FOR THE RADIO LISTENER

shortwave magazine

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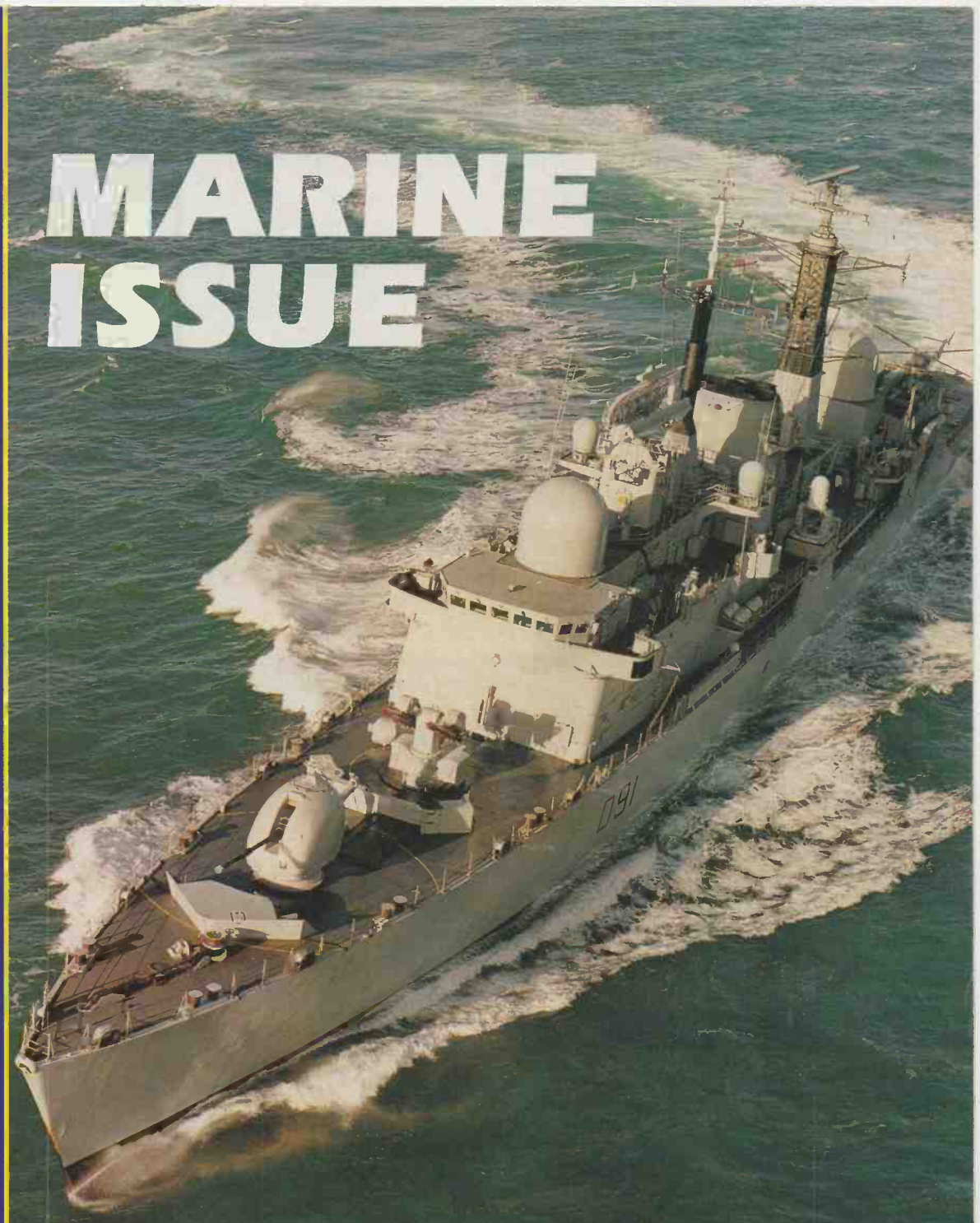

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short wave magazine

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ON SALE JANUARY 28
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Our Thanks to the Royal Navy Public Relations Dept., Room 0361, Main Building, Whitehall SW1A 2HB for providing the stunning photograph which illustrates our marine theme for this issue superbly.

features

regulars

good listening

editorial

SWM SERVICES

Subscriptions

Subscriptions are available at £21 per annum to UK addresses, £23 in Europe and £25 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 £36(UK) £39 (Europe) and £41 (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.

Back Numbers and Binders

Limited stocks of most issues of *SWM* for the past five years are available at £1.80 each including P&P to addresses at home and overseas (by surface mail).

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

Orders for p.c.b.s, 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 Poole (0202) 659930. An answering machine will accept your order out of office hours and during busy periods in the office. You can also FAX an order, giving full details to Poole (0202) 659950.

People who live in glasshouses....

In a recent Editorial I voiced a complaint about the pronunciation of some of the presenters on Classic FM. Well, several of you wrote and pointed out that there were some mistakes in what I had written. For these, my apologies - in my defence the column was written at the very last minute and the corrections were overlooked when passing the final film. If only I had used the spell checker! However, I stand by my remarks, although I would not like to have to try to pronounce some of the titles and names!

Crossword Competition

I did promise the winners' names for this issue - well, Elaine has managed to pack the entire box of entries into one of the removal crates, so you will have to be patient and wait until next month. Sorry.

Mokse Coke

Unfortunately the Morse alphabet printed in 'A Morse Decoding Chart' on page 17 in the January 93 issue contained some errors. This was all down to me - a Morse-illiterate editor - you can find a correct chart elsewhere in this issue. I promise to try a little harder the next time anything on Morse is published.

letters

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

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

Dear Sir

Regarding the item of equipment found by John Redmond of Scotland and reported in your latest issue of *SWM*, it looks very much like the Fullerphone in use with the army at one time. As a radio operator in the Royal Signals, 1948-1950, we used them via land-line as an alternative to telephone for added security. Morse was the medium - of course and given good maintenance, they were very good. They were enclosed in a metal carrying case, not much larger than the dimensions that he has supplied and it looks as if someone has tried to convert it to a 'base station'!

Headphones were supplied and the bell, of course, was to call-in. There was a small compartment for (if I remember correctly) two dry batteries, the voltage and life of which I can no way recollect. I never used this gadget very much as my time was taken up with operating the 19 and 52 sets, (remember them, anyone?). The Fullerphones had their own lines on a small section of the main exchange, I **think** - memory fades after so many years! I'd be very interested if you get any more info.

James Stone, Southampton

Dear Sir

How nice to see amateur radio/communications manufacturers beginning to produce good quality h.f. receivers at realistic prices i.e. Lowe HF-150, Yaesu FRG-100. If we are to introduce more young s.w.l.s to our fascinating hobby we need more basic equipment and less 'black boxes' with loads of pushbuttons and knobs. Otherwise short wave radio listening will become another hobby only 'millionaires' will be able to afford.

Alan Curry, Cleveland

Dear Sir

The Sony SW55 short wave receiver, which I own, comes with a neat travelling case moulded out of plastics designed to accomodate the receiver, mains adaptor, etc. However, when the British 3-pin plug is fitted to the mains adaptor, you cannot close the case.

I came up with the idea of purchasing a 2-pin razor plug, plus a 3-pin razor plug adaptor. By fitting the 2-pin plug to the mains adaptor the case will now close and you only have to carry the 3-pin razor adaptor separately.

A.L. Barber, Cornwall

Dear Sir

I have been a radio listener for about 24 years now and have come to the conclusion that the old radios are much better than some of these newer ones. In the past I have used a Receiver Type R209, which covered frequencies 1-20MHz also a Trio 9R 59DS, which covers frequencies 55kHz-30MHz, I also have a Sangean ATS-803A that covers frequencies 877-108MHz f.m., 150-281kHz l.w., 520-1620kHz m.w., 150-29999kHz a.m.

Over the past few months I have found that the Trio is good from 1.6 to 7MHz, as the Sangean ATS-803A is not sensitive enough. For example, on 80m the Trio receives better and the RSGB News is S9 +30 on the Trio but S1 and struggling on the Sangean. From 7MHz up to 30MHz, both are equal.

Derick Marker
Bracknell

letters

Dear Sir
With reference to the letter in the December *SWM* from Ivor Nathan concerning the inclusion of Band II v.h.f. f.m. broadcast stations in Brian Oddy's 'Long, Medium & Short' feature. I also had the same thought a few months ago, but after thinking about it dismissed the idea. Ivor may not be aware of just how many active broadcast stations/frequencies may be involved. In the UK and Ireland alone there are in excess of 1000 active frequencies, (I have received over 60 at this location alone), and Brian has over 50 people in the UK who send him log extracts for his current column, myself included. As each of these people live across the length and breadth of the UK, the subsequent reports by each would be, in the main, different due to the shorter range of v.h.f. and the lower transmitter power used by each station.

The result would be a mammoth task to compile a table of stations received as in the long and medium wave sections of Brian's column and take up considerable room in the magazine at the cost of reducing other articles or raising the cover price, which would probably reduce circulation figures. Also as Brian already has quite a difficult task in preparing the present article in a relatively short space of time each month for publication, due to submission deadlines and a further 1000 plus frequencies to collate would be almost impossible and/or detract from the rest of the article.

Perhaps the Editor would consider at some stage a one-off special, even if need be spread over a couple of issues; but on a regular basis I think that the idea is a non-runner.
Robert A Connolly
Co. Down

Dear Sir
Whilst sorting out some old photographs, I came across this one of my old friend Donald Ingram. I took it *circa* 1948, soon after he had left the RAF, receiving his licence G3CPM. Donald served in Ceylon and India as a base radio operator.

Although I had served with the Royal Corps of Signals, my leanings were towards photography. When I took this, we had jusy finished erecting Donald's aerial in the garden, much to the curiosity of all the neighbours.

Donald passed away a couple of years ago. Right up to the end he remained a dedicated radio enthusiast. Many of your readers must have been in contact with him over the 40 odd years he was on the air. Perhaps some of them remember him.
Michael Cotterell
Worcester

Dear Sir
During the seventies I worked at the Appleton Laboratories in Slough, before we moved to the Rutherford Laboratires. Ever since I can remember walking through the main doors, there was a three-dimensional model of the solar magnetosphere and its interaction with planet earth.

I was very lucky in being put into the Solar Physics Group, which had a number of projects involving the study of the sun, using several radio telescopes and other instrumentation. During the following years, I learnt a lot more about our star and the manner in which it influences us on earth.

So, when the series on the sun appeared recently in *SWM* I was very interested. Unfortunately, I am rather disappointed with some aspects of these article, which do not accurately reflect our knowledge of the sun. In particular, I must point out some of the mistakes on page 24 of the November edition.

