shortwave magazine

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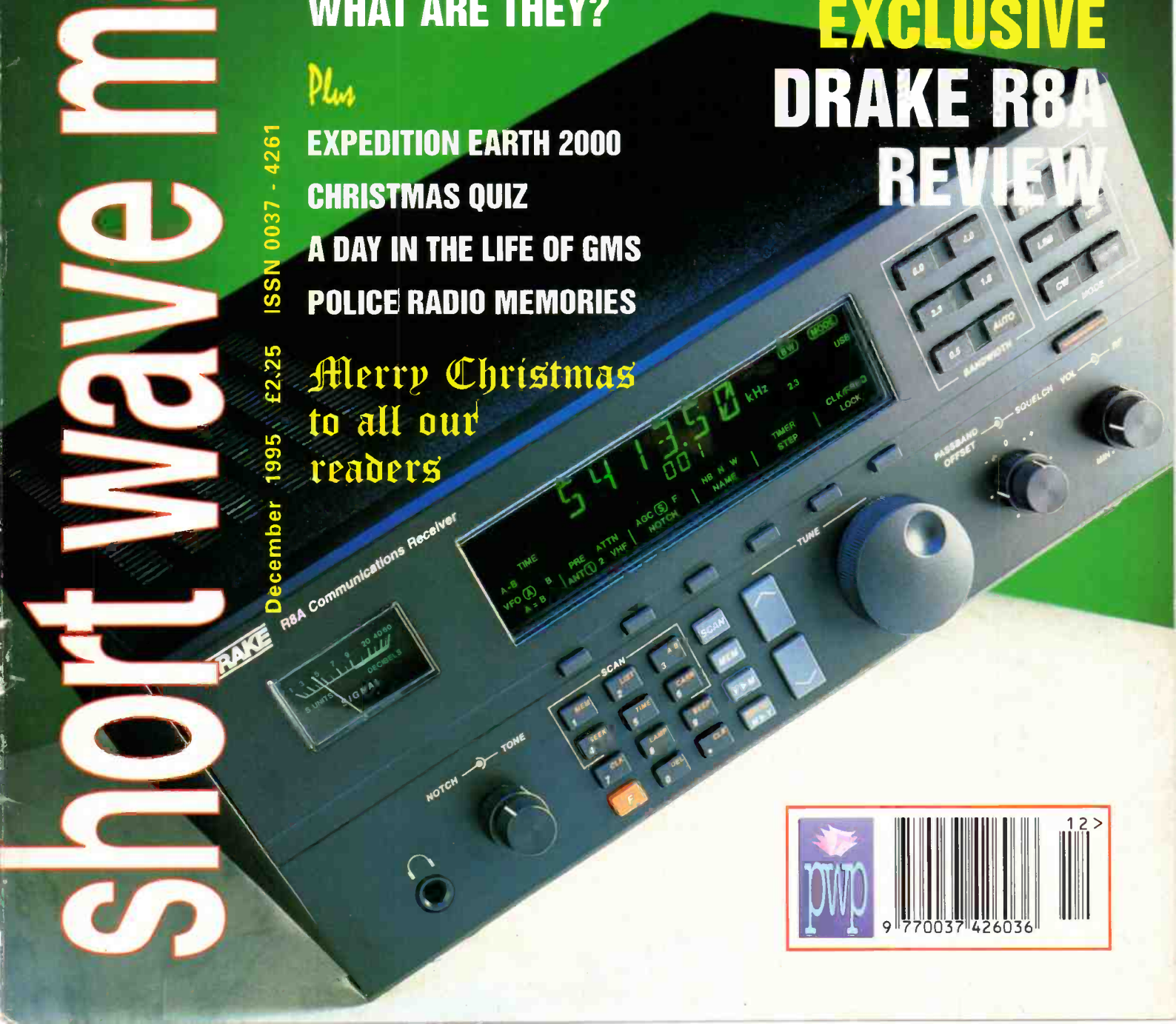
A DAY IN THE LIFE OF GMS

POLICE RADIO MEMORIES

Merry Christmas to all our readers

December 1995 £2.25 ISSN 0037 - 4261



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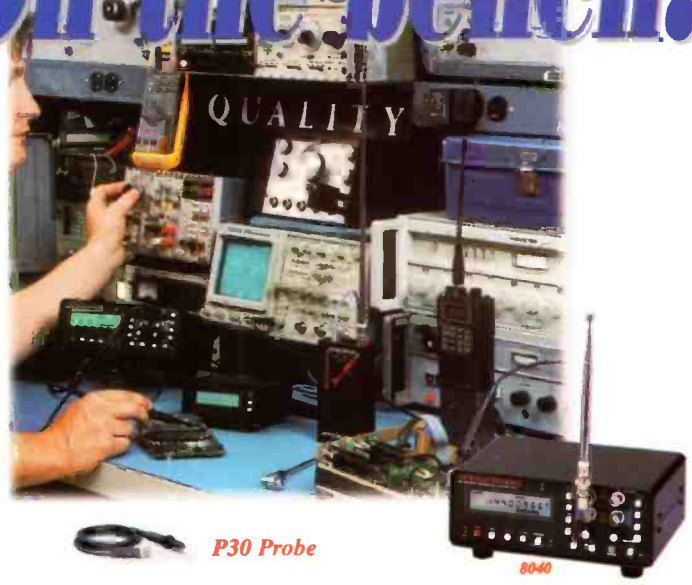
On the bench...



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short wave magazine

Vol. 53 ISSUE 12 DECEMBER 1995

ON SALE NOVEMBER 23
Next issue on sale DECEMBER 19

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Cover Subject

Due to the specialised nature of our hobby, the world market for short wave receivers is limited. In consequnce it is not very often that new models are launched. The appearance of the R8A from Drake makes this last issue of 1995 one not to be missed. *Photo: Craig Dyball.*

Merry Christmas

Regular Columns

Good Listening

SWM SERVICES

Subscriptions

Subscriptions are available at £25 per annum to UK addresses, £28 in Europe and £30 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 **£2.30** each, photocopies are also **£2.30** per article, plus **£0.50** 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.

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

Technical Help

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

editorial

Another year has gone by and it is once again time for me to wish all our readers the appropriate season's greetings. I am convinced that time accelerates as one gets older! When I was very young it seemed like eternity between going to bed on Christmas Eve and waking up on Christmas Morning to eagerly see what Father Christmas had brought me. Now it doesn't even seem like an age between successive Christmas Days!

To make me feel even older, immediately after writing these words I am off with Brown Owl to Denver to 'inspect' our latest grandaughter. I wonder if radio will ever hold the same interest for my grandaughters as it did for me?

All of us here at *Short Wave Magazine* hope that 1996 brings you lots of listening pleasure.

Dick Ganderton G8VFH

letters

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

More Computer Mail - For and Against

We really have stirred up a 'hornets nest' with this topic. Please keep your views coming in.

Dear Sir

I write in response to Mr Harold McIntyre's letter in the current issue of *Short Wave Magazine* and I totally agree with his comments. I have been aware of the very same experiences as he has when I browse through the magazine shelves in WH Smiths, John Menzies, etc. It is quite true that there are far more magazines dealing with computers than there are dealing with amateur radio.

I am a newcomer to short wave listening, having started only two years ago and I look forward every month to my copy of *Short Wave Magazine*. If I wanted to read about computers I would buy a computer magazine, there are dozens to choose from. So, please keep *Short Wave Magazine* for uses of short wave radio. It's very good as it is and doesn't need the ingress of computer articles.

D. Evans
Cwmbran
Gwent

Dear Sir

I agree with Harold McIntyre G3FLJ about introducing more computer related articles in *Short Wave Magazine*. Over the years, many publications, clubs and various active enthusiasts have had new members start to agitate 'change' their way. I have a computer, but if I want to read computer articles, I get a computer magazine. RTTY, Packet and c.w. are fine or the monitor screens, but let us please keep this excellent magazine free of too much 'computer related articles'.

Amateur TV articles yes, when coupled to a computer, but bits and bytes galore spare us! I am sure this letter will be one of many from your readers.

David Mays
Peterborough

Dear Sir

You invited readers opinions on Harold McIntyre's letter (*SWM* October) with regard to computer related material being published in *SWM*. I agree wholeheartedly with Mr McIntyre in not wanting any more of this material in the magazine. The right balance exists at the moment. Darren Burton (*SWM* September) should be able to find all he wants regarding the subject in one of the many computer magazines available. I doubt very much however, that we would find the kind of radio information we have in *SWM*. Each magazine has its own purpose.

I take this publication mainly for the airband column which, I wish, was greatly expanded. One needs only to go along to the various airports in the country to see the array of equipment being displayed on the observation terrace. Airband listening is growing more rapidly than any other specialised part of the spectrum. I do read the other articles of course except those that are computer linked. I would much prefer to see an upgrade of the more useful and, less expensive, new products on the market. This would benefit everyone, not just the few.

I hope I am joined by many other readers in opposing any more computerised pages. In the meantime, I thank you for producing an interesting monthly.

W. J. Hibberd
Bridgend
Mid Glamorgan

letters

Dear Sir
I write in reply to Mr Leonard's letter regarding computers in amateur radio. I also became interested in radio as a small boy, I think I was about four or five, round 1948, "when me dear old grand-daddy built me a crystal set". A load of old wire wrapped round a Tufnol tube, another piece of wire from the bedroom window that seemed to be hanging on the very sky itself, a bit of what looked like old coke and a pair of earphones.

Tickle the coke with a bit of brass wire out of a shoe brush and away you go, music, talking, singing and a myriad of other noises, frequently all at the same time burst forth from the earphones.

I started making them for my friends, faithfully copying my grandfather's handiwork. I discovered a shop up the road that sold ex-government surplus bits, a veritable Aladdin's Cave, as I got older I progressed to valves. I then obtained a transistor, you had two choices, a red spot or a white spot, you always blew the first one up by putting the battery on backwards to see what happened.

I went through the usual range of radios, wireless sets 17, 18, 19, 36, 48 and an R107 and R109. I spent hours listening to Top Band and eighty metres. I remember the comments when the early sideband equipment started to appear, comments similar to Mr Leonard's comments about computers. We used to wind up the sideband operators by building a transmitter with series gate mod, build a ring modulator from a couple of old transformers and listen to them getting more and more frustrated when they could not resolve the signal. I then took the RAE, became licensed and behaved myself a bit better.

I later became interested in RTTY, the Creed model 7, then the 7B, the 7ERP and the Teletype 33, with variations by Olivetti and several other makes. After obtaining all the old Rudolf Hell HellFax machines from Birmingham Airport, I even managed to FAX transmissions including mobile (eat yer heart out yuppies) with a petrol generator on the roof of my Land Rover.

Yes, Mr Leonard, the earlier days of radio were very interesting, but you have to have progress. If it wasn't for forward thinking Radio Amateurs, you would not be watching a television, where would you draw the line, shall we go back to spark transmitters and coherers and if you have satellite TV, I can remember when 'ten gigs' was considered useless for anything but Radar.

Also, as you say you are in the Army, which 'manpack' radio would you prefer, the one you use now or would you like a wireless set 18 on your back? I should forgo the peddle generator for remote locations when the l.t. battery is exhausted and it is very difficult to become discrete with a four metre whip antenna sticking out just behind your right ear.

My interest in radio as a hobby was recently renewed because of computers and things up in the sky. In fact, I would not be reading *SWM* but for the sections on data reception. Computers are not biased by the way if you can lay your hands on an old Creed Teleprinter, most amateur RTTY transmissions are still at 45 and 50 baud. Though typing in CLS is a lot cheaper than watching a roll of paper coil itself up on the floor because come idiot had set his machine up with a loop to keep calling your answer back.

Until funds allow better, I currently have a Sangean 803A and a couple of home built computers, a 286 permanently on the RX and a 486 DX100 as a general machine. I find *SWM* a reasonable balance and sufficiently unbiased to print critical letters, keep it up.

Brian Steadman GW8FSN
Pwllheli

Dear Sir
I think this is the first time that I have written to a magazine, but a comment in the letter written by Mr McIntyre in the October issue of *SWM* left me with no option.

Firstly let me say, I have been reading *SWM* since 1941, that's when I built my first one valve set, on a sturdy piece of board, using the appropriate valve and coil holders, firmly held in place with wood screws.

Your magazine has changed its format quite a few times since then, in fact, about five years ago I nearly gave it up in despair because I could not figure out what type of reader it was aimed at. Fortunately, you have since changed to your present format, which I am very pleased with, which leads me into the reason that I am writing.

The *SWM* now covers a range of up-to-date topics that should please most readers, but it does not cover the use of computers in short wave listening to the full potential and I don't just mean to operate the receiver, which Mr McIntyre seems to think that's all a computer is capable of. Let's face it, unless he is using a one valve regenerative set, I expect his set is already internally computer controlled, although that may come as a 'devastating shock' to him. I hope that, like me, he's trying to keep up with today's technology. I am 64 years old and still learning.

I am very interested in receiving RTTY, Morse, SSTV, Weather FAX, etc., but am not sure what equipment I need. I have a 486 DX4, but what else do I need? When I had a little Sinclair Spectrum computer, all I required was a £25 package of hardware and a cassette tape and I was able to pick up most of them. Now that I have a computer a 1000 times more powerful, it seems that we are talking of £200+ to do virtually the same thing. I know you have covered these subjects, but they appear to be aimed at readers who are already familiar with the technical aspects of the required equipment.

So, to restate, yes, I would very much like to see a greater coverage of how to use a computer with a modern s.w. receiver and please keep up the good work of a now excellent magazine.

D. F. E. Woodward
Stroud
Glos

It is pleasing that so many of our readers can see the ***positive*** *side of* SWM *covering radio related aspects of computers. Lets face it, columns such as 'Info in Orbit' and 'Decode' would not exist if it were not for the existence of 'cheap' personal computers. Their use, specific to the afore mentioned columns, is already covered regularly within the columns - and this is essential - as I'm sure all the regular enthusiasts of these columns would agree. I'm pleased that our 'more mature' readers are keen to 'keep up with technology'. By the way, Mr Woodward, access to decoding solutions need not be expensive for use with your 486 PC. Try* Hamcomm *and* JVFAX. *These together with the Pervisell interface, will produce excellent results. See page 72 for Pervisell and page 78 for 'Decode' special offers.-* ***KN.***

Help Needed

Dear Sir
I am a regular reader of *SWM* living in Dublin. I would be obliged if you could list DX clubs in the Rep. of Ireland.

Noel Doyle
Dublin

Unfortunately we are some what lacking details on this topic. So any Eire based DXers, please help - ***KN.***

Is there something you want to get off your chest? Do you have a problem fellow readers can solve? If so then drop a line to the Editor.

grassroots

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

* Short Wave Magazine & Practical Wireless in attendance

rallies

***November 26:** The Bridgend & District Amateur Radio Club will be holding its 9th Amateur Radio & Computer Rally at the Bridgend Recreation Centre in Bridgend. The rally will have all the usual amateur radio and computer dealers, a Bring & Buy, RSGB Morse test on demand (two passport size photos must be produced). Doors open at 11am, 10.30am for disabled visitors. Admission is £1. Further details from **Maurice GW0JZN (01656) 864579** or **Don GW3RVG (01656) 860434**.

December 3: The SDX Cluster Support Group will be holding a Radio, Electronics & Computer Rally in the Maryhill Community Centre, which is located just along from junction 17 of the M8 motorway and is located on major public transport routes. Doors open at 10.30am for disabled visitors and 11am to 4.15pm for everyone else. Entrance fee is £2 for disabled, UB40 holders and £2.50 for all other visitors (children under 14 accompanies by a parent free of charge). There will be many traders, club stands, lectures and demonstrations. Further information can be obtained from **John Dundas GM0OPS**, Rally Organiser, on **0141-638 7670**.

***December 3:** The Verulam Amateur Radio Club are holding their rally at the Watford Leisure Centre, which is located less than five minutes drive from the Junction of the M1 and M25 motorways. Trading will be from 10am to 4pm. **(01923) 222284**.

December 3: The Thames Valley Electronics Rally is being held at Kempton Park, Race Course, Sunbury-on-Thames, Middlesex. Doors open 10.30am to 4.30pm (10am free entry to the Bring & Buy stand). Major manufacturers and retailers, accessory supplies, antenna supplies, Bring & Buy stall, computers and component retailers and specialist groups. Admission for adults £1.50, OAPs £1 and children under 14yrs free. **(01494) 450504.**

December 16: Computer Fairs (Northern) computer/rally fair and game's fair is to be held at the G. H. Carnall Leisure Centre, Lostock Road, Davyhulme, Manchester, immediately at J4 off the M63 motorway. Doors open 10am to 3pm. The show is open to traders of both computer and radio backgrounds alike. There is easy access for disabled visitors and a massive free car park, cafe and bar. Admission is £1.50 for adults, first 400 + free £2.25 mag or CD. **0161-627 2502**.

1996

January 20: Computer Fairs (Northern) computer/rally fair and game's fair is to be held at the G. H. Carnall Leisure Centre, Lostock Road, Davyhulme, Manchester, immediately at J4 off the M63 motorway. Doors open 10am to 3pm. The show is open to traders of both computer and radio backgrounds alike. There is easy access for disabled visitors and a massive free car park, cafe and bar. Admission is £1.50 for adults, first 400 + free £2.25 mag or CD. **0161-627 2502**.

February 4: The 11th South Essex Amateur Radio Society Radio Rally is to be held at the Paddocks, Long Road, Canvey Island, Essex. The paddocks is situated at the end of the A130. Doors open at 10.30am - features: amateur radio, computer and electronic component exhibitors, Bring & Buy, RSGB Morse testing on demand (two passport photos required), home refreshments, free car parking with space outside main doors for disabled visitors. Admission is £1. Further details from **David G4UVJ** on **(01268) 697978**.

February 11: The Northern Cross Rally is to be held at a new and better venue, the Thornes Park Athletics Stadium, Wakefield, just out of town on the Horbury Road. Easy access from M1 junc. 39 & 40 - well signposted and with a talk-in on 2m and 70cm. Doors open at 11am (10.30am for diabled visitors and Bring & Buy). Details from **Dave G0FLX** on **0113-238 3622**.

February 17: Computer Fairs (Northern) computer/rally fair and game's fair is to be held at the G. H. Carnall Leisure Centre, Lostock Road, Davyhulme, Manchester, immediately at J4 off the M63 motorway. Doors open 10am to 3pm. The show is open to traders of both computer and radio backgrounds alike. There is easy access for disabled visitors and a massive free car park, cafe and bar. Admission is £1.50 for adults, first 400 + free £2.25 mag or CD. **0161-627 2502**.

February 24: The Rainham Radio Rally is to be held at the Rainham School for Girls, Derwent Way, Rainham, Gillingham, Kent. Talk-in on S22 GB4RRR. Doors open at 10am to 3.30pm. Disabled and wheelchair users from 9.30am. Admission is only £1.50, under 14s, free. There will be the usual mix of trade stands, Bring & Buy, many special interest groups, etc. There's plenty of off road parking, a licensed bar, food and refreshments available with an area to sit and eat and watch the world go by. Further details from **Martin G7JBD** on **(01634) 365980**.

February 25: The Barry Amateur Radio Society are holding their annual Radio and Computer Rally at the Barry Leisure Centre, Barry. Doors open at 10.30am and 10am for disabled visitors. More information can be obtained from **Brian Brown GW0PUP** on **(01222) 832253**.

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 Fighting Cocks Public House, Hengrove. 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.

RSGB City of Bristol Group: last Tuesdays, 7pm. New Friends Hall, Purdown, Bell Hill, Stapleton, Bristol BS16 1BG. November 28 - Construction contest, December 19 - Christmas party. Dave Bailey G4NKT. 0117-967 2124.

South Bristol ARC: Wednesdays, 7.30pm. Whitchurch Folkhouse Assoc., Bridge Farm House, East Dundry Rd, Whitchurch. November 29 - QSL card evening, December 6 - Club annual darts match, 13th - Christmas social. For more information ring (01275) 834282 on a Wednesday evening.

BUCKINGHAMSHIRE

Aylesbury Vale RS: Wednesday evenings, 8pm. Hardwick Village Hall, (Hardwick is situated off the A413 between Aylesbury and Buckingham). December 6 - G6NB construction contest. Ivan Eamus G3KLT. (01296) 437720.

CLWYD

Conwy Valley ARC: 1st Wednesdays, The Studio, Penrhos Road, Colwyn Bay, Clwyd. December 6 - Control by DTMF - by John Lawrence GW3JGA. R. W. Evans GW6PMC (01745) 855068.

DEVON

Appledore & DARC: 3rd Mondays, 7.30pm. Appledore Football Clubroom. December 18 - Christmas social. Dave Brierley G3YGJ. (01237) 476124.

Plymouth RC: Tuesdays, 7.30pm. The Royal Fleet Club, Devonport, Plymouth. November 28 - Talk by Trevor G3ZYY on the presentation of talks and on the new PRC club calls award certificate, 30th - Committee meeting, December 5 - Constructors cup competition, all entries accepted, 12th - Table top sale, 15th - Coach trip to TARS Christmas party and Kwiz Kup, 19th - Sherry and mince pie evening. F. P. Russell on (01752) 563222.

Torbay ARS: Fridays, 7.30pm. ECC Social Club, Highweek, Newton Abbot. December 15 - Xmas party. Peter G4UTO. (01803) 864528.

EAST SUSSEX

Southdown ARS: First Monday of the month, The Chaseley Home for Disabled Ex-Servicemen, Bolsover Road, Eastbourne, 7.30pm. December 4 - Social evening. Vic Robins G0THX on (01323) 846774 or John Vaughan G3DQY on (01323) 485704.

GREATER LONDON

Edgeware & DRS: Thursdays, 8pm. Watling Community Centre, 145 Orange Hill Road, Burnt Oak. November 23 - Astronomy by Brian G3ZKE, December 14 - The Grand Edgware Junk Sale. Rod Bishop. 0181-204 1868.

Southgate ARC: 2nd & 3rd Thursdays, 7.30pm. The Pavilion, Winchmore Hill Cricket Club, Firs Lane, Winchmore Hill, London N21 3ER. November 23 - Demo night and radio on the air, December 14 - AGM. M. E. Viney G0ANN. (01707) 850146.

HAMPSHIRE

Horndean & DARC: 1st & 4th Tuesdays, 7.30pm. Lovedean Village Hall, Lovedean Lane, Lovedean, Hants. November 28 - Digital TV by Bruce Randall NTL, December 5 - Natter night. 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.

Winchester ARC: 3rd Fridays, Red Cross Centre, Durngate House, North Walls, Winchester. 7.30pm. December 15 - Xmas party - not to be missed! P. Simpkins G3MCL. (01962) 865814.

HEREFORD & WORCESTER

Bromsgrove ARS: 2nd & 4th Tuesdays. Lickey End Social Club, Alcester Road, Burcot, Bromsgrove. November 28 - BARS Christmas dinner, December 12 - Technical topics. Barry Taylor. (01527) 542266.

HERTFORDSHIRE

Hoddesdon RC: Alternate Thursdays, 8pm. Conservative Club, Rye Road, Hoddesdon. November 23 - Talk on RAYNET by G4KUJ. Dave G1CAY on (01992) 460841.

KENT

Bromley & DARS: 3rd Tuesdays, 7.30pm. The Victory Social Club, Kechill Gardens, Hayes. December 12 - Christmas social (second Tuesday). A. Messenger G0TLK. 0181-777 0420

Medway AR & TS: Fridays, 7.30pm. Tunbury Hall, Catkin Close, Tunbury Avenue, Walderslade, Chatham, Kent. November 24 - Fish and chip supper, December 1 - Talk on microwave ovens by Peter Martin G0GIR, 15th - Christmas party. G3VUN, 40 Linwood Avenue, Strood, Rochester, Kent ME2 3TR. (01634) 710023.

LINCOLNSHIRE

Lincoln SW Club: Wednesdays, 8pm. City Engineer's Club, Waterside South, Lincoln. December 13 - Christmas meal. (01427) 788356.

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. November 29 - SWR measurements by Stuart G3XYO, December 6 - Christmas dinner, 13th - A club member's view in Russia by Terry G0IRQ. Mike G4EOL. (01603) 789792.

OXFORD

Oxford & DARS: 2nd and 4th Thursdays, 7.30pm. The Grove House Club, Grove Street, off Banbury Road, Summertown, Oxford. D.A. Walker G3BLS on (01865) 247311.

Vale of White Horse: 1st Tuesday of each month. 8pm at The Fox, Steventon. Ian White. (01235) 531559.

SOMERSET

Yeovil ARC: Thursdays, 7.30pm. The Red Cross Centre, 72 Grove Avenue, Yeovil. November 23 - QRP by G3MYM, 30th - Committee meeting and club station on the air, December 7 - The National VHF Post Code Charity Challenge by G3ZXX, 14th - Workshop practice by G7SDD. Cedric White, QTHR. (01258) 473845.

SUFFOLK

Bury St. Edmunds ARS: 3rd Tuesdays, 7.30 for 8pm. Culford School. December 19 - Christmas social. Kevin Waterson G1VGI, 20 Cadogan Road, Bury St. Edmunds, Suffolk IP33 3QJ. (01284) 764804.

TAYSIDE

Dundee ARC: Tuesdays. 7pm. Dundee College, Graham Street, Dundee. November 28 - Packet radio by Drew GM1JTK, December 5 - Construction evening, 19th - Construction evening. Allan Martin GM7ONJ, 11 Langlee Place, Broughty Ferry, Dundee, Tayside DD5 3RP.

WARWICKSHIRE

Stratford-upon-Avon & DRS: 2nd & 4th Mondays, 7.30pm. Home Guard Club, Main Street, Tiddington, Stratford-upon-Avon. November 27 - Baluns and matching by David Yates G3PDQ, December 11 - Open evening. Martin Rhodes G3XZO. (01789) 740073.

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. December 6 - Sky Update by Phil G4FSQ. Further details from the examinations secretary Brenda G4DTE on (01484) 424776 or secretary Malcom McKenzie G8RWN, 9 Broomhouse Close, Denby Dale, Huddersfield, W. Yorkshire HD8 8UX or (01484) 861782 for club activities.

Keighley ARS: The Ingrow Cricket Club, Ingrow, Keighley. Thursdays, 8pm. November 23 - Natter night, 30th - Films, December 7 - Night on the air, 14th - Natter night. Kathy G0RLO. (01274) 496222.

Wakefield & DRS: Tuesdays, 8pm. The Ossett Community Centre, Prospect Road, Ossett. November 28 - On the air, December 5 - Game for a laugh, 2E1DGD, 12th - On the air. Bob 0113-282 5519 or G3WWF@GB7WRG.

WILTSHIRE

Trowbridge & DARC: 1st & 3rd Wednesdays, 8pm. The Southwick Village Hall, Southwick, Trowbridge. December 6 - Christmas party, skittles and presentation night. Ian G0GRI on (01225) 864698.

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

junior listener

More on Postage

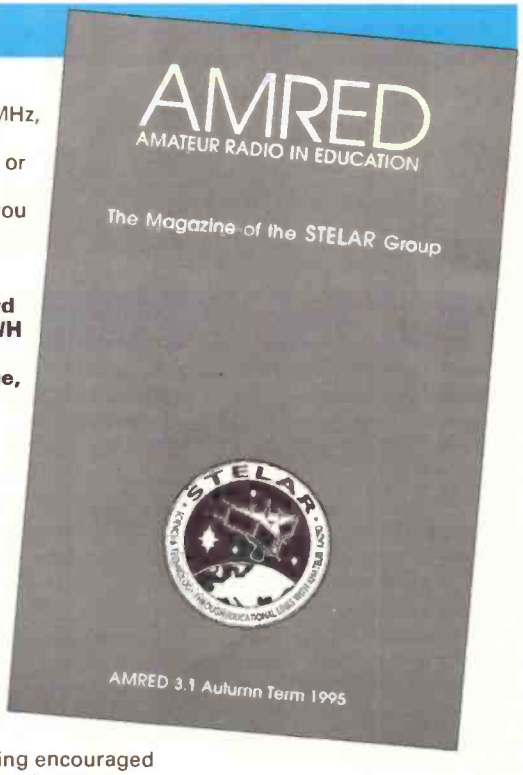
Colin Cadby has written with a few questions following November's bit on postage. How many IRCs should you send for a reply? Difficult one that! Now an IRC in this country is worth 41p, that will post a 20g letter to Europe or a 10g letter anywhere else in the world. Now, a typical QSL card is close on 10g in weight and a single sheet of A4 and an envelope is also getting close to the 10g mark. But a stations schedule from a broadcast station is nearer 20g. So if you are expecting things from Europe then one IRC could be OK for some things but not for others. If you are sending outside of Europe and are expecting more than just the minimum in return then you should send more than one IRC. Just 40g of postage would cost up to £1.02 from this country and you have to remember that other countries can have much higher postage rates than ours. But, don't assume that a non-reply is because you haven't sent enough IRCs, it can be because the other end are snowed under with reports and are a bit slow or because they can't be bothered to reply! As for overseas postage stamps, you can buy them from philately shops, just look them up in your *Yellow Pages*. They can probably help with sorting out just how many stamps of what value should be purchased. If you decide that in the end dollar bills are the answer, you'll find them popular at the other end because they are easy to convert (even when they aren't the local currency). I'm sure that sometimes my local Post Office staff hide when I'm in the queue, because I often have IRCs to exchange for stamps and you have to fiddle about working out how many IRCs and how much cash are needed for the stamps I want. Probably the other country's Post Office staff feel the same!

STELAR

Have you ever heard of the STELAR Sponsorship Scheme for Teachers' RAE Course, well I hadn't either until recently. This is a course for teachers who work in schools where there is no amateur radio activity or where the licensed member of staff is about to leave. The course is Monday - Saturday April 8-13 next year at the Trio - Kenwood UK Ltd. headquarters at Rickmansworth. If you are a teacher who thinks they could be interested or if you go to a school where you think they should be interested, then write to **STELAR** at **7 Carlton Road, Harrogate, North Yorkshire HG2 8DD** for an application form. If your school starts muttering about finances being stretched and things like that, tell them the course is free, as is the accommodation and the materials necessary! Amateur radio can do so much for a school, and if they are interested in amateur radio then short wave listening will come into the activity too. Many aspects of the National Curriculum could be illustrated by amateur radio and short wave listening.

My eldest recently was looking at weather as part of a school project and the class enjoyed the weather pictures we were receiving each day. STELAR stands for Science and Technology through Educational Links with Amateur Radio and they are working hard to promote amateur radio in the educational system. The overall age of those involved with amateur radio is rising, and I'm sure the same is true about short wave listening too. this is not really a good thing for the hobby of radio generally. The time to get newcomers interested if you can is when they are at school. If some of the youngsters who are involved in computers had been introduced to radio at the same time, they could have ended up with a different hobby. STELAR hold a net each Wednesday during term time and it usually runs from 1300 until 1330. The frequencies to listen are 3.77MHz, and if that fails then 7.048MHz or 14.165MHz are worth a try. If you would like to contact this group, then contact **Richard Horton G3XWH at Harrogate Ladies College, Clarence Drive, Harrogate, North Yorkshire HG1 2QG. FAX: (01423) 871027**.

I would be very interested to hear what sort of radio, either amateur radio or short wave listening, is being encouraged at school, please drop me a line.



Listen and Learn

I received *On Target* 8 from Radio Netherlands recently and it struck me whilst I was reading it through just how much you can learn when listening. The documentaries they are running throughout December and January made very interesting reading. I often forget how many interesting programmes can be heard on the air each day, it's only when the programme details arrive on the doormat that I'm reminded. First, I would like to draw your attention to two documentaries well into the New Year though. On February 21, they are discussing 'Collectors. Why do people collect things and what do they collect'. As a person who never throws anything away if I can find another use for it (and sometimes when I can't) I thought that this would be one for me to make a note of. The other, on March 13 that caught my attention is called' You said either and I say either'. The on-going battle between American English and British English'.

A light-hearted look at the same language that divides. In December, Radio Netherlands have teamed up with Deutsche Welle to produce a two-part series on the past, present and future of the Nederlands' relationship with Germany. So it doesn't matter what your interests are, whether political, financial, general interest, world affairs or history. There are programmes going out on the air all year round that you would find interesting. of course, if you are on the mailing list of those stations that send out news on their programmes in advance then you can make sure you don't miss those that interest you most. Despite the fact that stations like Radio Netherlands receives thousands upon thousands of letters a year - as well as FAX and Internet messages - they still value listeners reaction. So much so that they have a special programme now on a Sunday called *Sincerely Yours* that lets readers have their say. Pete Myers presents the programmes and is happy to receive any messages (however they are sent) for inclusion in the programme. Did you also know that Radio Netherlands have set up a permanent amateur radio station there, I'll let you know when I find out the callsign and details of when they go on the air.

news

For the latest in the World of Listening

Feba Radio Celebrates 25th Anniversary With London Emmanuel Choir

The London Emmanuel Choir are holding a Feba Carol Festival on Saturday December 9 at Westminster Central Hall, London at 5pm (finishing by 7.30 to assist those travelling long distances).

Feba supporters and friends will be gathering at this central London venue, which has a seating capacity of 2000. The focus of the carol concert will be Christmas praise and thanksgiving to God for Feba's ministry, which is now reaching out with the Gospel through broadcasts in over 40 languages.

The Choir and its President Mrs Muriel Shepherd have a deep interest in missionary work. For more than 25 years the offerings from their December Carol Concerts have been given to the support of Feba's ministry.

For more information about Feba Radio, you can contact their HQ at **Ivy Arch Road, Worthing, West Sussex BN14 8BX**.

Are You Ready To Re-Tune?

Market Harborough's first local radio station, HFM, initially hit the town's airwaves on May 21 1995. The idea was to broadcast around the town's summer carnival providing music, chat, information and hopefully a little entertainment on the way. The initial concept had come several years ago from local man John Fitzpatrick. John had a history of involvement in radio and together with a diverse band of enthusiasts, he successfully set about establishing the first f.m. station for the town late last year. The intention was to invest any profit made back into the community through local charities. All these aims were realised.

The station had a fantastic 28-day broadcast with the added bonus of £1000 being donated to the local volunteer bureau after shut down. And the broadcast itself? By the time the station came on air, the whole community was gripped - all other stations and media fell by the wayside as Market Harborough re-tuned its radios (some even bought new ones especially for the occasion) and tuned into HFM. Households, offices, factories and cars in Market Harborough were all listening.

Now, get ready to re-tune! The second HFM broadcast begins on November 26 on 105.50MHz f.m. stereo. The intention this time is to be bigger and hopefully better than the last time. Feedback from advertisers, DJs and most importantly listeners has been received and recognised and acted on and the countdown to Christmas in Market Harborough is going to be all the better for a local f.m. radio stations.

You can expect more of the same high standard, more of the music you request, more of your friends and relatives on air and more local news, information and entertainment than you will find anywhere else on your dial! And, due to a huge request from the night owls and the factory workers, HFM will be coming to you 24 hours a day, waking you up in the morning and putting you to bed every night.

For more information on Market Harborough's only radio station, contact the office on **(01858) 464666** or write to them at: **129 St Mary's Road, Market Harborough LE16 7DT**.

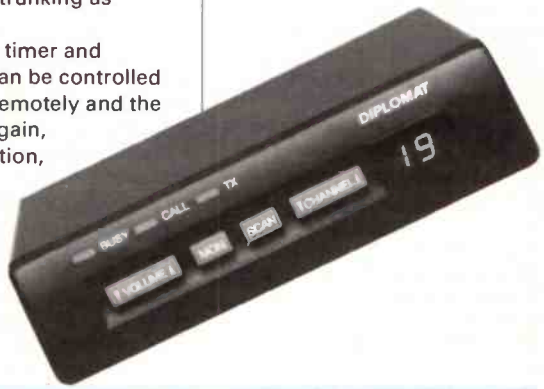
Brand New Two-Way Radio

In preparation for the imminent release of the new Band 1 spectrum by the Radiocommunications Agency, **Diplomat Communication Systems Ltd.** have produced a full function 25W radio to satisfy market expectations. In addition to the usual p.m.r. features such as five tone signalling, CTCSS and DCS this product boasts a host of other facilities previously unheard of in standard private mobile radio applications.

The radio can be 'stunned' and 'revived' remotely over the air and it has a beacon facility that can be used for vehicle location.

A major feature is that the unit can be configured to operate IBIS trunking as standard.

The p.t.t. timer and transmitter can be controlled over the air remotely and the microphone gain, CTCSS deviation, transmitter power and receiver sensitivity are all software controlled.



Software variants provide variable five tone and a Taxi rank queuing display mode that enables ranked vehicles to interrogate the despatch computer independently of the human controller.

At only 150x185x37mm this unit is claimed to be the smallest full feature radio in this band. The unit is designed to comply fully with ETS300 086, one of the tightest specifications for p.m.r., which should permit its use anywhere in the world. In addition to Band 1, the other variants cover from 30 to 250MHz with u.h.f. models planned in the next nine months.

For further details contact **Stewart Harding** or **Ivor Davies** of Diplomat on **(01256) 381656**.

On The Air

On The Air is the new Broadcasting Museum & Vintage Sound Shop located on the historic Rows of Chester (Chester, England's most complete walled city and most historic in the North West, is famous for its Rows, unique half-timbered shopping galleries whose layouts date back to the 13th century).

This fascinating museum of radio and TV has a shop where you can actually buy genuine restored wireless sets and gramaphones from the days when Glen Miller ruled the airwaves! Those gleaming Bakelite and fretwork radio sets that once announced the outbreak of war are now in demand among enthusiasts world-wide, and On The Air is a mecca to those who prefer the mellow tones of an authentic wireless to today's CD sound.

Founder Steve Harris, who worked in TV broadcasting before turning a lifelong interest into a business, is an expert in this new area of 'antiques', providing information and valuations to major collectors', guides and antiques magazines. On The Air houses a unique collection of broadcasting memorabilia with hands-on displays spanning everything from Marconi to the latest digital camcorders.

Authentically restored period radios and wind-up gramaphones are for sale in the Vintage Sound Shop. Demand is growing and customers order from as far afield as Europe and Japan! Prices start form about £75 while good old shellac 78s come as low as 50p. You can even buy tins of gramaphone needles!

Find out more by contacting **Steve Harris, On The Air Broadcasting Museum & Vintage Sound Shop, 42 Bridge Street Row, Chester CH1 1NN. Tel/FAX: (01244) 348468**.

National Transmitter News

New BBC FM Transmitters

September 14, Modbury, Devon, now brings good television, NICAM and teletext reception to an additional 270 people in Modbury, to include Brownston Street, Church Street, Broad Street and New Road. It also serves the area around Swanbridge Mill.

Viewers wishing to use the new Modbury relay should consult a local television dealer or antenna contractor, but reception advice is also available for ITC Engineering Information and BBC Engineering Information.

Station details are as follows:

Channels	BBC 1 (South West)	55
	BBC 2	62
	ITV (Westcountry)	59
	Channel 4	65
Antenna Group:	C/D	
Polarisation:	Horizontal	
Effective Radiated Power:	4W	

Further information is available from:

BBC Engineering Information, Broadcasting House, Seymour Road, Mannamead, Plymouth PL3 5BD. Tel: (01752) 229201

September 29, Inverarish, Raasay, now brings good television and teletext reception to an additional 220 people in Inverarish, The Braes, Sconser and Dunan.

Viewers wishing to use the new Inverarish relay should consult a local television dealer or antenna contractor, but reception advice is also available for ITC Engineering Information and BBC Engineering Information.Station details are as follows:

Channels	BBC 1 (Scotland)	40
	BBC 2	46
	ITV (Grampian)	43
	Channel 4	50
Antenna Group:	B	
Polarisation:	Vertical	
Effective Radiated Power:	40W	

Further information is available from:
BBC Engineering Information, Broadcasting House, Queen Margaret Drive, Glasgow G12 8GD. Tel: 0141-330 2345

August 10, Crumlin & Hafodyrynys, Gwent, now brings improved television reception to about 925 people in Hafodyrynys, the Swffryd area of Crumlin and in the Kendon Valley.

To take advantage of the new station, viewers will need good quality antennas directed towards the relay which is on ground south of Hafodyrynys. Viewers wishing to use the relay should consult a local television dealer or antenna contractor, but reception advice is available from Edward Trickett, Information Engineer, Wales or ITC Engineering Information (addresses below)
Station details are as follows:

Channels	BBC Wales on 1	56
	BBC Wales on 2	66
	HTV Wales	62
	S4C	68
Antenna Group:	C/D	
Polarisation:	Vertical	
Effective Radiated Power:	8W	

Further information is available from:
Engineering Information Officer Wales, BBC Broadcasting House, Llandaff, Cardiff CF5 2YQ. Tel: (0222) 572255

ITC Engineering Information,Crawley Court, Winchester, Hampshire SO21 2QA. TEL: (0962) 848647

From Hardcopy To Floppy Disk

After many years of producing its *Encyclopedia of Shareware* in a book The **Public Domain Shareware Library** (PDSL) has converted to floppy disk format. The reason for the change is because of the huge increase in the number of programs being made available and the difficulty this presents in continually producing a printed version.

The change to disk will mean that the Encyclopedia can be updated rapidly and easily and that hard copy supplement issues can be supplied as back-up on a regular basis. The new *Encyclopedia of Shareware* contains in excess of 4000 programs, costs just £2.50 and comes with a special £2 off voucher.

To order a copy of the *PDSL Encyclopedia of Shareware* you should contact PDSL at **Winscombe House, Beacon Road, Crowborough TN61UL. Tel: (01892) 663298 or FAX: (01892) 667473.**

Radio & TVDX News

Nato in a recent Bosnian air strike knocked out and destroyed the Stolice radio transmitter and the adjacent TV installation atop Mount Majevica.

Construction in Poland has just started on a replacement radio mast at Konstantynow (near Gabin) for completion Autumn 1997. The original 646 metre high Polish Radio relay at 225kHz collapsed four years ago. In the nearby Czech Republic, Radio Free Europe and Czech Radio will co-operate in the creation of Radio 6 running at 1287kHz Medium Wave. Czech Radio are also anxious to utilise the empty 1233kHz channel to further expand and improve Medium Wave in the Republic.

A possible link up between Ulster TV and the defunct Irish TV3 group could grow into a new TV3 channel across the Irish Republic on-air Spring 1997. Distribution will be via MMDS (microwave relay) and cable and the channel plans for 84 programme hours weekly with nearly 20% locally made and the rest from overseas.

