Estay Lt	N. Spain	U*
294.5	KC	#Old Hd of Kinsale	S. Ireland	F, I	312.5	WW	Ventspils	Latvia	F*
294.5	NG	Pikasaare Ots	Estonia	F*	312.6	SR	Skardshfjara Lt	Iceland	E*, F*
294.5	PA	Paknemeem Lt	Estonia	F*	313.0	HA	Halten Lt	Norway	J*, U*
294.5	PS	#Pt. Lynas Lt	Anglesey	E, F, M, O, R*, V*	313.0	PA	Cabo de Palos Lt	S. Spain	J*
294.5	PT	#Souter Lt	Durham	D, O	313.0	PB	Portland Bill Lt	Dorset	A, E*, F*, G, H, I, L, P, R*, W, Y, Z
294.5	SN	Sletnes Lt	Norway	F*	313.0	TY	Tory Is Lt	N. Ireland	D, F, M, N*, S*
294.5	UK	Sunk Lt V	Off Essex	C, F*, U*, W, Y	313.0	CM	Cromer Lt	Norfolk	B*, C, D, E*, H, I, K*, O, R, S*, U*, Y, Z
295.5	CB	La Corbiere Lt	Jersey	A, E*, F, L, O, P, W, Y, Z	313.5	OG	Olands Sodra Grund	Sweden	F*, V
295.5	RE	La Rochelle	France	F*	313.5	PQ	Porquerolles	S. France	F*, J*
296.0	BH	Blavandshuk Lt	Denmark	B*, O, E*, F*, J, O, R*, S*, U*, Y	314.0	HK	Hekkingen Lt	Norway	F*
296.0	GR	Georee Lt	Holland	J, O, Y	314.0	VG	Ile Virgile Lt	France	A, B*, O, E*, F, G, H, I, K*, L, M, N*, O, P, R, U*, W, Y, Z
296.0	KN	Skrova Lt	Norway	C*, F*, J*	314.5	SK	Strandholm	Iceland	F*
297.0	FG	Pt de Barfleur Lt	France	E*, F*, G, H, I, K*, L, O, P, R*, U*, W, X*, Y, Z	314.5	TL	Punta D. Penna	Italy	F*
297.5	MA	Mantyluoto	Finland	F*	315.0	SL	Sletterherage	Denmark	C*, O, E*, F*, J, K*, M*, P, R*, S*, U*, V, X*, Y
297.5	PS	Cabo Penas Lt	N. Spain	F*, J*	316.0	IN	Ingolfshofdhi Lt	Iceland	E*, F*, J*
298.0	GX	Ile de Groix	France	E*, F*, H, O, Y	319.0	LEC	Stavanger	Norway	A, B*, C, D, E*, F, H, I, K*, L, M, N*, O*, P, Q, R, S*, T, U*, V, W, Y, Z
298.0	TA	Cabo Gata	S. Spain	F*	372.0	DZN	Prins Chris's Sund	Greenland	F*
298.5	RR	Round Is Lt	Is of Scilly	A, B*, O, E*, F, H, J*, K*, L, M, N*, O*, P, R*, U*, W, Y, Z	381.0	AB	Akraberg	Faroes	E*, F*
298.5	SW	Skagen	Denmark	D, F*, J*					
298.8	DV	Djupivogur	Iceland	C*, O, E*, F*, J*					
298.8	HO	Hornbjarg	Iceland	F*					
299.0	AD	Ameland Lt	Holland	D, E*, F, H, J, O*, R*, V, W, Y					
299.0	BN	Les Baleines	W. France	E, F*, J*, O, X*, Y					
299.0	O	Tarifa	S. Spain	J*					
299.0	UN	Understen Lt	Sweden	O*, F*					
299.5	NP	Nash Pt Lt	S. Wales	A, E*, F, H, J*, K*, L, O*, P, R*, W, Y, Z					
299.5	SK	Skomvaar Lt, Rost	Norway	F*, J*					
299.5	VR	Utvaer Lt	Norway	B*, C*, D, F*, J*, O*, S*, U*, Y*					
300.0	MZ	Mizen Head	S. Ireland	E, F*, J*, Y*					
300.0	TI	Cap d'Antifer Lt	N. France	C, E*, J*, K*, L, O, P, W, Y, Z					
300.5	OU	Dungeness Lt	Kent	C, E*, F*, H, I, K*, L, O, P, R*, U*, W, Y, Z					
300.5	LA	Listia	Norway	D, E*, F*, J*, L, O, Z*					
307.0	CA	Pt de la Creach	France	A, F*, J, L, M, Y					
301.0	ER	Eierland Lt	Holland	D, F*, J*, O*					
301.5	KD	Kinnards Hd Lt	NE. Scotland	B*, O, F*, O*, R*, S*, Y					
301.5	L	Torre de Hercules	N. Spain	F*, J*					
301.5	OB	Hoburg	Sweden	B*, F*, J*, R*, U*					
302.0	RB	Cherbourg Ft W Lt	France	E*, F, K*, L, P, R*, Y, Z					
303.0	D	Rota	SW. Spain	E*, J*					

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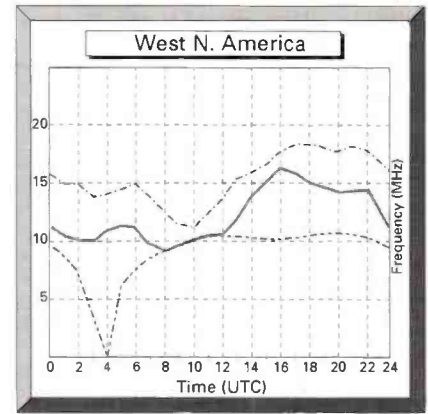
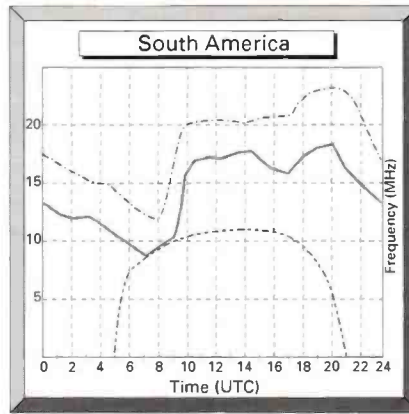
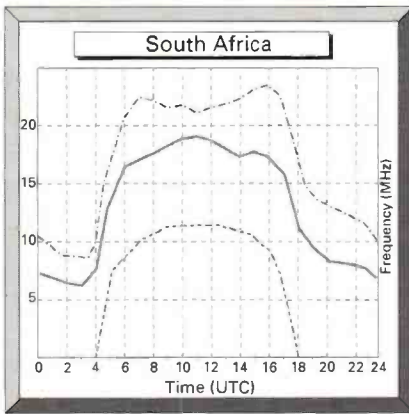
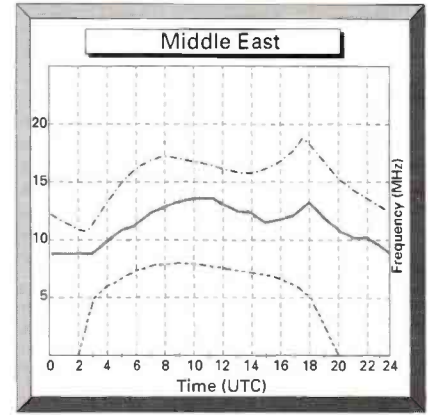
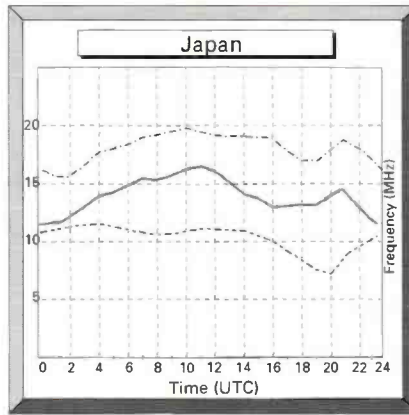
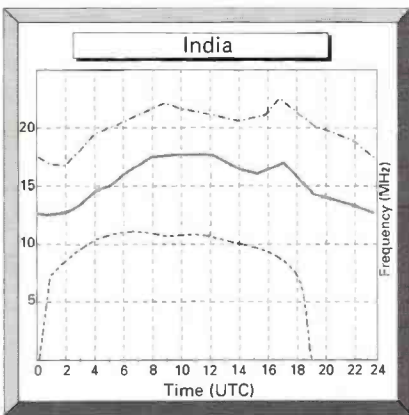
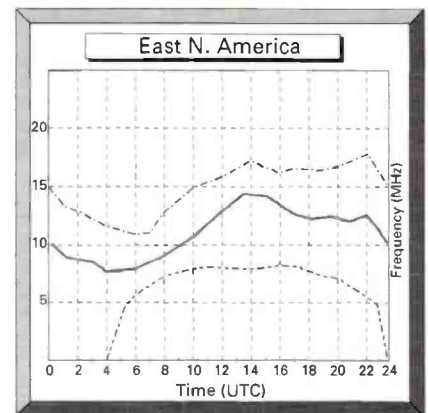
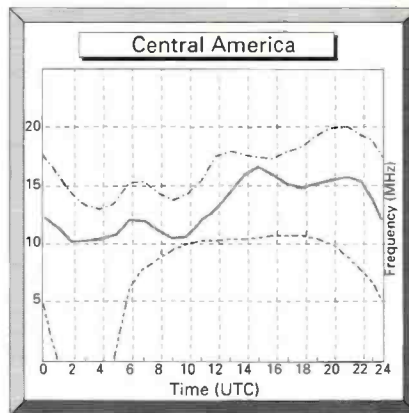
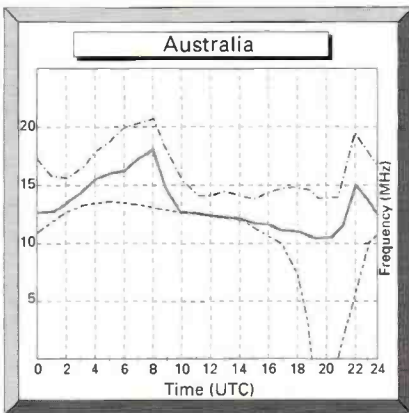


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# World Propagation Forecasts June '94

This month we are featuring a new service for propagation forecasting. We welcome your response to the following charts, so please write and let us know what you think. We will endeavour to make it a permanent feature if the response is sufficient to warrant this.