It is true that radio energy is emitted by solar flares over a wide spectrum, but the maximum energy is emitted according to the analysis of the flare spectrum could be used to predict the onset of proton events, and that even with one radio telescope, operating at 16GHz, we could accurately forecast the emission of protons. References to 10, 136MHz and 3GHz are misleading, because these are only selected on the basis of comvenience for construction, not for their scientific value.

Unfortunately, Fig. 2.2 is almost totally wrong! The sun rotates anticlockwise, not as indicated. As a result of this rotation, the sun's magnetic field is distorted into a spiral, so solar flare emissions do not travel as suggested in the diagram. In fact, the flare products shown as travelling towards the earth would never actually reach us because their trajectory would be an anticlockwise spiral, not as shown! The flare labelled 'not aligned with earth' is in the only position where a flare emission could actually reach the earth.
Lawrence Harris
Plymouth

The author replies: First yes; the drawing Fig. 2.2 is wrong. Somehow the arrows have been transposed from the original. However, in the actual text accompanying Fig. 2.2 it is made crystal clear that the sun rotates west to east (anticlockwise). The same applies to the earth-sun line-up for a second bite at the cherry. The drawing is a simplification of the general idea.

As for the solar wind spiralling away from the sun. I have already said that! I am no astrophysicist, astronomy just happens to be one of my numerous interest. I think that Mr Harris has totally missed the whole point of the series. It was written for the absolute beginner using a language register easily readable by a ten year old child (my son is my test bench. Any word he stumbles over I will alter it to a simpler word or short phrase).

In the series I continually reiterate that I am making great over-simplifications of what is a highly technical subject. If you were briefed to teach basic nuclear physics then you would hardly begin with Quark, Strangeness, Charm or Tachyons. And so it was my idea to give people some idea of where the actual propagation comes from suing simplisitc language and drawings.

Mr Harris won't have liked the next part either, because I credit Brett and Tuve with squirting r.f. straight up into the air. It's the old debate; who discovered what. My resource material for the series was the Science and Inventions department of the British Library, my own extensive astronomy library magazines, etc. It was 15 weeks of research before I touched my wordprocessor.

To reiterate then. The arrows are in an incorrect position (but were the right way round in the original manuscript). The series was aimed for the absolute beginer and most definitely **not** an 'A' level student!

I'm sorry that Mr Harris isn't enjoying the series, which was written in 1978 by the way, but perhaps this is because of his superior knowledge of solar mechanics; just like the c.w. operator who likes to tramp along at a steady 25 words per minute but is forced to run at 12 w.p.m., very boring.
Kevin M Fox

grassroots

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

rallies

*** February 21**: The Great Northern Rally, G-MEX, City Centre, Manchester. All the usual attractions, including a free cash draw, bring & Buy, licensed bar and hot and cold meals, etc. Easy access on one ground floor, with plenty of parking.Talk-in on 144MHz via GB1GMEX. Admission £1.50, doors open at 10.30, close at 5pm with priority for the disabled. Further information on **061-748 9804**

***March 13/14**: The London Amateur Radio & Computer Show will be held at Picketts Lock Centre, Picketts Lock Lane, Edmonton, London. There will be a large trade presence, free parking, lectures, disabled facilities, Bring & Buy and Special Interest Groups. **Tel: (0923) 678770**.

March 14: Wythall Radio Club will be holding their annual radio rally at Wythall Park, Silver Street, Wythall. Doors open from 11am to 5pm. The usual traders in three halls, and a bar and refreshment facilities will be available. In addtion there will be a Bring & Buy. Talk in on S22. Admission 50p. G0EYO. Tel: 021-430 7267.

March 28: Pontefract & DARS 13th Annual Components Fair & Springtime Rally will be held at the Carleton Community Centre. Doors open 11am to 4pm. Admission by prize programme, 3 prizes plus free prize draw for lady visitors. Traders, Bring & Buy, Bookstall, licensed bar, hot or cold snacks. Free car parking, 2m talk-in. Car boot spaces will be available. **G0NQE. Tel: (0977) 677006.**

March 28: Bournemouth Radio Society's 6th Annual Sale at Kinson Community Centre, Pelhams Park, Millhams Road, Kinson, Bournemouth. Doors open 11am to 5pm. Talk-in from G1BRS on 2m S22. Amateur radio and computer traders, clubs and specialised groups. Excellent refreshments. Admission £1, including free raffle tickets. **Ian G2BDV. Tel: (0202) 886887.**

April 18 Marske-by-the-Sea Radio Rally will be held in the Marske Leisure Centre, High Street, Marske-by-the-Sea near Saltburn. Doors open at 11am. There will be the usual traders, a Bring & Buy and refreshments. Talk-in will be on S22. **Mic G7ION. Tel: (0287) 610030.**

May 3: The Dartmoor Radio Club Rally will be held at a new and larger venue, the Yelverton War Memorial Village Hall, Meavy Lane, Yelverton, Devon. Doors open 10.30am with Talk-in on S22. **Ron G7LLG. Tel: (0822) 852586.**

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

* Short Wave MAgazine & Practical Wireless in attendance

Avon

RSGB City of Bristol Group: last Mondays, 7pm. The Small Lecture Theatre, Queens Building, University of Bristol, University Walk, Bristol. Feb 22 - 10GHz Narrowband Operation by G3JMY. Dave Coxon G0GHM. (0275) 855123.

South Bristol Amateur Radio Club: Wednesdays. Whitchurch Folkhouse Association, Bridge Farm House, East Dundry Road, Whitchurch, Bristol. Feb 3 - 10m Activity Evening, 10th - Magazine Exchange Evening, 17th - 70cm ATV Challenge, 24th - Soldering Iron Competition.

CORNWALL

Cornish RAC: 7.30pm. The Village Hall, Perranwell Station, Perranwell, Nr Truro. Feb 4 - St John's Ambulance, 9th - Activities Night, 15th - Computer Section Geoff G0FHT (0209) 820836.

EAST SUSSEX

Hastings E&RC: 3rd Wednesdays, 7.45pm. West Hill Community Centre, Croft Road, Hastings. Fridays, 8.30pm. Ashdown Farm Community, Downey Close, Hastings. Feb 17 - Weather Recording by G4ITM. Reg Kemp. 7 Forewood Rise, Crowhurst.

ESSEX

Braintree & DARS: 1st & 3rd Mondays, 8pm. The Community Centre, Victoria Street, Braintree. Feb 15 - PMR Conversion by G3PEN & G0DEC. Derek (0787) 474312

GREATER LONDON

Acton, Brentford & Chiswick RC: 3rd Tuesdays, 7.30pm. Chiswick Town Hall, Heathfield Terrace, Chiswick, W4. Feb 16 - WAB by G0HHP. Colm Mulvany G0JRY. Tel: 081-749 9972.

Edgware & DRS: 8pm. Watling Community Centre, 145 Orange Hill Road, Burnt Oak. Feb 11 - Model Rockets gy G4CQF, 25th - Morse Training Evening. Hank Kay G0FAB. (081-205 1023).

Southgate ARC: 2nd & 4th Thursdays, Winchmore Hill Cricket Club Pavilion, Firs Lane, Winchmore Hill, London N21. Feb 11 - Multi-mode Action On The Air, 25th - Inter-club Darts Match. Brian Shelton. 081-360 2453.

Wimbledon & DARS: 2nd & last Fridays, 7.30pm. St Andrews Church Hall, Herbert Road, Wimbledon SW19. Feb 12 - Vertical Antenna Adjustments, 26th - The History of Cameras by G0KEB. Chris Frost. 081-397 0427.

HAMPSHIRE

Horndean & DARC: 1st Thursday , 7.30pm. Horndean Comunity School, Barton Cross, Horndean. Feb 4 - Junk Sale. Stuart Swain. (0705) 472846.

HEREFORD & WORCESTER

Bromsgrove & DARC: Fridays. Avoncroft Arts Centre, South Bromsgrove, Worcester. Feb 12 - Photography. Joe Poole. (0562) 710010

HERTFORDSHIRE

Dacorum AR & TS: 1st (informal) & 3rd (formal) Tuesdays, 8pm. The Heath Park, Cotterells, Hemel Hempstead. Feb 16 - Aerial Design Part 2 by G0NJI. Dennis Boast. (0442) 259620.

Hoddesdon RC: Alternate Thursdays, 8pm. The Conservative Club, Rye Road, Hoddesdon. Feb 4 - A Natter Night, 18th - Visit by RSGB General Manager Peter Kirby. Roy G4UNL 081-804 5643.

KENT

Bromley & DARS: 3rd Tuesdays, 7.30pm. The Victory Social Club, Kechill Gardens, Hayes. Feb 16 - Introduction to Fibre Optics by Alan Ogden. Geoffrey Milne. 081-462 2689.

NORFOLK

Dereham ARC: 8pm. St Johns Ambulance Hall, Yaxham Road, Dereham. Feb 11 - SSTV by G4TUK. Mark Taylor G0LGJ. (0362) 691099.

Norfolk ARC: Wednesdays, 7.30pm. The Norfolk Dumpling, The Livestock Market, Harford, Norfolk. Feb 3 - EME 1296 Receiver by G4EOL, 10th - Archeology and Metal Detectors by John Davies, 17th - Science For All by G3PTB, 24th - Informal & Night On The Air. Jack Simpson G3NJQ. (0603) 747992.

NOTTINGHAMSHIRE

Mansfield ARS: 1st Thursdays, 8pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. Feb 4 - RSGB Video Evening. Mary G0NZA. (0623) 755288.

South Notts ARC: Fridays, 7pm. Highbank Community Centre or Fairham Community College, Farnborough Road, Clifton Estate, Nottingham. Feb 5 - Open Forum, 12th - Construction at Fairham College, 19th - The Secret War by G4MHB, 26th - On Air. Ray G7ENK. (0602) 841940.

SOUTH YORKSHIRE

Barnsley & DARC: Mondays, 7.15pm. Darton Hotel, Station Road, Darton, Barnsley. Feb 1 - On the Air Night. Ernie G4LUE. (0226) 716339.

STRATHCLYDE

West of Scotland ARS: Fridays, 8pm. Garnethill Multi-Cultural Centre, Rose Street (Off Suchiehall Street), Glasgow. Feb 12 - Vehicle Electronics Old & New by GM3HOM, 26th - Vintage Radio On Film by GM3EDZ. Jack Hood GM4COX. (0698) 350926.

SUFFOLK

Sudbury &DRAS: 1st Tuesday, 8pm. The Five Bells Public House, Bures Road, Great Cornard, Sudbury. Feb 2 - Weather Satellites by G3CQL. Colin. (0787) 77004.

