

shortwave magazine

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AIRBAND SPECIAL ISSUE

Airband Starter Kit - Special Offer ◀

Reviewed - Weltz WS1000E Wide-Band Receiver ◀
The World's Smallest Scanner?

John Wilson on Receivers and Computers ◀

First Radio Over the Atlantic ◀
West Pacific Airband Scene

Competition
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July 1996 £2.50 ISSN 0027-4261



UBC860XLT

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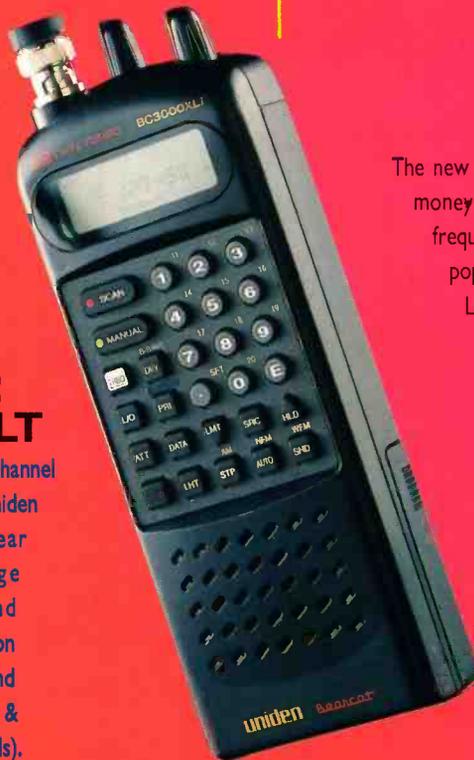
- Full frequency LCD display
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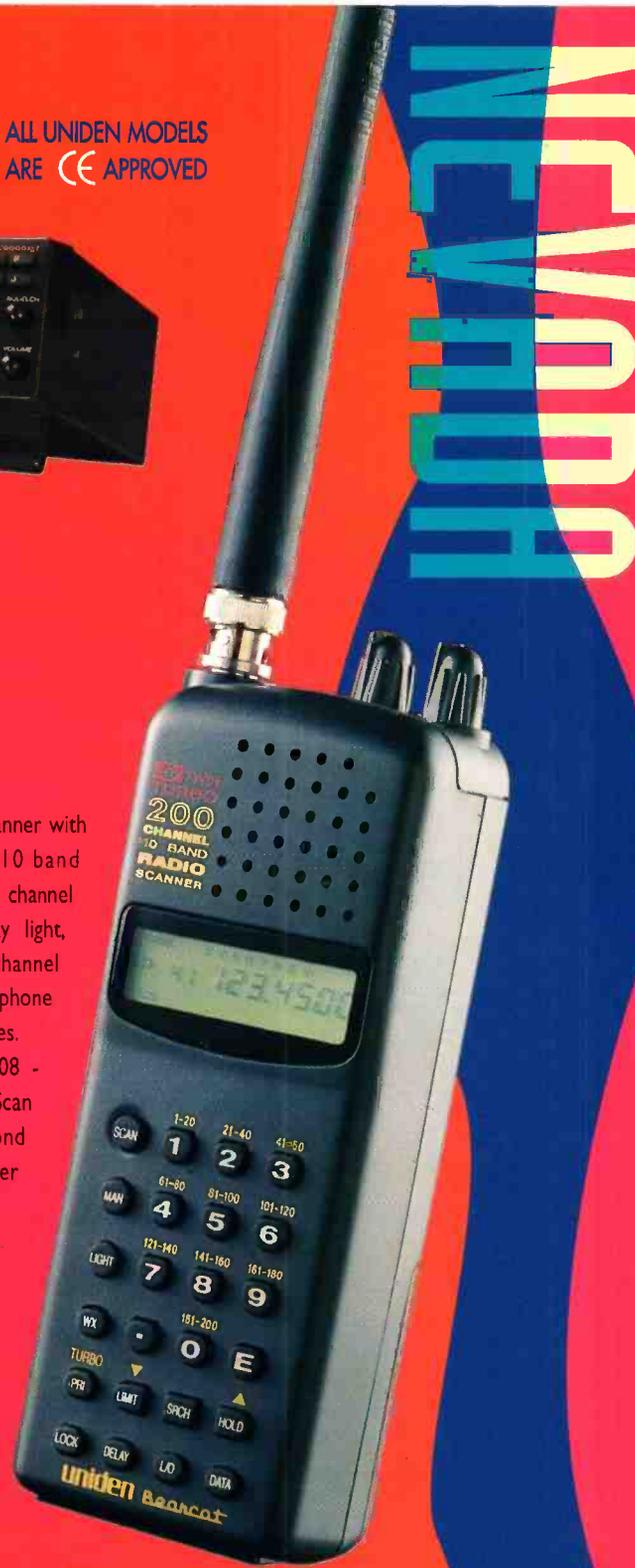


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Cover Subject

David White looks at the first airship to use radio, the Virgin craft of today, like this one in Philips colours, are much the same.

Photo courtesy:
Virgin Airship and
Balloon Company.



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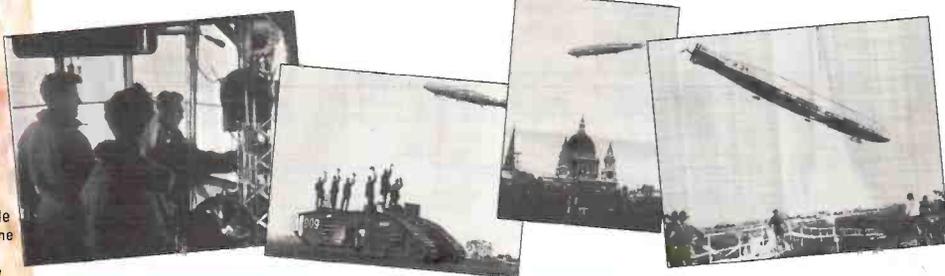
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Good Listening

DISCLAIMER. Short Wave Magazine wishes in no way to either condone, or encourage, listeners to monitor frequencies and services which are prohibited by law. We respectfully refer you all to both the Wireless Telegraphy Act 1949, and the Interception of Communications Act 1985. Some of the products offered for sale in advertisements in this magazine may have been obtained from abroad or from unauthorised sources. *Short Wave Magazine* advises readers contemplating mail order to enquire whether the products are suitable for use in the UK and have full after-sales back-up available. The Publishers of *Short Wave Magazine* wish to point out that it is the responsibility of readers to ascertain the legality or otherwise of items offered for sale by advertisers in this magazine.



SWM SERVICES

Subscriptions

Subscriptions are available at £25 per annum to UK addresses, £30 in Europe and £32 (Airsaver), £37 (Airmail) overseas. Subscription copies are despatched by accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both *Short Wave Magazine* and *Practical Wireless* are available at £42(UK) £47 (Europe) and £51 (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, 80 Clarence Road, Erdington, Birmingham B23 6AR. Tel: 0121 - 384 2473.

Photocopies and Back Issues

We have a selection of back issues, covering the past three years of *SWM*. If you are looking for an article or review, or whatever that you missed first time around, we can help. If we don't have the whole issue we can always supply a photocopy of the article. Back issues are £2.60 each, photocopies are also £2.60 per article, plus £1.00 for subsequent parts of serial articles.

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.

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Technical Help

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

EDITORIAL

AOR Competition

The gremlins certainly got into the act on the final part of the AOR Competition! The essential corner flash turned into a yellow square. To add to the confusion I gave instructions in my Editorial that were based on a previous competition using a different format. For that, my sincere apologies. Well done to those of you who decided that what was needed was proof that you had bought a copy of the magazine and not just read it in your local newsagent. To try to compensate for the confusion, I have decided to extend the closing date by one month to Friday 26th July. The requirements are still the same - cut off the bottom outside corner of the June front cover, to include a part of the yellow square.

Distribution

I have been receiving disturbing reports from readers that they have been unable to obtain their regular copies of *Short Wave Magazine* from their local branch of WH Smith. On asking the assistant why they cannot find a copy, they have been told that the magazine is no longer stocked. If you have this, or any other distribution related problem, please let me know as soon as possible, so that I can get our distributor working on a solution.

Also, if you find that copies of *SWM* on the newsagent's shelves are imperfect, please let me know immediately. Do not just tell the shop staff and leave it at that. Again, armed with the right information I can try to get something done about it.

Wood Norton Radio Weekend

The planned Wood Norton Radio Weekend, being arranged in conjunction with BBC World Service and Lowe Electronics offered readers a unique opportunity to immerse themselves in their hobby, along with other like-minded souls and experts. This was to be nothing like a radio rally - just the opposite, in fact. Unfortunately, not enough readers responded to make the event anything like viable. Why, I do not know - other hobbies have similar residential weekends - if any readers would like to offer explanations I will be only too pleased to read them. Perhaps the weekend was too expensive - although I must point out that the price being charged barely covered the cost of the facilities. Interestingly, a large percentage of the enquiries came from readers overseas, for whom the cost would be greatly inflated with travelling expenses.

From this you will have gathered that we have, reluctantly, had to cancel the weekend.

Dick Ganderton G8VFH



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

LETTERS



More Internet and PCs

Dear Sir

In reply to a letter from Harold McIntyre G3FCJ on the subject of the Internet in the February 1996 edition of *SWM*. This person does not know what he is talking about when he says that the Internet has nothing to do with short wave radio.

A wire on the end of a telephone might be, but international short wave stations are also connected to this wire like Radio Netherland, Radio Japan, etc etc also there are magazines like this one and Monitoring Times that are also connected to this wire. So that we radio listeners/DXers can get updated information about their station/magazine etc and they can

also get speedy feedback from their listeners/readers.

I have been a DXer for some 25 years and up until this year was opposed to PCs in the hobby as I was to digital radios until 1988 when I bought a Sangean ATS-803A. This radio is still working well, never needing repairing and I have been very happy with it. So much so, that I bought another one from Haydon Communications this year - I understand one of the last in the UK. If only they had these radios in 1970 at an affordable price! They make life easier.

Now back to PCs and radio. As I have said, I was opposed to PCs in our radio hobby until this year. After the news that *World Radio and TV Handbook* is to go on the

Internet, again useful to the DXer and s.w.l., I decided to look into the possibility of obtaining a PC, not to play games, but to be the work horse of the hobby and to be connected to the Internet and E-mail. After some attempts in and around Guildford at prices between £1000-£3000 - much-to-much for a first time PC - I bought a copy of *Practical PC* magazine and I have not only found a package for less than £900 but I also found an article about language translation, which I have phoned the *SWM* Editorial offices about, in the hope that it might be of use to us DXers and s.w.l.s in corresponding to South and Central America and Africa, etc. Yet again PCs being useful.

So let anyone say that there is no



Dear Sir

Regarding Bob Ashton's missing l.c.d. readout (letters *SWM* June 1996 edition), I had a similar problem with the large l.c.d. screen (75 x 75mm) on an exercise bicycle. Battery (two cells) removed and the equipment was stored over winter in an outside shed. Next Spring it wouldn't work - no apparant damage, not wet, no insect infestation. On the assumption that it was the cold and damp, I put the computer box on the worktop over the boiler (21 - 35°C.) for three days and then reinserted the

battery. A faint, uneven glimmer could be seen, so back over the boiler for another couple of days. Back in went the battery and this time the whole screen could be read but less black than formerly. I popped a small packet of silica gel in the computer box and carried on using the equipment every day. After another couple of weeks of actual, intended use, the l.c.d. gradually recovered its full contrast and has worked properly since that problem some two years ago.

Liquid crystal displays do not like cold,

damp conditions; but neither do they tolerate direct sunshine for very long either as a friend of mine with an electrical retailing shop discovered when an expensive 'phone on window display went from ivory white to yellow and the outer skin of the l.c.d. sandwich lifted away and wouldn't go back!

I hope the foregoing can help before a more drastic solution is called for.

D. Ellison
Epsom
Surrey

Dear Sir

Through the *SWM* letter page I should like to publicly recognise a company which has given me excellent service recently.

I had a brainwave about how I could best feed my AR3000A and HF-225 receivers simultaneously with my existing antennae so that I could avoid further disruption to the family garden. At 12.30 p.m. on Monday I telephoned Shenzi Communications in North Yorkshire to discuss my needs and to order a preselector and two antenna splitters. I described my radio set-up and what I hoped to achieve with Grant Rowley, the company's owner.

He decided that what I required could be best achieved by modifying a standard splitter, advising me that it would take "a couple of days" to do the necessary calculations and

modifications. He quoted me a price of approximately £2.00 more than the standard splitter. I was delighted at this as I had been prepared to have to have spent at least twice as much!

The next day at 7.30 am I received the antenna splitter just ordered, labelled and with specific instructions as to the connections - and it worked first time!

I have found service such as this difficult to find these days. I therefore have no hesitation in recommending Shenzi to any s.w.l. or amateur for their antenna needs.

I hope that you may be able to publish all or part of my letter so that this company's service can be acknowledged.

John Garnett
Truro
Cornwall

Dear Sir

John Wilson comments in his 'I did it my way' article in the June 1996 issue of *SWM* that one's opinions of the virtues and shortcomings of receivers are inevitably subjective as well as objective, although he did not use those precise words. I think he is right, but I have to say 'I think' because my own experience of handling different receivers is very limited, despite my several decades of interest in radio. I have never had the opportunity myself of handling the much-lauded AR88, or the HRO, or the Racal RA17, so I can only take it on trust that these really are good receivers.

However, having seen these highly praised in print, I wonder if I would be impressed by their performance, in perhaps unfair comparison with modern receivers. I wonder if those who give them such glowing reports are perhaps wearing the rose-tinted spectacles of nostalgia, or are comparing them with their lesser contemporaries, rather than modern equivalents. I suspect that there is no ready answer to this, since subjectivity enters into the equation.

I am interested in the performance of amateur radio

receivers of earlier decades, of other makes in addition to the 'Rolls Royce' varieties such as Collins and Drake. How good were the American Hammarlund, Hallicrafter, and Davco DR30 receivers, and what about the British Minimitter MR44 marks I & II, and the Radiovision Hamcommander (have I got that name right?) of the 1950s? Did the eye-catching British equipments advertised in *SWM* in the 1960s under the name of Ray Cross Electronics live up to their paper specifications?

At the time when these various receivers were current production, the amateur radio press did not review much equipment, and certainly not in the detailed manner which is the present practice. I didn't ever come across any examples of these to try out for myself, and I don't know anyone who did.

Perhaps one of our contributors or readers may be able to enlighten me.

T.G. Lambert
Tyne & Wear

room for PCs in this hobby of ours and I will do my best to change their minds. As I now think that PCs can be very useful to the hobby, my only down comment is that I had to go to a PC magazine to get a PC, with a lot of software that will be of **no** use, or very little use, when it would have been better to see an advert in *SWM/PW* for a PC with software more useable to DXing and short wave listening.

My other reason for the PC is that as I am now disabled with arthritis in my back and neck I have a lot of time to fill, so I want to get the most out of my, number one hobby, health and doctors permitting.

Lastly I hope the new column in *SWM* called 'Shackware' will help

readers with the buying of PCs, the best ones to buy and the firms to go to - there are pitfalls, as I have found.

Personal computers are our future, E-mail is 21st century letter sending here today, but I don't think postmen/women will be outdated, at least not yet.

R.J. Reynolds
Guildford, Surrey

Antennas for Airband

Dear Sir

In the December 1993 Issue of *SWM* you published a letter from an airband enthusiast regarding a dedicated antenna for that band. I have checked every *PW* and *SWM* since then and one does not seem to be forthcoming. I was particularly interested in this letter as I also find that scaling is the main 'unknown'.

Like many of your readers the home construction of antennas is a major part of the hobby but a look through *Wires And Waves* and *More Out Of Thin Air* plus all the *PW* antenna specials, (including this months) one can find various measurements of a quarterwave at 145 MHz, hence my reluctance to 'chop' at the centre of the airband.

I rely on the accuracy of your articles

because I do not have any test equipment so please can you ask your sister magazine to design one for us, I would suggest a 'Slim Jim' for 130MHz.

M.R. Dickinson
Hayle
Cornwall

Keep your eye on *this* magazine for news on this subject - *KN*.



GRASSROOTS

* Short Wave Magazine & Practical Wireless in attendance

rallies

July 28: The Rugby ATS 8th Annual Radio Rally will be held at the BP Truckstop on the A5, three miles east of Rugby and just 2.5 miles North west from junction 18 of the M1 motorway. Doors open from 10am and admission is £1 per car and facilities include a good cafeteria and toilets. Talk-in on S22 by GB8RRR. Further details from Peter on (01455) 552449 or Steve (for bookings) on (01788) 824214.

***July 28:** The Scarborough Amateur Radio Society Amateur Radio, Electronics and Computer Fair will be held at The Spa, South Foreshore, Scarborough. More details can be obtained from Ross Neilson G4ZNZ on (01377) 257074.

***August 4:** The RSGB Woburn Rally is being held at Woburn Abbey, Bedfordshire. Further details from Norman Miller G3MNV on (01227) 225663.

August 11: The 39th Annual Derby Mobile Rally takes place at the Littleover Community School, Pastures Hill, Littleover, Derby. Doors open at 9.30am. The school is located off the A5250 (Burton Road) south of Derby, one mile south of the village of Littleover and the A5111 Derby Ring Road. There will be a large flea market, tables by the hour, wide range of radio and computer traders, monster radio & computer junk sale run by the society - with silly prices, famous for many years, starts at 11am. There will also be a wide range of refreshments available. Ample accommodation if wet. Martin G3SZJ, QTHR. Tel/FAX: (01332) 556875.

***August 11:** Flight Refuelling ARS Hamfest 96 will take place at the Flight Refuelling Sports Ground, Merley, Wimborne, Dorset. The event will run from 10am to 5pm and will include the usual mix of traders, Bring & Buy, craft exhibitors, car boot sale and field events. Talk-in will be on S22. Richard Hogan G4VCQ on (01202) 691021.

August 16: Cockenzie & Port Seton Amateur Radio Club Radio Junk Night will be held from 1830 to 2130 in the Cockenzie & Port Seton Community Centre. Bring along your own junk and sell it yourself. Tables will be provided free of charge on a first come first served basis. Entry fee £1 and refreshments will be available. All money raised to go to the British Heart Foundation. Bob G6M4UYZ on (01875) 811723.

August 18: The Red Rose Rally is being held at Horwich Leisure Centre, Victoria Road, Horwich, Nr. Bolton of J6 M61. There will be a cafe, bar, Bring & Buy, RSGB stand, special interest groups, parking for 300 cars, free cash draw every hour, children's activity room up to seven years, supervised by parent. Doors open at 10.30am and admission is £1, free for children. Talk-in on S22. Albert G7RZW on (01204) 62980.

August 18: The 7th Great Eastern Rally is to be held at the Cattle Market, Hardwick Narrows, Kings Lynn. Doors open at 10am (9.45am for disabled visitors). There will be an outdoor car boot area, a spacious indoor area with national exhibitors, a Bring & Buy, talk-in on S22, free parking, refreshments on site, easy access for disabled. It is a good family day out with Sunday car boot nearby and close to Hunstanton Beach & Sandringham House. For bookings and information contact G0BMS on (01553) 765614 or at GB70PC or E-mail leo@feline.conqueror.co.uk

August 25: The Galashiels and District Amateur Radio Society Open Day and rally will be held at a new and larger venue, The Volunteer Hall, St. John's Street, Galashiels from 11am to 4pm. There will be a Bring & Buy, refreshments and a raffle. Talk-in on S22. (01896) 850245 or (01896) 755943 evenings only.

August 25: East Coast Amateur Radio & Computer Rally, Clacton Leisure Centre, Vista Road, Clacton-on-Sea. Sharward Promotions, Upland Centre, 2 Upland Road, Ipswich, Suffolk IP4 5BT. Tel: (01473) 272002.

August 26: The Huntingdonshire Amateur Radio Society Annual Bank Holiday Monday Radio Rally is to be held at Ernulf Community School, St Neots, Cambridgeshire. Doors open at 10am and admission is £1. Refreshments available. Talk-in on S22. Further details from David Leech G7DIU on (01480) 431333.

***September 1:** The Bristol Radio Rally is being held at Brunel Centre, Temple Meads Stations, Bristol. Doors open at 10.30am to 4pm (disabled 10.15am). Admission is £1. There is ample under cover parking, refreshments, large Bring & Buy and talk-in on S22. (01275) 834282.

September 1: The Telford Radio Rally will be held at the Telford International Centre. Two large, purpose built exhibition halls offer a day for the whole family. Main dealers are already booked along with a Bring & Buy, flea market and many special interest groups represented. Parking is on site and it is easy to find, just off the M54 motorway. Further details from Tony 2E1DXR or via GB7PMB on (01743) 235619.

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

Bristol International RC: Tuesdays, 8pm. The Black Horse Public House, West Street, Old Market, Bristol. All visitors are welcome. The club has been formed so that all radio enthusiasts, whether they be Licensed Amateurs, s.w.l.s or CBERs can get together and have a good natter and do things that you do in radio clubs. PO Box 28, Bristol BS99 1GL.

South Bristol ARC: Wednesdays, 7.30pm. Whitchurch Folkhouse Assoc, Bridge Farm House, East Dundry Rd, Whitchurch, June 30 - Longleat Rally, July 3 - 10m activity evening, 10th - Sales of plants, 17th - Club 'Bullseye' contest, 24th - Magazine evening, donate or exchange. For more information ring (01275) 834282 on a Wednesday evening.

BEDFORDSHIRE

Dunstable Downs RC: Fridays 8pm. Chews House, High Street South, Dunstable, Bedfordshire. June 28 - Informal meeting. New members and visitors welcome, just drop in or call Paul G7TJSJ on (01582) 861936.

BUCHINGHAMSHIRE

Aylesbury Vale RS: Wednesday evenings, 8pm. Hardwick Village Hall, (Hardwick is situated off the A413 between Aylesbury and Buckingham). July 3 - Discussion evening and NFD planning, 17th - DF hunting, Gerry Somers G7VVFV on (01296) 432234.

CORNWALL

St Austell ARC: 1st & 3rd Monday. Skywave, 47 Trevarthian Rd, St Austell or Poltair School, Trevarthian Rd (in term time). Reg G4TRV. (01726) 72951.

DERBYSHIRE

Derby & DARS: Wednesdays, 7.30pm. 119 Green Lane, Derby. July 3 - Junk sale, 10th - Cup of tea and natter evening, 17th - BBQ in the club room garden and featuring Odd Fellows BAR, 24th - Direction finding practice - meet at Markeaton Park car park, talk-in on 433.550MHz (SU22). Martin Shardlow G3SZJ, 19 Portreath Drive, Allestree, Derby DE22 2BJ on (01332) 556875.

DEVON

Appledore & DARC: 3rd Mondays, 7.30pm. Appledore Football Clubroom. July 15 - Club BBQ. Dave Brierley G3YJG. (01237) 476124.

Plymouth RC: 1st & 3rd Tuesdays, 7.30pm. The Royal Fleet Club, Devonport, Plymouth. June 30 - Longleat Rally, July 2 - Packet in Plymouth by Pete G7DQC, 6th - VHF National Field Day, details at the club/RAYNET - Ivybridge Carnival event, 7th - RAYNET - Lions Walk, Walkhampton. John Doherty G7HIK on (01752) 896501.

FIFE

Dunfermline & DARC: Thursdays, 7.30pm. The former RAF radio station, Outh Muir, located by the A823 Dunfermline to Crieff Road, one mile from the Knockhill Racing Circuit. June 27 - Natter night, July 4 - VHF operating evening, 11th - Natter night, 18th - The Radiocommunications Agency - a talk and demonstration of their work by Alan Fletcher, Operations Manager, Scotland. Adrian Donaldson GM0SRD on (01383) 735967.

GREATER LONDON

Edgware & DRS: Thursdays, 8pm. Watling Community Centre, 145 Orange Hill Road, Burnt Oak. June 27 - VHF FD briefing, July 11 - Amateur radio servicing, 25th - CW training. Stephen Slater on 0181-953 2164.

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.

Southgate ARC: 2nd & 3rd Thursdays, 7.30pm. The Pavilion, Winchmore Hill Cricket Club, Firs Lane, Winchmore Hill, London N21 3ER. June 27 - Radio on the air. M. E. Viney G0ANN. (01707) 850146.

HAMPSHIRE

Horndean & DARC: 1st & 4th Tuesdays, 7.30pm. Lovedean Village Hall, Lovedean Lane, Lovedean, Hants. July 2 - Natter night, 23rd - History of Portsmouth Dockyard by Mike Ross. S. Swain (01705) 472846.

Southampton ARC: Mondays, 7pm. This club is now up-and-running after some years of inactivity. New members welcome. Harold McIntyre on (01703) 737715.

HEREFORD & WORCESTER

Bromsgrove ARS: 2nd & 4th Tuesdays. Lickey End Social Club, Alcester Road, Burcot, Bromsgrove. July 9 - DF hunt (mobile), 23rd - Discussion on DF hunting, Barry Taylor. (01527) 542266.

Malvern Hills RAC: 2nd Tuesdays. Red Lion, St Annes Rd. Jim Davis G0OWS. (01684) 576538.

HERTFORDSHIRE

Harpenden ARC: 1st Thursday of the month from September to May, at Aldwickbury School, Harpenden. Further details from Peter 2E1BDB on (01727) 860631 or John G4JOV on (01582) 765821.

ISLE OF MAN

Isle of Man ARS: 1st Mondays, 8pm. Transport House, Fort St, Douglas. Other Mondays, 8.30pm, Royal Naval Assoc, Regent St, Douglas. Every Thursday, The Manx Legion, Peel, 9pm for an informal get together. Chris Wood GD6TWF, 2 Lyndale Avenue, Peel, Isle of Man.

KENT

Bromley & DARS: 3rd Tuesdays, 7.30pm. The Victory Social Club, Kechill Gardens, Hayes. July 16 - Crystal set contest by Graham G4NPD. A. Messenger G0TLK. 0181-777 0420

Medway AR & TS: Fridays, 7.30pm. Tunbury Hall, Catkin Close, Tunbury Avenue, Walderslade, Chatham, Kent. July 12 - Sharpening tools by George G4INO. G3VUN, 40 Linwood Avenue, Strood, Rochester, Kent ME2 3TR. (01634) 710023.

LANCASHIRE

Wigan Douglas Valley ARS: 1st & 3rd Thursdays. Wigan Sea Cadet HQ, Training Ship Sceptre, Brookhouse Terrace, off Warrington Lane, Wigan. D. Snape G4GWG on (01942) 211397.

Preston ARS: Thursdays, 8pm. The Lonsdale Sports & Social Club, Fulwood Hall Lane, Fulwood, Preston. July 4 - Maplin kit - construction competition, 18th - General discussion evening, natter night and G3KUE on the air. Eric Eastwood G1WCQ. (01772) 686708.

NORFOLK

Norfolk ARC: Wednesdays, 7.30pm. Formal and informal meetings at The Norman Centre, Bignold Road, Off Drayton Road between 'Asda' and Three Mile Cross Roundabout, Norwich. July 3 - Night on the air, construction QRP and Morse practice, 10th - 'From Boys Own Paper to RadCom' - amateur radio and reminiscences by Victor G3JNB, 17th - Night on the air, construction QRP and Morse practice, 24th - Inductance measurement by Arnold G3PTB. Mike G4EOL. (01603) 789792.

NORTH YORKSHIRE

Hambleton ARS: July 4 - HF operating night, 18th - junk sale. More details from John G0VXH on (01845) 537547.

NOTTINGHAMSHIRE

Mansfield ARS: 2nd Mondays, 7.30pm. July 8 - Weather satellites - an informal talk by Malcolm Taylor. Pre-Ashfield Show update. David Peat G0RDP on (01623) 631931.

South Notts ARC: Wednesdays, 7pm. Meetings held (in term time) at Fairham Community College, Farnborough Road, Clifton Estate, Nottingham. Julie Brown G0SOU. (01509) 672734.

SHROPSHIRE

Salop ARS: Thursdays, 8pm. The Telesports Club, Abbey Foregate, Shrewsbury. June 27 - National Field Day preparations, July 4 - NFD - the final check before the event, 18th - Fox hunt - G6DQY as a fox. Ian Davies G7SBD, QTHR. (01743) 463711.

SOMERSET

Yeovil ARC: Thursdays, 7.30pm. The Red Cross Centre, 72 Grove Avenue, Yeovil. June 27 - Club station on the air and committee meeting. Cedric White, QTHR. (01258) 473845.

WARWICKSHIRE

Mid Warwickshire ARS: 2nd & 4th Tuesdays, 8pm. St Johns HQ, Warwick Div., 61 Emcote Road, Warwick. July 2 - Day visit to Bracknell, 9th - 2m fox hunt. Don on (01926) 424465.

Stratford-upon-Avon & DRS: 2nd & 4th Mondays, 7.30pm. Home Guard Club, Main Street, Tiddington, Stratford-upon-Avon. July 6 - Summer social event, 8th - 160m direction finding contest, 22nd - Construction competition. Martin Rhodes G3XZO. (01789) 740073.

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 0121-552 4619/0121-552 4902.

WEST YORKSHIRE

Denby Dale ARS: Wednesdays, 8.30pm. Pie Hall, Wakefield Road, Denby Dale, West Yorkshire. Denby Dale ARS also provides RAE, Morse and Novice RAE classes and is a registered City & Guilds examinations centre for both the RAE and Novice RAE exams. Further details from the examinations secretary Brenda G4OTE on (01484) 424776 or secretary Malcom McKenzie G8RRW, 9 Broomhouse Close, Denby Dale, Huddersfield, W. Yorkshire HD8 8UX or (01484) 861782 for club activities.

Wakefield & DRS: Tuesdays, 8pm. The Ossett Community Centre, Prospect Road, Ossett. July 2 - Carrier Waves - G0ISJ, 9th - On the air, 16th - Into the Internet by G4BLT, 23rd - Treasure hunt. Bob 0113-282 5519 or G3WWF@GB7WRG.

WILTSHIRE

Trowbridge & DARC: 1st & 3rd Wednesdays, 8pm. The Southwick Village Hall, Southwick, Trowbridge. June 30 - The club is providing a talk-in station for the 39th Longleat Mobile Rally. Operation will be from 8.45am until 12.15pm using the club call sign GX2BQY on S22 and SU22, July 3 - Summer social/inter club skittles. Ian G0GRI on (01225) 864698.

General News

I thought I would start this month with some general bits of news. I mentioned the World DX Club some months back and now I have a current address for them, I was reluctant to mention an address until I was sure who to contact as sometimes the committees change from time to time. Anyway, **Arthur Ward at 17 Mospur Drive, Northampton NN2 6LY** handles subscriptions. A full year's subscription to the World DX Club, that includes 12 issues of Contact, costs £11. If you would like to see a sample issue of Contact then send one or three IRCs.

Gori Roberto from Italy has written saying he's been interested in radio since 1981, especially the collection of Radio and TV station stickers. He has about 40000 different stickers from about 18500 stations around the world! Obviously, he's got some duplicates and would like to trade some. If you are interested in collection stickers too, then put all the details in a letter, send it to me and then I'll forward them on to Gori.

Finally, I've heard some interesting news regarding old radio sets. If your parents or grandparents have any vintage radio sets gathering dust in the loft, hang on to them! They could be valuable. Back in March there was an auction in London when some of the lots fetched sums like, £680, £430 and even £740 for a 1934 Ecko AD-65. Even foreign radios fetched more than double their estimated price. Perhaps it's time to go and dust off those old radios?

JUNIOR LISTENER

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



This Month's Broadcast Haul

I've had another good month for information from broadcast stations, it won't last so I shall enjoy whilst I can! The haul this month is RCI, Budapest International, DW, China Radio International (a first for me), VoA and Radio Netherlands. I try and read through all the programme guides these stations send out and depending on how generous they've been it can take some time. Radio Netherlands English Service produce a really interesting six-page newsletter that seems to come out fairly regularly. A documentary that's coming up in September will interest many football-mad listeners - *I want to play for Ajax, Dad!* is a behind-the-scenes look into the Ajax Amsterdam football club. Keep an ear out between September 11 and 13 and try listening at 1830UTC on 6.02, 7.12, 9.86, 9.895, 11.655, 13.7, 15.315 or 17.605MHz on the Friday.

Voice of America have a programme called *Communications World* that goes out of air on Saturdays at 1030, 1230, 1730, 2130 and 0030UTC. The broadcasts at 1730 and 2130 are specifically aimed at

Europe. Try 1.197, 9.7, 9.76 and 15.255MHz at 1730 or 1.260, 6.160, 9.535 and



9.76MHz at 2130UTC. If you regularly listen to VoA, do you know why they don't always announce the hour when they give the time "15 past the hour", for example. Well, apparently it's because sometimes the programmes are pre-recorded and broadcast more than once, so they can't specify the hour.

How do you fancy learning to speak Chinese? I think I'll pass as I had enough trouble with French at school! But, if you fancy trying, China radio International run *Learn to speak Chinese* that goes out on Mondays. They broadcast to Europe at 0400-0500, 2000-2100 on 6.950 and 9.920MHz, then again at 0500-0600 and 2100-2200, or you could try 0500-0530 and 2100-2130 on 3.985MHz, finally 0600-0700, 2200-2300 on 9.88MHz. If you want to QSL after hearing a broadcast, then write to: **China radio International, English Service, Beijing, China 100866**. They also produce a cooking show on

Saturdays! In the newsletter I was able to scrounge they put sample recipes, and for someone who loves Chinese food then it's time to start tuning in! I was very pleased to get a schedule from Radio Canada International considering their recent problems.

They are now starting their 51st year of broadcasting and I hope they go on for many more. Their *Mailbag* programme is a good place to start listening, Sundays between 1330 and 1400 on 11.935, 15.325 and 21.455MHz. It's worth trying which of the frequencies to see which has the best propagation for your area and will vary from week to week too. The programme is also repeated at 2100 on even more of RCI's frequencies, so try a bit of experimentation. With just about the whole world going Olympics made this summer, many of the international broadcasters are no different.

Radio Budapest International have been running a series of programmes on their athletes, teams and their chances of success. International broadcasters will be a good way of finding out about more than just the UK athletes if you are really interested in sport. The action should be well underway by the time you get to read this copy of SWM.

Happy listening



Beginning of the End?

The Radiocommunications Agency have said that some users of p.m.r. (those used 'on-site' like shopping precincts, exhibitions and sporting arenas) can now use certain types of Voice Privacy. This will make it more difficult for others to listen to the transmissions - drat! Although it's not impossible to understand the signals this certain will make it harder for the scanner users. Is this the start of the end? How many more users will go the same way - I understand why they need to go for Privacy, but it doesn't help the genuine hobbyist.

New Book

I've received a copy of *The Sound & Vision Yearbook 1996/97* and I think it is one of the most unusual books I have ever come across. It is edited by Andy Emmerson and produced by Jonathan Hill. Now the hard bit, how to describe it - it's a guide for all those who collect or are interested in anything to do with communications and associated subjects. For example, are you interested in amateur radio, jukeboxes,

radar, offshore and pirate radio or telephones? Well this book will tell you which books or magazines will interest you, who are the specialist dealers and whether there are any societies you could contact. Now the information isn't perfect, I couldn't find an entry for *Practical Wireless* magazine (the amateur radio sister magazine to SWM) under the amateur radio heading. But then the book doesn't claim to have all the answers and invites readers to send them any

additions for future editions. So *Offshore and Pirate Radio* has several magazines listed, plenty of specialist dealers to help you, there's even details of a twice-yearly fair of interest and some 'must-have' books. For £3.50 this 96-page, A5 booklet is so packed with information, it almost makes you want to start collecting or getting interested in something. **Contact: Sunrise Press, Bampton, Devon EX16 9LY** for details of the book's contents.

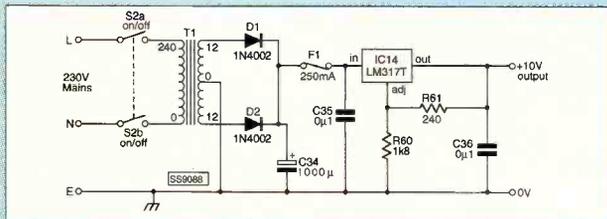


COMMUNIQUE

Errata

The gremlins have defeated our best efforts to keep them locked-up and out of harms way! As a result of their meddling in matters that really are none of their business, the following details were published incorrectly.

From the May *SWM*, **Fig. 2.1** of the 'Audio Signal Processor' was missing a connection. The corrected part of the circuit diagram is shown here.



The 'Inexpensive Passive Preselector' article - June *SWM*, featured a simple formula to enable the calculation of the inductance required for a tuned circuit when the frequency and capacitance are known. The constant was incorrect. The formula should have been. You will be pleased to know that we have rounded up the last of the pesky creatures responsible for the above. They are now languishing in a steel plated cell. We hope that this will keep them contained...

$$L = \frac{25330}{C f^2}$$

Task Buster from PDSL

The Public Domain and Shareware Library announce its new CDROM *Task Buster*. This disk contains some 2323 applications and utilities for Windows and MSDOS.

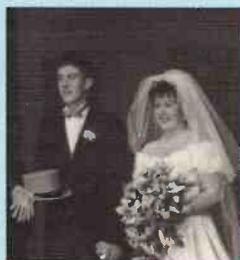
Rod Smith, founder of PDSL said "this CDROM has huge potential, sooner or later every PC user finds they need a utility of some sort, file conversion, virus clean-up, peripheral set-up, data recovery, font installation, configuration management, the

list is endless, we just had to fill the need in one go".

It's not often that such programs are needed, but when they are this CDROM ends the long search for the correct application. The built-in search facility enables the rapid location of the correct utility.

Zoë Gets Married

Our prized Editorial Assistant Zoë enjoyed a wonderful day early on in June, when she and her fiancé Ian tied the knot and got married. The weather was kind as they enjoyed a glorious break in the spell of extended winter. The happy couple spent their honeymoon in Turkey. As this was written we eagerly await the return to the office of Mrs Crabb.



Zoë and Ian enjoy their special day.

Lake Filter

No, not a solution to increasing pond algae, but a new, post receiver, audio stage passive filter from Lake Electronics. The NRF2 is a new 'passive' audio filter, specially designed to improve audio selectivity.

Measuring only 70 x 50 x 25mm the filter is supplied in an ABS case, it is simply inserted in-line with either the headphones or loudspeaker.

The NRF2 is supplied ready built and costs £16.50 plus £1.00 P&P. Contact: **Lake Electronics, 7 Middleton Close, Nuthall, Nottingham NG16 1BX. Tel: 0115-938 2509.**

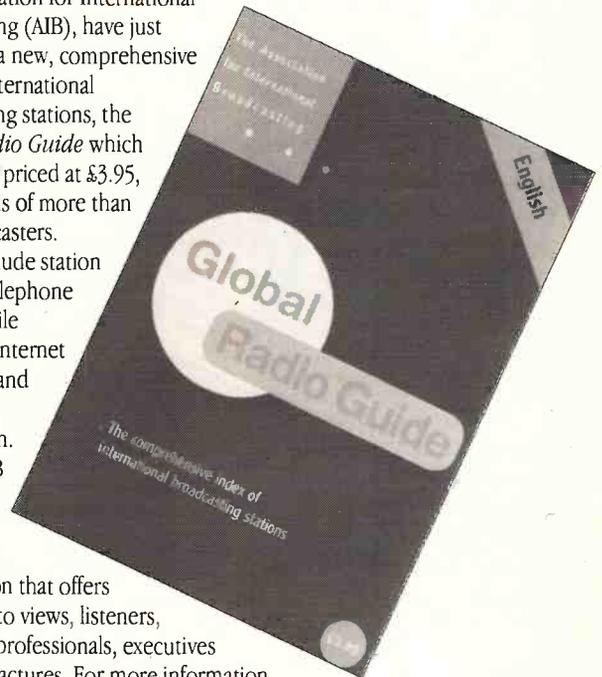


Global Guide

The Association for International Broadcasting (AIB), have just published a new, comprehensive index of international broadcasting stations, the *Global Radio Guide* which is available priced at £3.95, gives details of more than 100 broadcasters. Details include station address, telephone and facsimile numbers, Internet addresses and schedule information.

The AIB is a non-profit making organisation that offers assistance to views, listeners, broadcast professionals, executives and manufacturers. For more information please contact:

The Association for International Broadcasting Limited, PO Box 990, London SE3 9XL. FAX: +44 (0) 181-852 0853, E-mail: tomw@cityscape.co.uk WWW: <http://www.cityscape.co.uk/users/in73/index.html>



muTek Muddle

Oops, those gremlins again! This time they 'got at' the item in last month's 'Communique' about the muTek WWW site. The correct URL is <http://ourworld.compuserve.com/homepages/mutek> we hope that not too many of our readers

got lost in cyberspace. If you don't yet have access to the Internet the good old post will do, contact: **muTek, PO Box 24 Long Eaton, Nottingham NG10 4QN. Tel/FAX: 0115-972 9467.**



Warwickshire Field Day

The Mid-Warwickshire Amateur Radio Society is holding a field day at the Draycote Water Country Park on Saturday 3 August. A special event station will be on the air between 1000 and 1500.

There will be both v.h.f. and h.f. stations operating. The v.h.f. station will be using the call sign **GX6WAR** on the 144MHz band. The h.f. set-up is due to use call **GX3UDN** on the 3.5, 7 and 14MHz bands.

This is the first field day event that the club has arranged for many years. Early indications show that it will be well supported.

Draycote Water Country Park

A New National Radio Society Is Born

For the first time in eighty years, licensed radio amateurs, short wave listeners and those with an interest in all aspects of amateur radio now have two national societies to choose from to represent their interests to the UK's licensing authorities.

Co-founder, Greg Reilly-Cooper (GOMAM), said "This is a milestone in amateur radio. As we approach the millennium, more than 61000 UK licensed radio amateurs and thousands upon thousands of short wave listeners now have a much needed choice of national society to represent their interests and enhance their enjoyment of this fascinating hobby."

The United Kingdom Radio Society - UKRS for short - was formed in response to overwhelming demand from the length and breadth of the UK and will cater for enthusiasts in all

comprises some 8.4 hectares, it is situated in the heart of rural Warwickshire and overlooks the Severn Trent Reservoir which in turn covers some 240 hectares, has a maximum depth of 20m and a capacity of 22.7GL.

The club event station will be located on high ground adjacent to the triangulation pillar at Hensborough Hill, 112m a.s.l. There are excellent views of the Great Midland Plain, as well as sailing boats and windsurfers skimming across the water.