## Maritime Beacons

beacons he could receive during daylight and after dark. He says, "This part of the band has always seemed dead to me. That was until I switched my receiver to the c.w. mode". A vital point this, because the beacon carriers are unmodulated and they cannot be detected with a receiver in the a.m. mode.

The signal on 293.0 from the

St. Catherines Lt (CP) on the Isle of Wight is making the reception of some other beacons difficult for **George Millmore** (Wootton, 10W) - it completely swamps part of the band. Trinity House (Coves) informed him that a new antenna has been installed which is fed by an 11W transmitter. Perhaps a 'wavetraps', series-tuned to 293, installed between the receiver antenna and earth terminals would help.

Robert Connolly now uses a

computer program by Greg Baker (see pages 34/35 July'93 SWM) to ascertain the range and direction of each maritime beacon he receives! This program, which is written in BASIC, may be of interest to DXers who employ a directional loop ahead of their receiver.

For many years *Reed's Nautical Almanac* has provided mariners with detailed information about the I.W. maritime radiobeacons around our shores and those of some other

countries. However, Kenneth Buck has pointed out that the 1994 edition may be of little use to DXers, because only a shortened table is given. Some of the UK beacons have been omitted and none of the Norwegian beacons are listed. Instead, satellite and v.h.f. radiobeacons are detailed. The beacon booklet and supplement produced by Robert Connolly may be of more interest to DXers - for details write to him, via me, enclosing an s.a.e.



# Long, Medium and Short Waves

Some international broadcasters are now using the audio subcarriers of domestic TV satellites, e.g. Astra, but it seems unlikely they will discontinue their short wave services, as only a small percentage of listeners own satellite receiving equipment.

Although the performance of most modern s.w. portables is good, reception is often marred by the use of high power transmitters on shared channels. Until the broadcasters adopt a new approach to band planning the present problems are bound to continue.

## Long Wave Reports

Note: l.w. & m.w. frequencies in kHz, s.w. in MHz; Time in UTC (=GMT). Unless stated, logs compiled in the four week period ending April 2.

Frequent checks during March by **Roy Merrall** (Dunstable) revealed that weak sky waves from the RAI 10kW transmitter at Caltanissetta, Italy on 189kHz could often be detected after dark. On March 2 they peaked SIO323 at 1905. At 2305 on March 5 he noticed co-channel interference to the Polish R-1 transmission from Raszyn on 225. By tuning slightly to one side he heard distinctive chanting, which he suspected was from Van, Turkey. Similar chanting was heard on 243 from the TRT outlet at Erzurum.

The rebuilding by Polish Telecom of the 646m high l.w. mast radiator near Gabin, that collapsed in August 1991, has been delayed due to legal action by local residents. A compromise proposal, which involves rebuilding the mast but reducing the transmitter power from 2000kW to 750kW, is now awaiting official approval. Until the main transmitter at Konstanytown can be brought back into service Polish R-1 continues on 225kHz from the reserve transmitter site at Raszyn.

## Medium Wave Reports

Most of the m.w. transatlantic signals that reached here at night in March were too weak to be identified, but there were a few exceptions.

The broadcasts from two stations in Canada and one in the USA were heard by **Gerry Haynes** in Bushey Heath. He logged CJYQ in St. John's on 930 as SINPO 34433 at 0100; CKVO Clarendville on 710 as 24322 at 0126; also WBBR New York, on 1130 as 24222 at 0134.

Whilst checking the band on March 14 **Ted Bardy** (N.London) heard a broadcast in French on 1375. It peaked 23332 at 0105 and was from RFO, St.Pierre & Miquelon. At 0123 he heard WSSH in Boston, on 1510, which rated

32222. He tried again next night, but only CJYQ could be identified, which rated 22232 at 0135.

In Co.Fermanagh, **Paul Logan** (Lisnaskea) found the conditions favoured S.America, but all signals were weak. Three stations in Venezuela were identified: R.Vibracion (YVSY), Carupano on 1470, heard at 0045; R.Dos Mil (YVRZ), Cumana on 1500 at 0110; Ondas del Mer (YVNG), Puerto Cabello on 1380 at 0140. A check on CJYQ at 0130 revealed a weak signal. At 0300 he heard R.Vision Cristiana Int, Turks & Caicos on 535.

The broadcasts from some of the stations in North Africa and the Middle East were heard after dark by listeners in the UK - see chart. Although

**George Millmore** (Wootton, IoW) found reception good from S.Europe and N.Africa he noted a marked reduction in signal strength from Spain.

Over in Belgium, **Wilfried Derynch** (Ichtegem) received the sky waves from four stations in Saudi Arabia! Soon after 0100 Qurayyat on 900 was SIO212; Damman 1440 SIO343; Jeddah 1512 SIO222; Duba 1521 SIO444. In daylight he logged quite a few of the UK local radio stations - see chart.

A Dutch commercial station called 'Radio 10 Gold' is now broadcasting on 675 via Lopic. **Roy Patrick** (Derby) says, "It's a good signal here all the time, but daytime is the best - 45444". He likes the 'oldies' format adopted by this station.

A new Virgin Radio outlet in North Staffordshire on 1242kHz has been attracting the attention of **Tim Bucknall** in Congleton. He says, "It provides perfect reception 24 hours a day here". When attempting to log it in other locations it may be necessary to use a set with a directional loop or ferrite rod antenna, because 1242 is shared by their outlets in Dundee, Sheffield and Stockton.

When in SW France, between Bordeaux and Spain, **Oliver Carr-Forster** found that he could hear ILR Capital Gold on 1548 quite well after dark. Using a Sony ICF-2001D portable with just the internal ferrite rod antenna he rates their signal 33223.

A rare event for **John Wells** (E.Grinstead) was the reception in daylight on March 7 of ILR Great Yorks Radio via Doncaster on 990kHz. While checking the band he noticed that BBC R.Devon now announces 'BBC R.Devon & Dorset' on all channels. Also, that CD 603 uses the ident '603 Radio'. On 1359 he picked up 'Classic Gold' carrying Midlands' adverts, but presumes the station was Xtra-AM.

**Rhoderick Illman** (Oxted) logged 'Mercury Xtra' on 1476 and 1521 - hitherto known as 'County Sound'.

## Long Wave Chart

Freq kHz	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	S*
153	Donebach	Germany	500	A,B*,E,F*,G*,H*,I,J*,K*,M*,O*,Q,R,S,T*,U*,V,W
153	Brasov	Romania	1200	A,M*,T*
162	Allouis	France	2000	A,B*,D,E,G*,H*,J*,K*,N,O,Q,R,S,T*,U,V,W
171	Kaliningrad	Russia	1000	A,G*,J,K*,N,Q,R,S,T*,U,V,W
171	Medi7-Nador	Morocco	2000	S*
171	Minsk	Belarus	1000	A,E
177	Oranienburg	Germany	750	A,G,J*,N,Q,R,S,T*,U,W
180	Polati	Turkey	1200	K*
183	SaarLouis	Germany	2000	B*,D,E,G,J*,K*,N,D,O,R,S,T*,U,V,W
189	Caltanissetta	Italy	10	A*,P*
189	Tbilisi	Georgia	500	R*
198	Warsaw 3	Poland	200	H*
198	BBC Droitwich	UK	500	A,E,G,H*,J,K*,N,O*,Q,R,T*,U,W
207	Munich	Germany	500	A,E,F*,G,I,J,N,O*,Q,R,S,T*,W
207	Reykjavik	Iceland	100	C*
207	Azilal	Morocco	800	A,S*
216	RMC Roumoules	S.France	1400	A,B*,D,E,G,H,J,N,O,Q,R,S,T*,V,W
216	Oslo	Norway	200	A,G*,M*,O*,R*
225	Raszyn Resv TX.	Poland	?	A,B*,E,J*,*,N,Q,R,S,T*,U,V,W
225	TRT-1 Van	Turkey	600	P*
234	Beidweiler	Luxembourg	2000	A,D,E,G*,J*,N,O,Q,R,S,T*,V,W
234	St.Petersburg	Russia	1000	A,M*,R*,S*,T*
243	Kalundborg	Denmark	300	A,E,J*,K*,O,Q,R*,S,T,V,W,X
243	Erzurum	Turkey	200	A*,P*
252	Tipaza	Algeria	1500	A,G*,H*,J*,Q*,S*,T*
252	Atlantic 252	S.Ireland	500	A,E,G,H*,J*,K*,L,N,O,Q,R*,S,T,U,V,W
252	Kazan	Russia	150	A,N*,S*,T
261	Burg	Germany	200	A,E,G,H,Q*,R*,S,T,V,W
261	Taldom(Moscow)	Russia	2000	A,N*,S*,T
270	Topolina	Slovak Rep.	1500	Q,C*,E,G,N,Q,S,W
279	Ashkhabad	Turkmenistan	150	P*
279	Minsk	Belarus	500	A,G,J*,N,Q,R*,S*,T,W

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

- Listeners:
- A: Ted Bardy, N.London.
  - B: Vera Brindley, Woodhall Spa.
  - C: Tim Bucknall, Congleton.
  - D: Oliver Carr-Forster, W.London.
  - E: Noel Carrington, Sutton in Ashfield.
  - F: Wilfried Derynch, Ichtegem, Belgium.
  - G: John Eaton, Woking.
  - H: Alec Griffiths, Inverness.
  - I: Simon Hockenhill, E.Bristol.
  - J: Sheila Hughes, Morden.
  - K: Mark Jones, Peterborough.
  - L: Ronald Kilgore, C.London/derry.
  - M: Eddie McKeown, Newry.
  - N: Eddie McKeown, Bradford.
  - O: Mary McPhillips, Co.Monaghan.
  - P: Roy Merrill, Dunstable.
  - Q: George Millmore, Wootton, IoW.
  - R: Albert Moore, Douglas, IoM.
  - S: Fred Pallant, Storrington.
  - T: Harry Richards, Barton-on-Humber.
  - U: Tom Smyth, Co.Fermanagh.
  - V: Andrew Stokes, Leicester.
  - W: Phil Townsend, E.London.
  - X: Edward Turnbull, Gosforth.

**Lawrence Mason** (Hassocks) informed me that BBC R.Kent closed their m.w. outlet on 1035kHz to make way for a new station to be known as 'London Country Radio'. They may be testing by the time you read this, so please let me know if you hear them.

## Short Wave Reports

In March, conditions in the higher frequency bands were very unsettled and reception from many areas was poor. The early closure of the bands continued. At the end of March several broadcasters ceased operations in the 11m and 13m bands.