WARWICKSHIRE

Stratford upon Avon & DARS: 7.30pm. The Home Guard Club, Main Road, Tiddington, Stratford-upon-Avon. Feb 8 - Trials & Tribulations of an OWL by G4AXW, 22nd - Test Equipment Evening by G3MXH. A. Beasley G0CXJ. 060-882 495.

WILTSHIRE

Trowbridge & DARC: 1st & 3rd Wednesdays, 8pm. Southwick Village Hall, Southwick, Trowbridge. Feb 3 - Surplus Equipment Sale. G0GRI (0225) 864698.

YORKSHIRE

Bridlington & DARS: Alternate Thursdays, 7.30pm. Combined Cadet Building, Bridlington Upper School, Bessingby Road, Bridlington. Feb 4 - CW & RAYNET by G4XBU, 19th - Computer Programming by Keith Goodyear. Norman G4NJP. (0262) 673635.

Jon Jones
PO Box 59
Fishponds
Bristol BS16 4LH

junior listener

New Listening Guide

The International Short Wave League have published the latest edition of *Guide to English Short Wave Broadcasts to Europe*. This very reasonably priced booklet has 27 pages, all compiled by names familiar to readers of Brian Oddy's 'Long Medium & Short' column.

This guide includes information following the winter changes in frequency that many broadcasting stations have made - it was checked out during the second weekend in November, so is nicely up-to-date.

Most listening guides present their listings in frequency order, this guide lists the details in time order. Starting at 0000 the guide details the length of the programme (such as 0000-0100), then comes the country and the station involved (USA, WHRI Indiana), next comes the frequency in kilohertz (7315). Finally it lists the type of programme you are likely to come across (religious prog). The bits in brackets are taken from the first entry in the list and gives you an idea of what information you can get.

That's not all, either. The last couple of pages tell the reader details of the various DX programmes that can be heard from different broadcasters. An example is 0405-0435 on Sundays WWCR in Nashville, USA air the programme *World of Radio* on 7435kHz.

Now to the cost of this information. Copies can be obtained from ISWL HQ, 10 Clyde Crescent, Wharton, Winsford, Cheshire CW7 3LA and you need to send £1 or 2 IRCs. One helpful thing is that you can send postage stamps to the value of £1 rather than sending a postal order, which can work out expensive.

The ISWL

The International Short Wave League started back in 1946 and caters for members who are interested in both amateur radio and broadcast bands. Each month their journal *Monitor* is sent to members and this covers the h.f., v.h.f. and broadcast bands There are short articles on transmitting topics as well as technical and general interest matters.

The League organises monthly competitions for members, with certificates available for the winners.

The annual membership for UK addresses is £15, but if there are two of you in the house who are interested in joining, then you can do so for the same £15 fee - you do have to share the magazine though! If you live overseas, then the cost is a bit higher because the magazine costs so much to post each month - £25.

If you're not sure whether you'd like to join the ISWL, you can receive a sample copy of *Monitor* for just 60p (again you can send stamps). Just send to the address mentioned previously.

Technical Tips

Once a month, during the *Mailbag* programme on Deutsche Welle a feature called 'Technical Tips for DXers' goes out. As there are no broadcasts aired especially for Europe it may be worth trying several of the times and frequencies to see which one you are able to receive.

0100-0150 on 6.040, 6.085, 6.120, 6.145, 9.515, 9.565, 9.610, 9.7, 9.77 and 11.865MHz on Sundays.

0200-0250 on 1.548, 6.035, 7.285, 9.615, 9.69, 11.945 and 12.055MHz again on Sundays.

0300-0350 on 6.045, 6.055, 6.085, 6.120, 9.535, 9.545, 9.640, 9.705 and 9.77MHz on Sundays.

0500-0550 on 5.960, 6.045, 6.12, 6.13, 9.535, 9.67 and 9.69MHz on Sundays.

0900-0950 on 9.565, 15.41 and 21.6MHz on Saturdays.

Finally, 2100-2150 on 6.185, 9.67, 9.69, 9.765 and 11.785MHz on Saturdays.

Misconception

Many new listeners often think that books like *Passport to World Band Radio* are really only for those who are experienced in the hobby. Recently I was sent a copy by Larry Magne - the publisher of this book. Since then I've found the time to sit down and actually read it and found a lot more than I was expecting.

Probably the most difficult question I ever get asked is "which radio should I buy?" That's difficult to answer because what appeals to me is likely to be hated by someone else. Well *Passport to World Band Radio* have tested loads of different radios and give their views on many (about 60 according to my count). What is also useful is that they've dug out many of the different names that the same radio goes under - Sangean ATS-808/Aiwa WR-D1000/Realistic DX-380/Roberts R808/Siemens RK661 is just one example of a radio under many names.

Anyway they go one to praise or critise as necessary and give them a star rating. This should give some guidance when you're trying to decide where to spend your hard earned cash.

So I discovered that this is not just a listening guide, but a useful reference book that I shall be returning to time and time again. I also found the article on world time, or UTC as we know it, interesting.

Audio Filters

Eric Stubbs from London write with his experiences in choosing a receiver to replace his Russian Vega Spinola 250. Having examined the market with great care, he settled on the Philips AE-3205 portable. However, it was the final part of his letter that attracted my attention. Eric mentions the use of a noise blanker and signal processor to try and improve performance. What I'd like to talk about is the use of one particular accessory - the audio filter. These are a much neglected accessory that can prove to be a great aid for the short wave listener.

So what do I mean by an audio filter and how does it help the listener? Well, in this case I'm referring to a self contained add-on unit that normally connects to the external speaker or headphone socket of the receiver. Let's now look at what it does and why we need it. In simple terms all a filter can do is alter the relative volume of different frequencies as they pass through it. So what I hear you say! Probably one of the most common problems facing the short wave listener is the multitude of whistles and squeaks that can interfere with the desired signal. Wouldn't it be great if we could eliminate the offending whistle. All we need is an adjustable filter that can reject a very narrow band of frequencies. The technical term for this is a 'notch filter' as it 'notches-out' unwanted signals. As the notch filter only effects a very narrow band of frequencies, the interference can be removed with minimal degradation of the wanted signal.

Another example of how a filter can help is to be found when suffering splatter from an adjacent signal. In most cases this creates a lot of unwanted high frequency energy. Using a filter, this interference can be reduced by limiting the high frequency signals. In a sophisticated filter this effect is adjustable and can be set for the best compromise between audio quality and interference reduction. Although there are several filter systems on the market, probably the most common are those produced by Datong. If you like to know more, why not pop along to your local short wave supplier and ask for a demonstration.

news

Mains Power in Your Car?

Normally to get mains power when out mobile you have to use a generator. Merlin now have a range on d.c. to a.c. inverters available that may help out. These can be either plugged into the cigarette lighter in your car, or wired direct to the battery. The unit simply converts 12V d.c. to 240V a.c. All units feature a low battery protection circuit that shuts the unit down should the battery voltage drop below 10.7V, they also feature overload and overheat protection. Prices range from £99.95 to £517.75 exclusive of VAT and carriage.

Merlin Equipment, Scotts House, Cuxham Road, Watlington, Oxon OX9 5JW. Tel: (0491) 613027.

The Story of BBC Colour Television

The first full, regular colour television service in Europe began on BBC-2, a quarter of a century ago, on 2 December 1967. The pioneering days of colour television began in the UK long before then. To mark the 25th anniversary of the beginning of the full, regular, BBC Colour Television Service, Keith Hamer and Garry Smith have produced a 32-page book that charts the history of this important technological development. *The Story of BBC Colour Television* is a special edition from the series of *TV Graphics Review* publications. It features over 40 illustrations, many of which are extremely rare. A special centre-page spread includes 12 photographs in full colour and depicts test cards and identification symbols from the early days of BBC colour plus rare pictures of various BBC Christmas ident symbols. Further details are available by sending a 1st class stamp (or 2 IRCs) to HS Publications. The book is available for £3.95 inclusive.

HS Publications, 7 Epping Close, Derby DE3 4HR.

R209 Diagrams

I have been sent a set of original notes on the R209 receiver by Derick Marker. If any other reader would like a copy of these notes, send a large s.a.e. marked R209 to the Editorial Office (the new address, please!). There are 11 foolscap sheets, so please make sure the envelope is big enough! Many thanks to Derick, who is looking for information on the Trio 9R 59DS. If you can help, drop me a line and I'll forward on the details.

Maritime Notes

If you're interested in details of maritime licensing then the DTI have a very interesting information sheet on the subject. Called RA145 it details all kinds of information regarding using radios at sea from yachts to ocean going liners. To get a copy of this, apply to: **The Information & Library Service, Radiocommunications Agency, Room 605, Waterloo Bridge House, Waterloo Road, London SE1 8UA**. Don't forget to ask for leaflet RA145.

More Marine Information

ICS Electronics produce a very useful leaflet called *Marine Radio Communication for the Serious Offshore Sailor*. On one side of the large fold-out sheet there are brief details of all kinds of signals that appear on the marine bands from Navtex to GPS and Satellite Communication to Radio Telex. On the other side there are details of the products that ICS stock to receive and/or decode these signals. If you would like to see a copy of this, you need to send an A4 stamped, self-addressed envelope to ICS requesting a copy of the leaflet.

ICS Electronics Ltd., Unit V, Rudford Industrial Estate, Ford, Arundel, West Sussex BN18 0BD.

RAE Course

An RAE Course is to be held at the Arnold and Carlton College, Digby Avenue, Nottingham. The course started on January 7, but there may still be places. There will be sixteen weekly meetings on Thursday evenings 6.30 to 9.15pm with the objective of taking the RAE in May.

The course is intended for students with some basic knowledge of radio. It should be ideal for novices wishing to obtain a full licence and also as a revision course for those already aiming to sit the RAE in May.

Further information can be obtained from the course tutor, **Alan Lake G4DVW. Tel: (0602) 382509**.

BARTG

There were a few changes made at the British Amateur Radio Teledata Group's AGM. The main ones of note were that BARTG's Publication Sales would now be handled by Mark Ashby G6WRB and that GB2ATG will be re-appearing under the Managership of Bob Canning G0ARF.

One thing that has not changed is BARTG's subs rate (£10), which has been held at the rate set in 1988!

Membership Secretary: **Peter Adams G6LZB. 464 Whippendell Road, Watford, Herts WD1 7PT. Tel: (0923) 220774.**

Publication Sales: Mark Ashby G6WRB. 47 Ryton Close, Luton, Beds LU1 5SR.

Kenwood Amateur Radio Launch

Kenwood Amateur Radio dealers attended the launch of a new nation-wide dealership at Kenwood's UK Headquarters in Watford. As of 1 December 1992, Kenwood took over distribution of its amateur radio products in the UK and Ireland.