September 27 saw the switch-on of the BBC's experimental DAB (digital audio broadcasting) around the London region using Radios 1-5 as source material. During 1996 'BBC NOW' will launch on digital offering a 10 minute rolling news, sports and business news package around the clock, together with live relays from Parliament.

Swedish broadcaster SVT is seeking an extension of the present four year charter to ten years, the present charter terminates March 1996. SVT will also come under government scrutiny over plans for 24 hour broadcasting and its news coverage - and the longer term plan to offer a programme channel on satellite. The committee studying the various broadcasting changes will report back to parliament March 1996.

'PICCA TV' which caused some confusion during the 1995 Sporadic E season originates from an independent broadcaster using the 0500-0800GMT period on Latvian TV, Riga. Sporadic E listing update for Latvia are - Network 1, LTV-1 Riga ch.R3 150kW erp; Ventspils ch.R5 165W...Network 2, LTV-2 Kuldiga ch.R5 10kW.

The Belgian BRTN-TV1 transmitter ch.E10 at Waver still transmits but the new ch.E10 replacement transmitter at Saint-Pieters-Leeuw will take over soon, already test transmissions have been carried out using a special test card.

The Digital Video Broadcasting Group - DVB - meet in Geneva November '95 to hopefully decide on Europe's future terrestrial digital standard though if a more complex standard is thought viable the decision will be delayed further, mainly due to the uncertainty of suitable chip availability.

The annual *European Broadcasting Union's list of television stations no.40* across the European region will be available March 1996. This is a reference work resembling a telephone book and covers all transmitters from megawatts to milliwatts. Copies of *List no.40* are available on paper, or diskette (TV 40 0995) or on IBM PC compatible HD DOS (TV 40 0396). The book or disks cost 70 Swiss Francs including postage and a yearly update. There's a User's Guide for the diskettes at 15 Swiss Francs. Available from **Publications Dept. EBU, Case Postale 67, CH-1218 Grand Saconnex GE, Switzerland.**

Address Change For AOR

AOR (UK) have now moved to their new factory and HQ location. The move is to enable the production of the new AR7030 receiver and cater for the increase in their UK business. Their new address is: **AOR (UK) Ltd., 4E East Mill, Bridgefoot, Belper, Derbyshire DE56 2UA. Tel: (01773) 880788, FAX: (01773) 880780.**

Datong Electronics

Datong Electronics of Leeds would like to point out their full postal address is **Clayton Wood Close, West Park, Leeds LS16 5QE** and that their telephone number is **0113-274 4822** and **FAX** number is **0113-274 2872.** If you have recently tried to contact Datong by FAX without success this is because an error crept into the FAX number details given in their recent adverts.

LISTENING TO

Lowe Electronics have been catering for needs of Short Wave Listeners for nearly 30 years. We are therefore uniquely qualified to give unbiased advice on all aspects of the hobby. As well as our own world famous range of communications at head office in Matlock at our seven branches around the country. Our name is known throughout the world among short wave enthusiasts, and we were honoured to be the only receiver manufacturer asked to make a presentation to the recent International Broadcasting Conference in Amsterdam. We have also been importing high quality scanners into the UK longer than any other firm. With the advent of the new CE marketing regulations from January 1st, many of the popular types of scanner will inevitably have to disappear from the European market. You can rely on us to carry in stock the very best of those that remain.

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Drake R-8A Communi

John Wilson has managed to get his hands on the first production Drake R-8A receiver to escape from the USA. Of course, he couldn't wait to try it out.

The R.L. Drake Company has a history of producing fine receivers stretching back to 1957 when Drake introduced the 1-A; strictly amateur band, but representing a new direction for receiver design. The series of receivers progressed through the 2-A, 2-B and 2-C to the R-4/A/B/C line to the solid state R-7/7A (what happened to R-5 and R-6)?, but Drake effectively dropped out of the communications receiver market in the early 1980s.

The announcement in 1991 of a new R-8 was greeted with great enthusiasm, and the receiver, when it arrived on the market, proved to be all that we expected of Drake in terms of performance. However, there were adverse comments about the way in which some of the operating functions worked, and Drake have clearly spent time listening to users, because the R-8A is everything a user could want - and this will be a 'user's' review. Do I like the R-8A? I certainly do: let me tell you why.

Firstly it's a nice size; the front panel is 337mm wide and 121mm high; big enough to carry all the controls at a decent spacing for human fingers , and allowing the use of a large display so that even tired eyes can read all the information presented on it. Front to back measures about 330mm, allowing the R-8A to sit comfortably in an operating position whilst leaving room in front. It's all black - uncompromisingly black, which makes reading the white control legends all the more easy and gives a no-nonsense professional look to the receiver. Overall weight is about 285kg; easy to carry about but heavy enough to stay put on the bench when poking at the controls, a stability also helped by the rear feet being made of a soft material that stops the R-8A moving around. The front feet in the 'level' position raise the centre of the tuning knob about 38mm off the bench top. If this is too low for you, a folding metal bar lifts the knob centre to about 75mm, the position I, as a knob twirler, personally prefer.

The front panel is made from an extruded metal section, giving a comforting solidity to the receiver whilst the case is made up of metal panels with an outer 'wrap around' metal cover. No plastics bits anywhere in sight, which is perhaps as well, for when I unpacked the R-8A I found signs that it had been dropped on one of the front corners with sufficient impact to distort the corresponding top case

SPECIFICATIONS

Frequency Range:		100kHz to 30MHz
Modes:		a.m., l.s.b., u.s.b., c.w., RTTY, f.m.
Sensitivity:		
	s.s.b.	100kHz to 30MHz (10dB S+N/N) 0.5µV nominal (pre-amp off) <0.25µV (pre-amp on)
	a.m.	100kHz to 30MHz (10dB S+N/N, 1000Hz, 30% mod) 1.5µV nominal (pre-amp off) <1.0µV (pre-amp on)
	f.m.	100kHz to 30MHz (12dB SINAD) <0.5µV
Frequency Stability:		±5ppm, -10° to 50°C
Frequency Accuracy:		Better than ±100Hz, -10° to 50°C
Selectivity:		a.m., l.s.b., u.s.b., RTTY, c.w. 6kHz @ -6dB; <12kHz @ -60dB 4kHz @ -6dB; <8kHz @ -60dB 2.3kHz @ -6dB; <4.5kHz @ -60dB 1.8kHz @ -6dB; <3.6kHz @ -60dB 500Hz @ -6dB; <1.5kHz @ -60dB
FM Only:		12kHz @ -6dB, 25kHz @ -60dB
Ultimate Selectivity:		>95dB
Image Rejection:		>80dB, 100kHz to 30MHz
IF Rejection:		>80dB, 45MHz >100dB, 50kHz

Dynamic Range:	97dB, 100kHz to 30MHz @ 100kHz spacing
IP_3 - Intercept Point:	+20dBm @ 100kHz spacing (pre-amp off) -20dBm @ 5kHz spacing (pre-amp off)
1st IF: **2nd IF:**	45MHz 50kHz
AGC:	Threshold: 0.8µV Attack Time: 1mS Release Time: SLOW: 2sec FAST: 300mSec Nominal 6dB change in audio ouput for 100dB input change above a.g.c. threshold.
Ant 1, Converter: **Ant 2:**	50Ω unbalanced 50 or 500Ω unbalanced
Notch Filter Attenuation:	AF type, 40dB min. depth (500Hz to 5kHz)
External Speaker Output:	2.5W, 4Ω with less than 5% distortion
Line Outputs:	300mV, 4.7kΩ
AC Power Requirements:	100/120/200/240V a.c., ±10% 50 or 60Hz, 40W nominal
DC Power Requirements:	11 to 16V d.c. @ 2A
Operating Temperature:	-10 to +50°C
Weight:	5.9kg
Size:	Width 334 (w) x 134 (h) x 330mm (d)

ations Receiver

The revised ergonomics of the latest version of the R8 are a definite improvement.

corner. The receiver however performed without fault; a tribute to the internal and external construction.

When the lights go on again....

So it looks and feels nice; how does it perform? Check the setting of the mains voltage selector, plug in to the mains supply. Oh No! Whip out the mains plug hastily and read the instruction manual, from which you learn that when you first connect the R-8A to a power source, even though the receiver is turned 'off', the entire display lights up every segment of every character, thus scaring the pants off an unwary user (or reviewer). The manual further informs you that this is part of an automatic power-on reset system and the display reverts to normal after 3 seconds (sometimes as long as 5 or 6 seconds when the receiver is really cold). Thank goodness for that, because the display tells you everything about how the receiver is operating, except for signal strength which is, thankfully in my opinion, still shown on a moving coil panel meter.

Before going into detail about the display and all its uses, I will simply go through the R-8A as a receiver with the display showing frequency readout.

Anyone who owns or has used the earlier R-8 or R-8E will immediately see that the space above the power on/off switch is now occupied by two sets of six push buttons, one for selecting i.f. filter bandwidths and the other selecting mode. Transferring these functions from the previously unloved 'carousel' type of selection shows that Drake really did listen to customers, and the change has, in my opinion, substantially improved ease of use of the R-8A. Bandwidths can be selected by poking the appropriate button, 500Hz, 1.8, 2.3, 4 & 6kHz, with the sixth button being marked 'AUTO', which links appropriate filters to mode selection. The filter shape factors are well chosen, with the important s.s.b. filter at 1.9:1 and the a.m. 4kHz filter at better than 2:1. Mode selection on the second six key pad covers a.m. and a.m. Sync/f.m./l.s.b./u.s.b. /c.w. & RTTY. Sideband listeners in particular will find the instant sideband selection a great improvement on the R-8 carousel, and setting the balance between upper and lower sideband using the passband shift control is a real treat.

Filter settings chosen by the user for each mode are retained even when the receiver is switched off or the power disconnected and the filters themselves are extremely well chosen, both in bandwidth and in overall shape.

The R-8 right from its introduction was noted for very good audio, and the R-8A produces wonderful listening quality on both broadcast and s.s.b. utility stations. Listening to one of the big amateur nets on 80 metres, I swapped between the R-8A and my 'benchmark' Collins, and I have to say that I found the audio from the R-8A much more pleasant than that produced by the 'tight' mechanical filter in the Collins. On very strong s.s.b. signals there was a slight 'crack' at the start of the first syllable of a word but you have to listen very carefully to hear it and it was not a problem in normal use.

Using the 500Hz filter gives clean c.w., with no tendency to filter ringing.

That Synching Feeling.....

The synchronous a.m. performance is a great improvement over that in the earlier R-8. Gone is the slow descending howl when first switched in, and gone too the tendency to lose lock in deep fades. All that happens when you switch from a.m. to a.m. Sync is that the 'SYNC' legend on the display blinks a couple of times during lock acquisition and then remains steady when in lock. This is accomplished without any audible howls or whistles. The lock range is quite wide, and if the receiver is off-tuned, the 'SYNC' legend blinks a couple of times again to show that the synchronous detector has automatically disengaged and lock is rapidly re-established when the tuning knob stops rotating. Checking on a deeply fading signal on 5.955MHz with the 6kHz filter selected, the R-8A would hold lock up to 2.5kHz away from the true frequency, and if deliberately unlocked, would immediately re-acquire lock within the same range. Someone has been working far into the night at Drake, because you can also use the passband shift control whilst in SYNC mode to move the i.f. filter around and choose the best position for removal of adjacent channel interference. Even on normally impossible signals like 1215kHz after dark, it's possible to get a readable signal

The good audio is helped by a larger than usual speaker built in to the top of the receiver, and I did not

CONTINUED ON PAGE 15 ▶

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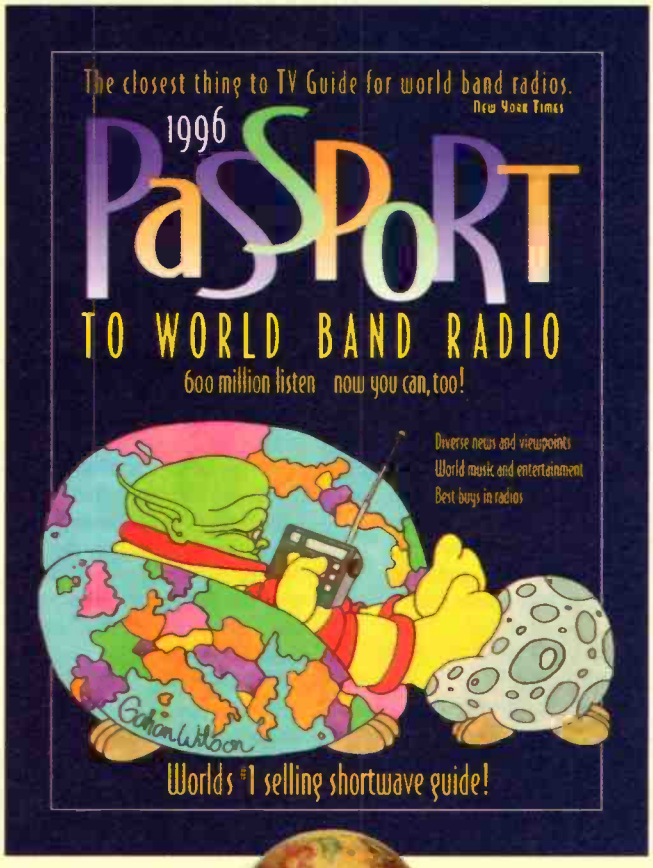

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The back panel is clean and well laid out, too.

▶ CONTINUED FROM PAGE 13

observe any rattles from the case even at high volume levels. An accessory outboard speaker unit (MS-8) is available which may well sound even better, but I didn't have the opportunity to test it. The front panel carries a standard headphone jack which disconnects both internal and external speakers when used. Mono or stereo headphones can be used, but of course the sound will always be mono.

Hand in hand with i.f. filtering goes pass band shift which allows an operator to 'slide' the i.f. filter across an incoming signal to assist in removing unwanted heterodynes or 'splatter'. Drake were always renowned for their skill with passband shift design, and that in the R-8A keeps up the good reputation, not only in s.s.b. or c.w. listening, but also in a.m. and RTTY. The passband shift range is wide enough to slide the 2.3kHz filter right through an s.s.b. signal, and simple checks show a range of +5 to -3kHz relative to filter centre frequency. Using the 4kHz filter in the a.m. mode, the passband shift is enough to tune completely out of the signal on both sides of the carrier, with the shift measuring +4 to -4kHz from filter centre. In RTTY use, the passband tuning control allows one to receive high (2125/2975Hz) or low (1275/1445Hz) tone pairs, or any others within the tuning range of the shift control. Operation of the shift control is smooth as silk in all modes.

I am being interfered with....as someone said to someone

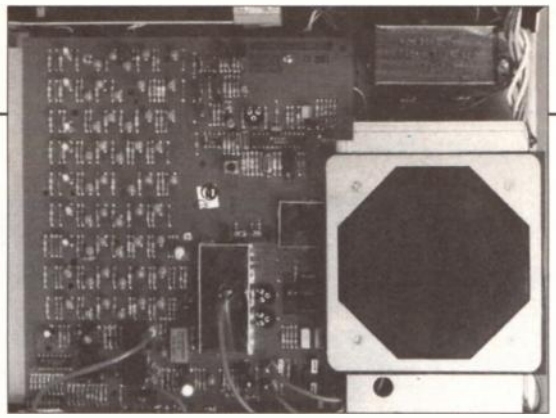
Also in the 'interfering signal removal' facilities is a notch filter. Conventional wisdom suggests that a notch filter in a receiver should be placed in the i.f. stages before the a.g.c. detector, so that an interfering carrier can be removed before it generates a.g.c. and reduces the receiver gain. However, Drake have chosen to provide an audio notch which does have the advantage that the notch can be made narrower and deeper without the need for the careful layout and alignment needed in an i.f. notch. Suffice to say that the filter works very well indeed, and has wisely been made to cover an audio range of 500Hz to a little over 5kHz so that interfering adjacent station carrier whistles on short wave broadcasts can be eliminated

Both passband shift and notch functions are operated by rotary controls, but behind each control knob is a secondary rotary, and although I have a personal dislike of dual controls, those on the R-8 do at least make sense and are easy to use without fumbling. Behind the notch tune control is an audio tone control which gives a flat response at centre, with a ±10dB high frequency adjustment range. Behind the passband shift is an all mode squelch control which can be a little tricky to set, because on s.s.b. and a.m., the squelch setting changes with changes in r.f. gain, whereas in f.m. the squelch setting is constant. Drake themselves mention the difficulty of all mode squelch settings in the manual, but if you provide scanning (yes, the R-8A has scan functions) on h.f., then you have real problems with wide variations in signal strength on different frequencies and short of having a separate squelch control for each frequency there's not a lot you can do about it.

The only other dual concentric control on the R-8A is the obvious combination of a.f. and r.f. gain. I'm really pleased that there is a decent r.f. gain control system, because any h.f. receiver without r.f. or i.f. gain controls can never be satisfactory for the s.s.b. or c.w. listener. Both a.f. and r.f. controls give smooth progressive action.

So far, so good, but the major function on an h.f. receiver is changing the operating frequency, and despite all the clever keypads and computer interfaces, the thing a human reaches for is the tuning knob. However, that is not the whole story because the tuning dynamics of a receiver include such things as the speed and ease of rotation, characteristics of the variable rate tuning system when fitted, number of increments on the rotary encoder, and so on. Only a human hand and brain can tell whether the tuning system feels 'right', and even then personal preference plays a large part in the decision. The tuning rates on the R-8 felt fine to me in s.s.b. and c.w. modes, but I found that to my taste the 'speed-up' on a.m. was a bit too eager to come into action. Selection of tuning step size is easy and convenient, with steps of 1kHz, 100 and 10Hz available. As supplied, the R-8A tunes and displays frequency in 10Hz steps on s.s.b., c.w. and data modes, and 100Hz steps in a.m. and f.m. One little quirk is that if you change the tuning step from standard setting in a mode, then switch to another mode, you find on returning to the original mode that the steps have reverted to the standard setting; for example if you have selected 10Hz steps for a.m., switch briefly to l.s.b. then back to a.m., the step size has gone back to 100Hz. However, and rather curiously, if you are in a non-standard step size and switch off the receiver, the darned thing remembers the non-standard setting when you switch it back on again. If 'road rage' ever becomes a recognised mental state, then these little quirks could start 'receiver rage'. I have a sudden mental image of Basil Fawlty beating the hell out of his receiver with a tree branch because it won't remember a tuning step.....Sorry; that's a peculiarly British thing. The 'quirk' is really not a problem because you can store different default settings for 'AGC', 'Step', and 'Bandwidth' by simply setting up these parameters to your liking then holding down the appropriate mode button for more than two seconds. The chosen settings will then be held as the new standard settings for that mode.

▶

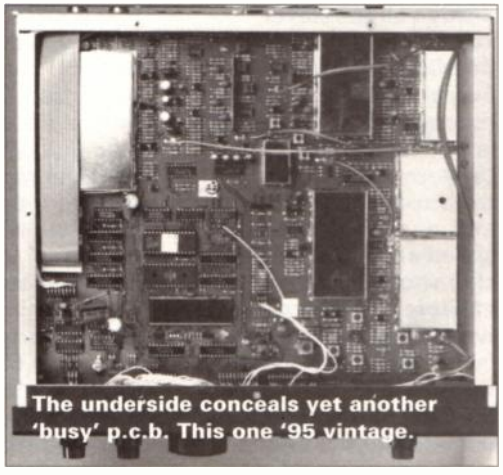


The inside is full of circuit boards. The top view shows the front-end filtering. Observant readers will notice that this board was designed in 1994.

I like 'em heavy....

Another personal preference is for a weighted tuning knob, and I don't think that Drake have done justice to a fine receiver by fitting it with a lightweight moulded plastics tuning knob. Just to see what would happen I took off the standard knob and replaced it by one of the same size but made of metal and weighing 60gm against the Drake knob at 10gm. The difference in feel was quite remarkable, and I can see a little sales opportunity for anyone who makes a 'de-luxe' tuning knob for the R-8A (Just like Kenwood did for the TS-830S). However, it would be best to ask Drake if there are any limitations to hanging a heavier knob on the shaft of the tuning encoder because I wouldn't like to be the man who recommended that you wreck the encoder bearings.

The tuning steps in the R-8A are generated by the now familiar triple loop frequency synthesiser, and without exception these synthesisers generate a series of often audible 'pops' as the different loops reach the end of their tuning range and jump back to the start again. In the R-8A the steps are at the transitions from 990Hz to 1kHz and at 99.99 to 100kHz, and if you listen to a reasonably strong signal at or close to these points through the tuning range you will hear the transitions take place. However, they only occur (as in any similar receiver) during tuning, and since the function of the receiver is presumably to listen to signals when not tuning, the 'pops' are of no real significance and less noticeable than in some other receivers I have used.



The underside conceals yet another 'busy' p.c.b. This one '95 vintage.

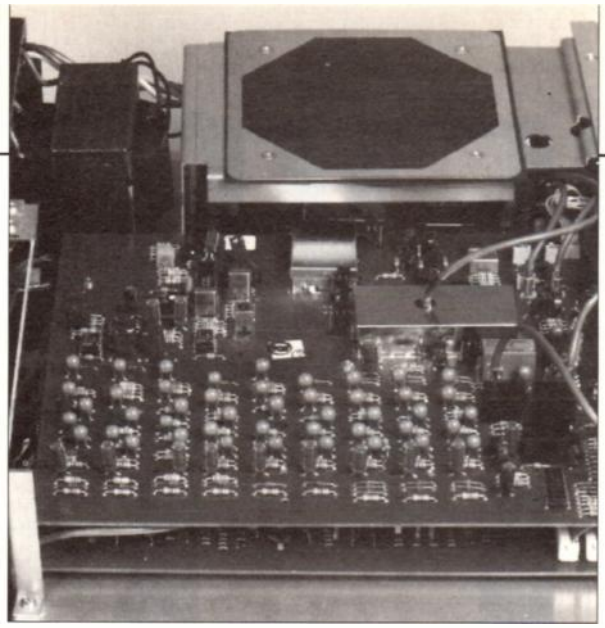
Alongside the main tuning knob are two large 'up' and 'down' buttons which step the receiver frequency in fixed increments; 5kHz from 100 to 540kHz and from 1.800 to 30.000MHz; and in 10 or 9kHz steps in the medium wave band from 540 to 1800kHz. Selection between 10kHz (USA specification) and 9kHz (European specification) is made by simply switching on the receiver whilst holding down the 'STEP' button. A neat feature is that the 9kHz steps are always on the correct European frequencies regardless of the frequency selected by the main tuning knob. The up/down buttons can also step in 100kHz increments if the 'F' (function) button is pressed first.

Next to the up/down buttons is a keypad which provides direct frequency entry as a primary function, with secondary functions also available. For frequency entry Drake have wisely chosen to provide either MHz or kHz entry at the user's choice. If kHz entry is chosen, then 100kHz is entered as simply 100; 3750kHz is entered as 3750; 14200kHz as 14200. If MHz entry is chosen, then the same frequencies would be entered as 0.1, 3.75, and 14.2 with a decimal point appearing on the display between the least significant MHz digit and the 100kHz digit. All in all very simple and entirely satisfactory for every possible user. A final nice point is that frequencies can be entered from the keypad down to the finest resolution in current use; for example you can enter 3750.42kHz and that is what you get, providing you remember to put in the decimal point. How accurate do you need to be? (as the pilot of the *Enola Gay* said to his crew).

Operation of the keypad buttons is easy, even though they are in a vertical plane, but I found that if I pressed the right hand edge of the buttons the number did not always register, whereas pressing the left hand edge proved 100% positive. Maybe this only applied to my particular sample but it could be slightly disconcerting if you were halfway through frequency entry and missed a digit. The alternate functions of the numeric keypad are concerned with scanning (keys 1 to 6), and general functions such as clock and timer setting, turning on and off the 'beep' tone, setting the display brightness, clearing memories and so on. These secondary functions are activated by a single press of the 'F' key and operate clearly and in a self explanatory way.

Above the numeric keypad and under the main display is a row of six buttons for controlling major operating features, with the legends clearly visible in the display itself. Each of the buttons has a primary and secondary function, again selected by the 'F' key, but a clever feature is that the primary and secondary status can be reversed if the user chooses. The functions covered include switching between the two v.f.o.s, although use of the term v.f.o. does not indicate that each 'v.f.o.' contains virtually a complete receiver set-up covering filter and mode selection, a.g.c. settings, pre-amp settings and so on. In effect you have two separate receivers available at the touch of a button, and this is a powerful operating tool in practice. Other functions include settings for a.g.c. (including, Hooray, an 'a.g.c. Off' setting), noise blanker, pre-amp, antenna selection, timer, tuning steps, notch filter and so on. All very comprehensive and so easy to use.

Dominating the display itself is a 7-digit alpha/numeric readout which indicates frequency of the v.f.o. or memory channels to 10, 100 or 1kHz depending on the tuning steps chosen by the user, or the channel name, or time and timer settings, or various programming and error messages. The channel name function ties a text line to a frequency so that the user can be reminded of the station or service on that frequency. Although most operators will use this facility to put a name tag on memory channels, if the 'Name' function is switched on during free tuning, if the frequency to which the receiver is tuned is within 1kHz of a 'named' frequency, the name will appear automatically when the tuning stops. Bit disconcerting the first time it happens, but a clever bit of electrickery nonetheless. As supplied, the first



The electronics are stacked two boards high. Note the large quality loudspeaker.

twenty memories are pre-programmed with the bottom frequencies of the major broadcast bands and some frequency standard transmissions, but these can be changed and/or new names entered by an ingenious use of the main tuning knob or UP/DOWN buttons to run through the alphabet and enyter the new 'name' character by character. using the RS-232C interface also allows names to be entered from an external terminal or computer running a terminal emulator.

Filter bandwidth and mode in use are shown to the right of the frequency readout, whilst to the left are legends covering scanning and memory functions. Altogether, the main display panel on the R-8A is one of the best I have seen in terms of readability and legibility, and it's a positive pleasure to see all receiver operating parameters displayed at once, without the tedium of searching through menus to find out which filter is in use, or even which mode you are in. The display is backlit in green and is bright enough to see in any conditions which I encountered. Also notable is the wide viewing angle which removes the need to be 'square on' to the receiver when using it.

Memories are made of this...

The R-8A is the answer to advancing Alzheimer's, because it has 440 memory channels available so that it can remember what you have forgotten. These, however, are not simple frequency stores because each memory location can store frequency, mode, bandwidth, a.g.c. setting, pre-amp or attenuator setting, antenna selection, notch filter on/off, noise blanker setting, and SYNC detector on/off. Linking all this information to memory scanning facilities means that you have, in effect, 440 different receiver set-ups which can all be scanned. This receiver is a frequency monitor's dream, and when further coupled to very extensive receiver control functions by way of the built in RS-232C interface there seems to be very little it can't do for you. Whether you can **hear** anything over the r.f. noise generated by your computer is another matter. I can't comment on any software which may be available for the R-8A, but I understand from the Drake distributors that software for DOS, Windows and Windows 95 is about to appear in the USA from third party suppliers.

Swallow this; it will improve your image.....

The memory and scanning functions are so comprehensive that I can't possibly condense a description into this review, but all is explained in a very clear user's manual which even I can understand. In the modern style the manual contains no circuit or technical information apart from the r.f. specification, which is a great pity because Drake have used some very neat electronics inside the R-8A. For fellow members of the FOUL (Few Of Us Left) Club who read circuit drawings with as much enjoyment as a good novel, a service manual exists which reveals amongst other things the elegant method by which Drake mix down from the 45MHz first i.f. to 50kHz without suffering bad image problems 100kHz away. They call this the Image Rejecting Mixer, which like the fabled Oozlem bird manages to swallow its own image whilst passing the wanted signal along. On a simpler level, front end protection is provided by a combination of neon tube and reverse power protection networks but oddly the neon is only on the 50Ω Antenna 1 input and not on the high impedance Antenna 2, which conceivably could be the input which suffers the highest voltages from static?

One strange omission from both the user's manual and the service manual is any detail on how and where the optional v.h.f. converter is fitted, or how the receiver operates when on v.h.f. However, the converter covers 35 to 55MHz (what a fabulous tuneable i.f. range for microwave converters), and 108 to 174MHz thus covering every v.h.f. service of any real interest. Combined with the R-8A I can't think of a better all purpose receiving station, but since I haven't had the pleasure of using the converter, I can't comment on the 'usability' of the package.

Conclusions, or "I thought he'd never stop talking"

Since it is my belief based on long experience that no respectable manufacturer would deliberately publish performance data which his equipment could not meet, I have chosen to write a 'user's' review rather than give pages of filter plots and detailed measurements. The R-8A being from an extremely good home meets its published specification figures with ease, but these don't in any case tell you what a receiver feels like in use. I ***can*** tell you that I found the R-8A a compelling receiver to use, and a worthy flag carrier for the Drake name. It's honest in appearance, excellent in performance, and a pleasure to use. The audio quality in particular is a joy to hear in all modes, and although I have mentioned a few things which I found not entirely to my liking, remember that these are my personal opinions and may not be of any importance to you. There are inevitably things about the R-8A which I haven't mentioned because of lack of space, but the Drake appointed distributors, **Nevada Communications, 189 London Road, North End, Portsmouth PO2 9AE. Tel: (01705) 662145**, will help you with any specific queries and I think it appropriate to thank them for their readiness to let me have one of their first receivers to review, and also to arrange airmail shipping of a service manual from the USA at extremely short notice.

As far as the competition is concerned the R-8A seems to be in a class of its own. The JRC NRD-535 is comparable in specification but is much more expensive, and I don't think that any of the receivers from the 'Big Three' of Japan offer the same combination of features, performance and operating convenience, particularly at the current price of the R-8A. It's a nice receiver, and I enjoyed using it. ■

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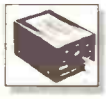

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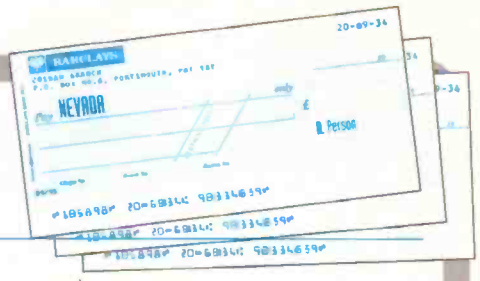

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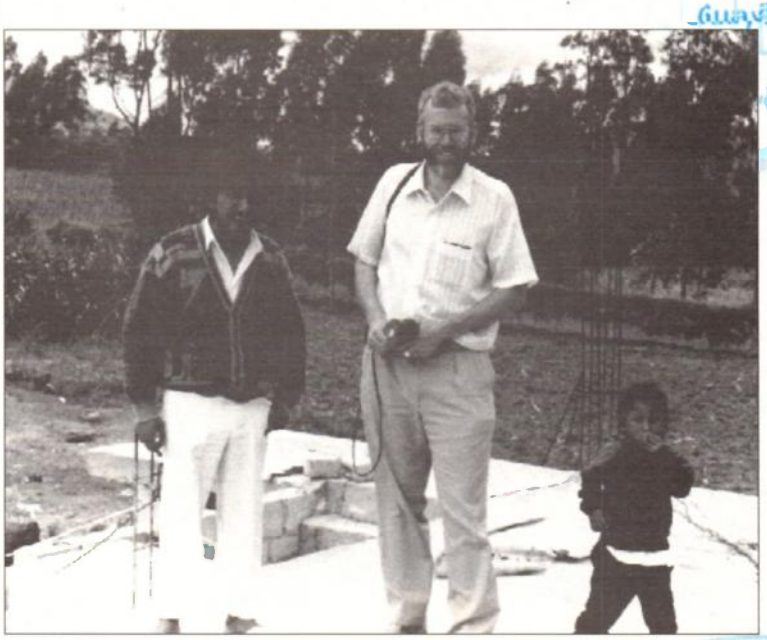
Ecuador's Radio Alianza
Is it a pirate?

During the first few months of 1995, reports appeared in the DX hobby press of a new and somewhat mysterious station in Ecuador called Radio Alianza. Rich MacVicar HC1JMN, of HCJB's English Service in Quito, decided to locate the station.



Luís Cachihuango with Rich MacVicar and Samuel Andrango on the roof of R. Alianza's transmitter building.

Radio Alianza's programming sounded professional, including an airing of the Ecuadorian national anthem at the end of the broadcast day. However, Radio Alianza was using the out-of-band frequency of 5.4539MHz. There was no record of it in recent government listings and there were no on-air mentions of its location.

DXer and author Henrik Klemetz noted that greetings given over the air pointed to the station's location as somewhere in Ecuador's northern province of Imbabura. The Imbaburan music on the station and, as we'll see, the very name of the station were further indicators as to its location.

I took a recording of Radio Alianza over to HCJB's Segundo Andrango. Segundo serves in the Quichua language department and is himself an Otavalan Indian from Imbabura province. Before listening to the tape, Segundo explained that the name Alianza probably had to do with the Alliance denomination (Alianza in Spanish,) which has numerous churches in Imbabura province. In fact, Segundo had become a Christian some 23 years before through the influence of the Alliance Church in Imbabura province.

Upon listening to the tape, Segundo's interest peaked. The Quichua-language voice sounded like an old friend of his, someone with whom he grew up and went to school. Segundo mentioned that his friend, Luís Cachihuango, was a part-time broadcaster on Super Radio, a small station in San Pablo del Lago, not far from Otavalo. Luís was well known in the area as an evangelical leader as well as the head of a savings and credit company.

Wednesday June 14 was the day Segundo and I decided to drive up to Super Radio to see if we could find Luís. Even if Segundo's old friend didn't have anything to do with Radio Alianza, we were sure he would at least know something.

To Otavalo

By mid-morning, we arrived at Super Radio in San Pablo. It was closed. However, the owner, Sr. Beltran, was standing outside the general store at the front of the building and inquired if he could be of help. He told us that 'Lucho' (Luís' nickname) would be at his company's new office in the nearby city of Otavalo and gave us directions. Before continuing north on the Panamerican Highway to Otavalo, Segundo suggested we first stop by Luís' house, over on the other side of beautiful Lago San Pablo.

Ten minutes later at the home, a young Otavalan girl answered the door and told Segundo that Radio Alianza was right there! On we went enthusiastically to Otavalo.

It is no exaggeration to say that, over the past two decades, the small city of Otavalo has become famous throughout the world. Tourists come to purchase beautiful handmade items such as sweaters, rugs, hats, blankets, dresses and vests in Otavalo's Poncho Plaza. Indeed, it is now possible to find Otavalan items in many countries. The distinct music of Imbabura province is also played by Otavalan bands, who travel all over the world.

Like Segundo, Luís Enrique Cachihuango is an Otavalan Quichua Indian in his mid-30s. He has become well-known in the Otavalo community as the head of the successful Imbaya Chuchuqui Savings and Credit Company. He was pleased to see his old friend, Segundo. After introductions, I felt a little uncomfortable upon explaining the reason for our visit to his office, but soon realised that Luís was quite open to discussing his station.

CONTINUED ON PAGE 24 ▶

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AOR have been synonymous with pioneering design of high quality wide band receivers for many years building on the strength of the AR2001, AR2002, AR3000 and AR3000A. The tradition continues and we are proud to announce the arrival the very latest receiver... the AR5000. The new receiver is not based upon any specific earlier model but draws on the best points and combines this experience with the latest circuit design. The result of this clever RF design is a **very sensitive** receiver with **excellent strong signal handling** capabilities over a very wide receive range. The AR5000 is housed in a newly designed **solid metal cabinet** and provides a very wide receive frequency coverage from **10kHz to 2600MHz, all mode reception** FM, AM, USB, LSB & CW and MANY microprocessor facilities aimed toward professional monitoring and the dedicated listener. The AR5000 features a **NCO (Numeric Controlled Oscillator)** providing **tuning rates right down to 1Hz**. A **TCXO** is fitted as standard. Front end **automatic electronic preselection** has been incorporated between 500kHz - 999.999999MHz with low pass, band pass and high pass filters covering other bands. This is a real achievement for a receiver with such a wide frequency coverage and scan / search speeds of up to 50 channels per second.

First stocks expected around Christmas '95. Please phone or send a S.A.E. for a leaflet. £ T.B.A.

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AOR AR7030 - *"Superior by design"*

New high dynamic range short wave receiver 0 - 32 MHz

For many years short wave receiver manufacturers throughout the world have pressed forward the frontiers of performance and design bringing a handful of notable advancements and setting new industry benchmarks for receiver specification. With the introduction of the all new AOR AR7030 short wave receiver, a new measure of performance, indeed a new benchmark is offered to the discerning and dedicated listener.

No matter how many new features and facilities are offered, ultimately a receiver will be judged on how well it receives! It is for this reason that we can feel so confident of the receiver's success and notability. The AR7030 stands ahead of the field offering an **IP3 greater than +35dBm** (preamp off - around +25dBm preamp on), dynamic range greater than 100dB in AM mode with a 7 kHz filter and greater than 105dB in SSB modes with a 2.2 kHz filter. All this and GREAT SENSITIVITY better than 0.5uV for 10dB S/N in AM mode and better than 0.3uV for 10dB S/N in SSB. Selectivity too is razor sharp offering greater than 90dB @ 10kHz SSB and greater than 100dB @ 20kHz.

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The **SDU5000** is a spectrum display unit designed with the AR3000A, ICOM R7000, R7100 & R9000 in mind. It will also be ported for the new AR5000. Locating brief transmissions has never been so easy, by using the MAX facility any transmission within ± 5 MHz may be identified and signal strength measured in dBm. A small modification is required to the standard AR3000A to provide compatibility but the **AR3000A PLUS** is ready to go. ***SDU5000 £799***

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.
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AR8000 UK £449

The **AR2700 UK** 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. An optional **VOICE RECORD** chip RU2700 permits an **instant 20s digital recording off air** which may be replayed over and over again. Computer control is also possible by using the optional IF-ADP and CU8232 adaptor and interface unit.
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TIP OF THE MONTH *AR1000, AR2000*
memory channels changing on their own?

Have you ever wondered why the memory channels of your AR1000, AR2000 and similar models such as HP100 etc appear to change all by themselves, often overnight!!!

The answer is quite simple really... they don't change on their own at all but you have over-written them without realising. If you press [MANUAL] a channel number will appear on the left of the display, this is normal and you carry on entering frequencies and listening to activity. All is fine until YOU CHANGE THE MODE using the AM/NFM or WFM buttons... it is at this point that the memory data gets over-written (the channel number of the left of the display).

Positive: You can use this to your advantage if you know about it as it makes changing memory data very quick on occasion. The potential for over-writing data can easily be overcome too by clicking the [DIAL] one click (doesn't matter which way) before entering frequencies... this cancels the memory channel number display on the left of the LCD.

N.B. Some production runs of AR2000 do not exhibit this characteristic.

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. The introduction of the custom modified **AR3000A PLUS** provides even greater performance and capabilities... simply request the descriptive leaflet for full details.
AR3000A £999, AR3000A PLUS £1099

The **AR3030** short wave receiver provides coverage from 30 kHz - 30 MHz with 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. ***AR3030 £699***

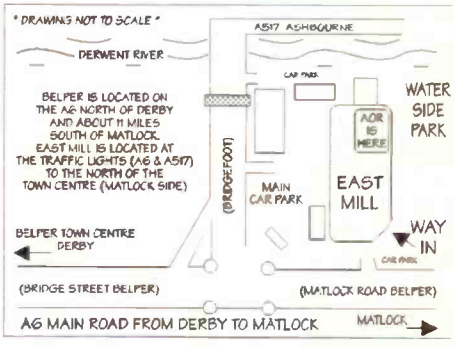
OPTOELECTRONICS Scout & AOR AR2700 / AR8000

If portability is of prime concern and "hand carry" is the only possibility then the **Scout** may help you locate those elusive transmissions when visiting airshows, motorsport events etc. The **Scout** is similar to a conventional frequency counter in that it measures the frequency of any transmission from 10MHz to 1.4GHz which is 10dB to 15dB higher than the ambient RF background level. However, the **Scout** distinguishes itself from a traditional frequency counter by being able to differentiate between random noise and coherent RF transmissions. This exclusive feature developed by OPTOELECTRONICS is called **DIGITAL FILTER & AUDIO CAPTURE**.

Of particular interest to operators of the AR2700 & AR8000 is the ability to connect the **Scout** directly to the receiver (small modification required) so that active frequencies are automatically fed to the AOR receiver which immediately jumps to the active frequency reported by the **Scout**, this feature is called **REACTION TUNE**. ***Scout £399***

NEW LOCATION

This simple map should help people travelling to visit us. We are located on the 4th floor of a refurbished mill complex with excellent views across the river Derwent. A door control system provides access into the building via stairs and a lift, just look for the "AOR" button on the main entrance.



01773 880788

Where does the name 'Alianza' come from?

"Radio Alianza gets its name from the Christian Missionary Alliance (Mission Cristiana Alianza). Another reason for the 'Alianza' name is to unite people. My philosophy is to live in unity. There are differences among the people of this province-economic, religious, racial—but I believe that radio can be used to unite."

How long has Radio Alianza been operating?

"We first applied for a licence about a year ago, but were not successful. Perhaps it was because of the small amount of equipment we had then. We began to broadcast our test transmissions more frequently about six months ago, especially on weekends."

What is the power of your transmitter?

"500 watts."

And was the transmitter hand-made here?

"Yes. A number of technicians put it together from transmitter designs that they had. This was an encouragement to me as I saw that procuring a transmitter would not mean we had to first have a great deal of money. It would be possible through enthusiasm and by it being God's work."

A fair number of radio enthusiasts in other countries have already heard Radio Alianza. Is there an address at which listeners could write to you?

"Yes. I thank them for tuning in. I didn't realise that my little transmitter was reaching so far away! If they write to me, their letters might be of help in convincing the government to give us a licence, as we have programmes for the rural sector, educational programmes for development - not the same things as heard on a normal radio station. Anyone can write to me at:

Sr. Luís Enrique Cachihuango, Cooperativa Imbaya Chuchuqui, Casilla 140, Otavalo, Ecuador."

R. Alianza's Luís Cachihuango with HCJB's Segundo Andrango.

You broadcast regularly on Super Radio in San Pablo del Lago. Have you been in radio for a long time?

"I've been involved in radio for only about three years. I began by recording commercials in Quichua and later became an announcer. On Super Radio, I've been the director of Quichua programming. I loved doing programmes for Super Radio and out of that came Radio Alianza."