Radio France International (RFI) is still using the **25MHz (11m)** band to reach listeners in Africa, but no reports were sent from that area. Several listeners in the UK heard their transmission on 25.820 (Fr 1000-1500) via back scatter and other modes, but such reception was very erratic. At best their signal was 32222 at 1105 by **Robert Connolly** in Kilkeel.

Daily variations in propagation were evident in the **21MHz (13m)** band in March. When conditions were favourable R.Australia's Darwin broadcast to Asia on 21.725 (Eng 0630-1100) reached the UK. It was 33323 at 0900 by **Bernard Curtis** in Stalbridge and 45434 at 1050 by **Simon Hockenhill** in E.Bristol.

Also noted in the morning were DW via Julich? 21.820 (It, Eng, Fr, Ger, Port to Aust, S.Pacific 0830-1100) rated 43233 at 0905 by **Chris Shorten** in Norwich and 44322 at

1010 by **P.R.Guruprasad** in Vellore, India; UAE R.Dubai 21.605 (Eng to Eu 1030-1055) 44444 at 1030 by **Sheila Hughes** in Morden; R.Pakistan, Islamabad 21.520 (Eng to Eu 1100-1120) 43443 at 1120 in Oxted; UAER, Abu Dhabi 21.735 (Ar to Eu 0900-1358) 44444 at 1150 by **Fred Pallant** in Storrington; also 21.630 (Ar to N.Africa 0800-1300) 32233 at 1118 by **Harry Richards** in Barton-on-Humber.

In the afternoon, the BBC via Ascension Is 21.660 (Eng to Africa 0730-1745) was SIO322 at 1215 in Wootton; DW via Kigali 21.560 (Ger to M.East 1400-1555) 45434 at 1427 by **John Eaton** in Woking; HCJB, Ecuador 21.455 (Eng, u.s.b. + p.c) SIO253 at 1530 by **Kenneth Buck** in Edinburgh; WYFR via Okeechobee, 21.525 (Eng to Eu, Africa 1600-1700) 33323 at 1605 by **Darren Beasley** in Bridgwater; BBC via Limassol 21.470 (Eng to E. Africa 0430-1615) 33343 at 1613 by **Ron Damp** in E.Worthing.

Later, R.Netherlands via Bonaire 21.590 (Eng to Africa 1730-2025) was 35333 at 1900 by **Michael Griffin** in Ross-on-Wye; VOA via Greenville? 21.485 (Fr to Africa 1830-2000) 14331 at 1900 by **Eric Shaw** in Chester; Monitor R.Int via WCSN 21.640 (Eng to S.Africa 1800-2000) 45444 at 1923 by **Vera Brindley** in Woodhall Spa; WYFR via Okeechobee 21.615 (Eng to Eu 1900-1945) 33333 at 1940 in Kilkeel.