The club urges all to listen out for the stations, they will be most pleased to QSL. Further details from the club secretary, **Don G8HRI, Tel: (01926) 424465.**

aspects of the hobby.

Amateur radio attracts people from all walks of life and, because it places no physical demands upon its followers, is particularly suited to the physically disabled. The UKRS intends to pay particular attention to the needs of its disabled members, for whom special membership terms are available.

Following the introduction of the "Novice licence" by the Radiocommunications Agency, many young people are being attracted to the hobby and they too will find a very warm welcome in UKRS.

Applications are welcome from anyone with an interest in amateur, i.e. non-commercial, radio. The UKRS envisage that the combination of two national societies working in tandem for their members' common interests will have far-reaching effects for our hobby.

For further details and an application form, send a stamped, self-addressed envelope, at least 225 x

Transmitter Directory

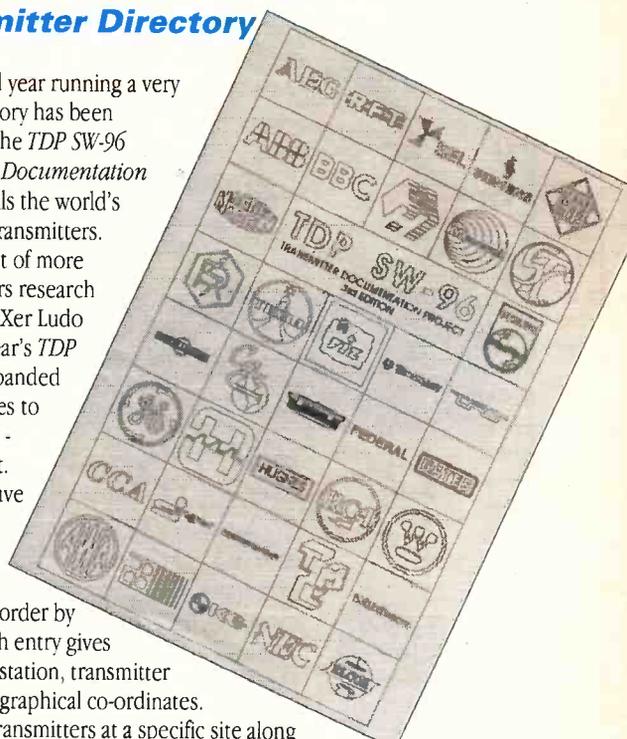
For the third year running a very useful directory has been published. The *TDP SW-96 Transmitter Documentation Project* details the world's short wave transmitters.

The result of more than ten years research by Belgian DXer Ludo Maes, this year's *TDP* has been expanded by eight pages to become a 68 - page booklet. The short wave broadcast transmitters are listed in alphabetical order by country. Each entry gives name of the station, transmitter site, and geographical co-ordinates. Number of transmitters at a specific site along with details of their power, manufacturer, type number and year of installation.

This latest issue also includes much historical information including the first short wave broadcast transmitters, thanks to historical research and a number of dedicated specialist contributors, for example Sydney Newman, the pioneer from Australia.

The *TDP* also includes a section detailing manufacturers, statistical analysis of the number of transmitters in use around the globe, grouped by, power level and country.

This fascinating booklet is available directly from the author, **Ludo Maes, PO Box 1, 2310 Rijkevorsel, Belgium.** The price has been held at last year's level of £5, or six IRCs, including worldwide delivery (for other currencies please contact Ludo). Unfortunately Ludo can not accept cheques or credit cards.



125mm, to: **Greg Reilly-Cooper GOMAM, United Kingdom Radio Society, Box 100 Northwich, Cheshire, CW8 1FA. Tel: 01606 783270. E-mail: info@ukrs.org WWW: http://www.ukrs.org ax25 packet: GOMAM@GB7OAR**

SEND YOUR NEWS TO KEVIN NICE AT THE EDITORIAL OFFICES

Magnetic Balun from Wellbrook

Two new products aimed at the s.w.l. market have just been announced by Wellbrook Communications.

The Universal Magnetic Balun, UMB130, has a frequency range of 100kHz to 30MHz. Providing both impedance matching and earth isolation, the UMB130 allows long wire, dipole and terminated folded

dipole antennas to be connected to coaxial feeder. The UMB130 is weather proof by use of epoxy resin encapsulation, feeder connection is via a SO-239 socket.

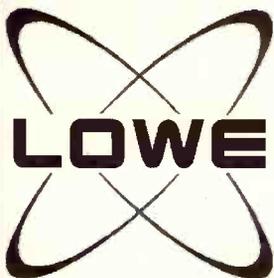
Also from the same stable comes model RAC130, receiver antenna combiner, which allows two antennas to feed a single receiver to enable an increase in gain, or reduce the effects of fading and improve signal quality.

The RAC130 is a passive

transformer combiner/splitter that has a frequency range from 100kHz to 30MHz. A feature of the RAC130 is a phase inverter that can be switched to allow the antennas to combine either in phase or anti-phase to prevent signal cancellation due to phase difference between the antennas. It is possible to also use the device as an antenna splitter, thereby allowing two receivers to be fed by a single antenna with up to 30dB isolation between the

receivers.

Prices for the two products are as follows, UMB130 £24.95, the RAC130 £29.95 both are subject to P&P at £2. For further information contact: **Wellbrook Communications, Wellbrook House, Brookside Road, Bransgore, Christchurch, Dorset BH23 8NA. Tel: (01425) 674174.**



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Shortwave, Airband and Scanner Superstore

THIS MONTH'S SCANNER SUPERDEALS



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Customers will have noticed that the range of available scanners has been drying up over the last few weeks, basically because various importers seem to be dragging their heels over this vital issue.

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They are now available from stock right away but do get in quick as we expect demand to be very high!

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ANOTHER LOWE BARGAIN BOOK!

POOLEY'S FLIGHT GUIDE '95

We've become famous for our "end of year" Pooley's Flight Guides and we now have the 1995 edition in stock.

It's over 3cm thick and has over 550 pages crammed full of useful info for the dedicated airband enthusiast.

Quantities this year are very limited, so don't hang about - order today!

Just £7.00 to callers or £10.00 by mail order

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SRX50



The SRX 50 is an ideal receiver for those wishing to discover the world of short wave broadcast stations. Despite its low price, the styling is elegant and the performance is equal to many other sets costing two to three times as much! The major short wave bands are covered allowing reception of many countries with built-in telescopic antenna. Local radio is also covered by the inclusion of Long Wave, Medium Wave and the VHF-FM broadcast band. Reception of VHF is in stereo through the supplied earphones. With a 24hr clock display with alarm and sleep timers, the SRX50 would make a great travelling companion too.

- Covers 5.9 to 15.5 MHz short wave
- Includes LW, MW and VHF FM
- Memory channels
- 24hr digital clock with alarm and sleep facility
- Telescopic whip
- Ferrite rod antenna for LW and MW
- Clear LCD digital frequency display
- UP/DOWN tuning control with search tuning

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plus
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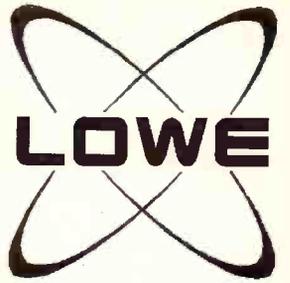


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Telephone 01629 580800
Fax 01629 580020**

Email info@lowe.co.uk or check out our site on the World Wide Web - URL <http://www.lowe.co.uk/>

TRONICS LTD



Everything for the serious hobby radio enthusiast

NRD535D



The NRD535D comes complete with factory fitted CMF78 ECSS board, CFL243W Bandwidth Control Unit and CFL233 1kHz narrow filter. Fitted with these options, this receiver would normally cost over £2700.00. The bandwidth control unit gives you a continuously variable IF bandwidth right down to 500Hz and used in conjunction with the pass band tuning control gives you an amazingly powerful system for eliminating interference.

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First Radio Over The Atlantic

David White, G3ZPA takes a look at the first foray in 'Airband' radio. By an intrepid crew of the R34 airship which made a prize winning flight across the Atlantic Ocean in 1919.

After the First World War had ended in Europe, various people turned their eyes and minds away from war to see what other fields they could direct their energies towards. One of these was in the field of aviation, to which the war had given a huge impetus.

In 1909 the Daily Mail newspaper had offered a prize of £1000 for the first powered flight across the English Channel and this had been won by Louis Bleriot. Only ten years were to pass before the newspaper again put up an increased prize of £10000, this time for the first non-stop powered flight across the Atlantic Ocean. The race was on!

May 1919 saw an attempt to fly from Newfoundland to Europe by way of the Azores in three United States flying boats. Two of these had come down in mid Atlantic after engine failure, but Commander Read in the remaining plane reached Plymouth in Devon by way of

Portugal, but they did not qualify for the prize money as they had stopped *en-route* for refuelling.

The next serious attempt was on May 18 when a single engined Sopwith Biplane left Newfoundland and was not heard from for over a week. Eventually, a ship reached the States with the two airmen aboard and they reported their engine had failed 1760km from their starting point, and by sheer luck, had come down in the Atlantic close to a ship that did not have any radio aboard.

Finally, In June 1919, a Vickers Vimy twin engined biplane successfully achieved the first non-stop powered flight and landed in Ireland thus winning the £10000 prize. All this was remarkable as these attempts were done without any form of radio to assist in navigation.

The British Government had decided in March of that year not only to attempt the Atlantic crossing, but to do it in the opposite direction against the prevailing winds, and for this they decided to use a huge rigid airship called

the *R34*, which was built by the Beardmore Company at Inchinnan near Glasgow. It was as big as a battleship at 195m was fitted with five Sunbeam *Maori* 12-cylinder engines and was completed on 20 December 1918.

In the early Spring of 1919 a bad landing caused considerable damage and when it was finally repaired and ready for the attempt, the prize had already been won. Nevertheless, it was decided to go ahead for the great publicity and the fact that it would be the first east to west crossing as well as the first two-way crossing.

The *R34* was fitted with the new electric lighting which even lit up the instruments. Banks of accumulators were installed and it was also fitted with two-way wireless telegraphy equipment.

The Admiralty loaned two warships, *HMS Tiger* and *HMS Renown* to radio weather forecasts and another ship was placed south west of Ireland so that in the eventuality of the airship coming down, then one of the ships might be able to get to it quickly.

Public Chart

The RAF supplied the crew, which was commanded by Major G. H. Scott and inside the Air Ministry building a room for two-way radio communication was commissioned and the airships position recorded on a special wallchart. Also Marconi House erected a large chart to display to the public each radio position plot.



The R34 control cabin.

The Wireless Officer for this historic flight was 2nd lieutenant R. F. Durrant and the two Wireless Operators were H. R. Powell and W. J. Edwards. Accordingly, at nearly 0200 on Wednesday July 2 1919 the *R34* set off from East Fortune near the Scottish coast on her epic journey to America.

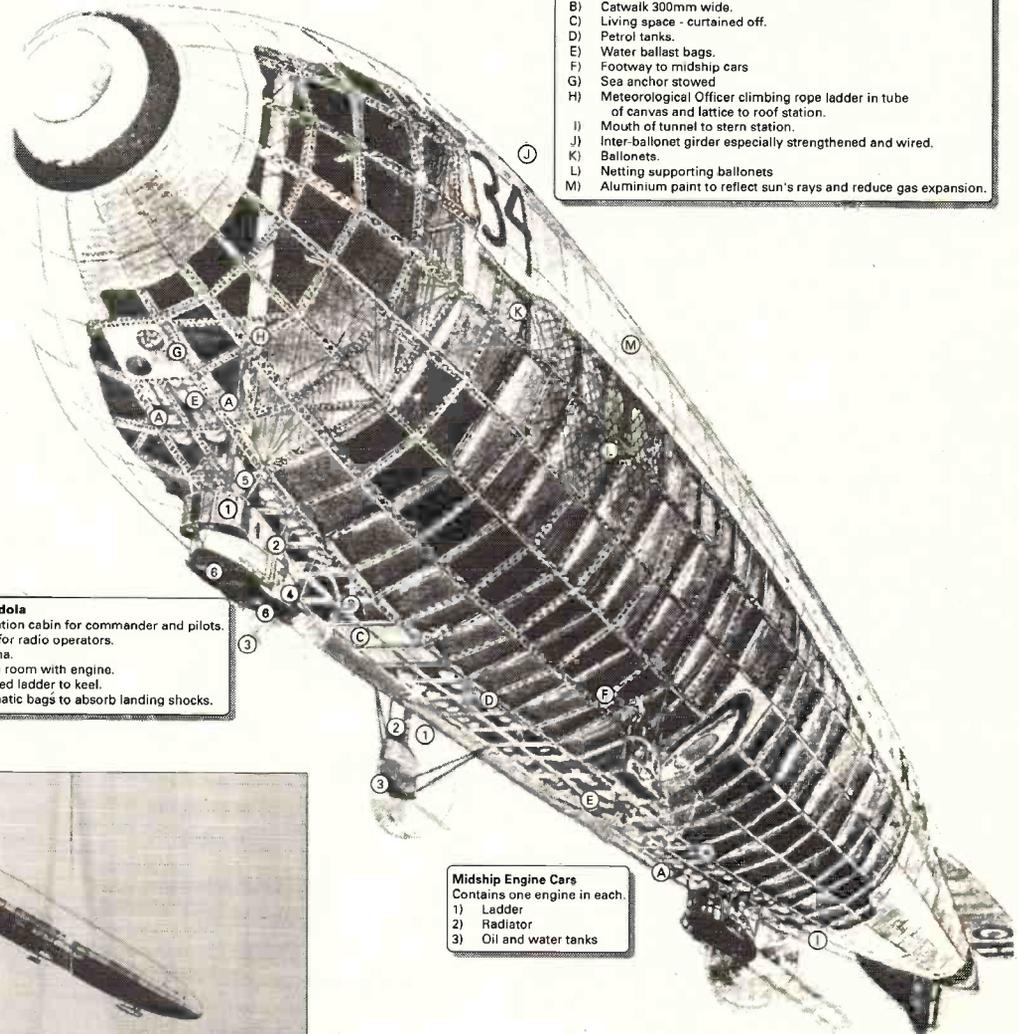
Within minutes of taking off, the wireless operators were busy acknowledging congratulatory messages, which were being sent by the Admiralty, RAF and other organisations. After three hours had passed, they saw the last sight of the land and now faced 3200km of open sea.

At 800km distance from East Fortune, the wireless operators were still making good contact with that station but the position fixing via radio direction finding was not very successful as Clifden wireless station in Ireland would not transmit long enough to give the operators a chance to get an accurate fix, so the compass and sextant were relied on when weather conditions allowed.

A welcoming to Pulham on the return flight 13 July 1919.



Cut-away Section of the R34

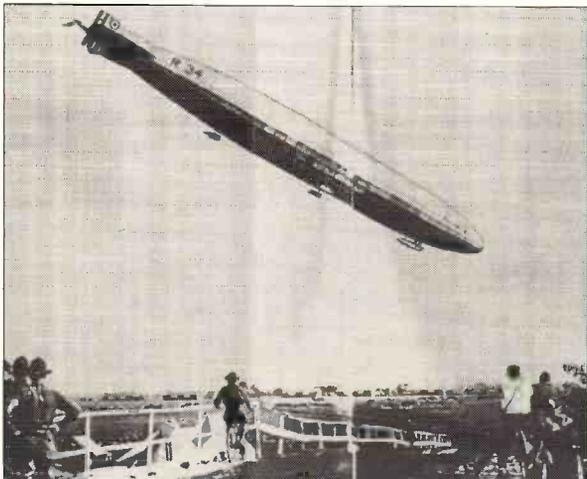


Hull
 A) Inverted V-shaped keel running almost end-to-end.
 B) Catwalk 300mm wide.
 C) Living space - curtained off.
 D) Petrol tanks.
 E) Water ballast bags.
 F) Footway to midship cars
 G) Sea anchor stowed
 H) Meteorological Officer climbing rope ladder in tube of canvas and lattice to roof station.
 I) Mouth of tunnel to stern station.
 J) Inter-ballonet girder especially strengthened and wired.
 K) Ballonets.
 L) Netting supporting ballonets
 M) Aluminium paint to reflect sun's rays and reduce gas expansion.

Fore Gondola
 1) Navigation cabin for commander and pilots.
 2) Cabin for radio operators.
 3) Antenna.
 4) Engine room with engine.
 5) Enclosed ladder to keel.
 6) Pneumatic bags to absorb landing shocks.

Midship Engine Cars
 Contains one engine in each.
 1) Ladder
 2) Radiator
 3) Oil and water tanks

Rear Gondola
 Incorporating two engines geared to one large propeller.



Landing at Mineola airport, New York 6 July 1919.

The end-fed long wire was on a drum with a handle attached to it and when needed the handle was turned so that the antenna would hang down vertically for about 91m from the forward control cabin and operated on a frequency of 230kHz - now a part of the long wave band.
 On July 3 it was noticed that faint radio signals were being received from St. Johns in Newfoundland, which was fortunate as signals were fading out with East Fortune and Clifden

wireless stations. Also, another event of note was the first air to ground radio contact with the Azores.

No Ships Sighted

Throughout the journey, radio contact was maintained with many ships, but they never once sighted any of them. At 1630 on the 4 July (Independence Day) the R34 passed over Newfoundland and the first two-way radio contact with North America was with the radio station at Glace Bay.

With many other contacts following sometime later along with the many coastal ships which kept the two wireless operators busy throughout the journey. The most important contact was with New York when they still had 1440km to go and despite bad weather and headwinds, New York was reached at 1400 on the 6 July, giving great excitement to the seven men in the control cabin.

Vast crowds of New Yorkers greeted the arrival at Mineola airport and gave the

airship's crew of 30 a heroes' welcome. Major Pritchard parachuted down to the ground to take charge of the US Navy's landing party and unwittingly became the only foreigner ever to arrive in the United States by parachute!

When the R34 docked, it had become the holder of the world's endurance record after 108hrs in the air. After four days of wining and dining and taking on fresh supplies and fuel, the airship prepared to take off again for the return journey.

Continued on page 17

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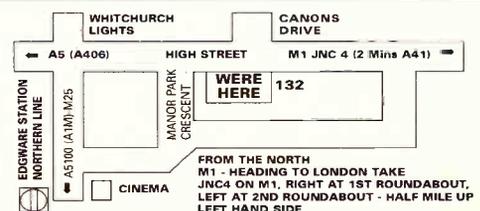
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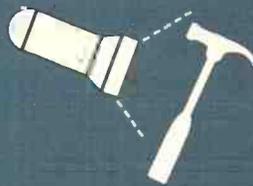
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"SWM 001, Squawk 2641 Mode C"

A look at Secondary Surveillance Radar with Colin Goodall

Should you hear London ATC asking a flight to Squawk do you expect the captain to reply with "quack quack"? Well no, he won't but he will set his transponder to the code given by the controller. So in the example above our flight SWM 001 will now respond to any interrogation by Secondary Surveillance Radar (SSR) with our height and the code 2641. The real question is, how do they do that?

On-board Transponder

The transponder on-board the aircraft does two jobs. Firstly it has a connection to the altimeter and therefore knows how high the aircraft is flying and secondly the combination of four numbers selected on the front panel are stored together with the height data. Now the clever part is that on the ground mounted on the same tower as the primary radar is a second antenna which revolves exactly the same as the main antenna but instead of sending out pulses and looking at the echoes, SSR sends out a message saying, effectively, "Hello, who are you, please respond".

On the aircraft the transponder recognises the SSR request and transmits the stored data, namely the height and the four digit code. The difference between primary and secondary radar is that primary radar detects

the echoes from aircraft whereas secondary radar causes the transponder to burst into life and transmit its data. Instead of a passive reflection, SSR gets back a separate, strong transmission. Thus the ground equipment can be much more simple and the response is always a powerful transmission not just a reflection. The SSR interrogation is sent out on 1.030GHz and the response from the transponder is on 1.090GHz. This is a vast improvement on primary radar and provides virtually no black spots or poor reception conditions.

The height data only needs to be three digits as the controllers only want the flight level. Flight level is the height in feet as shown on an altimeter when set to the international standard of 1013.2mB, but with the last two digits ignored. For example if we are flying at 17000ft, that is flight level 170. Or if we fly at 33000ft then that is flight level 330. So the transponder knows the flight level that upon interrogation will be transmitted to the controller. This is the Mode C as referred to above, i.e. the ability to send flight level when asked. There are also modes one, two, and four which we shall take a look at later.

The selection of the code on board the aircraft is done by rotating each of the four knobs on top of the transponder. Only the numbers from zero to seven are used.

Call Sign or Code

The code number can also be made to represent the aircraft call sign. Stored within the Air Traffic Control computer is the call sign of all regular flights and the transponder codes allocated to those flights. It is therefore a very simple task for the computer to convert the code '2641' into 'SWM 001'.

Why not just transmit SWM 001 to start with you may ask. Well the answer is that to be able to transmit **any** combination of letters and numbers would require a much greater bandwidth.

The transponder uses binary numbers to make transmission and reception easier particularly should there be a need for error checking. Without going into the awful details of binary words, cyclic redundancy checks and how a computer operates, suffice to say that by only using the numbers zero to seven it makes the job much more simple and the hard work of converting from a four-digit code to a real call sign can be undertaken by a large computer working very quickly on the ground. There are a total of 4096 different codes that can be set/transmitted.

But why have all this expensive equipment just to tell a computer how high we are and the four-digit code that was given to us in the first place by the controller?

Well the computer uses our transponder information together with the primary radar echoes to continually refresh the radar screen in

front of the controller.

Our controller now has in front of him on his screen all the details of all the flights in his sector. The screen shows a blip for the position of the plane and by the side it shows the height and the call sign. As we fly along the blip is updated and we appear to move across the radar screen. Obviously the aircraft must have the transponder and the ATC computer must be able to use the data, but in the major countries of the world it is now mandatory to operate with SSR.

The four-digit code is usually advised to each aircraft as part of their departure clearance and is set on the transponder as part of the normal start up procedures. However the transponder is not switched from STANDBY to ON until the plane is actually taxiing to the end of the runway as ATC do not wish to have their radar screens cluttered up with details of planes stationary at loading gates.

Other Meanings

The four-digit codes have, of course, been arranged such that groups of codes are used only by one ATC unit. The first two digits denote the unit or agency allocating the code and the last two identify the actual aircraft. The codes can of course be used to denote other things besides just a reporting number. For instance if the code 7600 is selected by the aircraft this is recognised as a radio failure and ATC are aware immediately.

Another code is 7700, which is the same as declaring an in-flight emergency. Other special codes include 7711 - 7727 used for Search and Rescue and 7500 used when an aircraft has been hi-jacked.

There is another button on the top of the transponder called IDENT. This is used by the flight crew, when asked by ATC, and it sends out an additional signal that causes the blip on the controllers screen to flash thus giving positive identification of an aircraft's position. So when you hear ATC say "Squawk Ident" you will know what is happening.

Also on the transponder is a 'Reply Monitor Light' which illuminates for test purposes and when the transponder replies to the SSR interrogation. As a flight progresses the transponder will be interrogated continually particularly as you fly from one ATC area into the next. The code is normally retained for the whole flight thus making identification by humans and computers that much easier.

The Civil version of the system is therefore called Mode 3 and the other modes available on certain transponders are 1, 2, and 4. These are used by military

aircraft only. The SSR transponder was developed from the military "Identity Friend or Foe" (IFF) so it is not surprising that the military have incorporated their own system.

Mode 1 is for a military ID code that is interrogated by AWACS and Ground Control Intercept (GCI). Modes 2 and 4 are for special ID codes used by tactical aircraft in wartime and are NEVER used in peacetime.

So when an aircraft is asked to "Squawk", you now know what is going on and you can be reassured when flying, that SSR has improved flight safety

immensely. Also the widespread use of SSR has reduced the number of calls made by aircraft reporting their position. There is now just no need for continually reporting at waypoints, as the controller knows exactly where each aircraft is and at what height. For example a flight crossing UK airspace from the Irish Sea to Belgium now only speaks to London Control three times. The initial contact (136.4), when changing frequency (127.425) at Woodley and when saying "good-bye" as he changes to Maastricht Control.

First Radio Over The Atlantic

Continued from page 13

At six minutes to midnight on 9 July the 400 men of the ground crew let go the mooring ropes and the *R34* rose quickly into the sky for the return journey to Britain. As the airship passed over the skyscrapers of New York at 2000ft, many searchlights

picked out the *R34* against the clear night sky and thousands of people lined the streets to watch, even at that late hour.

Because of a strong following wind, the airship averaged .76 knots for two days and for the first time in the whole voyage actually sighted a ship in mid-Atlantic! Shortly afterwards, one of the engines failed, but the remaining four could cope, providing the winds remained behind them.

Due to thick cloud, it was difficult to judge the actual height above the sea so they had to descend very low to get under the cloud. Experience had shown that when the airship was descending it was prudent to wind in the trailing vertical radio antenna as on the outward journey the antenna had touched the sea and all the static

electricity in the airship was discharged, with a bang, through the antenna, frightening the wireless operators, but luckily doing no damage to the vintage Morse code radios.

Although they were unable to ascertain their position because of the thick cloud, they found they were again coming within radio range of Clifden wireless station, which relayed a message from the Air Ministry to the airship stating that it must head for Pulham in Norfolk due to bad weather at East Fortune. Once again the Wireless Operators on board were very busy acknowledging the many messages of congratulations on their epic voyage. The radios had performed perfectly throughout the two-way crossing, but it was noted that the radio range was only barely adequate and it was to be another five years before the short wave bands were in use for intercontinental two-way contacts.

Despite that, the use of radio had been invaluable to enable progress to be

followed in both countries and *R34* eventually landed at Pulham at 0700 on 13 July with one two of the five engines now operational. The radio antenna was wound in for the last time and handling ropes lowered to the 420 men of the ground crew below and the airship was docked in its huge hanger.

Significant Rôle

The last wireless message had been from the Prime Minister Lloyd George and also Winston Churchill. As Major Scott stepped out of the control cabin after the 11200km flight, he was handed a telegram from the King which read, "I heartily congratulate you all on your safe return home after the completion of your memorable and indeed unique transatlantic air voyage". Radio had played a very significant rôle in this amazing feat and the importance of it was not lost, as within a few short years, the explosion in world-wide radio communication took place.

R34 over St. Paul's Cathedral, London.



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West Pacific Airband Scene

This month we bring you part one of an update to the Pacific Airband Scene feature in SWM March 1994, which concentrated on activity in the East Pacific. The following describes what is happening throughout the aeronautical bands to the west of the area, monitored by Bob Ball from a gas carrier running between Western Australia and Japan.

The observations were made during April 1996 and whilst I have tried to portray what is actually happening I have also noted where this is the exception to the norm. In places I appear to be a bit vague, but especially where Tokyo Radio is involved this is actually the case, whilst it would be nice to lay down hard and fast frequency changes, that simply is not the case. With a sunspot minimum and the Northern Hemisphere's winter these frequencies are probably the lowest these stations are ever likely to employ. Once again all the information below has actually been gleaned from observation, rather from out of date reference books and frequency listings, some of which perpetuate what can only be described as myths. More than one book lists Guam on h.f., whereas operations were transferred to Honolulu at least five years ago.

Honolulu North Pacific

The entire Northern Pacific, South of the Aleutians, from just off the West Coast of North America across to 165°E North of Japan and down to 130°E in the Southwest is controlled by Oakland ATC in California, the actual handling of the radio traffic being done by Honolulu and San Francisco Radios. Honolulu's area of responsibility

stretches from 150°W to 165°E for flights transiting the North Pacific. Tracks vary on a day to day basis to take advantage of winds for speed and economy but generally aircraft cross 150°W North of 40°N and fly a great circle route to Asia. If more Northerly routes are favourable then aircraft will cross into Honolulu's FIR at around 55°N 150°W and then continue towards the Aleutians, almost immediately crossing into Anchorage's FIR, the aircraft being told by San Francisco at 150°W to call both Honolulu on h.f. and Anchorage on v.h.f. Aircraft working Honolulu always cross to the South and West of Anchorage no matter which routing they are taking, whilst those aircraft routed up the North American coast work San Francisco on h.f. from KYLLE to CANOA and then Vancouver Control on 135.2MHz before being passed to Anchorage.

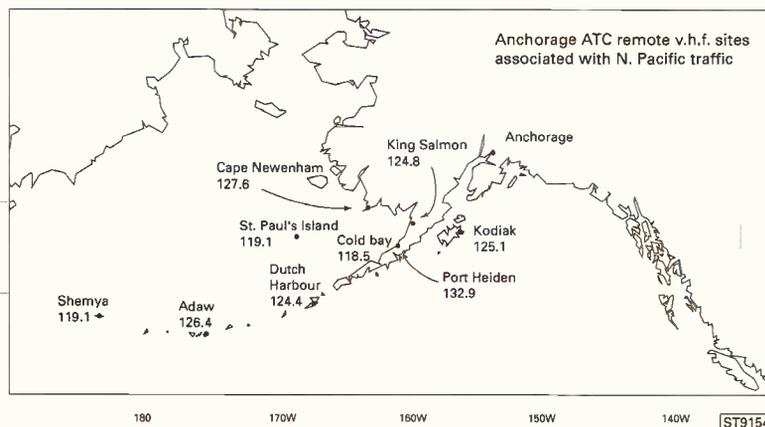
The routes over the Aleutians vary daily and depending on which track is in use aircraft are directed to 125.1MHz (located on Kodiak Island) crossing 150°W, 118.5 (at Cold Bay) at 160°W when the route takes them over Cold Bay or 124.4MHz (at

Dutch Harbor) at 164°W when flying over Dutch Harbor. Flights approaching Adak from the West call on 126.4MHz (on Adak) around 174°W or 150nm out. The exact hand-off to v.h.f. can vary slightly depending on the operator. There are additionally remote v.h.f. stations at King Salmon (124.8MHz), Port Heiden (132.9MHz) and Cape Newenham (127.6MHz); these are very rarely mentioned by San Francisco or Honolulu and I would guess that aircraft are selcalled on h.f. and told to call on these frequencies if v.h.f. contact is lost. Generally aircraft South of 51°N 180° stay on h.f. all the way. Honolulu's workload can vary considerably, as some days aircraft are within v.h.f. range of Anchorage within minutes of crossing 150°W and are not heard again on h.f. until they reach the FIR with Tokyo. Westbound flights once out of range of Anchorage on v.h.f. do not normally check back in on h.f. and just 'appear' when they call Tokyo at NIPPI or OMOTO.

The FIR boundaries between Honolulu, Anchorage and Japan are a little bit complicated as the Tokyo FIR boundary stretches

along 165°E from 27°N to 43°N, where it heads Westwards slightly to 50°N 159°W, up to 46°N the boundary is with Honolulu. North of 46°N the boundary is with Anchorage, however this is out of their v.h.f. range and aircraft crossing at PASRO and AKISU bound for Anchorage or the East Coast of the States call Honolulu on h.f. before calling Anchorage on 119.1MHz at PLADO if arriving via PASRO or at AAMY (pronounced Amy) if via AKISU. Aircraft overflying CUTE (46° 25'N 162° 19'E) and bound for Anchorage on G344 call on 119.1MHz about 100nm West of CHIPT, whereas those bound for destinations like Seattle and Vancouver often track via CARTO calling on 119.1MHz when 100nm West of LYLLE if passing over Adak or 51°N 180°, they then return to h.f. at 170°W, this time without the usual selcall checks. However if the next point after CARTO is 50°N 180° they remain on h.f. the entire way.

As well as passing ATC traffic, which takes the highest priority, Honolulu Radio also passes 'Company Only' messages from aircraft other than those it is controlling. Many of these are over Russian airspace or with Anchorage, which is purely an air traffic control operation. These messages are things like ETAs, fuel quantities remaining etc. World flights over Indonesia and Malaysia, as well as Polar Air flights over Russia also frequently pass company only messages for relaying. Tokyo does not have phone patch facilities, so flights in Tokyo's FIR requiring to



channel can be made the primary around 0100z. This works quite well as Honolulu generally is still on 13.273 and 13.339MHz at this time. However, Tokyo can still use 13.273MHz as its main channel on a very infrequent basis.

Flights arriving from North America pass into Tokyo's airspace at 165°E, crossing anywhere North of 33°N. Routes across the Pacific are flexible and change on a daily basis, flights can cross the FIR at 34°N one day and at 42°N the next. Flights inbound for Japan and Korea are then generally routed via NIPPI as noted above or by a lesser used route, R580, which is parallel and slightly to the South of R220, the boundary is at OMOTO and flights then go via ONEMU and are then directed to call Tokyo Control on 133.6MHz at 145°E. South again and parallel to both R220 and R580 is A590, and whilst this is predominately used for Eastbound flights occasionally flights to Japan cross the FIR at PASRO, call again at POXED and then call on 133.6MHz at SABES. Aircraft inbound via CALMA (38° 15'N 146° 55'E) and then ADNIP are told to call Tokyo Control on 133.6MHz at 146°E. Flights that enter Tokyo's FIR on more southerly tracks, around 38°N and bound for Japan are routed via RIPKI (37° 11'N 150° E) and COMFE report on 133.6MHz at the latter point or 146°E, about 15nm nearer the mainland. These arrangements have been recently introduced as, apart from flights arriving via ONEMU, aircraft were previously told to call on the extended range channel of 126.7MHz at 146°E.

From around 0300z the bulk of the flights start arriving from the Eastern side of the Pacific and at this time a second primary frequency is brought into use. Unfortunately things change on a daily basis, literally. The one constant is

that United, Delta and Japanair flights use one frequency and all other flights use another. For a while the two channels were usually 13.273 and the previously unused 11.330MHz, though any combination of these two and/or 10.048 or 8.951MHz were used. In late October 1995 the two primaries normally were 8.951 and 8.915MHz, sharing 6.655MHz as the secondary. There is a gentleman's agreement between Tokyo and Honolulu and they rarely use the same frequencies. With Honolulu now using 13.273MHz until as late as 0500z Tokyo has been forced to use an alternative, the usual combinations are 8.951/8.915MHz and 8.951/10.048, or 11.330MHz with either 8.951 or 10.048MHz, but there is pattern as to which frequency is used by the UA/DL/JL flights and which by the rest. The opposite frequencies can be utilised as secondaries or a third channel can be used, e.g. 10.048 or 6.655MHz can be used if both 8MHz channels are in use as primaries, and on a few occasions the two primaries can have their own secondaries, meaning a total of four channels in use. This split is not as stringently applied as those used by Honolulu and often aircraft will be left where they call in. Aircraft working Tokyo on h.f. before 0300z are normally left where they are until they reach v.h.f. range and then after 0500z aircraft seem to be left where they make the initial call. The frequency which will become the evening primary is introduced as the secondary for both channels around 0600z.

By around 0600z most of the traffic has reached the FIR and 8951 generally becomes the main channel, its secondary being 6.655 or rarely 5.628MHz, the latter is not normally used as this is being used by Honolulu in

this period. Sometimes aircraft are selcalled and moved, other times they are just told to make their next report on the new channel when they give their routine position report or have a request, though its not totally unknown for the last flight to be forgotten! Occasionally you will get the situation where 8.951 and 8.915MHz are being used and the operator on the "main" channel of 8.951 decides to move what's left of his traffic down to 6.655MHz, simultaneously the operator on 8.915 thinks traffic levels are now low enough to shut the channel down and selcalls and moves his traffic to 8951MHz as quickly as the other operator is moving his traffic off! By 0800z the vast majority of flights have reached v.h.f. range and 8.951MHz falls into disuse, the last few flights including Asiana 201, Japanair 624 and Eva 11.

Eastbound flights start calling Tokyo for ground radio checks from around 0730z, usually on 6.655MHz, the secondary being 5.628MHz or very rarely 8.951MHz. Around 0900z traffic builds up and warrants a second primary channel; United, Delta and Japanair flights being directed towards either 5.628 or 6.655MHz and the other companies to the opposite - this also varies on a nightly basis, though on one occasion I heard 5.628 and 5.667MHz being utilised, this latter channel being quite a recent introduction and had normally only used by Honolulu. Rarely all the traffic will be worked on one channel, but the two primary arrangement is the norm. The outbound peak is more pronounced and shorter than that inbound, a lot of flights from originating from places like Singapore or Hong Kong stop in Japan prior to transiting the Pacific and seems to take off simultaneously. The "second

primary" is generally devoid of traffic by 1230z, and can be left to die a natural death or the last few aircraft can be selcalled. From as early as 0930z but normally around 1030z the overnight primary channel of 2.932MHz is introduced, aircraft already on 5.628 or 6.655MHz are generally left where they are, one of this pair becoming the secondary. Very occasionally 2.932MHz will not be introduced as the primary until after 1400z. On one occasion Tokyo tried sharing 6.655MHz with Honolulu but the amount of traffic was horrendous that Tokyo decided to change channel, instead of the usual move to 2.932MHz Tokyo used 8.951MHz until around 1200z.

Unusually, what occurred at the end of 1994 was that the very first outbound flights used 5.628MHz, then at 0800z 2.932MHz was introduced for all flights and as aircraft reached the extremes of v.h.f. range and checked in on 2.932MHz they were then instructed to make their 160°E report on 5.628MHz again.

Eastbound flights normally cross on six or seven routes, the three-Southern most being the busiest. These three do not use named reporting points for the majority of the flight, but give reports at every ten degrees of longitude. United flights are generally equipped with satellite equipment and when working Honolulu once they have checked in on 6.655 for a Selcall check it is unusual to hear them again. Tokyo is not so equipped and therefore handles United flights normally by voice.

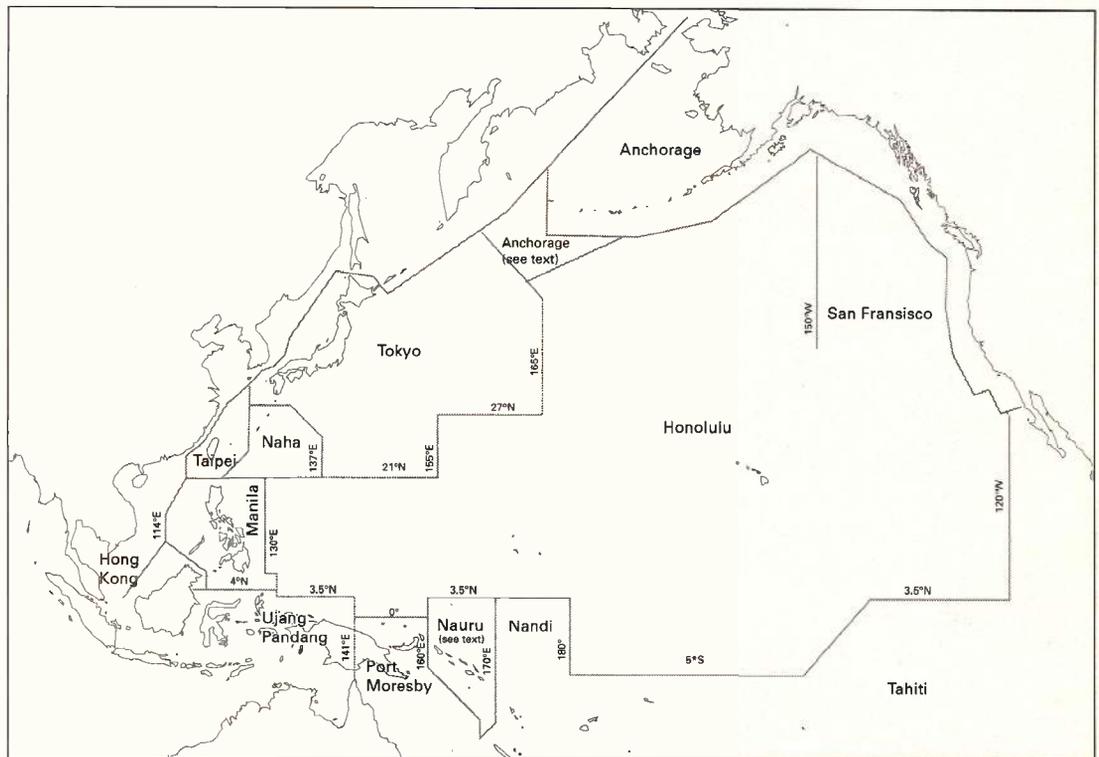
The Southern-most route is that to Los Angeles, and usually flights exit Japan via VEPOX, this is generally also the busiest route across. The second track, two degrees further North, is to San Francisco and departs via COMFE, RIPKI and then via the flexible tracks. This route

is also very busy. Two degrees further North again for most of the route is the track for flights towards Seattle and Vancouver, aircraft departing Japan via ADNIP and CALMA. It is very rare for flights to change between each of these tracks, but sometimes traffic is so heavy on one track that the only way a flight can get a higher altitude is to change route. One rare occasions flights will depart via a more southerly exit, i.e. L.A. bound flights leave via MASON, those to San Francisco via VEPOX and the Seattle-bound flights will route by way of RIPKI.

The remaining routes cross the FIR at CUTEE, AKISU, PASRO and OMOTO, flights using these tracks flying to destinations such as Anchorage or points in Mid-West America or the East Coast. Although these routes are fixed flights use the most advantageous one for their destination. The route via PASRO is the busiest of these, only UA 802 on its way to Newark generally flies via OMOTO.

West Pacific - Honolulu - 'Honolulu Area'

As stated in my previous article, Honolulu handles traffic in two distinct parts; flights from Asia towards the Hawaiian Islands, and those between Northeast Asia and the Guam area and destinations further afield in Australasia. The FIR boundary between Honolulu and Japan follows 165°E down to 27°N, where it then proceeds Westward to 155°E and then Southwards to 21°N where it continues to 130°E. There does not seem to be a rigid point for the few



flights between Guam/Saipan and Honolulu to change over, it is generally done in the vicinity of Wake Island. In a similar vein there is a blurred area around Majuro, though as a rule flights from Honolulu to Majuro use the Honolulu area frequencies and then tend to use those employed in the Guam area on departure for points West.

There are no hard and fast rules regarding the where North Pacific frequencies end and where West Pacific Frequencies begin, it depends entirely on a flight's destination. Flights bound for Honolulu can cross 165°E as far North as 36°N (North Pacific flights can cross 165°E as South as 33°N) and the most Southerly tracks from the Hawaiian Islands may cross 27°N and into Tokyo's jurisdiction around 158°W. As with the North Pacific routes these tracks change on a daily basis and flights can fly in one direction at the Northern extremity and along the Southern one in the opposite direction.