Now, from what you've said, I understand that you have already applied for a licence from the government and were turned down?

"At first we applied for a licence for a medium wave frequency. They turned down our application, saying that there was no space left on the medium wave band for another station in the province. Afterwards, we realised that short wave was another possibility, perhaps even better if we wanted to reach a more distant, rural audience. It would be a better way for distant family members to communicate with one another. So, we then applied for a short wave licence. We haven't yet received a definite response - the situation is pending.

"We really hope and pray to get a licence. Here in Imbabura province, there are no Christian stations that broadcast in Quichua and Spanish. Yes, Radio Bahai is on short wave, but that station is totally restricted to the Bahai faith."

You don't seem to have a problem with operating without a licence, even though Christ taught that we must follow the laws of the country we live in.

"This is something that always keeps me thinking. I'm an evangelical leader and know that we must always obey the authorities that the Lord has put over us. For that reason, I presented our first and second applications before doing anything else. They haven't yet favourably answered our second application. With that in mind, I decided not to go on the air daily, but rather wait upon the Lord.

"However, I did decide to broadcast on Sundays only. The main purpose in that was to keep the transmitter in a limited stage of usage so as not to let it deteriorate. If we were to leave everything turned off completely, there would be a greater possibility of something becoming damaged. Also, with these Sunday transmissions, perhaps we could receive some listener backing that would help us pressure the government for a licence.

"We are in the unique position of already having the equipment ready to go on the air daily. On many occasions, people apply for a licence, but have no equipment. The whole idea is just a passing dream. By the Lord's work, however, we already have the equipment and are ready to broadcast. I believe it's much better to be in this position when applying for a frequency. As it was only last December when we sent in the second application, there is still reason for hope."

Studio

The three of us then went to Luis' home, the site of Radio Alianza, at Eugenio Espejo, a hamlet to the south of Otavalo. Equipment in the control room included two microphones, two turntables, a console and several tape recorders. An adjoining studio was used for live music performances.

When Radio Alianza first went on the air, the transmitter and antenna were also located at Luís' home. However, the transmitter created a great deal of interference to the audio equipment. A friend and fellow church member helped Luís install the transmitter and antenna at

his home a little over a kilometre away. The town, supportive of the whole idea, gave permission for Radio Alianza to erect its own set of telephone lines between the two homes as a studio-transmitter link.

High Ground

The antenna is, indeed, favourably located on high ground. From the roof of the building housing the tiny transmitter, one has wonderful views of fields of corn waving in the breeze up and down the northern Ecuadorian Andes. Nearby mountains are green Imbabura to the east and jagged Mojanda and snow-capped Cotacachi to the west.

The antenna is a folded dipole 12 metres high and 24 metres long. It runs east-north east/west-south west, providing strongest signals in the directions of north-north west/south-south east.

As with, perhaps, most stations in Latin America that do not yet possess an official government licence, Radio Alianza does not consider itself a 'pirate' or 'bootleg' broadcaster. The practice of airing test transmissions, which are really regular broadcasts, while awaiting government authorisation, is very commonplace, especially in Peru. We have put Radio Alianza in touch with the Quito office of AMARC the World Association of Community Radio Broadcasters. AMARC may be able to 'go in to bat' for Radio Alianza when the time comes. The community immediately surrounding Radio Alianza is also ready to give their backing.

Reports Needed

At the time of writing (June 1995), Radio Alianza's frequency is just under 5.849MHz between the 49 and 60 metre bands. Listen for them on Sundays up until approximately 0200UTC (Monday) sign off. Before our visit, Luís was already familiar with what a QSL was and is now expecting requests from different parts of the world. A US dollar bill would be the most helpful means of helping with return postage costs.

Luís Cachihuango asks listeners, wherever they may live, to write with suggestions, be they on programming or technical in nature. Letters of encouragement and support would be especially appreciated at the above address. ■

Mount Imbabura provides a majestic background for R. Alianza's folded dipole antenna.

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- 125kHz step added for WBFM
- Lower battery consumption
- Improved Short Wave reception

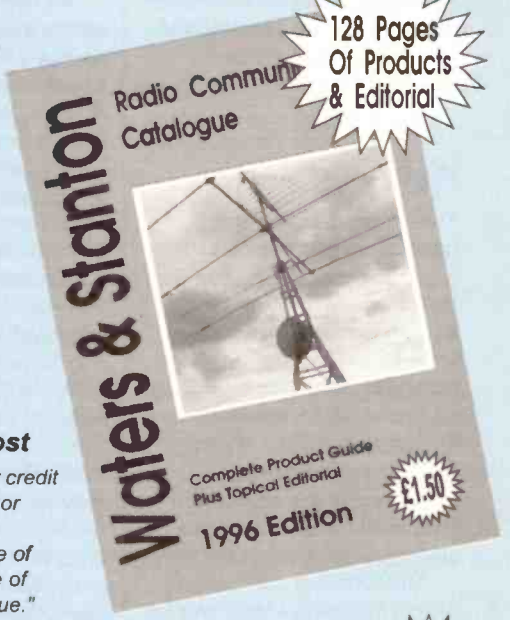
Offered for a very limited period - all these factory fitted extras that "turbo charges" the MVT-7100.

List Price £449 Phone for Deal

1996 Edition out 14th November

The best catalogue in the business. 128 pages crammed with ham radio and listening products. You'll find many accessories that have never been advertised before, all at amzingly low prices. There's articles on ham radio and lots of technical information. It's a great read.

128 Pages Of Products & Editorial



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Simply phone your credit card number to us or send a cheque or stamps to the value of £2 marking outside of envelope "Catalogue."

Optoelectronics New Cub Counter

1MHz - 2.8GHz

Features 10 hour ni-cad charge life, 9 digit display, digital filter to reduce false counts, auto capture means you don't lose the display when the signal stops! Ni-cads, AC charger and aerial included. Great for surveillance etc. Order Code **"Cub-UK-pack."**

£139 Opening Offer

MBR-8 7 Band Receiver

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- 2.2 - 22MHz
- 108 - 174MHz
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- Directional Antenna
- Slow Motion Dial
- Analogue S-meter
- 12 Months Warranty
- FREE Short Wave Handbook

£49.95 24hr Del. £8

This Month!

Optoelectronics AR-8000 + Scout "Combo"

£739 The Pair!

The Scout counter can be plugged into our special version of the AR-8000 for "Reaction Tune" control. In a fraction of a second the AR-8000 is on channel!. Great for surveillance. Our package includes everything you need.
Amazing separate prices on Scout and AR-8000 - just phone.

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All cover 25 - 1300MHz

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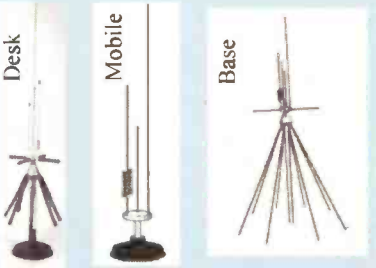

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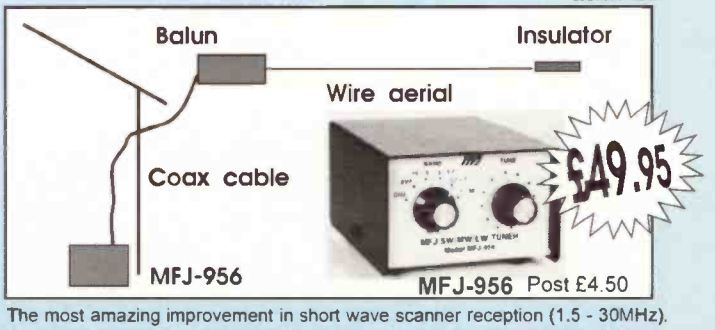

The most amazing improvement in short wave scanner reception (1.5 - 30MHz). Just add the long wire balun to the end of a wire, add the MFJ-956 passive preselector and hear signals literally jump out of the noise! Makes reception as clear as many base station receivers. Lets you realise the full potential of your scanner. Full 10 day money back gurantee - now that's confidence for you!

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Save £2

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£9.95

The QS-200 lets you mount any scanner on you car dash board using the plastic grill.

Everything For The Listener

The products below are also available from all **32 MAPLIN STORES**

WATSON

25 - 1900MHz
A new range of scanning aerials designed to give you what others promise.

Tele-Gainer: 41cm telescopic with knuckle joint BNC
Maplin Ref BH82D **£14.95**
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Maplin Ref BH81C **£12.95**
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Maplin Ref BH83E **£19.95**

These antennas are specially made by Watson to enhance your scanner's performance. They are of extremely high quality and the first true dedicated 25 - 1900MHz scanning aerials to be offered in Europe. Don't be fooled by the low prices - these really are great performers.

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100kHz - 1300MHz Scanner Receiver
WFM-NFM-AM-SSB
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MVT-7000UK
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WFM-NFM-AM
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PRO-46 PRO-44

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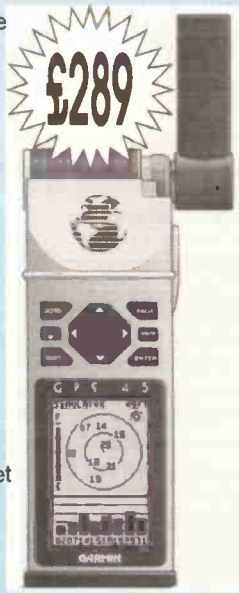

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Expedition Earth 2000

At the beginning of 1996 a small band of intrepid explorers are due to set off on an eighteen month circumnavigation of our green and watery planet. Communications of all types will be used to both follow their progress and enable the group to communicate with each other and base. Kevin Nice takes a broad look at the expedition in general.

The event planning commenced some eighteen months ago, following the predicted success of a previous expedition to Africa. One of the themes of the African expedition was to raise money for conservation. This was so popular that the Event Director, Mark Hiley, recognised the public desire was for a larger event which could follow this theme.

Expedition Earth 2000 was quick to attract the interest of the media, in particular BBC Television. A national public relations tour was set up to attract sponsors to the event. The Tour was a major success attracting over 400 sponsors. The team held regular press conferences that resulted in the event being featured in both the press and on radio/TV.

The expedition objective is to combine the huge revolution in travel and adventure programmes with compelling conservation issues. The team will circumnavigate the globe and highlight the world's environmental problems and initiatives for the coming millennium.

Quite unbeknown to the exhibition team, various broadcasters, including the BBC, had been looking for ways to combine wildlife and conservation to a wider audience. Traditional style programmes had a popularity with audiences older than 40 years of age. Expedition Earth 2000 provides a solution to the problem of broadening the appeal to reach a huge audience.

Sponsorship

The expedition has attracted a great deal of sponsorship, much of this sponsorship coming from companies which have supplied essential equipment for the actual circumnavigation itself. A brief summary includes; adventure and diving equipment, satellite navigation systems, vehicles, radio communications equipment and special edition expedition clothing.

The communications equipment is of specific interest to *SWM* readers and this is detailed in **Table 1**.

Direct Conservation Benefit

Events such as Live Aid have relieved the suffering of the third world. Children in Need and Comic Relief have helped millions of children, but few events of this scale have been set up for the sole benefit of conservation.

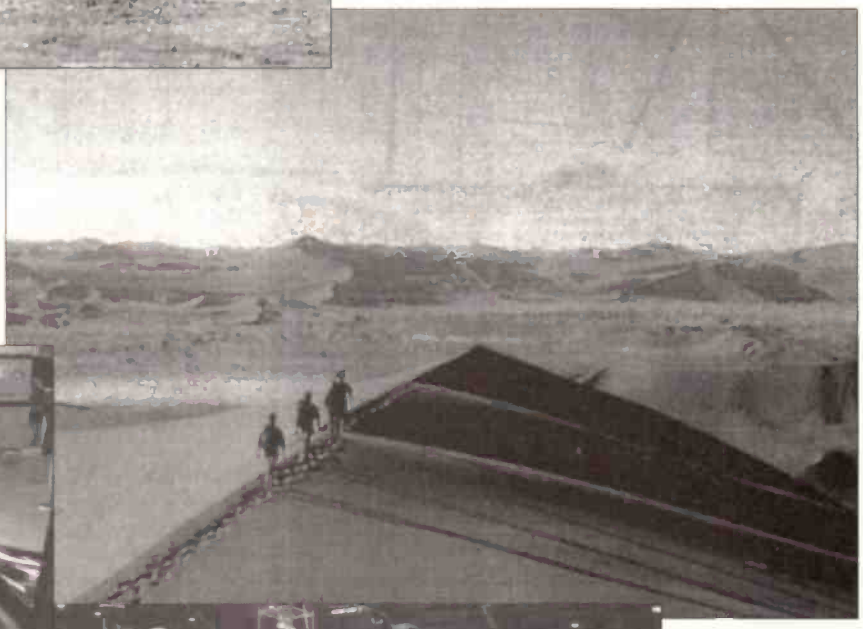
As a direct result of Expedition Earth 2000, the organisers expect millions of pounds to directly benefit conservation. Vast amounts of media exposure will benefit both the natural world - in assisting the process of protective legislation change - and conservation-friendly

Table 1

Icom IC-H21T	v.h.f. hand-held repeater
Icom IC-F10	2-way 'back to back' hand-held
Icom IC-M15	80 channel Marine system
Icom IC-706	h.f. multi-mode transceiver

Expedition Earth 2000 will work closely with the conservation beneficiaries to expose, finance and protect the most desperate plights of our seas, forests and wildlife.

Expedition Earth 2000 is a chance to help reverse the fortunes of some of the most endangered species.



Their journey will take them through some of the remotest and most physically demanding areas of the world.

One of the Expedition vehicles, l.h.d. Maverick LWB 2.7TD, donated by the Ford motor company, as featured recently on their stand at the recent Earls Court Motor Fair.

The event is predicted to raise an amount in the region of £5M for conservation. As the expedition traverses the planet, it will cover a number of major enviromental/conservation issues. Viewers and readers will be asked to 'sponsor' or 'donate' money to the issue.

To assist in setting up the subjects to be covered and providing accurate and fascinating facts about each, the involvement of eight popular conservation organisations is being sought.

commerce.
I look forward to bringing you updates to this fascinating adventure over the next eighteen months.

We will be featuring regular news of how the expedition is progressing so watch out for updates.

■

"Expedition Earth 2000 represents a unique combination of exciting adventure and compelling conservation to create the largest televised adventure in history....Equally unique is its ability to transcend cultural boundaries as has been proved by the media's unprecedented interest in more than 25 countries. The event will be watched by many millions of people, uniting black, white, young and old to protect the planet that is home to all".

Mark D. M. Hiley F.R.G.S. Founder and Expedition Leader.

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NEW OPTO SCOUT 3.1-Mk2

Latest Mini Frequecy Finder From Optoelectronics. It will capture and memorise up to 400 frequencies that can be recalled directly into the AR8000. Supplied with ANT, Nicads and Charger. RRP **£399**

Buy the **AR-8000 & Opto-Scout** together including modification & connecting cable. **RRP £848.**
***SPECIAL OFFER* £739**
SAVE OVER £100

NEW OPTO CUB

Minature Handheld Counter covers 1MHz - 2.8GHz digital filter to reduce counts. Inc. Nicads, Charger and ANT.
OUR PRICE £139

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Minature Hand Held. Covers 1 MHz - 2.8GHz supplied with Nicads, Charger and Antenna.
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A Minature Wideband Antenna. Receives 30 - 1200 MHz. Transmits 2m/70cm, BNC fitting only 1.5" long its supperb
RRP **£29.95** P & P £1

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We have a VHS Video demo tape showing the Opto-Scout being used to its full potential. This video is available on *FREE LOAN*, all we require is £10 deposit (refundable) + £2 P&P and we'll send you a copy. You return the tape when you've watched it and we'll refund your £10. (Provided the tape is returned undamaged). Alternatively – order a Scout from us and we'll deduct the £10 and you can have the video on us. NB:- it is an **offence** to copy this tape for any reason.

STAR BUY REALISTIC PRO-43

Listen to aircraft/ham, marine, mobile phones and much more with this superb handheld scanner . Covers 66-88/118-174/220-512/806-1000MHz. **RRP £249.**
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WANT TO GET INTO SCANNING? THEN THIS IS IDEAL FOR YOU

Listen to Aircraft, Ham, Marine and much more with this superb scanner. Covers 66-88/108-174/380-512MHz. ~~£149.95~~
OUR PRICE **£119.95**

REALISTIC PRO 25	~~£179~~	£159.95
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Wideband Desktop Scanner with rotary tuning and tone encoder ~~£349~~
Limited Stock **£249.95**

UK SCAN DIRECTORY

4TH EDITION

£17.50
FREE P&P

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£4.95 + P&P £1

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The ultimate handheld scanner covers 500kHz-1900MHz. All mode. Includes antenna, nicads & charger.
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Soft case for 8000/2700		£17.95
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SW-8000 S/ware for 8000		£49.95
AR-3000A	~~£999~~	£899.95
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New Handheld Scanner covers 0.1 - 1650 MHzx (all mode) includes Nicads, Charger and ANT n RRP£449.95
OUR PRICE £399.95

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NEW FROM AOR AR-5000

New Wideband All Mode Base Receiver 10KHz - 2600 MHz (all mode).
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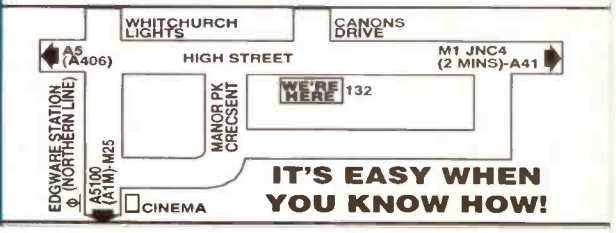

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New High Dynamic Range SW Receiver. Covers 0–32 MHz.

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Award winning minature SW receiver.

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Superb Short Wave Broadcast receiver. Also receives air & marine band etc. Mains or battery

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World wide digital radio with clock and 20 presests.

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World time clock plus AM/FM radio with alarm & calculator.

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Ideal fo any receiver.
Receives all short wave bands.
All mode, no ATU required.
Built in balun. SO239 connection.

27ft. long

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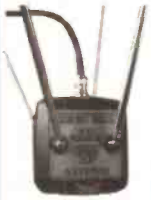
SWA-30



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OUR PRICE

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Pull out and clip on compact short wave antenna. Boost the performance of your portable with one of these.

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SW LONG WIRE KIT

DX end fed long wire kit, up to 150ft of copper wire.
The Complete Package.

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WATSON LONG WIRE BALUN

- Matches any Wire
- 500HM Out put
- Improves Reception

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Excellent Condition (as new)

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ICR–7000	VGC	£729.95
OPTO–3300	VGC	£99.95

Radiosondes

What are they, who uses them, what for and can you hear them? Philip C Mitchell answers these intriguing questions below.

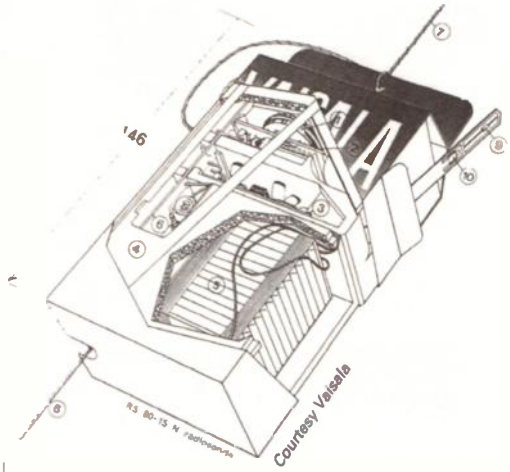


Fig. 1; Cut-away of Vaisala Radiosonde model RS 80-15N.

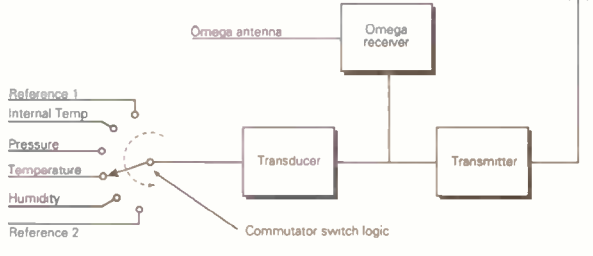
1. Pressure sensor BAROCAP®
2. Transducer electronics
3. Omega receiver
4. u.h.f. antenna counterpoise
5. Battery
6. Transmitter
7. String and Omega antenna
8. u.h.f. antena radiator
9. Temperature sensor THERMOCAP®
10. Humidity sensor HUMICAP®

For today's weather forecaster, it is essential to know detailed physical facts about the atmosphere not only at ground level but above ground. It is the knowledge of above ground level changes in temperature, humidity, pressure, wind speed and direction, and other facts that are of paramount importance in compiling accurate weather forecasts. Certainly, most of the weather is generated at altitude and most significant cloud formations originate in the first 1.5kmft of the earth's atmosphere. Pilots and air traffic controllers need to have accurate data about all these factors for the safe and economical movement of aircraft. Flight path planning is weather dependent when it is essential for aircraft to avoid areas of turbulence such as thunderstorms and wind shears but on the other hand to take advantage of upper air jet streams. Space craft launches can only safely go ahead if weather conditions are good not only at ground level but up to the commencement of the stratosphere at approximately 13km.

Initially, information on upper air conditions was obtained by sounding balloons carrying aloft a small package of instruments that would record there and then barometric pressure and temperature. These instruments were contained within a light bamboo framework and were sent aloft by a 1.2m diameter, hydrogen filled balloon and reached heights up to 20km when the envelope would rupture and the load descend earthward. A label attached to the instrument package requested the finder to 'return to the Air Ministry Meteorological Office' although frequently the whole outfit would drift many miles and finish up in the sea!

So it was logical therefore, that information about the upper air should be transmitted via short wave frequencies from instruments carried aloft, received by ground stations and the data processed into user-friendly formats. Thus, the radiosonde was born out of necessity to obtain accurate and continuous information about the atmosphere that could be processed by the more powerful computers that forecasters had access to. The helium filled balloon and its small instrument package (the radiosonde) are expendable and since one manufacture is quoted as saying that over a million of his type of radiosonde had been produced and that there is on average over 2000 ascents daily, it is a fair assumption that a proportion of these have been retrieved by members of the public. A contemporary model, such as the RS 80-15N, manufactured by Vaisala, Finland is capable of transmitting a stream of accurate measurements of barometric pressure, temperature, relative humidity and wind profiles from heights up to 30km before the carrying balloon envelope bursts and the 'ascent' as it is known, is terminated. Additional sensors can be added to the sonde for customer's special requirements such as monitoring atmospheric ozone and radioactivity levels.

Fig. 2: RS 80-1 5N Block Diagram.



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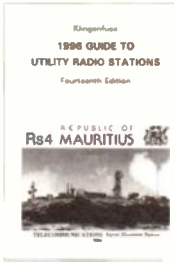

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What's Inside?

A model of radiosonde RS 80-15N is shown in **Fig. 1** and miniaturisation of component parts ensures the weight of the package is kept to a minimum (230g). On the data transmission side of things, the three components, pressure, temperature and humidity each has its separate capacitive sensors as in **Fig. 2** These sensors are linked, every 10 seconds, via a continuous sampling logic gate switch to a single transducer completing the a.f. circuit which in turn varies the a.f. oscillator frequency fed to the transmitter. Thus the frequency generated by the transducer is the measure of the meteorological parameters. The calibration reference points 1 & 2 are used primarily prior to the launch of the radiosonde. Barometric pressure is measured, as in an ordinary household barometer, by the varying contraction or expansion of a small aneroid capsule (Barocap). The minute mechanical movements are in turn converted - via a transducer - into alterations of capacitance. Temperature is likewise measured by the by a small sensor (Thermocap), the variation in capacitance of which is altered by the small movements of two adjacent electrodes separated by a tiny temperature sensitive ceramic chip (0.2mm thick). Finally, humidity is measured by the contraction or expansion of a moisture sensitive, flat, 1 micron thick, polymer film sandwiched between two thin electrodes again varying the capacitance of the sensor (Humicap). A constant stream of data is relayed to the ground receiver. The transmitter frequency of this particular radiosonde is either 403MHz or 1.680GHz (f.m.) and has a range of 250km. and should you have a réceiver capable of receiving these frequencies in f.m. mode, you may be able to hear the telemetry signals if you are within range of the sonde. Other makes use frequencies around 27MHz. (f.m.).

The strength and direction of the wind (profile) will also vary with height and these two factors are arrived at by a different system. To ascertain these factors, the bearing, distance and heights of the radiosonde must initially be calculated. In the Vaisala RS 80-15N system, Omega aircraft Navaid signals are received from their ground stations and retransmitted by the radiosonde and received back by the decoding sonde network. (Loran C and v.l.f. systems can also be utilised by other model radiosondes). Bearing, distance and height data is continuously monitored of the sonde and relayed via a v.l.f. radio link to the ground station which enables the wind profile to be calculated. **Fig. 3.** shows the acquisition of all radiosonde data and its final processing and interpretation by the Vaisala DigiCORA ground based equipment. The DigiCORA 2, MW 15 Automatic Rawinsonde set currently used is a computer driven receiver necessary to interpret and present in user friendly formats the telemetry signals received from the radiosonde. The automatic directional telemetry antenna is able to receive signals from distances up to 200km. so that several radiosondes can be monitored within that range and a separate signal path to the set is linked to the Navaid Networks for the computation of the wind profile. New standards of wind profile accuracy can be obtained through the Global Positioning System option. The output from the Rawinsonde set will include the standard format World Meteorological Organisation (see page 35 November *SWM*), messages that are re-broadcast via RTTY (e.g. by Bracknell, Hamburg, Halifax, etc.) which most utility listeners are familiar with. The output data thus obtained is an essential ingredient for the mathematical models upon which present day weather forecasting is based.

Launch of the RS-80 Radiosonde. *Courtesy Vaisala*

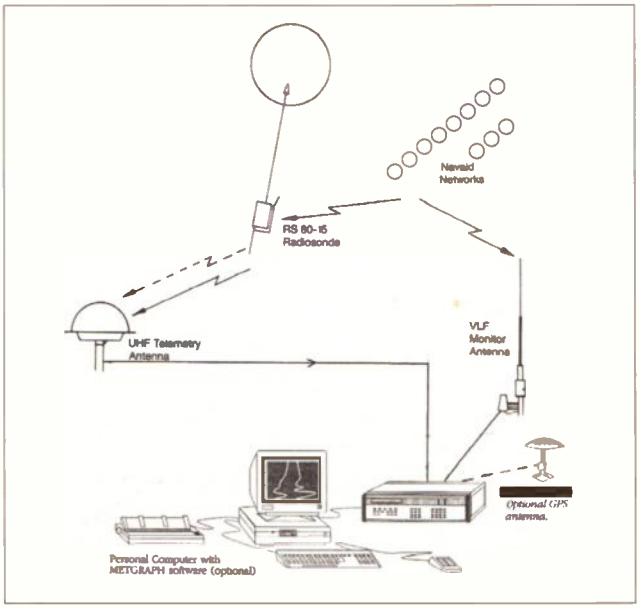

Fig. 3. Signal path from a Radiosonde to ground station MW15 Rawinsonde set (GPS antenna is alternative to v.l.f. monitor antenna).

Baffling First Time

To enable the processed data to be of use to the weatherman, all resultant data can be combined into a wide selection of output formats. One such graphical presentation is known as the 'tephigram', an example of which is given in **Fig. 4.** Although at first sight, this graph presents a rather complicated appearance,

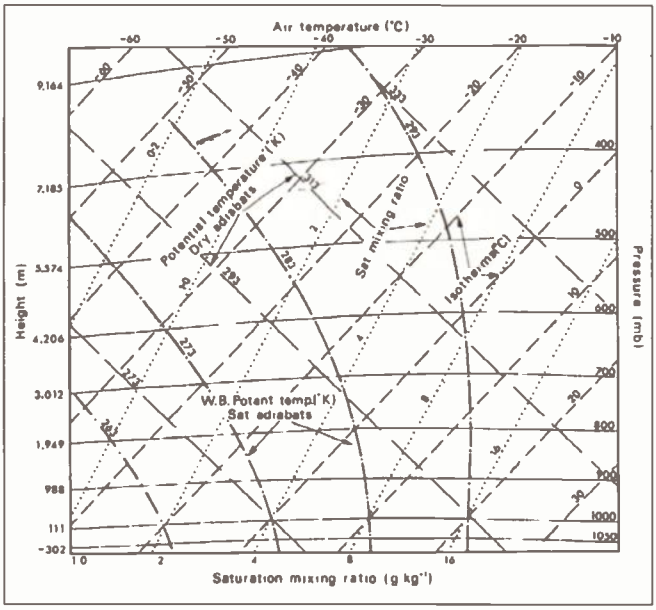

Fig. 4: Simple tephigram graph. The following above-ground properties can be displayed: temperature, height, potential temperature, wet-bulb potential temperature, pressure and humidity.

simplified, it plots temperature (on the baseline) against barometric pressure (height) on the vertical scale although strictly speaking the latter is oriented at 45° towards the left of tephigram. The remaining factors transmitted by the sonde, humidity (dew point), wind speed and direction are also plotted but overall many more factors about the physical properties of the weather are also derived from the tephigram.

The listener, whose interest also extends to weather watching and the reception of facsimile weather maps and charts, will have at some time received tephigrams and other related material that have derived data from radiosondes. When first received, as was experienced by the writer of this article, this particular material leaves one completely baffled. However, a visit to your local reference library for a book on basic meteorology, will reveal the mysteries of the tephigram and enhance ones' understanding of the atmosphere! Studying the temperature/height and humidity plots will give a clue to the stability or instability of the atmosphere which will in turn affect cloud formation, whilst temperature inversions can be identified, inasmuch as these influence radio reception. The Royal Navy, Northwood, transmits several of these at 0540 and 1710UTC daily on 3.652, 4.307, 6.5255 and 8.331MHz, listed in their schedule as 'Selected Upper Air Ascents' an example of which is given in **Fig. 5** and at several times during the day, Offenbach on 117.4kHz (DCF37) and 134.2kHz (DCF 54) do likewise, although the plots are somewhat customised versions of a tephigram in the case of the latter station. The charts from RN Northwood are true tephigrams and include the originating stations from which radiosondes are launched, for example 07110 Brest. The reference number 07110 being the station index number and a complete Worldwide list of these World Meteorological Organisation observing stations can found in the Klingenfuss *Air and Meteo Code Manual* - obtainable from the *SWM* Book Store.

Many thanks to **Vaisala Ltd.** for technical information supplied on their products.

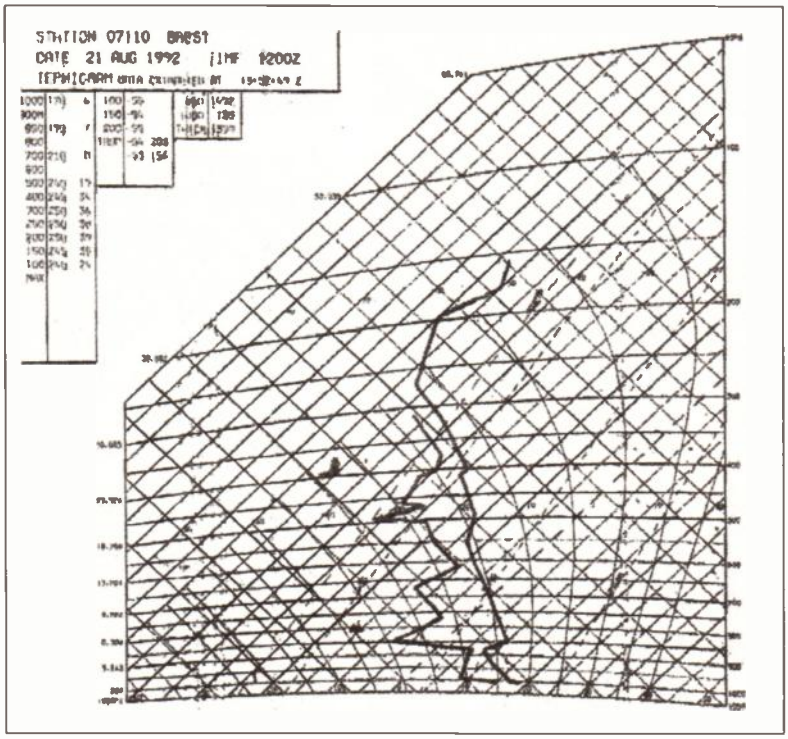

Fig. 5: Actual tephigram received via FAX transmission from RN Northwood, 3.652MHz l.s.b. The two thick lines running vertically, in the centre of the chart show temperature (RH) and dewpoint (LH) against height - scale on right. Actual temperature can be read off on scale at bottom of chart. Ascent from station 07110 Brest.

A Day in the Japan's Geostationary

The real benefit of monitoring geostationary WXSATs, where this can be done, is their continuity of data. For Europeans, METEOSAT-5 provides a constant stream of high quality WEFAX and Primary Data images (except for encryption limitations), so we can monitor the weather over Europe, Africa, the Atlantic and the Middle East for 24 hours per day.

The Americans have a choice - currently GOES-8 provides them with continuous images from its location over the east coast of America, and GOES-9 will shortly be occupying the westerly slot.

The only other WXSAT providing reliable, unencrypted data is the Japanese WXSAT GMS-5. Positioned over longitude 140° east, a little to the north of New Guinea, like METEOSAT and GOES, it provides continuous imagery which is available both directly - to those with suitable equipment (normal WEFAX hardware) - and via indirect methods. Its WEFAX telemetry is on 1691.0MHz, the standard frequency for such transmissions.

Regular users of METEOSAT data know that a set of four infra-red sectors of the globe, as seen by GMS-5, is transmitted at specific times within the METEOSAT WEFAX schedule. This permits us to see a large section of the globe not otherwise covered by METEOSAT or GOES.

Australiasia

During my searches on the internet for other satellite imagery, I found a number of sites which act as archives of current GMS data. I started collecting visible-light images from these sites, to see how well Australia, Japan and China were covered. These (visible-light GMS-5) images are not available from METEOSAT. I sent a message requesting Internet site information, for the full GMS data set, and received several replies from universities which have scientific projects using such images.

I collected one day's worth of images, selecting from this collection, those pictures received at hourly intervals, give-or-take source data problems. The results are presented here and form, in my humble opinion, a most picturesque collection.

Fig. 1 shows sunrise as seen by GMS-5, at about 1732UTC on 3 October. The sliver of earth looks rather like the crescent moon a few days after new moon. In Britain of


Fig 1.


Fig 2.


Fig 3.


Fig 4.


Fig 5.


Fig 6.

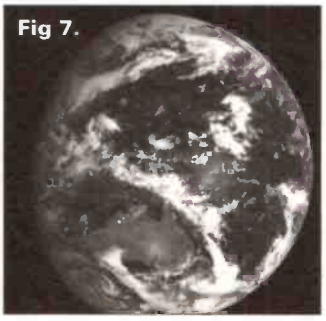
Fig 7.

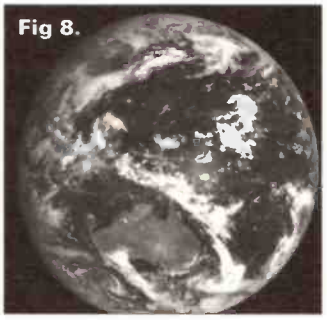
Fig 8.


Fig 9.


Fig 10.

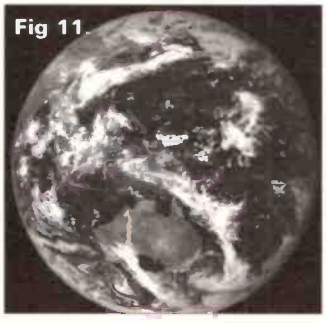
Fig 11.

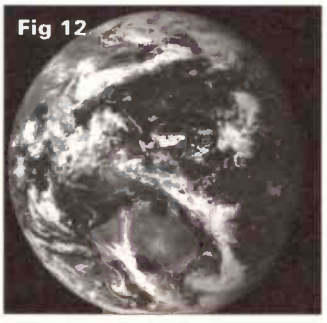
Fig 12.

life of GMS-5 Meteorological Satellite

course, this is our late afternoon.

The next image **Fig. 2.** was taken at 1831UTC (one hour later), and we can now see a weather system at the far east of the image, an area in the Pacific Ocean.

By 1932UTC, **Fig. 3.** a substantial portion of the eastern side of the globe is illuminated where the morning sun has arrived.

Fig. 4. By 2032UTC, half of the globe is illuminated, as seen by GMS-5, and eastern Australia experiences sunrise. The movements of cloud systems can be seen between images, forming a dramatic animation sequence. The earth now looks like a first-quarter moon.

One hour later, **Fig. 5.** at 2132UTC, we see a distinctly gibbous phased earth as sunrise continues to cross Australia. The progressive illumination of the Philippines, Japan and China happens during the following hours, as shown in **Fig. 6.**, taken at 2226UTC, **Fig. 7.** at 2332UTC, and **Fig. 8.** at 0033UTC on 4 October.

By 0134UTC, **Fig. 9.** the earth below GMS-5 is totally illuminated and the area served by the WXSAT can be seen to include the whole of Australia and as far east as the eastern coast of India. Images are of extremely high quality and I was able to zoom to such an extent that the weather over Melbourne was clearly seen, and several geographical features were identified - quite amazing for images recorded by the satellite barely a few hours earlier - see **Fig. 19.**

Fig. 10. is 0232UTC
Fig. 11. is 0332UTC
Fig. 12. is 0426UTC
Fig. 13. is 0532UTC
Fig. 14. is 0633UTC
Fig. 15. is 0832UTC note the 0732UTC image was not available.
Fig. 16. is 0932UTC
Fig. 17. is 1025UTC
Fig. 18. is 1132UTC.

The remaining sequence of images, **Fig. 10.** through the picturesque crescent earth of **Fig. 18.**, were taken at the times indicated, and show the passage of daylight across the western half of the globe.

For reference, image size varies between 5Kb and 180Kb, according to the detail within the picture.

These images were collected from the site: **http://explorer.arc.nasa.gov** in the directory **pub/weather/gms/jpg/vis/4km** and are all courtesy of Goddard Space Flight Centre, NASA. The GMS-5 satellite is operated by the Japanese Meteorological Agency. ■

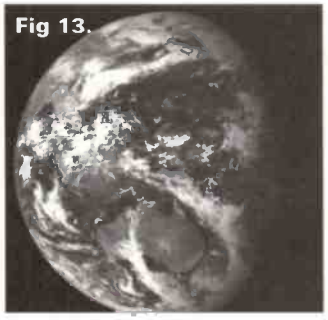
Fig 13.

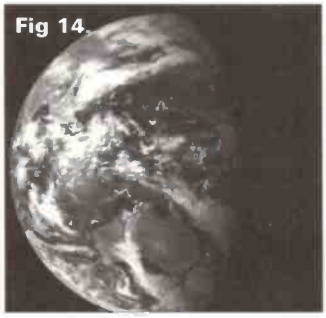
Fig 14.


Fig 15.

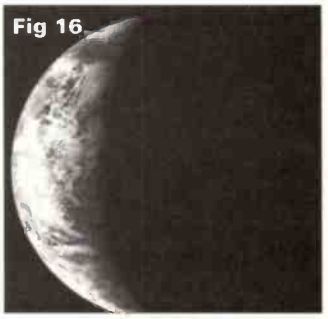
Fig 16.


Fig 17.


Fig 18.

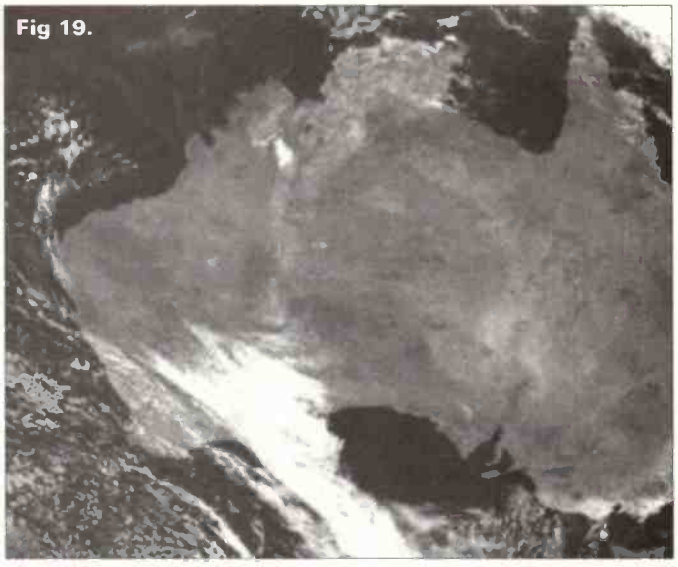
Fig 19.

Lawrence Harris takes a look at a WXSAT from the other side of our tiny planet.

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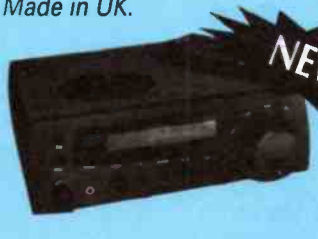

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Memories of Police Radio

Jeff Oliver G7PBK describes how police radio communications have changed over the last 25 years.

"Can you get Radio Caroline on it?" asked my mate, eyeing my parent's new Ecko v.h.f. (valve) mains radio. It was about 1965 and everyone who was anyone tuned to the pirate radio stations. Not knowing much about radio, we tuned the set from left to right and got everything - except Caroline.

With the tuning bar at the end of the scale, we were about to switch off when we heard "M2XW Control to stand-by". That short message was perhaps my introduction to the world of radio beyond the broadcast frequencies.

I soon became a regular listener of M2XW and discovered that it was the County Police v.h.f. frequency. Since then I have been a regular listener to Police frequencies.

Before someone starts raising their eyebrows at such illegal goings on, I should perhaps explain that after someone pinched my pushbike, I joined the local Police and have been using Police frequencies for the past 27 years.

I joined a small Borough force which had ten cars, two motorcycles and a J2 Austin van. All of these were equipped with v.h.f. Our force callsign was M2XJ. We shared the frequency with the local Fire Brigade who used the callsign M2XJF.

We could obviously monitor each other's transmissions. One day we had a small fire in the nick. The Fire Brigade turned out and all was soon back to normal. Before leaving, one of the firemen asked me to explain a message that he had heard us broadcast on a regular basis. "The leaves are falling, I say again the leaves are falling." Secret code for spies? No, just the office PC telling the Inspector that the kettle was on and he had just brewed tea!