Trio-Kenwood (UK) Ltd., Kenwood House, Dwight Road, Watford, Herts WD1 8EB. Tel: (0923) 816444.

news

Free Catalogue

Inside the March issue of *Practical Wireless* there is a 32-page Spring Supplement from Greenweld. Multi-meters, p.s.u.s, radios, books, batteries, components and all kinds of other useful bits and pieces can be found. The March *PW* should be on the book-shelves between February 11 and March 11. If you can't get hold of a copy then send a cheque or postal order for £1.85 requesting the March issue to: **PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.**

PROGRAM notes

HCJB · THE VOICE OF THE ANDES · QUITO · ECUADOR

HCJB WORLD RADIO

HCJB

HCJB hosts two programmes that are of special interest to the radio enthusiast. The first is broadcast on Wednesdays - *Ham Radio Today* is hosted by John Beck and brings news from the world of amateur radio as well as electronics in general, the latest DX news from the amateur bands and items of interest to the electronics hobbyist.

The second programme goes out on Saturdays. *DX Partyline* is hosted by Ken MacHarg and John Beck. What is happening in the world of media and communication? Special reports are also provided from correspondents around the world.

To find out the best frequency for you to listen on sent to **HCJB, Casilla 691, Quito, Ecuador** and request the latest frequency schedule.

Waterproof Connectors

Cirkit is now stocking the new range of miniature IP66 waterproof connectors from Bulgin.

Designed for a wide range of applications from small signal to 5A 380V a.c., the connectors are available in five body styles each accepting either 3- or 8-pin contact carriers offering a wide combination of in-line or chassis mounting plugs and sockets.

Moulded in UL94V-0 rated nylon the five body styles include, in-line cable types - only 25mm diameter, and three chassis mounting types; the contact carriers simply snap fit into the body following wiring and insertion of the gold flashed contacts.

More details from: **Cirkit Distribution Ltd., Park Lane, Broxbourne, Herts EN10 7NQ. Tel: (0992) 441306.**

Radio & TV Developments

In 1989 the Japanese inaugurated their Extended Definition Television system (EDTV) with a view to improvement along the whole chain of TV programme production from the studio centre through to the transmission and reception of the final signal. One major problem that occurs in built-up urban regions in Japan is that of signal reflection at the receiving site producing ghost images. The ghost is caused when a 2nd (or more) reflected signal arrives via a longer path at the receiving antenna slightly later than that of the main signal. The result is a 2nd and usually weaker image to the right of the main picture.

Short term reflections may arrive at the antenna only slightly later than the main signal causing signal distortion whereas long path reflections may arrive considerably later and can be observed as a secondary and complete picture at a lower level. Time delays can be from 1 to 42µs. Ghosting is destructive to Teletext information which will usually resolve as garbage text!

If a single ghost presents a problem then antenna orientation may often reduce or eliminate the unwanted signal. Phase shifting can present a cure in the case of a cable head end, though uneconomic on a single domestic dwelling. Sometimes a single ghost may remain irrespective of antenna setting, or several ghost signals may be present.

The Shibasoku company has researched the problem in depth and produced one answer - the insertion of a ghost reference signal in the blanking interval on line 18 of both the odd and even fields (line 18 and 281 of their NTSC 525-line system). The reference signals on the incoming signal are compared and measured against an internal reference source on the receiver, the delay (phase) and amplitude results thus obtained are then used to subtract from both the reference and incoming signals and a clean signal is regenerated. Within the measuring circuitry is a repeating eight field pattern which will also detect and reduce long term ghosts. Improvement by way of ghost level reduction can be up to 30dB with a 5s reaction time for cancellation in the event of a 'sudden' ghost appearing.

Shibasoku have designed their systems for auto by-pass or for auto insertion in the event of a ghost(s) presence and the equipment is intended for rebroadcast/relay and cable operations rather than the domestic market. Receiving equipment can memorise up to 10 user-defined ghosts packages, each of these can incorporate up to a further eight ghost images selections with totally independent phase, delay and amplitude correction. Ghost signal reduction can be set to any signal approaching throughout 360° and delays up to 63µs.

On a more down to earth approach the Japanese broadcaster NHK has been experimenting with an absorbing ferro-magnetic material which are made into strips and laid vertically beneath tiles and wall coverings of high rise buildings. The ferro-magnetic 'tiles' are placed on the side of the building facing the local v.h.f. transmitter to reduce or eliminate the high incidence of signal reflection. Already three large buildings in Tokyo have been faced with this material - the highest being 243m and the tallest building in Japan.

Thanks to *International Broadcast Engineer* (IBE 257) July '92 for the above information.

We've Moved!

Please note that in the middle of January *SWM* moved to a new home.

Read the Contents page for details of our new office address and telephone numbers.

LOWE ELECTRONICS

Bringing the world to your home

WORLD BEATING SHORTWAVE RECEIVERS

LOWE HF225

Everybody loves a winner! It probably came as no surprise to owners of the HF225 when our receiver won yet another award. After all, they are already appreciating the excellent sensitivity, superb IF filtering and the remarkable ease of operation. Add a keypad for direct frequency entry, an active whip antenna, synchronous detection and FM unit and you have one of the most versatile receivers on the market today – significantly less expensive than some of its far eastern competitors!

HF225 ..... **£479.00**
HF225 EUROPA **£699.00**
(A very special limited edition – telephone for details)

LOWE HF150

Small, but perfectly formed, the HF150 is really establishing itself as a premier receiver for serious listening. It's complete with selectable sideband synchronous detection, three AM bandwidths and SSB filtering optimised for DXing utility stations. But we don't just stop there. We've just made it a lot more useful by launching a quick release mobile mounting bracket, and now we've added computer control for complete versatility. Call at any of our branches for full details.

HF150 ..... **£359**

THE BEST OF THE REST...

KENWOOD R5000

Despite its age, still proving a tough, reliable HF receiver. IF Shift and Notch controls allow you to process the incoming signal and narrower CW and SSB filters are available for those who need them. Now the only shortwave set with provision for installing a VHF converter. (And our unique two year warranty!)

From **£949**

ICOM R72E

An ideal choice for those who need lots of memory channels and scanning facilities. FM can be added as an option as can narrower CW filters. DDS technology ensures smooth tuning. Direct frequency entry from the keypad, clocks and timers enhance the operation.

R72E **£759.00**

JRC NRD535

Probably the finest receiver available today. Designed to give you total control of the incoming signal, its many features include pass band tuning, notch filters, noise blankers, dedicated data modes including FAX and built in RS232 interface for computer control via our Multiscan software.

From **£1395**

Colin G3XAS at
BOURNEMOUTH
27 Gillam Road,
Northbourne,
Bournemouth
BH10 6BW
Tel: 0202 577760

Dave G4KFN at
NEWCASTLE
Newcastle Airport,
Woolsington,
Newcastle Upon Tyne
NE20 9DF
Tel: 0661 860418

Tony G4CYE at
BRISTOL
79/81 Gloucester Rd,
Patchway,
Bristol
BS12 5JQ
Tel: 0272 771770
NEW

Fred G4RJS at
LONDON
223/225 Field End Road,
Eastcote,
Middlesex
HA5 1QZ
Tel: 081 429 3256

Tony G4NBS at
CAMBRIDGE
162 High Street,
Chesterton,
Cambridge
CB4 1NL
Tel: 0223 311230

Sim GM3SAN at
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Cumbernauld Airport,
Cumbernauld,
Scotland
G68 0HH
Tel: 0236 721004

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Here to help you are:
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Derbyshire DE4 5LE
Tel: 0629 580800
Fax: 0629 580020

Steve G6URJ
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Chatham Road,
Sandling,
Maidstone
Kent ME14 3AY
Tel: 0622 692773

Tom G4LAR at
LEEDS
34 New Briggate,
Leeds,
LS1 6NU
Tel: 0532 452657

Steve G1WSY at
HEATHROW
6 Cherwell Close,
Langley,
Slough, Berks
SL3 8XB
Tel: 0753 545255

NEXT?

NEW! YAESU FRG100

A new receiver from Yaesu has been a long time coming and the FRG100 sets a new standard from this manufacturer. Broadcast listeners may like the 6 and 4kHz bandwidths and the fifty memory channels will store both frequency and mode.

Seems good value at.....**£499**

LOWE NEWS!

Seems we forgot to tell SWM readers about our new branch! A few months ago, we formally adopted KW Communications of Maidstone into our branch network, bringing Lowe sales and service to the south east for the first time. Now under control of our latest recruit, Steve Jelly, G6URJ we look forward to meeting readers old and new there. Steve is currently upgrading the computer system there so we can demonstrate the full range of datacomms products.

As part of our expansion plans, our Bristol branch has also relocated to offer customers a larger demonstration area. The new address is shown opposite and a quick call to Tony, our manager there, will provide you with directions if you need them.

MULTISCAN

Computer control of receivers is a growing interest with many SWL's and as a result, Lowe Electronics have commissioned the Multiscan program for IBM PCs and compatibles. This is quite a sophisticated and versatile program offering a high level of control of functions depending on the receiver in use. It supports the current range of receivers from Kenwood, Yaesu, AOR, JRC and Icom's R7000 and R7100.

Multiscan features 2000 memory channels with dual VFOs and space for a fifty character "comment". Manual tuning can be accomplished with keyboard entry, up/down controls or by mouse control, together with mode change, filter selection, BFO control, passband tuning, noise blankers etc., depending on your receiver.

A spectrum analyser display is also incorporated, together with a comprehensive logbook and precompiled database of over 1000 entries. The database is fully editable, allowing you to create a number of files.

A datasheet is available but a demonstration at one of our branches allow you to see the full potential of thise excellent software.

MULTISCAN.....**£75.00**

RF SYSTEMS

This small company from the Netherlands has really turned on the world of shortwave listeners. Their products are highly innovative, extremely well made and offer great value for money – and what's more they work!

Comprehensive datasheets are available on all their products and we'll be happy to supply these on request.

Magnetic Longwire Balun.....**£39.95**
MLB Antenna Kit 1 (12.5m long)
.....**£66.95**
MLB Antenna Kit 2 (20m long) **£76.95**
MLB Marine (special MLB for maritime use).....**£54.95**
DXONE the ultimate active antenna
.....**£289.00**
DX7 Active antenna.....**£179.00**
T2FD Low noise antenna.....**£169.95**
DXListener.....**£249.00**

NEW! FROM RF SYSTEMS

THE MAGNETIC TRANSFER ANTENNA

Developed primarily for marine applications, the MTA is a passive antenna. Comprising of a 2m long, UV resistant, plastic pipe with stainless steel fittings, the MTA can be mounted in a variety of locations. It has a specially wound helical element designed for omnidirectional reception and is elliptically polarised to make the most out of transmissions vertically or horizontally polarised. Two versions are available: one covering 100kHz – 25MHz and the other 500kHz – 30MHz. We expect the price to be around £159.00. Full details on request.