Propagation conditions in the **17MHz (16m)** band also varied



# Medium Wave Chart

Freq (kHz)	Station	Country	Power (kW)	Listener	Freq (kHz)	Station	Country	Power	Listener	Freq (kHz)	Station	Country	Power	Listener
520	Hof-Saale (BR)	Germany	0.2	A	801	St.Petersburg	Russia	1000	Y*	1170	Lipacy	Belarus	150	R*
520	Hof/Hurzburg (BR)	Germany	0.2	H*	801	RNE1 via ?	Spain	20	C*,F*,H*,O*,S*,W*	1170	Vila Real	Portugal	10	O*
531	Ain Beida	Algeria	600	E*,F*,H*,S*	810	Westerglen(BBC)	UK	100	A,B*,F*,G*,J*,K*,L	1179	Santiago(SER)	Spain	10	H*,P*
531	Leipzig	Germany	100	A,F*,G*,O*,S*,U*,Y*					M*,O*,S*,W,Y	1179	Solvesborg	Sweden	600	A,B*,G*,J*,M*,O*,Q,S,W,Z*
531	RNE5 via ?	Spain	?	H,O*	819	Batra	Egypt	450	B*,E*,H*,O*,S*					
531	Beromunster	Switzerland	500	A,H,Q,U*	819	Toulouse	France	50	F*,O*	1188	Kuurne	Belgium	5	A,B,L,O*,S*,W*
540	Wavre	Belgium	150/50	A,B,F*,O*,Q*,S*,U*,W	819	Rabat	Morocco	25	Q*	1188	Szolnok	Hungary	135	H,W*
540	Solt	Hungary	2000	O*,Q*,Y*	819	Warsaw	Poland	300	B*,F*	1197	Munich(VOA)	Germany	300	G*,M*,O*,Y*
540	Sidi Bennour	Morocco	600	H,S*	819	S.Sebastian(EI)	Spain	5	H*	1197	Vitoria(EI)	Spain	5	H
540	Vitoria(EI)	Spain	10	H	828	Hannover(NDR)	Germany	100/5	H*,W*	1197	Virgin via ?	UK	?	A,B,D,S,W
549	Les Trembles	Algeria	600	E*,F,H,Q*,S*,W*	828	Corca Ouhibhne	Ireland (S)	1	Y	1206	Bordeaux	France	100	O*,Y*
549	Thurmu (DLF)	Germany	200	A,B,F*,O*,Q*,S*,U*,Y*	828	Barcelona(SER)	Spain	50	H*,W*	1206	Wroclaw	Poland	200	M*,S*
549	St.Petersburg	Russia	1000	O*,U*	837	Nancy	France	200	F,O*,Q*,S*,W,Y*	1215	Virgin via ?	UK	?	A,B,O,G*,N,Q,S*,W,X*,Y,I
558	Espoo	Finland	1000	B*,U*	837	COPE via ?	Spain	?	F*,H*,O*,S*					
558	Rostock(NOR)	Germany	200	H,U*	846	Rome	Italy	540	A,F*,H*,L,O*,S*,W	1224	Vidin	Bulgaria	500	O*,S*
558	Tirgu Jiu	Romania	20	S*	855	Berlin	Germany	100	O*,X*	1224	Virgin via ?	UK	?	A,B,O*
558	RNE5 via ?	Spain	?	E*,F,H*,D*,Q*,S*,Y*	855	R Bucharest	Roumania	750	H*	1233	Liege	Belgium	5	H,O*,S*
567	Berlin	Germany	100	A,O*,U*	855	Murcia(RNE1)	Spain	125	B*,E*,F*,H*,O*,S*	1233	Virgin via ?	UK	?	A,B,O,W
567	Tullamore(RTE1)	Ireland (S)	500	A,B,F,G*,J*,L,Q,S,U*,W,Y	864	Santah	Egypt	500	S,W*,X*,Y*	1242	Marseille	France	150	O*
					864	Paris	France	300	H*	1242	Virgin via ?	UK	?	A,O,G*,Q,W,Y
567	Laayoune	Morocco	50	H	864	Frankfurt(AFN)	Germany	150	A,F,S,W*,I	1251	Marcali	Hungary	500	O*,W
567	RNE5 via ?	Spain	?	H*,O*	873	Socuellamos(RNE1)	Spain	2	H*,O*	1251	Huisberg	Netherlands	10	F*,G*,O*,S*,Y
576	Bechar	Algeria	400	H*	873	Zaragoza(SER)	Spain	20	B*,F*,G*,J*,K*,O*	1260	SER via ?	Spain	?	O*
576	Muhlacker(SDR)	Germany	500	A,F*,O*,Q*,S*,U*,Y	873	Enniskillen(R.U.I)	UK	1	Q*,S,W,Y	1260	Guildford (V)	UK	?	A,B,O*
576	Riga	Latvia	500	O*,S*,U*	873	COPE via ?	Spain	?	H*,K*,O*,S*,W*	1269	Neumunster(DLF)	Germany	600	A,F*,O*,Q*,S*,W
576	Barcelona(RNE5)	Spain	50	E*,H,S*,W	882	COPE via ?	UK	1	Q	1269	COPE via ?	Spain	?	H*,Y*
585	Orf Wien	Austria	600	S*,U*	882	Washford(BBC)	UK	100	A,B,F,K,Q,S,W,Y,I	1278	Strasbourg	France	300	O*,W
585	Paris(FI)	France	8	A,B,F,O*,S*	891	Algiers	Algeria	600/300	E*,F*,H*,O*,S*	1278	Dublin(Cork(RTE2))	Ireland (S)	10	A,B*,F*,O*,Q,S*,W,Y
585	Madrid(RNE1)	Spain	200	E*,F,H*,O*,Q*,S*					S*,W,X*	1287	RFE via ?	Czech Rep.	400	A,O*,Q*,S*,W
					891	Huisberg	Netherlands	20	B,O*,S	1287	Lerida(SER)	Spain	10	F*,H,S*
585	Gafsa	Tunisia	350	H*	891	Antalya	Turkey	600	H*	1296	Valencia(COPE)	Spain	10	F*,H,O*,O*
585	Dumfriess(BBC/Scott)	UK	2	A,O*,W	900	Milan	Italy	600	H*,O*,Q*,S*,W*	1296	Orfordness(BBC)	UK	500	B,W,Y,I
594	Frankfurt(HR)	Germany	1000/400	A,F*,G*,O*,Q*,S,W*,Y*	900	COPE via ?	Spain	?	H*,O*,W*	1305	Marche	Belgium	10/5	O*
					900	Qurayya	Saudi Arabia	1000	E*	1305	Rzeszow	Poland	100	O*,S
594	Oujda-1	Morocco	100	A,E*,H,S*	909	. Mallorca(RNE5)	Spain	10	H*,O*	1305	Orense(RNE5)	Spain	5	H,O*,S
594	Muge	Portugal	100	W*,Y*	909	Lisnagarvey(BBC5)	N.Ireland	10	Y	1314	Kvitsoy	Norway	1200	A,B,F*,O*,Q*,S,W,Z*,I
603	Lyon	France	300	A,O*,Y*	909	B'mans PK(BBC5)	UK	140	B,F,S,W					
603	Koenigswinter	Germany	20	X*	918	R.Ljubljana	Slovenia	600/100	F*,O*,Q*,S*,W,Y*	1314	RNE5 via ?	Spain	?	H,O*,O*
603	Sevilla(RNE5)	Spain	50	H*,O*,Q*,S*,W*	918	Madrid(R.Int)	Spain	20	H*,O*,S*,W*	1314	Wachenbrunn(RMWS)	Germany	1000/150	A,B*,O*,W*,Z,I
603	Newcastle(BBC)	UK	2	B*,F*,O*,X*	927	Volivertem	Belgium	300	B,F,O*,Q*,S,W	1332	Rome	Italy	300	B*,H,O*,S*,O*
612	Athlone(RTE2)	Ireland (S)	100	A,B*,F,G*,J,M*,Q,S,W,Y	927	Izmir	Turkey	200	A*	1341	Lakihegy	Hungary	300	O*
					936	Bremen	Germany	100	H*,O*,Q,W	1341	Lisnagarvey(BBC)	Ireland (N)	100	A,B*,K,Q,S*,W,Y
612	Sebaa Aioun	Morocco	300	Q,S,H*	936	Verida	Spain	20	H,O*,S*	1341	Tarrasa(SER)	Spain	2	H*,S
612	Lerida(RNE1)	Spain	10	H*	936	RNE5 via ?	Spain	?	F*,H*	1350	Nancy/Nice	France	100	A,B*,E*,O*,S,W
621	Wavre	Belgium	80	A,O*,Q*,S,W	936	Lov	Ukraine	500	W	1350	Cesvaine/Kuldiga	Latvia	50	H*
621	RNE1 via ?	Spain	10	H,O*	945	Toulouse	France	300	H,O*,Q*,S*,Y*	1359	Melilla	Morocco	5	M*,O*,S*
621	Barcelona(OCR)	Spain	50	H*	954	Brno(Dobrochov)	Czech Rep.	200	H,K*,O*	1359	Arganda (RNE-FS)	Spain	600	F*,H*,W*,Y*
630	Dannenberg(NOR)	Germany	100	H*	954	Madrid(CI)	Spain	20	C*,F*,H,K*,O*,S*	1368	Foxdale(Manx R)	IoM	20	B*,O*,Q*,S*,W,Y,I
630	Vigra	Norway	100	O*,Q*					1377	Lille	France	300	A,O*,Q,S,I*	
630	Timisoara	Romania	400	Q*	963	Pori	Finland	600	A,B,O*,S*,W*,Z	1386	Athens	Greece	50	A*
630	Tunis-Djedeida	Tunisia	600	H*,O*,S*	963	Paris	France	8	S	1386	Kaliningrad	Russia	500	A,J*,O*,S*,W*
639	Praha(Liblice)	Czech	1500	A,O*,Q*,S*,U,Y	963	Tir Chonall	Ireland (S)	10	O*,S*,Y*	1395	Lushjet(Tirana)	Albania	1000	B*,H*,O*,S*
639	La Coruna(RNE1)	Spain	100	E*,H,O*,Q*,S*,U*,W*	963	Seixal(RRE)	Portugal	10	H*,O*	1395	RNE5 via ?	Spain	2	H*
					972	Hamburg(NOR)	Germany	300	A,O*,S*,Y*	1404	Brest	France	200	A,B*,O*,S*,W,Y
648	RNE1 via ?	Spain	10	H*,O*,Q*,S,W*	972	RNE1 via ?	Spain	?	F*,H,S*	1413	Masirah (sBBC)	Oman	1500	O*
648	Orfordness(BBC)	UK	500	A,B,F,K*,Q*,S*	972	Nikolayev	Ukraine	500	W	1422	Heusweiler(SR)	Germany	1200/600	A,B*,E*,O*,W,Y,I
657	Neubrandenburg(NDR)	Germany	250	O*,S*	981	Alger	Algeria	600/300	B*,E*,F*,H*,S*,W,X*	1431	Caramulo	Portugal	10	H*
657	Napoli	Italy	120	H*	981	Megara	Greece	200	A*,H*	1431	Nikolayev	Ukraine	400	H*,O*
657	Madrid(RNE5)	Spain	20	E*,H,O*,W*	990	Berlin	Germany	300	O*,I*	1440	Kyzylorda	Kazakhstan	?	O*
657	Rafha	UAE	2	H*	990	Potenza	Italy	10	B*,H*	1440	Marmasch(RTL)	Luxembourg	1200	A,B*,G*,O*,Q,S,W,X*
657	Wrexham(BBC/Wales)	UK	2	A,F,K,L,M*,Q,W	990	R.Bilbao(SER)	Spain	10	F*,H,O*,S*,W,Y*	1440	Dammen	Saudi Arabia	1600	E*,X*
666	Bodensees'dri(SWF)	Germany	300/180	A,L,O*,Q*	990	Redmos(BBC)	UK	1	Q	1449	Berlin	Germany	5	O*
666	R.Vilnius	Lithuania	500	H*,S*	990	Twynn(BBC)	UK	1	Q	1449	Redmos(BBC)	UK	2	O*,W
666	Lisboa	Portugal	135	H*,S*	999	Hoyerswerda	Germany	20	Q*	1458	Lushjet(Tirana)	Albania	500	O*,I
666	Barcelona(COPE)	Spain	10	O*,W*,Y*	999	Schwerin (RIAS)	Germany	20	Q*	1467	Monte Carlo(TWR)	Monaco	1000/400	B*,F,O*,S*,Y*
675	Marseille	France	800	A,O*,Q*,S,U,V	999	Torino	Italy	20	B*	1476	Wien-Bisamberg	Austria	600	L*,O*,S*,Y*
675	Lopic(R10 Gofth)	Holland	120	F	999	Madrid(COPE)	Spain	50	F*,H,O*,W,Y*	1485	Bournemouth(BBC)	UK	2	S*,Y*
675	Bodo	Norway	10	F	1008	Sionin	Belarus	50	R	1494	Clermont-Ferrand	France	20	A,O*,S
684	Sevilla(RNE1)	Spain	500	E*,F,H*,O*,Q*,S*,W*	1008	Las Palmas(SER)	Gran Canaria	?	H,O*	1494	St.Petersburg	Russia	1000	S*
684	Beograd	Yugoslavia	2000	A,O*,Q*,S*	1008	Flevo(Hiv-5)	Holland	400	A,B,C*,F*,O*,S	1503	Stargard	Poland	300	H,O*,S
693	Viseu(ROPI)	Portugal	10	O*	1017	Rheinsender(SWF)	Germany	600	A,F*,K*,O*,S*,Y*	1503	RNE5 via ?	Spain	?	F*,H*
693	Droitwich(BBC3)	UK	150	A,G*,W	1017	RNE5 via ?	Spain	?	H*,M*,O*	1512	Volivertem	Belgium	600	A,K,O*,S,W
693	Enniskillen(BBC3)	UK	1	Q	1017	Istanbul	Turkey	1200	H*	1512	Chania	Greece	50	H*
693	Postwick(BBC5)	UK	10	B	1026	Graz-Dobl	Austria	100	O*	1512	Jeddah	Saudi Arabia	1000	E*,H*
702	Flensburg(NDR)	Germany	5	A,O*,S*,U	1026	SER via ?	Spain	?	F*,H*,S*	1512	R.Ukraine Int.	Ukraine	?	E*,R*
702	Monte Carlo	Monaco	300	H*,O*,R	1035	Tallinn	Estonia	500	S*,Y*	1521	Kosice(Czitate)	Slovakia	600	O*,S*,W
702	Sebaa-Aioun	Morocco	740	Q*	1035	Milan	Italy	50	F*,H*,K*	1521	Ouba	Saudi Arabia	2000	E*,H*,X*
702	Presov	Slovak Rep.	400	Q*	1035	Lisbon(Prog3)	Portugal	120	H,O*,S*	1521	R.Manresa(SER)	Spain	2	H*,W
702	Zamorra(RNE1)	Spain	10	F*,H*,O*,Q*,S*,W*	1044	Dresden	Germany	250	A,O*,S*	1530	Vatican R	Italy	150/450	B*,F,H*,J*,K*,P*,Q*,S,W*
711	Rennes 1	France	300	A,F*,J,L,O*,S,U,W	1044	Sebaa-Aioun	Morocco	300	H*					
711	Heidelberg	Germany	5	Q*	1044	S.Sebastian(SER)	Spain	10	F*,O*,W*	1539	Mainflingen(DLF)	Germany	700	F*,S,W,Y,I
711	Laayoune	Morocco	600	E*,F*,H*,Q*,S*	1053	Zaragoza(COPE)	Spain	10	H	1557	Nice	France	300	B*,F*,P*
711	Murcia(COPE)	Spain	5	Q*,S*	1053	Droitwich(BBC1)	UK	150	S,W,Y,I	1566	Mjadzel	Belarus	10	H*
720	Langenberg	Germany	200	O*,R,U	1053	Enniskillen(BBC1)	UK	1	Q	1566	Mayak	Russia	?	O*
720	Lisnagarvey(BBC4)	Ireland (N)	10	B*,P*,Q,S,W	1053	Postwick(BBC1)	UK	10	B	1566	Sarnen	Switzerland	300	O*,S*
720	Norte	Portugal	100	H*,O*	1062	Kalundborg	Denmark	250	A,B,O*,Q*,S*,W	1566	Sfax	Tunisia	1200	H*,O*,Q*
720	Sfax	Tunisia	200	S*	1062	Norte	Portugal	100	H	1575	Genova	Italy	50	F*,H*,O*,Q*
720	Lots Rd,Ldn(BBC4)	UK	0.5	B,F*,J,S	1062	Oiyabakir	Turkey	300	H	1575	SER via ?	Spain		