The traffic follows very pronounced peaks and apart

from military flights being almost entirely Westbound from around 2100z until the last flights cross the FIR at around 0600z. During this period 13.300MHz is still used as the primary and 17.904 or 11.384MHz are used as the secondary, if 17.904MHz is employed then it is replaced by 11.384MHz around 0100z. There is generally next to no traffic left when 13.300MHz is shut down, the little there is generally being military and will be moved to 11.384MHz. The last few Westbound flights include United 825, Air Micronesia 903C and Eva 21. At the beginning of the 1995 Tokyo quite often used 13.300MHz and it almost seemed a race as to who would get there first, and when this happened Honolulu would stay on 11.384MHz. This doesn't seem to happen now, though Honolulu will rarely stay on 11.384MHz if propagation is particularly poor.

The few flights in the local evening will use either 11.384 or 6.532MHz, which is shared with the Guam Area traffic before flights are directed towards 4.666MHz

primary and 2.998MHz secondary as their cross the FIR with Tokyo any time after 1000z. The use of the former frequency by Honolulu being quite a recent innovation. Prior to the New Year 2.998MHz primary and 6.532MHz secondary had been used for quite a while.

During the Summer of 1994 6.532MHz was employed as the primary for both Guam and Honolulu area flights, aircraft in the former area being told to use 11.384 as the secondary and those in the latter area were directed to use 2.998MHz as theirs, flights inbound to Honolulu were then often told to change to 2.998MHz as they reached 180° or 170°W from 1300 onwards. They are then asked to call Honolulu Centre on 119.9MHz ten minutes prior to THOMA, DANNO, HOOPA or CHOKO. Most flights leave Japan on the same route often via MASON or VEPOX, these two points can simultaneously carry outbound traffic for Los Angeles as well. All flights in this period are Eastbound.

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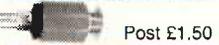
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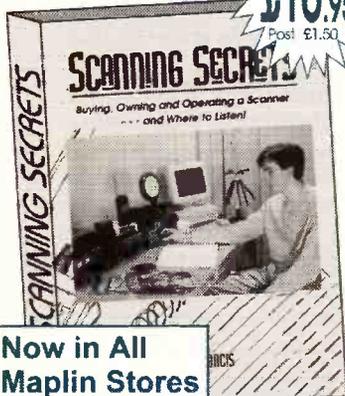


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Sources of Aeronautical Information

To the beginner, getting the necessary information to understand what happens on the airbands can be a bewildering task. Should you, perhaps, go to the expense of receiving those NOTAMs that you've heard of? This article will show that there is plenty of helpful information easily available to the public by mail order from official sources. When compared to the prices of books intended for the hobbyist (such as frequency guides), the official offerings seem quite reasonable.

To start with, let's pretend we're planning a flight. Where do we begin? The obvious place is with our aerodrome of origin. *Pooley's Flight Guide* is published annually. There are British (including Ireland) and European editions. Alternatively, *Bottlang Airfield Manuals* come in different volumes with wider geographical coverage, but are far more expensive. These publications cover even the smallest aerodrome but only show basic information. Full instrument navigation procedures are not included.

A supplier of these publications is **Airtour International, Elstree Aerodrome, Borehamwood, Hertfordshire, WD6 3AW, Tel: 0181-953 4870.** Another is **Transair Pilot Shop, West Entrance, Fairoaks Airport, Chobham, Surrey, GU24 8HU, Tel: (01276) 858533.**

If you want full details of a particular aerodrome then you're better off buying a set of let-down plates. Instrument procedures are illustrated, i.e. Standard Instrument Departures (SIDs) and Standard Terminal Arrival Routes (STARs). Where there is i.i.s., a separate chart is shown for each runway. Also included are runway and taxiway maps, which could be complex at a large airport like

Heathrow. A complete set of let-down plates can work out expensive and they're only available for selected larger aerodromes. I'd recommend these only for an airport of special interest. I always buy some to cover my holiday flight!

A publisher of these is **Aerad Customer Services (S464), PO Box 10, London (Heathrow) Airport, Hounslow, Middlesex, TW6 2JA, Tel: 0181-562 0795/0586.** Be sure to make cheques payable to 'British Airways plc.' Another publisher is Jeppesen, which you can order from Transair.

Of the two, I prefer the indigenous Aerad product. Perhaps it's just familiarity, but I find the layout easier to read and they print on a more substantial grade of paper. If ordering for the first time from Aerad, ask for the free *Legend Booklet* that explains the symbols appearing on the charts - almost a reference work in its own right!

Radio-Navigation

How do you locate an aircraft's position after take-off? If a SID is published, the flight might follow that. More likely, the radar operator can act as the pilot's eyes and spot a gap in the traffic pattern, issuing a short-cut and enabling some of the tedious SID to be cut out. There are good reasons for SID routings, though, and proximity to high terrain or noise-sensitive conurbations might limit the amount of

corner-cutting that's possible. In any event, an instrument flight will end up in the airways system. Generally, two sorts of chart are available: lower and upper airspace, the dividing line being FL245 in the UK (see example, Fig. 1). These show the airways and the beacons or reporting points that they interconnect. Aerad, for example, publishes a series of low altitude charts such as EUR/1 + EUR/2 (the EUR signifying Europe, the two charts being printed on opposite sides of the same sheet). This covers Ireland and most of Great Britain plus a slice of north Europe. If you need the north of Scotland then you'll have to order the adjoining EUR/3 + EUR/4.

Above FL245, the high altitude radio-navigation charts (H series) from Aerad include H201 + H202, again printed on a single sheet, and you'll be pleased to hear that the whole of the British Isles plus quite a bit of western Europe will be found there. Charts are updated frequently but many of the changes are minor. Aerad charts are labelled with the date from which they become Effective (the EFF date appears on the front of the chart). Jeppesen, as already mentioned, produces a rival set of similar charts.

Certain areas have their own chart. If you're interested in oceanic flights, Aerad offer the North Atlantic as NAT 1 + NAT 2 on one sheet, plus the separate Polar chart. Jeppesen has the *North*

Atlantic Plotting Chart.

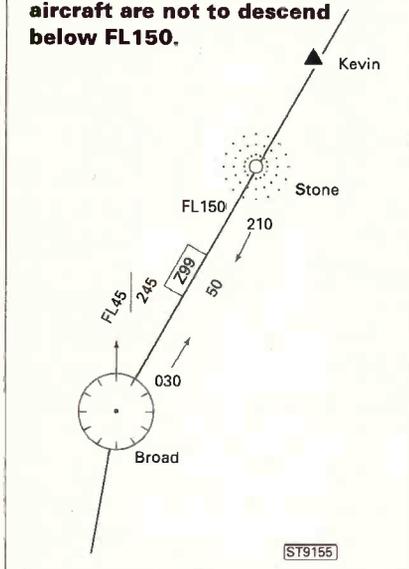
Remember that North Atlantic tracks change twice a day and it's up to you to plot the current ones on the chart. Congested areas, such as around busy terminals, also have a detailed radio-navigation map such as Aerad's *London Area Chart*.

Military buffs can obtain specialised *en-route* radio-navigation charts direct from the RAF. Contact: **1 AIDU, RAF Northolt, West End Road, Ruislip, Middlesex, HA4 6NG, Tel: 0181-845 2300 ext. 7209.** Make cheques payable to 'MoD Public Sub Account RAF Northolt.' For example, chart 510 covers the British Isles and 512 shows the southern North Sea (including oil rigs!).

En-Route Information

Charts alone don't tell the whole story. They often include a summary of communications frequencies but there's so much more to be found in the *En-Route Supplements*. I keep Aerad but doubtless there's a Jeppesen offering. The UK is covered in Aerad's *Europe and Middle East* volume, but other books cover the remainder of the world. The book is endowed with all sorts of useful information but four main sections will help readers of this *SWM*. The first lists the frequencies for aerodromes and area control centres; then there's the aerodrome section with non-communication details such as location, runway

Fig. 1. Radio-navigation chart. Airway Z99 leaves BROAD v.o.r. beacon on track 030° magnetic and arrives, after a distance of 50nm, at the STONE n.d.b. It then passes the KEVIN compulsory reporting point. The airway lies between flight levels 45 and 245, but in the cruise, aircraft are not to descend below FL150.



versions do. For example, the RAF volume that includes the UK is the *British Isles and North Atlantic* one, affectionately abbreviated to 'BINA.'

The RAF also do a smaller *Flight Information Handbook* that mainly lists procedures, but also includes emergency frequencies. Worth buying if you've any cash to spare after ordering the essentials.

Other Charts

If your interest is more specialised then you could consider suitable charts. I'll first mention two that are

free. *RAC 5-0-1* and *RAC 5-0-1.1* show UK danger, air-to-air refuelling and restricted areas and give a guide as to the main military low-flying routes. Please enclose a pre-paid reply envelope when ordering; together they weigh almost 250g but are supplied folded to just less than A4 size. Request from: **Civil Aviation Authority, Chart Room, Room T1120, CAA House, 45-59 Kingsway, London, WC2B 6TE, Tel: 0171-379 7311.**

Visual flight requires maps of the countryside that's being overflown. As an

airline passenger, you can orientate yourself when over land - if there are sufficient gaps in the clouds! The charts for this purpose are topographic ones, the UK being covered by three charts at half-million scale. There are also quarter-million ones that

show more terrain detail but only include low-level airways and airspace. Both types have some radio-navigation on them. The new low-level half-million series is a simplified version, again omitting higher airspace. Airtour, Transair and CAA Chart Room should all be able to help.

Another visual chart shows helicopter routes inside the London Control Zone. These flights invariably work the Special VFR facility to be allowed into the Zone at low level. Published by the CAA.

Other Sources

From the CAA come two periodicals. These will interest the specialist, rather than general, enthusiast and I wouldn't regard them as essential. The *Aeronautical Information Circular* is published every four weeks and is available on subscription. Most of the content is administrative in nature but it does give warning of policy changes - such as phasing out i.l.s. or the introduction of 8.33kHz channel spacing. Major airspace changes are often described, and the appropriate frequencies might be listed. You also get advance warning of airspace restrictions - such as the temporary ones required by the Red Arrows!

Don't forget the Royal Flights and Airspace Restrictions warning, which is free! Telephone 0500 354802. Living in airspace approaching Northolt, it's not unusual for me to see a low-flying Royal Squadron aircraft. Who's in it and where did it come from? By noting the time and direction of the flight and comparing this with the free telephone recording, you can get a fair idea. Next, look up the Court Circular or Diary section of a quality national newspaper, and find an engagement that fits the bill. A little detective work reveals all!

General Aviation Safety Information Leaflet (GASIL) teaches you the technicalities of good airmanship and is aimed at light aircraft pilots. Published every other month, it includes a list of frequency changes. I've never found much help for the i.f.r. radio enthusiast here, and I do summarise the permanent frequency changes in my own 'Airband' column. By subscription from the CAA.

To place a subscription for either periodical, contact:

CAA Printing and Publication Services, Greville House, 37 Gratton Road, Cheltenham, Gloucestershire, GL50 2BN, Tel: (01242) 584139. Ask for the free *Publications Catalogue* when ordering.

Choose the Basics

What would I buy? Definitely the Aerad supplement, plus local low and high radio-navigation charts. Preferably, the RAF supplement for my region as well. If I live near (or visit) one large airport then I would want the let-down plates too.

There are plenty of other specialised charts and publications, but they aren't necessary for the enthusiast's usual purposes. There is also the expense of buying documents that you don't really need. For that reason, I've covered what I think will be of most help to you. If you find some official information source that you couldn't do without, and that I've missed, write to my 'Airband' column and tell me!

If you're a chart etc. supplier and I've missed you out, well, sorry, I simply don't know about you! Why not send me your catalogue? I'll mention you in a future issue. My address will be found in the 'Airband' column on page 62 of this magazine.

Godfrey Manning G4GLM

direction and elevation. Then, airways are listed with their assigned frequencies - you'll see how complex this subject is. Finally, ICAO four-letter aerodrome identifiers are decoded (e.g. EGLL is Heathrow).

I would say that the airways section, although comprehensive, is by no means easy to follow. Some of the 'hobby' listings, as advertised in *SWM* are easier to understand but at the expense of missing some fine detail. The civil supplements don't cover u.h.f. either, but the RAF

Abbreviations

CAA	Civil Aviation Authority
FL	flight level
g	grams
ICAO	International Civil Aviation Organisation
i.f.r.	instrument flight rules
i.l.s.	instrument landing system
kHz	kilohertz
n.d.b.	non-directional beacon
nm	nautical miles
NOTAM	NOTice to AirMen (includes AirWomen)
u.h.f.	ultra high frequency
VFR	Visual Flight Rules
v.o.r.	very high frequency omni-directional radio range

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Short Wave Magazine, July 1996



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For many years spectrum display units (SDU) have been used by government and commercial organisations to aid the location of elusive transmissions. Due to the high price such equipment has never been within the reach of the average listener. However times have changed and new technology coupled to the innovation of AOR has lead to a great reduction in size and price, placing the SDU5000 within the grasp of many serious listeners.

Usually when tuning, searching or scanning using a traditional receiver only one frequency is monitored at any instant, however the SDU5000 provides a visual display of activity not only on the frequency being monitored but up to 5 MHz above and below as well. This ensures that even a brief nearby transmission will be "captured" and nothing can escape undetected. The SDU5000 is so effective at locating brief transmissions that it is in daily use by frequency management organisations and even in the front line of many military "hot spots" and exercises.

The SDU5000 remains compact due to the use of an internal 3.1" (79mm) HQM simple matrix 16 colour LCD 192 dot x 210 dot. An external home colour television with video input may also be connected (PAL or NTSC). The SDU5000 may be used with a number of receivers (which have a 10.7 MHz I.F. output) and **THE LATEST FIRMWARE** will support the AOR AR3000A and ICOM R7000, R7100 & R9000 and will be later ported for the AOR AR5000. The receiver's RS232 remote port connects directly to the SDU5000 (ICOM CT17 or Siskin/SMC communication interface is also required if using an ICOM receiver). A small modification is required to the AR3000A receiver.



An IBM PC compatible WINDOWS package HAWK 5000 is also available priced at £99.00 + £3.00 P&P. Supplied accessories: 9 - 25 D type RS232 lead suitable for connection to the AR3000A or ICOM CT17, DC lead, BNC-BNC patch lead, mains power supply & operating manual. Please phone or write for the colour leaflet... **AS REVIEWED IN JANUARY 1995 SHORT WAVE MAGAZINE.**

SDU5000 £799.00 inc VAT

The **AR8000 UK** receiver is without doubt the most full featured wide band hand held receiver on the market today. Frequency coverage is from 500 kHz - 1900 MHz without gaps. All mode reception AM, NFM, WFM, USB, LSB & CW... twin frequency display, alphanumeric text comments, optional computer control etc..

AR8000 UK £410 inc VAT



The **AR2700** receiver is the very latest high tech hand held receiver from AOR. Frequency coverage is 500 kHz - 1300 MHz with receive modes of NFM, WFM & AM, Optional voice record chip available.

AR2700 UK £269 inc VAT



AOR AR5000 - High performance HF/VHF/UHF receiver



The AR5000 advances the frontiers of performance providing excellent strong signal handling, high sensitivity and wide frequency coverage with microprocessor facilities to match.

- Very wide frequency coverage 10kHz - 2600MHz
- All mode reception: AM, FM, USB, LSB & CW
- Automatic electronic preselection of the front end
- Excellent strong signal handling
- NCO (Numeric Controlled Oscillator) with tuning steps down to 1Hz
- TCXO fitted as standard
- Multiple I.F. bandwidths 3kHz, 6kHz, 15kHz, 30kHz, 110kHz & 220kHz
- Auto mode bandplan selection
- Multi-function LCD with 7 character alpha-text comments
- Extensive search & scan facilities
- "Cyber Scan" fast search & scan speeds up to 45 channels / increments per second
- Analogue S-meter
- 1000 memory channels and 20 search banks with EEPROM storage
- Auto memory store
- Extensive RS232 command list
- Sleep timer / alarm
- SDU ready

RRP £1749 inc VAT

The **AR3030** is The New Classic of short wave receivers. Coverage is from 30 kHz - 30 MHz and all mode receive. The legendary 6 kHz mechanical AM filter is fitted as standard along with a 2.4 kHz Murata filter for SSB and an additional filter for NFM. Stability is excellent due to the standard fitting of a TCXO. Many options are available including VHF converters, Collins SSB, CW & AM filters, Concerto PC software etc.

AR3030 £699

The **AR3000A** has established itself as a high performance base mobile receiver offering an extremely wide frequency coverage of 100 kHz - 2036 MHz and all mode receive.

**AR3000A £949,
AR3000A PLUS**

(customised version) £995



Short wave column - Cabbage Crates in the Briny

There is a classic Monty Python sketch where a bunch of RAF types are talking ten to the dozen and nobody understands a word of what was said. "Sorry, Old Boy, just don't understand your banter..."

Air Comms have improved a great deal but what would I know, the last plane I flew on was so old, I sat next to the rear gunner. "What's the problem, Chalkie old boy?" "Sorry sir. I didn't see you come in. He got clean away with it, you know, Sir" "Yes, I know. Heard it on the Ops Net. War is hell, Chalkie." "But after all these years, they still let him get away with it, Sir". "Get it out of your system, old thing". "Thank you, Sir. Damn it all, Sir. In fact I'll have a triple serving of damn with a damn on the side with roly-poly damn and custard to follow..." "That's enough I think, Chalkie. More than enough." "Sorry, Sir. But AOR is getting a reputation for forefront HF technology and they still let him get away with that old rear gunner gag..."

There will be those who have come to our hobby from the Services. There will be pilots and ground crew who want to keep in touch. There will be listeners, fascinated by what they have heard on VHF via an AOR hand-held receiver. They may have something that is bothering them. The Tower gives them clearance for take off, sees them safely into the wild blue yonder then we never hear from them again... Don't worry, Chalkie old bean. Our aircraft never die, they simply go trans-oceanic.

As the VHF only provides a local service, they use HF on the long haul Stateside. Having come under control of its nearest ATC (Air Traffic Control), the aircraft sets its heading and calls the ACC (Area Control Centre) before requesting trans-oceanic clearance via the OACC (Oceanic Area Control Centre) on HF. We shall deal only with this HF traffic here, but for completeness the full chain of command on radio follows this pattern;

- Obtain take-off permission from the Tower and local weather conditions either from the Tower or regional Volmet on VHF.
- Establish flight level and heading on leaving our airspace on VHF.
- Establish contact with nearest ACC on HF.
- On leaving range of ACC, establish contact with OACC on HF.
- Request trans-oceanic clearance.
- Establish contact with nearest ACC in your country of destination, HF circuits at present favouring Atlantic routes.
- Establish contact with recognised air lanes over that country via local ATC on VHF.
- Establish contact with airport tower on VHF.
- Request landing clearance and put down on allocated runway.

The chosen runway and terminal building are always the farthest from the car and space did not allow me to document the six hour delay due to the wrong kind of snow at Kennedy in our idealised scheme of things. Aircraft don't fly high enough to avoid the effects of the ionosphere, so provision is made at 3, 5, 8 and 13Mhz to allow for the daily changes in reception and the longer term seasonal changes.

Our most audible OACC in the UK is at Shannon in Southern Eire. Signing as "Shanwick", the 5 and 8Mhz transmissions listed below are a good starting point during daylight conditions.

"Shannon Volmet" is a weather service. Announced in computerised speech, regular listening will show a fixed pattern to these broadcasts. Temperature, dewpoint - the temperature at which water vapour condenses back to water - wind speed and direction are followed by QNH. This is the ground setting for the altimeter. Cloud cover at fixed flight levels are given in "octas". Consider, if you will, the pilots field of vision to be from the centre of a large cake split into eight slices. Then "three octa" would be three eighths cloud cover at that height. The CAA would like to hear from any listener reporting "Hundreds and Thousands at one o'clock".

Stable weather conditions will be reported as "No-Sig" at the end of the bulletin. This is short for No Significant Change. The catchy heading of "Information in Plain Language Concerning Certain Meteorological Phenomena" or SIGMET is usually given in a single word, "Snow", "Rain", "Sleet", a plague of boils or what have you.

Some frequencies to try in USB:

5505KHz: Shannon Volmet.
5616KHz: Shannon ATC. Answerback on 8864.
5649KHz: Shannon ATC. Answerback on 8879.
6622KHz: Shannon ATC
5680KHz: Plymouth and Edinburgh Rescue Co-ordination Centres.
©Bob Ellis

For short wave, VHF or UHF listening, AOR have a range of equipment also including the AR5000, AR3000A, AR3000A-PLUS, AR8000, AR2700, AR3030, SDU5000, control software etc...

For full details contact AOR UK, the UK distributor for AOR



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The AR8000 UK receiver is without doubt the most full featured wide band hand held receiver on the market today. Frequency coverage is from 500 kHz - 1900 MHz without gaps. All mode reception AM, NFM, WFM, USB, LSB & CW... twin frequency display, alphanumeric text comments, optional computer control etc..



AR8000 UK
£399



The AOR-2700 receiver is the very latest high tech hand held receiver from AOR. Frequency coverage is 500 kHz - 1300 MHz with receive modes of NFM, WFM & AM, Optional voice record chip available.
AR2700 UK £269



AOR AR-7030

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This is a superb design - brilliant performance.

WS-1000 Wideband Scanner



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Secondhand Equipment

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Icom IC-R71E	Top quality shortwave receiver.....	£575.00
Yaesu FRG-9600	Wideband receiver 60-905MHz	£389.00
Yupiteru MVT-8000	Scanner, 8-1300MHz (as new)	£289.00
Kenwood R-5000	Superb top of the range receiver, fitted with VC-20 VHF converter	£789.00
NRD-525	Luxury shortwave receiver	£790.00
Yaesu FRG-100	Receiver (as new)	£399.00

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Welz WS1000E Wide Band Receiver

Hand-held scanners have been getting smaller by the year, but the latest to arrive from the far east is so tiny that it amazed even Alan Gardener.

A few years ago if someone had shown me a pocket sized receiver which could cover the frequency range 500kHz to 1.3GHz, be capable of resolving a.m., n.b.f.m. and w.b.f.m. signals, with good r.f. performance and operation from a couple of 1.5V pence batteries I would have been amazed. These days with improvements

in modern electronic manufacturing techniques, I tend to be less surprised. This is partly due to the enormous improvements in design associated with personal communications equipment, and the knock-on effect to other areas of domestic consumer electronics.

However, I must say that I got quite a shock when I first saw the review model - it is tiny!

Measuring only 58 (w) x 97 (h) x 24mm it is, genuinely, about the same size as a packet of cigarettes, and will easily slip into a shirt pocket - and I don't mean the American sized ones that a lot of equipment manufacturers seem to feature in their glossy sales ads.

Styling

As you can see from the photos the unit has very distinctive styling with a slightly curved shape making it a snug fit in the palm of the hand. The top panel carries a BNC antenna connector, 3.5mm earphone socket and concentric tuning and volume control knobs. The left hand side features a convenient second function key and squelch override button whilst the right hand side sports a safety lanyard loop and a knurled, edge mounted, squelch adjustment knob. Most of the front panel is occupied with the speaker grill, but the

top quarter includes a liquid crystal display and the left hand side has two strips of buttons providing a means of entering frequencies and controlling the main receiver functions. A small flap at the rear provides access to the battery compartment, which accommodates two AA sized cells, whilst two recessed studs on the bottom of the case provide a means of externally powering the unit.

One of the buttons on the front panel is marked 'Power' and on switching it on I was greeted with a cheery "HELLO" message on the l.c.d. screen. Rotating the tuning knob allowed me to step between nine pre-programmed memory channels, but almost any attempt at more sophisticated operation was repelled with a warning beep from the speaker - indicating that it was time to read the operator's handbook!

Handbook

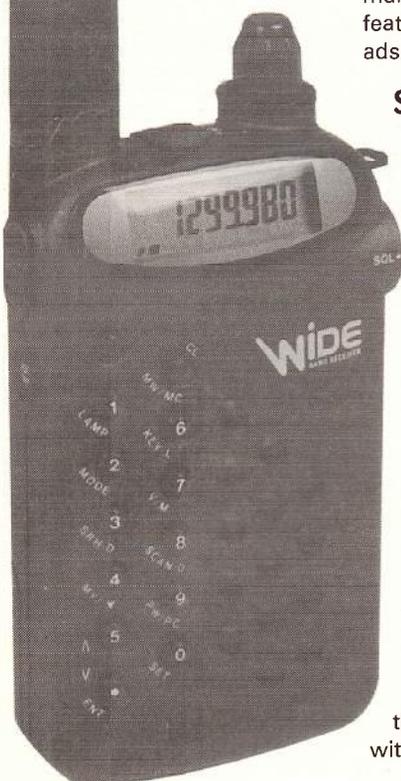
This proved to be very enlightening as the receiver has a normal and expanded mode of operation. The unit is shipped in the normal mode. This gives a very limited set of commands, which permit you to become used to operating the basic functions before progressing on to programming your own search and scan memories.

The method of changing the configuration is by means of the 'Set' function. This is one of the second function commands present on the keyboard, which is selected by pressing the side mounted

second function key whilst at the same time pressing the appropriate front panel button. Once the 'Set' menu has been opened, it is simply a matter of scrolling through the various commands by means of the rotary tuning control knob until the required function is displayed. Pressing the second function key whilst in this condition allows you to change the selected parameter which is confirmed by pressing the 'Enter' key on the front panel. Typical functions which can be changed in this way include altering the frequency step size, selecting auto step size, enabling auto mode selection, l.c.d. backlight operation, battery saver and automatic power down function, keyboard beep on/off, expanded mode on/off, v.f.o. mode, r.f. squelch level, Attenuator on/off, 'S'-meter sensitivity and fast tuning step size. One nice touch is the ability to pre-programme one of the front panel buttons to provide a quick means of directly changing one of the functions, the most obvious use for this would seem to be an instant change of tuning step size or mode.

Expanding

Once the Expanded mode has been selected all the main functions become available to the operator, including access to the 400 memory channels and ten search bands. The receiver can be toggled between v.f.o. operation where the top mounted



rotary control can be used to manually tune up and down in frequency at a rate determined by the preset step size. This can be set to be either 1, 5, 6.25, 9, 10, 12.5, 15, 20, 25, 30, 50, 100kHz or Automatic - but more of this later.

If a frequency has been entered in the v.f.o. mode it is a simple matter to store it in one of the memory locations. A press of a second function button brings up the next free

memory location which can be modified by rotating the tuning knob or by typing in a new

memory number. Once the correct memory has been selected the frequency can be stored by means of a second button push, which makes quick storage of active frequencies very easy.

Memories

The other main type of operation is the memory mode. Once this is selected the top mounted rotary dial allows the user to step through all the pre-programmed memories. This includes 20 special memory locations which are used to store ten pairs of upper and lower frequency search limits. Memories can be scanned as an entire group or individually

depending on the type of memory scan selected. A few more button

presses during a search or scan enable the receiver to stop, pause or delay once an active frequency has been found. A nice feature was the ability to select standard memory channels to act as upper and lower limits for individual frequency searches, which is very useful if you wish to perform a quick check for other activity between known channels. In addition unwanted signals can be locked out of a search by storing the frequency in one of eighty memories set aside for the purpose.

In the search mode, upper and lower frequency limits are stored in memories 400-419. To enter new limits it is necessary to enter the frequency in the v.f.o. mode and then assign it to one of the correct memory locations. This involves remembering which of the memory pairs refer to each search bank. For example the lower limit for search band 3 is stored in memory 406 and the upper limit is stored in memory 407. This does involve a certain amount of mental agility as the memory display indicates the contents as being located in memory 3a or 3b rather than 406 and 407.

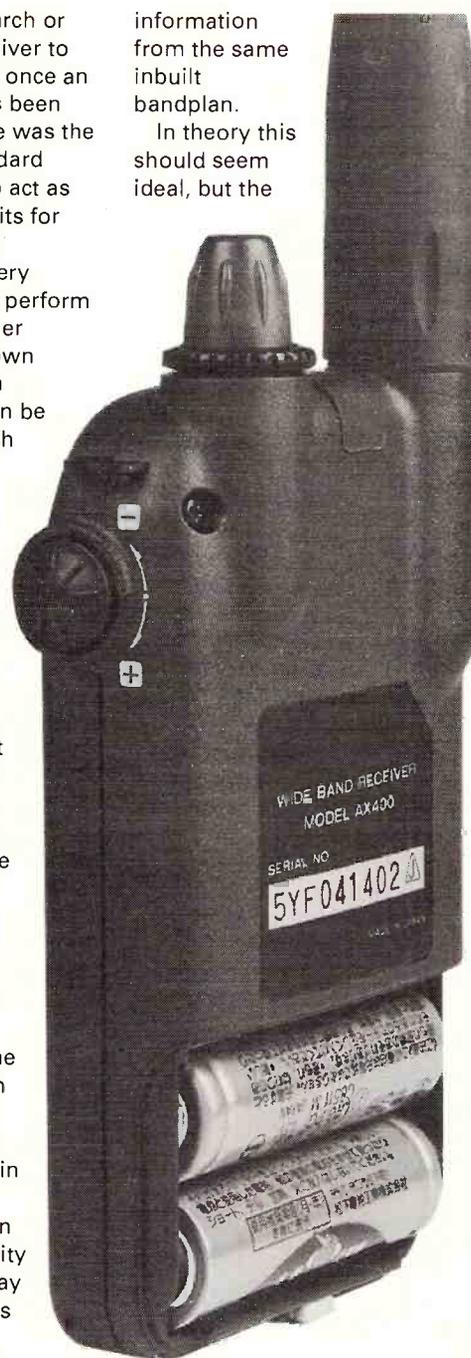
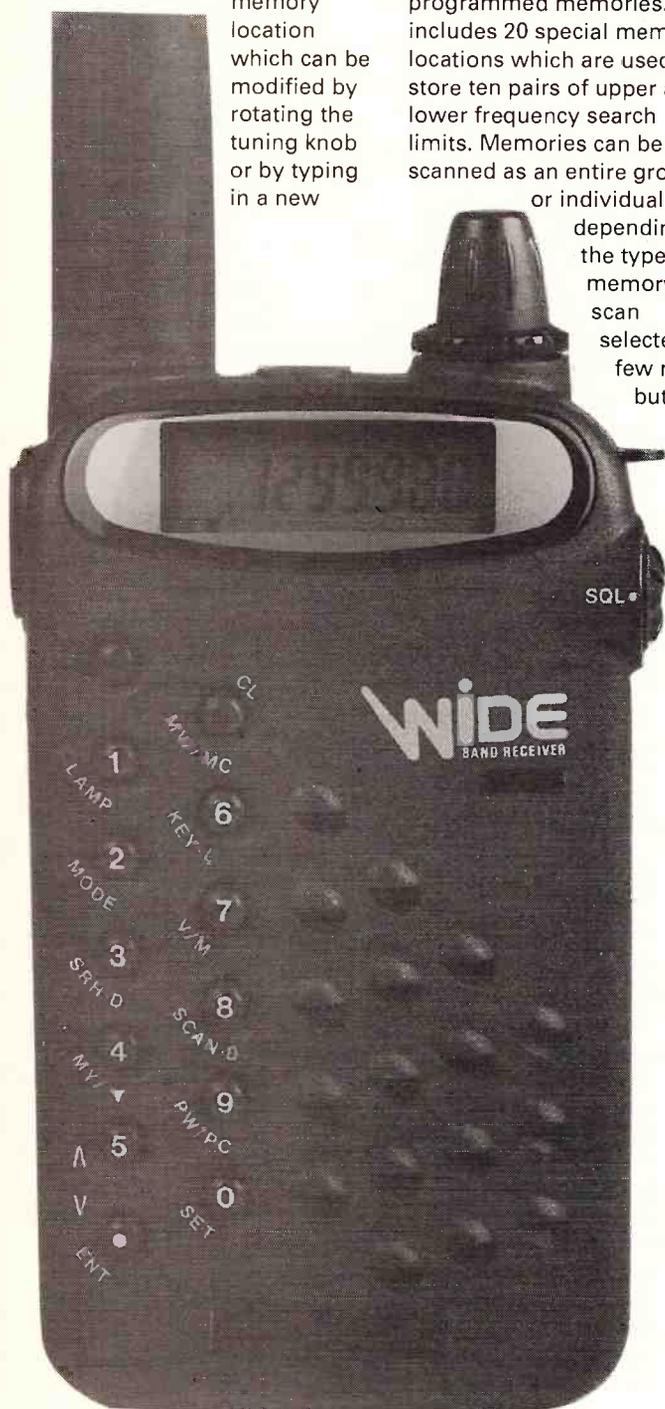
Automatic

Coupled to the search function is the ability to set automatic step and mode selection.

The automatic position allows the exact step size to be determined by an built-in frequency bandplan, so as you tune across certain frequency ranges the most appropriate step size should be selected automatically. This also applies to the automatic mode setting option which takes its

information from the same inbuilt bandplan.

In theory this should seem ideal, but the



review model and a couple of others I have seen are not programmed with settings relevant to the UK. This is particularly important when the search function is being used, as the step size and mode cannot be stored in the search memory. If you link a number of search bands the step size and mode either has to be pre-set to a fixed value or the automatic function has to be enabled. This means that for example it is not possible to use the receiver to consecutively search across the 144MHz amateur band using n.b.f.m.

with 12.5kHz steps, if it is also linked to a search of the v.h.f. air band using a.m. with 25kHz steps. In automatic mode the v.h.f. air band is programmed correctly but the 144MHz amateur band is programmed to tune in 20kHz steps for the American market. You can of course just search single frequency bands with the auto function disabled, but it does limit the flexibility somewhat. This problem seems to be a strange oversight on the part of the manufacturer, as the ability to store mode information in individual memories has been provided. Given the fairly constant changes in bandplans which are expected over the next decade as the UK tries to align its frequency allocations to the rest of Europe, and the mixture of a.m. and n.b.f.m. services found in some bands, it is unlikely that this type of operation could ever be 100% effective.

The other feature I missed was the ability to automatically search and store frequencies. This is very common on hand-held scanning receivers, where a block of memory locations are set aside to store active frequencies identified during a search. I have found this feature to be very useful when using a scanner away from home or at special events. It permits you to leave the scanner running unattended, overnight for example. You can then review the most active channels at your leisure - a great time saver if you are not sure of exact frequencies.

RF Performance

In terms of r.f. performance the model worked remarkably well considering the severe constraints which must have been placed on the designer in order to produce a very compact design and low power consumption. The measured sensitivity on n.b.f.m. averaged -120dBm for 12dB SINAD over most of the range 30-1000MHz. Below 30MHz the performance

tailed off with a worst case of -110dBm at 500kHz which was in line with the manufacturers figures. Intermodulation measurements gave a 3rd order intercept point averaging around -40dBm at 100kHz spacing. Both the sensitivity and Intermodulation performance are adequate in comparison to other current wideband hand-held scanners, but would lag some way behind models specifically designed for mobile or base station use.

Antenna

The antenna supplied with the receiver is a short flexible wideband design which gave reasonable performance above 100MHz, but substituting it for a slightly longer type gave improved results, especially on the medium and short wave broadcast bands. Connecting an external base station antenna produced good results on v.h.f. and u.h.f. but the attenuator had to be switched in before acceptable performance could be obtained on the short wave bands. Using the WS1000 in a car with an external mobile antenna worked well, with very few unwanted signals being observed, the only exception being when I was less than a couple of miles away from a very active p.m.r. site. This is not particularly surprising as the model has clearly been designed for hand-held use.

The only major problem I noticed during mobile operation was the maximum level of audio the internal speaker could produce, which barely overcame the engine and road noise. The 60mW audio output stage is just about sufficient to drive an external loudspeaker, if it is not mounted too far away from your head. When I used the review model at an outside event, I found that a pair of cheap personal hi-fi headphones became a worthwhile accessory. However the limited power of

the audio stage does mean that you get a long period of operation from a set of batteries. The dry cells supplied with the WS1000 almost survived the three week review period, but eventually a large 'Batt' message appeared on the l.c.d. display warning me that they needed replacing.

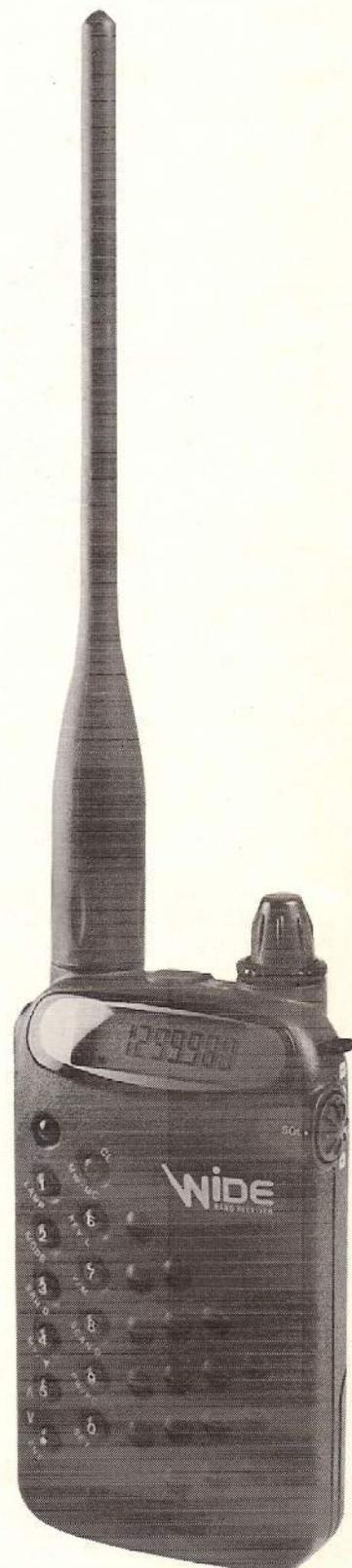
Summary

The WS1000E is a tiny hand-held scanner with a very wide frequency coverage, which makes it convenient enough to carry around with you at all times. This should make it very appealing for example to air and motor sports enthusiasts who wish to monitor the action as it happens.

The r.f. performance is adequate for its intended style of operation and is comparable to other hand-held scanners. Unless you connect a large external antenna to it or live in a very active urban area you are unlikely to encounter too many problems with unwanted spurious signals.

I enjoyed using the review model but found some of the functions restrictive, mainly due to the inappropriate use of factory programmed bandplans to permit automatic step size and mode selection during searches. This would be less troublesome if the search memories were capable of storing the necessary information. However if you mainly intend to use the scan mode to monitor individual frequencies stored in memory it shouldn't be a significant problem.

My thanks to **Waters & Stanton Electronics, 22 Main Road, Hockley, Essex SS5 4QS. Tel: (01702) 206835. FAX: (01702) 205843** for the loan of the review model. The suggested retail price of the Welz WS1000E is £349. A matching carry case is now available, price £14.95. All prices include VAT.





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The Receiver & the Computer Royal Wedding or Messy Compromise?

John Wilson has been taking a ramble down memory lane, probably with a bottle or two of his wine to keep him warm. He lets us in on some of his innermost thoughts on the marriage between h.f. receiver and computer.

Q uite recently I resurrected an old Trio R-1000 and had a twiddle around the bands with it. It didn't take me long to remember why this particular receiver was such a runaway success when it first appeared in 1979, and even after some 17 years it's perhaps worth considering the features which made it so outstanding then and still capable of holding its head up even today. As Dick Ganderton said in his Editorial (May 1996), "Just as in Formula 1, when one manufacturer makes a quantum leap in performance, it is not long before the rest try to catch up" - and didn't the other manufacturers have a hard task in trying to match the R-1000? Some of them never did!

The R-1000 was the classic 'switch on and use it' type of receiver, with no vices to speak of. Frequency selection was by a 30-position 'MHz' rotary switch and a real tuning knob which covered a 1MHz span. The tuning rate was fixed, and perhaps a mite swift for today's tastes at about 45kHz per revolution, but you could certainly get to a wanted frequency easily and quickly - and no thinking required. Frequency was

shown on a bright green fluorescent display which read to 1kHz, and mode selection was by simple pushbuttons. Straightforward and unbelievably easy to use. The fact that the displayed frequency was accurate on a.m. but ± 1.5 kHz out on s.s.b. was of no consequence for the period; the R-1000 was compact, light but rugged, performed well in all modes, ran from 12V d.c. as well as a.c. mains, had high and low impedance antenna inputs, covered everything from v.l.f. to 30MHz and was a totally new experience. The fact remains that the R-1000 was a landmark then and a pleasure to use, even now.

Memory Lane

So what is the purpose of this ramble down memory lane? Well, it occurred to me that all the really great receivers, which are held in high esteem by those who know what's what, are very similar to the R-1000 in concept - or maybe it's the other way around - no matter. Take the Collins 51-J or the 51-S; the R-390; the Racal RA-17 *et al*; all of these receivers were not only easy and unambiguous to use, they also had another common factor - they were never connected to a computer, either internally or externally.

Lest you think me a

Luddite, let me say that I am in reverent awe of the advances made as a result of the marriage between receivers and computers. If Art Collins had had access to a microprocessor you can be sure that his receivers would have incorporated it, because at one stroke he could have dispensed with many of the innovative mechanical complexities which were necessary to make his receivers work. In this sense the microcomputer would have been used as just another radio component, and this is the way in which the more accomplished modern designers have interposed a computer between your twitching fingers and the innards of an h.f. receiver. The secret is in making the user unaware that the computer is there at all, and allowing the receiver to appear as though it were a purely analogue device. In receivers of this type, the user need never consider the fact that a computer is doing all the work, because to all intents and purposes the receiver is simply a receiver.

I'm not sure which receiver actually qualifies for being the first to include a built in microprocessor controller because I have spent my life in the hobby and semi-professional market, and therefore don't know what was going on in the depths of

GCHQ or the development sections of large companies. No doubt one of my FOUL correspondents will tell me in due course. However, most modern hobby receivers such as the NRD-535, Drake R-8A, the receivers from Icom, Kenwood and Yaesu, the Lowe range and the AOR range all incorporate microprocessor control in one way or another and have generally done it in such a way that there is no obvious evidence that the computer exists within the receiver. There are differing degrees of control integration in different receivers and some have been more successful than others in making the marriage work (tell that to Buckingham Palace). Many receivers use the microprocessor to fulfil the tuning and frequency display functions, with a common data bus also driving the frequency synthesiser, but keep analogue controls for things like a.f. and r.f. gain, mode switching, power switching and so on. Obviously any receiver with fairly comprehensive memory facilities will probably be using the microprocessor(s) to provide the facility, as well as providing scanning functions. As far as I know, and I don't have a Watkins-Johnson service manual for the HF-1000 to check, only the AOR

The Receiver & the Computer

AR 7030 has carried internal computer control to the extent where every single front panel function, including gain control and power switching, is carried out by the computer with no direct analogue connection between the front panel and the actual receiver.