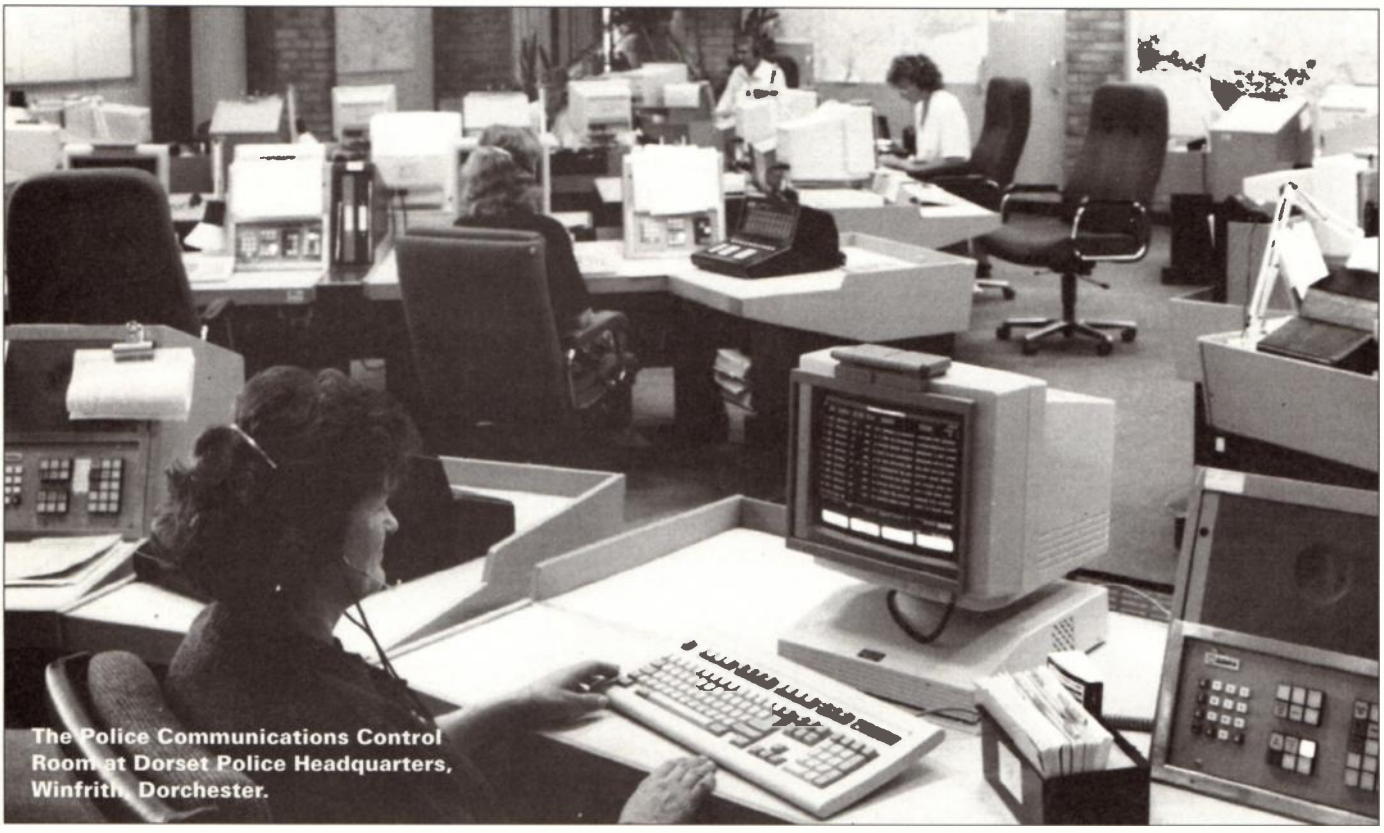
Personal Radio

Communication with patrolling officers was primitive to say the least. Dotted around the town were a number of blue Police 'Pillars', metal contraptions with a telephone and a lamp on top. If the nick wished to pass a message, the lamp was flashed until the PC came along to answer it. The public were always very helpful and would stop their car to tell the officer that he was 'being flashed'.

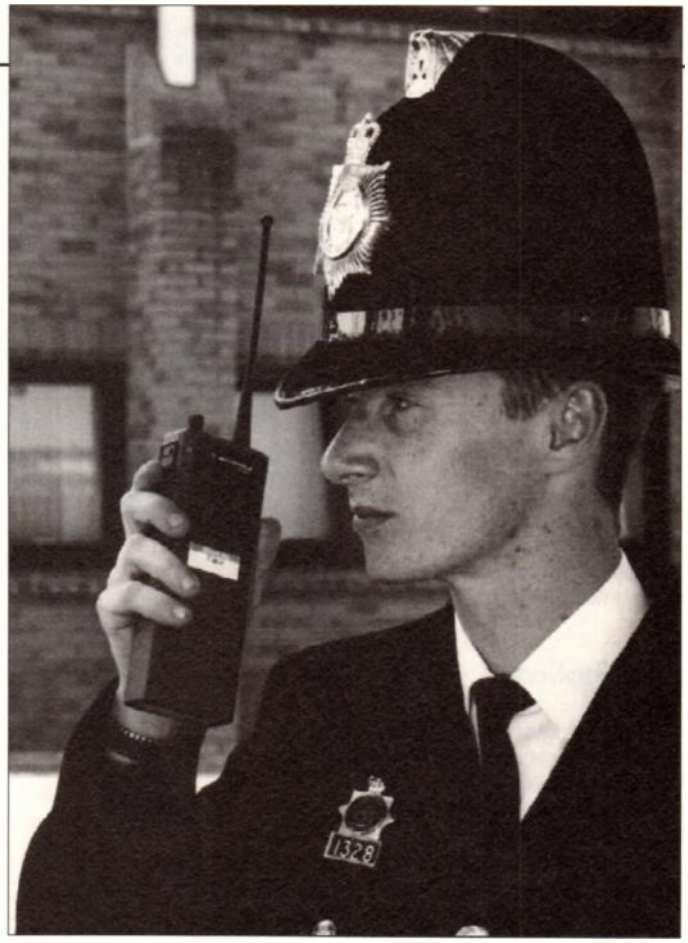
Then, late in 1966, we got personal radios for foot officers. Well, we got four of them. These were based on sets made for Lancashire Constabulary and were called 'LanCon' sets. The main body of the set was carried in a harness with two webbing cross bands.

The receiver was carried on one cross band and the transmitter mike on the other. I don't know what frequencies they worked on, but reception was confined to the town centre only.

I was a cadet at the time and one day I was patrolling with a regular officer who, because of the noise of the traffic, had connected an



The Police Communications Control Room at Dorset Police Headquarters, Winfrith, Dorchester.



Police Constable 1328 shown with the Motorola HT-600E hand-held radio as used by Dorset Police.

earpiece similar to hearing aids of the day. A lady stopped to ask us something, but on seeing the earpiece, she turned to me. "Poor thing! Is he very deaf?", she asked.

Two Piece Sets

Late 1967 saw us get a much better personal radio set-up. These were two-piece sets made by Pye and were called Pocketphones. The receiver used a yellow 9V battery and had a simple on/off/volume switch. The transmitter used a red battery which, I think, was 18V.

The antenna was stored inside the case and on pressing the p.t.t. switch, it sprung up about 150mm. Some years later, I was instructing Police recruits at the District Training Centre and I saw the springing antenna cause a few sore eyes and in one case, a bleeding nose! Imagine submitting a report trying to explain why a recruit had stuck a radio antenna up his nose!

The receiver could also cause problems. It emitted a very quiet tick to indicate that it was in receive mode. With some sets, this tick was louder than a clock and we felt like the crocodile in *Peter Pan*.

Another regular occurrence was to bend down to speak to a car driver whilst clutching the RX set. Quite a few officers had to pay up after the motorist was seen to drive away with the receiver on his roof!

Communications Equipment

Until recently, nearly all Police Forces relied on the Home Office for the supply of their communications equipment. We had to wait for them to up-date our radios and eventually, about 1974, the faithful Pye Pocketphones were ditched in favour of the three-channel Burndept.

This really was a super piece of kit. Transmitter and receiver in one, not too heavy and reasonably sized. It took two of the 9V yellow batteries.

The other major difference was the p.t.t. switch and mic. which were on top of the set. The usual method of carrying was in a harness worn with a strap around the neck and another around the body, rather like a toddler's harness.

Having three channels was a very useful feature, especially when we were working outside our Home Division. I had by now transferred to a large city force and this facility was greatly appreciated.

The only drawback with this set was down once again to human error. The 'Panda Cars' - Vauxhall Vivas, had a small box called a shoe, fitted near the gear stick. The radio was placed in the shoe where it amplified incoming messages via a loudspeaker and the battery received a trickle charge.

A small microphone similar to those used with cassette tape recorders was also fitted. Good as this system was, many is the time I have chased after someone only to remember that I had left my radio in its shoe.

A later version of the Burndept came along which had six channels and we all believed that this was the very height of technology and would not easily be bettered. But we were wrong.

For a variety of reasons, many Police Forces were now starting to purchase their own comms equipment, which allowed a wider choice than the Home Office kit. After many years of excellent service, the Burndept gave way to the Motorola. 99 channels, scan facility, extension mic., want some new channels? No problem, we'll just connect it to a computer.

A u.h.f. set with wide coverage and with an excellent record for reliability. It will take some beating but I suppose it will eventually be replaced. Perhaps by a satellite communicator with built-in FAX and computer terminal.

Vehicle Radios

I remember reading an article on early Police communications which showed a stationary police car with the driver wearing headphones and tapping on a Morse key. Fortunately, things had moved on by the time I joined.

Vehicles then had a single channel set with a funny button on it marked 'squelch'. No one seemed to know what it was for, but it made a horrible din if depressed. A handset, rather like a telephone, contained the mic. and earphone and a separate switch on the set switched off the loudspeaker.

The motorcycles had a waterproof radio set fitted on the petrol tank. My first experience of riding a police motorcycle nearly came to a sad end as I forgot about the antenna as I slung my leg over the saddle. Very painful I can assure you!

I was once approached whilst directing traffic by an officer from another Force on a Velocette 'noddy' bike. He was wearing a radio in a harness with a huge antenna made out of a flat piece of metal about 13mm wide. This was bent over at the top and gave the appearance of a fairground dodgem car. Apparently these antennas could give you a smack on the head if the 'Bobby' leaned over to talk to you!

Changes to vehicle radios have not been as frequently as those to personal radios. The international WARC meeting resulted in a change of frequencies, about 50MHz up on those which could be received on domestic radios. This also bought a change of radio to multi-channel sets with the facility to repeat into a personal radio when officers are away from their vehicles.

One interesting point is that v.h.f. transmitters still use a.m. No doubt there is a good reason for this. Another innovation has been introduced following recommendations in the *Highway Code*. This allows hands-free transmissions using

Microphones like this one are often used to aid with police communications.

(All photos courtesy of Dorset Police Headquarters, Press & Media Department, Winfrith).

a small micro switch or sometimes a VOX facility.

Base Stations

When I first joined, the radio set used to control the vehicles was a simple affair with a minimum of knobs and buttons. When we got the personal radios, a similar set was used as the base station.

This meant two sets with two identical microphones. It was very easy to reply to a transmissions on the wrong set. The microphone was a Pye Tulip microphone, and although there have been dramatic changes in communications equipment over the years, the control room in the station where I now work still uses the same Tulip microphones.

For a short period in the early 1970s, I was employed as a radio operator/controller. The 'radio room' had previously been a store cupboard. I had a small desk, an anglepoise lamp and a u.h.f. transceiver, again with a Tulip microphone Only local officers with personal radios were controlled by this means.

Vehicles were controlled on v.h.f. by Force Headquarters. When someone rang to request police assistance, the office PC would write the message on a pad and pass it to me. I would dispatch an officer and endorse the message form.

Nowadays, the operators in my station sit in a purpose built room with discreet uplighting surrounded by a host of technical equipment. Messages are typed on a computerised command and control system which can show resource activities, response times and much more. The Tulip microphones are being phased out to be replaced by 'Touch Screen' v.d.u.s.

As in the 1960s, both the v.h.f. and u.h.f. systems use duplex frequencies. Officers wishing to talk directly with each other at the scene of an incident must request 'talk-thru' facilities from the control room. I am aware that this may change with Selcall and trunking eventually replacing this method.

Hands Free

I have no personal experience of covert police communications and could not discuss them even if I had. However a period of time spent in Firearms Operations introduced me to radio comms outside the normal.

With any sort of firearm in your hand it is obviously of benefit to have some form of hands free radio. Early attempts with throat microphones were not too successful. I'm told that the sets we had were US army surplus that had been used in the second world war by Flying Fortress crews. This may be true as one set was covered in old chewing gum.

A more recent innovation was a combined earpiece and microphone. This was similar to the now familiar earpiece which comes with cheaper transistorised radios. It was worn in the ear without the need for a separate microphone. A thin wire was lead down the inside of the sleeve attached to a p.t.t. switch kept in place in the centre of the hand by Velcro straps.

We were all very doubtful about this piece of kit but were surprised to find that it worked. Transmissions were sometimes mumbled and the earpiece frequently fell out during training exercises, but it was a vast improvement over the throat mics. The equipment now in use is even better.

Despite the wish of most Police officers to retain the traditional image of a British 'Bobby', it is unfortunately necessary for us to sometimes wear specialist clothing when in public disorder situations. This has also resulted in different arrangements for using radio comms. The Nato style helmets are equipped with an earpiece and small boom mic similar to those worn by motorcyclists.

Again a p.t.t. switch is attached to the hand. One feature which required careful thought was the location of the radio itself. It could fracture a rib if worn on the chest and struck with a stone. Alternatives tried include, a waist belt or under the arm in an affair rather like a shoulder holster.

Encrypted Radios

There have always been people who listen into Police transmissions. (I have already confessed to this myself). These have included local journalists who would sometimes turn up at an incident before we did. Others were just interested in what was going on. This comparatively innocent breaking of the rules has been made much more serious by the advent of scanners.

Burglars have been caught at a break-in carrying scanners tuned to the local police frequency. Much more work is being done and a great deal of money spent to combat this menace. Encrypted radios are gradually being introduced. Message pagers can be used to direct officers to vulnerable premises. It can only be a matter of time before satcoms will replace traditional methods.

Early experiments with encrypted radios produced some hilarious moments. On a training exercise, the base station messages could be switched from encrypted to clear. For some reason the encrypted messages were unreadable. The radio operator switched to clear, put a metal wastepaper bin over his head and transmitted his message "Receiving you loud and clear, keep it like that" was the reply.

As we all know, dramatic changes have taken place over the last twenty five years in the area of communications. It seems a long way from those early LanCon sets to today where I carry a BT pager, and a cellular telephone in my briefcase, as well as my personal radio.

■

A Day In The Life Of A Radio Inspector

UNDERCOVER OPERATION

J. Edward Brown continues the 'down under' tales of Young Golly and Kilocycle Ken.

Cows grazed and cicadas clicked in the roadside long grass. Down the gravel road was an old dairy factory, which once made cheese, in the days of milk cans, before stainless steel tankers trucked milk to large central processing factories. There were many such derelict factories in New Zealand. Now the dairy factory was a part of an agricultural college, with a satellite dish on the roof.

The TV interference complainant's farm house was in the old colonial style, with sagging verandah, rusty corrugated iron and moss-covered boards. Kilocycle Ken, the senior radio inspector said, "Note the chimney-mounted three-element Yagi, cut for the single low band channel we had years ago, before there were umpteen other channels, rusty and blackened by years of smoke and fed with brittle 300Ω ribbon, which means the installation is suspect for a start, whatever the complainant says."

The complainant was an old farmer, unshaven and wearing a brown felt hat. He said, "I was watching *Dad's Army* last night and suddenly this voice came over, and lines came on the screen. It was terrible."

Kilocycle Ken nodded, understandingly. "What did the voice say?"

"Most of it was garbled, but I did hear 'sixtynine to starship'."

"Beam me up, Scotty," muttered Young Golly, the trainee.

Kilocycle Ken warned him with a look.

"And something about watching somebody," the complainant said, "sounded like the Cops."

"Have you heard it before?"

"Been hearing it for the last few days. I think there's something going on in the dairy factory. There's been a Russian Lada car beside the macrocarpa shelter belt, and a man inside, reading a newspaper. And there's been a big English car parked on the other side of the factory. He reads a newspaper, too. I think it's spies."

"Doing what?" Kilocycle Ken asked.

"That factory is a secret government project, they've put up electrified fences."

"Research into wool production?" Young Golly said.

"They've got rams wired up with transmitters so they can track them when tupping." He switched on the television and a rerun of *Emmerdale* bloomed.

The TV was an old 23in Golden Knight, one of those badge engineered chassis, this one for the Farmer's Trading Company. The same chassis had many different labels for different retailers.

...No money to buy new equipment...

Standard Speeches

Kilocycle Ken went through one of his standard speeches on rectification, probably caused by the antenna which should be replaced.

It didn't make the complainant happy. "The area has gone to pot. Literally. If the interference is not from the old dairy factory, then it could be the Maori bloke next door. He's been in prison a couple of times, he grows marijuana in a hot house he's built in the front room, never works, lives on social welfare."

"Sounds like an ideal existance," Young Golly said.

"He's got two televisions and two VCRs."

"Probably fell off the back of a truck," Young Golly said.

"And a big Japanese hi fi which keeps me from sleeping. And people calling to buy what he grows."

They watched *Emmerdale*, waiting.

Undercover Operation

A sudden voice, loud, extraneous. "Sixtynine to starship, standby, Stalion on the move."

"There it is!" the complainant shouted.

Kilocycle Ken said briskly, "We'll have a look. Come on, Young Golly."

"What is it?" Young Golly asked.

Kilocycle Ken tapped the side of his nose. "Undercover Operation."

"Police?"

"Security Intelligence Service. Not supposed to talk about them. Not supposed to know anything about them, but they are so - incompetent." He shook his head. "I've heard that starship call before, they never change it. It's them alright."

"What about the pot grower? Or the ram?"

Kilocycle Ken said, "Our complainant is getting interference from the SIS. We have a list of all the frequencies they commonly use, locked in the office safe, eyes only, but I'll bet they're using 51MHz again."

A Lada was disappearing in a cloud of road dust and the Rover was following.

Soviet Spies

Kilocycle Ken tuned the Sprague 610 receiver through the buzz of television's channel one, to the upper edge. "Following, on our way

to Charles St., presumably," said a very clear English voice.

Kilocycle Ken said, "Many of the SIS people are English. There was an English director, he recruited his own people."

"Nepotism," Young Golly said.

"I suppose we should be thankful that we weren't also lumbered with the old British 405-line television system, the Brits tried to sell us on that, even if it was obsolete, but we opted for the 625-line standard."

"Where too?" Young Golly asked.

"The Socialist Unity Party rooms are in Charles St."

"Communists?" Young Golly said. "I thought Soviet spies were finished, this is a different age."

"The SIS were told years ago to get rid of that gear, it's Second World War, almost," Kilocycle Ken said fretfully.

"We'll follow at high speed," Young Golly said. He had started the car and accelerated.

"You are chasing the source, but it's not going to achieve anything," Kilocycle Ken warned. "There's always trouble with channel one's sound frequency, from other services above 51MHz, before channel two starts at 54MHz, got 6m amateurs, some military freqencies in there, too, which I suppose is why the SIS use it. SIS is full of ex-military types. Most TVs tuned to channel one don't have enough rejection, that's why the SIS have been told not to use that frequency."

"If the TV transmission was on u.h.f., we wouldn't have this trouble," Young Golly said.

"We use channel one on 44 to 51MHz because it slides over all the hills around here."

"I thought the SIS would be modern, efficient," Young Golly said.

"They are just like us, no money to buy new equipment."

"We don't need an SIS," Young Golly said.

"All countries have some sort of Police branch that looks after security."

"Who's going to attack New Zealand - at the end of the world."

"We have commercial secrets."

"Like how many sheep we've got?" Young Golly said.

"The SIS vet public servants."

"Have I been vetted?"

"I doubt if they bother with trainee radio inspectors."

Incompetent SIS

Fast down the motorway. "Keep back, you'll be seen," Kilocycle Ken warned.

"You said the SIS are incompetent."

"Not that incompetent. But this is confusing. The Lada is following the Rover. I don't get it."

"A Russian Lada, is that significant?"

"The NZ Dairy Board did a swap of milk powder for Lada cars, only one way to get rid of surplus milk production," Kilocycle Ken said. "Russians had no cash."

"Driving slow for a chase," Young Golly grumbled.

A police car passed, siren whooping. Young Golly looked at his watch. "Lunch time, probably going for fish and chips."

Kilocycle Ken sighed. "You're so young to be cynical."

"I wonder if the police should be told about the complainant's Maori neighbour," Young Golly said.

"Live and let live, although he's probably causing interference. Did you see it? There was a thermostat going off. Probably from the marijuana cultivation, but the old man doesn't notice that. He's also got 11kV disc strain insulator interference, and he doesn't realise that either. And the electric fence was ticking away."

"So much for the peaceful countryside," Young Golly said.

"What about QRM from the dairy factory dish?"

"I haven't come across interference from an earth station."

"Yet," Young Golly said.

They went past the wharves. "Might be something to do with shipping," Young Golly said. "There are always Russian fishing boats in port."

Kilocycle Ken said, "I was once looked at to be recruited for the government monitoring service, which is a spy outfit."

"You!"

"I was much younger, but I liked this job, being out and about and meeting people, didn't want to be sitting in front of radio receivers all day, monitoring, or whatever they do, I never got as far as finding out, exactly."

"I'd like to be a spy," Young Golly said.

"Apply. All university students know where their headquarters are."

Secret Of Spying

The Lada parked outside a TV dealer's shop with a display of receivers, all showing the same programme, the British ITN News recorded earlier that morning. The driver got out, ignoring the parking meter and went into a large office building.

"He's going into the British High Commission," Kilocycle Ken said.

The Rover pulled into a loading zone, its motor idling, puffing smoke. "Needs a rebore," Young Golly said.

Kilocycle Ken and Young Golly got out, strolled past the car. A middle-aged man sat in it.

"The R/T looks like an old Pye Cambridge, connected to a standard car antenna, mike under the dash," Kilocycle Ken whispered.

They watched the TV display. "New Zealand TV did rebroadcast the BBC TV news for a while, but they couldn't break it up easily for the advertisements so they changed to the ITN," Kilocycle Ken said.

"It pays to advertise," Young Golly said.

"Not if you're the Security Intelligence Service."

"So what's going on here?" The Russians want to steal our agricultural research ideas? The SIS are trying to prevent them?" Young Golly asked.

"It could be Brits trying to steal research data," Kilocycle Ken said.

"So who is chasing who? It's very confusing," Young Golly said.

"That's the secret of spying, to know who is chasing whom, but one never knows the answer, if one is on the outside."

"They should use proper radio procedure and callsigns," Young Golly said.

"Forget it, we'll never know, which might be just as well, but if you stay in this game, you'll hear them again, undoubtedly."

"What about the complainant?"

"I'll let our head office know, they can tell the SIS they are being heard by every old TV around."

"I keep thinking about rams. I wonder what it feels like to be tracked by telemetry when tupping."

"Just another agricultural telemetry use." ■

...A very clear English voice...

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Bobbing up and down trying to see w was giving a demo of their latest UK shortwave receiver. Finally it was m turning the ever so important Tunin type assembly of the cabinet, (you c AHH), I could now see why everybod adoration for the AOR and the new A

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Q	R	Q	Z	U	P	W	S	C	E	Z	Y	N	O	S	W
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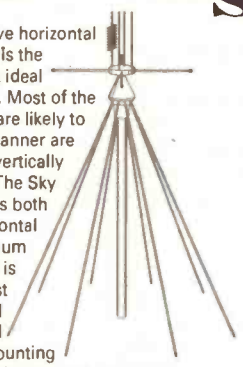

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Satellite TV News

The latest from the Clarke Belt

Perhaps one of the most exciting satellite developments in recent months has been the launch of the PAS-4 bird now active at 68° East. This strategic slot allows access from UK enthusiasts mainly in the South-East UK though **John Locker** in the Wirral managed to resolve signals low on the horizon, in fact just above the horizon and through a fortunate gap in a line of trees! Threshold extension was necessary to achieve reasonable picture quality - remember this is an 'on the horizon' signal through trees using only a 1.2m dish. The official blurb that PanAmSat send out, illustrate footprints, that just includes the British Isles in the Ku European beam and C Band coverage reaching almost to the East Australian coast. Another C Band offering includes both Europe and the Middle East, by the end of September **Ian Waller** (Lincoln) had logged seven programme channels - in English so far - in clear PAL and almost sparklie free on his 3.4m dish. Almost in the same post another letter from **Bandula Genasekera** (Sri Lanka) gave details of C Band reception that match Ian's UK sightings, though in Colombo signals are very strong indeed. He suggests that perhaps a 1.5m dish would suffice for domestic quality reception.

The channels seen so far have a familiar ring - MTV Asia; TNT/Cartoon Network; CNNI; and others lesser so such as the American ESPN sports; Sony Entertainment TV (SET); Asia Business News and possiby Doordarshan. And another channel visible across Asia is Discovery now downlinking in clear PAL via Intelsat 704 @ 66° East, along with Indian channels 'YES' and 'EETV'.

It's interesting that Ian, whilst monitoring PAS-4, noticed a weak newsfeed signal, adjusting the dish slightly (azimuth and elevation) revealed WTN and BSN midday offerings from the Raguda satellite @ 69° E (3.78GHz, audio 7.50GHz).

An unusual sighting by **John Locker** (Wirral) on October 7 was the MIR-EuroDisney link-up, apparently very good and was carried via the Cosmos 2054 @ 16° East onto Eutelsat II F1 Telecom band @ 13° East and lasted just over 30 minutes. Not so lucky is the latest Shuttle expedition that has now suffered (at the time of writing) several postponments in launching. This was being trailed on the Reuters European distribution feed now carried on Intelsat K (11.534GHz horizontal) having departed the favoured 13° East Eutelsat transponder. Again, at the time of writing all feeds have been in the clear though it's likely to encrypt in due course.

It was good to hear from **John Dickaty** (Bromborough, Wirral) who is an active satellite zapper using a Echostar 7700, 900mm dish and Quadband 0.7dB LNB. John D has been active for some time in Ku band and can track between Turksat 42° East to PAS-1 @ 45° West without obstruction. We've now put John D in touch with John L making the Wirral a really hot patch for satellite reception!

Satellite News Bulletins

Transponder, a well known and authoritative fortnightly bulletin containing both news and reception reports has ceased to publish after nearly 170 editions. David Thorpe, editor/publisher was offered a senior position within the satellite field in Canada, he's accepted and is now at work across the Atlantic. *Transponder* will be sorely missed as one of the best of its kind and whilst lamenting this loss I'd like to thank David for six years of hard work and wish him continued success in Canada.

Meanwhile 'down under' Bob Cooper, well known and respected as the original 'back yard' TVRO revolutionary is alive and well in New Zealand, preparing to conquer the South Pacific with large C Band dishes! Bob publishes a very informative and well produced *SatFACTS* monthly magazine detailing all that is happening in the skies over SE Asia, Australasia and the Pacific. Annual subscription is NZ$40 within New Zealand and US$40 elsewhere airmail - write to ***SatFACTS*, PO Box 330, Mangonui, Far North, New Zealand. Tel: +64-9-406-0651 or FAX: +64-9-406-1083.**

Thought For The Day

It's a Wednesday evening in mid October and as I type out these words on the Amstrad the bells of Romsey Abbey sound out with their midweek practice - as they've done for years past. And some 50 years ago Arthur C. Clarke typed out his thoughts on global communication using microwave relays in geostationary orbit. The now famous *Wireless World*, in October 1945, published these early thoughts on global gateways in the sky, which some century later has indeed come to pass. His early vision touches us all, whether we watch Sky Movies Gold or an SNG feed out of Baghdad or Sarajevo. Arthur now at 77 years of age lives in warm and happy retirement in Sri Lanka, still active with satellite though it's now a much more refined, regulated and perhaps exploited global communications environment than he ever would have imagined.

Orbital News

In Bob Cooper's *SatFACTS*, October 15 issue there is mention of a new and exciting C Band product. The European region largely enjoys C Band satellite downlinks in either left or right hand circular - this from the various Intelsat/Gorizont birds in the sky. Asia and the Americas are biased towards plane (linear) polarisation - vertical and horizontal - but again the Intelsat craft are into circular. Use of the dielectric slabs within a linear environment results in circular optimisation but a loss with linear signals. Australian company Av-Comm Pty Ltd. has just produced an all mode feed system which is a large step forward in C Band efficiency, if these reports are confirmed. As soon as more information is forthcoming we will let you know!

September 10 saw Intersputnik order the switching off of transponders on the Rimsat G1 (130°E) and G2 (142°E) birds and with it the programming of Asia Television Network (ATN). Rimsat is a USA based company with Malaysian funding that lease satellite platforms from the Russians. It appears that ATN were in arrears of transponder leasing payments and disregarded an August 21 request to pay up. ATN were off air for three days and returned after political intevention by the USA. It's a very cloudy situation both politically and technically and further change is expected at any time - if not already.

Just up the road the Korean Mugunghwa satellite (Koreasat-1) recently launched also has on-board problems and it looks as the station keeping fuel has drained with only a four year life expectancy. The owners can claim under their insurance if Mugunghwa's operational life terminates within 57 months - so keep the payments up!

A recent outside broadcast insert for GMTV via Orion 1 @ 37° W, thumbs up indiate a state of readiness!

An Intelsat K 21° W 2 way feed with respective reporters 'standing by' for the cue.

An SNG outside broadcast feed from Brussels, in the field sync blanking (frame hold pulse) there can be seen the originating company name.

A glorious technicolour test card, pity it's shown in black & white, seen on Astra in the early hours.

The recent conflict in Bosnia, the wreckage of the French jet downed by a ground to air missile smoulders as a local TV newsman files his report live. Seen via Orion 37° W.

Night scene in Sarajevo, an SNG unit and reporter, his uplink dish and equipment over his shoulder.

CONTINUED FROM PAGE 51

SEM QRM eliminator, £55. ERA synoptic decoder, new, £65. Tennamast, new, cost £200, bargain at, £150. Tel: Warwicks (01926) 54556.

Signal R532 airband radio mobile/base, 100 memories, scan, many airband books, 12V transformer, the best, £90. *Amateur Radio 1995 Callbook*, £7. Tel: Warwick (01295) 670749.

Sony ICF-SW77 short wave receiver, c.w. mains supply, absolutely as new and little used, packed with instruction manual, excellent performer, £240 o.n.o. Tel: Herts (01727) 859377.

Sony SW100S, boxed with manuals, £130. New 1995. Realistic 2035 scanner, boxed with manuals, £275, new 1995. Tel: Lincs (01754) 762359.

Trio JN60, serviced, re-valved, 100% working order, very sensitive, £80. E. Saunders, 75 Thompson Avenue, Kew, Richmond, Surrey TW9 4JN.

Vega VEF206, g.w.o., £20. Binatone Worldstar multi-band radio, g.w.o., £25. Invicta 8027 portable radio, g.w.o., £10 or exchange anything for air-band. Mike, Great Yarmouth. Tel: (01493) 854502.

Yaesu FRG-7700, 0 to 30MHz u.s.b., l.s.b., c.w., a.m., f.m. with matching a.t.u. and pre-amp/active antenna, £275. Telereader CD660 decoder with monitor, power supply and leads, no computer needed, £95. S. Stokes, Nottingham. Tel: 0115-9562 709.

Yaesu FRG-9600, 60-950MHz, perfect condition, £300 or exchange for s.w. receiver, 1-30MHz. Tel: Hull (01482) 813439.

Yaesu FT-101ZD MkIII with the following accessories - FC-901/FV-101DM/SP-901P/YO-901/FTV-901R/YR-901/YVM-1/complete with Yaesu FRG-7700 and FRA-FRV-7700, £1000. No offers. Tel: Essex (01206) 271763 after 7pm.

Yaesu FT-280R (2m, 25W), £330. Yaesu FT-290R (2m, 3W) with NiCads, £230. Mobile mount for FT-290R, £10. Portable 9-ele 144MHz Tonna antenna inc. 10m coax, £40. 8/8th 144MHz whip, £15. 80m G-Whip, £15. Mixed box large caps, £8. Old army headphones, £8. Mark G4ZUY, London. Tel: 0181-650 0894.

Yaesu FT-747GX transceiver, last of the batch, slight use of receive, mic. never taken out of box, f.m. fitted, £575. British Telecom FAX machine and copier, brand new, unused, still in box, £200, no offers. Tel: Kettering (01536) 522007.

Yupiteru MVT-7100, boxed, complete with all accessories, just three months old, £275. Tel: Sutton Coldfield 0121-308 8350.

Wanted

Early pocket calculators, especially those made by Hewlett Packard, Bowmar and Sinclair. Not working OK. Enrico Tedeschi, 54 Easthill Drive, Portslade, Brighton BN41 2FD. Tel/FAX: (01273) 410749 or (0850) 104725 mobile 24 hours.

Eddystone 960, EB37, EC10, 820, 870A. Civilian receiver Clarke & Smith. Camper and Nicholson, any receivers or information on this company please. Collection possible. Peter Lepino, Surrey. Tel: (0374) 128170 or FAX: (01372) 454381 anytime.

Universal M400 decoder or any other decoder capable of receiving ACARS transmissions, private purchase. Tel: Kent (01892) 520411 evenings/weekends.

Universal M800 decoder, must be latest model in A1 condition. Tel: Cheshire 0161-368 2544 (work) or 0161-427 2107 evenings/weekends.

Unwanted software and interface to run Lowe HF-150 from an IBM clone. F. Day, Kent. Tel: (01634) 400096.

£750 - waiting for ICR-7100, must be in good condition, boxed with manuals, Tel: Lincs (01754) 762359.

TRADING POST ORDER FORM

PLEASE WRITE IN BLOCK CAPITALS

A photocopy of this form is acceptable, but you must still send in the corner flash below as proof of purchase.

PLEASE INSERT THIS ADVERTISEMENT IN THE NEXT AVAILABLE ISSUE OF *SHORT WAVE MAGAZINE*

I enclose Cheque/P.O. for £.....(£3.00)

Made payable to *PW Publishing Ltd.*

Name .....

Address.....

.....

.....

.....

Post Code .....

Credit Card Details

Access VISA MasterCard

Card Number

Signature.....

Expiry date of card.....

FOR SALE/WANTED/EXCHANGE maximum 30 words

	(30)		

CONTACT DETAILS maximum 12 words

			(12)

SWM
DEC 95 TP

Greg Baker PO Box 208, Braidwood, NSW 2622 Australia. Internet: greg@pcug.org.au

Bandscan

Australia

News this time covers a wide range including news of Radio Australia, state government radio networks, Radio New Zealand, Radio Vanuatu, the Department of Defence h.f. network and environmental concerns with one company's pay television roll out.

Radio Australia

Radio Australia (RA) transmits daily in English, Indonesian, Standard Chinese, Cantonese, Thai, Tok Pisin, French, Khmer and Vietnamese. These languages have been chosen to underline Australia's commitment to our region according to RA publicity material. RA can be contacted by mail at **PO Box 428G, Melbourne, Victoria 3001, Australia, Tel: +61 3 9626 1800, FAX: +61 3 9626 1899**; and open message line on **+61 3 9626 1825**. RA is now also on the Internet with E-mail address **raust3@ozemail.com.au** and via the Australian Broadcasting Corporation (ABC) home page on URL **http://www.ABC.net.au**. This home page gives entry points to Triple J, Quantum, Radio National, Radio Australia, Behind the News and About the ABC. An English language schedule is a mouse click away.

RA is available via satellite broadcasts in the Asia-Pacific area through the Australia Television signal on the Palapa satellite. To receive this signal listeners tune to Palapa B2P channel 5H on 3880MHz in C band and use sound channel 7.20MHz for English and 6.48MHz for other languages.

In Europe RA can be heard twice daily from 0700-0800UTC and 1500-1600UTC on the World Radio Network (WRN) service via the Astra satellite. Listeners to this service need to tune to sound channel 7.38MHz on Astra 1B satellite channel 22 vertical 11538MHz.

In North America RA can be heard twice daily from 0700-0800UTC and 1500-1600UTC on the Galaxy 5 satellite channel 6 on 3820MHz with audio sub-carrier 6.8MHz and the Telstar satellite 303 channel 22 operating on 4160MHz with audio sub-carrier 6.2MHz.

RA provides a 24 hour feed of its English language programmes for distribution throughout Japan on the Cable Audio Network and in Europe and North America WRN relays of RA are carried on a range of cable and a.m. and f.m. broadcasts. In addition the Canadian Broadcasting Corporation has the WRN RA segment on air throughout the entire English language network between 0500-0600 local times.

Recommended frequencies in Europe for RA English language programs are 21.725MHz 0730-1100UTC, 15.530MHz 1100-1300UTC, 15.510MHz 0030-0400 and 0600-0700UTC, 11.660MHz 1430-1800UTC, 9.615MHz 1100-1800UTC, 7.260MHz 1800-2100UTC and 6.090MHz 1430-1900UTC.

Sydney 2000 Olympics

The North American NBC network will pay $1,000 million (about £450 million) for the rights to broadcast the Sydney 2000 Olympic Games. Naturally the organising committee is delighted with the deal. It will bring them 60% of the revenue along with exposure on the NBC free to air network and to around 95 million people expected to be on NBC's two cable networks by 2000.

NTA Tenders

The National Transmission Agency (NTA) has called for companies to tender for operations and maintenance contracts for its transmitting network which broadcasts ABC and SBS radio and television programs throughout Australia. Given the size of the network Australia will be divided into five geographic areas for the contracts. The resulting contracts and a possible sixth to cover RA h.f. transmission sites at Shepparton in Victoria, Cox Peninsula in the Northern Territory and Carnarvon in Western Australia will begin in mid-1996.

The NTA network is one of the biggest in the world. From its 530 sites the NTA operates 1100 transmitters and co-located commercial and community broadcasters operate another 475. The network is so large that tender documents for operations and maintenance contracts amounted to 900 pages of text. Additional information including 43,000 technical drawings of the network was provided on 11 CD ROMs and 14 floppy disks.

Radio New Zealand

Radio New Zealand International (RNZI) has set up on the Internet with its own world wide web page. According to Australia's hobby communications magazine *Radio and Communications (R&C)* this page was initially set up to give details on RNZI coverage of World Rugby League matches. It has now been expanded to include current RNZI radio schedules. The RNZI home page is at **http://www.actrix.gen.nz/users/rnzi**. RNZI Frequency Manager Adrian Sainsbury is at **rnzi@actrix.gen.nz**. The www page is basic but does provide a frequency schedule and program guide. RNZI also posts to Internet newsgroups **rec.radio.shortwave** and **rec.radio.info**.

Radio Vanuatu

Also from *R&C* comes the news that Radio Vanuatu has begun transmissions on 4.960MHz using a 10kW transmitter. I have yet to hear the station myself but programming is mainly in Bislama with some English and French including relays of Radio Australia, the BBC and Radio France International. If anyone hears that one in Europe I'll be amazed. I'll also report it here if anyone does log it. Keep me posted.

Pay TV Problems

Australia's second telephone company Optus has launched its own pay television network Optus Vision. This new network will not only bring pay television to Australian homes - at least in larger urban centres - but also a new competitor in the local call market with local calls connected through Optus. Until now Optus remained a long distance carrier only.

The roll out of the network is not without controversy however with Senators and members of the House of Representatives crying loudly about the visual pollution presented by the Optus cable being strung on power polls. The cry has been to get these unsightly cables underground sharing if necessary the conduits already placed there by the original telephone company Telecom Australia - now renamed Telstra Corporation. The Senators talk of an environmental timebomb while one MP says that Optus Vision is "a cheap and nasty roll-out destined to make the information superhighway an environmental dead-end of poles and wires". None of this will stop the roll out of course particularly given that the national environmental code agreed to by telecommunications operators only obliges carriers to comply with the **spirit** of environmental, heritage and planning laws.

Defence Radio

The Department of Defence is arranging studies for the design of a network of h.f. radio stations to support all Australian Defence Force long range fixed tactical h.f. radio communications with ships, aircraft and mobile land units. The fixed network will comprise four stations. One will be in the Riverina region of New South Wales (NSW) and the other three will be in the north of the continent near Townsville in Queensland, Darwin in the Northern Territory and at North West Cape in Western Australia. Each station will include a local management facility and separate transmitter and receiver station sites. While some of the system will be upgrades to existing facilities the project had its origins in a former project to relocate and update aging Navy communications facilities in the ACT. These facilities are now surrounded by the houses of newer suburbs which were not envisaged when the station was built. Current plans are for construction to begin in early 1997 with full operation planned for 1999.

And finally a few frequencies to Europe from this part of the world. Adventist World Radio can be heard from Saipan in the Northern Marianas on 9.465MHz from 1400-1900UTC and 9.495MHz from 1000-1630UTC; and from Palau on 9.965MHz from 1630-1800 UTC.

I welcome any news and comments. In particular I am interested in any s.w.l. information on Australian stations heard by *SWM* readers so I can chase up more details and interesting snippets from this end. My address is shown at the head of the column. For personal replies please send two IRCs.

Reflections

Fifty one years ago when I started work in the radio industry, the majority of people in the UK listened, on the medium wave band, to the BBC's Home Service for news and talks or, to the armed forces programmes for lighter entertainment. A good number were also regular listeners to the European Service of the BBC. Later the BBC introduced the 'Home' 'Light' and 'Third' programmes for domestic use and the World Service for their growing overseas audience. In the early days of f.m. broadcasting in the v.h.f. band (then 88 to 100MHz), sets made in the UK, had their v.h.f. dials scribed in the following order:- LIGHT (now Radio 2), THIRD (now Radio 3) and HOME (now Radio 4). The BBC used the lower end 88 to 95MHz for these stations while the upper half was used for broadcasting in continental countries and public service transmissions in the UK. This caused great complications with interference when extensive sporadic-E and/or tropospheric openings were in progress. This was overcome when the official communications were moved higher in the v.h.f. and u.h.f. parts of the spectrum thus leaving Band II (87.5 to 108MHz) free for international broadcasting.