# Local Radio Chart

Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener	Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum R	I	7.50	A,B,G,I,R,T,Z	1242	Invicta Snd(Coast)	I	0.32	A,B,F,I,U,Z
585	R.Solway	B	2.00	A,O,Q,S,T,V	1242	Isle of Wight R.	I	0.50	I,K,R,Z
603	Cheltenham(603 R)	I	?	G,I,R,T,Z	1251	Saxon R. (SGR)	I	0.76	A,B,I,M,Z
603	Invicta SG (Coast)	I	0.10	A,B,F,L*,R,U,Z	1260	Brunel R (Cl.Gold)	I	1.60	I,R
630	R.Bedfordshire(3CR)	B	0.20	A,B,E,G,I*,L,R,T,V,Z	1260	Marcher Snd (Gold)	I	0.64	Q,S,T
630	R.Cornwall	B	2.00	Q,R,S,Z	1260	Sunrise R	I	0.29	A,N*,R,X,Z
657	R.Clywd	B	2.00	B,E,I,Q,R,S,T,V,W*,Z	1260	R.York	B	0.50	V
657	R.Cornwall	B	0.50	R	1278	Bradford (Gt.Yks)	I	0.43	A,I,P*,R,V,W*
666	DevonAir R	I	0.34	A,J,L,Q,R,Z	1305	Barnsley (Gt.Yks)	I	0.15	A,B,G,I,V
666	R.York	B	0.80	A,B,I,L,S,V,Z	1305	Red Dragon (Touch)	I	0.20	I,P*,R,Z
729	BBC Essex	B	0.20	A,B,E,G,I*,L,R,U,V,Z	1323	R.Bristol (Som.Snd)	B	0.63	I,Z
738	Hereford/Worcester	B	0.037	A,G,I,K,L,R,T,V,Z	1323	Brighton (SCR)	I	0.50	A,B,G,I,Q*,R,U,Y,Z
756	R.Cumbria	B	1.00	E,Q,S,V	1332	Hereford R.(WGMs)	I	0.60	B,F,I,V,X,Y,Z
756	R.Maldwyn	I	0.63	G,I,K,Q*,R,T,Z	1332	Wiltshire Sound	B	0.30	I,L,R,Z
765	BBC Essex	B	0.50	A,B,G,I*,L,R,U,V,Z	1359	Essex R.(BreezeAM)	I	0.28	A,B,F,I,U,Z
774	R.Kent	B	0.70	A,B,E,F,G,I*,L,R,U,Z	1359	Mercia Snd(Xtra-AM)	I	0.27	I,T,Z
774	R.Leeds	B	0.50	A,I,P*,S,V	1359	Red Dragon (Touch)	I	0.20	J*
774	Gloucester (3CSG)	I	0.14	I,J,R,Z	1359	R.Solent	B	0.85	R,Z
792	Chiltern (S.Gold)	I	0.27	A,B,I*,R,V,Z	1368	R.Lincolnshire	B	2.00	I,V,Z
792	R.Foyla	B	1.00	W*	1368	R.Sussex & Surrey	B	0.50	A,G*,I,L*,R,U,Z
801	R.Devon & Dorset	B	2.00	A,G,I,J,K,M,Q,R,T,Z	1368	Wiltshire Sound	B	0.10	I,R
828	Chiltern (S.Gold)	I	0.20	A,B,G,I,Z	1413	Sunrise R.	I	0.125	A,B,I,R,X,Z
828	R.Aire (Magic828)	I	0.12	P*,V	1431	Essex R.(BreezeAM)	I	0.35	A,B,F,I,R,U,Z
828	R.WM	B	0.20	T	1431	R.210 (Cl.Gold)	I	0.14	I,R,U,V,Z
828	2CR (Cl.Gold)	I	0.27	R,Z	1449	R.Peterboro/Cambs	B	0.15	R,T,V,Z
837	R.Cumbria/Furness	B	1.50	P*,Q,S	1458	R.Cumbria	B	0.50	Q,S
837	R.Leicester	B	0.45	A,G,I,J,L,M,R,T,V,X*,Z	1458	R.Devon & Dorset	B	2.00	R,Z
855	R.Devon & Dorset	B	1.00	R	1458	Radio WM	B	5.00	C,T,X
855	R.Lancashire	B	1.50	Q,S,V	1458	Sunrise R.	I	50.00	A,B,F,G*,I,R,U,Y,Z
855	R.Norfolk	B	1.50	A,B,G,I,M,V,Z	1476	Guildford (M.Xtra)	I	0.50	A,B,I,M,P*,R,U,W*,Y,Z
855	Sunshine R	I	0.15	I,K,T,Z	1485	R.Humberside	B	1.00	I,L*,V
873	R.Norfolk	B	0.30	A,B,E,G,I,L,M,R,V,Z	1485	R.Merseyside	B	1.20	I,Q,R,S,T
936	Brunel R (Cl.Gold)	I	0.18	A,G,I,M,Q,R,T,Z	1485	R.Sussex & Surrey	B	1.00	B,E*,I,L,R,U,Z
945	R.Trent (Gem AM)	I	0.20	A,B,I,P*,Q*,R,S,T,V,X,Z	1503	R.Stoke-on-Trent	B	1.00	B*,G*,I,L,R,S,T,W*,Z
954	DevonAir (Cl.Gold)	I	0.32	A,M,R,Z	1521	Reigate (M.Xtra)	I	0.64	A,B,I,M,R,U,Z
954	R.Wyvern (WYVN)	I	0.16	B,K,Q*,T,V,Z	1530	Sheffield (Gt.Yks)	I	0.74	I,S,V
990	WABC (Nice & Easy)	I	0.09	I,N*,T,Z	1530	R.Essex	B	0.15	A,B,F,I,L,R,U,Z
990	R.Aberdeen	B	1.00	W	1530	R.Wyvern (WYVN)	I	0.52	I,L,Q*,R,T
990	R.Devon & Dorest	B	1.00	I,L,M,R,Z	1548	Capital R. (Cap G)	I	97.50	A,B,D*,I,R,U,Z
990	Hallam R. (Gt.Yks)	I	0.25	A,B,I,V,X,Z	1548	R.Bristol	B	5.00	R
999	R.Solent	B	1.00	B,G,I,K,L,R,Y,Z	1548	Liverpool (City G)	I	4.40	P*,Q,S,T
999	R.Trent (Gem AM)	I	0.25	A,B,I,T,V,X,Z	1548	R.Hallam (Gt.Yks)	I	0.74	P*,V
999	Red Rose (Gold)	I	0.80	P*,Q,S	1557	Chiltern R.(Gold)	I	0.76	T*,V,X
1017	Beacon R (WABC)	I	0.70	I,Q,R,S,T,V,Z	1557	Southampton (SCR)	I	0.50	A,I,M,Q*,R,T*,Z
1026	Downton R	I	1.70	Q,S,W*	1557	R.Lancashire	B	0.25	I,P*,Q,S
1026	R.Cambridgeshire	B	0.50	A,B,I,L,P*,V,Z	1557	Tendring (Mellow)	I	?	B,F,I,U,Z
1026	R.Jersey	B	1.00	I,L,R,Z	1584	Kettering (KCBC)	I	0.04	B,L,X,Y,Z
1035	NorthSound R	I	0.78	C*,H*,I*,P*,Q*,V	1584	R.Nottingham	B	1.00	A,H*,I,R,V
1035	R.Sheffield	B	1.00	I,P*,S,V	1584	R.Shropshire	B	0.50	H*,I,L,T
1035	West Sound R	I	0.32	Q	1584	R.Tay	I	0.21	T*
1107	Moray Firth R	I	1.50	A,H*,I	1602	R.Kent	B	0.25	A,B,F,I,L,Q*,R,U,W,Z
1116	R.Derby	B	1.20	A,I,L,P*,Q,S,T,V,X,Z					
1116	R.Guernsey	B	0.50	A,G,I,L,M,R,Z					
1152	BRMB (Xtra-AM)	I	3.00	J*,T					
1152	LBC (L.Talkback R)	I	23.50	A,B,I,L*,R,U,Z					
1152	Piccadilly R(Gold)	I	1.50	Q,S,T					
1152	R.Broadland	I	0.83	B,Q*,Z					
1152	R.Clyde (Clyde 2)	I	3.06	D,Q					
1161	Brunel R.(Cl.Gold)	I	0.16	I,M,Q*,R,T,Z					
1161	R.Bedfordshire(3CR)	B	0.10	A,I,Q*,T,Y,Z					
1161	R.Sussex & Surrey	B	1.00	B,G,I,L,R,U,Z					
1161	R.Tay	I	1.40	Q,T*					
1161	Humberside(Gt.Yks)	I	0.35	V					
1170	GNR Teeside	I	0.32	L*,P*,W					
1170	Hi Wycombe 1170AM	I	?	A,I,U,Y,Z					
1170	Portsmouth (SCR)	I	0.12	R,Z					
1170	R.Drwell (SGR)	I	0.28	B,Y					
1170	Signal R.(S.Gold)	I	0.20	S,T					
1170	Swansea Sound	I	0.58	L*					

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

**Listeners:**

- A: Ted Barry, N.London.
- B: Clive Boutell, Dovercourt.
- C: Tim Bucknall, Congleton.
- D: Oliver Carr-Forster, near Bordeaux.
- E: John Court, Birmingham.
- F: W Derynch, Ichtegem, Belgium.
- G: John Eaton, Woking.
- H: Alec Griffiths, Inverness.
- I: Gerry Haynes, Bushey Heath.
- J: Francis Hearne, N.Bristol.
- K: Simon Hockenhill, E.Bristol.
- L: Sheila Hughes, Morden.
- M: Rhoderick Illman, Oxted.

- N: Stephen Jones, Oswestry.
- O: Ronald Kilgore, Co.Londonderry.
- P: Eddie McKeown, Bradford.
- Q: Mary McPhillips, Co.Monaghan.
- R: George Millmore, Wootton, IoW.
- S: Albert Moore, Douglas, IoM.
- T: Martin Price, Shrewsbury.
- U: Martin Price, Westerham.
- V: Harry Richards, Barton-on-Humber.
- W: Tom Smyth, Co.Fermanagh.
- X: Andrew Stokes, Leicester.
- Y: Phil Townsend, E.London.
- Z: John Wells, East Grinstead.

daily. When favourable, R.Australia could be heard here on 17.695 from Darwin (Eng to S.Asia 0700-0900), rated 45433 at 0730 in Bushey Heath; also on 17.750 from Carnarvon (Eng to Asia 0000-0530, 0700-0900) 33333 at 0840 by **Eddie McKeown** in Newry.

Also heard here in the morning were AIR Delhi 17.387 (In to Indonesia 0845-0945) 23332 at 0934 in Oxted; Voice of Greece, Athens 17.525 (Gr, Eng to Aust 0850-0950, to Japan 1000-1050) SIO444 at 0938 by **Bill Clark** in Rotherham; BBC via Skelton 17.705 (Eng to N/C.Africa 0900-1615) 24232 at 1043 by **Ronald Kilgore** in Co.Londonderry; DW via Kigali 17.800 (Eng to W.Africa 1100-1150) SIO323 at 1125 by **Philip Rambaut** in Macclesfield; HCJB Quito 17.490 (Eng u.s.b. + p.c.) SIO354 at 1200 in Edinburgh.