Would I Lie to You, Dear?

In the marriage between the receiver and computer, just as in the marriage between man and woman, there are occasions when one of the partners will not be entirely truthful, and the classic case in receivers is the matter of operating frequency. Man turns tuning knob, computer thinks "He wants to be on 5.975MHz" and tells the synthesiser and frequency display via the data bus. Display accepts the information and throws up 5.975MHz on the front panel. Synthesiser declines to do what it is told and wanders off in search of the true meaning of life. The unsuspecting user believes the display and thinks "Why am I hearing 20 metre amateur c.w. on 5.975MHz?". This is not fanciful, it really happens, and is why

Kenwood incorporated a system in their receivers and transceivers which blanks the frequency display if the synthesiser loses lock and wanders off the correct frequency. As my old Granny said, "Don't believe everything you see".

It's worth mentioning here that receivers like the R-1000, FRG-7700, or the R-820 are less likely to be telling you lies because the frequency display in these receivers is based on a true frequency counter, which measures the actual local oscillator

frequency whilst adding or subtracting the i.f. centre frequency.

Again as in marriage, the noise made by one partner often dominates the other, and there is little doubt who makes the (electrical) noise in the receiver/computer marriage. The amount of broad band rubbish thrown out by digital electronic systems can be quite astonishing, and you only have to drive around a town listening to the car radio pick up the noise generated by bank burglar alarms to know

how far such noise can radiate. The designers of computer controlled receivers have to go to great lengths to shield and separate the r.f. sections of the radio from the digital system, and even so there are occasions when the receiver hears its own computer. It's also worth noting that even though the internal shielding is good enough to keep the

receiver quiet, the entire box is often radiating quite strong 'hash' and this has been commented on by many experts including Gordon Bennett and the 'FTS' team in the USA. The early NRD-535

was prone to radiating noise from the display panel, and in certain applications such as when using a loop antenna for medium wave DX listening, it was quite difficult to keep the display noise out of the loop. The fact is, if you have a digital computer running inside or close to a sensitive r.f. detector such as a receiver, it's almost impossible to hide its presence, but some designs at least have tried to minimise the noises generated by the digital systems.

The Lowe receivers and the AOR AR 7030 all use digital control systems that employ a 'static idle' feature in which the digital control section closes down if nothing is being twiddled on the front panel. In other words, if the receiver is being tuned the controller works as normal, but when the tuning knob stops, so does the digital section, thus removing the potential noise source. A case of replying only when



being addressed. Perhaps this, then, is the closest thing to a perfect marriage between receiver and computer.

Enter the Trouble Maker

If you have a receiver controlled internally by a computer, there is no real reason why that control cannot be exercised by an external computer, and many modern receivers do have a connector (port) to allow such external control. It is at this point that the receiver ceases to be a stand-alone device and becomes part of a 'system' in which the external computer can take over many, sometimes all, of the receiver control functions. On the face of it this could greatly extend the facilities of the receiving set-up, and there are many software packages which incorporate powerful log keeping and memory functions as well as the basic receiver controls. I've had the pleasure of using the excellent logging and frequency information packages from Tom Sundstrom in the USA, and have to admit that for the dedicated short wave listener they are very attractive and easy to use.

It's Virtually a Receiver

One application which I will never understand is the desire of some software writers to include an on screen picture of a receiver front panel which the computer user can drive from the keyboard or mouse as a 'virtual' receiver. Seems plain daft when you have the real receiver sitting close to the computer. I much prefer the feel of a real tuning knob to pointing and clicking with a mouse, or pressing 'up' or 'down' keys to tune the radio.

I first met this 'virtual'

receiver layout when someone in the USA produced software called *Ham Windows* to drive the Kenwood TS-940S transceiver from a PC. *Ham Windows* had a facility whereby you could rearrange the front panel layout on the computer screen as you wished and have, for example, the tuning knob off to one side rather than being in the middle as in the 'real' transceiver. Why on earth anyone would wish to do this when the designers of the transceiver had sweated blood getting the ergonomic layout right in the first place beats me. It's perhaps a tribute to the common sense of Kenwood that they declined to distribute *Ham Windows* through their sales network.

However, the biggest problem with linking a computer to a receiver is that neither the designer of the receiver nor the writer of the software can possibly know what make of computer is going to be used to control the system, and I have yet to discover a personal computer which does not generate high levels of radiated r.f. Even with the increased pressure from the FCC in America and our own European standards for EMC limits, the fact remains that the emissions from the average PC are strong enough to cause problems for the short wave receiver. In my own case I cannot listen to a receiver

while the computer on which I am now producing this text is switched on, because it (the computer) generates S-9 noise all over the short wave spectrum. I was listening to an 80 metre conversation on the R-1000 with which I started this article, and on 3.739MHz at 1800z (7pm clock time) on the 11th of May, I heard G0VIX say to G0MFG that he was sure they had worked before but his logbook was kept on a PC and he didn't want to switch on the PC to check because the noise from it wiped out 80 metres.....QED.

Silence is Golden.

Is there a quiet PC out there?? I suppose there must be, because one other use for the external computer is as a data decoding system and they seem to work well enough, although to be fair to my argument it is usually the case that the data decoding is driven from the audio output of the receiver and often via an optical isolator. I would be delighted to hear about 'quiet' PCs from anyone who has experience in the field, and the sales potential to the short wave radio market could be quite good for such a machine, but I doubt that the pressure to produce ever cheaper computers is likely to cough up a low cost properly r.f. engineered unit. From 'hands-on' experience I would observe that the main radiation sources from a PC

are likely to be the mains supply leads and the cabling from PC to monitor and PC to printer. Much good can be done by threading all external wiring through large ferrite rings and physically

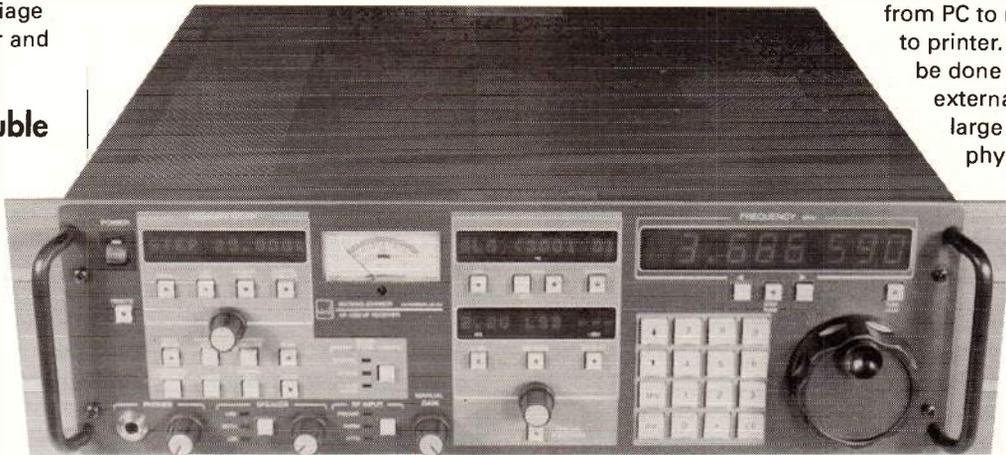
separating the computer and the receiver, but quite honestly I don't think that the receiver and stand-alone computer are truly r.f.

compatible at the present state of the art. Can anyone *prove* me to be wrong?? The reason why the receiver with an internal computer succeeds is probably because the links between the computer and the r.f. sensitive elements are short, direct, and properly screened, whereas the links to an external computer are relatively long, probably unscreened, and radiating directly into the antenna system of the station setup.

Unhand Me Sir!

Could there be an even worse scenario? Frankly there could, and that is to place the receiver actually *inside* a non-r.f. engineered PC. I cannot imagine a more hostile r.f. environment than the inside of a computer unless it is to sit in the middle of Rugby Radio antenna farm. Staying with the basic analogies of this article I can only compare it to placing a high born young lady in a closed room with many financial advisers and cavalry officers - surely she will be seriously interfered with.....

As far as I know there have been two attempts to build a receiver which fits into a computer; the first appearing in late 1993 and promptly vanishing from the scene (does anyone know why?) and the second recently announced. Now it has to be said at the outset that these 'receivers on a card' were



designed to cover a frequency range from medium wave to high u.h.f. and it's quite an achievement to design such a thing. When you consider the price of the latest offering it's even more remarkable, but I do have serious reservations about putting a sensitive receiver inside a computer and expecting it to work properly. I can see the attraction in having keyboard access to a wide range v.h.f./u.h.f. receiver which operates on a 'Channelised' basis, but for short wave radio my personal opinion is that it's definitely a non starter and I'll stay with a tuning knob I can turn with my fingers.

Most Serious Reservation

My most serious reservation however will remain the problem of computer generated r.f. noise getting directly into the receiver card, and I look forward to getting a hands-on trial of the latest unit so that I can report results to you. I'll have to have the thing on loan,

and will also need another PC because my own machine only takes half size cards, and my laptop will certainly not have room for the receiver card. If, therefore, I actually wanted to buy the 'on card' receiver, I would also need a new PC to house it, which would bring the total cost to at least £1000. I'd sooner buy a new Drake R-8A and have real performance, or spend less and get a second hand R-8E or even a Collins 51S-1, together with a separate v.h.f./u.h.f. scanner to cover the frequencies above 30MHz. But that is, as I have said, a purely personal view based on the use of these things on short wave. Possibly as a v.h.f./u.h.f. scanner it's of some use, but I think that the basic idea of the 'receiver on a card' is daft, and reduces the receiver to being just another computer accessory.

Whatever your views on the triumph of the latest technology, there is still a great deal of satisfaction to be had from owning and using a well engineered and

beautifully constructed piece of equipment. Why else would people buy a Rolex mechanical watch, or a vintage Bentley, or even such an apparent throwback as a Morgan car? We as short wave enthusiasts are fortunate in that our well engineered equipment comes at a much lower price than either the Rolex or the cars, but the pleasure is all there. Just spin the dial of a Hammarlund SP-600 and tell me it doesn't feel absolutely wonderful. Or, if you want something a little newer and you never used an R-1000, just give that a try next time you have the opportunity, and I think you will see my point about it having stood the test of time very well indeed.

Thoughts

To summarise my thoughts on the marriage between the computer and the short wave receiver:

Royal wedding?

Probably represented by the current range of good quality receivers seen advertised in

the pages of *Short Wave Magazine*.

Marriage under a little strain? Receivers allied to external computers with 'virtual' front panels replacing the 'real' panel which you bought with the receiver, and noise levels that in some cases prevent you hearing weak signals.

Grounds for divorce?

Computer cards which put the receiver inside the computer. You can't even argue about who gets custody of the front panel, 'cos you haven't got one. I think that separation on the grounds of mutual incompatibility is called for. I was interested to read in the June 1996 issue of *RadCom* magazine that a radio amateur reports that he is unable to work on the 2 metre band because of a neighbour's brand new computer which blots out 144.625, 144.7, 144.725, 144.75, 144.775 and 144.8MHz - and that's only in the amateur band; what else is it blotting out?? (And you want to put a receiver **INSIDE** the computer??)

And So To Other Things.

It seems to me that recent debate about "My third order intercept point is better than your third order intercept point", whilst worthy of consideration, is actually leading us away from the simple enjoyment of a very fine hobby. As I said in an earlier article, it is quite astonishing what good results can be obtained from receivers which do not necessarily have the ultimate r.f. performance of the latest offerings, and it brings to mind the privilege I had of meeting an ex-Cunard

radio officer who had served through WW2 and into peacetime, and retained his contacts with marine radio using an Eddystone EC-10. Now to me, the EC-10 is not what I would choose to listen to maritime c.w., but this elderly gentleman could make it sing and dance, and could copy signals with the greatest of ease. If I put an EC-10 through the kind of review process I adopt for current receivers, I have no doubt that the r.f. performance would be well down the scale, but nevertheless in the right hands it's capable of giving enormous satisfaction.

I also had a letter this week from a chap who is contemplating swapping his ICR-71E for a newer receiver, but my response is "Why?" The ICR-71 is an excellent receiver in its own right, and spending another £400 or £500 to make a change is not justified, unless there is an overriding need for the last pinch of performance or an aesthetic desire to have a change of appearance - and those crystal filters in the ICR-71 are really good - see my 'Filter' articles.

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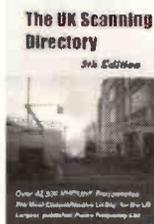
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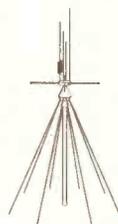


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Making Connections

Part 2 Connecting to the Antenna

In Part 1 of this short series, Joseph J. Carr K4IPV looked at ways of connecting an antenna feeder to a receiver. He concludes by looking at the antenna end of the feeder, your personal safety and how to fit coaxial connectors.

Now that we know all about connecting the feeder to the receiver, let's walk up the feed line to look at the head-end of the antenna. I have made the assumption that you are using some sort of wire antenna. Fig. 2.1 shows a typical antenna kit. Although you can obtain all of the materials separately, the kits are usually quite reasonable compared with the price of the individual components. The typical kit contains 25 to 50m of stranded copper wire, a length of coaxial cable (possibly with the cable ends already installed), two end insulators, and either a centre insulator or a BALUN transformer of some sort - a centre insulator is shown in Fig. 2.1.

If you opt for buying the components separately, then you'll find a variety of materials on the market and



Fig. 2.1: Typical wire antenna kit.

Fig. 2.2 shows two common forms of centre insulator. While these two products are quite different, they share some common features: a) both have a coaxial connector; b) both have connection points for a dipole or other doublet antenna, and c) both have a centre screw or hole for strain relief or mounting at a central point (as on an Inverted-Vee antenna). Both of them will keep the connection to the antenna from the weather. Although end insulators can also be used as centre insulators (and often are), the weather protection is lacking.

In Fig. 2.3 we can see a pair of end insulators. Note that both are ribbed. This construction increases the electrical path, while keeping the physical length within reasonable bounds. This is supposedly a lower r.f. loss construction method.

The down lead and antenna wires are connected to each other as shown in Fig. 2.4. Regardless of whether an end or centre insulator is used,

the technique is much the same. The antenna wire is passed through the hole in the insulator (Fig. 2.4a), with about 120 to 150mm of free end, and then wrapped around on itself (Fig. 2.4b). The normal practice is to make six to ten wraps, with seven being the most common specification. Once the wire is wrapped properly, tin it with a coat of solder. If a single wire downlead is to be used, it can be wrapped in a similar manner and then soldered to the main antenna wire (Fig. 2.4c).

NOTE: don't use the solder until you've checked the antenna for resonance and know it's right. Also, don't depend on solder for mechanical strength, it has none. The purpose of the solder is to ensure the integrity of the electrical connection, especially in weathering conditions. The reason why the wire is wrapped around itself seven times is to provide the mechanical integrity needed, as well as making a good

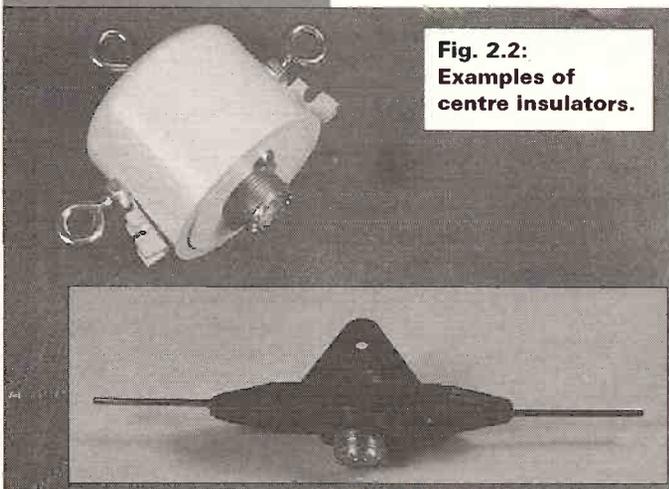


Fig. 2.2: Examples of centre insulators.

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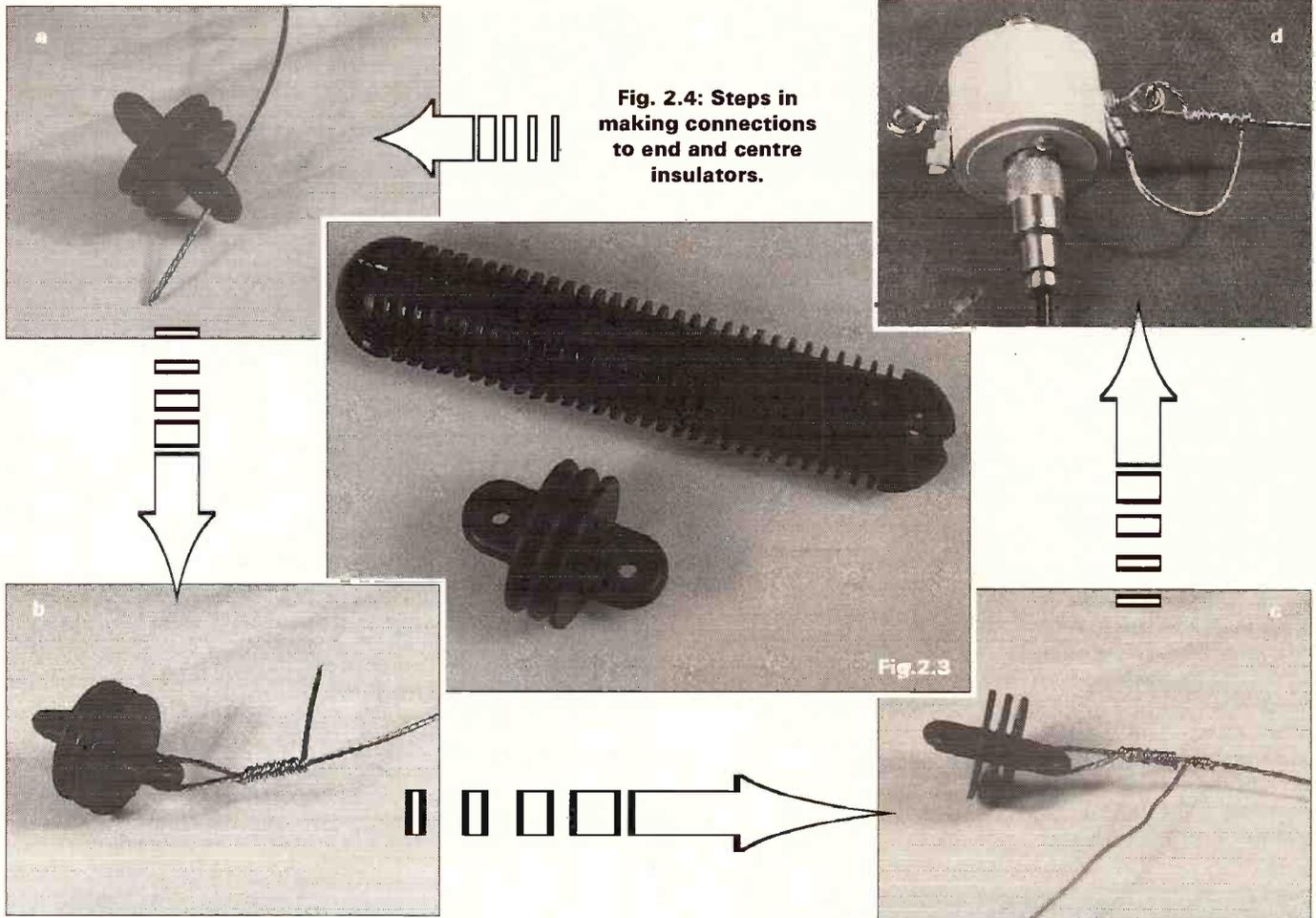


Fig. 2.4: Steps in making connections to end and centre insulators.

electrical connection. The solder is needed, but keep in mind that most of the electrical connection and all of the mechanical connection is provided by a good, tight wrap, not by solder.

The same sort of installation for a centre insulator is shown in Fig. 2.4d. In this case, however, the wire is passed through the eye-bolt, wrapped around itself (soldered), and then connected to the terminal on the insulator. Most centre insulators of this sort have large spade lugs for the electrical connections. The wire is laid onto the space provided, and then the connector is crimped over on the wire. It is then soldered.

The spade lugs on the centre insulator are almost invariably a bit corroded, as indicated by the fact that there is no lustre to the metal. It's not a bad idea to take a wire brush or bit of sandpaper and scrape away the surface crud, leaving a bright shiny surface to which

solder adheres easily. I've seen a number of bad antenna installations - and done some myself - that failed either right off, or after only a short period, because the solder connections weren't cleaned before heat was applied for soldering.

Antenna Construction and Safety

Antenna construction is not a benign activity, and indeed can be quite hazardous. Even relatively small wire antennas have a large 'sail area' that becomes dangerous when the wind kicks up. Antennas constructed of tubing or pipe are even more likely to cause problems. Always use the 'buddy system' to erect antennas. The buddy system makes it less likely that an accident will occur, and has the added advantage of having someone handy to call the emergency services if an accident does occur. Good advice is to get a bunch of friends together and have an

erecting party.

Besides the possibility of falling off ladders, or falling off the roof, or out of a tree, there is also the possibility of electrical shock. DO NOT EVEN THINK ABOUT TOSSING AN ANTENNA WIRE OVER AN ELECTRICAL POWER MAINS LINE. That's always an invitation to electrocution! Always- there are no exceptions. Also, when erecting the antenna, whether wire or tubing, be certain that it can't fall over or off the roof in a manner that brings it in contact with the power lines. Think ahead, plan and be safe. If you see anything nearby that even remotely resembles Fig. 2.5, be very careful! After all, while your estate may well re-subscribe to this magazine, we would rather have you in person!

Installing Coaxial Connectors

One of the skills that you need to develop when

building antennas is installing PL-259 u.h.f. style coaxial connectors. Although one is usually a bit fumble-fingered on the first one (or three), it's really quite easy to get the hang of it.

The PL-259 connector is shown disassembled in Fig. 2.6a, with the reducer insert. The threaded outer shell unscrews from the main barrel. The reducer is externally threaded so that it can mate with the back end of the main barrel. The PL-259 is designed for RG-8/U and RG-11/U coaxial cables, so a reducer is needed when RG-58/U or RG-59/U is being used. There are two sizes of reducers, one each for '58 and '59 coaxial cable.

Slide the outer shell and the reducer over the end of the coaxial cable, as shown in Fig. 2.6b. Next, use sharp pen knife, a razor knife, single-edged razor blade, scalpel or X-acto knife to slit the end of the cable's outer insulation, without damaging the underlying shield. Cut



back about 20mm of the outer insulation.

Next, use a sharp pointed tool, such as a small screwdriver, dental pick or soldering aid, and pick apart the strands of the shield.

Once the shield is disassembled, fold it back onto the reducer insert. Strip the inner insulation away from the inner conductor, about 5-6mm. Insert the assembly into the main barrel such that the inner conductor goes into the inside end of the centre conductor of the connector barrel. Screw the reducer into the threads provided, trapping the shield strands in place. When the reducer is properly seated, there will be no space between the collar on the reducer and the back of the main barrel **Fig. 2.6d**). As a further check, you should be able to see strands of the shield through the holes in the narrow section of the main barrel.

Check for short circuits between the inner and outer conductors. Do this before doing anything else.

Once the integrity of the electrical connections is proved, solder the shield to the main barrel through the holes in the barrel. Use at least a 100W soldering iron or gun for this task - there is a lot of metal there, and it won't properly heat up with a 40W pencil iron!

Finally, bring the outer shell back up on the barrel, and thread it in place. You are now finished (**Fig. 2.6e**).

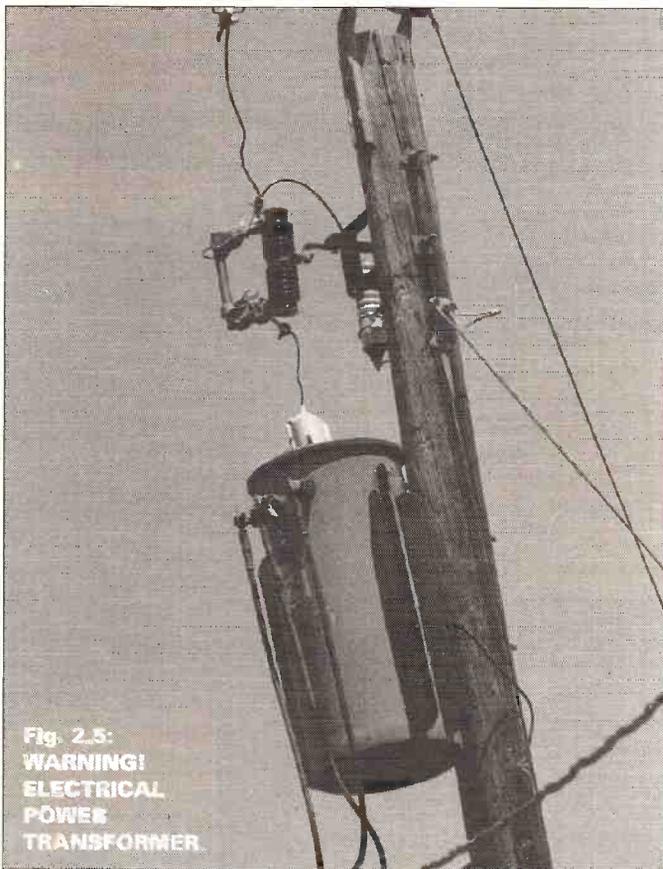


Fig. 2.5:
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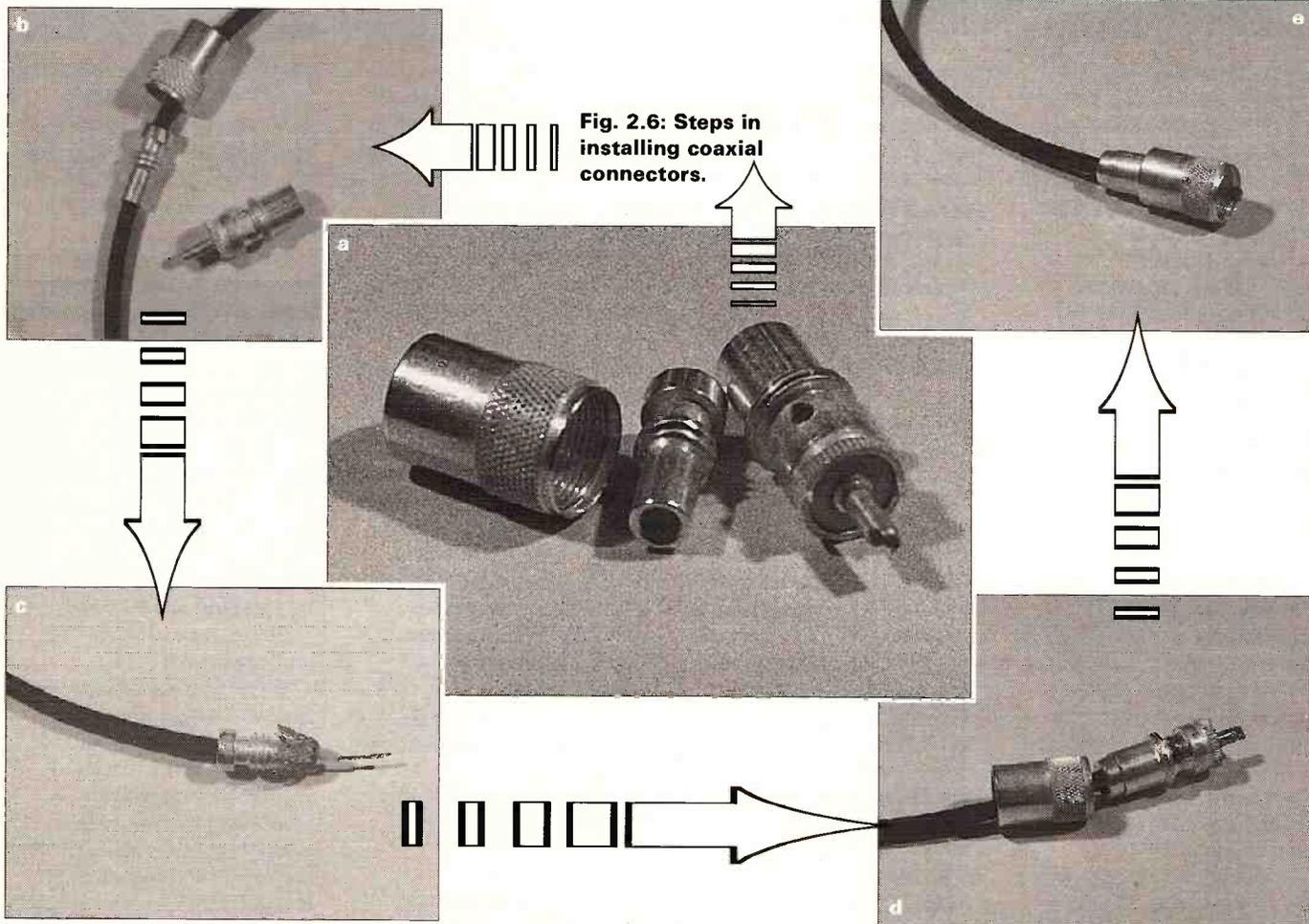


Fig. 2.6: Steps in installing coaxial connectors.

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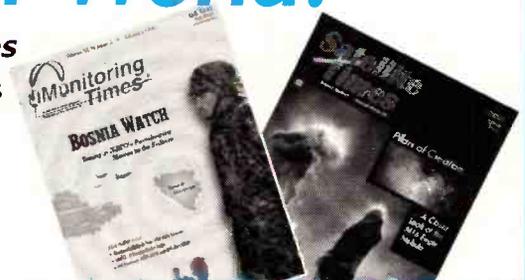
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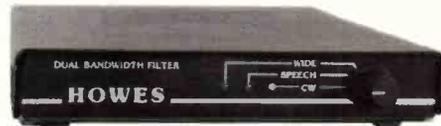
Antenna Selector

Switch between up to three SW receiving antennas and gain extra control over signal levels with the 0, 5, 10, 15, 20 & 25dB step RF attenuator. Matches CTU8 & CTU9 styling. Kit comes complete with case and all hardware.
ASU8 Kit: £27.90
ASU8 Factory Built: £49.50



Digital Read-out

Add digital read-out and update your analogue radio (FRG7, RA17 etc.). Give us a call to discuss fitting one to your receiver!
DFD4 Kit: £49.90
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Clean up your reception!

• Reduce noise and interference! • Sharp SSB/Speech filter with faster roll-off than IF crystal filters! • 300Hz bandwidth CW filter • Printed and punched front panel • All aluminium case • Simply connects between radio and external 'speaker or 'phones • Suits all general coverage receivers & transceivers • ASL5 Kit plus HA50R hardware: £29.80

Improve your station with great projects from HOWES KITS!

AA2 150kHz to 30MHz Active Antenna

The neat compact answer for those with limited space, holiday use, mobile operation etc. Two selectable gain settings, local or coax powering (12 to 14V). Good strong signal performance, IP3 +38dBm. Easy to build, and much liked by customers!
AA2 Kit: £8.90
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Covers 25 to 1300MHz. Broad-band performance in a neat, compact package. Just 410mm (16") long. Excellent performance in a small space!
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Assembled PCB Modules: £28.90

AB118 Air-band Active Antenna

Optimised for long distance reception on 118 to 137MHz air-band. Tuned antenna with pre-amp & band-pass filter. Hear ground stations you've never heard before!
AB118 Kit: £18.80
Assembled PCB modules: £27.90

MB156 Marine Band Active Antenna

156 to 162MHz marine band active antenna system. "Pulls in" those distant signals!
MB156 Kit: £18.50
Assembled PCB modules: £27.60



Top Value Receiving ATU

CTU8. Covers 500kHz to 30MHz. Matches antenna impedance and helps reduce spurious signals and interference in the receiver. SO239 sockets.
Kit (inc. hardware): £29.90
Factory Built: £49.90



Receiving ATU with balun

CTU9. All the features of the CTU8 plus a balun for balanced feeders, bypass switch for VLF etc. Additional terminals for balanced inputs, single wire and earth.
Kit (inc. hardware): £39.90
Factory Built: £69.90

Please add £4.00 P&P, or £1.50 P&P for electronics kits without hardware.

HOWES KITS contain good quality printed circuit boards with screen printed parts locations, full, clear instructions and all board mounted components. Sales, constructional and technical advice are available by phone during office hours. Please send an SAE for our free catalogue and specific product data sheets. Delivery is normally within seven days.

73 from Dave G4KQH, Technical Manager.

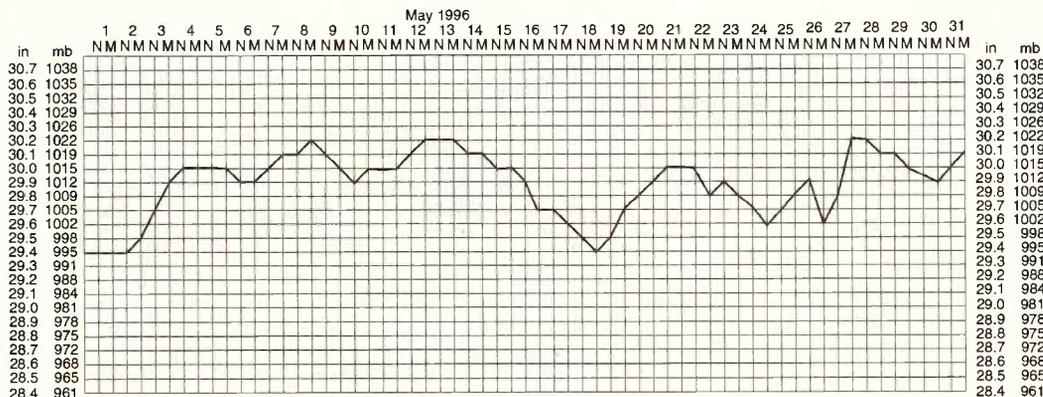
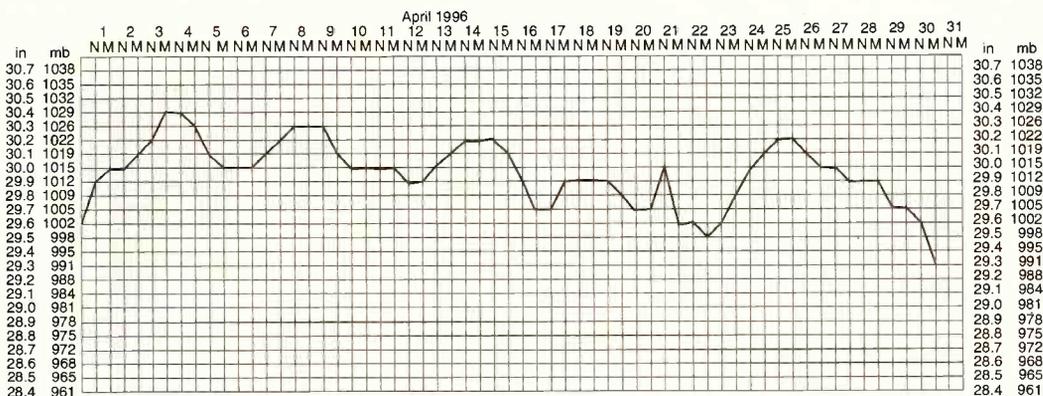
Propagation Extra

I believe that it is still essential that those readers who have an ongoing interest in propagation still have access to the various pieces of information collated by Ron Ham. I have asked Ron to continue to provide his monthly barometric pressure charts in the same format as before. In the meantime I am trying to arrange for a regular supply of sunspot charts and other similar information. If there are any readers who would be prepared to provide such information on a regular basis, please get in touch with me at the Editorial Offices, Broadstone.

Ron has provided two barometric pressure charts for this issue, Fig. 1 covers the month of April 1996, Fig. 2 covers May 1996.

Fig. 2: Barometric pressure chart for May 1996 taken by Ron Ham at Storrington, E. Sussex.

Fig. 1: Barometric pressure chart for April 1996 taken by Ron Ham at Storrington, E. Sussex.



SPECIAL OFFER SWM AIRBAND STARTER KIT

Airband listening is one of the more popular listening activities covered by Short Wave Magazine. If you are not already an Airband listener then our Special Offer this month will get you up and running. All the basic essentials are supplied - receiver, antenna, cable and a copy of *Pooley's Flight Guide United Kingdom 1995*.

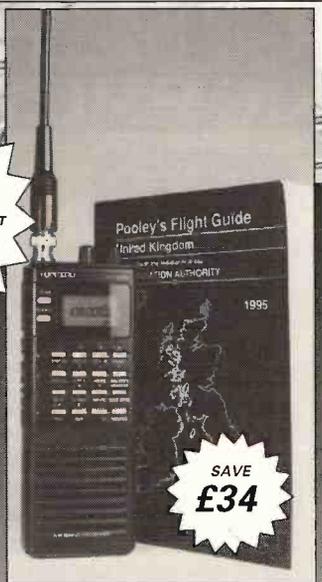


The receiver we have selected is the Yupiteru VT-225 v.h.f./u.h.f. airband scanning receiver. This user-friendly, 100 memory scanner has been especially designed for listening to v.h.f./u.h.f. airband signals. frequency coverage is in three bands - 108.0 - 142.1MHz, 149.5 - 160.0MHz and 222.0 - 391.0MHz. Both a.m. and f.m. modes are catered for and the scanner has 100 channel memories, 10 band memories, one priority channel memory and 100 search pass memories. The receiver is supplied with a flexible antenna, 12V car adaptor, earphone, hand strap, belt clip and four rechargeable NiCad cells. Normal



retail price for this receiver is £269. To enable you to use the VT-225 at home our Starter Pack comes with a LSA700 discone wide band antenna. This covers 70 - 700MHz and has brackets for mounting it onto a 50mm dia pole. An 'N-Type' socket, well protected from the weather, is used for connection to 50Ω coaxial feeder. Normal retail price is £39.95. To connect the discone to the scanner we supply 10m of UR43 coaxial cable with the correct connectors. A copy of *Pooley's Flight Guide United Kingdom 1995* provides a wealth of information on airfields and other related matters. Although this is the 1995 edition, it is still a very useful book.

ONLY £290 inc VAT
NORMALLY £324.45



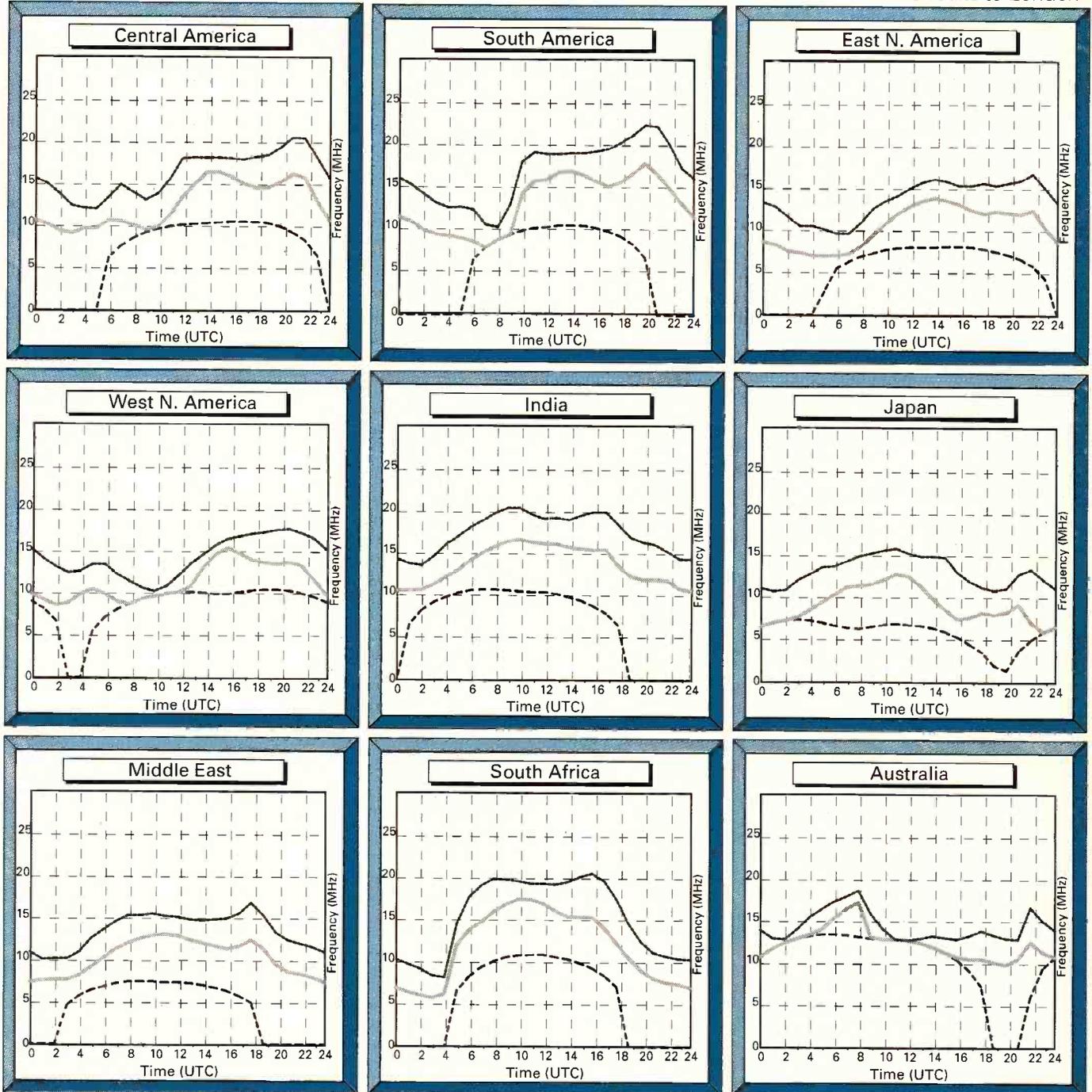
SAVE £34

The normal retail price for this package would be £324.45 inc VAT. Our Special Offer price for readers of *Short Wave Magazine* is £290.00 inc VAT - a saving of more than £34. Carriage is an extra £10.00

To order please use the Order Form on page 83.

World Propagation Forecasts July

Circuits to London



How to use the Propagation Charts.

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

success below this frequency are very slim.