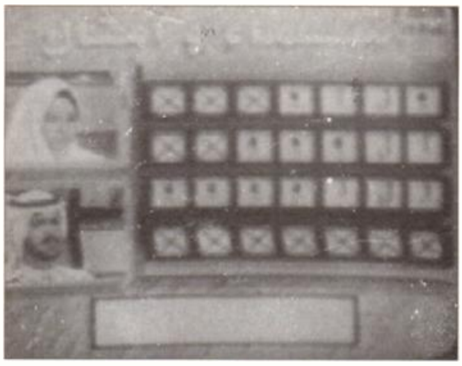
When the atmosphere is disturbed Band II is a haven for DXers, because, apart from the wide range of continental and Scandinavian stations that appear, there is a multitude of UK 'locals' to look for.

Fig. 1.


Fig. 3.

I believe that the advent of the transistor, in the late 1950s, with the consequent mass-production of small portable receivers, increased the popularity of broadcast listening throughout the world. In time many national networks, both state and independent, met this demand by setting up regional and local broadcast stations to operate on the medium-wave and v.h.f. bands. Local radio has proved a great success and really has become an important part of community life. Take a look next time you are in a car-park and see how many vehicles have a 'sticker' advertising someone's favourite station. I was reminded of this when in Ryde earlier this year where I saw an advert for the Island's local radio on the back of a service bus, **Fig. 1.**

Fig. 2.



The Right Conditions

Disturbances in the lower 'E' region of the ionosphere or the troposphere usually create the right conditions for v.h.f. and u.h.f. DXing. Such events, often referred to by DXers as 'openings' cause signals to travel great distances way beyond their normal range. You may wish to compare the following calendar of happenings with any DX entered in your own logs.

Solar

In Edinburgh, **Ron Livesey**, using a 2.5in refractor telescope with a 4.0in projection screen for his daily observations of the sun, identified one active area on the disc on August 6, 7, 26, 27, 28, 29, 30 and 31 and two on days 24 and 25.

Aurora

Ron is also the auroral co-ordinator for the **British Astronomical Association**. He received reports of 'flickering rays' up to 40° altitude during the overnight period on August 2/3 from an observer in Crediton and 'homogeneous arc and rays' and 'active rays' up to 20° on 22/23 from observers in Alness, Kinloss and Rutherford.

Magnetic

The magnetometers used by **John Fletcher** (Tuffley), **Karl Lewis** (Saltash), **Ron Livesey, David Pettitt** (Carlisle), **Tom Rackham** (Goostrey) and **Tony Rickwood** (Gillingham), between them, recorded some disturbance to the earth's magnetic field on August 8, 9, 10, 13 and 22.

Fig. 5.

Sporadic-E

Between May 6 and July 21, **Lt. Col. Rana Roy** (Meerut, India) received pictures, at varying strengths, during sporadic-E openings, from Bangkok TV on Ch.E3, (55.25MHz), Calcutta TV on Ch.E4 (62.25MHz), Chinese TV on Ch.C1 (49.75MHz), Commonwealth Of Independent States (CIS) on Ch.R1 (49.75MHz), Delhi TV on Ch.E4, Dubai TV on Ch.E2 (48.25MHz) and Madras TV on Ch.E4. In addition, typically sporadic-E, Rana saw a number of unidentifiable signals on some channels. He saw a variety of adverts, aerobic exercises, 'HOBOCTN' one of the C.I.S. news captions and a quiz programme and a play in Arabic. He checked Ch.R1 at

Fig. 4.

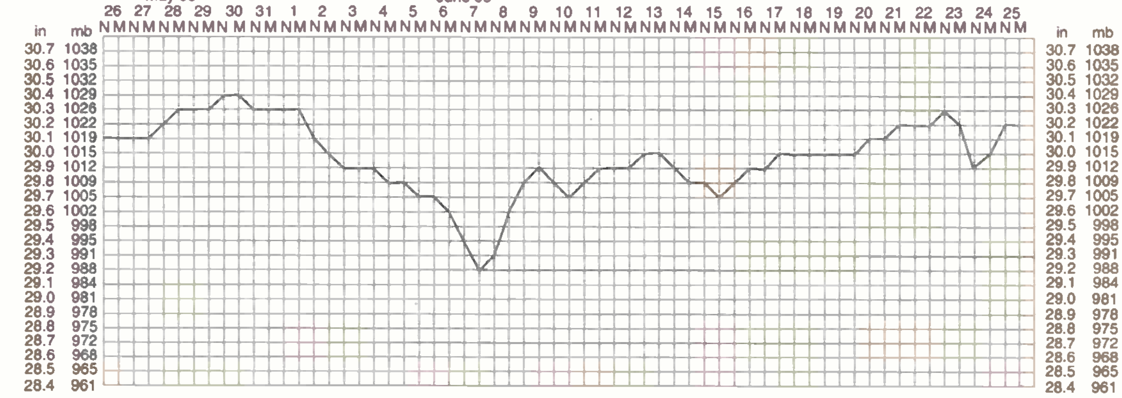


Fig. 6.

Fig. 7.

1700 on June 14 and found "multiple pics from the CIS each fighting for predominance on the screen." To give you some idea of the signal strengths involved, Rana kindly sent photographs of the pictures that he received from Dubai at 0900 on May 7, **Fig. 2.** and the C.I.S. at 1510 on July 1, **Fig. 3.** "It has not been much of a DX season," wrote Rana on September 11 and added, "In the last two years there has been very little DX, especially sporadic-E." This is true Rana, perhaps the reason is that the sun has been relatively quiet.

Fig. 8.

Weather

In September I recorded 6.52in (approx. 166mm) of rain compared to 3.68in (approx. 93mm) for the same period last year. Such a large amount of rain was very welcome to this area. Falls of more than 0.5in (approx. 13mm) fell on days 7, 8, 12, 15, 18 and 27 respectively and lesser amounts were logged on the 2nd, 10th, 11th, 13th, 14th, 24th and 26th.

The daily variations in atmospheric pressure from August 26 to September 25, **Fig. 4**, were taken at noon and midnight from the recording charts on the Short & Mason barograph installed at my home here in Sussex.

Tropospheric

Pictures in Band III, from Lahore (Pakistan) on Ch.E5, Kasauli (Ch.E6), Amritsar/DD2 Delhi (Ch.E7), Islamabad (Ch.E8), Jalandhar (Ch.E9) and Sialkot (Pakistan) (Ch.E10), were received by Rana Roy during tropospheric openings on August 20, 21, 24, 25, 26 and 27 and September 2, 4, 7, 8, 9, 10 and 11. These openings usually occurred between 0700 and 0930 and 2100 and 2359.

While on holiday in Lynmouth, North Devon, **S.M. Hockenhull** (Bristol), using an ITT 'Colt' portable, tuned Band II and found that the "high-powered station at Wenvoe easily swamped the receiver with strong multi-path signals off the high cliffs." However, by careful tuning and positioning of the set's rod antenna S.M. received good signals from the BBC Wales transmitters at Blaenplwyf and Carmel, plus the independent stations Red Dragon Radio (Cardiff) and Swansea Sound. Reception from BBC Radio Devon was prevented, as S.M. said, "by a large intervening lump of granite called Exmoor."

SSTV

During August, **John Scott GMUIK** (Glasgow) copied slow-scan television pictures from stations in Canada, **Fig. 5**, Hungary, **Fig. 6**, Spain, Switzerland, **Fig. 7.** and the USA. "The h.f. bands have been busy with many European stations sending SSTV," wrote John at the end of September. He also told me that one evening, around 2300, slow-scan pictures were coming in from "across the pond." Recently, John added 'Packet' to his station. He built the system from a kit which plugs into his transmitter and the serial port on his computer. "I have found this data mode handy for information," said John.

Royal Signals

Back in March, John copied a slow-scan 'CQ' signal from GM4DAE, **Fig. 8**, who, as the caption shows, is a member of the **Royal Signals Amateur Radio Society**. The Royal Corps of Signals has a fascinating history and it's worth looking for books about this famous regiment in your public library. Among the sets that they would have used during the second World War were the WS.18, left **Fig. 9**, WS. 38, centre **Fig. 9.** and WS. 22, **Fig.10.** The set on the right of **Fig. 9.** is the lesser known '58' which was made in Canada and mainly used by their infantry. Each one of these 50 year old portable transmitter/receivers are now much sort after by collectors of both vintage radio and military equipment. For the benefit of the collectors among you the 18 and 38 sets used a large 'alldry' battery which was fitted in the bottom of the 18 set's case and carried in canvas satchel for the 38. The former was designed as a back-pack set and the latter was worn about breast height by the signalman. The power requirements for the 22 and 58 sets were met by a separate vibrator pack, powered by 'wet' rechargeable accumulators and connected to the set by a dedicated lead. Most of the accumulators for the WS.22 were about the size of a car battery and housed in a metal carrying container. The vibrator unit for the 58 set was 'clipped' to the top of a container carrying two small two-volt accumulators and that whole assembly fitted into a metal back-pack case. The 38 set is unique because the operational frequency, between 6 and 9MHz, for both the transmitter and receiver, is selected by one large knob in the centre of the top panel. Whereas the transmitters and receivers on Wireless Sets 18, 22 and 58 are individually tuned. A variable capacitor is employed as the antenna 'tweaker' on both sections of the 18 and 58 sets, but, the much more powerful 22 set has a roller coaster for antenna matching adjusted by the large, numbered, knob on the left of **Fig. 10.**

Fig. 9.

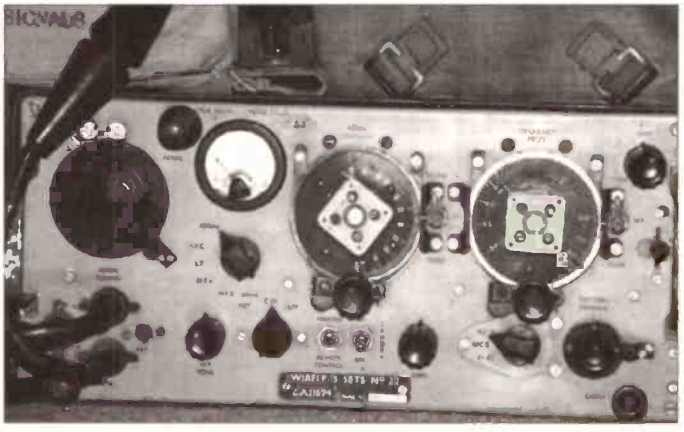
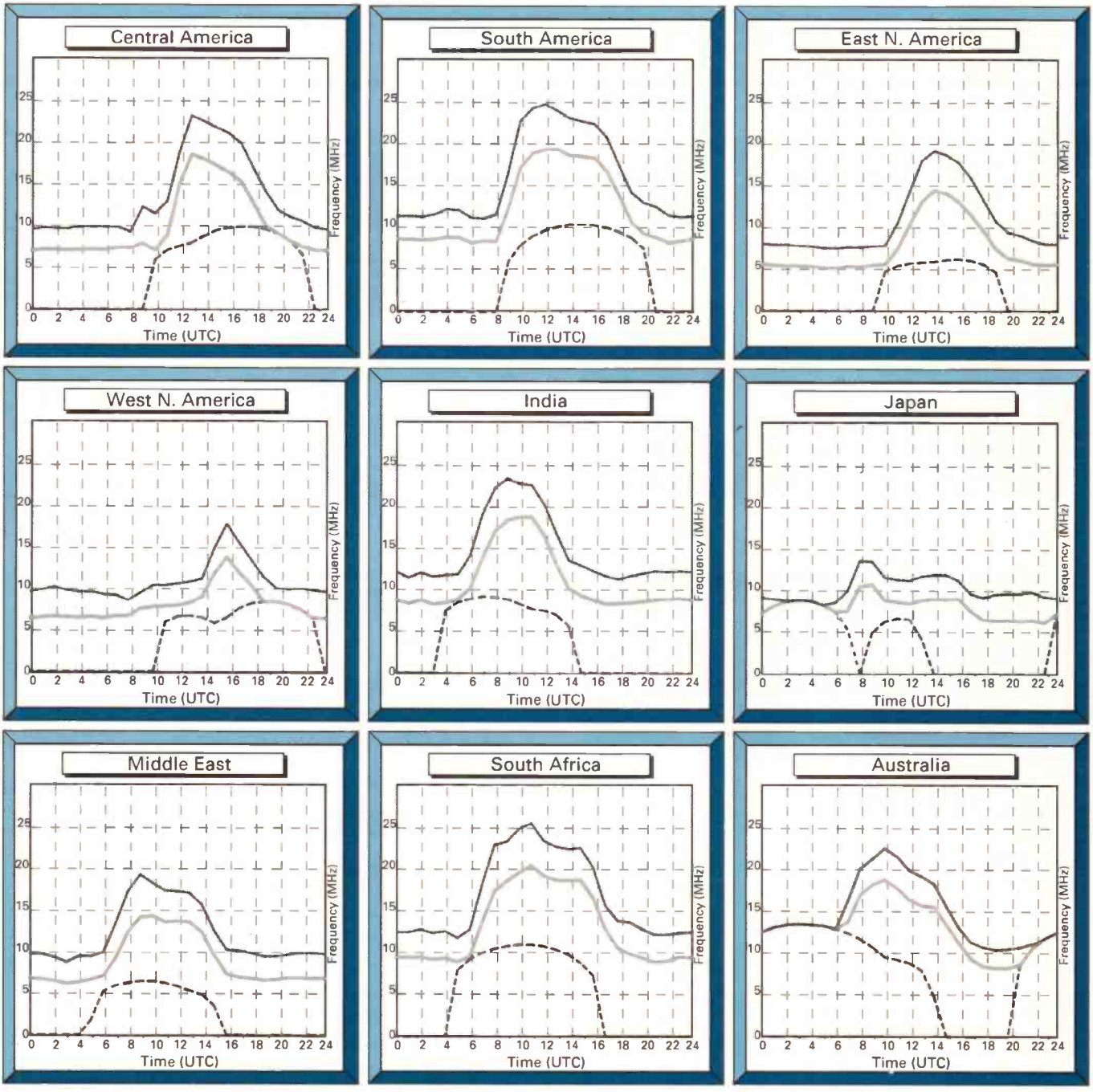


Fig. 10.

Jacques d'Avignon VE3VIA

World Propagation Forecasts December

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.

Paul Essery GW3KFE, PO Box 4, Newtown, Powys SY16 1ZZ

Amateur Bands Round-up

Listening to the Amateurs

Have you taken a cold look at your radio shack of late? None of us can reach perfection in layout of course; certainly we can make improvements in various ways. Some are obvious, some are subtle. They all contribute in some small way to enjoyment of the hobby.

Most of us are right-handed, so we tune with the left and log with the right hand. Thus the receiver main tuning knob should fall nicely to the left hand, and in turn this may involve blocking up the front of the receiver; indeed this may help an operator to read the controls more easily. A left-handed operator would reverse this. (Incidentally, if you've seen a TS-830S rig, ask yourself why you can see it was designed by a left-handed op!). Does the log fall nicely under the pencil, and does it stay there in use? A log that 'walks' is an unmitigated pain. Ventilation needs looking at if you do any long spells at the receiver. Is the table at the right height vis-a-vis the op's chair? Is the chair itself comfortable for a long bash? Once these are sorted out, we can start to look at the minor things!

Letters

Firstly a cry from the heart! **Tom Winzor** in Plymouth says his receivers (Trio R-1000, Yaesu FRG-7, FRG-7700) seem unable to find amateurs. The UK amateurs are in these bands: 1.81-2.0MHz, 3.5-3.8MHz, 7-7.1MHz, 10.1-10.15MHz, 14-14.350MHz, 18.068-18.168MHz, 21-21.45MHz, 24.890-24.990MHz, and 28-29.7MHz. In each case, the lower part of the band is devoted to Morse, while the higher-frequency end uses telephony. Lower sideband is in use up to 10MHz, and upper sideband above 10MHz for telephony; there is little or no Amplitude Modulation telephony by amateurs these days.

New contributor **Michael Micheletti** in Sterrebeek, Belgium, seeks news on how to send a card through the Bureau system. Most national societies run a QSL Bureau operation where members of that society can send outgoing cards through their Bureau, and receive them. In some countries, non-members can receive cards provided they keep their Bureau stocked with stamped addressed envelopes. For Belgium, the contact is: c/o Etienne David, ON5IA, A. Vermeylenstrat 49, B-8400, Oostende, Belgium.

'Why can't I hear anything much on 18, 21, 24 and 28MHz?', **Ian Whiteford** asks from Irvine. At the present state, near the bottom of the eleven-year sunspot cycle, the maximum usable frequency rarely climbs as high as 21MHz, let alone 28MHz, and then only for a short period each day, often around noon or just after. At the peak of the cycle, by contrast, these bands will hopping with life all day most days, and 14MHz may even be open all night as well. Ian's list shows that on 3.5MHz he found VP5PA, VK6ACY and some Europeans, while on 14MHz he noted NP4N, GS4WKS(Arran), LU7AUB, WB6FDR, K)3G, KP4IAT, KB2UBM, N1BRR, N4YKD, W1KFD, N7QMP, KB6NF, KB1JU, VO1CA, W4TMN, KB2VQX, N3RS, and W7FNI; 4U1ITU was booked in on 18MHz.

From Portsmouth, **Stuart Crow** has returned to the bands after a break, and has a KW202 as the prime tool on the bench. Like many another, Stuart is angry about the way DX operators (he mentions 9H4CM) demand money for QSL cards. As he says, the Bureau system is there and there is no need to demand a dollar a card. Stuart sees it as a clear case of financial blackmail which makes it a breach of the ITU definition of the amateur service.

That is so; however, there is the other end of the see-saw to consider. Most operators after DX seem to want cards direct; and in such a case it is arguable the dollar just about covers the cost of the card plus postage. On 14MHz Stuart mentions 9L1PG, EA9AR, 7X2YL, CN8MC, J55UAB, 7X2VXK, J28JY, SU1SK, ZD7SM, TY8G, all in Africa, 9K2ZC, A71BH, DU9RG, BY1QH, YI0OEB, BV5GU, YI1FCJG1WH, 9M8PR, VU2PAI, VU2DK, YB8NA, VU2BEJ, 4S7EA, JA7AKH, 9N1RHM, VK4EJ, VK2CLD, VK6AMD for Asia and VK; South Americans HC6CR, PZ1AP, ZY3IO, ZP6CC, and finally in N America WA6BMG, W6JCE, W7TJ, W7QKI, N7DD, W7LR, W5RAF. Turning to 21MHz we see quite a few Africans, plus an oddity signing A7)ID/24 in the CQ contest, JAs, OD5SF, 4L4KW/MM 200 kilometres S of Sri Lanka for Asia, a couple of VP8s and PY2BGA for S America, while KA1DWX, K1JDL, NO1J, K1OX, KQ4QF represented the N. American pickings. Notice how the 21MHz signals tend to be largely on N/S paths, telling us the m.u.f. was only a hair above the band.

Would a tuner help with a G5RV, wonders **Wayne Griffin**, and follows it up by asking if the v.h.f. converter is still available for the ICR70. To the second question I have to answer 'dunno!' but doubtless Icom UK would advise. As for a tuner, the only 'commercial' one here came as a makeweight part of a deal with another club member, and the others are all home-brewed. But yes, a tuner should make some improvement to received signals on all bands. It's maybe right to point out, though, that adding a tuner won't wake up a dead band! On Eighty Wayne logged various Bank Holiday GB calls, while 7MHz yielded PR7SM and FM5DP; on 14MHz he booked in KR4CQ/1, W3AAA, JE4VVM, YB5AQ, DU9RG, W4AJJ, W9KEH, N9RJG, N9ROA, KE3SA, W9WHM, VK2BYK, N7ML, WB4DBB, WA9USE, HP9DEQ, WB2CYR, WB4ZWS, WZ1Y, and W0NL. Finally 18MHz, represented by a lone YB2ARW.

Now we turn to **Colin Dean** in Barnsley, who listened to 14MHz to log A71EF, AP2N, BV5GU, BY1QH, DU1SAN, DU1SSR, DU9RG, D44AB, ET3AA, EY4AA, FR5HR, HL4GAB, HS7CKC, HS0/G3UUM, J28FX, N4ISV/OD5, OH2EW/OH0, SU1SK, S27YE, S79KMB, TA2ZW, TY8G, VK4LW, V51BO, YB0PMU, YI1FC, YI1RS, ZA1BJ, Z21JE, 4S7RF, 5H3LM, 5N9KWO, 9G1BS, 9G1YR, 9K2HR, 9L1PG, 9M2CW, 9M8PR, 9N1ARB, and 9N1HRM; at 18MHz he found CN8TM, CU7BA, C37HK, J28JA, K6KS, PT7BZ, V51BG, YB2ARW, 5B4XF, and 9H1DE. As for 21MHz OH0NRG and VP5/PA3FQA were noted.

Next we have a first letter from **Dave Haigh** in Halifax; Dave has a Trio TS-510 transceiver and PSU, while on the antenna side he has a 20m centre-fed coupled to a Datong AD270 active antenna. Dave is on the lookout for a ERA Microreader to resolve c.w. Why not just learn morse? .....it's much cheaper, and in any case there isn't a decoder yet that can cope with other than 'very good' fists. Dave stuck to 14MHz and offers 4X6TT, 4N1KT, 7Q7JL, 9K2KO, 6X8BQ, 5Z4PL, 7X2DB, 5N0QC, 7Q7LA, 9G1NS, 9J2AE, 9K2ZM, 9L1PG, 9M8DJ, 9Y5LR, 8P6DY, 9M8FC, 7N2PTB, 8R1Z, 9J2GA, A92MM, N7QXQ, 7X2DG, T77C, 5T5TC, XX9AW, 4X6ZK, J28RD, ZS8IMI, PP1RR, AX2XQ, W6EL, and VQ9QRM who sounds a bit odd!

Skip Path

The phenomenon of skip got to **Phil Townsend** in London E17 when he noted PA3ELF at 300 miles was RS11 at the same time as LZ1KBB in Sofia was RS53 but over 1000 miles away. An interesting one was a GM0??G/MM where for the question marks substitute B, D, or P. Seemingly the underwater section of this vessel inspects undersea installations. A pity his call was so gabbled and so unreadable.

Now we turn to **E. H. Trowell** in Minster, Isle of Sheppey, who notes there is some DX about even if you do have to dig for it!. Ted stuck to c.w. and on Top Band found SI6GM, while 3.5MHz stumped up with VP5/PA3BBP CE0Z and XR0Y. On 7MHz ZL3KIM, ZL4OL, XR0Y, ZL3NB, TI5NW, ZL2AGY, HB0/DL1AVK/P, ZG2AZ(Malta), ZL4SEA, 3V8AS, and VP5/PA3ERC were logged in, and on 10MHz VP5/PA3BBP. Turning to 14MHz JM7OLW, VE7NH, OY1CT, OX3RO, EA9PB, YV1NX, XE3ARV, KP2J, and FG5ED were noted, plus, on 18MHz XK3FH, AK2K, VP5/PA3ERC, YI9CW, YV6AZC/3, OH2BU/MVI, 9M2AX, 9K2MU, TY8G, PY2OW, XJ3AT, TR8DF, 9Q5MRC, 9Q2L, YV1NX and 9J2SZ. 21MHz accounted for VP5CRR and LU5FIL, leaving 24MHz for 9J2SZ. Our anonymous contributor is back again with more questions. This time: how does one get to know about forthcoming expeditions to rare spots? It helps firstly for you to be in touch, and co-operate with, a DX chaser locally. If something new is spotted, then you and your buddy can make a quick telephone call and both of you get a benefit. Secondly, you can get on to the circulation list for one of the weekly news-sheets, such as RSGB's *DX News Sheet* edited nowadays by top operator **Chris Page G4BUE**; or maybe The DX Bulletin. Details on the former from **RSGB, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE**. For the latter the address is **The DX Bulletin, PO Box 50, Fulton CA 95439-0050, USA**.

That's all for this time. As always, material to **PO Box 4, Newtown, Powys SY16 1RA**, to reach me by the first of the month. Not just lists, but comments, questions and whatever!

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SYNOPTIC REPORT FROM LAND STATION DAY 16
WIND MEASUREMENTS: TAKEN BY ANEMOMETER
FROM STATION AT: SODANKYLA (02836) IN
FINLAND STATION TYPE: MANNED – WITH
WEATHER REPORT.

**********MESSAGE NUMBER 873**********
DEUTSCHE LUFTHANSA FLIGHT NO: 470
POSITION: 57N 0-20W TIME:16:04 UTC
AIR TEMPERATURE:–57C WIND 100 KNOTS
AMERICAN AIRWAYS FLIGHT NO: 109
POSITION: 55N 0-30W TIME: 16:04 UTC
AIR TEMPERATURE:–46C WIND 74 KNOTS

**********MESSAGE NUMBER 704**********
BUOY REPORT FROM SHIP (MOBILE)
COMPILED BY TOULOUSE (MET CENTRE) IN
FRANCE
DATA FOR REGIONAL EXCHANGE FOLLO
MINIMUM TEMPERATURE: 17.9C
CLOUD INFORMATION – LOWEST CL
CUMULUS AND STRATOCUMULUS
LEVELS
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SSB Utility Listening

This month, I'm going to make a start on answering some of the many questions that have arrived in recent months. I try to answer all letters via this column, so there is no need to send a stamped s.a.e. with your questions. Occasionally, I am able to offer frequency or callsign listings of various types, and a stamped s.a.e. is required for these.

First up is **John Higgins** from Avon who wants to know more about a station he heard on 2.702MHz using the callsigns 'Coastal'. John wants to know the origin of this station, and some more about the transmission he heard. Well John, this is a service which has been mentioned several times in the past three years. The system is known as 'Coastal Control', and is a MoD service used by Royal Navy and NATO ships in UK waters. Rather than fill the rest of the page with a long write-up covering information that has appeared before, I would direct you (and other readers) to a couple of suitable books which will enable you to find out more. *Ferrell's Confidential Frequency List* (9th Edition) contains all the known 'Coastal Control' frequencies, while *Eavesdropping on the British Military* contains a very good description of the service, along with most of the frequencies; it also explains a little about the 'two letter' callsigns used by ships. Both these books are available from the *SWM* 'Book Store'.

Chris Rolfe from Kent writes in with a long list of loggings for 11.175MHz. He says that he uses a book called *The US Air Force and US Navy Directory 1995* (from the MACH III PLUS group) to check the aircraft tail-numbers heard on h.f. This book lists which particular squadron operates the aircraft, and you can cross check this piece of information with another book that Chris recommends - *Callsign 95* (by Photavia Press). If the details tie-up, then its a good bet that the information is correct. Many people use this information as a basis for writing off for a QSL card for what they have heard. On the whole, I would agree with what Chris says, but you should always be careful. USAF and USN aircraft are in a continual state of flux, and they change squadron quite often. There are many changes each week, so you can never be 100% certain unless you actually see the aircraft and make a note of the squadron markings.

Neil Dalton writes to ask about a suitable device to decode/monitor RTTY, c.w. and other digital transmissions on h.f. Well, Mike Richards is the best person to answer these questions, but it really depends on how much money you are prepared to spend. I am a great supporter of the idea that you should start small and work upwards as your interests and budgets allow.

If you have a PC compatible computer (which Neil has), one of the best introductory set-ups is the Pervisell interface and the HAMCOMM shareware software. The Pervisell interface is a small attachment which connects to the rear of the PC and converts the audio signal into a digital signal which the HAMCOMM software decodes.

The interface is extremely cheap, and Pervisell advertise each month in *SWM*; the HAMCOMM software is available from Mike Richards, full details are in his 'Decode column' (see page 77 of this issue - Ed.) each month.

Finally, Neil asks how I prefer to receive logs each month. Well, I'm happy to receive them by any method. Most people still use the post, but one or two are sending them to me electronically via the Internet (my E-mail details are at the top of the page).

Evan Murray writes all the way from New Zealand, enclosing a copy of the *New Zealand DX Times* newsletter (the monthly publication of the NZ Radio DX League), and a cassette tape of some typical stations heard 'down under'. The tape makes very interesting listening, and includes flights working such exotic places as Nandi and Manilla, several flights reporting and tracking an emergency beacon on 121.5MHz, and flights working McMurdo Sound in the Antarctic. For NZ listeners, exotic stations are those in Europe and traffic on the NAT tracks. Evan says that they are having an 'unofficial' competition amongst their readers, to see who is first to log Bodo Radio in Norway. Have any *SWM* readers heard this station recently?, earlier this year, they were listed as operating on 2.983, 4.666, 6.544 and 8.840MHz.

Bob Taylor writes to ask about the best way to operate two receivers from a single antenna, without each receiver causing interference problems to the other one. He mentions that he is aware of a device available commercially, but wants to know if there is a cheaper solution. I have to admit that I have absolutely no idea on this one. Last year I did some comparison tests of two receivers (a Sony ICF-2001D and an AOR AR-3030) by simply connecting both to my antenna (a G5RV) via a coaxial 'T' connector. Some people would probably be horrified by this solution, but it was only for a few days. Is there anybody who is already using two receivers from a single antenna who can explain how it's done - I can pass the details on to Bob directly, or mention them in this column in case others are interested.

I have had several letters from people who had trouble contacting **Diagrafix** in Slough (note the correct spelling), following the write-up about them in the August issue. For those who wish to contact them by telephone to follow-up an order, their number is (01753) 672671. What I should have pointed-out in the original article, was that there can sometimes be delays is the arrival of your goods, as they have to be imported from the USA.

Traffic Log

(all freqs in MHz u.s.b., all times in UTC)

5.422	(14/9, 01.00) Station '0A' calling station '4C' for a radio-check. Almost certainly a British Army exercise.
5.680	(13/9, 23.30) Ship GACE (RFA Victoria) working 'Rescue 193' (a Sea King helicopter from RNAS Culdrose in Cornwall), asking for their e.t.a. for refuelling. '193 said their e.t.a. was in 1 hour.
6.708	(9/9, 18.11) 'Navy 275' working 'R1I', reporting 'operations normal' 30 nautical miles north of Bari (southern Italy). If 'navy 275' had an English accent, it was almost certainly a Royal Navy Sea King helicopter operating off of a Carrier in the Adriatic.
6.708	(10/9, 07.40) 'Navy 270' working 'J8Y', reporting they were outbound to a location 5 miles north of Split (former Yugoslavia), endurance 2 hours, and maintaining a listening-watch on this frequency. Almost certainly another RN Sea King helicopter.
6.730	(22/8, 15.05) DHJ59 working aircraft '4XZ', who reported their take-off time as 15.00. At 15.54 both stations were heard communication in encrypted RTTY ('CRATT').
6.779	(22/8, 09.41) DHJ59 (German Navy, Wilhelmshaven) working German Navy ship 'DRHN' (name anyone?). DHJ59 referred to this frequency as 'H73'.
8.992	(29/9, 16.47) Selical tones, answered by station 'Papa Juliet', with all communications in French. This is a known French Air Force frequency, and 'PJ' is almost certainly a French Air Force C130 Hercules aircraft.
11.175	(23/9, 22.00) 'Medevac 533' (a USAF C-17 aircraft) working MacDill GHFS with a phone patch to 'Hilda America'. '533 is a medical emergency evacuation flight from St. Croix in the US Virgin Islands, en-route to Miami; they are trying to co-ordinate with a hospital in Miami to pick-up the patient they have on-board. This was a few days after the hurricane flattened this part of the Caribbean, and the only way to get major medical attention was to fly the injured to Miami.
11.306	(10/8, 11.05) 'Alpha Kilo 1' working Portishead Radio with a phone patch to Hungary, discussing the arrival time and security requirements for the arrival of a Sheikh.

Coming Soon

At the end of November, possibly the 29th, President Clinton is coming to London, and then travelling-on to Northern Ireland. This means that there will be a lot of SAM flights operating on the 'Mystic Star' network around this time, as well as 'Airforce 1' and 'Airforce 2', and probably even an E-4 aircraft (usually using the callsign 'Gordo'). Since the flights will have to cross the North Atlantic, they'll also be operating on the NAT tracks.

In early December, probably the first weekend of the 2nd and 3rd, the Combined Cadet Force (CCF) should be holding their 'Christmas Cracker' competition. The CCF is an organisation similar to the ATC and SCC, but mainly involving school-children at public schools in the UK. The objective of the competition is to work as many other CCF stations as possible, on all CCF frequencies, in a period covering a Saturday and Sunday. Their primary frequency is 4.9735MHz u.s.b., but they also have a number of frequencies between 4.450 and 4.480, and 5.200 and 5.250MHz. They have also been heard on 4.988, 6.913 and 7.753MHz.

The CCF operators use a 2-letter code when referring to frequencies, so if you hear them discussing a change of frequency, you will need to search the above ranges for the actual frequencies in use.

For those of you who manage to hear any of the stations involved in the competition, the results are announced on Christmas day at 12.00 on 4.9735MHz (... a good excuse to avoid the kitchen on that day!).

Brian Oddy G3FEX, Three Corners, Merryfield Way, Storrington, West Sussex RH20 4NS

LW Maritime Radio Beacons

The increasing hours of darkness during July, August and September encouraged quite a few listeners to try searching the band at night for the sky waves from distant maritime radiobeacons. Static was quite a problem in some areas during August, but it did not deter the really keen DXers from listening well into the night!

Quite extensive logs were compiled at night by several listeners and some of the beacons they heard were located at considerable distances from the UK - see chart. The Canary Is beacons at La Isleta (LT) and Punta Lantailla (NA), which share 291.9kHz, were received at 0030UTC by **Jim Edwards** in Bryn, but the one at Prinz Christian Sund, Greenland (OZN) on 372.0 was not heard until 0330.

Several beacons located nearer to the UK were heard for the first time by dedicated DXers: Ristina, Estonia (RS) on 306.5 and Ijmuiden, Holland (YM) 288.5 were logged by **Steve Cann** (Southampton); Cozzo Spadaro, Sicily (PZ) 286.5 and Cabo San Sabastian, S.Spain (SN) 291.0 were noted by **Robert Connolly** (Kilkeel); Jaroslawiec, Poland (JA) and Leba, Poland (LE), which share 287.3, were heard by **Albert Moore** (Douglad IoM), but his prize catch was OZN on 372.

The ground waves from beacons around the UK and some other countries were received during daylight - see chart. **John Wells** (E.Grinstead) noticed that the long range Consol beacon at Stavanger, Norway (LEC) on 319 was radiating a keyed callsign followed by a plain carrier instead of the alternate dot and dash sectors which merge into an equisignal. It is not known if this was intentional or a fault condition.

Very welcome first reports were received from **Mike Dawson** (Reading), **Derek Malyon** (Ipswich) and **Eric Tubman** (Whitstable). To compile his list Mike used a 50m open loop in the attic with a JRC NRD525. He logged OZN earlier this year. Derek listened mainly during the day in August & September. Eric searched the band at night (after 2200) during September with a Lowe HF-225 + PR-150 and MLB + random wire.

Robert Connolly's popular *Non Directional Beacons of Europe* is still available - if you would like an information sheet about it please write to him via me enclosing an s.a.e.

Long Wave Maritime Radiobeacon Chart

Freq (kHz)	C/S	Station Name	Location	DXer
284.5	LZ	Lizard Lt	S.Cornwall	A,B,C*,D,G,I,K,L,M,P,S,U,V
284.5	MA	Cabo Machichaco	N.Spain	D*,H*,J*,L*,O*,P,U
284.5	PR	Porkkala	Finland	H*
285.0	NO	Cabo de la Nao Lt	S.Spain	D*
285.0	NP	Nieupoort W.Pier	Belgium	D*,P
286.0	TR	Tuskar Rock Lt	S.Ireland	A,C*,D,I,J*,L,P,S,U,V
286.5	AL	Almagrundet Lt	Sweden	C*,D*,H*,L*,N,P
286.5	BY	#Baily Lt	S.Ireland	D,L
286.5	FI	Cala Figuera	Majorca	C*,D*,L*,P,Q*,U,V*
286.5	FT	Cap Ferret Lt	W.France	A,D,H,L*,O*,P,V*
286.5	NK	Inchkeith Lt	F of Forth	B,O*
286.5	PZ	Cozzo Spadaro	Sicily	D*
287.3	BT	Bjargtangar Lt	Iceland	D*
287.3	HA	Haifa Lt	Israel	D*
287.3	IB	I.Berlenga	Portugal	D*
287.3	JA	Jaroslawiec	Poland	L*
287.3	LE	Leba Rear	Poland	D*,L*
287.3	MD	Cabo Mondego	Portugal	D,P
287.5	DO	Rosedo Lt	France	D*,V
287.5	FR	Faerder Lt	Norway	B,D*,H*,J*,L*,P
288.0	HH	Hoek van Holland	Holland	D,P
288.0	KL	Sklinna Lt	Norway	B*,D*,H*,L*,O*,P
288.0	OH	Old Hd of Kinsale	S.Ireland	A,L
288.5	FI	Cabo Finisterre Lt	NW.Spain	A*,B*,C*,D,H,L*,O*,P,Q,V*
288.5	UD	Cabo Salou	S.Spain	P
288.5	YM	Ijmuiden Lt	Holland	C,D,G*,H*,I,J,P,S,U
289.0	BL	Butt of Lewis Lt	Is of Lewis	R
289.0	BY	Baily Lt	S.Ireland	A,B,C,D,L,P,Q
289.5	KY	Oksoy Lt	Norway	D*
289.5	LO	Landsort S Lt	Sweden	D*,G*,H*,Q
289.5	MN	Hammerodde	Denmark	D*,H*,P
289.5	SN	Ile de Sein NW Lt	France	A,C,D*,G,I,J*,P,S,U,V
290.0	FD	Fidra Lt	F of Forth	B,D*,I,O*
290.5	DY	Duncansby Hd Lt	NE.Scotland	D,O*,R
290.5	LL	Hallo Lt	Sweden	D*,H*,O*,P
290.5	SB	S.Bishop Lt	Pembroke	A,B,C,D,G,I,J,K,L,M,P,S,U,V
290.5	VI	Cabo Villano Lt	N.Spain	A,D,G*,H*,I*,J*,L*,M,N*,O*,P,Q*,T*, U,V
290.5	VY	Visby	Sweden	P
291.0	OR	Orskar Lt	Sweden	D*,P
291.0	SN	Cabo San Sebastian	S.Spain	D*,L
291.5	CK	T.Navolokskiy	SSR Arctic	D*
291.5	SU	South Rock LV	Co.Down	A,B,C*,D,F,G,I,J,L,N,O*,P,Q,S,U,V
291.9	AV	Aveiro	Portugal	D*
291.9	LC	Leca	Portugal	V*
291.9	LT	La Isleta	Canaries	D*,H*,L*
291.9	MR	Montedor Lt	Portugal	D*
291.9	NA	Punta Lantailla	Canaries	D*,H*
292.0	MH	Mahon, Minorca	Balearic Is	D*, V*
292.0	SJ	Souter Lt	Sunderland	B,C,D,I,L,N,O*,P,S,U
292.5	SM	Pt St.Mathieu Lt	France	A,C,D,G*,H*,I,J,K,L,P,S,U,V
293.0	CP	St.Catherine's Lt	I.o.W.	A,C,G*,I,J,K,M,N,P,S,T*,U,V
293.0	RN	Rhinns of Islay Lt	Is of Islay	B,D,L,Q
293.0	SY	Svinoy Lt	Norway	B,D*,O*
293.5	RO	Cabo Silleiro Lt	N.Spain	D*
294.0	KU	Kullen High Lt	Sweden	D*,H*,I*,L*,P
294.0	PH	Cap d'Alprach	France	A,B*,C,D,G*,H*,I,J,K,L,M,N,P,S,T*,U,V
294.5	KC	#Old Hd of Kinsale	S.Ireland	D*
294.5	PA	Pakrineem Lt	Estonia	D*
294.5	PS	#Pt.Lynas Lt	Anglesey	D,L,Q
294.5	PT	#Souter Lt	Durham	B
294.5	SN	Sletnes Lt	Norway	D*,L*,P,R*
294.5	UK	Sunk Lt V	Off Essex	C,G,I,J,K,N,P,S,U,V
295.5	CB	La Corbiere Lt	Jersey C	I, A,C,D*,I,K,P,S,U,V*
295.5	CR	Cap Couronne	France	D*,P
295.5	RE	La Rochelle	France	D*
296.0	BH	Blavandshuk Lt	Denmark	B,D*,G*,H*,L*,O*,P,U
296.0	GR	Georee Lt	Holland	I,J,P,U
296.0	KN	Skrova Lt	Norway	D*,H*
297.0	FG	Pt de Berfleur Lt	France	A,C,D*,G*,H,I,J,K,L,M,N,P,S,T*,U,V
297.5	MA	Mantyluoto	Finland	D*
297.5	PS	Cabo Penas Lt	N.Spain	D*,H*,Q
298.0	GX	Ille de Groix	France	C,D*, ,F,H*,S,U,V
298.0	TA	Cabo Gata	S.Spain	D*
298.5	RR	Round Is Lt	Is Scilly	A,B,C,D,F,G*,I,J,K,L,M,N*,O*,P,S,U,V
298.5	SW	Skagen	Denmark	D,P
298.8	HO	Hornbjarg	Iceland	D*
299.0	AD	Amaland Lt	Holland	B,C,D,H,I,J*,L,N*,P,S,U
299.0	BN	Les Baleines	W.France	C,D*,H*,P,U
299.0	O	Tarifa	S.Spain	D*
299.0	UN	Understen Lt	Sweden	D*
299.5	NP	Nash Pt Lt	S.Wales	A,C,D,G*,I,J,K,L,M,P,S,U,V
299.5	SK	Skomvaer Lt, Rost	Norway	D*
299.5	VR	Utvaer Lt	Norway	B,D*,H*,L*,N*,O*,P,R,U
300.0	MZ	Mizen Head	S.Ireland	A,D,L*,P,U
300.0	TI	Cap d'Antifer Lt	N.France	A,C,G,I,J,K,L,M,P,S,U,V
300.5	DU	Dungeness Lt	Kent	C,D*,I,J,K,L,M,N,P,S,T*,U,V
300.5	IO	Ilichevsk	Ukraine	D*
300.5	LA	Lista	Norway	B,D*,H*,L,O*,P
301.0	CA	Pt de Creach	France	D,U
301.0	ER	Elerland Lt	Holland	B*,D*,H*,I,P
301.1	RG	Raufarhoefn	Iceland	D*
301.5	KD	Kinnards Hd Lt	NE.Scotland	B,D*,I,O*,U
301.5	L	Torre de Hercules	N.Spain	D*,H*,P,V*
301.5	OB	Hoburg	Sweden	D*,H*,L*,P
302.0	RB	Cherbourg Ft W Lt	France	A,C,D,G,H,I,J,K,L,M,N,P,S,U,V
303.0	D	Rota	SW.Spain	D*
303.0	FB	Flamborough Hd Lt	Yorkshire	A,B,C,D,G*,I,J,K,L,N,O*,P,S,T*,U,V
303.0	FV	Falsterborev Lt	Sweden	B,D*,L*,O*
303.0	YE	Ile d'Yeu Main Lt	France	A,C,D*,H*,I,J*,K,L*,M,O*,P,S,U,V
303.4	VC	Cape St. Vincent	Portugal	I
303.5	BJ	Bjornsund Lt	Norway	B*,D*,H*,O*
303.5	FN	Feistein Lt	Norway	B,P
303.5	IA	Llanes Lt	N.Spain	D*,H*,L,U,V*
303.5	VL	Vlieland Lt	Holland	C,D*,H,I,J,L,M,P,S,U
304.0	ME	Punta D.Maestra	Italy	V*
304.0	PS	Pt Lynas Lt	Anglesey	A,B,C,D,I,J,L,N,P,Q,S,U
304.0	SB	Sumburgh Hd Lt	Shetland Is	O*
304.5	MY	Cabo Mayer Lt	N.Spain	D*,G*,P,V
305.0	BA	Estaca de Bares	N.W.Spain	V,L*
305.0	C	Cabo Priorino Lt	N.Spain	D*
305.0	FP	Fife Ness Lt. SE	Scotland	B,D,I,L,O*,U
305.0	GL	Ile de Giraglia Lt	Corsica	D*,Q
305.5	AL	Pt d'Ailly Lt	France	A,C*,D,G*,H,I,J,K,L,M,N,O*,P,S,T*,U,V
305.7	DA	Dalatangi Lt	Iceland	D*,H*
306.0	EC	Elizabeth Castle	Jersey	K,U,V
306.0	FN	Walney Is Lt	Off Lancs	B,C,D,I,J*,L,N,P,S,U
306.0	TN	Thyboron	Denmark	B,H*,O*,P
306.5	GJ	Le Grand Jardin Lt	France	A,C,U,V
306.5	KL	Kolkasrags	Latvia	D*
306.5	OR	O Oemussaar	Estonia	D*
306.5	RS	Ristna	Estonia	C*,D*,L*,O*
306.5	SY	Sorve	Estonia	D*
306.5	UT	Utsira	Norway	B,D*,H,I,J*,L,O*,P,Q,R
307.0	GL	Eagle Is Lt	Ireland	B,D,L,P,Q
308.0	RC	Cabo Roca	Portugal	D
308.0	RD	Roches Douvres Lt	France	A,C*,D*,G,H,I,J,K,L,M,N,P,S,U,V
308.5	NZ	St Nazaire	France	D*,H*,P,S,U,V
309.0	MU	Kobenhaven	Denmark	D*
309.3	BA	Punta Estaca Bares	N.Spain	D*,H*,J*,L*,O*,P
309.5	FH	Fruholmen Lt	Norway	D*
309.5	MA	Marstein Lt	Norway	B,D*,H*,L,O*,P
309.5	PB	Portland Bill Lt	Dorset	A,C*,D*,I,J,K,L,N,P,S,U,V
310.0	:ER	Pt de Ver Lt	N.France	A,C*,D*,G,H*,K,M,P,S,U,V
310.5	BO	Bokfjord Lt	Norway	D*
310.5	SG	Sjaellands N Lt	Denmark	D*,L*
311.0	GD	Girdle Ness Lt	NE.Scotland	B,D,L*,O*
311.0	NF	N.Foreland Lt	Kent	A,C*,G*,I,J,K,L,M,N,P,S,T*,U,V
311.5	LP	Loop Hd Lt	S.Ireland	D,L*
312.0	HO	Tennholmen Lt	Norway	D*,H*
312.0	OE	Oostende	Belgium	D*,G,H,I,J,K,L,M,N*,P,S,U,V
312.0	UH	Eckmuhl Lt	France	D*
312.5	AK	Akmenrags	Latvia	D*
312.5	BK	Baltiysk	Russia	D*,H*
312.5	BT	Mys Taran Lt	Russia	D*,H*,O*,P
312.5	CS	Calais Main Lt	France	A*,D*,G*,H*,I,J,K,N,P,S,U,V
312.5	DB	Doobskiy	Ukraine	D*
312.5	KA	Klaipeda Rear Lt	Lithuania	D*,H*
312.5	LB	Liepaja	Latvia	D*,O*
312.5	VS	Cabo Estay Lt	N.Spain	N,P
312.5	WW	Ventspils	Latvia	D*,G*
312.8	SR	Skardhsfjara Lt	Iceland	D*,H*,L*
313.0	HA	Halten Lt	Norway	D*,H*,O*,P
313.0	PA	Cabo de Palos Lt	S.Spain	D*,V*
313.0	TY	Tory Is Lt	N.Ireland	B,D,L,O*,Q
313.5	BR	Cap Bear Lt	S.France	C*,D*,H*,L*,V
313.5	CM	Cromer Lt	Norfolk	B*,C*,G*,I,J,L,N,O*,P,S,T*,U,V
313.5	OG	Olands Sodra Grund	Sweden	D*
313.5	PQ	Porquerolles	S.France	D
314.0	HK	Hekkingen Lt	Norway	D*
314.0	VG	Ile Vierge Lt	France	A,B,C*,D,G*,H,J*,K,L,M,N*,P,S,U,V
314.5	SK	Strandhofn	Iceland	D*
314.5	TL	Punta D Penna	Italy	C*,D*,E*,J*
316.0	IN	Ingolfshofdhi Lt	Iceland	D*,H*
319.0	LEC	Stavanger	Norway	A,B,C*,D,G*,I,J*,K,L,M*,N*,O*,P,Q R,S,T*,U,V*
367.0	JV	Jakobshavn	Greenland	D*
372.0	OZN	Prins Chris's Sund	Greenland	D*,F*,H*,L*,P
381.0	AB	Akraberg	Faeroe Is	B*,C*,D*,G*,H*,L*,N*,P,R
404.0	NL	Noelo	Faeroe Is	B*,C*,H*,L*,N*,P,R