After mid-day, R.Tunisia Int via Sfax 17.500 (Ar 0700-1800) was 33453 at 1407 in Woking; WEWN Birmingham 17.510 (Ar to M.East

1400-1455) 45333 at 1426 in Barton-on-Humber & (Eng to Eu 1500-1555) 55544 at 1530 in Bridgwater; Africa No.1, Gabon 17.630 (Fr, Eng to W.Africa 0700-1600) 34433 at 1522 in E.Worthing; VOA via Morocco? 17.790 (Eng to Africa 1630-1730) SIO444 at 1630 by **John O'Halloran** in Harrogate; HCJB Quito 17.790 (Eng to Eu 1900-2000) 43444 at 1901 in Woodhall Spa; R.Netherlands via Bonaire, 17.605 (Eng to Africa 1930-2025) 25332 at 1930 in Chester; also on 17.655 via Irkutsk, noted as 35544 at 1942 in Storrington.

Slightly more stable conditions were noted in the **15MHz (19m)** band in the daytime. In the morning the Voice of Greece, Athens 15.650 (Gr, Eng to Azores 0900-0950) was 45555 at 0944 in Oxted; UAE R.Dubai 15.395 (Eng to Eu 1030-1100) SIO444 at 1030 in Edinburgh; BBC via Ascension Is 15.190 (Eng to S.Am 0900-1100) 34232 at 1041 in Co.Londonderry, via Limassol 15.575 (Eng to M.East 0400-1500) 43442 at

1100 in Chester & via Masirah Is, 15.310 (Eng to India, S.Asia 0900-1500) 55444 at 1110 in Vellore; R.Australia 15.565 (Eng to Asia 1100-1300) was noted as 'good' at 1136 by **John Stevens** in Largs.

In the afternoon R.Austria Int via Moosbrunn 15.450 (Eng, Ger, Fr to Asia 1200-1500) was 41322 at 1232 in Newry; R.Netherlands via Madagascar? 15.530 (Du to S.Asia 1330-1425?) 33233 at 1355 in Norwich; Voice of Vietnam, Hanoi 15.010 (Eng to F.East 1330-1400) 45333 at 1357 in Barton-on-Humber; AIR via ? 15.120 (Eng to SE.Asia 1330-1500) 43222 at 1415 in Bushey Heath; Voice of Greece, Athens 15.630 (Gr, Eng to M.East, E.Africa 1400-1450) 45554 at 1447 by **David Edwardson** in Wallsend; VOA via Philippines 15.410 (Chin to E.Asia 1400-1500) 32353 at 1450 in Woking; SRI via Sottens? 15.505 (Eng, Fr, Ger, It to S/C.Asia 1500-1700) 44444 at 1505 in Kilkeel; Africa No.1, Gabon 15.475 (Fr to W.Africa 1600-1900)

SIO334 at 1600 by **Phil Townsend** in E.London.

In the evening RNB Brazil 15.265 (Eng, Ger to Eu 1800-2020) was logged as SIO212 at 1800 by **Tom Smyth** in Co.Fermanagh; WINB, Red Lion 15.715 (Eng to Africa, Europe 1600-2100) was noted as 'weak' at 1900 in Dunstable; WRNO, New Orleans 15.420 (Eng to E.USA, Eu 1600-2300) 43344 at 1910 in Lisnaskea; VOA via Morocco 15.410 (Eng to Africa 1600?-2000) 23433 at 1912 by **Chris Haigh** in Huddersfield & 15.205 (Eng to Europe, M.East, N.Africa 1500-2200) 44444 at 1950 in Storrington; Monitor R.Int via WSHB 15.665 (Eng to Eu 1900-2200?) SIO444 at 1915 in Harrogate; WEWN, Birmingham, 15.695 (Eng, Fr, It, Serb to Eu 1800-2100?) 45444 at 1945 in Ross-on-Wye; China R. Int via Mali 15.110 (Eng to E.S.Africa 2000-2125) 33333 at 2000 by **Ross Lockley** in Stirling; BBC via Ascension Is 15.400 (Eng to Africa 1500-2315) 43333 at 2030 in Stalbridge; R.Havana, Cuba 15.165 (Fr, Eng to Eu 2000-2200) 44434 at 2053 in E.Worthing.

The occupants of the **13MHz (22m)** band include KHBI Saipan, N.Mariana Is 13.615 (Eng to Oceania 0800-0855), logged as SIO433 at 0830 in Harrogate; R.Australia via Darwin 13.605 (Eng, Chin to Asia 0900-1355) 24532 at 0955 in Wallsend & via Carnarvon 13.755 (Kh, Eng to S.Asia 1230-1430) 45333 at 1349 in Woking; UAE R.Dubai 13.675 (Eng to Eu 1030-1100) 42332 at 1034 in Co.Londonderry & (Eng to Eu 1600-1640) 44434 at 1610 by **George Tebbitts** in Penmaenmawr; R.Austria Int, via Moosbrunn 13.730 (Ger, Eng, Sp, Fr to Asia 1100-1300) 55545 at 1137 in Barton-on-Humber; R.Netherlands via Flevo 13.700 (Eng to S.Asia 1330-1625) 45333 at 1415 in Vellore and 44434 at 1530 in E.Worthing; R.Pakistan, Islamabad 13.590 (Eng to M.East 1600-1630) 45333 at 1618 in Woodhall Spa; VOA via Botswana 13.710 (Eng to Africa 1600-2200) 44333 at 1716 in Oxted; WHRI, South Bend, 13.760 (Eng to E.USA, Eu 1600-0000) 54343 at 1817 in Bushey Heath; DW via Julich? 13.790 (Eng to W.Africa 1900-1950) 34434 at 1900 in Storrington; RCI via Sackville 13.650 (Eng to Eu 2030-2130) 34443 at 2055 in Chester; Monitor R.Int via WCSN 13.770 (Eng to Africa 2000-2100?) 34222 at 2005 in Bridgwater & 33333 at 2040 by **Charles Beanland** in Gibraltar; SRI via Schwarzenburg 13.635 (Eng, Fr, It, Ger to Africa 2000-2200) 35333 at 2012 in Huddersfield & via Sottens? 13.685 (It, Eng, Fr, Ger, Port to Australia, S.Pacific 0830-1100) 55555 at 0900 in Newry.

In the **11MHz (25m)** band R.New Zealand's broadcast to Pacific areas has sometimes reached the UK! Their 100kW transmission on 11.735 (Eng 1800-2137) peaked 34222 at 1851 in Bushey Heath. R.Australia has also been heard here on 11.660 from Carnarvon (Eng to S.Asia 1430-1800), rated 35553 at 1502 in Wallsend; 11.695 from Shepparton (Eng to Pacific 1430-2055) 22322 at 1617 in E.Worthing.

In the daytime the BBC via Skelton 12.095 (Eng to Eu, N/W.Africa 0400-



2215) rated 34243 at 1050 in Co.Londonderry & via Kranji 11.750 (Eng to S.Asia 1045-1700) 55534 at 1045 in Vellore and 32222 at 1515 by **Peter Pollard** in Rugby; VOIRI Tehran 11.790 (Eng to ? 1130-1227) 33222 at 1130 in Newry & 11.910 (Eng to Asia 1130-1227) SIO222 at 1152 in Macclesfield; ERA Thessaloniki, Greece 11.595 (Gr to Eu 1000-2255) SIO455 at 1210 in Edinburgh; Voice of the Mediterranean, Malta 11.925 (Eng, Ar to N.Africa 1400-1600) 43444 at 1400 in Penmaenmawr; R.Pakistan, Islamabad 11.570 (Eng to M.East 1600-1630) 45434 at 1624 by **Mary McPhillips** in Co.Monaghan; RFI via Moyabi? 11.615 (Eng to W.Africa 1600-1700) 32233 at 1633 in Barton-on-Humber.

Later, R.Kuwait via Kabd 11.990 (Eng to Eu, USA 1800-2100) was 44544 at 1900 in Derby; Voice of Israel, Jerusalem 11.603 (Eng, Russ, Fr to Eu 1900-2100?) 44333 at 2015 in Woodhall Spa; R.Damascus, Syria 12.085 (Eng to Eu 2008-2108) 53233 at 2020 in Norwich; R.Japan via Moyabi, 11.925 (Eng to Eu 2100-2155) SIO434 at 2100 by **Julian Wood** in Elgin; AIR via Bangalore 11.620 (Eng, Hi to Eu 1745-2230) SIO444 at 2140 in Harrogate; R.Gauch, Porto Alegre, Brazil 11.915 (Port 24hrs) 24543 at 2145 in Stirling; BBC via Ascension Is 11.750 (Eng to S.Am 2200-0330) 35333 at 2225 in E.Bristol; RCI via Sackville 11.845 (Eng, Fr to Caribbean 2200-2300) 55544 at 2230 by **Robin Harvey** in Bourne; R.Nac da Amazonia, Brazil 11.780 (Port 0900-0200) SIO322 at 2239 in Rotherham; R.Anhanguera, Brazil 11.830 (Port 0400-0300) 33333 at 0035 in Lisnaskea.

R.New Zealand Int has also been reaching the UK in the **9MHz (31m)** band! While beaming to Pacific areas on 9.700 (Eng 0759-1206) the signal rated 44444 at 0805 in Norwich, 33433 at 0903 in Huddersfield and SIO222 at 1100 in Edinburgh. Later, R.Australia via Carnarvon on 9.770 (Eng to Asia 1430-1630) was peaking SIO444 at 1458 in Harrogate.

Also logged in this band were SRI via Sottens? 9.885 (It, Eng, Fr, Ger. Port to Australia, S.Pacific 0830-1100), noted as 55555 at 0900 by **Clare Pinder** in Glasgow & via Lenk? 9.535 (Eng to Eu 1000-1030, 1100-1130) 55555 at 1000 in Morden; RFI via Allouis? 9.805 (Eng to Eu 1230-1300) SIO222 at 1230 in Co.Fermanagh & via Moyabi, Gabon 9.790 (Fr to Africa 2000-2300) SIO433 at 2120 in Rotherham; Monitor R.Int via KHBI Saipan, 9.355 (Eng to NE.Asia, India 1400-1600) 54433 at 1423 in Bushey Heath; R.Pyongyang, N.Korea 9.325 (Eng to Eu, M.East, Africa 1500-1550) 43443 at 1530 in Stirling; AIR via Bangalore 9.910 (Eng [News] to SE Asia 1530-1545) 32332 at 1543 in Woking; Voice of Vietnam, Hanoi 9.840 (Eng to Africa 1600-1630) 44444 at 1612 in Newry; SNBC Omdurman, Sudan 9.165 (Eng to Africa 1800-1900) 32432 at 1810 in Bridgwater; BBC via Skelton, 9.915 (Eng to C.Am 2200-0330) 43333 at 2215 in Bourne; Voice of Turkey, Ankara 9.445 (Eng to USA 2200-2250) 55444 at 2245 in Ross-on-Wye; R.Bulgaria, Sofia 9.700 (Eng to Eu 2245-2345) 33333 at 2250 in Rugby; R.Nac del Paraguay 9.735 (Sp 0800-0400) 33333 at 2300 in Lisnaskea; UAER, Abu Dhabi 9.770 (Eng to NW USA 2200-0000) SIO333 at 2315 by **Francis Hearne** in N.Bristol; R.Cancao Nova, Brazil 9.675 (Port 24hrs) 33333 at 0129 in Gibraltar.