The Sun - The Source

Part 4

In this part, Kevin Fox continues his account of how the sun affects radio propagation here on earth.

The 'D' Layer

Just above the Troposphere, at a height of around 42km we enter the earth's Ionospheric layers, and the first of the 'radio' zones: the D Layer (**Fig 4.1**). Less is known about this region than almost anything else of earth's atmospheric layers. It exists only during the daytime gradually fading away as the sunset deepens and recombination of the ionised atoms takes place. Radio signals below frequency 300kHz may be reflected off the D layer, but frequencies above this nominal 300kHz are attenuated - sometimes to the point of complete oblivion. Below the D layer propagation is mainly by 'ground wave', which means that the radio signal follows the contours of the earth's surface.

Very Long Waves are used by certain military organisations to provide 'over-the-horizon' radar imaging and communication links with nuclear submarines many fathoms below the worlds' oceans. Because the D layer is the lowest of the 'radio' layers and is also quite densely packed with atmospheric gases, etc., it doesn't usually receive much solar ionisation, which is just as well because all signals above 300kHz are attenuated, with the amount of attenuation varying directly according to frequency. The lower the frequency then the more the attenuation.

Medium wave DX listeners are quite familiar with the performance of the D layer; they know that they've not much chance of picking-up American commercial stations during the daytime whilst the D layer is in place. But at sunset, when the D zone starts to break up, the American stations (as well as the rest of the world) start coming through. Although I keep on tossing terms like Sunrise and Sunset around seemingly carelessly, do remember that in every case, all over the world, I am, of course, referring to local sunrise/sunset times. Ionisation of the D layer is very dependant on the position and activity of the sun. During northern summer months - May to September - ionisation of the D layer is at a maximum. Try listening on 3.5MHz during the day, all you'll hear is essentially local contacts propagated by ground waves. But listen again around 22:30UTC and you will hear amateurs around the world talking to each other. All that has happened to make this tremendous difference is that the D layer has dissipated and is no longer attenuating or blocking signals at these lower frequencies.

During times of sunspot maximum solar activity can become so intense that the ultra violet radiation punches its way deep into earth's atmosphere and heavily ionises even the D layer. When this happens we get superb propagation at v.h.f. and above, whilst sometimes a complete black-out, known as a Sudden Ionospheric Disturbance (s.i.d.) - what used to be called Dellinger Fade-outs, on the short wave bands. This situation may persist for minutes, hours, or even weeks during severe solar storms, and whilst the v.h.f. operators are making DX contacts on 50, 70, 144 and even 430MHz, us h.f. operators are just left grinding our teeth in frustration. When an s.i.d. occurs the lower frequency h.f. bands are effected first. I once heard two German amateurs on 14MHz discussing the fade-out on 7MHz! As the ionisation of the D layer increases then the higher h.f. bands start to go down as well. The result is rather eerie - a complete lack of s.s.b. chatter and the euphonious melody of Morse is replaced by a sound like waves breaking on the sea shore, only instead of water, the sound is more like material being torn viciously apart. Once the D layer has reached this state of ionisation then local geomagnetic effects start to happen. Compasses and other magnetic devices may begin to malfunction, and

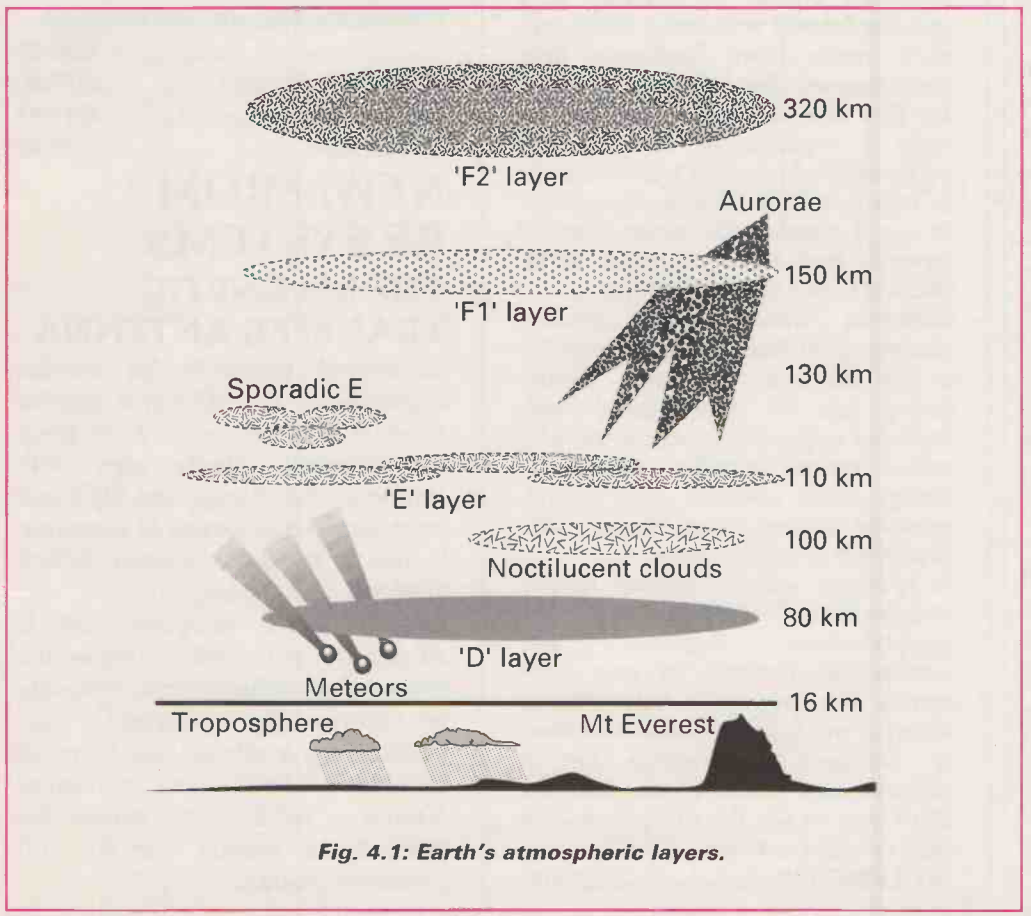


Fig. 4.1: Earth's atmospheric layers.

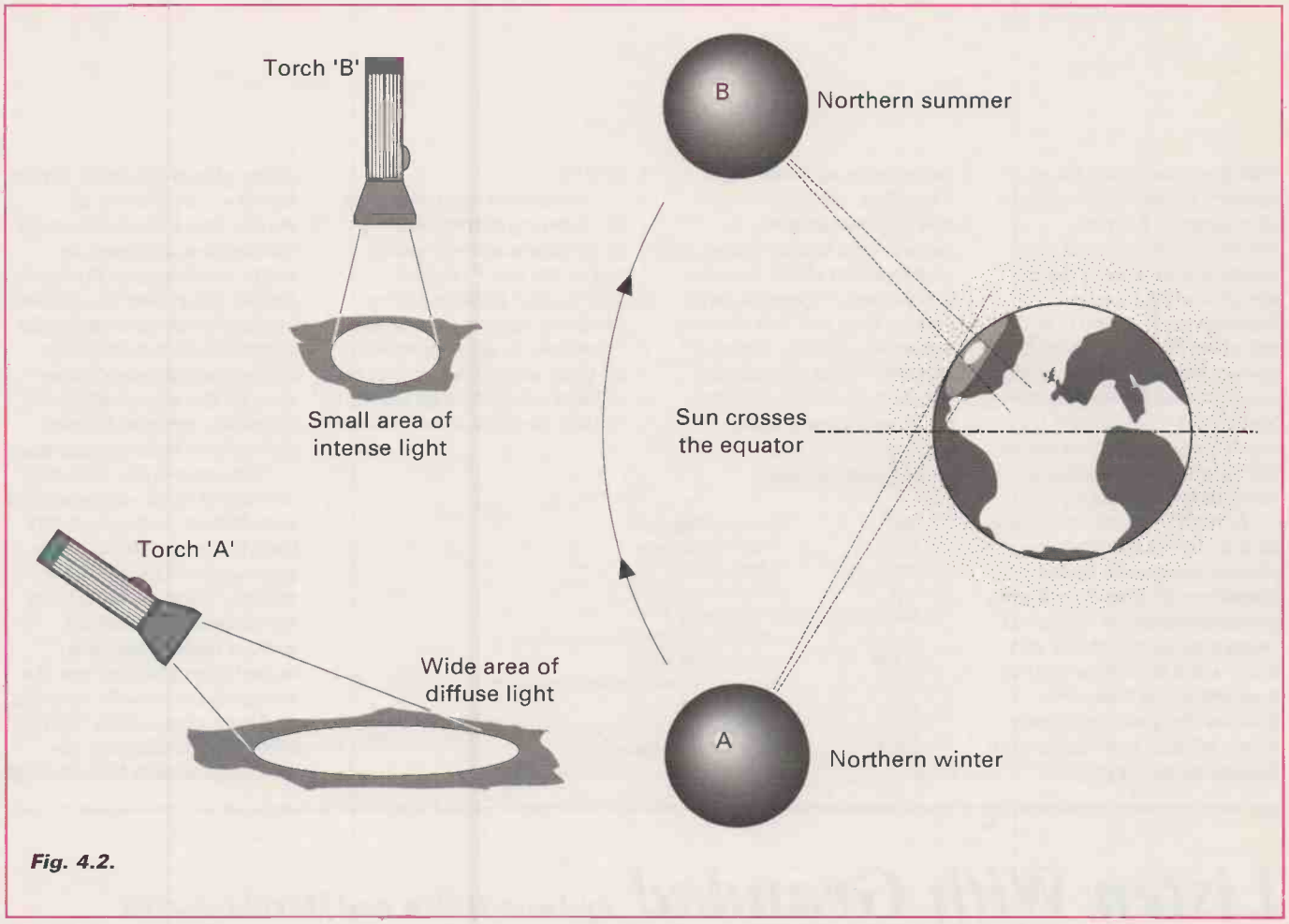


Fig. 4.2.

large amounts of static electricity are induced into power and telephone lines. And, of course for the astronomers there are the superb auroral displays to view.

The E Layer

At a height of between sixty-five to eighty miles up the D zone fades away and is replaced by the E layer. Like the D layer the E region is largely dependant on daylight for its existence via ionisation and the position and state of the sun. In the Northern hemisphere it is greater during the summer months, with the highest activity happening around the Summer Solstice on June 21. (**Fig 4.2**) shows why this is so.