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

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

probability of success for the path and time.

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

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

Good luck and happy listening.

Satellite TV News

Heavenly Sightings.....

Your friendly local corner BBC TV centres are now equipping for SNG (satellite news gathering) activities and a good place to check them out is in Telecom band (12.5-12.75GHz) on Orion Atlantic 37°W or Telecom 2C at 3°E. They also can access transponders 3,11 on Eutelsat II F4 at 7°E though no reported sightings have been seen on this bird.

Plymouth, Southampton, Wales and Belfast have units based at respective regional centres - the BBC early evening magazine programme 1830-1900 hours is an easy catch for the inserting downlink into the local programme, reverse audio/presenter cues being uplinked (from the studio) to the remote truck via a 64kB/s data carrier on the same transponder as the downlink.

Each truck is based around an Iveco Turbo Daily with an equipped weight of nearly 7 tonnes, the r.f. uplink modulators running a 700W TWT into a 1.5m square offset dish giving around 71dBW, sufficient to saturate for 1/2 transponder working - though eventually going compressed. The Plymouth studio was the first up and running with regional SNG uses a 3.7m dish and is normally seen - as on May 16 with 'BBC Plymouth UKI-231' ident. May 16 also saw 'UKI-120 UTV' from N.I. with showground reports around 1845 on Telecom 2C.

May 2 and local elections, in Welwyn Garden City **Ken Suddes**

was crouched over his controls and logged election results on Intelsat K 21°W and Eutelsats 10, 16 and 25°E, he saw the rival Exeter results at 11.636GHz horizontal on 16°E without the problems experienced elsewhere!

John Locker (Wirral) advises that Intelsat 707 has now taken over from 702 at 1°W offering more Ku downlinking capacity though much in D-MAC. Early morning May 17 and 2 analogue OB feeds on 707 - 11.670GHz vertical with maritime views of sailing ships (using a Telenor OB truck) and 11.534GHz vertical with harbour views - a nearby fishing boat has 'SVOLVAER' by way of home port, rugged mountains covered in snow as a backdrop and almost vertical prime focus satellite dishes on a large building behind suggesting a far North location.

May 21 again carried an analogue OB circuit at 10.969GHz horizontal with an ident 'NOR-9/TOS-6' - it's worth checking out this bird. Other recent activity was the successful launch of Astra 1F that early May had been moved to about 20°E and testing prior to slotting at 19.2°E for eventual digital transmissions.

Mark Radulovic (Burton-on-Trent) advises that the unknown Yugoslav picture in the May SWM satellite column originates from the Serbian Community TV (Bosnian-Serb TV), also seen is the sponsor (bottom) and the word under the clock means 'NEWS'. Thanks, Mark.

Ross Lockley writes from Galashiels, Selkirkshire - and is a 'Sky' viewer though hopeful that parents will upgrade to Hot-Bird soon! Ross includes a newspaper cutting - apparently Mexico's Televisa TV programmes are being viewed on Tortel, Chile - a very remote island 1500 miles South of Santiago from the Solidarity satellite far outside of the predicted footprint coverage. It's similar to parts of Central/South Africa where Astra is received, probably due to anomalies in the satellite transmit platform producing odd sidelobes.

additional offerings courtesy Canal Plus, Telepiu 1 and other TV channels.

As I hammer at the keyboard we are all awaiting the launch via Ariane 44L of the Israel AMOS-1 satellite that will slot at 4° early summer and offer three spot beams, one into the Middle East and others on Eastern and Central Europe. Signal levels of 50dBW are quoted that should provide reception on dishes around 800mm. The Central European beam covers most of the UK and Wales and should provide Israeli programming (hopefully) for the many Jewish folk resident in the UK. Downlinks are quoted at 10.95-11.20 and 11.45-11.70GHz. I'm awaiting a reply from Kol Israel over programme plans....

With digital TV moves always in the media news, BSKYB have partnered with American Sky Broadcasting (ASKYB) for the latter's digital service across North America in Autumn 1997 to rival the now on-air DirecTV digital service. This will give BSKYB experience in digital operation prior to her own UK service start up in 1998, having put immediate digital plans on hold - other than test transmissions.

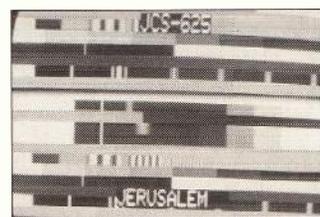
The delay to UK digital Sky transmissions will also give chip makers time to design low cost chip sets in digital decoders, current decoder prices are far too high to attract a high subscription take-up for any new Sky digital service. The technical press reports that Hyundai Digital Video Systems have designed a single chip containing an MPEG video/audio decoder and 16Mbit DRAM frame buffer (whatever that is!) though mass production decoders will initially be two-chip.

When Star/AsiaSat dropped the BBC World Service TV service, many viewers were deprived of BBC programming, including **Alan Smith** in Thailand. Alternatives suggested at very short notice were via PAS-4 68°E at 4.1550GHz that is co-frequency to India's JAIN-TV and needs a 3-4m dish for a spot beam centred on India, or on PAS-2 that is an horizon level signal to Alan - another big dish and MPEG digital as well, no joy there. Most AsiaSat viewers have optimised on 1.8m fixed dishes and so the BBC World Service has no takers in SE Asia. Alan (and I) await a reply from the BBC over this unfortunate situation. The BBC signal was dropped from AsiaSat - April 1st!

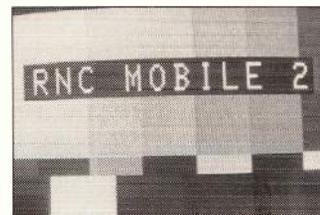
The BBC World TV service has also been dropped from the Rome-based Orbit digital subscriber service Rome that covers the



Open wide! Gum operation from the North Carolina University Dental School via Orion Atlantic.



Jerusalem Capitol Studios (JCS) and a 16°E Eutelsat news feed.



Intelsat K relays a test card from an unknown American mobile truck.

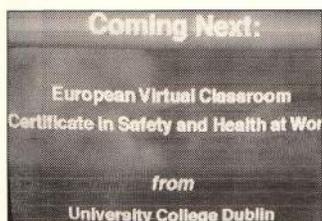
Middle East. Orbit is Saudi financed and after the BBC screened a dubbed Panorama programme about the Saudi Arabian penal system the plug was pulled on the BBC Arabic TV service. Orbit report increased subscription income after prices have been again dropped from what is the world's most expensive subscription TV service.

More TV channels will be on offer from the Spanish commercial channel Antena 3 TV who have promised a 20 channel package from Autumn 1996 increasing from the existing five satellite channels. The PAY-TV operation will unfortunately be digitally compressed and encrypted.

The Chinese Long March 3B rocket that flew sideways and exploded when launching the Intelsat 708 satellite crashed onto a village killing many residents though the Chinese press reports only six deaths. The area was sealed to prevent the press accessing the crash scene. All Long March launches are now on hold pending investigations into the crash. Meanwhile Intelsat has cancelled further Long March launches opting instead for Ariane capacity.

Changes at RTL-5, part owned by CLT and Veronica that now will become a Dutch 24 hour version of CNNI, this follows an ownership legality dispute in which the EC instructed CLT to sell the channel.

And finally reports of an impending Iranian satellite launch still filter through media circles. The 'Zohreh' bird is claimed to be complete and ready for launch, only awaiting the go-ahead from Tehran officialdom.



Eutelsat II F4 at 7°E, a sound in syncs (SIS) transmission via a sync stabiliser/audio decoder.



The BBC Spotlight, Live News by Satellite SNG vehicle on location in the West Country feeding into the Plymouth studio via Orion, the reporter checks out his script.

News In Orbit

Several of our film enthusiast readers followed the media events at the mid-May 49th Cannes Film Festival thanks to the special 'TV Festival' film channel that Eutelsat transmitted over the 13°E Hot Bird (11.638GHz horizontal) in the clear. This aired from UK breakfast time round to late evening with news, happenings and the glitz with

DX Television

Three sustained Sporadic-E openings occurred towards the end of April, signalling the start of the 1996 DX-TV season. Reception came mainly from central and south-eastern Europe that is unusual for early openings; very often, Spanish signals are the first to emerge. All in all, an encouraging start to the new season.

Reception Reports

Stephen Michie (Bristol) noted an opening on April 21 that brought in Band I signals from Slovenia (SLO-1 on Channel E3), Germany (ARD-1 E2) and Switzerland (DRS E2). The latter station was transmitting a film in Cinemascope.

Janet Bridgman (Derby) saw clear Spanish TVE-1 pictures during the morning of April 27. Reception included a light-entertainment programme featuring a female singer. Italian signals were also present on Channel IA for a short while. Sporadic-E reception continued well into the afternoon and a strong steady signal on Channel R2 was identified as Moldova - the RM logo could be clearly seen in the top-left corner of the picture. Several Eastern European FM radio stations were also heard between 58 and 65MHz. Ukraine TV, identified by its YT-1 logo, made an appearance on Channels R1 and R2 for a time towards the end of the opening.

The Sporadic-E opening appeared to be widespread throughout the UK. **Ian Winton** (Fife) also witnessed the opening but during the afternoon, receiving signals from TVE-1 (Channel E2) and RAI UNO (IA) plus unidentified broadcasts on E3 and E4.

Peter Barber (Coventry) logged TVE-1 on Channel E3 during the morning, followed by Ukraine TV and an unidentified station on Channel R1 displaying an 'NTHS' logo in the lower left of the picture.

The following day, Slovenia (SLO-1 Channel E3) was identified at 1148UTC. The opening continued well into the afternoon with Italian broadcasts from RAI UNO on Channel IA plus unidentified signals on R1. **Chris Howles** (Erdington) resolved broadcasts from Slovenia (SLO-1 Channel E3) and Germany (ARD-1 E2) during the same opening.

Paul Logan (Co. Fermanagh)

also noted the previous stations from 1300UTC. In addition, Austria (ORF-1) was present on Channels E2a and E4 with Grand Prix coverage. At 1354, SECAM colour signals appeared from Hungary (MTV-1) on Channels R1 and R2 with a movie and 'MTV-1' identification on the hour. TV Nova (Czech Republic) appeared on R2 followed by STV-1 (Slovakia). At 1430 the only signal remaining was TV Nova on Channel R1 with an old Czech film and a music show at 1450.

Mike Gaskin (Launceston) reports that the f.m. band was open to Sporadic-E on the 28th. Mike received a German-language station on 87.9MHz, possibly MDR-III from Inselsberg.

Finally, tropospheric reception was reported by **Andrew Burfield** (Braintree) on April 14 and 15. Reception included several British, Dutch, Belgian and French transmitters. Although France uses positive-going video (the picture looks like an unsynchronised negative image on a normal TV set), Andrew discovered that by carefully detuning his receiver a critical point was reached where the video would invert thus giving a normal image.

Watch Out For These...

Regional broadcasts via the Nederland-2 network....New NRK-1 logo and test card identifications from Norwegian transmitters, also local opt-outs....Spanish test card around 0430-0500UTC via the TVE-2 network on Channel E2 (TVE-1 no longer transmits a test card)....Various new Russian private stations in Bands I and II....Ukraine TV (YT-1) being relayed via the former ORT (Russian Public TV) channels in Moldova.

Equipment Round-Up

To give newcomers to DX-TV some idea of the equipment used by enthusiasts mentioned in this column, here is a brief run-down of typical gear currently being used.

Stephen Michie and **Janet Bridgman** both use a D-100 receiver with indoor Band I dipoles.

Ian Winton and **Chris Howles** use a D-100 receiver with outdoor Yagis. **Paul Logan** uses

a Grundig colour portable TV with a 3-element Band I Yagi.

Paul Barber uses a portable monochrome TV in conjunction with a tuneable indoor loop antenna for Band I.

Andrew Burfield uses a domestic colour TV connected to a wideband u.h.f. Yagi fed via an amplifier.

FM Set-up

Mike Gaskin (Launceston) is using stacked crossed-dipoles for f.m. DXing, vertically-spaced at 5/8. Fortunately the f.m. band is fairly uncluttered at his country location. Mike comments that the system is highly effective for Meteor Shower work and it outperforms a three-element Yagi beam. A Technics GT550 receiver is used that has selectable i.f. bandwidth. Mike's antenna system is shown in **Fig. 2**. (Watch SWM for details of how to build this one. **Ed**)

German TV Graphics Wanted

Aleks Radulovic (Burton-upon-Trent) is interested in TV graphics, mainly the German ones. He is currently working on a project about German television and welcomes any off-screen photographs of identification captions and clocks, etc. used mainly by ARD, ZDF and N3. Please write in if you have any pictures you can loan Aleks.

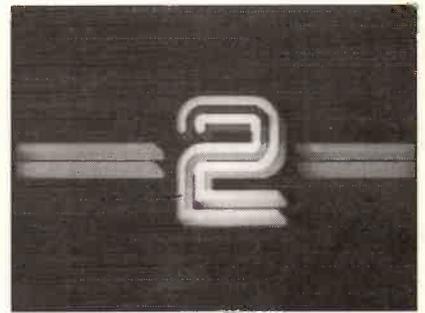


Fig. 1: BBC-2 identification caption from the Seventies. This was the first computer-generated Identification Symbol; previously they had been mechanical models placed in front of a camera.

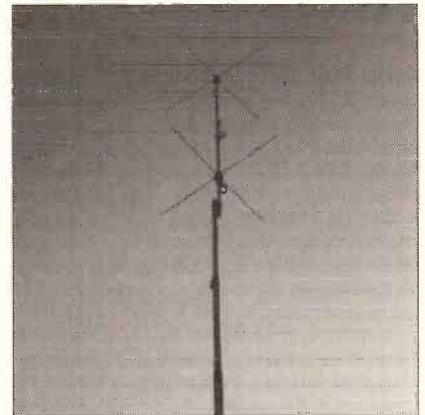


Fig. 2: Mike Gaskin's stacked crossed dipoles for f.m. DX-ing.

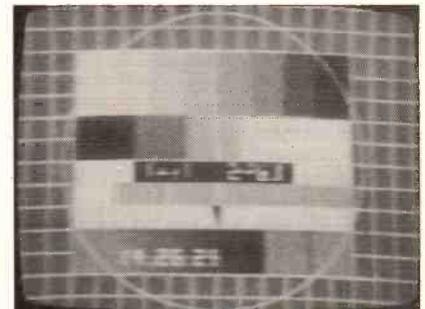


Fig. 3: Libyan FuBK test card received on Channel E6 from the 20 kW Tripoli transmitter via Sporadic-E.

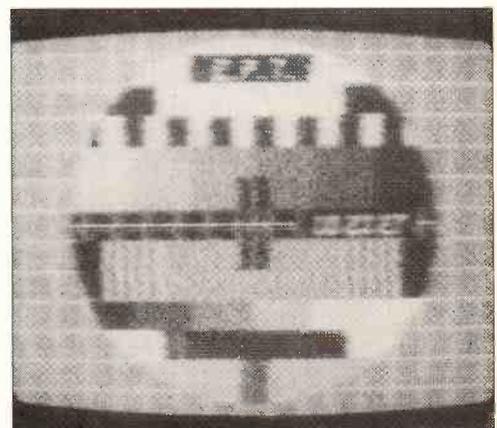


Fig. 4: An elusive 'exotic' - the Greek PM5534 test pattern on Channel E3 from the 1.5kW transmitter at Akarnaika.



Fig. 5: French fifth-network caption.

Channel Five

Martin Dale (Stockport) has sent details of the controversial channel plan for Channel 5 Broadcasting Ltd (**Cavendish House, 128-134 Cleveland Street, London W1P 5DN**). The original channel plan for the United Kingdom was drawn up in the Sixties creating four channels per transmitter; these were carefully allocated in such a way as to avoid co-channel interference problems when the same channel groups appeared elsewhere in the country.

The provision of a fifth terrestrial channel means that only a small number of previously unused channels can be used for the whole network. In order to prevent interference some transmitters will radiate only a fraction of the power of their BBC-1, BBC-2, ITV and Channel 4 counterparts. For example, Channel 5 transmissions from the Tacolneston transmitter will radiate at only 4kW, whereas the other four transmissions are 250kW! Basically it is a pig's ear approach and many video recorder installations will have to be retuned from their usual Channel 36 slot in many areas.

Interference Problem

A problem that affects many DXers (TV and radio) is interference radiated from computer terminals or certain types of domestic TV receiving equipment, particularly those featuring Teletext, NICAM stereo, etc. **Paul Logan** (Co. Fermanagh) is desperately seeking a cure for Band I interference that his newly-acquired JVC colour TV emits. The set is being used for domestic reception. Unfortunately, the radiation is likely to be emitted directly via the unscreened receiver circuitry and not via the mains lead or antenna; a braid-breaker filter in the u.h.f. antenna feed has been tried but to no avail. Can anyone offer any advice on whether a mains lead filter may reduce the radiation?

Keep On Writing!

We're always very pleased to hear from *SWM* readers. Please send DX-TV reception reports, equipment news, off-screen photographs, examples of TV graphics and general information as soon as possible to: **Garry Smith, 17 Collingham Gardens, Derby DE22 4FS, England.**

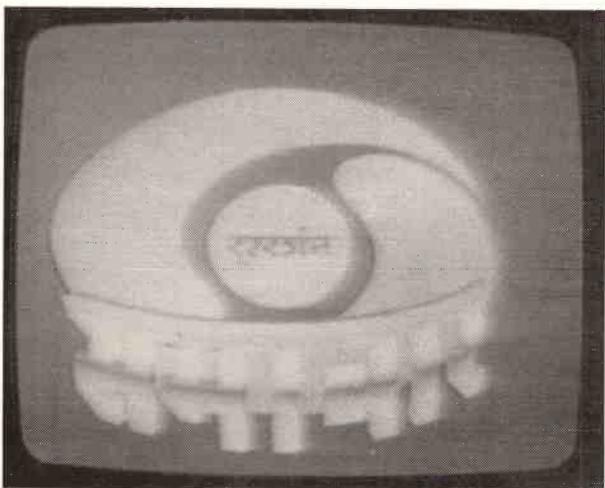


Fig. 6: Identification caption as used by Doordarshan TV (India).

Yet another chance to **WIN** an exciting new receiver worth **£349!**



Reviewed this month, the Weltz WS1000E is claimed to be the world's smallest scanner. **Waters & Stanton Electronics** have kindly donated one as a prize for our competition. Try your luck at winning this compact scanner by entering our three-part competition.

This month simply **highlight** the **five** differences between the two cartoons on the second cartoon. Cut out and save the answer form, keep it in a safe place, answer and collect the reply forms from both the August and September issues of *SWM*.

When you have completed all three parts of the competition, send the three parts to the address that will be given in the September issue.

The closing date for this competition 26 October 1996.

The winner will be announce in the December 1996 issue of *Short Wave Magazine*.

Only fully completed entries can be accepted.

Listen to 73kHz with a VLF Converter from Datong Electronics.

The new Amateur Radio frequency allocation covering 71.6 to 74.4kHz is going to be a challenge to all those people who enjoy building their own equipment. However, if you don't want to reinvent the wheel, why not take a look at Datong's VLF Converter.

With a frequency coverage of 0 to 500kHz the VLF Converter will not only allow you to listen to the new Amateur Band, but everything else that happens at these low frequencies. The VLF signal is converted up to 28MHz so that you can listen on any Short Wave Receiver. Its high sensitivity means you only require a short antenna (thank goodness).

Built into a diecast aluminium box with two SO239 connectors. The VLF Converter fits between the antenna and the receiver input. The converter can be powered by an internal 9 Volt battery or an external 5 to 16 Volt supply. The On/Off switch not only saves power, but switches the antenna directly to the receiver so that you don't have to remove the converter when it is turned off.

At a cost of £39.95 (inc. VAT & Postage) the VLF Converter is such good value for money that it will probably cost more to build a unit of the same quality.

Datong Electronics Ltd. Clayton Wood Close, West Park, Leeds LS16 6QE Tel: 0113-274 4822
For Converters, Filters and Active Antennas call now for a Catalogue.

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- Built-in time Base correction (T.B.C.)
- Line conversion: 525 to 625 lines, 625 to 525 lines
- Field conversion: 60 to 50 and 50 to 60 fields
- AC mains powered

£449.00 inclusive of VAT.

RR-50 MANUALLY TUNED SATELLITE RECEIVER

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£199.00 inclusive of VAT.

DELUXE MODEL fitted with Threshold Assistance Device (TAD), lowers threshold to between 3-4dB, switchable and adjustable, a must for very weak signal work.

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Bandscan

Europe

What do you do if you own a radio station, make programmes, want to reach listeners, but do not own your own transmitters? Not a problem, you might think, if you have had an agreement with one of the world's major international broadcasters to use one of their transmitters just a few kilometres down the road. And then, all of a sudden, the rug is pulled from underneath you when the international station closes down its operation from which your broadcasts are sent out.

For Richard Vella Laurenti, Managing Director of the Voice of the Mediterranean, and his staff, it's not a nightmare waiting to happen. It became a reality in January this year. The Malta-based station used Deutsche Welle's relay station on the Mediterranean island to send programmes to listeners throughout Europe in English, French, German and Arabic. But DW ended its contract at the end of 1995, saying that, because of spare capacity on short wave transmitters elsewhere in Europe, it was less expensive to hire time from other broadcasters than to maintain its own ageing plant on Malta.

Leader writers in the Maltese press expressed outrage: Its three-hour Sunday programme, *Valletta Calling*, is an excellent vehicle, thundered the *Sunday Times*, of views, news and features intended to project Malta's image overseas. Hundreds of listeners write in to the station every month from the four corners of the globe, commenting favourably on VOM's programmes. The station is thus Malta's only international voice which, for obvious reasons, should not be stilled.

Listeners were also outraged, as this extract from a letter sent by Audrey McNeill in England shows: The silence from VOM is really terrible and I miss you so very, very much. More or less everyone who worked there seemed to know me...and before long I hope to hear your wonderful little station on the air once again.

Richard Laurenti tells me that he is working as hard as he can to secure new arrangements for the relaying of VOM via transmitters in

another part of Europe, to maintain short wave broadcasts to the continent and medium wave to North Africa. Keep an ear on 9.88 and 11.925MHz that the station plans to use when it resumes transmissions. And if you want to get in touch with the station, write to: **PO Box 143, Valletta, or FAX +356 241501.**

Sweden Goes Digital

Radio Sweden's production went digital in May when the station commissioned the RadioMan system produced by a company in neighbouring Finland. The system allows desktop production on a personal computer, including dubbing material, editing and playout, and will reduce staff costs in the longer term as less technicians and engineers will be needed to make programmes. Programme playout is also automated in the new system, which means that material from a variety of sources can be cued automatically and played to air at precisely the right time and in the right order.

France Goes For News

Radio France International will be concentrating on news and current affairs for its 24 hour-a-day French network from this autumn. Jean-Paul Cluzel, the new head of RFI, unveiled his plans for RFI's output at the Challenges for International Broadcasting conference organised by Radio Canada International in May.

RFI would seek to provide a radio alternative to Anglo-Saxon news stations like CNN, and would present in a well-balanced way French news, essential news and current affairs about each major region in the world and report on diplomatic and international relations. Music would continue to play an important

role in the stations output, and he cited the success of the *World Music* programme sponsored by the French soft drink, Orangina, as an example of what listeners want from the station.

RFI can be heard in English to Europe at 1200-1300 on 9.805, 15.155 and 15.195MHz and at 1600-1700 on 6.175MHz.

Long Life for Long Wave

Unknown in some parts of the world as a broadcast band, long wave continues to have life in it here in Europe. The *Media Network* programme from Radio Netherlands reported on the intention of Delta Radio to build a new

RAI's Italian language site is at <http://www.rai.it/raiint/>

Bad News from Further South

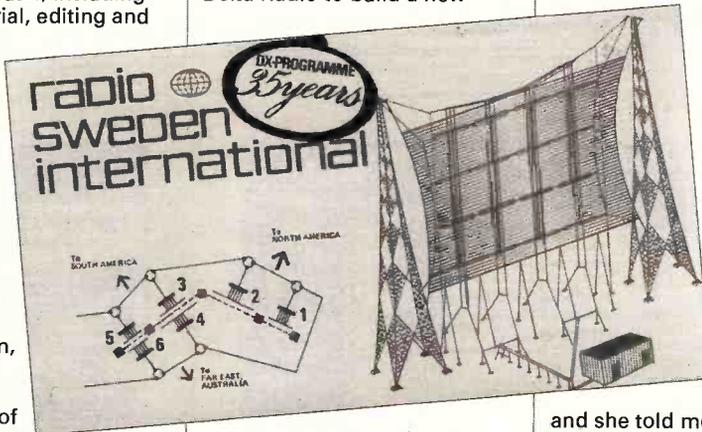
Straying away from Europe for my final item, I thought you should know that Channel Africa is under threat from the South African government. A new Minister of Telecommunications, which includes the broadcasting portfolio, has asked for an investigation into launching an international service of radio and television for the country, apparently not realising that an African-wide radio service is already on the air. This comes hard on the heels of the

suspension of Lebona Mosia, the Executive Editor of the station, for alleged misuse of an SABC credit card.

I spoke to Noeleen Vorster, Manager of Communications at Channel Africa just before we went to press,

and she told me that the station had to produce a paper justifying its continuing survival for the cabinet meeting on May 22. The staff, she said, felt very unsettled, but that the station should not be written off just yet. More news about this in forthcoming editions of *SWM*.

And that is all for this time around from our scan of the broadcast bands in Europe (with an excursion into Africa). Until my next column, good listening!



station to transmit on the channel of 171kHz, which is assigned to Holland but has never been used.

The station seems to be a modern-day version of Radio Luxembourg, with some British funding committed to the project. Delta's format will be hit music presented by multi-lingual DJs. This brings direct competition to Atlantic 252 operating from Ireland for UK-originated advertising. No time scale has been announced, and it will be interesting to see if planning permission is granted for the transmitting antennas in a country as small and densely populated as Holland.

Web to Italy

Radio Roma, from RAI-International, has announced an English language World Wide Web site address. It is <http://www.planetitaly.com>

**Next Month
Bandscan
Australia**

SSB Utility Listening

A few months back I wrote about Michael Powell who wanted to compile a listing of United States DSN numbers. If you remember, these are phone numbers in a private US military network, and are useful to those who are interested in listening to US military flights; if you hear an aircraft (or ship, or submarine) placing a phone-call to a DSN number, knowing exactly which installation the call is going to can help to provide more information about the users. A common logging is something like 'Shortwave 1, phone-patch to DSN 226-xxxx, to report their ETA as 16.00z'. If you know where DSN 226 is located, you know where the aircraft is going.

David Turner from Staffordshire wrote in with a sample copy of the list that he has compiled, and has agreed to allow me to pass it on to readers of *SWM*. David's list simply contains the numbers from '226' up to '999', which represents the DSN prefix (much like the UK dialing code). The list also contains a space for you to enter brief details of the US military installation when you hear a call in progress. As David points out, this is not a perfect solution, as the list only has space for one entry per DSN prefix, but many DSN prefixes are shared between different places. The list is six pages long, but only contains about 25% of the entries completed - there is plenty of scope for *SWM* readers to 'fill-in the blanks'!

So, how can you get a copy of David's list; as usual, they are only available from the address at the top of this page, and you must send a large stamped SAE.

In the past, some people have got a bit confused over the idea of a 'large envelope' - one that I received last year was big enough to use as a tent on a Field Day! The copies of the list that I'll be sending are the same size as this page, so if you can find an envelope that will hold a copy of *SWM*, then that's the size to send-in. While you're at it, you can also send me a copy of your own logs, as my supply is beginning to dwindle. I'm

particularly interested in seeing some logs of maritime stations. Still on the subject of Autovon/DSN numbers, **John McNaughton** writes to say that he has a copy of a book which would go a long way to helping Michael (and others) in their quest for DSN numbers. The book is *The Illustrated Directory of the United States Air Force* by M. Roberts, published by Guild Publishing; John got his copy through the Military & Aviation Book Club. The book lists almost all the public phone number for each USAF base, and it lists all the DSN numbers. The book is a few years old now, and although there have been a number of base closures, there have been only a few that have opened since publication. One drawback of this book is that it only covers the USAF, but DSNs are used by both the US Navy and US Army as well.

Addresses

Charles Weston has written to ask for details of a book (or any other publication) which lists addresses of the numerous utility stations. I imagine that Charles wants to try to QSL some of the stations he hears. The only suggestion that I have, is the *Klingenfuss Guide to Utility Stations* - available from the *SWM* Book Store. As well as a long list of frequencies and callsigns, there is also a section devoted to addresses of utility stations. The data is broken down by country and then by type (such as AIR - airline, MAR - maritime, etc.).

The latest revision also contains many Internet addresses, if you have access to that kind of technology. As good as the Klingenfuss books are, they are never 100% perfect, as there are many

more stations heard than the addresses listed. Also, stations change location from time to time, but keep the same address, one address may be used for several locations, stations change address, and in some instances you have to write to an entirely different country (the military are notorious for this last one!). Just like Charles, I would like to know of a book which lists as many addresses as possible of 'utility stations'. If anyone has any suggestions or recommendations, please write in with the details.

VOLMET

Bob Birnie in Aberdeen writes to say that he has just discovered what the s.s.b. button on his receiver is for, and has 'found' his first VOLMET station after reading about them in a recent *Short Wave Magazine*. Well Bob, it's

always nice to hear from somebody who manages to find this column useful. As a result of his success with VOLMETs, Bob has now put up a long wire antenna, and is itching to find some more signals to listen to. I've been saying it for years, and will

stand by my comments of a few months back - VOLMETs are the easiest signals to find in the h.f. bands, they are almost always the first signals that you should try to hear when you start out in listening to 'Utilities'. They are either continuous broadcasts, or they appear at fixed times during the day. They are transmitted from all over the world, and almost all of them can be heard at the opposite end of the world.

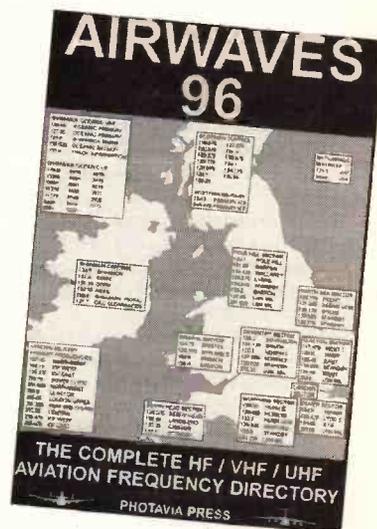
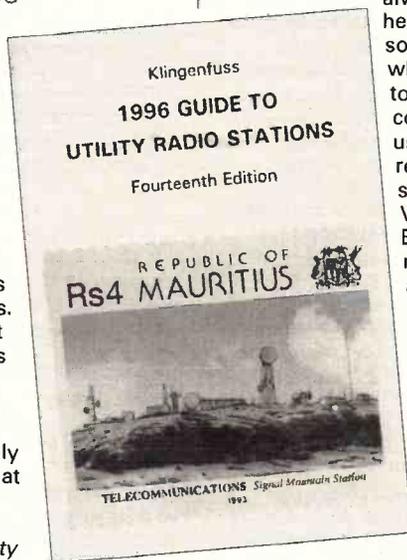
As such, they make excellent indicators of

propagation, and also prove to be extremely useful in checking that your equipment is working correctly. The downside of this argument is that VOLMETs are too easy, and casual listeners think that they can pluck other stations out of the ether with the same ease. As most of us know, it's a bit more difficult than that!

After the VOLMETs, I suspect that the next easiest group of frequencies is probably the North Atlantic Track frequencies within the Aeronautical bands. These are also very busy, especially during the day (with westbound flights) and very early morning (with eastbound flights). Bob wants to know what else he can do to improve his reception. He says that he has put up a long wire, so perhaps a very large dose of patience would be useful for listening to stations that only transmit occasionally. Once you have a receiver and a good antenna, all you need is patience and a log-book.

Next Month

The latest edition of the *Airwaves 96* frequency guide appeared during May, so I'll be taking a look at that. I only got my copy the day before the deadline for this issue, so I was not able to complete a review in time.



Amateur Bands Round-up

Listening to the Amateurs Let's have all your news and comments, sent as usual for the start of the month.

Again a bumper crop of letters. From Woodford near Kettering **Karl Drage** noted 17 countries on 3.5MHz, 6 on 7MHz c.w., 64 on 7MHz sideband, 14 on 14MHz c.w., 108 on 14MHz sideband, 18 on 18MHz sideband and 7 on 21MHz sideband. To deal with the question of M callsigns, the RA decreed that rather than let the current G series run out completely, they would start both A and B licences with the M prefix on April 1. There weren't all that many left-over G calls though! It'll be a long while yet before the problem comes up with novice calls, so there is no change there. The regional identifiers remain the same, so an MW comes from Wales and MC is a Welsh club prefix.

Karl's second question is about an American station signing KF4HXZ/AG. I would guess that this station had just taken the upgrade exam; between passing the higher-grade exam and receiving the appropriate call the old call plus suffix accepts them into the segments of band available to the higher-grade licence.

I used some loose words in May, says **Dennis Miller** of Dawlish. I said that early prefixes were of the form GW3. I then changed from past to the present tense and said the 3 (i.e. in GW3) had no significance geographically. I should maybe have added the words 'in UK' at the end, but even so the change of tense seems to make it clear enough.

On a different tack, Dennis had some memories of the 1947 sunspot peak, and receiving stations with an R1155 receiver and 28MHz converter - those were the days!

I've come back after seven years, says **Andy Bright** from Watford, but the original logs containing those lovely South Pacific islands are lost, requiring a clean new start. Bit of a difference too, between near the peak and right in the trough! Andy likes to locate his loggings as closely as he can, and mentions for example the common OH2 and the rare OH9. Two sources for this detail: the latest edition of *RSGB Amateur Radio Operating Manual* and *DARC's* - a bit more detailed - by DK5JL; *The Call Sign Directory*. Mine is

a fourth edition dated 1989 when the address was **DARC Verlag, Postfach 11 55, D-3507, Baunatal 1**. I'm told it is still published. There is enough detail in good English for you to 'drive' the book to good effect; I don't speak German but I've not had trouble with interpretation. On a different tack Andy is angry at those who ask a pile-up 'Who is the DX?' That particular problem would go away if the DX operated in accordance with their licences, but in practice they often only give their own call every half-hour or so!

Historic Scotland Weekend

This is over the weekend of August 24/25. Between 0800UTC on the Saturday until 1700UTC on the Sunday, eleven stations will be operational from historic sites around Scotland, from Shetland down to the Borders, mainly on 3.5/7/14MHz. The calls are all of the form GB2HSx where the x represents the last letter of the call from a particular site. There is an Award to be had for hearing/working seven of the eleven, plus a Merit Award for ten of the eleven. Overseas stations need four or seven. Log Copy plus £3, \$5, or 10IRCs, to **Ayr Amateur Radio Group, PO Box 36, Prestwick KA9 1AL**. More details from Mike GM4SUC on (01292) 443127. If I might add a rider, please pin your ears back specially for GB2HSZ up in Shetland, and GB2HSO at Maes Howe in Orkney; it is quite frustrating to the operators up there not to raise stations that are perfectly audible.

More Letters

Two letters from **Geoff Wallis**, one from Wiltshire and t'other from Leicestershire. Geoff listened awhile to ZD7Z and reckons he is one fine operator - but the pile-up: yeuch! At home Geoff has settled on a FRG-7700/FRV-7700/FRT-7700 set-up, buckled to a G5RV folded to sit in the loft! At Kirkby Mallory there was a Sony ICF-6500W to about 8 metres of thin wire at ceiling level.

The favoured mode is c.w. on 7MHz. 3V8BB was to be heard from, on occasion, as early as 0500UTC, but peaking a bit later. Still with the Sony, Geoff notes that Western Africa has been coming through in the late night/early morning period with occasional openings from the Western Pacific and New Zealand. On the other hand, Geoff says, he must have missed a lot because of his poor bit of wire in Leicestershire. It is hoped that a G5RV will be up in time for next month.

A query was the one signing EU10C around 7.008MHz most evenings around 2100...anyone out there who knows?

On the subject of pile-ups, it is well to remember that most DX operators facing this problem will tend to work split frequencies. Hence to work him, you have first to find out his listening pattern: he may listen up or down a few kHz or even alternate while holding to a fixed transmit frequency. So - the savvy op wanders round the pile-up until he has the pattern suss'd, while the dope operator just calls the DX on the transmit frequency where he won't be heard!

HAC Receiver

Now a note from **Bob Clapp G3HCN** of Bristol; he recalls training as a wireless op in the RAF, coming out in 1945, and listening to mainly BC stations on the domestic radio; it must have been around 1948 when he first saw an ad for the HAC receiver in the old *Short Wave News*. He got one, built it up, and found the amateur bands, which in turn led to a 'ticket' in 1950. A crystal-controlled transmitter, and the HAC for receiving formed the first rig. In those days commercial or even war-surplus gear was far beyond reach. Happy days!

Makes me recall buying a BC348 from the G2AK shop in Birmingham, and everyone else having to wait while G2AK taught me to 'drive' it. Then I just had the tiny problem of lugging it home; six miles on the 'bus and a half-mile walk! But, like Bob, it led me to my licence. Just to crown it, I must have been one of the last few entries in G2AK's log when we had a contact via GB3PW

during a lift.

My somewhat 'advanced age' is a barrier to taking the RAE, says **John Mathews** in London SE25. The only answer I can offer to that is that in my own classes, over the years I had many students of 'advanced age'. Every one managed an RAE pass though to be sure some took more than one bite at the cherry. Take a look at the Silent Keys column in say *RadCom*, and you'll find that a large proportion have recent calls. The motto is 'Go to it!'

Stupendous

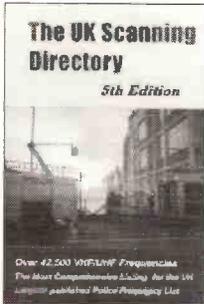
Next come a couple of letters from **John Collins** in Birmingham. One morning at 0426 John noted JY1 on 7MHz sideband with a stupendous pile-up, but comfortably readable. Earlier, around 0100, John picked up OD5OD, C6AFV, CP6ND, T12SW. Around 2300, 8P9IJ was giving VE3VET as his QSL address, VA3DX at RST 589, VE2ZH and the Sand Box net, ZB2FX was G3RFX to whom the cards should go and CP6DA was YL Maria. Finally, Y11MH, Majid, PO Box 5864 Baghdad with a clean 599 signal. John's Eddystone receiver is connected to about 18m of wire running roughly north - south.

In Barnsley, **Colin Dean** seems to have stuck with 14MHz sideband, that netted him A61AH, A61AN, A71DX, A92GD, AP2JZB, FR5ZN, HH2PK, HS8FZ, JY5IN, JX9ZP, R1FJZ, S0ZR, SU7SK, TA2II, TJ1GB, VQ9LV, V51BO, V85BG, YB9/G0SMC, Y11AU, ZA1AJ, Z21Kk, 3V8BB, 4F4IX - a DU prefix - N3CBW/4L1, 4S7GF, 5A1A, 6W6/K3IPK, 9K5MR, 9M2RS and 9N1RHM.

Wrap-up

That's it for another one. Sorry to have been so fierce with the axe this time on your lists, but space is the problem. For next time of course, the deadline is, as always, to arrive at Box 4, Newtown SY16 1ZZ by the beginning of the month.

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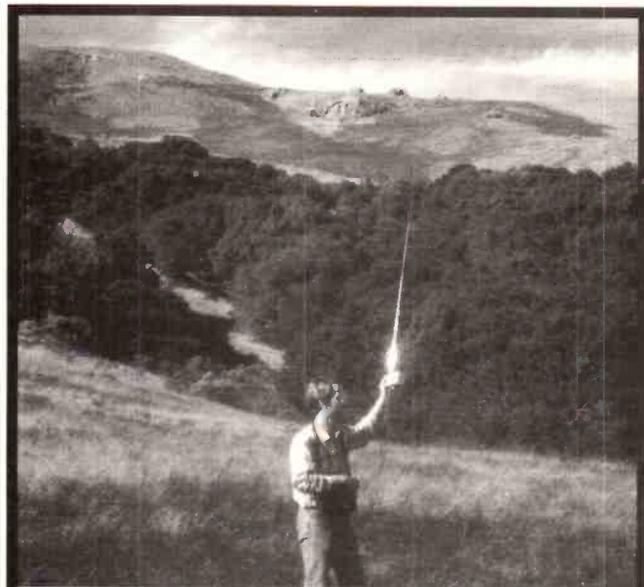
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Do you visit aerodromes (or displays) by car? I've come across a problem that could affect motorists at many aerodromes. Current car insurance is invalid for all third-party claims if driving on a part of an aerodrome where aircraft have access. At Elstree, my local airfield, one car-park is also crossed by aircraft moving from hangar to apron. When North Weald has an event on the west side, you need to drive past the threshold. See what I mean?

Note that the lack of insurance isn't just restricted to collisions with aircraft. It's **all** third party incidents! If a pedestrian ran out in front of you, collided with your car and tried to blame you, then you would find that you are **not** insured! May I ask all readers to examine your car insurance and write in with what you find? Does anyone know of insurance that **does** allow driving on these parts of aerodromes? I suspect that I've found a loophole that most people haven't noticed. One day, someone will be very sorry when they find out the hard way.

Notice Board

Do I have a namesake? Can you help trace Dr. Manning who once served on 615 Squadron RAF, including at Biggin Hill, and would now be aged in his 70s? If so, please ask him to ring **George Sharp (Tel: 0181-874 8208)** so that he can be invited to the Squadron reunion this August.

Fancy a pleasure flight over North London? An excellent photographic opportunity! Organiser is **Jim (Tel: 0181-906 2266)** and the idea is for himself and two others to share the cost of a light aircraft, probably departing Denham. Let me know what it was like if you go.

You Are Clear To Display

The Red Arrows expect to appear at the following venues in **July** (date in parenthesis) according to A/C 46/1996 from the CAA: Brize Norton & Yeovilton (13), Silverstone (14), Valley (17), Fairford & Spike Island (20), Fairford (21), Peterhead (22), Perranporth (23), Culdrose (24), Lyme Regis & Shawbury (25), Blackpool (26), Manston (28) and St. Mawgan (31). In **August**:

Bournemouth (1) and Cranwell (2). Shows can be cancelled at short notice for various weather and operational reasons, so check before making a long journey.