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

DXers:-
(A) Derren Beasley, Bridgwater.
(B) Kenneth Buck, Edinburgh.
(C) Steve Cann, Southampton.
(D) Robert Connolly, Kilkeel.
(E) Robert Connolly, while in Budapest.
(F) Mike Dawson, Reading.
(G) John Eaton, Woking.
(H) Jim Edwards, Bryn.
(I) John Hobson, Ely.
(J) Derek Malyon, Ipswich
(K) George Millmore, Wootton, IoW.
(L) Albert Moore, Douglas, IoM.
(M) Fred Pallant, Storrington.
(N) Peter Pollard, Rugby.
(O) Peter Polson, St.Andrews.
(P) Peter Rycraft, Wickham Market.
(Q) Tom Smyth, Co.Fermanagh.
(R) John Stevens, while in Melvich.
(S) Phillip Townsend, E.London.
(T) Eric Tubman, Whitstable.
(U) John Wells, E.Grinstead.
(V) Ross Workman, Shorham-by-Sea.

Godfrey Manning G4GLM, c/o The Godfrey Manning Aircraft Museum, 63 The Drive, Edgware, Middlesex HA8 8PS

Airband

Partebavia P-68
Christine Mlynek

As the end of another year draws near, I hope you found all the aeronautical interest that you wanted during 1995, and that this column made it more enjoyable. Thanks to one and all for your letters, please keep them coming in 1996. Remember that next month's issue contains my Christmas Quiz.

Do you know anyone organising an unusual aerial activity? Examples have included dropping objects from kites and launching toy balloons for charity; flying home-made or hobby rockets; unusual parachute drops, etc. Well, the organiser of such events should first contact Airspace Utilisation Section of **National Air Traffic Services at Building 76, Hillingdon House, Uxbridge, Middlesex UB10 0RU**. Spread the word.

Follow-Ups And Foul-Ups

Non-one spotted the muddled captions in the October issue (page 63). The Stinson and Aeronca (note spelling) photos had their captions interchanged by mistake. Sorry.

In the September 'Airband' (page 60) I described the position-fixing system at LATCC should a 'Mayday' call be received. I'm grateful to **Vivek Gole** (Fernau Avionics Ltd.) who supplied some inside information. His company makes ground-based navigation aids such as direction finders and beacons. They installed the v.h.f. auto-triangulation equipment at LATCC. Techniques have moved on from the wall-map approach. Now the position is shown on a computer screen. The computer is loaded with optically-read discs that contain digitised maps. The operator can home in on the relevant area in whatever scale is suitable, and see the position fix superimposed on the map.

Directional antennas work on the Doppler principle. They are located at Binbrook, Birmingham, Cardiff, Gatwick, Heathrow, Little Rissington, Manchester, Manston, Shawbury, Stansted, Thorney Island, Wattisham, Woodvale, Wyton and Yeovilton. A star-connected data network sends the directional information from the receiver to the Distress & Diversion Cell as digital data. I'm pleased that 'Airband' is read in industrial circles.

Frequency Feature

On page 62 of the October issue, I put together a list of points that readers asked about. Replies, as follows, are from **Peter Buchan** (Crewe), **H.R. Edwards** (New Malden), **J.M. Lambert** (London), **James MacKenzie** (Leigh), **Nameless** (Nuneaton), **Steve Parsons** (The Wirral) and **Retro** (Surrey).

Sometimes civil aircraft appear to work the London Military controller. In fact, the aircraft is working a civil controller whilst outside the controlled airspace of the main airways system. At quiet times, one controller is handling the civil and military frequency for the same airspace. Calls on one frequency are relayed on the other; this is called band-boxing. An example is the Daventry sector 133.9 and 275.35MHz. British Airways flights between London and Newcastle or Aberdeen go up the east coast off-airways, for instance, so as to avoid flow restrictions on the main routes.

At quiet times, one controller handles all the London FIR uncontrolled traffic (as often mentioned in CAA documents). I regret that this is clearly an economy measure and can lead to poor service.

Manchester sub-centre has some frequencies not mentioned in October; 125.1, 126.65, 133.05, 133.4 and 134.925MHz (this latter not listed in Aerad). It also operates Pennine Radar

Fully aerobatic Yakolev
Christine Mlynek.

128.675MHz. Another local radar is Warton 124.45MHz.

If the Red Arrows aren't on the frequencies listed in October, they also have 242.05, 257.975 and 377.6MHz available to them.

London Mil has changed its frequencies (again!) so Pole Hill (Irish Sea) was 231.625 and is now 264.825; Daventry was 291.8 and is now 275.35; Clacton was 264.475 and is now 233.8; Dover/Lydd was 277.95 and is now 230.05 and Seaford/Hurn was 231.975 and is now 251.225MHz. Would you like me to print frequency lists in any particular order? Alphabetical by name of station or numerical by frequency? Old first, or replacement frequency listed first? If you have a definite view, if it'll make it easier for you to keep up to date, do tell me.

Retro wants the frequency for military helicopters in the London zone. They don't talk on 119.9MHz like their civil counterparts. Retro also reminds us of the v.h.f. London Mil frequencies: 135.275 (South) and 128.7MHz (North).

North Atlantic departures from Glasgow have too little time to receive their organised track clearance once airborne and now have the facility to contact Shanwick direct whilst still on the ground. Read-back is now often confined to the track identifier, the full lat/long co-ordinates not being given. Can this lead to errors?

You Write

Airband gossip from **Chris Brenton** (Plymouth). As reported here previously, Royal Navy Plymouth has joined the LARS on 121.25 and 386.7MHz, squawk codes beginning 02 and 07. The frequency is primarily to control Plymouth-based Fleet Requirements Dauphin (callsign Broadway), as well as Sea King and Lynx, helicopters, plus Sea Harriers. Plymouth Approach 133.55MHz is close and co-ordination is required.

Roy Dent (Harrow) saw an article on the NASA high-altitude Pathfinder aircraft. Unmanned and solar powered, I assume it has electric motors. I saw it on television news and it does bear a resemblance to its pedal-powered predecessors, the Gossamer aircraft. Roy also saw the publicity about the FAA's plan to replace air-traffic control with a system relying on GPS satellite navigation. I can't see what they're aiming at, the available technology not being capable of this task yet.

A question from **Edward Dicken**. "I remember seeing the 119.9MHz Special VFR radar operator's position in the Heathrow control tower. Now, have they moved it to West Drayton, or is it still there?" Unfortunately, Edward, there aren't many Area Control Centres in the UK (West Drayton, Fareham/Swanwick, Manchester and Prestwick) so I can't see them shutting down one of them in order to accept your idea of having an open day. They do shut down some positions at off-peak times, but never the whole Centre! The Special VFR frequency often doesn't open until 0800, awkward for the early-morning rush of helicopters that are around from 0730.

On the subject of the new *en-route* centre at Fareham, **C.H. Crowther** (Tewkesbury) sends a progress report. Both Fareham and West Drayton can transmit on the Strumble sector 133.6MHz.

Information Sources

Of course you've got your *Airband Factsheet* by now. No? It'll only cost you a self-addressed envelope with return postage (to hold one A4 sheet) if you send your request to the Broadstone Editorial Offices (not to me!).

Now out are the winter editions of *Airport Timetables (UK)* at £11.95 and *Airport Timetables (Heathrow and Gatwick)* at £5.20, which includes information not found in the UK title. UK postage included, overseas add £0.50. Order from (and cheques payable to) **Airtime Publishing Ltd., 13 The Hollows, Long Eaton, Nottingham NG10 2ES, Tel: (01159) 736998**. These books list flight numbers and destinations in chronological order for each day of the week. Each aerodrome has its own list.

Frequency And Operational News

The CAA's *GASIL* 5 of 1995 reports that London (Stansted)'s Radar frequency 125.55 is now available for Tower when directed by air-traffic control; Sumburgh's Offshore Radar, previously 118.15, is now 126.1MHz. LARS is now provided by Bristol on 128.55 instead of 132.4MHz.

Navigation wise, they've changed the frequency of the

Great Yarmouth n.d.b. (ND) - again! Recently it was on 397 and later 396; now you'll find it on 417kHz. Henton (HEN) has changed to 433.5 (was 395kHz). Finally, I'm sad to report the closure of Finningley, along with the loss of all frequencies. On this subject, pilots should beware closed aerodromes, the runways of which are marked by a white cross at each end; the paved surfaces are often given over to other purposes such as the storage of vehicles.

In The Cockpit

Starting in the August issue, I described Secondary Surveillance Radar (SSR). Unfortunately, there wasn't room last month for the concluding part, so here it is now.

TCAS, Traffic Alert and Collision Avoidance System, is mandatory for some flights in the USA and is now equipping many aircraft. This new technique warns pilots of possible collision risks with other nearby aircraft. It senses the presence of the other aircraft by its SSR transponder response. TCAS, then, is a newly-extended use of SSR.

Initially, TCAS I would indicate traffic advisory information to the pilot. An aircraft that seemed to be on a consistent collision course would be indicated to the pilot. TCAS II can give resolution advisories, instructions to climb, descend, or hold altitude, in order to avoid collision. No heading changes are given. The software controlling the equipment in each aircraft should give complementary instructions, so (for example) one approaching aircraft descends whilst the other climbs and hence separation is increased.

Whilst pilots are legally permitted to follow the TCAS instructions in emergency, hence going against controller's orders, this gives the controller a problem in getting the traffic pattern organised again afterwards. The changed altitude might start to bring an aircraft into conflict with another flight that the controller (but not TCAS) knows about.

TCAS can be fooled. It doesn't know the other aircraft's intentions. The other traffic might be 2000ft above us and descending straight towards us on a certain collision course, but the automatic system doesn't know that the other aircraft will actually level out once 1000ft above us. My preference is for humans to fly and control aircraft and for automatic systems to monitor and advise. A new topic from In the Cockpit next time.

Abbreviations

CAA	Civil Aviation Authority
FAA	Federal Aviation Administration
FIR	Flight Information Region
ft	feet
GASIL Leaflet	*General Aviation Safety Information*
GPS	Global Positioning System
kHz	kilohertz
LARS	Lower Airspace Radar Service
LATCC Centre	London Area & Terminal Control
MHz	megahertz
Mil	Military
n.d.b.	non-directional beacon
VFR	Visual Flight Rules
v.h.f	very high frequency

Piper Tomahawk
Christine Mlynek.

The next three deadlines (for topical information) are December 8, January 12 and February 16. Replies always appear in this column and it is regretted that no direct correspondence is possible. Genuinely urgent information/enquiries, Tel: 0181-958 5113 (before 21:30 local please).

John Griffiths, c/o 22 Ffordd Beibio, Holyhead, Gwynedd, North Wales

Scanning

I'd like to take this opportunity to say a heartfelt thank you to everyone who has written in over the past year. Most of you will know who you are! However, thanks must be expressed to a certain few without whom this column and many of the frequencies that appear within it, would not be possible. If everyone took as much trouble to put in information in the amount that the hard core do - we'd be a brilliant piece in what is already an information packed magazine.

Thanks then to **Paul Wey** and **Carl Ashby** who edit and write the already popular *Scanning Report*. This started life as a collation of information on where to listen by a couple of die-hard enthusiasts and has blossomed into what I consider to be the seminal work on the hobby. If you are not already subscribing to it - do so! With support and finance from others this piece can only grow. It's fact packed, up-to-date and a bloody good bit of reference to have in the shack.

Then there's **Tim Anderson** who writes in with low v.h.f. openings, Es and other bits of information. Tim writes on a semi-regular basis and transfers the hobby onto disc which is then collated and offered for sale. The moans that I've had about the 'gen' on the disc come from people who seldom see the amount of work put in by enthusiasts - often in their own time - and for the benefit of each of us.

For readers like like **'Oxford Ears'** I do promise anonymity after all! OE's speciality is military airband and some of the latest 'gen' on this area comes via his monitoring. I know 'OE' personally and we've spent a few hours in the shack here nattering on about this and that and exchanging info first hand. Things like a 'near situation' with a U-2 from a certain base followed through London Mil and via Brize Radar and the like. It's that aspect of scanning which lends the excitement to the hobby. The 'being there' bit. The exact details aren't important - what is is that the incident was just three weeks after the tragic crash of a sister aircraft at RAF Fairford. Without people like OE, like Tim, Paul and Carl this hobby wouldn't be half as interesting as it currently is. Gentlemen, to each of you, seasons greetings and a massive thanks.

Extras Planned

Moving on now. The home QTHR here at Steeple Claydon is up and running, though it needs sorting out! I'm still using the same equipment line up, although I plan extras in the coming year. Possibly another h.f. receiver which will then replace my Sony ICF PRO-80. Currently this set is on h.f. duty through an AD370, although another h.f. set will release this one to act as a stand-by for civilian airband monitoring. Purists will know the PRO-80 has a small black frequency convertor available which allows coverage of 115.15MHz through to 225MHz with no gaps. Not as good as a dedicated scanner maybe but with a good antenna - probably or one of the Howes airband kits - who knows? I'll possibly go for a second user Sangean ATS 803A, running it through both a Howes filter and an a.t.u. with an extension speaker for better clarity. That will give me two decent h.f. sets kitted out for better than average reception and each on a separate antenna. I think Julie will rail against having a G5RV but where there is a will, there is a way - besides which, a more 'friendly' antenna such as the 'Miller' will probably keep her happier than having a wire across the garden. Don't ask me how but there you go! Eventually I'd like to have both a h.f./v.h.f./u.h.f. set-up on the go covering not just the short waves but also being able to monitor military and civil bands. This means my interests on h.f. and u.h.f. will be taken care of by a pair of receivers, leaving one free for 'spot' work now and again. If Santa's on the ball, that is! In the meantime, mail via the North Wales address please!

Readers Letters

Onto the last section of mail for the year. From an unknown source is this gem which I feel sure all of you will subscribe to. The following publications are free of charge and would be of interest to scanner users:

Radio Communication in the Police and Fire Services of England and Wales. Final report March 1993. Document PL93 8/1246/2.

Police Service User requirements for radio communications. Document GD-91/1235/4 Smith.

Fire Service User requirements for radio communications. Document GD-91/1174/3 Smith.

Contact: **The Home Office, F7 Division, Room 538, Horseferry Road, Dean Ryle Street, London SW1P 2AW. Tel: 0171-217 8361.**

Thank you to whoever sent it in. I'm sure those of you who follow such activities will find this of interest.

A plea now from **Dirk Gill** of Aylesbury. Dirk is 78 years old, and still listening. A veteran of the RAF's 'Y' stations during the Second World War, Dirk still listens in. He tells me that he used to spend eight to ten hours a day tuning over frequencies during the war and adds that it was real work and how he'd have loved to have a scanner in those days. No doubt! Kirk is looking for a dry cell battery charger. Used by **P. Beaumont** of Upper Norwood, this bit of kit is certainly in demand! If you know where Kirk could get hold of one, or if Mr. Beaumont is reading, then I'd appreciate you sending details to Kirk at: 1 Kinson Green, Aylesbury, Bucks HP20 2AU. Come on then - some of you must know how to make someone else happy!

Two letters now on a query by **Alan Burnett-Provan**. You have strayed into navigational aids of the airband and the signal heard on 113.65 is the Honiley VOR/DME - v.h.f. Omni-Directional Range / Distance Measuring Equipment. VOR emits a morse ident 'HON' in slow morse 24 hours a day. Honiley marks a 'crossroads' between two airways - A1 and B3. Location is south east of Birmingham airport. Thanks to both **Robert Taylor** and **T. Trenfield** for that 'gen'.

Mr. Trenfield also writes in with some 'gen' on MASC. Apparently, Tamworth and Lichfield Police are on this system, talked about in a previous issue of the magazine. Some other - **non police** - frequencies of note are as follows:

456.825	Tamworth Borough Council.
120.300	Baxterly Field air / ground.
159.012	McAlpine Contractors.
140.456	British Gas Tamworth Depot.
169.460	Private Roadworks Company.

Mr. Trenfield also asks a very good question in that - if we aren't allowed to listen to broadcasts on civil air, for example, why aren't all those enthusiasts who frequent airports arrested....? I'll leave it there on that one!

Richard Gosnell writes in with an interesting slant on BR transmissions. 453.900 is used by platform staff at Reading to maintain comms on train delays and the like. It is a repeater net, with the repeater on permanent talk-through. Most of the traffic is mobile and calls are 'Rail' followed by a number eg. Rail 12. Richard tells me that the First Law of Monitoring means that unusually high levels of traffic indicate that something's up...! Reading also uses c.t.c.s.s. Another channel - 453.900 - is used by Thames Turbo Workshops to the west of Reading station. Swindon uses 453.550 and used by shunting, etc. 453.900 is used for customer relations, including the ticket office. Calls here are 'Retail' and followed by a number. These operate single frequency simplex rather than as a c.t.c.s.s. repeater. Again, Richard asks whether services classed as broadcasts can be classed as fair game for scanner users? Things like Volmet and ATIS - which are, in simplicity, broadcasts. Richard asks if anyone could use this in defence if caught....in that our TV - and incorporated radio receiving - licence allows us to listen to broadcasts....again, I'll stay well clear of this one although it is pretty interesting!

The aforementioned 'Oxford Ears' was busy monitoring and came up with some interesting frequencies for the sharing of. These are produced in full - and contain some that some military monitors may well have missed:

313.0	'Cylon' callsigns (F-15s) on with London Mil.
268.5	Helio's on with Lyneham.
357.475	Tankers on with Brize - calls not heard. Nationality required.
312.0	Wallop Approach.
286.175	UNID.
122.750	UNID.
275.4	UNID.
233.8	UNID.
246.325	Benson.
111.1	Fairford ILS.
125.9	Quids on with Dutch Military.
390.875	USAF but UNID
370.075	USAF but UNID.
297.7	'Isis' Callsigns = Bulldogs ex Benson.
352.975	Air to Air but UNID otherwise.
262.975	Air to Air but UNID otherwise.

These on a VT-225 from Boars Hill and other locations. I can track some myself but some need

clarification. Any ideas? Which leads me into a plea - if you're into airband monitoring, have you considered joining the Black Cat Aviation Group? The Group Needs **You**! Consider it - if only to enhance your own database of some of the hottest frequencies as they are found! You can find them at:

BCAG, 19 Crescent Road, Hunstanton, Norfolk PE36 5BU.

Mike Newell G1HGD - another regular of the piece - writes in with a query regarding the Scanmaster Base vertical I use and wonders what it's like. In one word? Brilliant! It's unobtrusive, small and neat and so far has proved to be weatherproof and excellent on reception. This is permanently hooked up to my VT-225 and I can't fault it, Mike. As for desktop discones - I've no news on them. Oh and yes, you could loft mount the Scanmaster but it deserves to be outside. With regard to the Mr. 'GA' incident and subsequent letter. Yes, I believe it did deserve airing. The scanning debate continues and while I get a lot of positive mail, Mike, the odd letter now and again deserves mentioning so that users who are cautious can see that a fringe element exists whose very existence threatens our hobby. If we wish to stay serious then we need to police our own.

Mike also mentions a publication called *Scanner UK* which was sent anonymously to him. Has anyone any idea who they are? If you do, can you write in so that I can review a copy? Lastly, Mike asks if anyone has a PC serial lead for a Psion 3 128K version? Or, if you know how to convert a Psion 2 lead to a Psion 3, also get in touch. Mike can be contacted at, 90 Arthur Street, Kenilworth, Warwickshire, CV8 2HG. Air Ambulance frequency now from S. Warland who says that the Kent Air Ambulance uses 132.65. Rochester airport is the base and it can also be seen using the Medway Hospital heli-pad. Thanks for that.

Table 1.

Fire Brigade v.h.f. Frequencies:

70.525	M2FH	S. London.
70.585	M2HX	Hampshire.
70.610	M2h.f.	Surrey.
70.635	M2KD	E. Sussex.
70.725	M2VD	Essex.
70.760	M2FE	E. London.
70.800	M2KW	W. Sussex.
70.835	M2KF	Kent.
70.895	M2KP	Hertfordshire.
71.000	M2HI	Oxford / Thames Valley.
71.135	M2HK	Bucks.
71.175	M2FN	W. London.
71.275	M2VN	Suffolk.
71.425	M2VC	Cambridgeshire.

An anonymous reader from Kent sends in some fire brigade frequencies which are published in **Table 1**. It may well be worth investigating these frequencies elsewhere in the UK as they may be duplicated. My thanks to him for that.

Lastly, an update from **Neville Atkins** who wrote in regarding charging batteries. This is an addendum and should be read by all who plan to carry out the re-charging:

For primary read dry cell. Gas build up will occur and should never be ignored. This particularly applies to sealed cells. **Then** move on to the section regarding NiCads. I trust this clears up the misplacing of NiCads before Dry! As in all matters to do with re-charging, care should be exercised and caution should be a password otherwise the only coil you'll be seeing is the mortal one you leave behind....!

That's about it for this month. I trust Christmas brings you exactly what you want and that you get what you've ordered. My own will be bleak - as befits a student(!) so maybe Santa may drop a new h.f. receiver my way free of charge for me to play with! Who knows? Seasons greetings anyway, and good fortune for the coming New Year. Keep scanning - keep the news coming in and remember: It's what we make it that makes it for us.

73s and Seasons Greetings to all readers!

Lawrence Harris, 5 Burnham Park Road, Peverell, Plymouth, Devon PL3 5QB

Info In Orbit

Fig. 1.

How quickly the weeks pass. The hot days of summer, which added sparkle (forgive the unscientific terminology) to the WXSAT images, are gone. Now, once more we have NOAA-12 making its early evening pass in virtual darkness, only weeks after it was providing us with visible-light imagery.

This morning (mid-October) I watched METEOR 3-5 passing north-bound over Britain, quickly darkening as it approached the north pole. Then it cut off, its visible-light sensor reaching darkness. And so to winter!

Current WXSATs

The only uncertainty, with recent WXSAT operations, has been whether OKEAN-4 or SICH-1 would transmit during their passes near Britain. There does not seem to have been any pattern to their operations. For several days there were no reports of transmissions. Then, while I was writing this paragraph on Monday 16 October at 1310UTC, a strong 137.40MHz signal coming from SICH-1, was detected by my scanner - the first for several days. NOAAs-12 and 14 still transmit continuous telemetry on 137.50 and 137.62MHz, and METEOR 3-5 is due to swop operations with METEOR 2-21 shortly.

Shuttle Audio

Those readers who have received the Shuttle pack referred to at the end of each column, know that it contains a detailed list of the frequencies for audio used both by the Shuttle itself, and by the stations which re-broadcast it. The information is issued by NASA and a few other sources of specialised information.

Careful study left me slightly puzzled because one publication explained about digital encoding of voice signals as follows: "Voice signals coming straight from the Shuttle are digitally encoded on the same signal that carries the data stream. A side effect of this is that you can't receive air-to-ground voice signals straight from the Shuttle, with an analogue receiver."

I posted a query about reception of Shuttle audio, in the 'Shuttle' newsgroup on Usenet (the Internet) and was amazed when I received a response from Shuttle astronaut **Ron Parise**! He explained that the paragraph referred to "the S-band and Ku-band communications, which are the primary modes of communication during on-orbit ops."

The paragraph which explains about transmissions in the other bands states: "The Space Shuttle transmits on three frequency bands: u.h.f., S-Band, and Ku-Band. The u.h.f. frequencies are simple a.m. voice and are very easy to copy. These frequencies are used for launch and landing operations, EVA operations, and as an additional voice downlink when other channels are in use, or the current ground station has no S-Band capability".

Ron comments that both paragraphs are correct, and refer to different communications modes and frequency bands. My thanks to Ron for his mailing. He flew on missions STS-35 and 67.

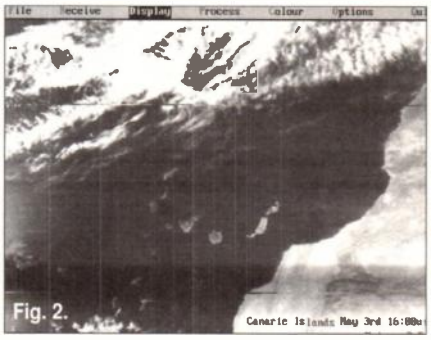


Fig. 2.

Steve Black tells me he is a Shuttle fanatic (aren't we all?) and asked whether I have been to any launches? Unfortunately, no! I was temporarily agog when, during an interview on Radio Devon about space matters, the interviewer - Craig Rich (well-known 'weather man' in this region) - told me that he was just back from the USA where he had an opportunity to watch a launch!

Interference to WXSAT Bands

News came in during October that Brazil is putting some extremely detrimental proposals to the World Radio Conference this autumn (WRC-95), concerning the meteorological satellite bands.

137-138MHz (a.p.t.)

The Brazilian proposal consists of a primary allocation for the Mobile Satellite Service (MSS) - over the entire 137-138MHz band, in all three International Telecommunications Union (ITU) regions. This would eliminate the sub-bands in which meteorological satellites have priority. The world-wide distribution of free meteorological data by satellites, such as NOAA's polar orbiters, would be threatened, should this proposal succeed.

1675-1710MHz (Geostationary WEFAX)

Brazil also proposes the addition of MSS on a primary basis, in ITU regions 1 and 3 (region 2 allocation already exists). Significantly, Brazil proposes to change a footnote to remove the protection granted to meteorology by WARC-92. This protection forms the basis under which many nations agreed to allow MSS into this band in the first place.

The footnote currently reads: "In the band 1675-1710MHz, stations in the mobile-satellite service shall not cause harmful interference to, nor constrain the development of, the meteorological satellite and meteorological aids services".

The Brazilian proposal would remove the phrase "not cause harmful interference to....services."

The bottom line would be a loss of the frequencies used for direct broadcast. Fortunately, **Jose Mauro de Rezende**, who is the Coordinator of Basic Systems at the National Meteorological Institute (INMET) in Brasilia, Brazil, is taking up the issue with the Ministry of Agriculture, Science and Technology, Army and the AEB (National Space Agency). In a personal communication, Jose Mauro told me that the National Meteoro-logical Institute in Brasilia is aware of problem and they will see how to handle it.

My thanks to **Donald Hinsman** for this alert.

Letters

As might be expected, many of the images being received for consideration for publishing in 'Info' are of good quality, and many printouts are received in colour. Regular correspondent **Roger Ray** of Telford sent me several images on disk, received from NOAA-14 during June this year. **Fig. 1**. dated 27 June, shows the merest hint of cloud over northern Ireland.

Jim Gahan sent **Fig. 2**, a METEOR 3-5 image of 3 May, showing the Canary Islands. This is a particularly clear image from this region.

PROSPERO (X3)

Tony Hall wrote from the Isle of Wight with a request for elements, but briefly mentioned the satellite X3. I asked him for more information and he very kindly wrote to tell me about his earlier involvement with space projects.

Tony was an electronics engineer and joined the development team working on the Black Knight rocket which was to be used for studying head re-entry phenomena under the direction of the RAE at Farnborough. The rocket was assembled at Cowes (IoW) and systems checked out at a test site near the Needles lighthouse, before being sent to Woomera for launch.

Black Arrow just managed to launch PROSPERO (X3) before being cancelled. PROSPERO can still be heard transmitting telemetry on 137.56MHz, and, using my general purpose scanner, I hear it most days.

Visible Satellites

Brian Taylor of Woking is one of several readers who asked about the identification of visible satellites seen crossing the sky. For those interested in making a positive identification, one of the Kepler sets provided with the disk option mentioned at the end of this column, includes a near-complete set of elements for the visible satellites.

South Of The Equator

Luckily *SWM* is distributed all over the world so it is good to receive letters from distant lands where people are also involved in the same hobby. **Nigel Tucker** wrote from picturesquely sounding Waterfalls in Harare, Zimbabwe, where he monitors the WXSATs. Nigel enquired about the transmitting schedule of METEOR and NOAA WXSATs. To summarise the situation,

whichever METEOR WXSAT is operating (METEOR 2-21 takes over on 20 October) it transmits on 137.85MHz in sunlight only. The use of a satellite tracking program can show whether the METEOR is in sunlight or eclipse, and therefore on or off.

If anyone wants to obtain a satellite tracking program, I keep a selection of software for the PC; currently available are the new versions of STSorbit Plus, PCTrack311 (the latest version was released in August), WINorb24 (a Windows program), and Birddog (still version 3). I do regular searches for new versions of software and for new programs. Those wanting copies can obtain them by sending me a disk with pre-paid envelope and 50p towards the cost of data collection.

Hurricane Tracking

During August, the images from GOES-E (which are re-transmitted by METEOSAT-5) usually show storms of varying intensity, and this year several achieved hurricane status. **George Newport** of Canterbury collected a number of images of the infra-red LY format from GOES-E, showing the track of hurricane Felix during mid-month. I selected **Fig. 3** which was taken on 14 August at 1800UTC while the hurricane was well into the Atlantic.

Amongst the images that George sent was one of his station - **Fig. 4**. George recently upgraded his Deskjet 550 printer with the coloursmart software.

Beginners' Section - More Receiver Info

Last month we looked at some of the important features to expect in a WXSAT receiver. Sensitivity is important. Using new components, receivers can be sensitive to signals barely above noise level. Specifications may vary between systems, depending on how the manufacturer measures sensitivity, and their measuring equipment! A good figure to seek is 0.2 or 0.3µV (microvolts). Measurements may be quoted as 0.3µV for 12dB SINAD at 10kHz deviation.

These figures describe sensitivity over a specified bandwidth - that is, a signal as low as 0.3µV was detected, using the specified bandwidth. Another method describes the signal amplitude required to silence (quieten) the 'noise' heard in the absence of signal.

Filters

Circuitry includes combinations of filters, often presenting a bewildering list of specifications. Active, low pass and high pass filters may be used. The real question is - can they extract a good signal in the presence of unwanted noise? Specifications

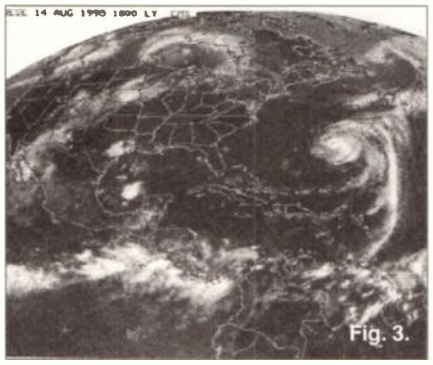


Fig. 3.

do not completely answer this question.

Studying advertised receiver specifications does not guarantee success. Try to buy a receiver with an assurance from the supplier that if it proves unusable in your location, you can return it.

In Britain, the allocation of frequencies for paging devices encroaches on the 137MHz weather satellite band. WXSATs transmit about 5W; paging frequencies as low as 137.9MHz are used, and may output hundreds of watts! It is hardly surprising that all over Britain, we initially suffered severe interference from these transmissions.

Many receivers were modified to minimise the effects of pager signals, though some manufacturers appear to have done little to their products. Be aware of this problem when selecting kit, or buying a completed receiver.

New Products

A new receiver from Martelec is currently under test. Watch out for a review soon.

Amiga Help Request

Colin Lee writes from Southampton to ask whether any 'Info' reader knows of a source of software/hardware to decode WXSAT signals on his Amiga 1200. It is a long time since anyone wrote to me with such information but I can pass details via this column.

Printers

The majority of images submitted for 'Info' are hard copy. A few are printed on dot-matrix printers but increasing numbers are done on either ink-jet or laser printers. I have used all three so can provide some information for people such as **M J Beddie** wondering about the choices.

The use of 9-pin printers has all but ended. These can be had at low prices but are only useful for general text printing, assuming they have an NLQ (near letter quality) mode. They are not really suitable for graphics.

I still use my 24-pin dot-matrix printer for some correspondence, but for graphics printing it has its limitation.

Laser and ink-jet printers are excellent for good quality WXSAT images, and each has its merits. Lasers require large amounts of expensive memory (around £60 - £80 per Mb) to produce single, large images. I found it possible to get a giant, high-quality picture by tiling several image sections together, all from one METEOSAT image. The result was superb for exhibition use. Running costs for laser printers are on the high side.

Ink-jet printers have continued to fall in price, to a level where £300 gets a high quality print. I recently bought an HP660C and it has been invaluable. The Epson Colour Stylus printer is of similar quality and price.


Fig. 4.

Internet METEOSAT Images

An E-mail message from **Nottingham University** pointed me to their web site, a source for WXSAT images on the Internet. Nottingham's receiving equipment consists of a 2.5m dish antenna, a down-converter with twin receivers, a pair of d.s.p. based decoders, and a fully automatic, PC based, image capture, conversion, storage and archival computer. Images captured by this machine are immediately mirrored (copied) to a dedicated Novell server (ccn7) equipped with 2Gb of on-line storage, which is available for anonymous FTP access.

Every WEFAX image from METEOSAT is captured and archived in JPG format to **ccn7.nott.ac.uk** in the directory \SATPIX\ARCHIVE. This is split into sub-directories for each format. Each directory is an independent rolling archive with an arbitrarily defined depth.

The latest image of each of METEOSAT's formats, is made available at: ftp.ccc.nottingham.ac.uk/pub/sat-images.

Their World Wide Web home pages are at: **http://www.ccc.nottingham.ac.uk/pub/sat-images/meteosat.html** and **http://www.ccc.nottingham.ac.uk/~cczsteve/sjm.html**

I tested these sources early one Sunday morning and was very impressed with the web facilities. There is an on-line description of METEOSAT and an active graphic of METEOSAT formats in which you can select the area and spectrum (for example Britain in visible-light - C02). The image downloaded is the most recent for that format. The 'latest' option at 0853UTC was the image received at 0848UTC.

Shuttle Pack

A multi-page A4 'booklet' is available, containing the entire Shuttle manifest (all scheduled launches up to the year 2003), together with frequency listings for both direct and re-broadcast Shuttle frequencies, and a FAQ (frequently asked questions) about reception. Please enclose an s.a.e. and 50p.

For anyone proposing to visit the USA and wanting to watch a Shuttle launch, I have a detailed description of the official places and people to contact to obtain passes. This information is not in the Shuttle pack but can be separately requested.

Frequencies

NOAA 14 a.p.t. on 137.62MHz.
NOAA 12 a.p.t. on 137.50MHz.
NOAA beacons on 136.77 and 137.77MHz.
METEOR 2-21 uses 137.85MHz.
OKEAN-4 and SICH-1 use 137.40MHz occasionally.

Stop Press

New information about the METEOSAT programme has just been published by EUMETSAT; next month's column will explain the the changes to METEOSAT operations, some of which should have happened by late November.

Kepler Elements - MIR and Shuttle

Different options are available:
1. For a print-out of the latest WXSAT elements, MIR, and the Shuttle (when in orbit) send an s.a.e. and 20p coin or separate, extra stamp. Transmission frequencies are given when operating. This data originates from NASA and is totally up-to-date.
2. To join the list of people receiving monthly print-outs, please send a 'subscription' of £1 (plus four self-addressed, stamped envelopes) for four editions. Overseas readers can obtain International Reply Coupons.
3. You can have a computer disk file containing recent elements for the WXSATs, and a large ASCII file holding elements for thousands of satellites.

Please enclose £1 with your PC-formatted disk and s.a.e.

Mike Richards G4WNC, PO Box 1863, Ringwood, Hants BH24 3XD. Compuserve: 100411,3444: Internet: mike.richards@bbcnc.org.uk

Decode

All the Data Modes

Fax chart with noise streaks, station CFH Halifax, 6.496MHz, 120/576.

Moscow Met

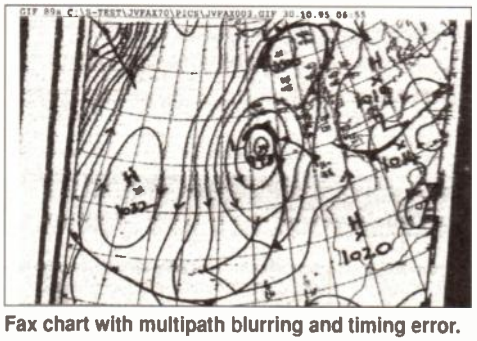
One of the regular contributors to 'Decode' is currently involved in detailed analysis of the transmissions emanating from the ex-USSR. Of particular interest at the moment is the Moscow Met FAX signals. If you have any recent details of frequencies or transmission schedules please write and let me know.