In the **7MHz (41m)** band R.For Peace Int, Costa Rica 7.375 (Eng [u.s.b. + p.c.] to C/N.Am 0000-1300) was 33222 at 0700 in Norwich; R.Australia via Darwin 7.150 (Viet to S.Asia 1300-1430) 21321 at 1330 in Bushey Heath & iva Carnarvon 7.260 (Eng to S.Asia 1430-2100) SIO344 at 1950 in Edinburgh; R.Albania, Tirana 7.155 (Eng to Eu 1430-1455) SIO334 at 1430 in Harrogate; AWR (KSDA) Agat, Guam 7.455 (Eng to Asia 1600-1700) SIO252 at 1600 in Dunstable; VOA via Selebi-Phikwe 7.415 (Eng to Africa 1900-2200) 43433 at 1900 in Chester; Slovak R.Int via Velke Kostonany 7.345 (Fr to Africa 1930-2000) 54544 at 1930 in Stirling; Voice of Nigeria, Ikorodu 7.255 (Eng, Fr, Hi, Africa) 33433 at 1940 in Bridgwater; AIR via Aligarh? 7.412 (Hi, Eng 1745-2230) SIO433 at 2109 in Rotherham; R.Prague, Czech Rep 7.345 (Eng to Eu 2100-2127) 55455 at 2119 in Co.Monaghan.

Some of the **6MHz (49m)** signals to Europe come from HCJB Quito 6.205 (Eng 0700-0830), peaked 55555 at 0700 in Glasgow; R.Austria Int, via Moosbrunn 6.155 (Ger, Eng, Fr, Sp 0400-2230) SIO333 at 0845 in N.Bristol; SRI via Lenk? 6.165 (Eng 1000-1030, 1100-1130) 44434 at 1100 in Chester; R.Netherlands via Flevo 5.955 (Eng 1130-1325) 44444 at 1320 in Stalbridge; Croatian R, Zagreb 5.920 (Various 24hrs) 44434 at 1425 in Penmaenmawr; RTL via Junglinster 6.090 (Fr 24hrs) 55444 at 1430 in London; RFI via Allouis 6.175 (Eng 1600-1700) 45554 at 1616 in Woking; R.Vlaanderen Int, Belgium 5.910 (Eng, Fr, Ger, Du, Sp 1800-?) 34444 at 1909 in Co.Monaghan; Vatican R, Italy 5.882 (Eng 1950-2010) 54554 at 1959 in Bridgwater; R.Pyongyang, Korea 6.576 (Eng 2000-2050, also to M.East, Africa) SIO333 at 2011 in Rotherham; R.Latvia Int, Riga 5.935 (Eng 2000-2030 Sat) SIO444 at 2020 in Harrogate; R.Budapest, Hungary 6.110 (Eng 2100-2130) 44444 at 2100 in Morden; R.Prague, Czech Rep 5.930 (Eng 2100-2127) 44333 at 2105 in Rugby; R.Sweden via Karlsborg? 6.065 (Eng 2230-2300) 54544 at 2230 in Ross-on-Wye.

## Tropical Bands Chart

Freq MHz	Station	Country	UTC	DXer	Freq MHz	Station	Country	UTC	DXer
2.310	ABC Alice Springs	Australia	1900	G,M	4.840	Heilongjiang, Harbin	China	1532	G
2.325	ABC Tennant Creek	Australia	1840	G,I,M	4.840	AIR Bombay	India	1613	G,I,M
2.340	Fujian 1, Fuzhou	China	2215	O	4.845	R.Fides, La Paz	Bolivia	0055	C,M
2.485	ABC Katherine	Australia	736	G	4.845	Caracol, Bucaramanga	Colombia	0114	M
3.210	Em.Nacional, Maputo	Mozambique	1815	G	4.845	RTM Kuala Lumpur	Malaysia	1422	G
3.220	R.HCJB Quito	Ecuador	0320	N	4.845	ORTM Nouakchott	Mauritania	2126	C,E,I,M,Q
3.220	R.Togo, Lome	Togo	1944	G	4.850	R.Yaounde	Cameroon	2110	E,N,PU
3.223	AIR Shimla	India	0056	G,M	4.850	AIR Kingsway(Feader)	India	1524	G
3.230	SABC Oranje Meyerton	S.Africa	1835	I,N,O	4.865	R.Alvorada, Londrina	Brazil	0040	I
3.240	TWR Shona	Swaziland	1840	C,G,I,N	4.865	PBS Lanzhou	China	2211	F,M,Q
3.245	AIR Lucknow	India	0050	C,G,I,M	4.865	L.V. del Cinaruco	Colombia	0105	A,C,F,I,M
3.255	BBC via Maseru	Lesotho	2051	C,G,I,N	4.870	R.Cotonou	Benin	2200	C,H,I,M,N,Q
3.267	RRI Gorontalo	Indonesia	1647	G	4.870	SLBC Colombo	Sri Lanka	0100	C,I,M
3.270	SWABC 1, Namibia	SW Africa	2051	C,G,I,M,N,Q	4.875	R.Roraima, Boa Vista	Brazil	0100	I,M
3.277	AIR Srinagar	India	1711	G,I,M	4.879	R.Bangladesh	Bangladesh	1527	G
3.290	SWABC 2, Namibia	SW Africa	0250	C	4.880	AIR Lucknow	India	0330	C
3.300	R.Cultural	Guatemala	0120	C,I,M,N	4.885	R.Clube do Para	Brazil	0200	C,F,I,M,N
3.315	AIR Bhopal	India	0050	G,I,M	4.885	R.Difusora Acreana	Brazil	0037	I
3.316	SLBS Goderich	Sierra Leone	2224	I,M,Q	4.885	KBC Nairobi	Kenya	1948	Q
3.325	FRCN Lagos	Nigeria	1915	C,E,I,M,N	4.890	RFI Paris	via Gabon	0358	M,N
3.335	CBS Taipei	Taiwan	2056	G,M,O,Q	4.890	R.Chota	Peru	0300	C
3.338	R.Maputo	Mozambique	1845	C	4.895	R.Bare, Manaus	Brazil	0034	I
3.355	AIR Kurseong	India	1555	G	4.895	R.IPB AM	Brazil	0025	M
3.356	R.Botswana	Gaborone	0300	C,I,N		Campano Grande			
3.359	RTV Malagasy	Madagascar	1818	G	4.895	Voz del Rio Arauca	Colombia	0005	C
3.365	R.Cult. Araraquara	Brazil	0141	M	4.895	AIR Kurseong	India	0100	M
3.365	R.Rebelde, La Jula	Cuba	0245	C	4.896	Pakistan BC	Pakistan	1624	G,M
3.365	GBC R-2	Ghana	2226	C,E,F,I,K,M,N	4.900	SLBC Colombo	Sri Lanka	1805	G,I,M,Q
				Q,R,U,V	4.905	R.Regio, Rio	Brazil	0155	C
3.365	AIR Delhi	India	0050	G,M	4.905	R.Nat.N'djamena	Chad	2157	C,E,I,M,N,P,Q
3.370	R.Bair	Mozambique	0330	C	4.910	AIR Jaipur	India	1633	G,Q
3.380	R.Chortis	Guatemala	0150	C,M	4.910	R.Zambia, Lusaka	Zambia	2157	G,I,Q
3.380	R.Malawi	Malawi	1935	C,G	4.915	R.Anhanguera	Brazil	0100	I,M
3.905	AIR Kingsway(Feader)	India	1627	G,I	4.915	R.Difusora, Macapa	Brazil	0033	C,I
3.915	BBC Kranji	Singapore	1712	O,G,I,M,Q,R,U,V	4.915	PBS Guangqi, Nanning	China	0100	C
3.940	PBS Hubei Wuhan	China	2315	R	4.915	GBC-1, Accra	Ghana	2158	A,C,E,H,I,M,N
3.945	AIR Gorakhpur	India	1527	G					P,Q,R,U
3.945	Vatican Radio	Italy	2045	I,N,T	4.915	Voice of Kenya	Kenya	1909	I,Q
3.950	Qinghai PBS, Xining	China	2320	C,E,M	4.915	R.Cora, Lima	Peru	0309	C,M
3.955	BBC Skelton	England	2120	C,J,N,T,U,V,X	4.920	R.Quito	Ecuador	0530	C,I,M
3.955	R.Budapest	Hungary	2105	I,K	4.920	AIR Madras	India	1658	G,I,M
3.955	Novosibirsk rly A Ata	Kazakhstan	0004	I,M	4.925	R.S.Miguel, Riberalta	Bolivia	0200	M
3.960	Xinjiang PBS, Urumqi	China	1641	I	4.925	R.Nacional, Bata	Eq.Guinea	2205	Q
3.960	RFE/RL Munich	W.Germany	2100	C,U	4.935	R.Difusora, Jatai	Brazil	0100	C
3.965	RFI Paris	France	2354	A,C,E,N,U	4.935	Voice of Kenya	Kenya	1940	Q
3.970	RFE Munich	Germany	2130	U	4.940	AIR Guwahati	S.Africa	1613	I
3.980	VOA Munich	Germany	2130	C,E,N,U	4.945	Channel Africa	S.Africa	1745	O
3.985	China R via SRI	Switzerland	2200	S,U,W	4.950	R.Nac.Luanda	Angola	1915	I
3.985	SRI Beromunster	Switzerland	2033	B,C,N	4.950	R.Madre de Dios	Peru	0058	M
3.990	Xinjiang BS, Urumqi	China	0006	E,I,U	4.955	R.Cultura, Campos	Brazil	0100	C
3.995	DW via Juilich	Germany	2200	A,C,J,N,U,X	4.955	R.Merajora, Belem	Brazil	0227	M,N
4.035	Xizang PBS, Lhasa	Tibet	2300	M	4.960	R.Federacion, Sucua	Ecuador	0127	M
4.081	Ulan Bator 1	Mongolia	2325	M	4.970	PBS Xinjiang	China	0010	I,M
4.220	Xinjiang PBS, Urumqi	China	2335	I,M	4.975	R.Uganda, Kampala	Uganda	1942	E,I,L,M,N,Q,U
4.409	R.Eco. Revens	Bolivia	0100	M	4.980	PBS Xinjiang, Urumqi	China	0026	M
4.500	Xinjiang BS, Urumqi	China	2336	E,I,M	4.980	Ecos del Torbes	Venezuela	0005	A,C,F,H,I,K,L
4.600	R.Perla del Acre	Bolivia	0110	M					M,N,R,U
4.650	R.Santa Ana	Bolivia	0200	M	4.985	R.Brazil Central	Brazil	0110	C,I,M,U
4.735	Xinjiang, Urumqi	China	2345	C,E,M,R	4.990	AIR Ext.Service	India	0027	C,I,M,R
4.750	Xizang BS, Lhasa	Tibet	2328	M	4.990	FRCN Lagos	Nigeria	2205	C,H,I,M,N,P,Q
4.755	R.Educ CP Granda	Brazil	0130	M	4.990	R.Ancash, Huaraz	Peru	0133	M
4.755	R.Maranhao	Brazil	0045	C,M	4.995	R.Andina, Huancayo	Peru	0138	M
4.760	Yunnan PBS, Kunming	China	0004	E,M	5.005	R.Nacional, Bata	Eq.Guinea	0513	N
4.760	AIR Port Blair	India	1615	G,I	5.005	R.Nepal, Kathmandu	Nepal	1710	G,I,M
4.760	ELWA Monrovia	Liberia	0600	G,H,L,M	5.010	R.Garoua	Cameroon	2204	C,I,M,N,Q
4.760	TWR	Swaziland	2200	I,U	5.010	Guangxi 2, Nanning	China	2300	M
4.765	R.Integracao	Brazil	0145	C,O	5.010	Escuelas Radiofon	Pop.Ecuador	0210	U
4.765	R.Rural, Santarem	Brazil	0203	M	5.015	R.Brazil Tropical	Brazil	0026	C,I
4.765	Brazzaville	PR.Congo	2350	C,I,U	5.020	PBS-Jiangxi Nanchang	China	0010	C,I,M
4.765	RRI Medan	Indonesia	1655	L	5.020	La Voix du Sahel	Niger	0612	I,M,N
4.770	Centinea del Sur	Ecuador	0150	C	5.020	ORTN Niamey	Niger	2200	Q
4.770	FRCN Kaduna	Nigeria	2012	C,I,K,M,N,P	5.021	Hanoi	Vietnam	2344	G
				Q,U	5.025	R.Parakou	Benin	1932	I,M,N,Q,U
4.770	R.Mundial, Bolivar	Venezuela	0243	M	5.025	R.J.da Transamazonica	Brazil	0110	C,I
4.775	R.Los Andes, Tarija	Bolivia	0136	M	5.025	R.Rebelde, Habana	Cuba	0020	A,C,I,M
4.775	R.Amarea	Brazil	0237	O	5.025	R.Uganda, Kampala	Uganda	1955	I,M,Q
4.775	TWR Manzini	Swaziland	1634	G	5.030	BSB Thimpu	Bhutan	1419	G
4.777	R.Gabon, Libreville	Gabon	1920	G,I,M,N,Q	5.035	R.Aparecida	Brazil	0253	M
4.783	RTM Bamako	Mali	2043	C,E,I,M,Q,U	5.035	R.Bangui	C.Africa	2058	C,I,M,N,Q,U,X
4.785	R.Tanzania	Tanzania	1900	P	5.045	R.Cultura do Para	Brazil	0022	C,F,I,M
4.786	R.Federacion	Ecuador	0050	I	5.045	R.Difusora	Brazil	0205	C
4.790	AIR Shillong	India	0150	C	5.047	R.Togo, Lome	Togo	2156	C,E,I,K,M,N,P
4.790	Azad Kashmir R.	Pakistan	0049	G,I,M					O,R,U
4.790	R.Antatida	Peru	0147	C,M,O	5.050	Voz de Yopal, Yopal	Colombia	0205	C
4.790	TWR Manzini	Swaziland	1758	G	5.050	Em. Jesus Gran Poder	Ecuador	0030	M
4.795	Nova Difusora	Brazil	0115	M	5.050	R.Tanzania	Tanzania	1957	I,M,Q
4.795	R.Douala	Cameroon	1930	P	5.055	R.Difusora, Caceres	Brazil	0038	C,M
4.795	La Voz de los Caras	Ecuador	2230	U	5.055	RFO Cayenne(Matoury)	F. Guiana	0332	C,I,M
4.800	R.Nac Amazonas	Brazil	0032	M,N,U	5.055	TWR Manzini	Swaziland	0400	M
4.800	CPBS 2 Beijing	China	0048	I	5.075	Caracol Bogota	Colombia	0317	C,I,M,N,P
4.800	R.Popular Cuenca	Ecuador	0047	I	5.131	R.Vis. 2000	Peru	0024	I,M
4.800	AIR Hyderabad	India	0120	G,M		Bambamarca			
4.800	LNBS Lesotho	Maseru	2050	C,G,Q	5.240	Xizang, Lhasa	Tibet	2015	C
4.800	R.Onda Azul	Peru	0249	O	5.256	RRI Sibolga, Sumatra	Indonesia	0003	O
4.805	R.Nac.Amazonas	Brazil	0020	C,I	5.320	CPBS 1, Beijing	China	1649	I
4.805	R.Villa Rica	Peru	0226	M					
4.810	R.San Martin Tara	Peru	0046	I,N					
4.810	SABC Meyerton	S.Africa	2230	U					
4.815	R.Difusora, Londrina	Brazil	0045	C					
4.815	R.diff TV Burkina	Ougadougou	2127	E,M,Q,U					
4.820	La Voz Evangelica	Honduras	0045	C,I,M					
4.820	AIR Calcutta	India	0035	E,G,M					
4.820	Xizang, Lhasa	Tibet	2252	M					
4.825	R.Cancao Nova	Brazil	0045	I,M					
4.830	R.Botswana Gaborone	Botswana	1918	N,O,U					
4.830	R.Tachira	Venezuela	0040	A,C,F,I,M,N					
4.832	R.Rejo	Costa Rica	0614	I					
4.835	R.Tezultun, Coban	Guatemala	0050	C,I,M					
4.835	RTM Bamako	Mali	2042	C,E,H,I,K,M,N					P,Q,U