My advance warning of the Reds' dates isn't always sufficient to meet the deadline for this column. There's an easier way! Dial **(0500) 354802**, it's free of charge and is a recording telling you about Royal Flights and Temporary Airspace Restrictions (including the Reds). I believe that information for the next day is put up at 6pm.

I think displays are sometimes held at Kleine Brogel, Belgium, in which case **Ivo Swinnen** might be going. He tells me that the name implies a small enclosed area (see March and May issues). The base was established by the Allies in 1944 (presumably as they advanced after D-Day) and received its first jets in 1948. Now it's the home of 10th Tactical Fighter-Bomber Wing, Belgian Air Force, equipped with the F16.

Let's Fly

Chris (who took the photographs this month) and I had a try at the Victor K2 tanker simulator near Grantham, Lincolnshire. It's a realistic representation of the two pilots' positions in the aircraft, with a simple dusk horizon visual system but no motion. It looks like an airliner with ejector seats and you do need to adjust to the idiosyncratic Smiths (Mk 27) flight instruments. It's also heavy, especially in pitch, this axis also being fussy to trim. It's slippery, difficult to stop it from climbing and almost as hard to persuade it to descend!

They can even dress you to look the part - great for photos! If you'd like to try, the cost is £48 +

VAT per hour and you can arrange an appointment with **Gerard Bauer** by phoning (01522) 810053 (evenings). Location is obscure, so do check before you set out; take a two gallon 'Jerry can' to flush the loo and your own refreshments as there's no running water. A highly recommended experience.

Would you like to fly a transport aircraft simulator? Unfortunately it's expensive, but the suggestion is for three readers to share the cost. It works out at £98 for each person to have 20 minutes in control. You get me as your first officer, the other two non-handling 'pilots' would then observe. The simulator is at Luton Airport. Since its owner needs to be paid, it'll be money in advance with no refund. If you can't make it on the day, you could send somebody else in your place. Any takers? Note that this is cost price and there's no money in it for me.

Follow-Ups

Military helicopter routes over the Aylesbury area came up in April. From the Isle of Man, **Mrs. B** tells me that 71 Squadron at Odiham fly Chinooks while 33 Squadron fly the Puma, both with Rafair callsigns. Then, 27 Squadron fly both and are really the Operational Conversion Unit (although the nomenclature has changed). They often refuel at Ronaldsway on the way over to Ireland, so Mrs. B gets to see them. I'm not sure that the ones over Aylesbury are going in that direction, though.

What heading is quoted for the direction from which the wind blows? In May I said it was true heading and A/Cs 122/1991 and 110/95 confirm this. **Bob Biggart** (Newmilns) says that Tower and a.t.i.s. give magnetic headings. I

suppose we have to go by the *Manual of Air Traffic Services* for the official answer. I haven't got one, so would any reader with access to a copy please look it up and write in? Bob warns that some countries (like Canada) are so close to the magnetic poles that ordinary compasses vary between unreliable and useless! Charts are published with a grid system that's unique to the high latitudes. Inertial navigation can be set to follow these, but leads to the confusion in the southern hemisphere that flights toward the pole head to grid north!

A reader from Cheltenham confirms that full ACARS decoding is going to be difficult (see April and June 'Airband'). The relevant specifications are ARINC 429 and 724B but I'm none the wiser as to how to obtain these. Our informant points out that airlines each operate their own codes and a vast quantity of data is sent. One example is Oleo strut switch position that detects whether the telescopic undercarriage shock absorber is compressed under the aircraft's weight. If it is, then this informs the system that the aircraft is on the ground rather than airborne.

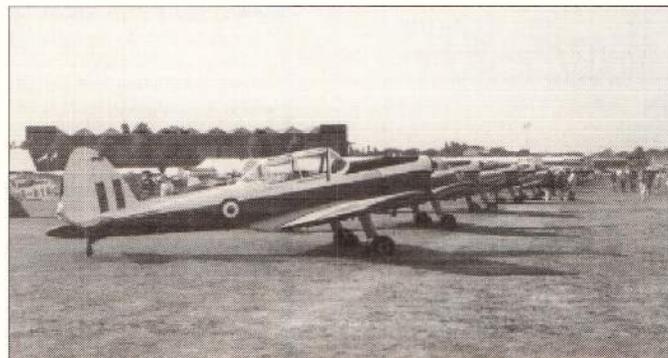
Radio Procedure

Thanks to that same reader for contributing some historic documents to my Museum. We're all familiar with the current phonetic alphabet. At the end of the War, it was different: Able, Baker, Dog, Easy, Fox, George, How, Item, Jig, King, Love, Nan, Oboe, Peter, Queen, Roger, Sugar, Tare, Uncle, William, Yoke, Zebra. Note that Charlie, Mike, Victor and Xray haven't changed but some people abbreviate the modern Foxtrot to Fox. Roger now means 'Information received'.

Frequency and Operational News

What's the future of navigation? I won't join the debate that says it's satellites or nothing (opposed by those who object to the world's navigation system being under the control of the one country that launched the satellites). However, A/C 37/1996 suggests that our old friend the v.o.r. beacon could be phased out from 2005 leaving just d.m.e.

A current trend is the removal



Not the nine Red Arrows - but Chipmunks.
Christine Mlynek.



Godfrey flying the Victor Tanker. *Christine Mlynek.*

of n.d.b.s on approaches. This strikes me as a false economy, it removes one of the cross-checks that's helpful when relying on instruments. I see on page 6 of *The Log* (April 1996) that I'm not the only one to recognise that this could be a problem.

Anticipated by **John Barker** is the opening of Sheffield Airport

at the end of this year. I can't find any official reference to its frequencies yet, John, but I'll publish them here when I do. However, could the airport be known by a different local name? It would help if you let me know.

Duxford's airshows attract many visiting aircraft, all the more complicated for the presence of Fowlmere to the west. The CAA announce arrangements for display days in *A/C* 25/1996. Arrivals should obtain a landing slot by telephone but might succeed in doing this once airborne on 122.675MHz (Duxford Ops). Display aircraft park on the spectator side of the runway. On departure, four visual points have been chosen and are called Gate A, B, C and Gate

D. Pilots will call 122.075MHz prior to departure and might state to which gate they will be flying. The gates are shown on a map in the *A/C*.

A new upper airway is UN502 between Jersey v.o.r. beacon and the RATKA reporting point. *A/C* 34/1996 explains that this is to provide another access route to the North Atlantic entry points. Interestingly, the *A/C* depicts a chart showing the origins of some supersonic (SL) routes.

Information Sources

If you'd like a copy of any individual *A/C* mentioned here, send a stamped, addressed envelope (A4 capacity) with your request to: **Deputy Manager AIS, Aeronautical Information Services (NATS), Room 163, Control Tower Building, London (Heathrow) Airport, Hounslow, Middlesex TW6 1JJ.** All /1996 *A/Cs* mentioned this month weigh less than 5g each.

In May, **Roy Dent** (Harrow) explained how local aerodrome weather reports helped him make accurate forecasts. He recommends the 'Temeraire,' a solidly-made 72mm diameter plastics disc on which you enter wind direction, barometer, whether rising or falling, and season. From this you can read off a guide as to the day's likely weather trend. Of the two versions (inches of mercury or millibar barometer scale) we aviation types prefer the latter. Order from: **Great Western Antiques, Torre Station, Newton Road, Torquay, TQ2 5DD, Tel: (01803) 200551.** Price (including UK postage and VAT) is £10 payable to Temeraire. Availability while stocks last. Mention *SWM* when ordering. Not necessarily accurate outside Britain. They also make a pocket barometer (£245, carrying case £20 extra, plus £4.50

UK postage, includes VAT) but apparently this is not accurate enough for aeronautical purposes.

The occasional 'In the Cockpit' feature will appear in months when there's less news to report. In this feature, I show you a photo of real cockpit radio equipment and describe its operation.

The next two deadlines (for topical information) are July 12 and August 16. Replies always appear in this column and it is regretted that no direct correspondence is possible. Genuinely urgent information/enquiries: 0181-958 5113 (before 2130 local please).

Abbreviations

ACARS	Aircraft Communications Addressing And Reporting System
A/C	Aeronautical Information Circular
ARINC	Aeronautical Radio Incorporated
a.t.i.s.	automatic terminal information service
CAA	Civil Aviation Authority
d.m.e.	distance measuring equipment
MHz	megahertz
n.d.b.	non-directional beacon
v.o.r.	very high frequency omni-directional radio range

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Scanning

A mixed bag this month - as usual - but also one letter that raised questions for me. It also brought some insight into how the column is viewed by many of the readers out there, which I feel needs to be addressed. I'll open with that this month.

First, I've been asked why is the column called 'Scanning' when it contains about 70% military airband information? The short and simple answer is that is the way **you** want it as a readership. All I do is collate and then facilitate the column, the actual writers are those who send in information - that's your lot. So, why is it filled with airband stuff when there is an airband column in the magazine? Again, explanation time. Godfrey Manning is - as his column content clearly shows - an expert at aviation communications. Civil in the main, Godfrey is well qualified in answering queries concerned with radio matters and in aviation in general. I don't promise that. What I do is maintain military movements and follow-up on the frequencies that are picked up by scanner and aviation enthusiasts with a penchant for military movements. I don't stray into civil matters and Godfrey, in the main, doesn't stray into the military. Oh, he may do now and again but that's in response to a query he will have had from a reader. The jargon word - buzz word - for this is 'inter-relating'....

Massive Hobby

Scanning is a massive hobby. However, we here in the UK are a bit limited with what we can put in. While a general comment like 'airband activity heard on.....' is okay, putting in something like 'Bucksfordshire Police on.....' is most certainly not! As a consequence, the column is written based on the information I get in from readers. It could be that one month it will be marine band listeners, the next, general queries. That's the way it works, people! So to **A. Howlett**, there is your answer! Andrew also sends in the following for 'PC' of Manchester:

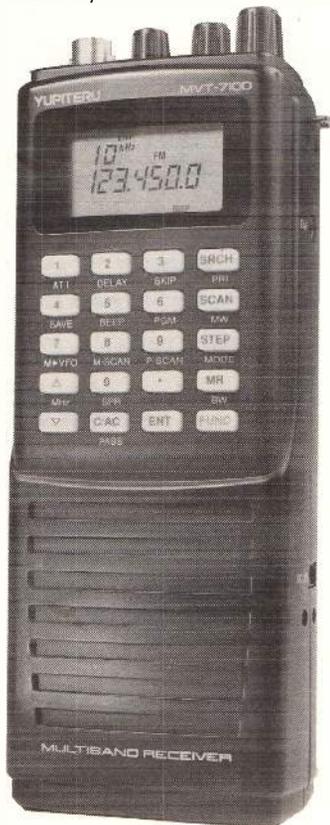
Piccadilly Eye in the Sky is on 468.1375MHz. Red Rose/Rock FM Flying Eye on 469.2125MHz and Radio City's helio is on 469.4625MHz. There - that's airband too, isn't it....?! Andrew

also says that scanners fitted with s.s.b. can tune to 427.8125MHz (tune 15.6kHz off main carrier on u.s.b.) to get BBC studio links in the Manchester area.

Information requested for **David Birch** as to the following: Heard on 243.0MHz *French Air Force 7220, French Air Force 7230. This is London Centre. Caution. A temporary danger area has been established -* and followed by the co-ordinates. What is it? Well, first, the frequency given is a military emergency channel. The message was a nav. warning and would have alerted the two aircraft to the area. Actual details would be hard to trace, but it would be standard practice to ensure all aircraft were clear. Perhaps it was a firing range or some air-to-air refuelling? Any ideas?

Help in the Glasgow area for scanning frequencies is being offered by a reader who wishes to remain anonymous. Anyone interested in contacting him should write to me, enclosing a stamped - unaddressed - envelope with their details and I'll forward them on.

The reader also asks for assistance on the following subjects. He has a Yupiteru MVT-7100 and cannot seem to be able to find how to do a limit scan. Any



ideas? He also asks for a challenge, and wishes to hunt for frequencies. In the time honoured response of scanner owners everywhere I would say: Choose a band, say 600-700MHz and hunt it down daily, recording all you hear on it. That way you build up a picture of activity in a particular area. I would do it weekdays (if I had the time!) and concentrate on weekdays only to start with and then move to the weekend. That's how it's done!

Clippings

From Southern Eire comes a letter with newspaper clippings regarding problems faced by the Gardia - Irish Police - and their new radio equipment. It is a Trunked Digital Encryption System installed by Motorola. Officers have complained that the system is 'deaf', that reception is poor to non-existent and is also muffled when it is transmitted. This system will shortly be used by the Met, according to the leader in the Irish paper.

Again, no new system is without its setbacks, but this particular one is not popular with the Gardia - indeed, one of the clippings sent tells of lives being put at risk, following this with a statement that officers from one area are not patched to officers in another - leaving yawning gaps in the ability to cross-respond if need be. The leader seems to suggest that this is due to channelling - that is, each division having a different frequency - and that the officers are thus compromised as a result. The Gardia, surprisingly, refused to comment....

Will we see this sort of problem in the UK? Who knows. If we do, then it pushes the police further into the front line and at a time when more and more criminals are armed. I would hope the UK Police authorities would learn from this. The *Cork Examiner* states that a distress call would have to be routed through Control, who would then have to alert a nearby patrol. Apparently, the older system was better in that response was quicker because all officers had access to an emergency channel. It will be interesting to see how these problems are resolved - but I hope, for the sake of the officers on the beat, that they will be before installation is completed. My thank's to my Irish correspondent for that.

Car Boot Sales

Car boot sales are - as many of you know - a haunt of mine. Last month I picked up an aged valved radio - made by Pye of Cambridge (Receiver Type P75A) and complete with its little Bakelite 'A7-s' notice on the rear case. It's here I'd like to ask for help. Yes, yes, I know it isn't scanning but it is radio! If you look at **Fig. 1** you will see a plan of the tuning arrangements. I have the spring, but the cord snapped. How do I get this to work so that I can tune the set?

It was poorly presented, costing me £8, and looked tired. However, some WD40 and a vacuum clean on the inside, a new plug and a wiring check and then the addition of a new speaker had me listening to BBC Radio 4 on long wave for hours! Beautiful sound, beautiful. I have since rubbed the cabinet down and given it a coat of varnish, cleaned all the valves and tested the chassis - lights up an electricians screwdriver nicely! The result is a bit of kit that looks aged and sounds fine. A bit deaf - it has l.w., m.w. and s.w. - the next plan is for an outside antenna on it - or at least a long wire - but, again, help is needed here. The rear panel says 'Aerial' and under that 'Earth' - so it was a two-core arrangement. Can anyone shed some light on how this works and how should it be installed?

Moral? Keep your eyes open at the boot sales! I've seen a short wave radio at one in High Wycombe that looked typically Far Eastern - masses of dials, switches and stuff. Digital and analogue tuning scales and a whip antenna on sale for £15. However, in the crush for the stall I lost out to another eagle-eyed enthusiast who snapped it up. I reckon some attention was needed - and a good clean - but as a budget set it would have been ideal for a beginner or as a shack stand-by set. It had s.s.b. and a b.f.o. too - a bargain at double that price? If you can't get to the rallies, then get to the boots. It may take ages to find something exotic but what is rubbish to someone is a gem to someone like me! If you find any interesting bits of kit at boots, flea markets or jumbles - let us know!

My amateur exam never happened. I just could not get the time to do the May exam - far too much work with being assessed

for my student placement - but it is still a possibility. Thanks to all those who wrote in to wish me well and pass on hints.

Letter from a Scottish correspondent - who wishes to remain anonymous. Using an MVT-7100 and an AR8000, he listens easily to places like Spadeadam and Otterburn Ranges and aircraft out of Leuchars. Also, he keeps a Sony ICF-2001D (a brilliant

set! and runs the lot through a half-size G5RV and an Air 33. Aged 66, he says listening is something he enjoys tremendously! Being so close to the ranges means he often sees some pretty good stuff and last year was in place to see - and hear - 16 Hercules aircraft coming in from Otterburn at about 250 feet! What I'd give to see that! Thanks, by the way, for the comments about the column - much appreciated.

The Realistic Jetstream airband pocket radio is a cheap way of listening to transmissions from aircraft and control towers.

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Measuring 130 x 76 x 39mm and weighing 260g without the PP3 battery, the Jetstream costs £14.95 from Lowe Electronics, Chesterfield Road, Matlock, Derbyshire DYE4 5LE.



TADs

Before ending, just a note on TADs. News from a good source informs me that a certain UK publishing group are attempting to publish all UK TADs in their latest publication. As an avid listener I would implore them to think seriously about this. Once they are presented in 'clear' then it will be a matter of days before they are changed. Okay, so it makes you money as a publisher to have the latest TAD list but it will also backfire as the information will be out of date once MoD see them in print.

That's tantamount to ripping off all the scanner owners out here who buy publications in good faith. Better to leave them listed as belonging to a base or a certain aircraft rather than publish them in the open. It often grieves me when 'big business' gets a grip on the hobby and spoil it for the many who listen faithfully and keep it to themselves. So, a word to the wise. If the TADs are printed - and then advertised as being 'up to date' by this publisher - it's as well for scanner owners to note that they will be out of date. The equation here is simple and goes like this: Publish TADs, advertise

the publication as being 'up to date' and MoD (RAF) will simply change the lot. Equals a book costing around a tenner or more to be put to use as wallpaper....because it will be hopelessly out of date.

UFO Info

Lastly, the UFO bit. Keep them coming! I've had a brilliant response to this and will possibly draft an article for the magazine on the connections between radio listeners and 'the unusual'. Watch out for things that tie in with stuff that many of you may well have heard but chosen to ignore. You don't know the half of it!

The towns list went down like the proverbial lead balloon, for those interested!

Another Month!

That's it again for another month! If you are air-show mad, check up on the latest venues. There are many bases cancelling due to inability to maintain security now they have gone civvy contractor mad at MoD!

Be careful - be good - and keep the news coming in on anything you hear!

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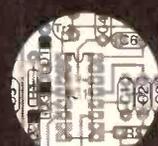
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Info In Orbit



Band	MHz	Mode	Allocation
v.h.f.	145.550		Amateur Radio
u.h.f.	243.000	a.m.	Emergency Voice Channel
u.h.f.	259.700	a.m.	Primary Voice Channel
u.h.f.	279.000	a.m.	EVA Voice Channel
u.h.f.	296.800	a.m.	Backup Voice Channel
u.h.f.	416.500		Data

Although most of the mail for this column relates to the WXSAT field, I am pleased to receive a considerable amount of correspondence on satellites in general, and the Shuttle and MIR in particular. I am therefore proposing to allocate a little space each month to provide a few notes on these projects and also on the International Space Station. If it transpires that some of these topics are not of interest then I can quietly drop them! It's in your hands! Please let me know what you want.

NOAA-9 Fails

We have been able to receive beacon telemetry from NOAA-9 on 137.77MHz for many years, even after cessation of its a.p.t. signal. On May 22 the System Support Group announced the following:

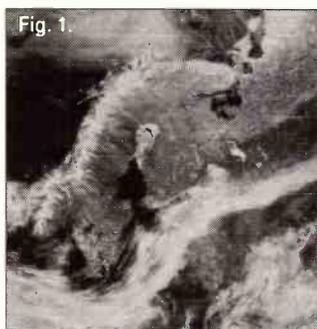
"No radio frequency transmissions were received from NOAA-9 after rev. 58987 late on May 21. The spacecraft is nearly eleven and one half years old, has an extremely marginal power system since the loss of one of its three battery charge regulators last August and is in a hostile orbit environment with long periods requiring the use of its remaining batteries on each orbit. Last August NOAA-9's on-board software was modified to terminate all r.f. transmissions in the event a power related problem initiated a spacecraft 'safe state' in order to assure NOAA-9 was deactivated with all communications systems off. Although the cause is still being assessed, continued tracking by our cdas and the search and rescue community confirm the absence of all transmissions. No further effort will be made to reactivate NOAA-9".

Current WXSATS

With a hefty number of examination papers to mark recently, I worked with the scanner on, and found myself hearing every operational WXSAT pass over during the long hours. METEOR 3-5 (137.85MHz) came over during the mornings, dutifully followed by NOAA-14 (137.62MHz), then by the time I heard NOAA-12 (137.50MHz) I realised it was time for the evening meal! The advance notification of the change-over from METEOR 3-5 to 2-21 scheduled for May 14 occurred on

time. The signal from METEOR 2-21 is so poor during sections of the orbit that one can identify it by just listening.

When operating, METEOR 3-5 produces some spectacular images, and **Les Hamilton** of Aberdeen recorded **Fig. 1** on April 11. From Les' location in Aberdeen he can monitor the northern areas covered by the METEORs considerably better than those seen from here in Devon. Large ice-sheets in the upper area of the Gulf of Bothnia are seen, as is Kolguev Island to the north-east of the Kola Peninsula. Lakes Onega and Ladoga were still frozen over at the time of this image.



GOES Schedule Changes

Apart from monitoring the polar WXSATS' v.h.f. transmissions (those in the 137MHz band), many enthusiasts have set up METEOSAT receiving stations to monitor WEFAX transmissions from the geostationary WXSATS. These all transmit on 1691.0MHz with similar formats, though differing picture content. METEOSAT-5 is located at 0° longitude, so a suitable receiving system can quickly find its carrier signal. The American GOES WXSATS are positioned across continental US, with GOES-8 on the eastern side and GOES-9 on the western side. Some

transmissions of certain GOES-8 formats are disseminated on METEOSAT's Channel 2 (1694.5MHz), including North and South America in infra-red, and a visible format of North America. Here on the western side of Britain, those with suitably clear horizons can receive the GOES-8

transmissions directly, albeit from a low elevation. I use a long Yagi for monitoring GOES-8 (1691.0MHz), which, from Devon, 'hovers' just a few degrees above the water!

Plans currently being implemented by NOAA call for re-transmissions by GOES-8 of some GOES-9 images. GOES-8 image scans are not currently synchronised with GOES-9, but there are plans to adjust scanning times to rectify this - the aim being to eventually incorporate GOES-9 WEFAX synoptic hour imagery into the GOES-8 schedule and vice-versa, as well as adding the new Full Disk Water Vapour imagery. My thanks to **Sam Patterson** of NESDIS for this information. I hope to do a feature on GOES images soon. Meanwhile, some GOES-8 images may be subject to increasing delays before actual transmission.

Letters and Pictures

Andrew Batters of Ilkley in West Yorkshire visited the RIG conference and AGM this year and bought a special offer of Timestep a.p.t. 'bits' and "threw them together with the antenna cellotaped to the garage wall" to get his first pictures. This was apparently Andrew's first efforts and his description captures the elation often felt when everything works with a newly assembled collection of hardware. Andrew is collecting all the images that his receiver will pick up, and sent in **Fig. 2**, a NOAA-14 image obtained at 1400UTC on May 10.

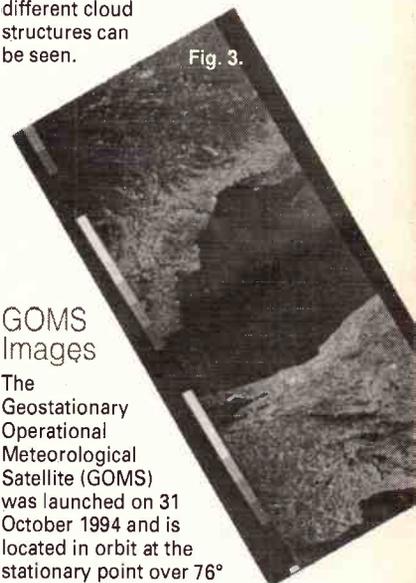
Peter Schoen of Germany is a user of JVFX. Peter lives in the northern part of Bayern and decided to concentrate on collecting images from the

OKEAN-4/SICH-1 satellites and subsequently produced a series of radar images, from which I selected the one in **Fig. 3**. Peter notes that these two satellites are

usually activated for just a few minutes when passing over Russian territory (see also my notes in last month's 'Info'). For Peter, these passes are often at an elevation of about 25° and cover the Black Sea and Turkey.

Mr A. Painter of Bilston (sorry about the formality but no

first name was given), sent in **Fig. 4**, an infra-red image taken on April 25 from NOAA-14. The detail seen on close examination of this image is very clear. He uses the new Martelec 'virtual' receiver and interface to feed the JVFX decoding program. The coastline over northern France shows the cloud-line clearly hugging the land, and several different cloud structures can be seen.



GOMS Images

The Geostationary Operational Meteorological Satellite (GOMS) was launched on 31 October 1994 and is located in orbit at the stationary point over 76° 50'E. It forms part of the Planeta-C Meteorological Space System. During recent months the staff there have been working towards providing regular images from GOMS and **Fig. 5** shows one of the images made available by Planeta-C. It shows the infra-red band image obtained at 2100UTC on April 8, and is one of a sequence of images from that day. My thanks to Dr Alexander Uspensky, the Director General of RPA PLANETA, for permission to publish their images.

Because of local obstructions (neighbours' houses!) I cannot look further east than about 30°E so cannot monitor GOMS transmissions. I would be most interested to know whether those who are more favourably located can monitor any WEFAX from the satellite. All indications are that it is transmitting at least on some occasions.

Shuttle News

As at late-May STS-78 (*Columbia*) remains on schedule for a 16 day mission, with a launch on June 20. Its orbit has a planned inclination of 39°.

STS-79 (*Atlantis*) is scheduled for launch on July 31 for the 4th

MIR linkup. Because of the need to match the orbit of MIR, launch windows are only open for about 7 to 10 minutes. The mission duration is nearly 9 days and being a MIR linkup, its orbital inclination is about 51°.



Fig. 4.

hardware will be assembled in orbit to create an advanced research facility with early, human-tended capability. Research will be conducted while the Space Shuttle is docked at the station, or through remote operations from the ground when the Shuttle and crew are not present.

Construction will continue as pressurised modules and attached payload platforms from Japan and Europe are added.

The ISS is a multi-national project that will be built by a team comprising Europe, Japan, Canada, Russia and the United States. Europe and Japan are providing facilities for pressurised and external research payloads. ISS will advance the use of the unique space environment by providing a permanent multipurpose, earth-orbiting laboratory. Pressurised laboratory accommodations will enable experimenters to use the microgravity environment of space to expand knowledge, develop new technologies and produce new products and processes. External payloads, mounted on Space Station support structures, will be used to study the effect of the space environment on materials and provide an observation point to view the earth and the heavens, and to carry out a range of scientific and technical experiments.

The Japanese module will include an external robot arm for payload servicing. Canada will provide a remote manipulator arm similar to the arm on the Space Shuttle to support station assembly and servicing. Russia will provide systems to support station reboost, navigation and power generation, an emergency crew rescue vehicle, and laboratory modules. The US will provide

primary station support structures, major subsystems including power, data, communications and thermal control, and habitation and laboratory modules.

At its completion in 2001, the Space Station will support a permanent human presence in space. A glance at my *Shuttle Pack* shows that many of the missions are for ISS materials transport and construction.

Shuttle Downlink Frequencies

The frequencies shown in the table at the top of the previous page may be of interest to those trying to monitor direct transmissions from the Shuttle.

S-Band transmissions include: 2217.500, 2250.000, 2287.500MHz (all data).

A complete list of all future Shuttle missions (my *Shuttle Pack*) can be obtained from me by sending £1 and a stamped, self-addressed envelope - preferably of A4 width. This information includes a considerable amount of additional Shuttle-related material - such as operational and re-broadcast frequencies - and is updated immediately I receive new releases from NASA. The high cost of individual printing is reflected in the requested charge.

MIR Monitoring

Monitoring daytime and evening passes of MIR (the large orbiting Russian space station) is fairly common amongst the radio ham community. If you use a satellite tracking program (such as STS-Plus, PC-Track, Winorb-28 amongst several) you can identify the best times to listen out for the cosmonauts. US astronaut Shannon Lucid is on board MIR until late July, and amateur radio operators report hearing the Russians and American on MIR talking in English (using 145.550MHz for making contact). The usual voice frequency for monitoring MIR is 143.625MHz. I believe that they work to a 0500 to 2000UTC schedule so there may be rare voice activity outside these hours. When MIR passes over after sunset or before sunrise you can expect to see the satellite cross the sky looking very bright.



Fig. 5.

International Space Station - An Overview

We are surprisingly close to the start of the construction of International Space Station (ISS) - Alpha. Assembly begins next year - 1997. In 1998, US and Russian

Non-a.p.t. Satellites Near the 137MHz Band

Although most WXSAT monitors use specially designed receivers for picture production, I suspect that many also have a conventional general-purpose scanning receiver covering a much wider band. Many years ago I was testing a basic antenna and scanning several bands when the receiver locked on 150.00MHz. After some enquiries and satellite prediction checks, I was able to confirm that it was a NADEZHDA satellite. I then went on to regularly monitor the series of COSMOS satellites transmitting on frequencies close-by.

There are often several satellites transmitting on each frequency, so do allow for this when comparing your timings with data from a predictions

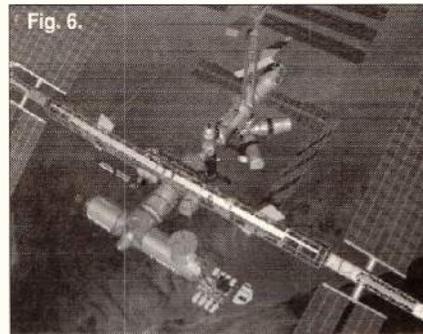


Fig. 6.

program! From time to time, a COSMOS is switched off and replaced by another from the same group. The signals from these satellites are quite recognisable, but not identical. The phrase 'fast RTTY' seems to best describe them. Some are classed as navigation satellites. NADEZHDA 2, 3 and 4 on 150.00 MHz
COSMOS 2123, 2191, 2315 on 150.00MHz
COSMOS 2310 on 149.91MHz
COSMOS 2180, 2218, 2279 on 149.94MHz
COSMOS 2173, 2327 on 149.97MHz
COSMOS 2233 on 150.03MHz

If you leave a scanner searching these frequencies, you should hear one within about 20 minutes, so they form a good test for the reception characteristics of your antenna system.

Amiga and Atari Software

Several readers asked me about obtaining software for the Amiga and Atari computers. After some searching around the Internet I have collected satellite tracking software for both machines. I have no way of determining the effectiveness of the software, or whether it requires special facilities on these machines. Anyone wanting to receive a copy please send a stamped, self-addressed envelope together with a standard PC-formatted disk and 50p (secured) towards the cost of collection, etc. I believe that these machines can read PC disks. If

yours does not then you may be unable to use the program.

The Book

I waited with bated breath for the first responses from 'Info' readers to the publication of *Satellite Projects Handbook* by Butterworth-Heinemann, my first book on weather satellites. (Available from the SWM Book Store). First off the mark was **Brian Dudman**, rapidly followed by Andrew Batters (whose first experiences of WXSAT monitoring are included earlier). Both readers commented helpfully on the general coverage of the book and I agreed with their observations that a number of the pictures are not too clear. I am not quite sure of the reason for the darker-than-expected reproduction of some of the images. It seems likely that a

second edition may appear in about two years or so.

Kepler Elements - MIR and Shuttle

Different options are available:

1: For a print-out of the latest WXSAT elements, MIR, and the Shuttle, send a stamped addressed envelope and secured 20p coin or

separate, extra stamp.

Transmission frequencies are given for operating satellites. This data originates from NASA. During Shuttle operations I send Kepler elements by return-of-post to those requesting them, and I can forward the first active set available. In all cases please enclose a secure 20p coin.
2: I also send monthly Kepler print-outs to many people. To join the list please send a 'subscription' of £1 (secured, plus four self-addressed, stamped envelopes) for four editions.
3: You can have the data as a computer disk file containing recent elements for the WXSATs, and a large file holding elements for thousands of satellites. A print-out is included, identifying NASA catalogue numbers (for the WXSATs, Amateur Radio satellites, and others of general interest), ideal for automatic updating of your tracking software. Please enclose £1 with your PC-formatted disk and stamped envelope.

Frequencies

NOAA-14 transmits a.p.t. on 137.62MHz; NOAA-12 transmits a.p.t. on 137.50MHz; NOAAs transmit beacon data on 137.77 or 136.77MHz; METEOR 3-5 (or 2-21) use 137.85MHz; OKEAN and SICH use 137.40MHz; METEOSAT-5 (geostationary) uses 1691 and 1694.5MHz for WEFAX; GOES-8 (western horizon) uses 1691MHz for WEFAX and MIR 145.55 and 143.625MHz.

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Decode

All the Data Modes

I've finally decided that running two E-mail accounts just doesn't cost-in and so have made a choice. Although my preference a year ago would have been to stick with CompuServe, this is no longer the case. Whilst CompuServe is very easy to use, especially with the integrated WinCim package, the network improvement has not kept pace with other suppliers. In my area there is still no local call rate access at 14.4kbaud or faster. Most of the main Internet service suppliers now offer 28.8kbaud access at local call rate from anywhere in the UK.

Another deciding factor has been the development of good quality WEB browsers such as Netscape Navigator. These programs provide an easy to use interface to the Internet and most have integrated mail and news clients. And then there is the cost. Whereas many Internet suppliers just charge a flat monthly charge, CompuServe has an incremental pricing structure that can quickly ramp-up the charges.

You've probably guessed by now that I've abandoned my CompuServe account and all future E-mail should be sent to my Pipex DIAL address which is: **mike.richards@dial.pipex.com**

I'm also busy putting together my own WEB page so I can provide up-to-date links to all the best software sites and the latest news on my Readers' Offers. I'm hoping to complete the page by next month, so watch this space.

Health Warning!

One of the common problems in my mailbag arises from listeners who start the hobby with sophisticated decoding equipment. Whereas the vast majority start with relatively low budget kit such as Hamcomm and JVFAX, if you have the funds available, it's very tempting to start with some up-market equipment. This has the potential to give you much better results without the hassle of constantly upgrading as you attempt to get better results. Whilst this all sounds very sensible (funds permitting) there are one or two disadvantages with this approach.

If you start with expensive kit, but then decide the hobby's not for you, you stand to lose more money on the second-hand sale.

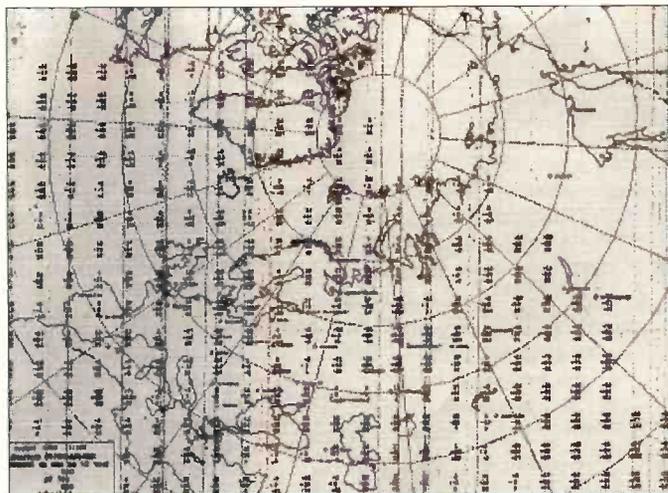
The second problem is the level of expertise required to successfully operate the more complex decoders. Because these units are aimed at the more experienced/commercial operator, the instruction manuals usually assume a fair degree of basic decoding expertise. It's this aspect that causes the problem for the new listener, as there's rarely a gentle introduction to the art of utility decoding! The end result is the new listener that's not really sure what the various signals even sound like end's up in a pickle very quickly.

A classic decoder that falls into this category is the Hoka Code 3. Whilst this features an excellent range of receive modes and very good analysis tools it's strictly not for the beginner. This can be likened to a learner driver starting with a Formula One racer!

If you happen to be one of those who have fallen into this trap, all is not lost. The golden rule is to keep it very simple and stick to the basic receive modes. Probably the easiest mode to start with is RTTY and there are a number of stations that can be relied upon to deliver good signals. The *Day Watson Beginners Frequency List* (see Readers' Offers) has been specifically compiled to give the new listener access to reliable data signals. Before you attempt to decode one of these signals you should first locate it by ear.

Set your receiver to u.s.b. and tune to the listed frequency $\pm 2\text{kHz}$ and you should hear a rapid warbling sound. If you just hear a steady whistle that means the station is at standby and you need to find another frequency from the list. Once you've found what you believe to be a RTTY signal, tune the receiver to give a fairly high pitched warble. Now connect your decoder and set it to the speed/baud rate as shown in the list. Next you need to set the shift setting of your decoder to that shown in the list. You will see that the most common setting is 400 or 425Hz for commercial stations. If you don't have the exact shift on your decoder, don't worry, just pick the nearest you have available.

With the speed and shift set, the only other adjustment you may have to make is the polarity. This is just a matter of trial and error, though once set, it should remain the same for the vast



Russian weather FAX received by George Newport.

majority of data signals.

Once you've cracked RTTY, you can move on to try SITOR or ARQ. These modes are a form of enhanced RTTY that use a special technique to reduce the number of errors. In very simple outline, the SITOR transmitter breaks the message into groups of three letters. As each of these groups are transmitted, the station pauses for an acknowledgement signal from the other end before continuing. If there's no response in the set time, the three characters are sent again. This very simple system is very effective and gives SITOR signals their characteristic chirp-chirp sound.

Another variant of SITOR is FEC (forward error correction). Whereas SITOR can only operate between two stations that are effectively locked together, FEC is a broadcast mode that is often used to send maritime traffic lists, etc. It uses the same principle of splitting the message into groups of three characters but just sends each group twice with a time gap

between the two. This gives the receiving station two chances to receive an error free message. For the listener, an important feature of FEC is that the signal is continuous with a warble that alternates between the two tones twice as quickly as a RTTY signal.

When it comes to receiving the more complex ARQ and multi-channel modes, you need to appreciate that many of these stations spend long periods just idling, whilst others send only encrypted messages. Keeping an eye on stations that spend long periods idling can be very time consuming unless your decoder has the ability to save received data to a file. If it has, you can turn this on and leave the decoder running on its own. When you return, you will find all the transmitted information neatly stored in the data file.

When it comes to encrypted signals - you don't really stand a chance. Modern encryption systems are so advanced that the amateur operator stands no chance at all of decoding the

Frequency List

This month's contribution of recently logged signals comes from **Colin Fallaize, Day Watson** and other un-named contributors.

Freq	Mode	Speed	Shift	ID	Time	Location
5.083	RTTY	100	400	DHJ51	1759	Grengel Met
6.3404	FAX	120	576	NMF	2151	USCG Boston
6.821	Rou-FEC	218	400	-	1355	MFA Bucharest?
8.083	FAX	90	576	RIJ75	1807	#TASHKENT MET
8.453	RTTY	75	850	HWN	1300	FN PARIS
10.162	RTTY	50	400	YL71	1020	INA Baghdad
11.080	RTTY	50	400	-	1450	SANA Damascus
11.133	RTTY	50	400	BZG41	1450	Xinhua Beijing
11.432	RTTY	50	850	IMB3	1250	Rome Met
13.440	RTTY	50	400	YZ1235	1030	Tanjug Belgrade
14.836	RTTY	75	500	-	0900	Polish Text
14.966	FEC-A	100	170	-	1405	Moscow?
15.770	RTTY	100	300	-	0800	DEUTSCHE WELLE
16.014	RTTY	150	500	#-	0840	Bulgarian text
16.127	RTTY	75	340	M4W	0830	Mossad
16.971	FAX	60	576	JJC	1415	Tokyo Met
18.220	FAX	120	576	JMH5	1302	Tokyo Met
18.242	RTTY	75	400	ZRO4	0650	PRETORIA MET
18.7042	FEC-A	96	400	DGS70H5	0914	PIAB BONN

message - this is the whole point of encryption in the first place! You may well ask why so many people want to buy advanced decoding equipment when there's such a poor chance of receiving any interesting data. The answer lies in the identification of transmissions and networks. Most of the experienced listeners I've talked to get the real buzz from being able to tune into an unknown signal and use the decoder's analysis tools to determine the nature of the signal. Having done this, the next stage is to try and work out where the signal comes from. And finally to see if its part of a much bigger network.

Determining the location of the transmitter is usually a question of comparing the signal quality and fading characteristics with other known signals. If you can find a known signal that suffers similar propagation effects then there's a good chance that both signals originate from the same general area. Working-out whether a transmission forms part of a larger network can generally be determined from the engineering messages sent over the link. Regardless of whether the links are encrypted or not you will usually find engineering messages sent in plain text. These messages can be compared with those emanating from known networks to see if the new signal is also part of the same network.

I hope this very quick overview gives you a few tips to more successful monitoring. If you have any other problem areas please drop me a line and I will do my best to answer them through the column.

Satellite Update

My very limited coverage of satellite utilities last month caused **John Locker** to drop me an E-mail with some interesting facts. John has specialised in satellite communication for many years and is a regular contributor to Roger Bunny's 'Satellite TV News' column. John reports that there are some signals to be heard in the UK though you do need rather more than a basic Astra (Sky TV) set-up. For his monitoring John uses an Echostar 8700 receiver with full threshold applied. This is fed from a 1.2m steerable dish.

To monitor for analogue frequency division multiplex (f.d.m.) signals you would then need to connect a short wave receiver to the unfiltered video baseband output of the satellite receiver. The short wave receiver needs to be set to s.s.b mode and be able to tune between 100kHz and 450kHz. When tuning below 300kHz select i.s.b. and conversely u.s.b. above 300kHz. The transmissions accessible via this system are primarily telephony traffic from third world countries though there may also be some

data. If you have access to C-band satellite receiving equipment you may well find some more active satellites.

For more up-to-date information you could take a look at John's Web site that can be found at:

<http://www.cybase.co.uk/satcom/>

If you have any further information on satellite utility reception, please drop me a line.

Where's WeatherMan?

Having recently mentioned the Soundblaster based FAX decoding program **WeatherMan (WXMAN)**, I've received a number of queries from people who can't locate a copy of the program. I've double checked the Internet and suggest you try the following location. Although I thought the latest release was 2.2, the latest I can find is 2.0. A good starting point is ftp.funet.fi/pub/ham/fax_sstv/wxman20.zip if you want to use your Archie client to search the program is always called wxmanxx.zip, where xx is the version number. Please let me know if you find a later version.

Worldwide Utility News Club

If you have Internet access and enjoy utility monitoring this club is an absolute must. As the name implies membership is worldwide and by subscribing (free) to the electronic mailing list you will receive daily, if not hourly updates on what's happening on the air. Although there is a strong US bias, there's lots of useful information and help available to all. To find out full details just log-on to their Web site at <http://www.leonardo.net.berri/wun>

Readers' Special Offers

Here's the latest list of reader' special offers. Whilst I do my best to return orders promptly, please allow up to three weeks for delivery.