Interference Tips

James Salisbury has E-mailed a couple of helpful hints. Following-on from last month's mention of the use of screened mains cable he reports that Electro-Mail (RS) sell the required special cable. The next tip from James relates to interference that gets to your receiver via the audio lead from your PC. He has found that fitting a small audio isolating transformer in the lead solves the problem. The best type to use is one of the miniature 600Ω telephone transformers that are available from a number of electronic component suppliers (Maplin Catalogue page 991). The transformer should normally be mounted at the receiver end of the lead. If you have any bright ideas for curing interference problems, please drop me a line with the details.

Antenna Solutions

With so many new people coming into the hobby, it's about time I covered the antenna requirements for utility listeners. If you've checked-out the *SWM* Book Store you will have noted that there are a vast number of books on the subject covering just about every conceivable type of antenna system.



Fax chart with multipath blurring and timing error.

So where should you start? The answer depends very much on where you live and the amount of space you have available for antennas. One of the cheapest and most effective antenna systems is the simple random wire (often mistakenly called the long wire). This comprises an insulated wire mounted as high and long as possible. In most cases there is little point in using a length greater than 30m. However, as with all antenna systems, you need to make sure it's kept as far away as possible from any sources of interference such as TV antennas and power lines. If you have power lines close to your garden, its as well to run your antenna at 90° to the lines to minimise induced noise problem.

Now, if like many listeners, you don't have 30m of free space for an antenna, you will have to compromise. One of the great advantages of the random wire is that you can improvise at very low cost. When planning your antenna you can bend the wire to fit the space available, but avoid bends sharper than 90°. You should also keep it as high as possible and away from buildings. There are lots of choices when it comes to selecting the wire for your antenna. The traditional choice is to use hard drawn copper wire as this has good electrical characteristics and survives the elements well. However, one of the most popular choices appears to be to use insulated multi-strand wire. This is generally light, strong and cheap. An additional bonus is that the use of thin wire makes the antenna far less conspicuous (spare a thought for the birds though). You will also need to provide some form of insulation at all the antenna fixing points. The most popular types are know as egg insulators simply because they are egg shaped. These are always available at rallies and most radio shops should be able to supply them at low cost. Having selected the antenna wire and layout, the next problem is routing the antenna to your receiver.

With a conventional random wire system you just connect the end of the antenna to the wire input terminal of your receiver. Whilst this is fine for general listening, most utility enthusiasts use a computer for decoding. This puts a prime source of interference right next to the receiver! If you just extend the antenna wire to the receiver there's a very good chance that the antenna down-load will pick-up some of that interference. The solution is to use a screened lead to bring the antenna into the house. However, If you connect the antenna wire directly to the coaxial cable you will suffer a significant signal loss due to the mismatch between the antenna and the coaxial cable. This loss can be minimised through the use of a balun transformer to match the antenna to the coaxial cable. The most common type is the magnetic longwire balun (m.l.b.), but there is a new product available from Lake Electronics that provides a cheaper solution if you're prepared to do some of the work yourself - see the mini- review elsewhere in Decode.

If you are only interested in a fairly narrow range of frequencies, it may be worth installing a half wave dipole antenna. This will not only provide a better signal, but will also tend to reject out of band signals. Try the *Receiving Antenna Handbook* by Joe Carr for more information. If you're really stuck for space then you may have to go for an active antenna. These comprise a very short antenna often only around 1m long with a small preamplifier to buffer the very high impedance antenna from the low impedance coaxial feed. Many of these antennas offer excellent performance and the *WRTH Equipment Buyers Guide* (1993 edition) includes a very useful performance comparison between the most popular models.

Lake Antenna Coupler

Whilst checking for new products at the Leicester Rally, I came across a great new unit from Lake Electronics. Alan Lake has become well known for his excellent amateur radio kits, but also produces a number of items for the listener. The new CT400 antenna coupling transformer has been designed with the listener very much in mind and provides an interface between a coaxial downlead and a random wire antenna - rather like a magnetic longwire balun. The difference in this case is the price - £6.75 each or £13.00 for two. Why two? If your receiver only has a wire antenna socket using a coaxial feed becomes a problem. This is where the second coupling transformer comes to play as it's connected to the end of the coaxial cable with the wire output connected to the antenna connection on your receiver. The CT400 is supplied as an assembled unit encased in epoxy resin so is completely waterproof. The antenna and coaxial connections are made using solder tags, so you will need basic soldering skills.

There are only three connections; antenna, braid and centre so you will only need very basic construction skills. Once the connection has been made, the whole assembly needs to be enclosed in a small plastics box to stop water getting into the coaxial feeder and soldered connections. Having tried a review model for a couple of weeks, I can confirm that the performance was very good and compared favourably with a conventional m.l.b. The CT400 costs £6.75 each or £13.00 for two plus £1.00 post and packing. For more details send an s.a.e. to **Lake Electronics, 7 Middleton Close, Nuthall, Nottingham NG16 1BX**. My thanks to Alan Lake for supplying the review model.

Shifts

Bill Hillier of Blaina writes asking why it doesn't matter what shift you set with *HAMCOMM* it always seems to decode. He wonders whether there is any need to bother with the shift setting. The simple answer is yes you do need to set the shift, but I ought to explain why. Let's start by examining exactly what we mean when we talk about the shift of a data signal.

Going back to basics you will recall that our digital signal is just a sequence of digital ones and zeros that are used to recreate the original message. This is rather like the series of dots and dashes used for the Morse code. When this digital signal is applied to a transmitter it is converted into two separate radio frequency carriers. One of these is used to represent a digital one and the other for zero. The end result is a carrier that

Internet Update

The latest news on hot Web sites for this month comes from **Maurice Andries** of Belgium and **R. Bates**.

WZ1V Home Page - **http://uhavax.hartford.edu/disk$userdata/faculty/newsvhf/www/ham-www.html**
Lowe Electronics - **http://www.demon.co.uk/lowe/index.html**
Ham Radio Outlet - **http://www.hamradio.com**
Amsoft - **http://hamster.business.uwo.ca:80.~amsoft/index.html**
Radio Devices - **http://www.raddev.com./biz/raddev/**
University of Torino - **http://www.cisi.unito.it/radiogw/radio.html**
NC State (Other Sites) - **http/www.acs.ncsu.edu/HamRadio/OtherWebs.html**
NC State (KE4ARM) - **http://www.acs.ncsu.edu/Ham Radio/**
Brown U ARC (K1AD) - **http://netspace.students.brown.edu/BRC/**
Bradley U ARC - **http://buarc.bradley.edu/wwwvl-ham.html**
Stanford ARC (W6YX) - **http://w6yx.stanford.edu/**
Stanford ARC (Club List) - **http://w6yx.stanford.edu/clubs.html**
U of Madison-Wis RS - **http://www.cs.wisc.edu/~timc/w9yt/**
US Navy PG Sch ARC - **http://www.nps.navy.mil/npsarc/k6ly.html**
QRP Club - **http://ncc1701-d.cc.nd.edu/QRP-L/**
Shortwave Info - **http://itre.uncecs.edu/radio/?/**
Trafford Amateur Radio Club -**http://www.mcc.ac.uk/OtherPages/TraffordARC/Trafford.html**
6D2X - **http://bahia.cs.panam.edu/radio/6d2x.html**
GJ4ICD - **http://user.itl.net/~equinox/**
UK Callbook - **http://www.mcc.ac.uk/cgi-bin/callbook**
E-mail addresses - **ftp://ftp.cs.buffalo..edu/pub/ham-radio/hams_on_usenet**
Auroral Prediction - **http://www.pfrr.alaska.edu/~pfrr/AURORA/PREDICT/CUSTOM1.HTM**

shifts between two set frequencies. It's the difference between these two carriers that's known as the shift. There are a number of shifts in use, but the most common are: 170Hz (amateur RTTY, ARQ, FEC), 400Hz (commercial RTTY) and 800Hz (RTTY and FAX). Just to add an element of confusion, you will sometimes hear people use the term deviation instead of shift. This is different because deviation is used to describe a signal that deviates from a nominal value as opposed to shift which describes a signal that shifts between two descrete frequencies. The term can be applied to a FAX signal where the signal deviates ±400Hz from a nominal mid-grey value. You will see that although a FAX signal has a total shift of 800Hz in deviation terms it's described as having a deviation of half that i.e. 400Hz. So why is all this important when trying to receive RTTY signals?

The easiest way to start to understand the subject is to picture one of the old filter based RTTY terminal units. These units use two audio filters to pick-out the two carrier signals. Now if they are to work effectively the frequency difference between the two filters must match that of the transmitter. So the switch settings for shift on one of these terminal units is vital to achieve the best decoding performance. The same applies to stand alone decoders such as the Wavecom, Universal or AEA PK series. Whilst you will find that the decoder usually continues to work when the shift is set wider than the signal, the unit is much more prone to interference from adjacent signals. The problems always get worse as the wanted signal gets weaker. Although computer based decoders such as *JVFAX* and *HAMCOMM* don't feature conventional audio filters, they still need care with the setting of shift values. This is because all the filtering and decoding has to be achieved within the computer. Whilst it is possible to achieve superb filtering using just digital techniques, the best systems require specialist d.s.p. hardware. Because this hardware is not available to programs such as *JVFAX*, it is important to match the shift settings with that of the signal. By doing this you give the software the best chance of decoding the signal accurately. Of course as reported by Bill the decoder will often continue to work with incorrect settings, but the performance will deteriorate as the signal gets weaker.

JVFAX Tuning Tip

Whilst talking to listeners at the Leicester rally, I realised that a number of people are suffering a couple of common problems with *JVFAX*. The first concerns setting the correct deviation for FAX reception. As supplied, *JVFAX* is preset with FAX settings best suited to amateur transmissions of 120rpm, IOC of 288 and 150Hz deviation. As most weather stations use 120rpm with IOC of 576 an deviation of 400Hz it's not surprising new listeners have problems. It also seems commonplace for users to set the number of grey levels to 2 in an attempt to improve performance. This does just the opposite as the tuning becomes more critical as you reduce the number of grey or intensity levels. The best way to change all these parameters is to first enter the Mode Editor from the main menu (M). Place the cursor over the mode number and select mode 1 Wefax576.

Now make sure the IOC is 576, LPM =120, deviation = 400 and intensity levels = 64. Next select the configuration option from the main menu and use the TAB key to step down to the miscellaneous settings (bottom right of the screen). About two-thirds of the way down the screen you will find "Initial RX mode:" move the cursor to this field and press the space bar to step through the modes until you get to mode 1 Wefax576. Now press control Enter to return to the main menu. If you now press F)ax you should find that the program starts in Wefax576 with a deviation of 400Hz and 64 intensity levels. When you exit the program these new settings will become the default values for future sessions.

Another common problem with *JVFAX* is a system crash just as you start to receive a FAX signal. Prior to the crash all seems fine and you can use all the other *JVFAX* menus. It appears that this type of failure is almost always due to memory conflicts. The easiest way to overcome this is to create a simple boot disk by putting a blank disk in drive a: and typing format a: /s. This formats the disk and copies over the important system files. Next restart your computer with this disk in drive a: and change to your *JVFAX* directory and try receiving FAX - you should find all is well. Having proved the point, you can either experiment with your autoexec.bat and config.sys files or just stick with the boot disk.

FAX Quality

Another comment from the Leicester rally suggested that maybe I make all this decoding sound rather easier than it is. Particular concerns were raised over FAX quality and whilst I accept that listeners do have problems there are lots of people who are able to reliably turn-in excellent results with *JVFAX*. The trick is to ensure *JVFAX* is set-up properly and fed with a good clean signal. You also need to make sure you don't use filtering that's too narrow. Whilst external filters can be a great help to FAX reception, there's always a temptation to over filter. The resultant effect is to progressively lose the fine detail. I've given some basic help on setting-up *JVFAX* in a section earlier in the column. To give you a few pointers as to where you might be going wrong, I've included some sample charts in the column. By far the most important single requirement is to have a good clean signal. This needs to be free of fading and multi-path distortion.

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 two weeks for delivery. IBM PC Software(1.44Mb disks):

Disk 1 (Order Code DK1) - JVFAX 7.0, HAMCOMM 3.0 and WEFAX 3.0
Disk 2 (Order Code DK2) - DSP Starter plus Texas device selection software.
Disk 3 (Order Code DK3) - Ultrapak 2.1 and NuMorse
Disk 4 (Order Code DK4) - 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 JVFAX and HAMCOMM Primer (Order Code FP4).
FactPack 5 On the Air with JVFAX and HAMCOMM (Order Code FP5).
FactPack 6 Internet Starter (Order Code FP6).
For the printed literature just send a self addressed sticky label plus 50p per item (£1.50 for four, £2.50 for 7 and £3.00 for 9). For software send £1.00 per disk (£1.75 for 2, £2.50 for 3 or £3.00 for all 4) and a self addressed sticky label (don't forget I provide the disk!).

Frequency List

This month's list of recently logged frequencies comes courtesy of Bill Hillier, Day Watson and a selection of other keen listeners. (all frequencies MHz)

3.173	RTTY	50	400	IMB	0030	Rome Met
4.274	c.w.	-	-	GKB2	1800	Portishead
4.308	c.w.	-	-	DAN	1815	German
4.286	c.w.	-	-	GKA2	2150	Portishead
4.497	RTTY	50	400	-	1900	Warsaw Met
6.972	RTTY	50	400	YOG59	1830	ROMPRESS
6.496	RTTY	75	400	CFH	2350	Canadian Forces
7.646	RTTY	50	400	DDH7	1730	Hamburg Met
7.658	RTTY	50	400	YZI223	1740	TANJUG press
6.496	FAX	120	576	CFH	2350	Canadian Forces
8:522	c.w.	-	-	FF14	1820	French
8.557	c.w.	-	-	SPE41	1830	Stettin
10.250	FAX	120	576	-	1545	Marid Met
11.453	RTTY	50		IMB	1545	Rome Met
11.485	FAX	120	576	AOK	1612	USN Rota satellite pic
12.748	c.w.	-	-	IRM	1810	Free radio medical service

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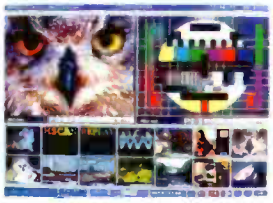

Multiscan and Microscan are setting the quality standard for SSTV and FAX transmission and reception. Microscan uses a simple comparitor interface while Multiscan provides ultimate performance using a PLL FM detector which provides optimum noise rejection. Microscan uses the PC speaker to generate the TX tones while Multiscan uses an optional TX board in the interface unit.

In all modes the Multiscan software gives a real time audio spectrum display which makes tuning into signals easy. In Fax mode the full screen is used to display the incoming picture. If you want a permanent record it can be saved to disk as a JPG file. In SSTV mode two windows are used on the screen which can be configured for receive or transmit. The picture above shows how small 'thumbnail' reviews of stored pictures are also displayed. The multitasking software allows JPG pictures to be loaded into the window and overlaided with text ready for sending while a picture is being received off air. The latest version of software will display 16.8 million colours.

The superb performance of this unit and the features it provides make it standout from the existing products which are currently available.

Multiscan prices

Multiscan units include the cost of the software

RX + TX built, tested and aligned	£249.00
RX only built, tested and aligned	£159.00
TX/RX PCBs + kit of parts	£149.00
RX PCB + kit of parts	£85.00
RX PCB only (includes software)	£49.00

Microscan price

Microscan shareware	£3.50 (pp £1.95)
Registration of ver 1.3 RX	£18.95
Registration of ver 1.3 TRX	£24.95
Registration of ver 2.02 TRX	£45.00
RX comparator kit	£7.50 (pp £1.95)

Radio Controlled Clocks

AMDAT stocks a large range of Radio Controlled Clocks with come in all shapes and sizes. A few are mentioned here but send an SAE for a complete list.

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Slim Line Time zone digital	£49.00
Analogue time display with digital date display. Black or grey.	£69.00

Digital Clocks

Low cost square Eurochron digital	£25.95
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Large face available in white & black	£85.95
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Elm root grain white face 27cm	£159.00

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Ladies wrist watch black face	£469.00

post and packing Digital £1.95. Analogue £3.95. Wall £4.95. Watches £5.95

ADC-60 Computer Clock

The ADC-60 allows the time on any coputer with a serial port to be maintained to the accuracy of MSF and DCF. The ADC-60 receives time information from both MSF and DCF which is output from the serial port in both binary and displayable formats as well as being displayed on the integral LCD display. PC software for DOS and Windows are supplied.

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LM&S

Long, Medium and Short Waves

During this year I have received hundreds of reports on reception from some of the listeners who find the broadcast bands of special interest. Those reports have enabled this series to be based upon actual reception rather than on what may be possible.

As 1995 draws to a close I am sure readers will want to join me in thanking each and every one of those listeners for their support. May I take this opportunity to wish them and all readers a Happy Christmas and good listening in the New Year.

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 the four week period ending September 30.

The ground waves from some of the German l.w. stations have been received during the afternoon by **Ted Harris** in Manchester. Typical ratings are DLF via Donebach on 153kHz (250kW) - SINPO 24454 at 1638UTC; DLF via Aholming on 207 (250kW) - 12431 at 1513; Radio Ropa via Burg 261 (200kW) - 14141 at 1640. Ted has received a letter from R.Ropa which indicates that their 200kW transmitter at Burg will be replaced with a modern 50kW "Stromsparsender" in early 1996.

Whilst on holiday in Melvich **John Stevens** (Largs) found l.w. reception to be much better than at home. He searched this band with an Icom R-70 receiver plus random wire antenna and logged 18 stations - see chart. On some frequencies he could hear more than one signal but he was unable to separate them.

Down on the Isle of Wight **George Millmore** (Wootton) found that just after 0800 some mornings it was possible to null-out Atlantic 252 with his loop and receive Tipaza, Algeria at SIO222. Atlantic 252 suffered a transmission failure on September 23, which lasted just long enough to allow Kenneth Buck (Edinburgh) to turn his loop towards Tipaza and hear their broadcast in Arabic! He says "This is not possible when Atlantic 252 is transmitting as reflections (from hills, buildings, etc.) mean that it cannot be nulled completely".

Medium Wave Reports

Owing to the longer hours of darkness and periods of favourable propagation conditions it was possible, during some nights in September, to receive the broadcasts from some stations in E.Canada and E.USA.

While searching the band in the early hours of September 3 **Robert Connolly** (Kilkeel) heard CHAM in Hamilton, ON on 820, which rated 32222 at 0130. He then tuned to CJYQ in St.John's, NF on 930 (often used as a pointer to conditions by DXers) which rated 22222. At 0150 he logged WINS in New York, NY on 1010 as 32332. Next was WTOP Washington, DC on 1500, which was 32332 at 0205. Before closing he heard WWRL New York, NY on 1600, rated 22222 at 0215. On the 9th he checked the band again and logged CHAM as 22222 at 0015.

Up in Shetland, **John Slater** (Scalloway) found the conditions favourable during three nights. On September 25 he heard CBI in Sydney, NS on 1140, which peaked SIO333 at 0500; also CJYQ on 930, which was SIO333 at 0515. On the 26th he picked up the broadcasts from RFO St.Pierre & Miquelon on 1375 - their signal was SIO333 at 0430. On the 27th he received VOCM in St.John's, NF on 590, which peaked a remarkable SIO444 at 0545.

A first check on the band since last winter was made on September 27 by **Harry Richards** in Barton-on-Humber. To gauge the conditions he tuned to 930 and heard CJYQ at 2330 - it was very weak, but for a brief period it peaked 23222.

The sky waves from several stations in the Middle East and N.Africa also reached the UK after dark. Four of the BSKSA outlets in Saudi Arabia were noted in the reports, but the most frequently heard was Dammam on 1440. On September 26 **Sheila Hughes** (Morden) logged their 1600kW transmission as 22222 at 2215. A broadcast in Arabic which **Paul Bowery** (Burnham-on-Crouch) thought was coming from BSKSA via Dammam on 783 (100kW) proved to be from Tartus, Syria (600kW). He established this by tuning to a parallel transmission from Al-Hassake (200kW) on 918.

At 0058 on September 28 **Eddie McKeown** (Newry) picked up the sky waves from the KCBC 20kW outlet at Nakuru, Kenya on 1386. At best they rated 15421.

Listeners who experience difficulty in receiving distant m.w. local radio stations during daylight should bear in mind the effect local terrain may have on the ground waves. Whilst visiting Lynmouth, N.Devon **Simon Hockenhull** (E.Bristol) witnessed first hand the attenuation introduced by local granite rocks. For example, the BBC R.Devon 2kW outlet at Barnstaple on 801 was only 22km away, but reception was much poorer than at home. The ground waves from the BBC Washford 100kW transmitter on 882 rated 45455, whereas at home they are off the scale at 55555.

Long Wave Chart

Freq (kHz)	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	L*
153	Donebach	Germany	500	B,C,D,E,H*,I,J*,K,L,M*,N,O,P
153	Bod	Romania	1200	J*
162	Allouis	Fance	2000	B,C,D,H*,I,J*,K,L,M,N,O,P
171	Nador Medi-1	Morocco	2000	A*,L*,N,O*
171	Kaliningrad	Russia	1000	B,C,D,H*,I,J*,K,L*,N,P
177	Oranienburg	Germany	750	B,C,D,E*,I,K,M*,N,O*,P
183	Saarlouis	Germany	2000	B,C,D,H,J*,K,L,M,N,O,P
198	Droitwich BBC	UK	50	B,D,H,J,K,M,O,P,Q
198	Burghead BBC	UK	50	N
198	WesterglenBBC	UK	50	C
207	Munich	Germany	500	B,C,D,E,G*,H*,J*,K,L*,N,O*,P
207	Azilal	Morocco	800	B*
216	Roumoules RMC	S.France	1400	B,C,D,G*,H,I,J*,K,L,M,N,O,P
225	Raszyn Resv	Poland	?	B*,C,D*,H*,J*,K,L*,M*,N*,O*,P*
234	Beidweiler	Luxembourg	2000	B,C,D,H,J*,K,L*,N,O,P
243	Kalundborg	Denmark	300	B,C,D*,G*,H,I,K,L,N,O,P
252	Tipaza	Algeria	1500	A*,H*,K,N,O*
252	Atlantic 252	S.Ireland	500	B,C,D,F,H,J,K,L,M,N,O,P,Q
261	Burg(R.Ropa)	Germany	200	B,C,E,H*,I,K,L,N,O,P
261	Taldom Moscow	Russia	2000	B*,C*,N,O*
270	Topolna	Czech Rep	1500	B*,C*,H*,J*,K,L*,M*,N,O*,P
279	Minsk	Belarus	500	B*,C*,H*,J*,K*,L*,N,O*

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

Listeners:-

(A)	Charles Beanland, Gibraltar.	(I)	Rhoderick Illman, Oxted.
(B)	Paul Bowery, Burnham-on-Crouch.	(J)	Eddie McKeown, Newry.
(C)	Kenneth Buck, Edinburgh.	(K)	George Millmore, Wootton, IoW.
(D)	Martin Dale, Stockport.	(L)	Fred Pallant, Storrington.
(E)	Ted Harris, Manchester.	(M)	Tom Smyth, Co.Fermanagh.
(F)	Francis Hearne, N.Bristol	(N)	John Stevens, while in Melvich.
(G)	Simon Hockenhull, E.Bristol.	(O)	Andrew Stokes, Leicester.
(H)	Sheila Hughes, Morden.	(P)	Phil Townsend, E.London.
		(Q)	Thomas Williams, Truro.

Paul Bowery has noticed that SGR are using the ILR Ipswich transmitter on 1170 for a new service called 'Amber Radio', which plays mostly pop music from the 60's and 70's. He says "SGR-FM is still being relayed from Bury St.Edmonds on 1251". Another change was reported by **Roy Patrick** (Derby) and **Andrew Stokes** (Leicester). Since September 7 they have been hearing 'Sabras Sound' on 1260, which has replaced Sunrise Radio (E.Midlands). The new company broadcast some English programmes as well as Asian.

Roy Patrick also mentioned that the ground waves from the Viva 963 1kW outlet in Southall reach Derby quite well during daylight! Up in Shetland, **John Slater** picked up a broadcast from Premier Radio at 0600 on September 27 - their 0.5kW transmission on 1413 rated SIO333.

Short Wave Reports

The propagation conditions in the **25MHz (11m)** band are unpredictable, consequently international broadcasters are no longer using it.

Daily variations in propagation occur in the **21MHz (13m)** band but some broadcasters are still using it to reach listeners in selected target areas. During favourable conditions R.Australia's broadcast to Asia via Darwin on 21.725 (Eng 0630-1100) has reached our shores. It was rated 24232 at 0841 by **Rhoderick Illman** in Oxted and SIO233 at 1030 by **Phil Townsend** in E.London. It has also been received in Gibraltar by **Charles Beanland**, but rated only 21122 at 0950.

Also noted in the reports were R.Portugal Int 21.720 (Port to Africa 0900-1100) rated 35444 at 1015 by **Eric Shaw** in Chester; UAER, Dubai 21.605 (Eng to Europe 1030-1055) 35543 at 1035 by **David Edwardson** in Wallsend; BBC via Ascension Is 21.660 (Eng to W/E/S.Africa 1100-1700) SIO233 at 1137 by **David Green** in Doncaster; BBC via Limassol, Cyprus 21.470 (Eng to E.Africa 1300-1700) 42333 at 1344 by **Martin Dale** in Stockport; R.Portugal via Sines 21.515 (Eng to ? 1430-1500? Mon-Fri) 34122 at 1439 in Newry; UAER, Dubai 21.605 (Ar to Europe 1355-1600) 33222 at 1500 in Kilkeel; RFI via Issoudun 21.620 (Fr to E.Africa 0700?-1555) 33333 at 1555 by **Peter Pollard** in Rugby; WYFR via Okeechobee, USA 21.525 (Eng, Fr, Ger, Port to W.Africa 1600-2045?) 24222 at 1611 by **Gerry Haynes** in Bushey Heath; HCJB Quito 21.455 (Eng [*u.s.b. + p.c.]) 22222 at 1850 by **Fred Pallant** in Storrington.

(*HCJB intended to close this service on September 1, but due to a change of plan it will continue).

Unreliable propagation conditions also exist in the **17MHz (16m)** band, but reception over long distances has sometimes been possible. R.Australia's early morning broadcast to Asia and Pacific areas via Carnarvon on 17.715 (Eng 0100-0900) was logged in Chester as 15332 at 0645. R.Japan was heard on three frequencies: 17.815 via Ascension Is (Eng, Jap to Africa 0700-0900) noted as 43343 at 0710 by **Chris Shorten** in Norwich; 17.810 via Yamata (Eng to S.E.Asia 0700-0800) as 15322 at 0731 in Bushey Heath; also 17.660 via Gabon? (Eng, Jap to Africa? 0700-0900) as 45554 at 0811 in Wallsend.

Also received during the morning were the BBC via Ascension Is 17.830 (Eng to W/C.Africa 0730-2100), rated 33333 at 0809 in Oxted; R.Pakistan, Islamabad 17.900 (Eng to Europe 0800-0845) SIO333 at 0820 in E.London; AIR Delhi 17.387 (Eng to Pacific areas 1000-1100) 33222 at 1022 in Newry; R.Austria Int via Moosbrunn 17.870 (Ger, Eng to Australia 0800-1100) SIO333 at 1054 by **Philip Rambaut** in Macclesfield; R.Pakistan, Islamabad 17.900 (Eng to Europe 1100-1120) 44333 at 1100 in Morden; V of Russia 17.860 (Eng

Medium Wave Chart

Freq (kHz)	Station	Country	Power (kW)	Listener
520	Hof-Saale (BR)	Germany	0.2	B*,L*
520	Hof/Hurzburg (BR)	Germany	0.2	P*
531	Ain Beida	Algeria	600	T*
531	Torshavn	Faeroe Is.	100	S
531	Leipzig	Germany	100	B*,D*,L*,M*,P*,T*
531	RNE5 via ?	Spain	?	B*,L*,M,P*,T*
531	Beromunster	Switzerland	500	B*,F*,R*
540	Wavre	Belgium	150/50	B,D*,L*,M,P*,R*,T,U
540	Sidi Bennour	Morocco	600	A*,B*,L*,M*,P*
540	Vitoria(EI)	Spain	10	B*,T*
549	Les Trembles	Algeria	600	A*,B*,D*,L*,M*,P*,T*
549	Thumau (DLF)	Germany	200	B,D*,F*,K,L*,M*,P*,T,U
549	St.Petersburg	Russia	1000	L*,P*
558	Espoo	Finland	100	D*,P*
558	Rostock(NDR)	Germany	20	L*
558	RNE5 via ?	Spain	?	D*,L*,M*,P*,T*
567	Berlin	Germany	100	L*,R
567	Tullamore(RTE1)	Ireland (S)	500	B,D,G,I,K,M,P*,T,U
567	RNE5 via ?	Spain	?	A*,B*,L*,M*,P*,T*
576	Muhlacker(SDR)	Germany	500	B*,D*,F*,K,L*,M*,P*,T*,U
576	Barcelona(RNE5)	Spain	50	A*,B*,D*,K*,L*,M*,P*,T*
585	Paris(FIP)	France	8	B,D*,M,U
585	Madrid(RNE1)	Spain	200	A*,B*,D*,K*,L*,M*,P*,T*
585	Dumfries(BBCScot)	UK	2	P*,R*
594	Frankfurt(HR)	Germany	1000/400	B,D*,F*,L*,M*,P*,R,T*,U
594	Oujda-1	Morocco	100	A*,B*,M*,T*
594	Muge	Portugal	100	J*,L*,T*
603	Sevilla(RNE5)	Spain	50	A*,B*,D*,L*,M*,P*,T*
603	Newcastle(BBC)	UK	2	R*
612	Athlone(RTE2)	Ireland (S)	100	B*,D,I,K,M*,P*,R,T*,U
612	Sebaa Aioun	Morocco	300	B*
612	RNE1 via ?	Spain	10	B*,M*,P*,T*
621	Wavre	Belgium	80	B,D*,K,L*,M,P*,R*,T,U
621	RNE1 via ?	Spain	10	B*,T*
621	Barcelona(OCR)	Spain	50	L*,M*,P*
630	Vigra	Norway	100	B*,L*,M*,P*,S,T*
630	Tunis-Djedeida	Tunisia	600	A*,D*,E*,L*,M*
639	Praha(Liblice)	Czech	1500	B*,D*,M*,T*
639	RNE1 via ?	Spain	?	A*,B*,D*,L*,M*,P*,T*
648	RNE1 via ?	Spain	10	D*,L*,T*
648	Orfordness(BBC)	UK	500	B,D*,M,P*,R*,T*,U
657	Neubrandenburg(NDR)	Germany	250	L*,M*,P*
657	Napoli	Italy	120	B*,M*,T*
657	Laayoune	Morocco	50	A*
657	Madrid(RNE5)	Spain	20	A*,B*,D*,L*,M*,P*,T*
657	Wrexham(BBCWales)	UK	2	B,D,J,K,L*,P*,T
666	Messkirch/Rohrd(SWF)	Germany	300/180	F*,L*,P*,R*,T*
666	Lisboa	Portugal	135	B*,D*,M*,P*
666	Barcelona(COPE)	Spain	10	T*
675	Marseille	France	600	B*,L*,M*,P*,T*
675	Lopik(R10 Gold)	Holland	120	B,D,J*,K,L*,M,P*,T,U
684	Sevilla(RNE1)	Spain	500	B*,D*,L*,M*,P*,T*
684	Avala(Beograd-1)	Yugoslavia	2000	B*,D*,L*,M*,T*
693	Berlin	Germany	250	P*
693	Potenza	Italy	20	B*
693	Tortosa(RNE1)	Spain	2	L*
693	Droitwich(BBC5)	UK	150	B,I,D,M*,P*,R,T,U
702	Flensburg(NDR)	Germany	5	B,D*,F,L*,M*,P*,T*
702	Monte Carlo	Monaco	40	M*
702	TWR via Monte Carlo	Monaco	300	M*
702	Banska	Slovak Rep.	200	B*
702	Zamora(RNE1)	Spain	10	E*,P*,T*
711	Rennes 1	France	300	B,D*,H,K,L*,M,P*,U
711	Heidelberg	Germany	5	B*,F,T*
711	Laayoune	Morocco	600	M*,P*,T*
711	Murcia(COPE)	Spain	5	P*
720	Langenberg	Germany	200	P*
720	Lisnegarvey(BBC4)	Ireland (N)	10	M*,P*
720	Norte	Portugal	100	B*,L*,P*,T*
720	Sfax	Tunisia	200	M*
720	Lots Rd,Ldn(BBC4)	UK 0	5	B,D,M,R,T*,U
729	Cork(RTE1)	Ireland (S)	10	B*,J,L*,M,P*,R,T*
729	RNE1 via ?	Spain	?	B*,D*,L*,M*,P*,T*
738	Paris	France	4	B,K,M
738	Poznan	Poland	300	B*,L*,M*,T*
738	Barcelona(RNE1)	Spain	500	B*,D*,L*,M*,P*,T*
747	Flevo(Hilv2)	Holland	400	B,D,H,K,L*,M,P*,R*,T,U
747	Cadiz(RNE5)	Spain	10	L*
756	Braunschweig(DLF)	Germany	800/200	B,D*,F*,L*,M*,P*,T*
756	Bilbao(EI)	Spain	5	B*,L*,P*,T*
756	Redruth(BBC)	UK	2	M,R*
765	Sottens	Switzerland	500	D*,E*,L*,M*,P*,T*
774	Abis	Egypt	500	M*
774	Enniskillen(BBC)	Ireland (N)	1	P*,R
774	RNE1 via ?	Spain	?	A*,B*,D*,E*,L*,M*,P*,T*
783	Burg	Germany	1000	B*,D*,F*,J*,L*,M*,P*,T*
783	Miramar(R.Porto)	Portugal	100	L*,P*
783	Dammam	Saudi Arabia	100	M*
792	Tartus	Syria	600	B*
792	Limoges	France	300	D*,M,P*
792	Lingen(NDR)	Germany	5	L*,M*,P*,T*
792	Sevilla(SER)	Spain	20	A*,B*,D*,L*,M*,P*,T*
801	Munchen-Ismaning	Germany	300	B*,D*,F*,J,L*,M*,P*,T*
801	RNE1 via ?	Spain	?	B*,D*,J,L*,M*,P*,T*
810	Madrid(SER)	Spain	20	B*,D*,L*,M*,P*
810	Burghead(BBCScot)	UK	100	S
810	Westerglen(BBCScot)	UK	100	B*,D,M*,P*,R,T*,U*
819	Batra	Egypt	450	M*,P*
819	Toulouse	France	50	E*,L*,M*
819	Trieste	Italy	25	B*
819	Warsaw	Poland	300	B*,D*,M*,T*
819	S.Sebastian(EI)	Spain	5	T*
828	Hannover(NDR)	Germany	100/5	D*,L*,P*,T*
828	Rotterdam	Holland	5	B,K
828	Oujda-2	Morocco	100	M*
828	Barcelona(SER)	Spain	50	B*,D*,P*
837	Nancy	France	200	B,L*,M,R*
837	COPE via ?	Spain	?	B*,D*,E*,L*,M*,P*
837	Sombor	Yugoslavix	10	B*
846	Rome	Italy	540	A*,B*,D*,L*,M*,P*,T*,U*
855	Berlin	Germany	100	B*,D*,F*,L*,M*,T
855	RNE1 via ?	Spain	?	A*,B*,D*,E*,L*,M*,P*,R,T*
864	Santah	Egypt	500	D*,L*,M*,T*
864	Paris	France	300	B,D*,L*,M,P*,U
864	Socuellamos(RNE1)	Spain	2	B*,E*,M*,T*
873	Frankfurt(AFN)	Germany	150	B*,D*,L*,M*,P*,T*
873	Zaragoza(SER)	Spain	20	B*,D*,L*,M*,P*,T*
882	COPE via ?	Spain	?	L*,M*,P*
882	Washford(BBCWales)	UK	100	B,D,J,M,P*,T,U
891	Algiers	Algeria	600/300	A*,B*,D*,J*,L*,M*,P*,T*
891	Huisberg	Netherlands	20	B,J*,L*,M*,P*
900	Brno(CRo2)	Czech Rep	25	L*,M*
900	Milan	Italy	600	A*,B*,D*,L*,M*,P*,T*
900	COPE via ?	Spain	?	M*,T*
900	Qurayyat	Saudi Arabia	1000	M*
909	B'mans Pk(BBC5)	UK	140	B,M,T,U
909	M'side Edge(BBC5)	UK	200	D,P*
909	Westerglen(BBC5)	UK	50	S
918	Plesvec(Sloven'nR)	Slovenia	600/100	B*,D*,L*,M*,T*
918	Madrid(Rint)	Spain	20	B*,D*,L*,M*,P*,T*
918	Al-Hassake	Syria	200	B*
927	Wolvertem	Belgium	300	B,D,L*,M,P*,T,U
936	Bremen	Germany	100	B*,D*,L*,M*,P*,T*
936	Venezia	Italy	20	B*,M*
936	RNE5 via ?	Spain	?	B*,M*,T*
945	Toulouse	France	300	D*,L*,M*,P*,T*
954	Brno (CRo2)	Czech Rep	200	B*,D*,L*,M*,P*
954	Madrid(CI)	Spain	20	B*,D*,E*,L*,M*,P*,R*,T*
963	Pori	Finland	600	B*,D*,L*,M*,P*,T*
963	Tir Chonaill	Ireland (S)	10	D*,E*,R*
972	Hamburg(NDR)	Germany	300	B*,D*,L*,M*,P*,R*,T*
972	RNE1 via ?	Spain	?	B*,E*,M*
981	Alger	Algeria	600/300	A*,D*,E*,J*,L*,M*,P*,T*
990	Berlin	Germany	300	D*,F,L*,T*
990	R.Bilbao(SER)	Spain	10	B*,D*,E*,L*,M*,P*,T*
999	Schwerin (R4AS)	Germany	20	F*,L*,T*
999	Madrid(COPE)	Spain	50	B*,D*,E*,L*,P*,T*
1008	Las Palmas(SER)	Gran Canaria	10	B*,M*,T*
1008	Flevo(Hilv-S)	Holland	400	B,D,E*,M,P*,T,U
1017	Rheinsender(SWF)	Germany	600	B,D*,F*,J,M*,R*,T*
1017	RNE5 via ?	Spain	?	B*,M*
1026	SER via ?	Spain	?	B*,D*,E*,M*,P*,T*
1035	Tallinn	Estonia	500	M*
1035	RAI via ?	Italy	?	P*
1035	Lisbon(Prog3)	Portugal	120	D*,M*
1044	Dresden	Germany	250	B*,D*,M*,T*
1044	Sebaa-Aioun	Morocco	300	A*
1044	SER via ?	Spain	?	D*,M*,P*,T*
1053	Zaragoza(COPE)	Spain	10	D*
1053	Talk Radio UK via ?	UK	?	B,D,M,P*,T,U
1062	Kalundborg	Denmark	250	B,D,M*,P*,T,U
1062	Squinzano	Italy	25	B*
1071	Brest	France	20	M,P*
1071	France-Inter via ?	France	?	D*,T*
1071	Lille	France	40	B,P*,R,U
1071	Riga	Latvia	50	M*
1071	Bilbao(EI)	Spain	5	D*,M*,T*
1071	Talk Radio UK via ?	UK	?	B*,D,T
1080	Katowice	Poland	1500	B*,D*,M*,P*,T*
1080	Toledo(OCR	Spain	5	B*
1080	SER via ?	Spain	?	B*,D*,M*,P*,T*
1089	Krasnodar	Russia	300	P*
1089	Talk Radio UK via ?	UK	?	B,D*,M,P*,R,T,U
1098	Nitra(Jarok)	Slovakia	1500	B*,D*,M*,P*,T*
1098	RNE5 via ?	Spain	?	A*,B*,M*,P*,T*
1107	AFN via ?	Germany	10	B*,D*,L*,P*
1107	RNE5 via ?	Spain	?	B*,L*,T*
1107	Talk R. UK via ?	UK	?	B, D, M, P*, R, T
1116	Bari	Italy	150	B*, M*
1116	Ponteverdra (SER)	Spain	5	B*, L*
1125	La Louviere	Belgium	20	B, D*, L*, M*, P*, U
1125	Deanovec	Croatia	100	B*
1125	RNE5 via ?	Spain	?	B*,L*,M*,P*,T*
1134	COPE via ?	Spain	2	D*,L*,M*,T*
1134	Zadar(Croatian R)	Yugoslavia	800/1200	A*,B*,D*,L*,M*,P*,T*,U*
1143	AFN via ?	Germany	1	B*,D*,L*,P*,T*
1143	Stuttgart(AFN)	Germany	10	M*
1143	Bolshakovo(Mayak)	Russia	150	B*
1143	COPE via ?	Spain	2	B*,D*,L*,M*,P*,T*
1152	RNE5 via ?	Spain	10	M*,T*
1161	Strasbourg(Flnt)	France	200	B*,D*,L*,M*,P*,T*
1170	Vila Real	Portugal	10	L*
1179	SER via ?	Spain	?	B*,M*,R,T*
1179	Solvesborg	Sweden	600	B*,D*,E*,J*,L*,M*,P*,T*,U
1188	Kuurne	Belgium	5	B,L*,M*,P*,U
1188	Reichenbach(MDR)	Germany	5	D*,T*
1188	Szolnok	Hungary	135	B*,M*
1197	Munich(VOA)	Germany	300	D*,L*,T*
1197	Virgin via ?	UK	?	B,D*,H,M,P*,T,U
1206	Bordeaux	France	100	B*,L*,P*,T*
1206	Wroclaw	Poland	200	B*,D*,L*,M*
1215	Virgin via ?	UK	?	B,D,M,P*,R,T,U
1224	Vidin	Bulgaria	500	M*
1224	Lelystad	Holland	25	B, L*, N, P, T
1224	Virgin Via ?	UK	?	M*, R*
1233	Liege	Belgium	5	L*, T*
1233	Virgin via ?	UK	?	B, D*, H, M, P*, T
1242	Marseille	France	150	B*,L*,R*,T*
1242	Virgin via ?	UK	?	B,D*,P*,T
1251	Marcali	Hungary	500	B*,D*,L*,P*
1251	Huisberg	Netherlands	10	L*,M*,T*
1260	SER via ?	Spain	?	B*,D*,L*,M*
1260	Guildford (V)	UK	?	B,M,T*,U
1269	Neumunster(DLF)	Germany	600	B*,D*,F*,L*,M*,T*,U
1269	Novi Sad	Yugoslavia	600/150	B*
1278	Strasbourg	France	300	M
1278	Dublin/Cork(RTE2)	Ireland (S)	10	B*,D,I,M,P*,R,T*,U
1287	RFE via ?	Czech Rep	400	D*,M*,P*,T*,U
1287	Lerida(SER)	Spain	10	B*,L*,M*,T*
1296	Kardzali	Bulgaria	150	M*
1296	Valencia(COPE)	Spain	10	M*,T*,U
1296	Orfordness(BBC)	UK	500	U*
1305	Rzeszow	Poland	100	B*,L*,M*
1305	RNE5 via ?	Spain	?	L*,M*,T*
1314	R.Due via ?	Italy	?	B*
1314	Kvitsoy	Norway	1200	B,D*,L*,M*,P*,S,T*,U
1314	RNE5 via ?	Spain	?	A*
1323	Wachenbrunn(RMWS)	Germany	1000/150	L*,P*,T*,U
1332	Rome	Italy	300	B*,D*,L*,M*,T*
1341	LatuhNE-FS)	Spain	600	B*,L*,M*,T*
1368	Foxdale(Manx R)	I.o.M.	20	D,J*,M*,P*,R
1377	Lille	France	300	B,L*,M,P*,T*,U
1386	Nakuru(KBC)	Kenya	20	L*
1386	Bolshakovo	Russia	2500	B*,M*
1386	R.Ned via B'shakovo	Russia	2500	L*,T*,U
1395	Lushnje(Tirana)	Albania	1000	D*,J*,L*,M*,P*,T*,U
1404	Brest	France	20	B*,D*,L*,M,P*,T*
1413	Masirah Is(BBC)	Oman	1500	L*
1413	RNE5 via ?	Spain	?	M*,P*
1422	Heusweiler(DLF)	Germany	1200/600	B*,D*,F*,L*,M*,P*,T*
1431	Kopani	Ukraine	500	P*
1440	Marnach(RTL)	Luxembourg	1200	B,D*,F*,L*,M,P*,U
1440	Damman	Saudi Arabia	1600	J*,L*,P*,Q*,T*
1449	Berlin	Germany	5	L*
1449	Squinzano	Italy	50	B*,M*,T*
1449	Redmoss(BBC)	UK	2	P*,R
1458	Lushnje(Tirana)	Albania	500	T*
1467	Monte Carlo(TWR)	Monaco	1000/400	A*,D,J*,L*,M*,P*,T*
1485	AFN via ?	Germany	1	B*
1485	SER via ?	Spain	?	R*,T*
1485	Homs	Syria	10	P*
1494	Clermont-Ferrand	France	20	M, P*
1494	St. Petersburg	Russia	1000	H*, J*, L*, M, O, P*, R*, T
1503	Stargard	Poland	300	D*, E*, L*, M*
1503	RNE5 via ?	Spain	?	M*
1512	Wolvertem	Belgium	600	B,D,H*,J*,L*,M,O ,P*,R*,T,U,V*
1512	Jeddah	Saudi Arabia	1000	L*
1521	Kosice(Cizatice)	Slovakia	600	L*
1521	Dubai	Saudi Arabia	2000	M*,T*
1521	R.Menresa(SER)	Spain	2	B*,M*,P*
1530	Vatican R	Italy	150/450	D*,J*,L*,M*,P*,T*,U
1539	Mainflingen(DLF)	Germany	700	P*,U*
1539	SER via ?	Spain	?	B*,P*,T*
1539	Valladolid(SER)	Spain	5	M*,P*
1557	Nice	France	300	P*
1566	Mjadzel	Belarus	10	B*
1586	Sfax	Tunisia	1200	M*,P*,R*
1575	Genova	Italy	50	B*,D*,E*,L*,M*,T*
1575	SER via ?	Spain	5	B*,M*,P*,T*
1584	SER via ?	Spain	2	B*,M*
1593	Holzkirchen(RFE)	Germany	150	B*,D*,L*,M*,P*
1593	Dnipropetrovsk	Ukraine	5	E*
1602	SER via ?	Spain	?	M*,T*
1602	Vitoria(EI)	Spain	10	B*,M*,P*,R*,U
1611	Vatican R.	Italy	15	B*,L*,U

Note Entnes marked * were logged during darkness. All other entnes were logged during daylight or at dawn or dusk.