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**AOR2002** base scanner, factory services with new Scanmaster disc, £260. I am looking for a receiver HF225, HF150, FRG7700 or similar, must be in excellent condition. Ron, Glos. Tel: (0386) 841961 any reasonable time.

**AR1500EX** a.m./f.m./s.s.b., boxed, as new, £280 o.n.o. Howes ASL5 filter, £20. CTU30 a.t.u., £45. AA2 active antenna, £20. TRF3 receiver, £20, 12V supply, £15, all cased, books, magazines, software, £30. Colin Clarke, Kent. Tel: 081-301 2294.

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**Receiver MkII type no: RA17**, serial no: N1357, year QB, good working order, £150 cash only and buyer collects, weight 67lbs. Tel: Lancs (0257) 279956.

**RN Electronics** 50/28MHz receive converter and low-noise masthead amplifier with cable and N-connectors, £65. The Insect Filter CW501, G3PPD's superb add-on audio filter, kills QRM stone dead, £50. Carriage paid. Ian Pryde GM3LGL, Ayr, Gt. (0369) 87341 at any reasonable time.

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**Yaesu FRG7700** communications receiver with memory unit and full instruction manual plus FRV7m700 v.h.f. converter, plus FRT7700 a.t.u., service sheet etc., £300. No offers. Tel: Derbyshire (0298) 77007.

**Yupiteru MVT-7100** boxed, used once, soft case, charger three weeks old, £350. Sony PRO80, full kit inc. converter, no box, instruction book, £150. Buyer collects or arrange transport. Don, West Yorkshire. Tel: (0274) 872505 evenings.

**Yupiteru MVT-7100** hand-held scanner, boxed with accessories, plus the UK Scanning Directory and Mydel Scan 2513 antenna, v.g.c., three months old, still under warranty, £300. Tel: Middlesex (0932) 761335.

**Yupiteru VT125II** v.h.f. airband scanner, mint condition with box, manual, charger etc., light use only, for sale due to purchase of VT225, £120 o.n.o. Mr Atkins, Stourbridge (0562) 883271 anytime.

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**Yupiteru VT225** v.h.f./u.h.f. scanner, used twice, includes NiCads and all accessories, handbook, boxed, as new, £180. Tel: Wigan (0942) 728531.

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**Cambridge Z88** portable computer with mains p.s.u., 32k Eprom, 128k RAM, parallel printer lead, manual, original packing, exchange for Sony 2001D. Tel: Herts (0442) 864737.

**Grundig Satellit International 650**, full coverage, i.s.b., u.s.b., excellent sound quality and performance, for Lowe HF225 and options or Lowe HF150, difference in cash. Tel: Cornwall (0736) 871464.

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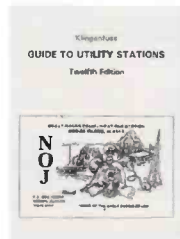
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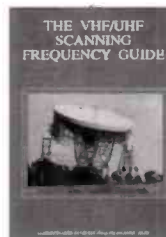
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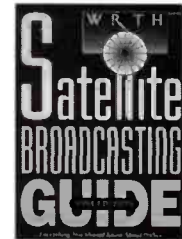
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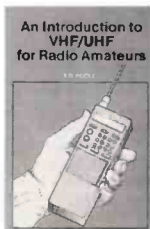
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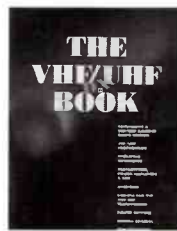
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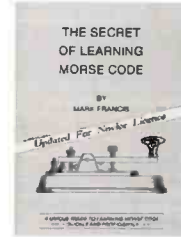
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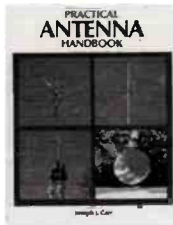
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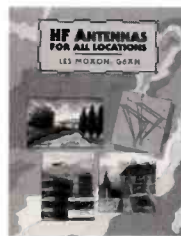
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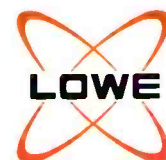
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