IBM PC Software(1.44Mb disks):

- Disk A (Order Code DKA) - JVFAX 7.0, HAMCOMM 3.0 and WXFAX 3.2
- Disk B (Order Code DKB) - DSP Starter plus Texas device selection software.
- Disk C (Order Code DKC) - NuMorse 1.3
- Disk D (Order Code DKD) - UltraPak 4.0
- Disk E (Order Code DKE) - Mscan 1.3 and 2.0

Printed Literature:

- Beginners Utility Frequency List* (Order Code BL)
- Complex Signals Utility Frequency List* (Order Code AL)
- Decode Utility Frequency List* (Order Code DL)
- FactPack 1 Solving Computer Interference Problems* (Order Code FP1)
- FactPack 2 Decoding Accessories* (Order Code FP2)
- FactPack 3 Starting Utility Decoding* (Order Code FP3).
- FactPack 4 JVFX and HAMCOMM Primer* (Order Code FP4).
- FactPack 5 On the Air with JVFX and HAMCOMM* (Order Code FP5).

Norfolk (NAM) FAX Schedule

Les Crossan of Wallsend has just sent me the latest full FAX schedule for this popular US Navy FAX station.

Time	Chart
0800	SAT IMAGE
0820	NOGAPS 850MB 12HR PROG
0830	NOGAPS 500MB 12HR PROG
0840	NOGAPS SFC PRES 24HR PROG
0850	NOGAPS 850MB 24HR PROG
0900	NOGAPS 700MB 24HR PROG
0910	NOGAPS 500MB 24HR PROG
0930	SAT IMAGE
0945	OPEN PERIOD
1000	SAT IMAGE
1015	NLMOC HIGH WIND / SEAS WARNING
1030	NOGAPS 300MB 24HR PROG
1040	NOGAPS 200MB 24HR PROG
1050	NOGAPS SFC PRES 48HR PROG
1100	SAT IMAGE
1120	NOGAPS 850MB 48HR PROG
1130	NOGAPS 700MB 48HR PROG
1140	NOGAPS 500MB 48HR PROG
1150	NOGAPS 300MB 48HR PROG
1200	SAT IMAGE
1215	NFAX SCHEDULE (0000Z-0800Z)
1240	NOGAPS SFC PRES 72HR PROG
1250	NOGAPS 500MB 72HR PROG
1300	SAT IMAGE
1320	NOGAPS SFC PRES 96HR PROG
1340	NOGAPS SFC PRES 120HR PROG
1350	NOGAPS 500MB 120HR PROG
1400	SAT IMAGE
1420	NORAPS SFC PRES ANAL
1430	OPEN PERIOD
1440	NORAPS 500MB ANAL
1450	NORAPS SFC PRES 12HR PROG
1500	NORAPS 500MB 12HR PROG
1515	FNMOCS SST ANAL
1530	NFAX SCHEDULE (0800Z-1700Z)
1540	NFAX SCHEDULE (1700Z-0000Z)
1600	SAT IMAGE
1630	NORAPS 500MB 24HR PROG
1640	NORAPS SFC PRES 36HR PROG
1650	NORAPS 500MB 36HR PROG
1700	SAT IMAGE
1715	NLMOC 48HR BLEND
1730	OPEN PERIOD
1800	SAT IMAGE
1815	NLMOC SEA HT ANAL
1830	NOGAPS SFC PRES ANAL
1840	NOGAPS 850MB ANAL
1850	NOGAPS 700MB ANAL
1900	SAT IMAGE
1920	NOGAPS 500MB ANAL
1930	NOGAPS 300MB ANAL
1940	NOGAPS 200MB ANAL
1950	NOGAPS SFC PRES 12HR PROG
2000	SAT IMAGE
2020	NOGAPS 850MB 12HR PROG
2030	NOGAPS 500MB 12HR PROG
2040	NOGAPS SFC PRES 24HR PROG
2050	NOGAPS 850MB 24HR PROG
2110	NOGAPS 500MB 24HR PROG
2120	OPEN PERIOD
2130	SAT IMAGE
2145	NLMOC 84HR PROG BLEND
2200	SAT IMAGE
2215	NLMOC HIGH WINDS/SEAS WARNING
2230	NOGAPS 300MB 24HR PROG
2240	NOGAPS 200MB 24HR PROG
2250	NOGAPS SFC PRES 24HR PROG
2300	SAT IMAGE
2320	NOGAPS 850MB 48HR PROG
2330	NOGAPS 700MB 48HR PROG
2340	NOGAPS 500MB 48HR PROG
2350	NOGAPS 300MB 48HR PROG
0000	SAT IMAGE

The station transmits from two stations located in Cutler, ME and Keflavik in Iceland using the following frequencies:

Cutler 3.357, 8.080, 10.865, 15.959 and 20.015MHz. 3.357MHz is operational from 0000-1200 and 10.865MHz takes over from 1200-0000UTC. The remaining frequencies are known as Commspot channels and provide FAX data on demand for Naval vessels. The Icelandic transmissions provide the best source for UK listeners and the frequencies used are 9.318MHz 24hr and 3.8205 Commspot. The following abbreviations are used in the FAX schedules and charts:

SFC = Surface
PRES = Pressure
NOGAPS = Naval Operational Global Atmospheric
NORAPS = Naval Operational Regional Atmospheric
700MB = 700HPA
PROG = Prognosis
NLMOC = Naval Atlantic Meteorology and Oceanography Centre
BLEND = Combination Chart Showing Optimal Track Ship Routings (OTSR) Pressure Centres and other data.
IMAGE = Grey

If you want to QSL, the latest address I have is Naval Atlantic Meteorology and Oceanography Centre, Operations Officer, 9141 Third Avenue Norfolk VA 23511-2394.

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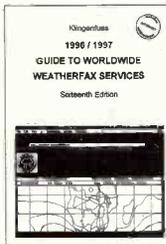
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Long, Medium and Short Waves

At present the lower frequency short wave bands are very overcrowded and many listeners have difficulty in receiving a wanted broadcast due to the sideband 'splatter' from a station on an adjacent channel.

Owners of relatively simple a.m. receivers could try tuning to a parallel transmission in another band but those with more advanced receivers may be able to improve reception by selecting either the upper or lower sideband of the wanted transmission.

Long Wave Reports

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT). Unless otherwise stated, all logs were compiled during April.

A broadcast in Italian from Radiotelevisione Italiana (RAI) via their 10kW outlet at Caltanissetta, Italy on 189kHz was received at 2102UTC on April 7 by **Fred Pallant** in Storrington. The transmission rated SINPO 12341. By 2115 it had improved to 22341.

Up in Edinburgh, **Kenneth Buck** searched the band during daylight and noticed that the ground waves from DLF Munich (500kW) on 207 and Taldom, Russia (2500kW) on 261 were weaker than usual, whilst those from other stations appeared to be unchanged. It suggested a reduction in the output power of those transmitters, but that has yet to be confirmed.

Medium Wave Reports

The broadcasts from some of the m.w. stations in E.Canada, E.USA and S.America reached our shores at night during April - see chart. **Tony Stickells** (Thornton Heath) found the conditions favourable on April 1 from 0200UTC and from around midnight on April 3. Up in Shetland **John Slater** (Scalloway) searched the band from 0400 during the nights of April 1 to 12. He picked up the 50kW transmission from CJYQ in St.Johns, NF on 930kHz, which is often used by DXers as a pointer to conditions, every night! An extensive log was compiled by **Paul Crankshaw** in Troon. At 0015 on the 9th he heard for the first time CFBC in St.John, NB on 930. The highlight for Paul was logging R.Monte Carlo, Montevideo, Uruguay on 930 at 2305 on April 27 - this is seldom reported and is subject to confirmation by QSL.

The sky waves from some of the stations in the Middle East and N.Africa also reached the UK after dark. Two BSKSA outlets in Saudi

Arabia were logged by **Eddie McKeown** in Newry - Jeddah (1000kW) on 1512 rated 21321 at 1940 and Dammam (1600kW) on 1440 was 25422 at 2333. Their 2000kW outlet at Duba on 1521 was heard by **Tom Smyth** in Co.Fermanagh.

Good reception of R.Nederlands broadcasts via the RTL 1200kW transmitter at Marnach, Luxembourg on 1440 is being reported from many areas of the UK. **Ross Lockley** (Galashiels) says, "An excellent signal here in southern Scotland, with less propagation disturbance than I remember for 'the great 208'. Ah, those were the days".

The sky waves from some of the UK local radio stations have been received late at night in Hono, Sweden by **Kristjan Saag** - see chart. On April 14 he logged ILR County Sound via Guildford on 1476 (1kW) as SIO444 at 0130.

A newly licensed m.w. local radio station in N.Ireland named 'AM Radio' or 'Radio 1521' began broadcasting on 1521kHz on April 8. The transmitter at Craigavon has an e.m.r.p. of 0.5kW and is intended to serve the local area but it is being received in some other areas too! Over in Troon it was rated 45444 by Paul Crankshaw. Whilst in Invergarry **Brian Keyte** (Bookham) logged it as 34323 at 1245. It has also been received in Largs by **John Stevens** and in Shrewsbury by **Martin Price**.

Short Wave Reports

Owing to the sunspot minimum period the **25MHz (11m)** band is unlikely to be used for broadcasting in 1996.

Propagation in the **21MHz (13m)** band varies daily. Sometimes it may be possible to receive R.Australia's broadcast to Asia via Darwin on 21.725 (Eng 0630-1100) in the UK. It was rated 14332 at 0903 by **Tim Allison** in Middlesbrough; 15333 at 0924 in Thornton Heath; 25322 at 1000 by **Norman Thompson** in Oadby; 25321 at 1030 by **Eric Shaw** in Chester.

Other broadcasters using this band include UAER, Dubai 21.605 (Ar to Eu 0615-1030) rated 22222 at 0826 by **Tez Burke** in Bradford; RCI via Sines, Portugal 21.455 (Eng to Eu, M.East, Africa 1330-1400) 44444 at 1325 by **Stan Watkins** in NW.London; UAER, Dubai 21.605 (Eng to Eu 1330-1355) 44444 at 1333 in Newry; DW via Julich 21.560 (Ger to Asia 1000-1355) 32332 at 1325 by **Robert Connolly** in Kilkeel; RFI via Allouis? 21.580 (Fr to Africa? 1100-1550) 45544 at 1356 by **Darren**

Long Wave Chart

Freq (kHz)	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	H*
153	Donebach DLF	Germany	500	A,B,C,D*,E*,F*,G*,H,J,K
153	Bod	Romania	1200	B,G*
162	Ailouis	France	2000	A*,B,C,E*,F*,G*,H,I,J,K
171	Nador Medi-1	Morocco	2000	D*,H*
171	B'shakov etc	Russia	1200	B,D*,F*,G*,H*,J,K
177	Oranienburg	Germany	750	A,B,E*,F*,G*,H,J,K
183	SaarLouis	Germany	2000	A,B,C,E*,F*,G*,H,I,J,K
189	Caltanissetta	Italy	10	H*
198	Droitwich BBC	UK	500	C,E,F,G,I,J,K
198	WesterglenBBC	UK	50	B
207	Munich DLF	Germany	500	A,B,E*,F*,G*,H*,J,K
207	Azizal	Morocco	800	H*,J*
216	Roumoules RMC	S.France	1400	A*,B,C,E*,G*,I,J,K
225	Raszyn Resv	Poland	?	B,E*,F,G*,J,K
234	Beidweiler	Luxembourg	2000	C,E,F,G,J,K
234	Ark' getsk etc	Russia	500	J
243	Kalundborg	Denmark	300	A,B,C,E,F,G,J,K
252	Tipaza	Algeria	1500	F*,J*
252	Atlantic 252	S.Ireland	500	B,C,E*,F*,G*,I,J,K
261	Burg(R.Rosa)	Germany	200	B,E*,J,K
261	Taldom Moscow	Russia	2500	B*,F,G*,J*
270	Topolna	Czech Rep	1500	A,B,F*,G*,J
279	Minsk	Belarus	500	B,F*,G*,J

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

Listeners:

(A) Vera Brindley, Woodhall Spa.
(B) Kenneth Buck, Edinburgh.

(C) Noel Carrington, Sutton in Ashfield.
(D) John Eaton, Woking.
(E) Ted Harris, Manchester.
(F) Sheila Hughes, Morden.
(G) Eddie McKeown, Newry.
(H) Fred Pallant, Storrington.

(I) Tom Smyth, Co.Fermanagh.
(J) Tony Stickells, Thornton Heath.
(K) Tony Stickells, while in Hassocks.

Beasley in Bridgwater; BBC via Ascension Is 21.490 (Eng to E.Africa 1400-1430) 44343 at 1414 by **John Eaton** in Woking; BBC via Ascension Is 21.660 (Eng to W/E.S.Africa 1100-1700) SIO322 at 1425 by **Philip Rambaut** in Macclesfield and 25532 at 1610 by **David Edwardson** in Wallsend; BBC via Limassol, Cyprus 21.470 (Eng to E.Africa 1300-1700) 35444 at 1626 by **Tony Hall** in Freshwater Bay, IoW.

Daily variations in propagation also occur in the **17MHz (16m)** band. Before noon the occupants include UAER Dubai 17.830 (Eng to Far East 0530-0600), rated 25522 at 0538 in Wallsend; China Nat.Radio 17.605 (Chin [CNR-1] 0000-1230) 15331 at 0700 in Chester; R.Pakistan via Karachi 17.895 (Eng to Eu 0800-0845) SIO433 at 0821 by **Francis Hearne** in N.Bristol; R.Australia via Carnarvon 17.715 (Eng to Asia, Pacific 0200-0900) 33433 at 0835 by **Stan Evans** in Herstmonceux; R.Slovakia Int 17.550 (Eng to Australia 0830-0857) 34444 at 0850 in Bridgwater; DW via Rwanda 17.800 (Eng to W.Africa 0900-0950) 43333 at 0900 by **Thomas Williams** in Truro; BBC via Ascension Is 17.830 (Eng to W/C.Africa 0730-2100) SIO222 in Co.Fermanagh; BBC via Cyprus 17.705 (Eng to Eu 0900-1200) 22222 at 1000 by **Martin Dale** in Stockport; Africa No.1, Gabon 17.630 (Fr to W.Africa 0700-1600) 44444 at 1110 in Galashiels; Israel R, Jerusalem 17.545 (Heb [Home Sce rly] to W.Eur, N.America 0300-1900) SIO444 at 1115 in Macclesfield; Voice of Russia 17.775 (Eng [WS] 1056-?) 44334 at 1115 in Oadby.

After mid-day R.Jordan via Al Karanah 17.800 (Ar [Home Sce relay] 1300-1600) was 33222 at 1358 in Bradford; BBC via Cyprus 17.885 (Eng to E.Africa? 1400-1430) 45444 at 1405 by **Vera Brindley** in Woodhall Spa; RFI via Moyabi, Gabon 17.560 (Eng to M.East 1400-1500) 33333 at 1443 by **Chris Shorten** in Norwich; DW via Antigua, W.Indies 17.765

(Ger to S.America 1200-1700) SIO323 at 1535 in Woking; BBC via Antigua, W.Indies 17.840 (Eng to N/C.America 1400-1700) 54233 at 1621 in Thornton Heath; RFI via Allouis? 17.620 (Fr to Africa 1700-1900) was 43433 at 1820 in Kilkeel; VOA via Greenville 17.640 (Fr to Africa 1830-2030) 35444 at 1837 in Storrington; BBC via Ascension Is 17.830 (Eng to W/C.Africa 0730-2100) 33333 at 1920 by **Bernard Curtis** in Stalbridge; R.Nederlands via Bonaire 17.605 (Eng, Du to S/E.W.Africa 1830-2025) 45243 at 1951 in Newry; WYFR via Okeechobee, USA 17.555 (Eng to Eu 1800-2200?) 34333 at 2045 in Scalloway, Shetland; VOFC Taiwan via WYFR 17.750 (Sp, Ger, Eng to Eur, [Eng 2200-2300]) 34222 at 2200 by **Sheila Hughes** in Morden.

Reception in the **15MHz (19m)** band is often good despite varying conditions. During the morning R.Japan via Moyabi, Gabon 15.165 (Eng 0700-0800) was rated 24333 at 0753 in Middlesbrough; Monitor R.Int via KHBI Agingan Pt, N.Mariana Is 15.665 (Eng to E.Eu? 0800-0900) SIO333 at 0811 in N.Bristol; R.Pakistan, Islamabad 15.470 (Eng to Eu 0800-0848) 33333 at 0800 by **Julian Wood** in Elgin; BBC via Hong Kong 15.280 (Eng to Far East 0300-0900) 33222 at 0830 in Scalloway; R.Australia via Carnarvon 15.530 (Eng to Asia, Pacific 0600-0900) 22222 at 0840 in Truro; Voice of Malaysia, Kajang 15.295 (Eng, Bahasa, Chin to S.Asia 0555?-1230?) 22332 at 0900 in Bridgwater; BBC via Masirah Is, Oman 15.310 (Eng to S.Asia 0300-0915, 1000-1500) 25333 at 1005 in Newry; BBC via Limassol, Cyprus 15.575 (Eng to E.Eur, M.East, W.Asia 0730-1500) 45454 at 1056 in Woking; BBC via Antigua, W.Indies 15.220 (Eng to S/C.America 1100-1400) 24332 at 1100 in Galashiels; R.Australia via Darwin 15.530 (Eng to Asia, Pacific 1100-1300) SIO333 at 1100 in Co.Fermanagh.

In the afternoon R.Bras, Brazil

Medium Wave Chart

Freq (kHz)	Station	Country	Power (kW)	Listener	Freq (kHz)	Station	Country	Power (kW)	Listener	Freq (kHz)	Station	Country	Power (kW)	Listener
520	Hof-Saale (BR)	Germany	0.2	A*,D*	891	Huisberg	Netherlands	20	H*,N,O	1386	Bolshakovo	Russia	2500	H,N
531	Ain Beida	Algeria	600	C*,N*	900	Bmo(CRo2)	Czech Rep	25	H*	1395	Lushnje(Tirana)	Albania	1000	C*
531	Torshavn	Faeroe Is.	100	D,F	900	Milan	Italy	600	D*,M*,N*	1395	TWR via Lushnje	Albania	500	E,H
531	Leipzig	Germany	100	C,D*,H,N	900	COPE via ?	Spain	?	N*	1395	Logic?	Netherlands	?	B,D,H*,N*,O
531	RNES via ?	Spain	?	H*,N*	909	B'mans Pk(BBCS)	UK	140	L*,N,O,P*	1404	Brest	France	20	H*,O
531	Beromunster	Switzerland	7	D,N,O	909	M'side Edge(BBCS)	UK	200	B,D,J	1404	Komotini	Greece	100	N*
540	Wavre	Belgium	150/50	C,D,H*,J,N,O,P	918	Plesivec(Sloven nr)	Slovenia	600/100	C*,H*,N	1413	RNES via ?	Spain	?	D
540	Solt	Hungary	2000	N*	918	Madrid(R.Int)	Spain	20	N*,P*	1422	Heusweiler(DF)	Germany	1200/600	B,D,H,N,O
540	Sidi Berrour	Morocco	600	C*,N*	927	Wolvertem	Belgium	300	A,B,C,D,H,J,M*,N,O,P*	1422	Valmiera	Latvia	50	H*
540	Vitoria(EI)	Spain	10	H*,N*	927	Evora(RRE)	Portugal	1	N*	1431	Kopani	Ukraine	500	H
549	Las Tremblas	Algeria	600	N*	936	Bremen	Germany	100	H*,M,N*	1440	Manach(RTL)	Luxembourg	1200	B,D,G*,H*,K*,N*,O,Q*
549	Thurnau (DLF)	Germany	200	C,D,H,J,N,O	936	RNES via ?	Spain	?	N*	1440	Damman	Saudi Arabia	1600	H*
558	Espoo	Finland	100	H*,P	945	Toulouse	France	300	H*,N	1449	Squinzano	Italy	50	B*,N*
558	Rostock(NDR)	Germany	20	H*	954	Bmo (CRo2)	Czech Rep.	200	N	1449	Redmoss(BBC)	UK	2	B*,L*,N*
558	RNES via ?	Spain	?	B,H*,M*	954	Madrid(CI)	Spain	20	H*,N*	1467	Esfahan	Iran	200	N*
567	Berlin	Germany	100	H*,N*,P	963	Pori	Finland	600	D*,H*,J*	1467	Monte Carlo(TWR)	Monaco	1000/400	D*,H,N
567	Tullamore(RTE1)	Ireland (S)	500	A*,B,C,D,J,L,M,N,O,P	963	Tir Chonaill	Ireland (S)	10	M*,P*	1485	AFN via ?	Germany	1	N*
567	RNES via ?	Spain	?	N*	963	Tunis-Ojedaia	Tunisia	200	H*	1485	SER via ?	Spain	?	N*
576	Muhlacker(SDR)	Germany	500	D*,H*,N*,O	972	Hamburg(NDR)	Germany	300	D*,H*,N*,D	1485	Carlisle(BBC)	UK	1	F
576	Barcelona(RNES)	Spain	50	H*,N*	972	RNE1 via ?	Spain	?	N*	1494	Clermont-Ferrand	France	20	N,O
585	Paris(FIP)	France	8	N,O	981	Algeria	Algeria	600/300	H*,N*,D	1494	St.Petersburg	Russia	1000	C*,E*,H,M*,N*
585	Madrid(RNE1)	Spain	200	B,H*,N	981	Varna	Bulgaria	150	N*	1503	Stargard	Poland	300	N*
585	Dumfries(BBCScott)	UK	?	D,J,L*,N*	981	Megara	Greece	200	N	1503	RNES via ?	Spain	?	C*,N*
594	Frankfurt(HR)	Germany	1000/400	C,D*,H*,M,N,O	981	Trieste	Italy	10	N	1512	Wolvertem	Belgium	600	C*,E*,H*,J,N,O,Q*
594	Oujda-1	Morocco	100	H*,N*	990	Berlin	Germany	300	D*,H*,N*	1512	Tallin	Estonia	30	D*
594	Muge	Portugal	100	D,H*,N*	990	R.Bilbao(SER)	Spain	10	H*,N*	1512	Jeddah	Saudi Arabia	1000	H
603	Lyon	France	300	M,N,P	990	Redmoss(BBC)	UK	1	H*,N	1521	Kosice(Cizatica)	Slovakia	600	H
603	Berlin (Lux)	Germany	10	D	999	Schwenin(RIAS)	Germany	20	H*	1521	Duba	Saudi Arabia	2000	M*
603	Sevilla(RNE5)	Spain	50	H*,N*	999	Iorino	Italy	20	N	1530	Vatican R	Italy	150/450	C*,E*,H,N
603	Newcastle(BBC)	UK	2	B,J,L	999	Madrid(CDPE)	Spain	50	H*,N*	1539	Mainflingen?	Germany	700	D,N,O
612	Athlone(RTE2)	Ireland (S)	100	B,D,J,L*,M,N,O,P	1008	SER via ?	Canaries/Sp	?	N*	1539	SER via ?	Spain	?	N*
612	Sebaa Aioun	Morocco	300	C*,N*	1008	Fievo(Hiv-5)	Holland	400	A,B,D,H,N,O	1557	Nice	France	300	N
612	RNE1 via ?	Spain	10	H*,N*	1017	Rheinsender(SWF)	Germany	600	D*,H*,N*,P*	1566	Stax	Tunisia	1200	H*
621	Wavre	Belgium	80	B,D,H*,J,N,O	1017	RNES via ?	Spain	?	H*,N*	1575	Genova	Italy	500	N*
621	RNE1 via ?	Spain	10	N*	1026	SER via ?	Spain	?	H*,N*	1575	SER via ?	Spain	5	C*,N*
621	Barcelona(OCR)	Spain	50	H*,P	1035	Lisbon(Prog3)	Portugal	120	H*	1584	SER via ?	Spain	2	C*,N*
630	Dannenberg(NDR)	Germany	100	D*,P	1044	Dresden(MDR)	Germany	250	A,D,H*,N*	1583	Holzkirchen(VOA)	Germany	1500	H*,N*
630	Vigra	Norway	100	H*,N*	1044	Sebaa-Aioun	Morocco	300	H*	1602	SER via ?	Spain	?	N*
630	Tunis-Djedaia	Tunisia	600	H*,N*	1044	SER via ?	Spain	?	N*	1602	Vitoria(EI)	Spain	10	E*
639	Praha(Liblice)	Czech	1500	H*,N,D	1053	Zargozal(COPE)	Spain	10	H*,N*	1611	Vatican R	Italy	15	D,N
639	RNE1 via ?	Spain	?	D*,H*,N	1053	Talk R UK via ?	UK	?	B,D,L*,M,N,O					
648	RNE1 via ?	Spain	10	H*,N*	1062	Kalundborg	Denmark	250	H,N					
648	Drifordness(BBC)	UK	500	B,D*,L,N,D,P	1062	R.Uho via ?	Italy	?	N					
657	Neubrandenburg(NDR)	Germany	250	D*,H*,N*	1071	R.France via ?	France	?	H*,M,N,O					
657	Napoli	Italy	120	C,N	1071	Riga	Latvia	50	H*					
657	Madrid(RNE5)	Spain	20	H*,N*	1071	Bilbao(EI)	Spain	5	N*					
657	Wrexham(BBCWales)	UK	?	B,D,J,L,M,N,P	1071	Talk Radio UK via ?	UK	?	B,D,L*,N*,P*					
656	Messkirch(Rohrd(SWF)	Germany	300/180	D,H*,N*	1080	Katowice	Poland	1500	H,N					
666	Sitkumeh(R.Vilnius)	Lithuania	500	H*	1080	SER via ?	Spain	?	H*,N*					
666	Lisboa	Portugal	135	H*,N*	1089	Krasnodar	Russia	300	H					
666	Barcelona(COPE)	Spain	10	N	1089	Talk Radio UK via ?	UK	?	B,D,E*,L*,M,N,D					
675	Marseille	France	600	H*,N*	1098	Nitra(Jank)	Slovakia	1500	A,D*,H*,N,O					
675	Logic(R10 Gold)	Holland	120	B,D,E,H*,J,N,O,P	1098	RNES via ?	Spain	?	H*,N*					
684	Sevilla(RNE1)	Spain	500	D,H*,N	1107	AFN via ?	Germany	10	H*,N*					
684	Awala(Beograd-1)	Yugoslavia	2000	H*,N	1107	RNES via ?	Spain	?	H*,N*					
693	Tortosa(RNE1)	Spain	2	N	1107	Talk R UK via ?	UK	?	D,N,O					
693	Droitwich(BBCS)	UK	150	B,D,J,L,N,O,P	1116	Bari	Italy	150	N					
702	Flensburg(NDR)	Germany	5	D,N*	1116	Pontevedra(SER)	Spain	5	N*					
702	TWR via Monte Carlo	Monaco	300	N*	1125	La Louviere	Belgium	20	H*,N*					
702	Slovensko 1 via ?	Slovak Rep.	?	N	1125	Deanovic	Croatia	100	N*					
702	Zamorla(RNE1)	Spain	10	N*	1125	RNES via ?	Spain	?	H*,N*					
711	Rennes 1	France	300	B,H*,J,M,N,O	1125	Llandindod Wells	UK	1	F					
711	Heidelberg	Germany	5	D,N*	1134	COPE via ?	Spain	2	A,H,N*					
711	Murcia(COPE)	Spain	5	N	1134	Zadar(Croatian R)	Yugoslavia	600/1200	H,N*					
720	Lisnagarvey(BBC4)	Ireland (N)	10	B,J,L*	1143	Stuttgart(ARN)	Germany	10	H*,N*					
720	Norte	Portugal	100	H*	1143	COPE via ?	Spain	?	H*,N*					
720	Lots Rd(Ldn(BBC4)	UK	0.5	D,M,N,O	1161	Strasbourg(Fint)	France	200	H*,N*,P*					
729	Puttbus(Bergen(NDR)	Germany	10	D	1179	SER via ?	Spain	?	N*					
729	Corke(RTE1)	Ireland (S)	10	D,H*,M*,N*,O,P*	1179	Solvesborg	Sweden	600	A,H,N,O					
729	RNE1 via ?	Spain	?	C,D*,H*,N*	1188	Kuurne	Belgium	5	H*,N*					
738	Paris	France	4	D	1188	Reichenbach(MDR)	Germany	5	D*,N*					
738	Poznan	Poland	300	H*,N,O	1188	Szolnok	Hungary	135	H*					
738	Barcelona(RNE1)	Spain	500	D*,H*,N	1197	Munich(VOA)	Germany	300	H*					
747	Flevo(HiN2)	Holland	400	B,C,D,H*,J,N,O,P*	1197	Virgin via ?	UK	?	B,D,L*,N,O,P*					
747	Cadiz(RNE5)	Spain	10	H*,N	1206	Bordeaux	France	100	H,N					
756	Braunschweig(DLF)	Germany	800/200	C,D,H*,N*,O	1206	Wroclaw	Poland	200	E*,H*,N*					
756	Bilbao(EI)	Spain	5	H*	1215	Virgin via ?	UK	?	B,D,L*,M,N,O					
756	Redruth(BBC)	UK	2	H*,L*,N	1224	Lieystad	Holland	25	A,D*,H,N,O					
765	Sottens	Switzerland	500	D,H*,N*,P*	1233	Liege	Belgium	5	H*					
774	Enniskillen(BBC)	Ireland (N)	1	H*,M*,N*,P*	1233	Virgin via ?	UK	?	B,D,L*,N,O					
774	RNE1 via ?	Spain	?	C,H*,N	1242	Marseille	France	150	H,N					
783	Burg	Germany	1000	C,D,H*,N*,O	1242	Virgin via ?	UK	?	B,D,L*,N*					
783	Miramar(R.Porto)	Portugal	100	H*	1251	Marzoli	Hungary	500	E*,H,N					
783	Zagreb-Buje	Yugoslavia	10	C*	1251	Huisberg	Netherlands	10	D*,E,H					
792	Limoges	France	300	H*,M,N,O,P*	1251	R.Renascence via ?	Portugal	10	N					
792	Lingen(NDR)	Germany	5	H*,N*	1260	SER via ?	Spain	?	H					
792	Sevilla(SER)	Spain	20	H*,N*	1260	Guildford(V)	UK	0.5	L*,N,O					
801	Munich-Ismaning	Germany	300	D*,H*,M*,N*	1269	Neumunster(DF)	Germany	600	A,D*,H,N					
801	RNE1 via ?	Spain	?	H*,N*	1269	COPE via ?	Spain	?	N*					
810	Madrid(SER)	Spain	20	H*,N*	1278	Strasbourg	France	300	N,O					
810	Westerglen(BBCScott)	UK	100	B,D,E,J,L,M,N*	1278	Dublin(Cork(RTE2)	Ireland (S)	10	B,D,E*,L*,M,N*,O					
819	Batra	Egypt	450	N	1287	RFE via ?	Czech Rep.	400	H,N					
819	Toulouse	France	50	H*	1287	Lerida(SER)	Spain	10	H*,N*					
819	Trieste	Italy	25	N	1296	Valencia(COPE)	Spain	10	H*,N*					
819	Rabat	Morocco	25	N*	1296	Orfordness(BBC)	UK	500	B,M,N					
819	Warsaw	Poland	300	H*,P*	1305	Rzeszow	Poland	100	H*					
828	Hannover(NDR)	Germany	100/5	H*,N*	1305	RNES via ?	Spain	?	H*,N*					
828	Rotterdam	Holland	5	B,H*,N,O	1314	Kwitsoy	Norway	1200	D,H*,N*					
828	Barcelona(SER)	Spain	50	C	1314	RNES via ?	Spain	?	N*					
837	Nancy	France	200	H*,M,N,O	1323	Zyri(BBC)	Cyprus	200	N*					
837	COPE via ?	Spain	?	C,H*,N*	1323	W'brunn (V.Russia)	Germany	1000/150	D,E,H,N					
846	Rome	Italy	540	H*,N*	1332	Rome	Italy	300	H*,N*					
855	Berlin	Germany	100	D*,H*,N*	1341	Lakihegy	Hungary	300	H*					
855	RNE1 via ?	Spain	?	C,H*,N*	1341	Lisnagarvey(BBC)	Ireland (N)	100	B,D,E*,L*,N*,O					
864	Santah	Egypt	500	N	1341	Tarasa(SER)	Spain	2	N*					
864	Paris	France	300	D,H,J,N,O	1350	Nancy/Nice	France	100	D,E*,H,N*,O					
864	Socuellamos(RNE1)	Spain	2	N	1350	Cesvaine/Kuldiga	Latvia	50	H*					
873	Frankfurt(ARN)	Germany	150	D,H*,N*,P*	1359	Arganda (RNE-FS)	Spain	600	H*,N*					
873	Zaragoza(SER)	Spain	20	H*,N*	1368	Foxdale(Mann R)	IOI	20	D,E*,F,M,N*					
882	COPE via ?	Spain	?	E*,H*,N*	1377	Lille	France	300	B,D,E,H*,N,O					
882	Washford(BBCWales)	UK	100	B,D,E*,J,L*,M,N,O,P*	1377	Luxor	Ukraine	50	N*					
891	Algiers	Algeria	600/300	C,H*,N*	1386		Egypt	10	N*					

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

Listeners:
 (A) Vera Brindley, Woodhall Spa.
 (B) Noel Carrington, Sutton-in-Ashfield.
 (C) John

Local Radio Chart

Freq (kHz)	Station	ILR	e.m.r.p (kW)	Listener	Freq (kHz)	Station	ILR	e.m.r.p (kW)	Listener
558	Spectrum, London	I	0.80	A,C,K,L,M,N,Q,R	1161	Southern Counties R	B	1.00	A,M,Q,R
585	R.Solway	B	2.00	D,I*,L,N	1161	Tay AM, Dundee	I	1.40	I,J,O*
603	Boss 603, Cheltenham	I	0.10	D,F,L,N	1170	Amber SGR, Ipswich	I	0.28	A,J*,O*
603	Invicta SG, Little Borne	I	0.10	A,C,D,M,Q,R	1170	GNR, Stockton	I	0.32	H*,I,J*,R
630	R.Bedfordshire(3CR)	B	0.20	A,C,F,L,M,N,Q,R,S*	1170	SCR, Portsmouth	I	0.12	R
630	R.Cornwall	B	2.00	D,P*	1170	Signal G, Stoke-on-T	I	-0.20	C,F,I,J,L
657	R.Chwyd	B	2.00	C,D,I*,L,N,P*,Q	1170	Swansea Snd, Swansea	I	0.58	D
657	R.Cornwall	B	0.50	D	1170	1170AM, High Wycombe	I	0.25	M,O
666	Gemini AM, Exeter	I	0.34	D,I,Q,R	1242	Invicta SG, Maidstone	I	0.32	A,M,Q,R,S*
666	R.York	B	0.80	C,D,L,N	1242	IoW Radio, Wootton	I	0.50	R
729	BBC Essex	B	0.20	A,C,M,N,Q,R,S	1251	Amber SGR, Bury StEd	I	0.76	A,C,H,O*,Q,R
738	Hereford/Worcester	B	0.037	C,D,F,L,N,Q,S*	1260	Brunel CG, Bristol	I	1.60	I,O*
756	R.Cumbria	B	1.00	D,I,J	1260	Marcher G, Wrexham	I	0.64	F,I,L
756	R.Maldwyn, Powys	I	0.63	C,F,I,L,N,Q	1260	SabrasSnd, Leicester	I	0.29	C,S*
765	BBC Essex	B	0.50	A,C,F,L,M,N,Q,R,S*	1260	R.York	B	0.50	D,O*
774	R.Kent	B	0.70	A,M,Q,R,S*	1278	Gt.Yks G, Bradford	I	0.43	C,L
774	R.Leeds	B	0.50	C,D,F,I,L,N	1296	Radio XL, Birmingham	I	5.00	A,C,F,G,I,J*,L,O*,Q,R,S*
774	3 Counties SG, Glos	I	0.14	D,L	1305	Gt.Yks G, Barnsley	I	0.15	C,D,F,I,J*,L
792	Chiltern SG, Bedford	I	0.27	A,C,F,L,M,N,O*,Q,R,S*	1305	Premier via ?	I	0.50	A,I,J*,L,O*,Q,R
792	R.Foye	B	1.00	I	1305	Touch AM, Newport	I	0.20	J*
801	R.Devon & Dorset	B	2.00	D,F,L,M,N,R	1323	S.Coast R, Brighton	I	0.50	A,L,M,O*,Q,R
828	Chiltern SG, Luton	I	0.20	M,O*	1323	SomersetSnd, Bristol	I	0.63	D,I,O*
828	Magic 828, Leeds	I	0.12	C,F,I	1332	Premier, Battersea	I	1.00	A,I,J*,M,O*,Q,R,S*
828	R.WM	B	0.20	L,N	1332	WGMSS CG, Peterboro	I	0.60	A,C,D,I,J*,L,O*
828	ZCR CG, Bournemouth	I	0.27	R	1332	Wiltshire Sound	B	0.30	O*
837	R.Cumbria/Furness	B	1.50	D,F,I,L,N	1359	BreezeAM, Chelmsford	I	0.28	A,C,J*,M,O*,Q,R
837	R.Leicester	B	0.45	A,C,H,I,L,N,Q,S*	1359	Merica CG, Coventry	I	0.27	G*,L,S*
855	R.Devon & Dorset	B	1.00	D,R	1359	R.Solent	B	0.85	R
855	R.Lancashire	B	1.50	D,F,I,N	1368	R.Lincolnshire	B	2.00	A,C,Q,S*
855	R.Norfolk	B	1.50	A,C,H,Q,R	1368	Southern Counties R	B	0.50	A,H*,M,Q,R
855	Sunshine 855, Ludlow	I	0.15	C,I,L,Q	1413	Premier via ?	I	0.50	A,I,J*,L,M,O*,Q,R
873	R.Norfolk	B	0.30	A,C,H,K,L,M,N,Q,R	1431	Breeze AM, Southend	I	0.35	A,J*,K*,M,O*,Q,R
936	Brunel CG, W.Wilts	I	0.18	D,L,M,N,Q,R	1431	M CG, Reading	I	0.14	I,Q,R
945	Derby (Gem AM)	I	0.20	A,C,D,F,H,I,L,N,P,S*	1449	R.Peterboro/Cambis	B	0.15	A,C,D,L,M,O*,Q
954	Gemini AM, Torquay	I	0.32	O*,Q,R	1458	R.Cumbria	B	0.50	D,I,J
954	Wyvern, Hereford	I	0.16	L,N,O*	1458	R.Devon & Dorset	B	2.00	D
963	Viva, Southall	I	1.00	A,L,M,N,Q,R	1458	Fortune, Manchester	I	5.00	F,I,J,L
990	R.Aberdeen	B	1.00	I,P	1458	R.Newcastle	B	2.00	I,J
990	R.Devon & Dorset	B	1.00	D,M,Q*,R	1458	Sunrise, London	I	50.00	A,J*,M,O*,P,Q,R,S*
990	Gt.Yks G, Doncaster	I	0.25	A,C	1458	Radio WM	B	5.00	C,L
990	WABC, Wolverhampton	I	0.09	L,N,S*	1476	CountySnd, Guildford	I	0.50	A,I,J*,L,M,O*,Q,R
999	Gem AM, Nottingham	I	0.25	A,C,I,Q,S*	1485	R.Humberside (Hull)	B	1.00	A,H*,J
999	Red Rose G, Preston	I	0.80	D,F,I*,O*	1485	R.Merseyside	B	1.20	D,F,I,L,P,Q
999	R.Solent	B	1.00	A,M,Q,R	1485	Southern Counties R	B	1.00	A,M,Q,R
1017	WABC, Shrewsbury	I	0.70	C,D,F,O*,Q,S*	1503	R.Stoke-on-Trent	B	1.00	C,D,F,H*,I,J,L,O*,Q
1026	R.Cambridgeshire	B	0.50	A,C,M,Q,R	1521	R.1521 Craigavon, NI	I	?	D,E,I,L
1026	Downtown, Belfast	I	1.70	D,F,I,O*,P	1521	MercuryXtra, Reigate	I	0.64	A,H*,I,J*,L,M,O*,Q,R
1026	R.Jersey	B	1.00	R	1530	R.Essex	B	0.15	A,M,Q,R
1035	Country 1035, London	I	1.00	A,F*,I,J*,L,M,O*,Q,R	1530	Gt.Yks G, Huddersf'd	I	0.74	C,D,F,I,J*,L,O*
1035	R.Sheffield	B	1.00	C,D,F*	1530	Wyvern, Worcester	I	0.52	I,L,O*,Q
1035	N.Sound, Aberdeen	I	0.78	I,J,O*	1548	R.Bristol	B	5.00	T
1035	W.Sound, Ayr	I	0.32	I	1548	Capital G, London	I	97.50	A,B*,C,M,O*,Q,R,S*
1107	Moray Fth, Inverness	I	1.50	I,P	1548	City G, Liverpool	I	4.40	D,F,I,L
1116	R.Derby	B	1.20	A,C,D,F,I,L,O*,Q	1548	Gt.Yks G, Sheffield	I	0.74	C,L
1116	R.Guernsey	B	0.50	D,Q,R	1548	Max AM, Edinburgh	I	2.20	I,J
1152	Amber, Norwich	I	0.83	A,J*,O*	1557	R.Lancashire	B	0.25	C,D,I,L,O*
1152	Clyde 2, Glasgow	I	3.06	I*,J	1557	Mellow, Olacron	I	0.125	A,I*,M,Q,R,S*
1152	GNR, Newcastle	I	1.80	I	1557	Northants SG	I	0.76	G*,I,J*,O*
1152	Lon.Newstalk, London	I	23.50	A,H*,M,Q,R,S*	1557	St Coast R, Solon	I	0.50	B*,M,Q,R
1152	Pic'y G, Manchester	I	1.50	D,F,L	1584	London Turkish R	I	?	A,M,Q,R
1152	Xtra-AM, Birmingham	I	3.00	B*,C,G*,L	1584	R.Nottingham	B	1.00	C,F,H*,I,R,S*
1161	R.Bedfordshire(3CR)	B	0.10	A,M,Q	1584	R.Shropshire	B	0.50	D,I
1161	Brunel CG, Swindon	I	0.16	D,L	1584	Tay, Perth	I	0.21	I,J,L,O*
1161	Gt.Yks, Hull	I	0.35	C,L	1602	R.Kent	B	0.25	A,B*,L,M,O*,Q,R

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

Listeners:

- (A) Paul Bowery, Burnham-on-Crouch.
- (B) Tez Burke, Bradford.
- (C) Noel Carrington, Sutton-in-Ashfield.
- (D) Robert Connolly, Kilkeel.
- (E) Paul Crankshaw, Troon.
- (F) Ted Harris, Manchester.
- (G) Francis Hearne, while in Leamington Spa.
- (H) Sheila Hughes, Morden.
- (I) Brian Keyte, while in Invergarry.
- (J) Ross Lockley, Galashiels.
- (K) Roy Patrick, Derby.
- (L) Martin Price, Shrewsbury.
- (M) Martin Price, while in Orpington.
- (N) Philip Rambaut, Macclesfield.
- (O) Kristjan Saag, Hono, Sweden.
- (P) Tom Smyth, Co.Fermanagh.
- (Q) Tony Stickells, Thornton Heath.
- (R) Tony Stickells, while in Hassocks.
- (S) Norman Thompson, Oadby.
- (T) Thomas Williams, Truro.