(A) Charles Beanland, Gibraltar.
(B) Paul Bowrey, Burnham-on-Crouch.
(C) Bernard Curtis, Stalbndge.
(D) martin Dale, Stockport.
(E) John Eaton, Woking.
(F) Ted Harris, Manchester.
(G) Francis Hearne, N.Bristol
(H) Simon Hockenhull, E Bristol
(I) Simon Hockenhull, while in Lynmouth.
(J) Sheila Hughes, Morden
(K) Rhoderick Illman, Oxted.
(L) Eddie McKeown, Newry.
(M) George Millmore, Wootton IoW.
(N) Roy Patrick, Derby.
(O) Clare Pinder, while in Appleby.
(P) Martin Price, Shrewsbury.
(Q) Harry Richards, Barton-on-Humber.
(R) Tom Smyth, Co Fermanagh
(S) John Stevens, while in Melvich.
(T) Andrew Stokes, Leicester.
(U) Phil Townsend, E London.
(V) Thomas Williams, Truro

[WS] 0900?-1200) 33333 at 1103 in Stockport; BSKSA Riyadh 17.880 (Ar [Holy Quran] to S.E.Asia 0900-1200) 34433 at 1117 by **John Eaton** in Woking.

After mid-day Africa No.1, Gabon 17.630 (Fr to W.Africa 0700-1600) was noted as 33333 at 1400 by **George Tebbitts** in Penmaenmawr; R.diff TV Marocaine via Tanger 17.595 (Fr, Eng to M.East, N.Africa 1400-1700) 44444 at 1515 in Kilkeel; RFI via Allouis? 17.620 (Fr to Africa 0700-1800?) 44344 at 1600 in Rugby; Monitor R.Int via WSHB 17.510 (Eng to Africa 1600-2000) 45333 at 1631 in Burnham-on-Crouch; WYFR Okeechobee, USA 17.760 (Eng to Europe, Africa 1700-1945) 45444 at 1715 by **Michael Griffin** in Ross-on-Wye; R.Nederlands via Bonaire 17.605 (Eng to S/E/W.Africa 1830-2025) SIO322 at 1852 in Doncaster.

Reception from some areas has often been better in the **15MHz (19m)** band. During the morning R.Japan via Moyabi, Gabon 15.165 (Eng, Jap to M.East, Europe, Africa 0700-0900) was 51542 at 0725 in Bushey Heath; AWR via Slovakia 15.620 (Eng to Africa 0900-1000) heard at 0900 by **Clare Pinder** in Glasgow; BBC via Limassol, Cyprus 15.575 (Eng to E/N.Africa, W.Asia, M.East 0400-1500) 33333 at 0945 by **Bernard Curtis** in Stalbridge; AIR via Aligarh? 15.050 (Eng to N.E.Asia 1000-1100) 33222 at 1005 in Newry; R.Australia via Darwin 15.530 (Eng to S.Asia 1100-1300) 43443 at

Local Radio Chart

Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum R	I	0.80	A,C,I*,D,K,M,R,S
585	R.Solway	B	2.00	D,M
603	Cheltenham(CD603)	I	0.10	C,D,K,M,Q,S
603	Invicta SG (Coast)	I	0.10	A,K,R,S
630	R.Bedfordshire(3CR)	B	0.20	A,C,D,E,F,G,H,I*,K,M,Q,R,S
630	R.Cornwall	B	2.00	D,K,S
657	R.Clwyd	B	2.00	D,K,M,O*,R,S
657	R.Cornwall	B	0.50	D,K
666	Gemini AM	I	0.34	D,F,H,I,K,S
666	R.York	B	0.80	A,C,D,M,Q,R,S
729	BBC Essex	B	0.20	A,D,K,M,Q,R,S
738	Hereford/Worcester	B	0.037	C,D,E,H,K,M,Q,R
756	R.Cumbria	B	1.00	D,J
756	R.Maldwyn	I	0.63	C,D,K,M,Q,S
765	BBC Essex	B	0.50	A,C,D,K,M,Q,R,S
774	Gloucester(3CSG)	I	0.14	D,K,M,Q
774	R.Kent	B	0.70	A,K,R,S
774	R.Leeds	B	0.50	D*
792	Chiltern(S.Gold)	I	0.27	A,D,I,K,Q,R,S
792	R.Foyle	B	1.00	D,O*
801	R.Devon & Dorset	B	2.00	D,E,F,G,H,I,K,M,R,S
828	Chiltern(S.Gold)	I	0.20	A,D,Q,R,S
828	R.Aire(Magic828)	I	0.12	C,D
828	R.WM	B	0.20	D,M
828	2CR(Cl.Gold)	I	0.27	D*,K
837	R.Cumbria/Furness	B	1.50	D,M
837	R.Leicester	B	0.45	A,C,D,E,K,M,Q,R,S
855	R.Devon & Dorset	B	1.00	D*,K
855	R.Lancashire	B	1.50	C,D*
855	R.Norfolk	B	1.50	A,D,K,Q,R,S
855	Sunshine R	I	0.15	H,M,Q,S
873	R.Norfolk	B	0.30	A,C,D,H,K,M,Q,R,S
936	Brunel R(Cl.Gold)	I	0.18	D,G,H,K,M,S
945	R.Trent(Gem AM)	I	0.20	A,C,D,H*,K,M,Q,R,S
954	Gemini AM	I	0.32	D,K,S
954	R.Wyvern(WYVN)	I	0.16	A*,C,D,M,S
963	Vive 963, Southall	I	1.00	A,D,K,L,M,Q,R,S
990	WABC(Nice & Easy)	I	0.09	D,M,Q,S
990	R.Devon & Dorset	B	1.00	H,K,S
990	Hallam R(Gt.Yks)	I	0.25	C,D*,S
999	R.Solent	B	1.00	A,D,F,H,K,R,S
999	R.Trent(Gem AM)	I	0.25	A,C,D,M,Q,S
999	Red Rose(Gold)	I	0.80	C,D*,M
1017	Beacon R(WABC)	I	0.70	C,D,M,Q,S
1026	Downtown R	I	1.70	D*,M
1026	R.Cambridgeshire	B	0.50	A,C,D,H,Q,Q,R,S
1026	R.Jersey	B	1.00	D,K,S
1035	Country 1035	I	?	A,B,D,K,Q,Q,R,S
1035	North Sound Two	I	0.78	D*,M
1035	R.Sheffield	B	1.00	C,D*,M,Q
1035	West Sound AM	I	0.32	D*
1107	Moray Firth R	I	1.50	D*,O,P
1116	R.Derby	B	1.20	A,C,M,Q,Q,R,S
1116	R.Guernsey	B	0.50	B,K,S
1152	BRMB(Xtra-AM)	I	3.00	D*,M,Q
1152	Great North R(GNR)	I	1.80	D*
1152	LBC(LondonNewstalk)	I	23.50	A,D*,K,R,S
1152	Piccadilly R(Gold)	I	1.50	C,D*,M
1152	Plymouth Snd(Cl.G)	I	0.32	D*
1152	R.Broadland	I	0.83	A,C*,D*
1152	R.Clyde(Clyde 2)	I	3.06	D*
1161	Brunel R(Cl.Gold)	I	0.16	D*,H,K,Q,S
1161	R.Bedfordshire(3CR)	B	0.10	A,Q,R,S
1161	Southern Counties R	B	1.00	A,D*,K,S
1161	Tay AM	I	1.40	D*,M
1161	Humberside(Gt.Yks)	I	0.35	C,D*,M
1170	GNR Teeside	I	0.32	D*
1170	Hi Wycombe 1170AM	I	?	A,D*,H,R,S
1170	Portsmouth(SCR)	I	0.12	D*,K,S
1170	Ipswich SGR/Amber R	I	0.28	A,D*
1170	Signal R(S.Gold)	I	0.20	C,D*,M,Q
1170	Swansea Sound	I	0.58	D,G
1242	Invicta Snd(Coast)	I	0.32	A,D*,R,S
1242	Isle of Wight R	I	0.50	B,D,F,K
1251	Bury St.Edmunds SGR	I	0.76	A,D,M,R,S
1260	Brunel R(Cl.Gold)	I	1.60	B,D,G,K
1260	Marcher Snd(Gold)	I	0.64	C,D*,L,M
1260	Sabras Sound	I	0.29	D,D
1260	R.York	B	0.50	D*
1278	Bradford(Gt.Yks)	I	0.43	D*,M
1296	Birmingham(R.XL)	I	?	A,B,D,J*,K,M,Q,S
1305	Barnsley(Gt.Yks)	I	0.15	C,D*,M
1305	Premier R via ?	I	0.50	A,D*,K,M,R,S
1305	Touch R	I	0.20	B,D,G,K
1323	R.Bristol(Som.Snd)	B	0.63	C,D,G,M,S
1323	Brighton(SCR)	I	0.50	A,D*,K,R,S
1332	Hereward R(WGMS)	I	0.60	A,C,D*,M
1332	Premier R,Battersea	I	1.00	A,D*,M,R
1332	Wiltshire Sound	B	0.30	D,K,M
1359	Essex R(BreezeAM)	I	0.28	A,D*,R,S
1359	Mercia Snd(Xtra-AM)	I	0.27	D,M,Q
1359	Red Dragon(Touch R)	I	0.20	D,G
1359	R.Solent	B	0.85	D,K,S
1368	R.Lincolnshire	B	2.00	D,S
1368	Southern Counties R	B	0.50	A,D*,K,R,S
1368	Wiltshire Sound	B	0.10	D,K
1413	Premier R via ?	I	0.50	A,B,D,K,M,N,R,S
1431	Essex R(BreezeAM)	I	0.35	A,B,D*,J*,M,R,S
1431	R 210(Cl.Gold)	I	0.14	C*,D,J*,K,S
1449	R.Peterboro/Cambs	B	0.15	A,D,K,M,S
1458	Fortune	I	5.00	C,D,J*,M
1458	R.Cumbria	B	0.50	D*
1458	R.Devon & Dorset	B	2.00	D*,K,S
1458	R.Newcastle	B	2.00	D*
1458	Radio WM	B	5.00	D,M
1458	Sunrise R	I	50.00	A,C*,D,K,Q,R,S
1476	New County Sound	I	0.50	A,B,C,D,K,L*,M,R,S
1485	R.Humberside (Hull)	B	1.00	D,J*,M
1485	R.Merseyside	B	1.20	C,D,J*,M
1485	Southern Counties R	B	1.00	A,D*,K,R,S
1503	R.Stoke-on-Trent	B	1.00	C,D,J*,K*,M,S
1521	Reigate(M.Xtra)	I	0.64	A,C,D,J*,K,M,R,S
1530	Huddersfld(Gt.Yks)	I	0.74	C,D*,J*,M
1530	R.Essex	B	0.15	A,D*,K,R,S
1530	R.Wyvern(WYVN)	I	0.52	D,J*,K,M,S
1548	Capital R(Cap G)	I	97.50	A,D*,K,Q,R
1548	R.Bristol	B	5.00	D,G,K,M
1548	Liverpool(City G)	I	4.40	C,D,J*,M
1548	R.Forth(Max AM)	I	2.20	D*
1548	Sheffield(Gt.Yks)	I	0.74	D*
1557	Northants R(S.Gold)	I	0.76	D,M
1557	R.Lancashire	B	0.25	C,D*,M
1557	Southampton(SCR)	I	0.50	B,D,K,S
1557	Tendring(Mellow)	I	0.125	A,D*,S
1584	Kettering(KCBC)	I	0.04	D,S
1584	London Turkish R.	I	?	A,R,S
1584	R.Nottingham	B	1.00	C,D*,J*,Q
1584	R.Shropshire	B	0.50	D,K,M
1584	R.Tay	I	0.21	D*,J*,M
1602	R.Kent	B	0.25	A,B,D,J*,K,M,R,S

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) Bernard Curti.Bristol.
(G) Simon Hockenhull, while in Lynmouth.
(H) Sheila Hughes, Morden.
(I) Rhoderick Illman, Dxted.
(J) Eddie McKeown, Newry
(K) George Millmore, Wootton, IoW.
(L) Roy Patrick, Derby.
(M) Martin Price, Shrewsbury.
(N) John Slater, Scalloway.
(O) Tom Smyth, Co.Fermanagh.
(P) John Stevens, while in Melvich.
(Q) Andrew Stokes, Leicester.
(R) Phil Townsend, E.London.
(S) John Wells, East Grinstead.

1100 in Manchester; R.Pakistan, Islamabad 15.625 (Eng to Europe 1100-1120) SIO433 at 1107 in Macclesfield.

In the afternoon WEWN Birmingham, USA 15.115 (Eng to Europe? 1200-?) was 53443 at 1216 in Ross-on-Wye; HCJB Quito, Ecuador 15.115 (Eng to N/S.America 1100-1430) was 33333 at 1227 in Rugby; R.Nederlands via Talata Volon, Madagascar 15.150 (Eng to S.Asia. M.East 1330-1625) 23331 at 1424 in Oxted; WEWN Birmingham, USA 15.235 (Eng to America 1300-1600) 53533 at 1509 in Bushey Heath; WWCR Nashville, USA 15.685 (Eng to Europe 1100-2100) 44444 at 1510 in Kilkeel; Africa No.1, Gabon 15.475 (Fr to W.Africa 1600-1900) 44344 at 1611 in Burnham-on-Crouch; RCI via Sackville? 15.325 (Eng to Europe, M.East 1645-1700) SIO333 at 1645 in E.London; VOA via Morocco 15.205 (Eng to Europe, M.East, N.Africa 1700-?) SIO444 at 1700 by **Tom Smyth** in Co.Fermanagh; R.Cairo via Abis 15.255 (Eng to C/S.Africa 1630-1830) 23322 at 1705 in Storrington.

Later, VOA via Morocco 15.410 (Eng to Africa 1600-2200) was SIO444 at 1842 in Doncaster; RNB Brazil 15.265 (Eng, Ger to Europe 1800-2020) 32222 at 1910 by **Thomas Williams** in Truro; BBC via Woofferton & Skelton, UK 15.070 (Eng to Europe, M.East, N/C.Africa 0500-2130) 55545 at 2005 in Gibraltar; R.Nederlands via Bonaire 15.315 (Eng to S/E/W.Africa 1830-2025) 45554 at 2020 in Wallsend; R.Africa, Eq.Guinea 15.186 (Eng to Africa 2000-2300) 33333 at 2100 in Scalloway; VOA via Greenville? 15.580 (Eng to Africa 1800?-2200) 44344 at 2130 in Woking; DW via Rwanda? 15.270 (Eng to W.Africa 2100-2150) 54444 at 2146 in Norwich; RAE Buenos Aires, Argentina 15.345 (Sp, Eng, It, Fr, Ger to Europe, Africa 1800-2300) 35333 at 2200 in Chester; R.Havana Cuba 15.220 (Sp to ? 2100?-2300?) 44434 at 2212 in Penmaenmawr.

In the **13MHz (22m)** band Israel R, Jerusalem 13.755 (Heb to Europe, USA 0800-?) rated SIO333 at 0826 in Macclesfield; R.Australia via Darwin on 13.605 (Eng, Chin to Asia 0900-1200) was 35423 at 0901 in Bushey Heath; R.Austria Int via Moosbrunn 13.730 (Ger, Eng, Fr, Sp to Europe 0400-1800) 55555 at 1130 in Glasgow and 44333 at 1430 in Truro; R.Nederlands via Flevo 13.700 (Eng to S.Asia, M.East 1330-1525) 24443 at 1424 in Oxted; SRI via Sottens? 13.635 (Eng, Fr, Ger, It to S/C.Asia 1500-1700) 23342 at 1527 in Manchester; WHRI South Bend, USA 13.760 (Eng to E.USA, Europe 1500-2200) SIO333 at 1530 in E.London; UAER, Dubai 13.675 (Eng to Europe 1600-1640) 43333 at 1613 in Penmaenmawr; WWCR Nashville, USA 13.845 (Eng to E.USA 1400-0100) 33333 at 1645 in Rugby; Croatian R, Zargreb 13.830 (Cr, Eng to Europe 24hrs) heard at 1700 in Kilkeel; VOA via Selebi-Phikwe, Botswana 13.710 (Eng to Africa 1630-1900) 45444 at 1702 in Burnham-on-Crouch; Monitor R.Int via WSHB 13.770 (Eng to Europe 1800-2157) 54444 at 1906 in Norwich; AIR via ? 13.750 (Eng to E/N.Africa 1800-1945) 33333 at 1920 in Morden; WEWN Birmingham, USA 13.615 (Eng to N.America 1600-2200) 25343 at 2030 in Chester; RCI via Sackville 13.650 (Eng to Europe, M.East, Africa 2100-2230) SIO444 at 2100 in Co.Fermanagh; WJCR via Millerstown, USA 13.595 (Eng 12hrs, Chin 12hrs) 34443 at 2214 in Woking.

R.New Zealand's broadcasts have been reaching the UK in the **11MHz (25m)** band! Their 100kW transmission from *Rangitaki on 11.900 (Eng to Pacific areas? 0500-0715+) was rated 25542 at 0703 in Wallsend. (*Rangitaki is about 80km from Ruapehu, the erupting volcano on the North island).

Also logged in this band were AWR via Slovakia 11.655 (Eng to Africa 0600-0700), noted as 33333 at 0640 in Morden; Voice of Greece, Athens 11.645 (Gr, Eng? to Europe 0600-0800) SIO444 at 0757 by **Francis Hearne** in N.Bristol; R.Jordan via Al Karanah 11.810 (Ar 0200?-1500?) 33343 at 0812 in Oxted; Slovak R.Int, via Velke Kostolany 11.990 (Eng to Australia 0830-0857) 43443 at 0830 in Scalloway; R.Finland via Pori 11.755 (Fin to Europe 0800-0930) 55555 at 0840 in Truro; Isreal R, Jerusalem 11.590 (Heb to Europe, USA 0400-?) SIO322 at 0845 in Macclesfield; R.Korea Int via Sackville, Canada 11.715 (Sp, Eng to S.America 1000-1100) 54444 at 1030 in Norwich; SRI via ? 11.640 (Eng, Fr, Ger, It to Far East, S.E.Asia 1100-1300) SIO333 at 1115 in Doncaster; Voice of the Mediterranean via Cyclops, Malta 11.925 (Eng, Ar to N.Africa 1400-1600) 44434 at 1420 in Penmaenmawr; BBC via Kranji, Singapore 11.750 (Eng to Far East 0900-1800) 42253 at 1503 in Woking; R.Jordan via Al Karanah 12.000 (Eng 1500-1730) 32342 at 1500 in Ross-on-Wye; R.Pakistan, Islamabad 11.570 (Eng to M.East 1600-1630) SIO333 at 1600 in E.London; RFI via Allouis? 11.615 (Eng to M.East 1600-1700) 34333 at 1624 in Burnham-on-Crouch; R.Australia via Carnarvon 11.660 (Eng to S.Asia 1430-2100) 44444 at 1625 in Rugby; VOA via Thailand 11.920 (Eng to Africa 1630-2000) 32332 at 1710 in Kilkeel; AIR via Bangalore 11.620 (Eng, Hi to Europe 1745-2230) 44444 at 1906 in Newry; R.Kuwait via Kabd 11.990 (Eng to Europe, N.America 1800-2100) 55444 at 2005 in Chester; R.Havana Cuba 11.705 (Eng to Europe 2100-2200) 44444 at 2100 in Glasgow; R.Bandeirantes, Sao Paulo, Brazil 11.925 (Port 24hrs) 34433 at 2326 by **Richard Reynolds** in Guildford.

R.New Zealand has also been reaching the UK in the **9MHz (31m)** band! Their transmission on 9.700 (Eng to Pacific areas 0715-1206) was rated 35553 at 0801 in Wallsend. R.Australia's broadcast to Pacific

Tropical Bands Chart

Freq (MHz)	Station	Country	UTC	DXer
2.310	ABC Alice Springs	Australia	1949	F,G,J,O
2.325	ABC Tennant Creek	Australia	1949	F,G,J,O
2 485	ABC Katherine	Australia	1949	G,O
2.850	KCBS Pyongyang	N.Korea	2105	E
3.200	TWR Manzini	Swaziland	1741	G,J
3.205	AIR Lucknow	India	0035	B
3.220	CPBS 1, Beijing	China	2108	O
3.220	R.HCJB Quito	Ecuador	0231	N
3.220	Channel Africa	S.Africa	0250	N,S,T
3.220	R.Kara, Lome	Togo	1801	B,E,G,J
3.223	AIR Simla	India	1719	G
3.230	SABC Meyerton	S.Africa	1745	B,J
3.240	TWR Shona	Swaziland	1747	E,G,J
3.245	R.Clube Verginha	Brazil	2350	B
3.245	AIR Lucknow	India	1714	G
3 255	BBC via Maseru	Lesotho	1900	B,E,G,J,T
3.270	SWABC 1, Namibia	S.W.Africa	1950	B,E,G,J,N,O,T
3.290	SWABC 2, Namibia	S.W.Africa	1750	B,E,G,J,T
3.300	R.Cultural	Guatemala	0330	B,E,F,S,T
3.305	R.Western, Daru	Pap.N.Guinea	1900	B
3.306	ZBC Prog 2	Zimbabwe	2108	E,J,N,O,S,T
3.315	AIR Bhopal	India	1720	B,E,G,J,S
3.320	R.France Int. via ?	France?	2142	D,N
3.320	SABC Meyerton	S.Africa	1746	B,E,G,J,S
3.325	FRCN Lagos	Nigeria	2110	B,D,E,G,J,O,S,T
3.335	CBS Taipei	Taiwan	2110	E,G,O,R,T
3.345	AIR Jaipur	India	0025	B
3.345	AIR Jammu	India	1715	E,G,J
3.345	Channel Africa	S.Africa	1904	G,J
3.365	GBC R-2	Ghana	2110	B,D,E,J,N,O,S
3.365	AIR Delhi	India	1704	E,G
3.365	R. Milne Bay	Pap.NewGuinea	2050	S
3.370	R.Beira	Mozambique	1748	J
3.375	R.Nacional S.Gabriel	Brazil	2157	D
3.377	R.Nacional, Mulenvos	Angola	2111	G,O
3.380	NBC Blantyre	Malawi	2111	E,G,J,O,T
3.395	ZBC Gweru	Zimbabwe	0345	E
3.915	BBC via Kranji	Singapore	2120	C,G,J,N,S,V,W
3.925	NSB (R.Tampa)	Japan	2145	E
3 945	AIR Gorakhpur	India	0235	T
3.950	Qinghai PBS, Xining	China	2220	S
3.955	BBC via Skelton	England	2200	F,K,N,W
3.955	R.Budapest	Hungary	1900	B,Q,R,U,V
3.965	RFI Paris	France	1804	B,K,M,N,V
3.975	R.Korea via Skelton	England	2015	J,K
3.975	R.Budapest	Hungary	2025	J,N
3.975	RRI Surabaya	Indonesia	2228	S
3.980	VOA via Munich	Germany	2020	K,N
3.985	China R via SRI	Switzerland	2100	H,L,N,U,W
3.985	SRI Beromunster	Switzerland	2000	V
3.995	DW via Julich	Germany	2200	A,B,I,N,V
4.000	Bofoussam	Cameroon	1930	J
4.035	Xizang PBS, Lhasa	Tibet	2035	E
4.460	CPBS 1, Beijing	China	2040	E
4.500	Xinjiang BS, Urumqi	China	2336	J,N
4.735	Xinjiang, Urumqi	China	1616	B,F,G,J,N
4.750	Xizang BS, Lhasa	Tibet	2350	B
4.760	Yunnan PBS,Kunming	China	2251	S
4.760	AIR Port Blair	India	1619	G
4.760	ELWA Monrovia	Liberia	2125	E,G,J,N,S,T
4.760	TWR Manzini	Swaziland	0310	T
4.765	R.Integracao	Brazil	0025	B
4.765	Brazzaville	Pep.Rep.Congo	2345	B
4.770	FRCN Kaduna	Nigeria	2041	D,E,F,J,L,N,O,S,T,V,W
4.775	AIR Guwahati	India	1630	G,J,T
4.777	R.Gabon, Libreville	Gabon	1920	B,D,E,G,J,S,T
4.783	RTM Bamako	Mali	2023	B,D,E,J,N,O,S,T
4.785	R.Tanzania	Tanzania	0303	N
4.790	Azad Kashmir R.	Pakistan	1761	B,G,S
4.790	R.Atlantida	Peru	2244	S
4.795	R.Douala	Cameroon	0541	S
4.795	La Voz de los Caras	Ecuador	0423	S
4.800	R.Nac Amazonas	Brazil	0040	N
4.800	CPBS 2 Beijing	China	2245	S
4.800	AIR Hyderabad	India	1730	E,J,T
4.800	LNBS Lesotho	Maseru	2040	B,D,G,J,N,O,T
4.805	R.Nac	Amazonas, Brazil	0030	B,E,T
4.805	R.Villa Rica	Peru	2246	S
4.810	SABC Meyerton	S.Africa	1935	J
4.815	R.diff TV Burkina	Ouagadougou	1937	B,E,J,S,T
4.820	La Voz Evangelica	Honduras	2350	B,S
4.820	AIR Calcutta	India	1650	B,E,G,J,T
4.820	Xizang, Lhasa	Tibet	2309	S
4.825	R.Cancao Nova	Brazil	0543	S
4.828	ZBC R-4	Zimbabwe	2038	E,G,J,O
4.830	R.Botswana, Gaborone	Botswana	0305	B,N,T
4.830	R.Tachira	Venezuela	2254	B,S
4.832	R.Reloj	Costa Rica	0635	E,J,S
4.835	R.Tezulutlan, Coban	Guatemala	0043	B,J,N
4.835	RTM Bamako	Mali	2023	B,E,J,L,N,O,S,V
4.840	AIR Bombay	India	1640	B,E,G,J,T
4.845	R.Fides, La Paz	Bolivia	0035	B
4.845	RTM Kuala Lumpur	Malaysia	1640	G,S
4.845	ORTM Nouakchott	Mauritania	2039	B,N
4.850	R.Yaounde	Cameroon	2205	C
4.850	AIR Kohima	India	0045	B,N
4.855	R.Sana Yemem	Yemen	1900	V
4.860	AIR Kingsway(Feeder)	India	1829	B,G,O,S,T
4.865	R.Alvorada, Londrina	Brazil	0100	B
4.865	PBS Lanzhou	China	2200	B,O,E,L,S
4.870	R.Cotonou	Benin	2130	B,E,N,S,T
4.879	R.Bangladesh	Bangladesh	1614	B,G
4.885	R.Clube do Para	Brazil	0046	E,N
4.885	KBC East Sce Nairobi	Kenya	1649	G,J,T
4.890	ORTS Dakar	Senegal	0300	T
4.895	Voz del Rio Arauca	Colombia	0045	B
4.895	Pakistan BC	Pakistan	1706	G,J,S,T
4.900	V. of the Strait 2	China	1546	G
4.900	SLBC Colombo	Sri Lanka	1715	B,G
4.905	R.Relogio, Rio	Brazil	0005	B
4.905	R.Nat.N'djamena	Chad	2046	B,E,J,L,N,O,T,V
4 910	R.Zambia, Lusaka	Zambia	1815	E,G,J,O,T
4.915	PBS Guangxi, Nanning	China	0050	B
4.915	GBC-1, Accra	Ghana	2009	B,E,F,J,L,N,O,S,T
4.915	KBC Cent Sce Niarobi	Kenya	1944	J,N,O,S
4.915	R.Cora, Lima	Peru	0115	P,T
4.920	R.Quito	Ecuador	0625	E,F,S,T
4.920	AIR Madras	India	1601	G,J
4.927	RRI Jambi	Indonesia	1623	E,F,J,S,T
4.931	R.Internacional	Honduras	0440	S
4.935	KBC Gen Sce Nairobi	Kenya	2009	E,G,J,O,S,T
4.940	AIR Guwahati	India	1604	G,T
4.945	Channel Africa	S.Africa	1750	S,T
4.950	R.Nacional, Mulenvos	Angola	2049	E,G,O
4.950	AIR Jammu	India	1627	G,J,S
4.950	RTM Kuching, Sarawak	Malayesia	0015	B
4.955	R.Cultura, Campos	Brazil	0055	B
4.955	R.Nac. de Colombia	Colombia	2304	S,T
4.960	Hanoi 2	Vietnam	0005	B
4.965	R.Zambia, Lusaka	Zambia	1958	E,G
4.970	PBS Xinjiang	China	1548	B,G
4 970	R.Rumbos, Caracas	Venezuela	2330	B,N
4.975	R.Uganda, Kampala	Uganda	2044	E,J,N,O,S,T
4.980	PBS Xinjiang, Urumqi	China	1626	G
4.980	Ecos del Torbes	Venezuela	2140	B,E,I,N,P,S,T
4.990	AIR Ext.Service	India	0025	B,N,P
4.990	FRCN Lagos	Nigeria	2040	J,N,S,T
5.005	R.Nacional, Bata.Eq	Guinea	2004	E,G,L,O,S,T
5.005	R.Nepal, Kathmandu	Nepal	1705	B,G,J,S,T
5.009	R.TV Malagasy	Madagascar	1714	E,G,J,S
5.010	Guangxi 2, Nanning	China	0055	B
5.010	Es.Radiofonicos Pop	Ecuador	0456	S
5.010	AIR Thiru'puram	India	0049	N,T
5.020	PBS-Jiangxi Nanchang	China	2155	B,E,S
5.020	La V du Sahel,Niamey	Niger	2042	E,J,N,O,S,T
5.020	SLBC Tamil Home Sce.	Sri-Lanka	1722	G
5.025	R.Parakou	Benin	2044	B,J,O,S
5.025	R.Rebelde, Habana	Cuba	0015	B
5 025	R Uganda, Kampala	Uganda	2036	J,S,T
5.030	AWR Latin America	Costa Rica	0445	S,T
5.035	R.Bangui	C.Africa	2044	C,E,J,N,O,S,T
5.035	Hanoi Hmong Sce	Vietnam	2314	S
5.040	L.V. de Yopal	Colombia	0020	B
5.045	R.Cultura do Para	Brazil	0005	B
5.045	RRI Yogyakarta, Java	Indonesia	1635	J
5 047	R.Togo, Lome	Togo	2005	B,C,E,J,N,O,S,T
5.050	GFBC Nanning	China	2200	T
5.050	Haixia 1	China	1640	J
5.050	R.Tanzania	Tanzania	2005	E,J,N,O,S,T
5.055	R.Difusora, Caceres	Brazil	0719	S
5.055	RFO Cayenne(Matoury)	French Guiana	0610	B,E,J,S
5.055	TWR Manzini	Swaziland	0400	T
5.060	PBS Xinjiang, Urumqi	China	2249	B,G,N,S
5.065	R.Candip, Bunia	Zaire	1840	E
5.075	Caracol Bogata	Colombia	0030	B,J,L,N,P,S,T

DXers

(A) Charles Beanland, Gibraltar.
(B) Robert Connolly, Kilkeel.
(C) Robert Connolly, while in Budapest.
(D) John Eaton, Woking.
(E) Jim Rdwards, Bryn.
(F) David Edwardson, Wallsend.
(G) P.Gordon Smith, Kingston, Moray.
(H) David Green, Doncaster.
(I) Ted Harris, Manchester.
(J) Gerry Haynes, Bushey Heath.
(K) Simon Hockenhull, E.Bristol.
(L) Sheila Hughes, Morden.
(M) Rhoderick Illman, Oxted.
(N) Eddie McKeown, Newry.
(O) Fred Pallant, Storrington.
(P) Roy Patrick, Derby.
(Q) Clare Pinder, Glasgow.
(R) Peter Pollard, Rugby.
(S) Richard Reynolds, Guildford.
(T) John Slater, Scalloway
(U) Tom Smyth, Co.Fermanagh.
(V) Phil Townsend, E.London.
(W) Thomas Williams, Truro.

areas via Shepparton on 9.860 (Eng 0630-1200) has also been received here. It was rated 34332 at 0821 in Oxted.

Also noted in this band were SRI via Fr.Guiana 9.885 (It, Eng, Fr, Ger, Port to Australia. S.Pacific 0830-1100) rated 55444 at 0916 in Bushey Heath; SRI via Schwarzenburg? 9.885 (Eng, Fr, Ger, It to Far East, S.E.Asia 1100-1300) SIO444 at 1110 in Doncaster; BBC via Kranji, Singapore 9.740 (Eng to Oceania 1130-1615) 14332 at 1330 in Chester; R.Mediterranee Int via Nardor, Morocco 9.575 (Fr, Ar to N.Africa, S.Europe 0500-0100) SIO433 at 1400 in E.London; Voice of Hope (KHBN), Palau 9.965 (Fil, Eng, Hin, Ur to Asia [Eng ident 1450]) 44444 at 1406 in Ross-on-Wye; R.Pyongyang, Korea 9.325 (Eng to Europe, M.East, Africa 1500-1550) 22222 at 1527 in Norwich; AIR via Aligarh? 9.910 (Eng to S.E.Asia 1530-1545) 54444 at 1544 in Burnham-on-Crouch; RRI Jakarta, Indonesia 9.680 (Ind to Asia? 0600-1710; 2300-0200) 43443 at 1700 in Scalloway; Africa No.1, Gabon 9.580 (Fr to C.Africa 0430-2300) 33333 at 1745 in Kilkeel; R.Nederlands via Flevo 9.860 (Eng to S/E/W.Africa 1830-1925) 34333 at 1839 in Newry; Voice of Turkey, Ankara 9.445 (Eng to Europe, USA 1930-2030) 44444 at 2000 in Glasgow; Israel R, Jerusalem 9.435 (Eng to Europe, N.America? 2000-2030) 44444 at 2000 in Morden; R.Nac del Paraguay 9.735 (Sp 0800-0400) 25533 at 2200 in Guildford; AIR via Delhi? 9.910 (Eng to Pacific areas 2045-2230) SIO444 at 2207 in N.Bristol; R.Cancao Nova, Brazil 9.675 (Port 24hrs) 33443 at 2211 in Woking; AIR via Delhi? 9.950 (Eng to W.Europe 2045-2230) 33222 at 2225 in Truro; BBC via Antigua, W.Indies 9.590 (Eng to S.America 2200-0130) 33333 at 2305 in Stalbridge.

In the **7MHz (41m)** band WYFR via Okeechobee 7.355 (Eng to Europe, Africa 0600-0800) was 34333 at 0715 in Morden; Sudwestfunk via Rohrdorf 7.265 (Ger to Europe 24hrs) 44444 at 0827 in Manchester; WEWN Birmingham, USA 7.425 (Fr, Eng, Sp to America 0800-1200?) 21111 at 0828 in Truro; Monitor R.Int via WSHB 7.535 (Eng [Various Sat/Sun] to Europe 0400-0955) heard at 0830 in Macclesfield; TWR Monaco 7.160 (Ger to Europe 1105-1120) SIO444 at 1105 in Doncaster; R.Nederlands via Nauen 7.190 (Eng to Europe 1130-1325) 45444 at 1202 in Newry; AIR via Aligarh? 7.412 (Hi, Eng to Europe 1745-2230) 43443 at 1750 in Kilkeel; R.Australia via Carnarvon 7.260 (Eng to S.Asia 1430-2100) 52432 at 1807 in Bushey Heath; VOA via Selebi-Phikwe, Botswana 7.415 (Eng to Africa 1900-2200?) 43333 at 2045 in Chester; VOIRI Tehran 7.260 (Eng to Europe, M.East 1930-2027) SIO433 at 1930 in E.London; R.Prague, Czech Rep 7.345 (Eng to Europe 2100-2127) 55444 at 2100 in Ross-on-Wye; Croatian R. via Deanovec 7.370 (News in Eng 2203) 32222 at 2200 in Penmaenmawr.

Some of the many broadcasts to Europe in the **6MHz (49m)** band come from AWR via Slovakia 5.905 (Eng 0600-0700) rated 44444 at 0640 in Morden; VOA via Woofferton, UK 6.040 (Eng 0400-0700) SIO444 at 0657 in N.Bristol; RAI Italy 6.060 (It, Relays Home Svce R.Uno [Prog-1] 0500-2300) 25533 at 0748 in Guildford; HCJB Quito 6.050 (Eng 0700-0830) 35333 at 0800 in Derby; DW via Julich? 6.075 (Ger 0800-1000) 55555 at 0830 in Manchester; SRI via Lenk 6.165 (Eng 1100-1130) SIO444 at 1109 in Doncaster; R.Nederlands via Julich 6.045 (Eng 1130-1225) 55444 at 1133 in Ross-on-Wye; BBC via Rampisham/Skelton, UK 6.195 (Eng 1500-2330) 32233 at 1515 in Stalbridge; Polish R, Warsaw 6.095 (Eng 1800-1855) 54333 at 1818 in Bushey Heath; R.Sweden via Karlsborg? 6.065 (Eng 1830-1900, also to M.East, Africa) 44444 at 1830 in Oxted; China R.Int, Beijing 6.950 (Eng 2000-2157) SIO333 at 2000 in E.London; Vatican R, Italy 5.882 (It, Esp, Fr, Eng, Sp, Port to 2000?-2158) 44434 at 2050 in Truro; BBC via Limassol, Cyprus 6.180 (Eng 1700-2200) 53444 at 2100 in Chester.

Among those noted to other areas were R.Nigeria, Ibadan 6.050 (Eng, Yor, Edo, Iga, Urh 0430-2305) rated 45444 at 0541 in Woking; R.Australia via Shepparton? 6.090 (Eng to Asia? 1500?-1900?) 33323 at 1527 in Penmaenmawr; BBC via Antigua, W.Indies 5.975 (Eng to C/S.America 2100-0600) 44544 at 2320 in E.Bristol; R.Nederlands via Bonaire, Ned Antilles 6.020 (Eng to N.America 2330-0125) 55555 at 2343 in Newry.

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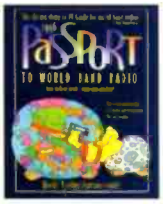

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