At night, and due to the greater concentration of atoms in earth's lower atmosphere, recombination is faster because there are more nearby atoms from which electrons may be grabbed. Imagine a full bathtub. Once the plug has been pulled then the water drains away from the bottom first, lowering the water level at the top. As the E layer begins to break up during the night, the same conditions apply. The bottom of the layer recombines first which lowers the height of the E layer. In times of high solar activity the E zone may lower but a residual amount remains, assisting or disrupting your activities through the night, depending on what you're trying to achieve.

During the day, and according to the state of ionisation the E region is capable of reflecting both h.f. and v.h.f. radio signals. Later on I will be discussing short wave radio propagation as a generic subject tying it all into what's occurring on the sun, but to whet your appetite, when working h.f. one has to chose a frequency with care: too low and the D layer has you. Not quite high enough and the E layer bounces your signal back down to earth too soon for reasonable DX (long distance) contacts. Too high and off it goes into space. All tricky stuff at first sight, but it's all rather easier when it's explained properly.

In daylight the E layer can reflect a radio signal around a thousand miles in a single 'hop'. Many amateurs believe that the E layer has an attenuating effect on radio signals which prevents further hops from happening. This is only partially true. All of earth's atmospheric radio reflecting layers have an attenuating effect, but this isn't the reason for multiple 'F-Layer type hops' at h.f. frequencies from the E zone in the daytime.

During daylight, frequencies below 4MHz are absorbed by the D layer, whilst radio signals above 4MHz are severely attenuated according to frequency. To get a radio signal through the D region and into the E zone requires the right choice of frequency and power. You have to use a high enough frequency to get through the D layer (where it will suffer attenuation) and into the E layer where more attenuation happens. By this time, if you're not working close to the m.u.f., (see Parts 5 &6), there's precious little left of your radio signal to make another journey back up into the E layer for further hops. However, hops within the actual E layer itself are not unknown, which can extend the range considerably.

Another phenomena, known as Sporadic-E, helps to propagate v.h.f. and higher frequencies over considerable distances. Sporadic-E occurs from random patches of E layer material lying above and below the main E layer and is most common around the middle of the Northern Hemisphere's midsummer, when solar activity is highest. There just isn't enough space for me here to give a detailed explanation of every method of radio propagation caused by solar mechanics.

The F Layers

Right at the top of the Ionosphere lie the two F layers. The F1 layer, at an average height of 240km, is the lower of the two: the F2 layer is 80km higher at 320km.

Although during the hours of daylight there are two distinct and separate F layers, amateurs tend to lump them together and refer to them simply as The F Layer. Because the F region is at the top of earth's ionosphere it's always the first zone to receive u.v. radiation from the sun, and goes on receiving it for a much longer time than any of the other layers. Therefore, ionisation is intense.

At night - or more correctly, as that part of earth moves away from the sun and is therefore not directly receiving any solar radiation - the two F layers combine together at a lower altitude of around one hundred miles. However, because the electron density at this altitude is so sparse, the ionised atoms have great difficulty in recombining. Therefore, the lower F layer still has the capability to reflect radio signals during the night as a lot of the layer is still ionised. When the earth rotates back into line with the sun again, the u.v. radiation hits the F layer first and the single layer once gain splits into two separate zones; F1 and F2.

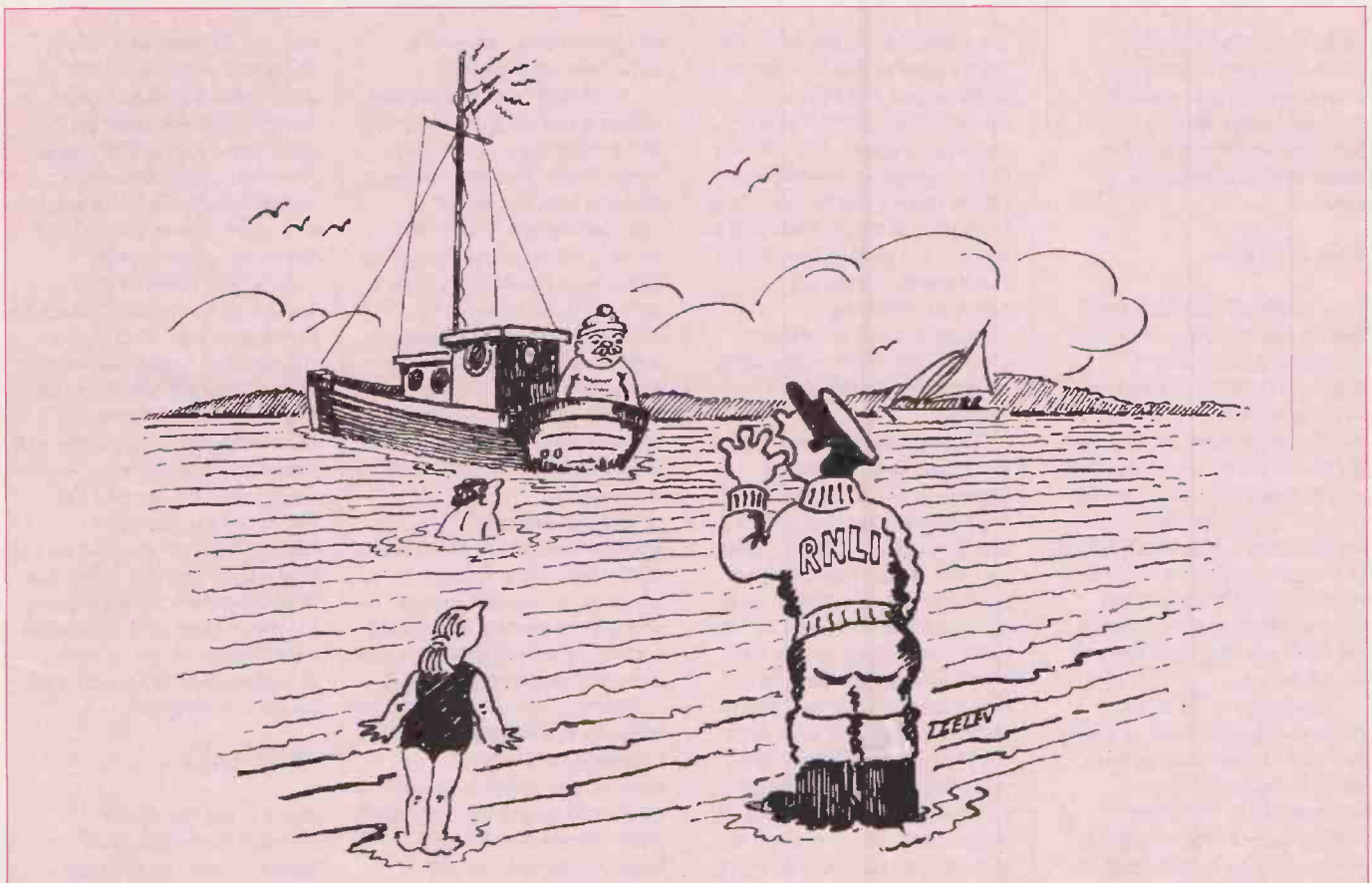
Although it does sound as if I'm saying that the earth's atmosphere actually swells out as the two F regions reform, that is exactly what happens. Earth's atmospheric 'thickness' is very dependant on solar activity, a fact that the ill-fated US spacecraft Sky*lab* did not take into account when it was placed into orbit. Due to heavy u.v. irradiation of earth's ionosphere, the whole atmosphere increased its depth considerably. Suddenly, *Skylab* found that its orbit was actually brushing through the outermost layers of earth's atmosphere causing friction drag on the spacecraft which ultimately brought it down many years before it was due

That covers the individual layers that make up the earth's atmosphere. In the next part we'll be looking at h.f. radio propagation as a complete subject, covering items such as measuring directly, at various frequencies, the output from the sun, how the sunspots are actually counted, and their place within the vital calculation to discover the maximum usable frequency. ■

Abreviations

DX	'long distance'
h.f.	high frequency
kHz	kilohertz
km	kilometres
MHz	megahertz
m.u.f.	maximum usable frequency
s.s.b.	single side-band
s.i.d.	sudden ionospheric disturbance
u.v.	ultra violet
UTC	Universal Co-ordinated Time (=GMT)
v.h.f.	very high frequency

Listen With Grandad *by Leon Balen and David Leverett*



Ahoy there Grandad! You can turn off your s.o.s. signal now, we've found your dentures just off the nude bathing beach.

South Midlands Communications Ltd

Southampton (0703) 255111 **Leeds** (0532) 350606 **Chesterfield** (0246) 453340
Birmingham 021-327 1497 **Axminster** (0297) 34918

LISTEN OUT at SMC

When you want more from your receivers, just look to Yaesu. We take your listening seriously.

Yaesu's serious about giving you better ways to tune in to the world around you. And whether it's for local action or world-wide DX, you'll find our HF/VHF/UHF receivers are the superior match for all your listening needs.

FRG9600

The **FRG9600,** a premium scanning receiver covering 60-905MHz, SSB, CW, AM & FM modes. 99 memories. 5, 10, 12.5, 25 & 100kHz scanning steps. Keyboard frequency entry. Optional convertors to extend range from 0.15-30MHz and 800-1300MHz

FRG8800 – *A BETTER WAY TO LISTEN*

The **FRG8800** HF communications receiver. A better way to listen to the world. Continuous coverage from 0.15-30MHz optional module for VHF coverage from 118 to 174MHz. SSB, CW, AM & FM modes. Direct frequency entry keyboard.

JRC NRD535 – *THE ROLLS ROYCE OF RECEIVERS*

The new NRD535 epitomises the very best in communications receiver design. This high technology product is based on the abundant technical experience gained by JRC in the professional communications receivers field. This means that the NRD535 is arguably one of the best receivers available to meet the discerning listeners needs. Brief specifications are as follows. Frequency coverage: 0.1-30MHz; Operating modes: CW, SSB (LSB & USB), AM, FM, FSK & RTTY; Supply voltage: 240V A.C. or 13.8V D.C. ECSS. BWC & RTTY units available as options.

DRAKE R8E – *BEST FROM THE USA*

Now available from SMC the new DRAKE R8E communications receiver. These receivers utilise the very latest in technology to meet the demanding requirements of today's listeners. Conveniently located front panel controls allow for rapid operator programming and ease of use. The R8E receiver covers 0.15-30MHz and with the optional VHF converter will also cover 35-55MHz and 108-174MHz. The large clear LCD display gives the operator full information about the current receiver status.

THE MOST COMPREHENSIVE RANGE OF RECEIVERS AVAILABLE AT MOST BRANCHES

YAESU JRC AOR SONY ICOM KENWOOD DRAKE FAIRMATE BEARCAT LOWE YUPITERU

SMC are pleased to be able to offer the SONY range of Multiband Receivers. They feature all the latest technology allowing unequelled coverage of both broadcast and shortwave bands, yet remaining both compact and easy to use. All the models illustrated cover VHF broadcast, SW broadcast, and some models cover other bands as well. The very latest model available from SONY is the ICF-SW77. This receiver covers LW, MW, SW and FM stereo broadcast bands and has SSB reception on the SW bands. A comprehensive keypad and LCD display give easy control over the massive array of features available. Other SONY products available include the minuscule ICF-SW1, the versatile ICF-SW7600, the popular ICF-2001D and for airband enthusiasts the AIR7 and ICF-PRO80.