DXers:

- (A) Robert Connolly, Kilkeel.
- (B) Paul Crankshaw, Troon.
- (C) John Slater, Scalloway.
- (D) Tony Stickells, Thornton Heath.

Transatlantic DX Chart

Freq (kHz)	Station	Location	Time (UTC)	DXer
USA				
850	WEEI	Boston, MA	0034	D
880	WCBS	New York, NY	0019	B
1010	WINS	New York, NY	0005	A,B
1130	WGBR	New York, NY	2337	B,D
1500	WTOP	Washington, DC	2345	B,D
1510	WNRB	Boston, MA	0219	B,C,D
1520	WWKB	Buffalo, NY	0547	B,C
1540	WDDC	Albany, NY	0947	B
1560	WQEW	New York, NY	0242	B,D
CANADA				
580	CJFX	Antigonish, NS	0440	B,C
590	VOCM	St.John's, NF	2249	B,C
640	CBN	St.John's, NF	0640	B
700	CHSJ	St.John, NB	0539	B
710	CKVO	Clarendville, NF	0400	C
740	CHCM	Marystown, NF	2328	B
780	CFDR	Dartmouth, NS	2324	B
820	CHAM	Hamilton, ON	0140	A
920	CJCH	Halifax, NS	2235	B,C,D
930	CFBC	St.John, NB	0015	B
930	CJYQ	St.John's, NF	0155	A,B,C,D
950	CHER	Sydney, NS	2221	B
1000	CKBW	Bridgewater, NS	0120	B
1070	CBA	Moncton, NB	2335	B
1140	CBI	Sydney, NS	2340	B
1375	RFO	St.Pierre/Miquelon	2240	B,C
1400	CBG	Gander, NF	0400	C
SOUTH AMERICA				
930	R. Monte Carlo	Montevideo, Uruguay	2305	B
1470	R.Vibracion	Carupano, Venezuela	0011	B
1500	R.Dos Mill (2000)	Cumana, Venezuela	2256	B

via Sottens? 13.685 (It, Eng, Fr, Ger, Port to Australia, S.Pacific 0830-1100) was 44444 at 0832 in Truro; R.Austria Int via Moosbrunn 13.730 (Ger, Eng, Fr, Sp to Eu 0400-1800) 45544 at 0832 by **Ted Harris** in Manchester; R.Korea via Kimjae 13.670 (Eng to Eu 0800-0900) 22222 at 0835 in Appleby; R.Australia via Darwin 13.605 (Eng, Chin to Asia 0900-1200?) 35323 at 0900 in Newry; UAE/R, Dubai 13.675 (Ar [Eng 1030] to Eu) 43223 at 1120 in Oadby.

During the afternoon Israel R, Jerusalem 13.750 (Heb [Home Sce relay] to W.Eur, N.America 0300-1900) was 34443 at 1201 in Bradford; ISBS Reykjavik 13.860 (Ic [u.s.b.+ p.c] to Eu 1215-1300) 55445 at 1230 by **Peter Pollard** in Rugby; WYFR via Okeechobee 13.695 (Eng to N.America 1300-1400) 33222 at 1358 in Thornton Heath; R.Kuwait via Kabd 13.620 (Ar to Eu, N.America 0930-1605) 45554 at 1516 in Woking; R.Pyongyang, Korea 13.785 (Eng to Eur, M.East, Africa 1500-1550) 43343 at 1518 in Norwich; WWCR Nashville, USA 13.845 (Eng to E.UA 1400-0100) 25332 at 1545 in Barton-upon-Humber; UAER, Dubai 13.675 (Eng to Eu 1600-1640) 45433 at 1600 in Middlesbrough; R.Denmark via RNI 13.800 (Da [Eng Sun] to Eu? 1630-1700) 55555 at 1630 by **Bill Griffith** while in Skopje, Macedonia; AVR via Slovakia 13.590 (Eng to Africa 1600-1700) 44444 at 1645 in Scalloway.

Later R.Vlaanderen Int, Belgium 13.645 (Eng to Africa? 1800-1830) was 24232 at 1819 in Woodhall Spa; WHRI South Bend, USA 13.760 (Eng to E.UA, Eu 1500-2157) 44333 at 1835 in Kilkeel; VOA via Selebi-Phikwe, Botswana 13.710 (Eng to Africa 1630-?) 15331 at 1840 in Chester; RCI via Sackville 13.650 (Eng 2000-2130, Fr 2130-? to Eu) 54444 at 2030 in NW.London; WEWN Birmingham, USA 13.695 (Eng to Eu 2000-2157) 34232 at 2039 in Bridgwater; Monitor R.Int via WSHB 13.770 (Eng to Eu 2000-2157?) 43333 at 2155 in Stalbridge.

The **11MHz (25m)** band has much to offer the listener. Noted before noon were HCJB Quito 11.615 (Eng to Eu 0700-0830), rated SIO333 at 0817 in N.Bristol; R.Finland via Pori 11.755 (Fin, Sw, Russ, Fr, Ger to Eu 0700-2030?) 44444 at 0830 in Truro; Slovak R.Int, via Velke Kostolany 11.990 (Eng to Australia 0830-0857) 45544 at 0830 in Galashiels; R.Korea Int via Sackville, Canada 11.715 (Eng to S.America 1030-1100) 42233 at 1030 in Appleby; REE via Noblejas 12.035 (Sp to Eu 0900-1900) 45545 at 1100 in Oadby.

During the afternoon Polish R, Warsaw 11.815 (Eng to Eu 1200-1255) was 34433 at 1223 in Manchester; R.Romania Int, Bucharest 11.940 (Eng to Eu 1300-1400) 54444 at 1336 in Norwich; WYFR via VOFC Taipei, Taiwan 11.550 Eng to India 1302-1502) SIO322 at 1355 in Macclesfield; R.Australia via Carnarvon 11.660 (Eng to S.Asia 1430-2057?) 43333 at 1439 in Woodhall Spa; R.Pakistan, Islamabad 11.570 (Eng to M.East, E.Africa 1600-1630) 32223 at 1611 in Stockport; R.Pakistan, Islamabad 11.570 (Eng to Eu 1700-1730) 42222 at 1700 in Plymouth.

Later, R.Kuwait via Kabd 11.990 (Eng to Eu, N.America 1800-2057) was 54544 at 1901 in Middlesbrough; R.Nederlands via Flevo 11.655 (Eng to Africa 1730-2125) 32441 at 2000 in Chester; R.Damascus via Adra 12.085 (Eng to Eu 2005-2105) SIO433 at 2005 in Co.Fermanagh; R.Globo, Rio de Janeiro, Brazil 11.805 (Port 0900-0330) 22222 at 2015 in Scalloway; BBC via Wofferton, UK 12.095 (Eng to Eu, N/W.Africa 1000-2230) 55555 at 2110 in Skopje, Macedonia; WWCR Nashville, USA 12.160 (Eng to Eu? 1500-2300) 54334 at 2115 in Rugby; AIR via Bangalore 11.620 (Hi, Eng to Eu 1745-2230) 43333 at 2105 in Stalbridge; RCI via Sackville 11.690 (Eng 2000-2130, Fr 2130-? to Eu, M.East, Africa) 54544 at 2140 in Herstmonceux; BBC via Ascension Is 11.750 (Eng to S.America 2000-0200) 43434 at 2227 in Penmaenmawr.

Radio Australia's broadcasts in the **9MHz (31m)** band often reach the UK well although they are intended for other areas. Two come from their Shepparton station: 9.860 (Eng to Pacific, Asia 0600-1200), noted as 44533 at 0700 in Herstmonceux; 9.710 (Eng to Pacific areas 0730-0900), 35533 at 0820 in Wallsend. Also received well in this band during the morning are R.Nederlands via Bonaire, Ned.Antilles 9.720 (Eng to Pacific 0730-1025), rated 44444 at 0820 in Appleby; SRI via Fr.Guiana 9.885 (It, Eng, Fr, Ger, Port to Australia, S.Pacific 0830-1100) 33223 at 0927 in Stockport; R.Prague via Litomyse 9.505 (Eng to Eu 1030-1057) 44444 at 1030 in Morden; R.Nederlands via Nauen 9.650 (Eng to Eu 1030-1225) 55545 at 1130 in Newry.

After mid-day China R.Int, Beijing 9.785 (Eng to S.Asia

Tropical Bands Chart

Freq (MHz)	Station	Country	UTC	DXer	Freq (MHz)	Station	Country	UTC	DXer
2.310	ABC Alice Springs	Australia	1814	G	4.820	AIR Calcutta	India	1720	G,O
2.325	ABC Tennant Creek	Australia	1815	G	4.820	Xizang, Lhasa	Tibet	2311	C,E
2.485	ABC Katherine	Australia	1857	G	4.825	R Cancac Nova	Brazil	0005	O
3.200	TWR Manzini	Swaziland	1853	G	4.828	ZBC R-4	Zimbabwe	2034	G,K,O
3.220	CPBS 1, Beijing	China	2020	G,K	4.830	R.Botswana, Gaborone	Botswana	2040	A,G,K,O
3.220	Channel Africa	S.Africa	0255	J,O	4.830	R.Tachira	Venezuela	2314	A,B,C,E,F,O
3.220	R.Kara, Lome	Togo	2042	K,O	4.832	R.Rejo	Costa Rica	0504	F,O
3.223	AIR Simla	India	1643	G	4.835	RTM Bamako	Mali	2044	A,B,C,E,I,J,K,L,O
3.230	R.Sof de Los Andes	Peru	2153	E	4.840	Heilongjiang, Harbin	China	2211	B
3.230	SABC Meyerton	S.Africa	1900	A,C,G,J	4.840	AIR Bombay	India	1603	B,G,K
3.240	TWR Shona	Swaziland	2042	C,G,K	4.840	R.Andahuyas	Peru	2355	C
3.245	AIR Lucknow	India	1646	G	4.845	RTM Kuala Lumpur	Malaysia	1634	G
3.250	R.Pyongyang	N.Korea	1815	G	4.845	R.Mauritania	Mauritania	2115	A,B,C,J,K,O
3.255	BBC via Maseru	Lesotho	2043	A,F,G,K,O	4.850	R.Yaounde	Cameroon	2118	B,C,J
3.270	SWABC 1, Namibia	S.W.Africa	2018	A,C,E,F,G,J,K	4.850	AIR Kohima	India	1520	G
3.290	Namibian BC, Windhoek	S.W.Africa	2130	A,C,E,F,G,J	4.860	AIR Kingsway(Feeder)	India	1812	G,K,O
3.300	R.Cultural	Guatemala	0121	F,J	4.865	PBS Lanzhou	China	2205	A,B,C,F,G,I,O
3.306	ZBC Prog 2	Zimbabwe	2044	A,C,F,G,K,O	4.865	L.V. del Cinaruco	Colombia	0131	B
3.315	AIR Bhopal	India	1649	G	4.870	R.Cotonou	Benin	2034	A,B,J,K,O
3.316	SLBS Goderich	Sierra Leone	2017	A,C,F,G,K,O	4.875	R.Roraima, Boa Vista	Brazil	2340	G
3.320	Pyongyang	N.Korea	1801	G	4.879	R.Bangladesh	Bangladesh	1604	G
3.320	R.S.Africa	S.Africa	2044	K	4.880	AIR Lucknow	India	0109	B
3.320	SABC Meyerton	S.Africa	1910	B,C,G	4.885	R.Clube do Para	Brazil	2328	A,C,F,J,L
3.325	FRCN Lagos	Nigeria	2050	A,I,J,K,O	4.885	R.Difusora Acreana	Brazil	2350	C
3.335	TWR	Swaziland	1925	C	4.885	KBC East Sce Nairobi	Kenya	1901	A,G,K
3.335	CBS Taipei	Taiwan	2020	G,K,O	4.890	R.Port Moresby	New Guinea	2026	G
3.338	R.Maputo	Mozambique	1915	C	4.895	Voz del Rio Arauca	Colombia	0030	A,C,O
3.340	R.Uganda, Kampala	Uganda	2052	A,G,J,K,O	4.895	AIR Kuruong	India	1655	G
3.345	AIR Jaipur	India	0029	J	4.895	Pakistan BC	Pakistan	1812	K
3.345	AIR Jammu	India	1655	G	4.900	SLBC Colombo	Sri Lanka	1812	G,K
3.345	Channel Africa	S.Africa	1937	G	4.905	R.Nat.N'djamena	Chad	2055	A,B,C,J,K,O
3.358	R.Botswana	Gaborone	2046	G,K,O	4.905	R. La Oroya	Peru	0055	C
3.365	GBC R-2	Ghana	2046	A,B,C,E,I,J,K,O	4.915	GBC-1, Accra	Ghana	2037	A,B,C,F,I,J,K,M,O
3.365	AIR Delhi	India	1702	G	4.925	R.S.Miguel,Riberaita	Bolivia	0040	A,C
3.375	R.Nacional S.Gabriel	Brazil	0400	C,O	4.931	R.Internacional	Honduras	2355	C
3.377	R.Nacional, Mulenvos	Angola	2046	G,K	4.935	KBC Gen Sce Nairobi	Kenya	1908	G,K,O
3.380	NBC Blantyre	Malawi	2047	A,C,G,K,O	4.940	AIR Guwahati	India	1650	G
3.390	BBC via Meyerton	S.Africa	2031	G	4.940	R.Abidjan	Ivory Coast	2215	B,E
3.395	BBC via Kranji	Singapore	2058	C,E,G,J	4.945	R.Progreso	Colombia	0101	C,O
3.950	Qinghai PBS, Xining	China	2234	F,F,I	4.950	R.Nacional, Mulenvos	Angola	1909	G,O
3.950	R.France Int	France	2105	J	4.950	AIR Jammu	India	1724	G
3.955	BBC via Skelton	England	1830	D,F,J,M	4.950	R.Madre de Dios	Peru	0025	C
3.955	R.Budapest	Hungary	2025	B,C,J	4.955	R.Marajera, Belem	Brazil	0128	J
3.960	Xinjiang PBS, Urumqi	China	1638	G	4.955	R.Nac. de Colombia	Colombia	0030	A,B,C,O
3.965	R.FI Paris	France	2010	B,C,E,I,J,P	4.965	R.Alvorada	Brazil	0025	C
3.975	R.Budapest	Hungary	2015	C,E,H,I,J,M	4.965	Christian Voice	Zambia	1914	G,K,O
3.980	Nexus, Milan	Italy	2000	J	4.970	PBS Xinjiang	China	1617	G,G
3.985	Nexus, Milan	Italy	1958	B,I,J	4.980	PBS Xinjiang, Urumqi	China	1612	G
3.985	China R via SRI	Switzerland	2105	B,C,D,J,Q	4.980	Ecos del Torbes	Venezuela	2301	A,C,I,J,L,O
3.985	SRI Beromunster	Switzerland	1915	C,O	4.985	R.Brazil Central	Brazil	0010	A,C,O
3.990	Xinjiang BS, Urumqi	China	1643	G	4.990	Hunan 1, Changsha	China	2130	B
3.995	DW via Julich	Germany	2100	B,C,E,J,R	4.990	AIR Ext.Service	India	0004	J,O
4.005	Vatican R.	Italy	2030	B,G,H,N	4.990	FRCN Lagos	Nigeria	2105	A,B,C,J,O
4.330	Xinjiang BS, Urumqi	China	1640	G	4.990	R.Ancash, Huaraz	Peru	0117	B
4.460	CPBS 1, Beijing	China	2217	E,G	5.005	R.Nacional, Beta	Eq Guinea	2030	B,G
4.500	Xinjiang BS, Urumqi	China	1635	G	5.005	R.Nepal, Kathmandu	Nepal	1703	G,G
4.735	Xinjiang, Urumqi	China	1612	A,C,G,J,O	5.009	R.TV Malagasy	Madagascar	1725	G
4.750	Xizang BS, Lhasa	Tibet	2233	C,E	5.010	R.Garoua	Cameroon	1855	A,B,G,K,O
4.755	R.Educ. CP Grande	Brazil	0033	J,K	5.010	Guangxi 2, Nanning	China	2310	B
4.760	Yunnan PBS, Kunming	China	2345	E,I,K,O	5.010	AIR Thirupuram	India	0030	B,O
4.760	AIR Port Blair	India	1647	B,G	5.020	PBS-Jangxi Nanchang	China	2210	G,G
4.760	ELWA Monrovia	Liberia	2022	B,C,G,J,K,M,O	5.020	Voz del Upano, Macas	Ecuador	0139	B
4.765	R.Integracao	Brazil	0204	B	5.020	La V du Sahel, Niamey	Niger	1856	A,B,C,F,G,K,O
4.770	Centinela del Sur	Ecuador	2335	C	5.025	R.Parakou	Benin	1945	A,B,I,K,O
4.770	FRCN Kaduna	Nigeria	2037	A,C,J,K,L,O	5.025	R.Rebelle, Habana	Cuba	2218	B
4.775	AIR Guwahati	India	1654	G	5.025	R.Uganda, Kampala	Uganda	1945	B,C,G,K
4.783	RTM Bamako	Mali	2035	A,B,C,K,O	5.030	AWR Latin America	Costa Rica	0035	B,C,O
4.785	R.Super, Ioague	Colombia	2350	C	5.035	R.Papareida	Brazil	0020	C
4.790	Azad Kashmir R.	Pakistan	1713	G	5.035	R.Bangui	C.Africa	2046	A,C,G,J,K,O
4.790	R.Atlantida	Peru	2250	C,O	5.040	L.V. de Yopal	Colombia	0355	O
4.800	CPBS 2 Beijing	China	2308	C,E	5.045	R.Cultura do Para	Brazil	0045	C
4.800	R.Popular Cuenca	Ecuador	0150	B	5.047	R.Togo, Lome	Togo	2050	A,C,K,L
4.800	R.Buenas Nuevas	Guatemala	0258	B	5.050	R.Tanzania	Tanzania	1907	K,O
4.800	AIR Hyderabad	India	1731	G,O	5.055	TWR Manzini	Swaziland	1921	G,O
4.800	LNBS Lesotho	Maseru	1911	A,G,J,K,O	5.060	PBS Xinjiang, Urumqi	China	2334	C,E,G,J,O
4.805	R.Nac. Amazonas	Brazil	2331	A,C,O	5.060	Sist d'Em Progreso	Ecuador	0146	B
4.815	R.diff TV Burkina	Quesadougou	2036	A,B,C,J,K,O	5.065	R.Candji, Bouna	Zaire	1713	B
4.820	La Voz Evangelica	Honduras	0116	A,B,O	5.075	Caracol Bogota	Colombia	2330	A,B,C,I,J,L,O,P

DXers:

- | | | |
|---------------------------------|--|--------------------------------------|
| (A) Darren Beasley, Bridgwater. | (G) P.Gordon Smith, Kingston, Moray. | (M) Clare Pinder, while in Appleby. |
| (B) Ter Burke, Bradford. | (H) Bill Griffith, while in Skopje, Macedonia. | (N) Peter Pollard, Rugby. |
| (C) Robert Connolly, Kilkeel. | (I) Sheila Hughes, Morden. | (O) John Slater, Scalloway. |
| (D) Bernard Curtis, Stalbridge. | (J) Eddie McKeown, Newry. | (P) Ted Walden-Vincent, Gt.Yarmouth. |
| (E) John Eaton, Woking. | (K) Fred Pallant, Storrington. | (Q) Stan Watkins, N.W.London. |
| (F) David Edwardson, Wallsend. | (L) Roy Patrick, Derby. | (R) Thomas Williams, Truro. |

1400-1557) was 32332 at 1505 in Kilkeel; R.Pyongyang, N.Korea 9.345 (Eng to Eu 1500-1550) 44333 at 1531 by **Paul Bowery** in Burnham-on-Crouch; Voice of Vietnam, Hanoi 9.840 (Eng to Eu 1600-1630) 43443 at 1609 in Woking; BBC via Skelton, UK 9.410 (Eng to Eu, N/C.Africa 0300-2300) 55555 at 1700 in Skopje; Voice of Turkey 9.535 (Eng to Eur 1830-1920) 43444 at 1910 in NW.London; VOA via Gloria, Portugal 9.760 (Eng to M.East 1700?-2200?) 43333 at 1913 in Woodhall Spa; VOIRI Tehran, Iran 9.022 (Eng to Eu 1930-2027) 44333 at 1940 in Rugby; DW via Portugal 9.615 (Eng to Eu 2000-2045) 44344 at 2000 in Bradford; Voice of Russia 9.480 (Eng [WS]) 55544 at 2011 in Freshwater Bay; China R.Int, Beijing 9.920 (Eng to Eur 2000-2157) 45544 at 2018 in Middlesbrough; WVHA via Scotts Corner, USA 9.930 (Eng to Eu, Africa 1800-2200) 54433 at 2034 in Plymouth; R.Pyongyang, N.Korea 9.345 (Eng to Eu 2000-2050) 34332 at 2039 in Bridgwater; R.Bulgaria, Sofia 9.700 (Eng to Eu 2100-2200) SIO222 at 2115 in N.Bristol; UAER, Abu Dhabi 9.605 (Eng to N.America 2200-0000) SIO333 at 2201 by **Ted Walden-Vincent** in Gt.Yarmouth.

The occupants of the congested **7MHz (41m)** band include Monitor R.Int via WSHB 7.535 (Eng [Various Sat/Sun]) to Eu 0400-0955), noted as 54444 at 0610 in NW.London; TWR Monte Carlo, Monaco 7.115 (Eng to Eu 0640-0820) SIO444 at 0700 in Co.Fermanagh; Polish R, Warsaw 7.145 (Eng to Eu 1200-1255) heard at 1218 in Elgin; R.T.Malaysia via Kajang 7.295 (Eng [R-4 Sce] 24hrs) 32332 at 1630 in Scalloway; VOA via Udorn, Thailand 7.215 (Eng to S.Asia 1400-1800) was 44333 at 1755 in Barton-Upon-Humber; VOIRI via Mashhad, Iran 7.190 (Ar to M.East, Africa 1700-2130) 54434 at 1830 in Chester; R.Thailand via Udon Thani 7.210 (Eng to Eu? 1900-2000) 43333 at 1900 by **Roy Patrick** in Derby; VOIRI Tehran 7.260 (Eng to Europe, M.East 1930-2027) 32232 at 1930 in Rugby; R.Australia via ? 7.330 (Eng to S.Asia ?-2100) 44444 at 1930 in Truro; R.Netherlands via Talata Volon, Madagascar 7.120 (Eng to S/E/W.Africa 1730-2025) 53343 at 1956 by **Martin Cowin** in Kirkby Stephen; R.Budapest, Hungary 7.250 (Eng to Eu 2100-2130) SIO333 at 2109 in N.Bristol; R.Romania Int, Bucharest 7.195 (Eng to Eu 2100-2156) 44444 at 2120 in Morden; VOA via Selebi-Phikwe, Botswana 7.415 (Eng to Africa 1900-2230) 32233 at 2140 in Stalbridge; BBC via Kranji, Singapore 7.110 (Eng to Far East 2200-0045) 43434 at 2225 in Penmaenmawr; AIR via Aligarh? 7.412 (Hi, Eng to Eu 1745-2230) SIO333 at 2229 in Gt.Yarmouth; Sudwestfunk via Rohrdorf 7.265 (Ger to Eu 24hrs) 55555 at 2315 in Oadby.

In the **6MHz (49m)** band WEWN Birmingham, USA 5.825 (Eng to Eu 2100-1000) was 55433 at 0750 in Herstmonceux; R.Vlaanderen Int, Belgium 6.035 (Eng to Eu 0900-0925 Mon-Sat) 33333 at 0900 in Morden; R.Austria Int, via Moosbrunn 6.155 (Ger, Eng, Fr, Sp to Eu 0400-2300) 45444 at 0948 in Bridgwater; R.Netherlands via Julich 6.045 (Eng to Eu 1030-1225) SIO444 at 1052 in N.Bristol; R.Australia via Shepparton 6.090 (Eng to Asia 1430-1900?) 22432 at 1623 in Burnham-on-Crouch; R.Yugoslavia 6.100 (Eng to Eu 1830-1900) 53343 at 1836 in Kirkby Stephen; R.Slovakia Int 5.915 (Eng to Eu 1830-1900) 44344 at 1855 in Woodhall Spa; Voice of Hope, Lebanon 6.280 (Ar, Eng to M.East 24hrs) 23332 at 1910 in Galashiels; R.Prague, Czech Rep 5.930 (Eng to Eu 2000-2027) 54444 at 2005 in Rugby; China R.Int, Beijing 6.950 (Eng to Eu 2000-2157) 33333 at 2027 in Plymouth; R.Ukraine Int 6.010 (Eng to Eu 2100-2200) 33333 at 2100 in Appleby; R.Austria Int via Moosbrunn 5.945 (Fr, Sp, Eng, Ger to Eur 1800-2300) 43444 at 2230 in NW.London; R.Nac da Amazonia, Brazil 6.180 (Port 0900-0200) 44343 at 2313 in Bradford; CHNX Halifax, Canada 6.130 (Eng [relays CHNS] 24hrs) SIO223 at 0351 in Gt.Yarmouth.

next month in short wave magazine

...The August issue is our **Broadcast Special** ...

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Off the Record

Radio Zodiac



Short Wave Switzerland was founded in December 1993 by DXer Peter Galliker, who had experienced considerable difficulty in receiving satisfactory reception to Free Radio stations. He was struck with the idea of finding a station within Europe that would relay these stations at high power, at a reasonable cost. Many stations showed no interest whatever, but after months of letter writing, hoping and waiting a positive response came from the Italian Radio Relay Service based in Milan.

The first programme to be aired by SWR Switzerland was over the 10kW transmitters of The Italian Radio Relay Service (IRRS). This was produced by DJ Yves of International Music Radio and took place on 5 February 1994, DJ Stevie of Radio Sparks joined SWR Switzerland. Over 40 (ex?)-pirates now use the relay facilities including several stations from Britain, Germany, Holland and Norway. The frequencies are usually 3.985MHz at night and 7.125MHz during daylight. You can confirm any changes with Brian Oddy's 'LM&S' column where they are normally listed under the transmitter site operator's identification of IRRS.

Anoraks' Corner

Eddie Austin from Dover, Kent, sent me a recent press cutting concerning the sad fate of Tongue Tower, a former naval wartime fort located about 5km off Margate in the Thames Estuary. Several of these forts were used for offshore pirate broadcasting during the middle 60s. They were sunk in position during 1942 to help defend London against air attacks. Tongue Tower had been listing quite badly in recent years and on the evening of 22 February 1996, during a Force 11 gale, it finally collapsed. This tower was once considered by Radio Essex boss Roy Bates for a proposed Radio Kent, however navigation charts showed the structure to be within territorial waters.

Three very interesting books called *The Maunsell Sea Forts* and a video showing the construction and deployment of these wartime towers has been written and produced by **Frank Turner** of Gravesend, Kent. He has some model and photographic exhibitions planned, plus boat trips around the forts during the summer months. You can contact

Frank on (01474) 321534 or Fax: (01474) 812850. He tells me that the MOD had to specially unclassify much of this material so that he could publish it.

From South Humberside **Harry Richards** says he has just received his copy of *Pop Went The Pirates* but disputes a comment about the suggested illegality of the English Service of Radio Luxembourg. Looking back at the scenario of 1967 when the offshore pirates were being legislated against I think it was more a moral comment than a legal one. British broadcasters were being prevented from transmitting from in or around the UK, while foreign transmissions from neighbouring countries, at very high power, could continue with impunity.

The question of pirate frequencies and QTHs has been raised by **Tom Winzor** of Plymouth. The Broadcasting Act of 1990 does make it illegal for British publications to print details of unauthorised radio stations. This apparent inhibition of free speech adds fuel to the determination of those actually involved in pirate broadcasting and ironically serves as an inducement for them to broadcast pirate DX news, which is the mainstay of some stations programming. **Martin Cowin** of Kirkby Stephen, remembers hearing Radiofax, and Radio Seagull and requests further details of present pirate stations. A list should have reached you by now Martin.

Pirate radio memories are the subject of **Dave Allen's** letter from Cheltenham. Dave recalls bunking off school on 14 August 1967 so he could hear the close down of Radio London, affectionately known as 'Big L'. He would like to see some pictures of some of the old

offshore pirates and a brief report on their equipment. I wonder if other readers of 'Off the Record' would like to go back in time to the 60s? Also would you take a day off school/work if your current music station were to announce its closure?

Did You Know?

Pirate Chat Magazine is making a comeback this summer, sample copies are £1.50 and can be ordered from - **Ostra Porten 29, 44254 Ytterby, Sweden**. *Turning The Tide* is the title of the latest Radio Caroline video (Caroline TV?) showing their vessel, the *Ross Revenge*, in dry dock. At the time of writing the ship is being prepared for another RSL broadcast at Sun Pier at Chatham. The *Ross* is moored about 50m offshore to the rear of the Radio Kent studios. There is a vague possibility (no more than that!) of the Radio Caroline SW service recommencing via IRRS. Offshore Echo/ France Radio Club are to have their annual meeting on Saturday 6 July 1996, in France, at the Calais ferry terminal restaurant including a dinner and disco. I intend to be there...why not you? Details are available from **Chris Edwards, PO Box 1514, London W7 2LL**.

On April 4, BBC1 and BBC Radio South East broadcast a programme about f.m. radio piracy. The TV series *First Sight Forum* gave the basic details relating to f.m. pirates in the inner cities. An hour long phone-in discussion on BBC local radio followed that included comments from Peter Baldwin, former Chief Executive of the Radio Authority, Howard Rose, Editor of *The Radio Magazine*, and a spokesperson

from pirate Cool FM. Briefly the RA man thought that jungle and other new wave music was just a fad, to which the Cool FM guy said, "Oh yes like rock 'n roll". Former offshore pirate Howard Rose concluded that if legal stations were unable to provide air time and opportunities for new music and its artists there would always be pirates. The area of the f.m. band where many of these stations could have been accommodated is currently being sold off to mainly established radio conglomerates with licence fees of around £80000 per annum.

UK Radio

This station commenced broadcasting on 24 January 1978 with a 1W medium wave transmitter based at Willenhall in the West Midlands. Other activities involved an a.m. station at Wolverhampton during the 1980s. Short wave transmissions involve the use of a 30W transmitter feeding a long wire antenna 10m from the ground. Their studio has a nine channel mixer, two turntables, two CD players, cassette machines and a reel-to-reel tape recorder.

Radio Zodiac

The presenters here actually sent me a cassette recording, how different they sound in hi-fi stereo. On air they use between 80 and 150W and have the ability to vary their operating frequency so as to help avoid transmission clashes with other stations or utilities. Power is supplied by a discreetly silenced and fairly portable 700W Honda generator. They have a selection of QSL cards and regular presenters include Steve Kent and Ian Page.

Monitors' Diary

On Easter Sunday, April 7, **Bob Marsh** of Bexleyheath, logged two m.w. pirates broadcasting to the London Area, Radio Argus and Radio Experimental. He says Experimental had a good signal strength but had low modulation, was difficult to understand and that an American religious programme was repeated twice. On s.w. he found the 48 metre area quite busy with several pirates spluttering each other. Stations logged include Radio Caroline (French), Weekend Music, Britain, Pandora, Blue Star and UK Radio.

On Easter Monday Bob reported variable conditions with deep fading on all stations including Radio Free London. A monotonous Dutch station called Doctor Tom (as opposed to Dr. Tim) kept repeating this name over the top of music. I heard this and can only presume it was some sort of test broadcast.

Bruno Pecolatto of Pont Canavese, Italy, sent me an impressive list of stations including the relays of the IRRS, he has also received RFL, Crazy Wave, Transatlantic, Brigitte, International Music, Pamela, Britain, Laguna, and Radio Wonderful.

Jack Diamond lives not far from myself here in Folkestone, his selection is similar and includes Laser, being splattered by Radio Monte Carlo, Blue Sky, London Weekend, Dr. Tom, Pandora, Britain, RFL and Weekend Music Radio. The 3.9MHz band includes Radio Moonlight, LWR and IRRS relays.

In October's 'OTR' we will be taking a look at Radio Blackbeard and more of your favourite pirate stations.

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AIRWAVES 96

The Complete HF/VHF/UHF Aviation Frequency Directory
Much of the more obscure (especially military) information is made accessible in this volume. Not only are facilities/activities listed, giving their frequencies, but also there are reverse lists - when the frequency is known, the allocated user can be found.

Airways sectors are listed so much more clearly than in the Supplements. The main transponder code groups are included. In fact, the book covers all the way from h.f. up to u.h.f. 100 pages. £8.95

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CALLSIGN 96

The Civil & Military Aviation Callsign Directory
Intended for the aircraft and radio enthusiast to use as a stand alone reference, or as a partner to *Airwaves 95*. Over 5300 military and 3000 civil callsigns are covered in detail. 144 pages. £8.50

FLIGHT ROUTINGS 1996

Compiled by T.T. & S.J. Williams
This guide was produced with the sole aim of assisting airband listeners to quickly find details of a flight, once they have identified an aircraft's callsign. Identifies the flights of airlines, schedule, charter, cargo and mail, to and from the UK and Eire and overflights between Europe and America. 140 pages. £6.60

HIGH IN THE SKY

Davis Barker & McKenzie
This new edition comprises ten sections. The first seven sections are an introduction of radios, antenna and radio communications, information about airways, sections covering v.h.f. and h.f. aeronautical communications, and a brief look at ACARS. The majority of the book is taken-up by section eight, which lists all known Selcalls in three different sequences (by airline/operator, by Selcall and by registration). The 9th section is devoted to Selcalls used by executive jets; these are separate, since these Selcalls are not always fixed. Mostly re-written this volume contains the all-important frequency listings for the aeronautical networks, airlines, the military and the commercial networks. 166 pages. £6.95

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David J. Smith
Described as the guide to world-wide air traffic control this companion volume to the *Air Band Radio Handbook* explains how air traffic is regulated internationally giving details of each country's system together with major airport radio frequencies. Related subjects include navigational aids, radio phraseology, flight plans and emergency procedures to name a few. This comprehensive book provides an insight into the complex world of air traffic control. 192 pages. £9.99

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Keith Skues
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Clive Woodyear
This is the eighth edition of this radio listener's guide. Simple-to-use maps and charts show the frequencies for radio stations in the UK. Organised so that the various station types are listed separately, the maps are useful for the travelling listener. Articles included in the guide discuss v.h.f. aerials, RDS, the Radio Authority and developments from Blaupunkt. 81 pages. £3.95

Datamodes

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Bill Laver
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Compiled by Geoff Halligey
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This book deals almost exclusively with television broadcast satellites and is a comprehensive collection of chapters on topics, each written by an expert in that field. It appears to be aimed at the professional satellite system installer, for whom it is invaluable, but it will be appreciated by a much wider audience - anyone interested in satellite technology. 280 pages. £32

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This book is a good practical introduction to amateur radio. A variety of constructional projects are included to give the beginner experience in designing and building an amateur radio station. Even includes valves. 398 pages. £15.95

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Dave Bradshaw

Published in association with *Electronics Today International* magazine, this book is both a theoretical and practical introduction to electronics. It clearly explains the theory and principals of electronics and each chapter includes a project for the beginner to make. The projects a loudspeaker divider, continuity tester, 'brown-out' alarm, freezing alarm, mini-amplifier and burglar alarm. 208 pages. £10.95



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G.L.Benbow G3HB
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If you're studying for the Radio Amateurs' Examination, this book could be useful. It's a summary of the salient points of the Radio Amateurs' Examination Manual, the standard textbook for the exam. It's A5 size, and therefore can be carried with you wherever you go. Easy-to-read, it's divided into 13 chapters with topics like receivers, power supplies, measurements, operating procedures, licence conditions and a summary of the formulae all dealt with. 92 pages. £4.99

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Esde Tyler G0AFC
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THE NOVICE LICENCE STUDENT'S NOTEBOOK

John Case G4AHR
This is the recommended course book for anyone taking the Novice Licence. Covering all aspects of amateur radio and electronics it would be useful to anyone starting out in amateur radio. Every left hand page is for your own notes of explanation. 124 pages. £5.99

SHORTWAVE RADIO LISTENING FOR BEGINNERS

Anita Louise McCormick K4QK1
This book provides all the hands-on information you need to get off to a quick start in short wave listening. An excellent introductory guide, it describes in easy-to-understand non-technical terms how short wave radio works, available equipment and where to find it, what stations can be heard and how to become a licensed radio amateur. 176 pages. £9.95

TRAINING FOR THE NOVICE LICENCE A MANUAL FOR THE INSTRUCTOR (R5GB)

John Case G4AHR
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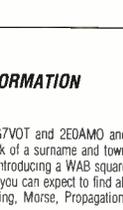
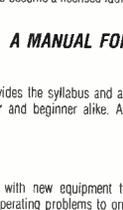
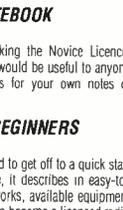
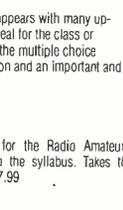
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EMC

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William R. Nelson WA6FOG
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Dick Bidduph G8PDS
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Stan Horzepa WA1LOU
What is packet radio good for and what uses does it have for the 'average' amateur? What are protocols? where, why, when? Lots of the most asked questions are answered in this useful book. It included details of networking and space communications using packet. 278 pages. £8.95

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Steve Ford WB8IMY
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QRP

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Edited by Rev. G. Dobbs G3RJV
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journal *Spral* from the years 1974 to 1982. Essentially it's a collection of circuits and projects covering everything from receivers, transmitters, antennas and accessories together with set ORP test equipment. This book is aimed at the keen constructor and provides all the information required to build the host of projects described. 96 pages. £8.50

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Edited by Bob Schelgen

Operating ORP is fun. The equipment is generally simple and easy to build, but often performs like more sophisticated commercial equipment. Some ORP Field Day stations operate a full 27 hours on a car battery - it's the perfect equipment for emergency communication when the power fails. Extracts from *OST* and the *ARRL Handbook*. 274 pages. £10.50

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2nd Edition. Doug De Maw W1FB

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John Case G4WHHR

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W. I. Orr W6SAI

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Doug DeMaw W1FB

This book is aimed at the non-technical amateur who wants to build simple projects and obtain a basic understanding of amateur electronics. Your workshop does not need to be equipped like an engineering lab to be successful as an experimenter. Don't let a lack of test equipment keep you from enjoying the thrills of experimentation. 195 pages. £8.50

Data

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George H. Fathauer

Published by Antique Electronic Supply (Arizona) A spirally bound (opening flat) style book, this should prove to be of great interest to valve collectors, historians and anyone trying to identify particular valves. The author provides a comprehensive list of American and British service valves and 'civilian' equivalents, together with the valve base details. 350 pages. £19.95

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(TUBES & TRANSISTORS)

(Original Publishers General Electric)

Re-published by Antique Electronic Supply (Arizona)

This still covered, novel-sized paperback facsimile book is printed on good paper and is packed throughout with information, and connection details (base pin charts) on receiving valves, special purpose valves, cathode ray tubes, thyratrons, vidicons and many others (including semiconductors). Highly recommended as a valve reference book. 475 pages. £9.95.

HANDBOOK OF RADIO, TV, INDUSTRIAL & TRANSMITTING TUBE & VALVE EQUIVALENTS

This book complements the whole series of *Radio Valve* books and as the name suggests, provides much information on equivalent valve types. Of particular interest to the collector and historian, the book also has a comprehensive Government (CV) to commercial equivalent guide. There are also guides to civilian equivalents for American Armed Forces types, and British Royal Air Force and Royal Navy valves. 60 pages. £2.95.

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Written as a workshop manual for the electronics enthusiast, there is a strong practical bias and higher mathematics have been avoided where possible. 249 pages. £3.95

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Owen Bishop

In essence this book is a helpful collection of designer's 'building block' circuits, information, connection data and back-up information complete with an index. 327 pages. £4.95

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Steve Money

This is a unique collection of useful and intriguing data for both the traditional and modern radio amateur as well as the high-tech listener. Familiar radio topics are covered - abbreviations and codes, symbols, formulae and frequencies - while the newer features of the hobby radio world - decoding, airband, maritime, packet, slow scan TV, etc. are also dealt with. 240 pages. 0/5

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RADIO VALVE GUIDE. BOOK 5

The 5th book in the series covers British, European, American, USSR and Japanese valves from 1960 to 1963. 44 pages. £2.95

RCA RECEIVING TUBE MANUAL

(Original Publishers RCA Corporation Of America)

Re-published by Antique Electronic Supply (Arizona)

This novel-sized stiff covered paperback book is absolutely fascinating for anyone interested in valves! In reality it's a designer's handbook with potted details, characteristic curves, information and descriptions of typical applications for each valve listed. It's even got a section showing receiver circuits and applications. Excellent reading and reference. 384 pages. £10.50

RCA TRANSMITTING TUBES

(Original Publisher RCA Corporation of America)

Re-published by Antique Electronic Supply (Arizona)

This is a stiff covered paperback novel-sized book. And if you've got an interest in transmitting with valves, this is a useful reference source for valves up to 4KW input. The RCA authors have included some interesting practical circuits using their valves, including some for s.b., v.h.f. and others. Highly recommended reference source. 318 pages. £9.95.

SOLID STATE DESIGN FOR THE RADIO AMATEUR (ARRL)

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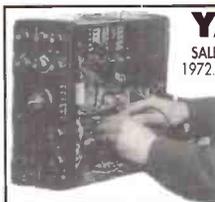
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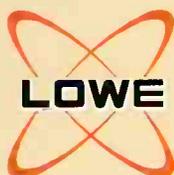
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