ICF-SW77

AIR 7

AOR

SMC are pleased to be able to offer a large number of models from the very comprehensive AOR range which includes both hand portables and mobiles/base stations.

All the receivers are built to the highest possible specification yet remain very competitively priced. Often the leaders in the field, the AOR range is proving very popular amongst both professional and non professional users.

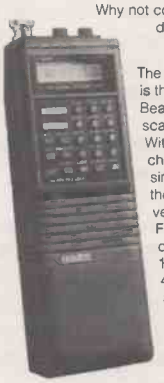
The top of the range model must be the AR3000 which covers 100kHz–2036MHz without any gaps. The sensational AR1500 is already a best seller, it's easy to understand why! With coverage from 500kHz – 1300MHz and complete with SSB. Try one today you'll see why they are a best seller. Last but not least is the AR2000 which is an extremely flexible handheld scanner covering 500kHz–1300MHz.

Why not contact us today for more details of the AOR range.

AR3000

BEST SELLER

AR1500



The Bearcat 200XLT is the cream of the Bearcat handheld scanner range. With 200 memory channels and simple operation these are proving very popular. Frequency coverage 66-88, 118-174, 406-512 and 806-956MHz.

200XLT

The compact HX850E is a basic scanner with a few memories. Ideally, suitable for a novice in the scanner market. AM/FM modes and a frequency coverage of 60-89, 118-136, 140-174 and 406-495MHz.

HX850E

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Lowe SRX-50 4-Ban Receiver

I suppose every generation of radio enthusiasts makes the same complaint - "If only these receivers had been available when I was younger"! Without any doubt, modern radios are using the latest technology to good advantage. Chips are now incorporated into receivers to perform a multitude of tasks, from frequency synthesising to frequency storage, and along the way new applications are found for every new generation of equipment.

While a teenager back in the sixties, one of my earliest transistorised radios had good signal reception, but its method of tuning was still the mechanical turning of a cord, which then turned a large tuning capacitor. When the cord broke, as they always seemed to do after a couple of years, the radios were beyond economical repair. This new receiver from Lowe, the SRX-50, uses contemporary technology for each stage of its operation. Frequency selection is provided by a phase locked loop synthesiser, which is stable over a wide range of ambient temperatures.

Ergonomics and appearance

The set has a telescopic f.m. antenna, pivot mounted in a recess on the top, which provides an adequate signal when extended. The speaker grille occupies almost one-half of the front, and delivers a clear sound. The unit has smooth lines without sharp edges. Also on the front face are most of the buttons - those for clock adjustment, band search initiation, memory storage and alarm facilities. The buttons are small but positive. Fortunately, it is not easy to accidentally operate the buttons or switches, but a 'LOCK' sliding switch is conveniently provided to over-ride any such accidental button pushing. Check this LOCK switch before trying to change anything!

While the radio is off, the digital display shows local time. When on, it shows the frequency; pressing certain switches causes the temporary display of other information. On the base of the receiver are two flat extrusions on which it stands. Like other small radios it isn't too difficult to knock it over, but as with my own Lowe HF-225 receiver, it is well made. Included with the receiver is a small booklet that adequately covers all of the facilities.

My family are used to boxes of electronics arriving for review or other testing, but this receiver elicited the comment from teenage daughter Cathy, "Isn't it a nice change to see a radio that I can operate without needing an electronics degree". The simple lines and easy style of the switch arrangements were appreciated by the non-electronics members of the household.

Facilities - Clock, Search, Alarm

This receiver has four bands - the three basic ones - f.m., a.m. (more commonly known as medium wave), and l.w., all having the usual frequency limits. The fourth band is short wave (s.w.), covering that part of the spectrum between 5.9 and 15.5MHz. Band selection is made by a four-position slider switch on the right-hand side of the model. The other two switches on this side include a slider volume control and the on/off switch, which actually has three positions - RADIO ON, AUTO RADIO and AUTO BUZZ' - more about these later. The f.m. antenna should be fully extracted for both f.m. and s.w. use. A standard built-in ferrite rod serves for both a.m. and l.w. On the left side of the receiver is a headphone jack and a connector for d.c. power input. Earphones are provided and seem to be of good quality, with clear labels for left and right channels. When used for f.m. listening, good stereo is available. Stereo broadcasts are indicated by a small l.e.d. between the AUTOSCAN buttons.

Clock and alarm

While the receiver is off, the digital display shows local time, using the 24 hour system. Setting the time needs care; you must hold down the SET button (middle button - top right), and then simultaneously press the hour button until the correct hour is displayed. The minutes are similarly adjusted. This was the only finger trouble that I experienced. Alarm time is adjusted slightly differently. The radio should be set with the desired station and volume, then switched to either AUTO-RADIO or AUTO-BUZZER, depending on how you want to be woken. You won't sleep through the buzzer! The radio option is far more civilised. These two positions are effectively OFF switches. The alarm will only operate if you activate the ALARM ON/OFF button on the front panel. When you do, the display changes for five seconds to show the set alarm time, and then reverts to local time with the message STANDBY, to show that an alarm is scheduled. To set the alarm time, adjustment is started during this five second period, and is carried out as previously described for the clock adjustment. It's all quite quick to do. There is also a SLEEP facility - when SLEEP is pressed, the radio will switch off automatically after 59 minutes.

Searching

Almost all receivers now search - particularly useful for people on the move (whether upwardly or downwardly mobile!). The two AUTOSCAN buttons (I think autosearch would be more accurate) have a different shape from all of the others on the front face. The upper one increments the displayed frequency, while the lower one decrements it. Their conical shape suggested to me that they would do the opposite! I quickly got used to this, so it wasn't a problem. Pressing the increment (or decrement) button briefly, causes the frequency to change by the amount pre-set for that band. This is 50kHz for f.m., 9kHz for a.m., 1kHz for l.w., and 5kHz for s.w. and is not adjustable. Pressing the AUTOSCAN button for a second or two, then releasing, causes the receiver to search

Specifications

Band	Frequency Range	Increment
f.m.	87.5 - 108MHz	50kHz
l.w.	153 - 281kHz	1kHz
m.w.	531 - 1602kHz	9kHz
SW	5.9 - 15.5MHz	5kHz

Accessories included: Earphones

d World

Lawrence Harris has been looking at this interesting portable receiver from the Lowe Electronics stable and wishes that it had been available when he was younger.

for the next signal in that band.

Here was a minor problem worth noting. The receiver stops on the first detection of a signal, and in practice, you need to then optimise reception by making a slight further frequency adjustment. The (fixed) SQUELCH setting seemed slightly low, so I consistently found this necessary. However, this is not a serious problem because after accurate tuning, the frequency can be stored by pressing MEMORY followed by any one of the five central large buttons. These allow the storage of five frequencies per band, and are exceptionally easy to use. Separately pressing any one, automatically selects the pre-stored frequency for that button in that band. These AUTOSCAN (autosearch) buttons have a third mode - holding one down causes a rapid frequency change, so jumping to a specific frequency is very quick.

Daily use

For routine domestic use the radio is switched on using the side-mounted slider switch. The available audio volume is ample and is adjusted with a similar, nearby slider control. As would be expected, using the earphones enables the volume to be considerably reduced, with a consequent lengthening of the battery life. If it is likely to be used regularly at home, a mains converter will be found economical.

My youthful late-night listening to Radio Luxembourg would have revelled in this portable. After you have used the memories to store your favourite local stations you can then select any one by pressing the appropriate large channel button - they are labelled from I to V (Roman numerals).

For the f.m. band, optimum reception is obtained by suitable orientation of the external antenna. Reception is good and all of the f.m. stations in my area were well received and with good stereo separation. Moving to the l.w. band, again all of the usual stations are available, and orientation of the receiver (and therefore its internal ferrite rod) invariably improves the clarity of reception. The AUTOSCAN feature is not really designed to be used on bands other than f.m. because of band crowding - they contain a plethora of stations or atmospheric noise.

However, as mentioned, you can store up to five separate frequencies in each band, so one manual search is probably all that you will ever need. I checked out the s.w. band and found virtually every type of broadcast could be well received. I logged RTTY, c.w., FAX and normal speech and reception was clear. I suspect that feeding some of the non-speech signals into a suitable decoder would work without problems, given the absence of a b.f.o. (beat frequency oscillator) to hear sideband broadcasts correctly. There were numerous speech and music stations within the band limits, making it an ideal radio for those wanting a low price entry to s.w.l.

Power requirements

The receiver requires three 1.5V AA or UM3 size batteries; alternatively the 4.5V output from a mains adapter can be used. The centre pin must be negative and the current requirement is about 300mA. The booklet states that one set of batteries should last for about seven days on a two-and-a-half hour daily use. For regular domestic use an a.c./d.c. converter would be more economical.

I do have several domestic portables, inherited rather than bought over the years. The largest cost far more than this Lowe, yet has fewer facilities and inferior quality sound. I wonder what the next five years will bring! A final quote from Marion, my better half, who, after looking at the radio and then being told of the price (£39.95) commented "I really would have expected it to be more expensive". I fail to disagree! ■

Abbreviations

a.c.	alternating current
a.m.	amplitude modulation
b.f.o.	beat frequency oscillator
c.w.	continuous wave (Morse)
d.c.	direct current
f.m.	frequency modulation
FAX	facsimile
kHz	kilohertz
l.w.	long wave
m.w.	medium wave
mA	milliamps
MHz	megahertz
p.l.l.	phase locked loop
RTTY	Radio TeleTYpe
s.w.	short wave
V	volts

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- **Two sets of transceiver connection**
- **Ideal for portable operation**

Photo not to scale

Front - actual width

The *New* AR210 Packet TNC has an extremely small case size of only 100 x 60 x 22mm approx. and ultra light weight of 90g (without NiCad battery fitted). However, nothing is compromised, the AR210 features five status LED indicators (CON STA PTT DCD PWR), a standard DE9 RS232C connector, power socket, power switch, plus two sets of radio connectors and externally accessible hard reset switch.
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Enhanced model - **AR1500E** - the World's first true compact hand-held wide range receiver offering SSB as standard has been made even better. Coverage is from 500 kHz all the way to 1300 MHz without any gaps in the range. Channel steps are programmable in multiples of 5 kHz and 12.5 kHz up to 995 kHz, the BFO will allow tuning between these steps for SSB operation. All popular modes are provided NFM, WFM, AM and SSB (USB, LSB and CW) with the BFO switched on.

The receiver is supplied with a comprehensive selection of accessories: DA900 wide band flexible aerial, NiCad pack, Dry battery case (for use with 4 x AAA alkaline cells), Charger, DC lead fitted with cigar lighter plug, Earphone, Soft case, SW aerial wire terminated in a BNC connector for shortwave reception and Operating manual.

Versatility is excellent. The AR1500E may be powered from it's internal NiCad pack, spare dry batteries may be carried for extended operation and used with the dry battery case, the set may also be plugged directly into the cigar lighter socket of a motor vehicle (external input range 11 - 18V DC). **RRP £299.00 including VAT.**

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On VHF Propagation in Practice

Paul Essery GW3KFE, offers another chunk of sound advice from his vast wealth of experience, this time on v.h.f. propagation and the problems of living in a valley.

At h.f., as we know, the ionosphere gives us most of our long-distance contacts but perhaps you are wondering what v.h.f. has to offer. If you live in a flat country area, such as East Anglia, you can expect under 'flat band' conditions the distance worked will be line-of-sight plus a third, so clearly antenna height is at a premium. When there is a 'lift' on, ranges can be much extended, perhaps out to hundreds of kilometres. If you have a directional and rotatable antenna system with which to take advantage of, say auroral conditions, then you can have real fun - once you learn a bit about spotting the openings.

Only Link

On the other hand, what about the s.w.l. who lives in a valley? If he is in the bottom of the valley and there isn't a repeater on a nearby hill then he is unlikely to hear much at all. For example, yours truly lives in such a valley in mid-Wales. There are repeaters for 144MHz and for 430MHz visible at the top of the hill to the SW. Disregarding the repeater, from the valley floor I can hear a station in Kerry or one in Newtown, but little else. The repeater is our only link with the chaps in the adjacent valleys. On the other hand the repeater is often accessed by mobiles as far away as the M62, but who are using the Rossendale Forest repeater, allocated the same channel. At the bottom of a valley v.h.f. isn't much good! The repeater users are locals anyway. In this neck of the woods one can leave the receiver scanning the whole of 144MHz and it won't stop for hours on end throughout a normal evening.

So, if you want to s.w.l. on v.h.f. or u.h.f. locally, you must pack a small receiver in a pocket, carry a gain antenna, and take to the hills. Or you must learn enough and build a listening post capable of coping with satellite and moonbounce signals. If you aren't in the first flush of youth, maybe hill-climbing isn't your scene - in which case if you live in a valley you won't think it worthwhile to speculate on a v.h.f. rig in your shack.

Monopolised

As we pointed out for h.f., there can be propagation between two points, A and B, but if both sides are listening (or switched off!) no contact results. Neither A nor B, nor the s.w.l. at C for that matter, will realise that there is an opening along that path. This goes just as much at v.h.f.

So, if you live in a town or at the bottom of a valley, then do, by all means, find out, by talking to the locals, just how much v.h.f. activity there may be. If the only outlet is the local repeater and that is perhaps monopolised by one of those oh-so-boring, squeaky-voice, obscenity-purveyors or poor souls with stomach eructations, again it's not worth bothering. If you live in the far north of GM, then repeaters are not usually jammed so, in fact, are quite useful. Indeed, this is generally true in country areas. In the cities, though.....!

On the other hand, if you are high up on a hillside with an outlook in 'interesting' directions, have a good, gainy antenna, a 144MHz converter driving the main station receiver and another one for u.h.f., then you are open for all sorts of interesting business. Satellites, of course, meteor-scatter, maybe even moonbounce reception, not to mention tropo and aurora openings. Satellite and moonbounce are also available from the bottom of the valley, of course.

Experience

'Spotting the openings' is an art you learn from experience. Obviously, meteor-scatter enthusiasts can look up the details of the various meteor showers and obtain dates and astronomical directions, which can be turned into compass directions. Tropo openings are often related to the presence of high barometric pressure. Aurora signals sound like a rusty buzz-saw and are noted when the beam is firing somewhere around north. If you listen to satellites, you must allow for the doppler effect, which will mean keeping your fingers on the tuning knob throughout a pass. For the times of satellite passes you really should be in contact with AMSAT-UK for predictions and all the rest of the knowledge AMSAT members have access to.

Any v.h.f. activity that depends on band openings involves some form of alerting system to get people on at the right times, so you want to get to know your locals and who to pass the word on to should the band suddenly open to DX. In return, be sure they will alert you .... and then you really are in business! ■

Errata: The Correct Alphabet in Morse Code! From Jan 1993 Issue With Letters D, K, R & U Corrected.

A	di-dah	N	dah-dit
B	dah-di-di-dit	O	dah-dah-dah
C	dah-di-dah-dit	P	di-dah-dah-dit
D	dah-di-dit	Q	dah-dah-di-dah
E	dit	R	di-dah-dit
F	di-di-dah-dit	S	di-di-dit
G	dah-dah-dit	T	dah
H	di-di-di-dit	U	di-di-dah
I	di-dit	V	di-di-di-dah
J	di-dah-dah-dah	W	di-dah-dah
K	dah-di-dah	X	dah-di-di-dah
L	di-dah-di-dit	Y	dah-di-dah-dah
M	dah-dah	Z	dah-dah-di-dit

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New high quality wide band receiving antenna uses fibre glass/stainless steel, with 4 small radials. 'N' type connector. Length 1.1 metres... **£39.95** + £4.75 P&P

WB1300 DISCONE (25-1300MHz)
Stainless steel top of the range 'N' type connector. Complete with short mounting pole and clamps "8 elements with vertical whip" – complete with short mounting pole and clamps etc etc. Best value at ... **£49.00** + £4.75 P&P

MICRO-SCAN (180-1300MHz)
New low cost ground plane antenna
£12.00 + £4.75 P&P

SKYBAND (25-1300MHz)
Stainless steel economy wideband Discone recommended – bargain price only
£24.00 + £4.75 P&P

LOG PERIODIC BEAM (105-1300MHz)
20-element w/b beam - transmits on VHF/UHF amateur bands. 12dB fwd. gain.
£135.00 + £4.75 P&P

DIAMOND D707 (500kHz-1500MHz)
A base ant. with 20dB pre-amp 3.5ft long fibreglass. Requires 12V DC supply.
£99.00 + £4.75 P&P

DIAMOND D505 (500kHz - 1500MHz)
Mobile version of D707. **£69.00** + £4.75 P&P

MALDOL MH1300 (500kHz - 1500MHz)
High gain wideband active mobile scanning ant. with pre-amp. Suitable for use with magnetic or outer mount..... **£69.95** + £4.75 P&P

YAESU

NEW FRG-100 HF RECEIVER
Call us now and be one of the first to own this brand new general coverage receiver. To the first customers we will offer a UK Mains Adaptor free of charge plus a G5RV Antenna. Order Now..... **£475.00**

ICOM

We carry a varied selection of the Icom range. However should you want something which is not in stock PAUL can get most things within 24 hours! (subject to availability). Here is just a small selection of their vast range!

IC R7100
Covers 25 - 2000MHz. Includes 900 memory channels with all mode capability. Five different scan options and an automatic record facility, what more you ask? Full brochure available. Special offer **£999**

IC R72
Covers 100kHz to 30MHz on the HF Bands and offers all mode reception (FM, with the optional board) Easy to use and idealy suited to the new comer. A full 99 memory channels with scan facility and a 10dB pre-amp fitted as standard **£589**

IC R1
Icom's most popular pocket-sized wideband scanner Frequency from 150kHz to 1300MHz with 100 programmable memories. AM, FM and WFM Modes. Sleep timer and clock facility Optional NiCads, carry cases, and fast chargers are available.

NEW LOW PRICE **£329**

IC R100
Mobile or base extra wideband scanning receiver covering 500kHz to 1.8GHz with 100 memory channels and receives AM, FM & WFM Modes..... **£475**

PHILLIPS D1875
Shortwave receiver covering all the major shortwave broadcast bands
SPECIAL PRICE **£49.95**

KENWOOD

R5000 RECEIVER
Based on the receive section of the TS440S HF Transceiver both in looks and design this model covers 100kHz to 30MHz all mode, 100 memories and facility for optional filtering. **RECOMMENDED**..... **£ CALL**

MICRO-READER

ERA Microreader
Data Communications decoder - decodes RTTY, CW, AMTOR (A) & SITOR (B). 16 character LCD display needing only connection to receiver extension speaker socket. Shortly to become available will be the large 4-line LCD display with built-in parallel printer driver port. Variable in-built morse tutor. (Call and reserve your optional display now) **£169.00**

SHORTWAVE RECEIVERS

LOWE HF-225
Receiver (30kHz - 30MHz) Optional extras inc FM/AM detector, Ni-cads, Speaker, Case & Active Ant. Long standing favourite. Quality filtering included. **£439.00**

LOWE HF-150
Receiver Economy model but with an excellent set of ' **EARS'.** LCD display. Portable or Mains Power **£329.00**

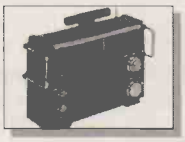
NRD-535
Japanese top of the range general coverage receiver, 0.1 - 30MHz Lots of Options available..... **£1115**

DRAKE R8E
Don't let its looks fool you – this is a top-class receiver direct from the States and a company known for its quality and reliability. 100kHz-30MHz supplied as standard (no hidden extras) with all filters and syncronas detector. Recent reviews agree – the performance of the R8E is second to none and still under £1000.00! Only **£995**

DRAKE
R8 VHF CONVERTER
In-board convertor giving: 35-55MHz and 108-174MHz..... **£195**
MS8 MATCHING EXTERNAL SPEAKER
Improves audio reproduction..... **£49.95**
COMPUTER CONTROL
Drake software now in stock (for IBM PCs and clones)..... **£59.95**
*For those of a technical nature, a full technical manual is now available **£29.95**

SANGEAN ATS803A
Full coverage shortwave receiver with AM/FM and SSB reception, with many features and good sensitivity filtering. This has become one of our most popular low cost radios. SPECIAL OFFER THIS MONTH: Free post and packing. **109.95**

STEEPLETONE MRB7
Multi-band Radio. This radio will appeal to both Aircraft Enthusiasts and the Marine Monitors. The multi-band 'jumbo' radio has almost everything you need to monitor these bands. LW, MW, & SW plus the Marine and Aircraft Bands... Good Starter! **£69.95**



TRADING POST

We buy as well as sell new & used radio equipment, please feel free to call Paul or John for instant quotes on P/Xs and Buy-ins

Marc II 'Hipster' Receiver150kHz-520MHz **£165**
Yaesu FRG7700 c/w accessories v.g.c..... **£425**
Kenwood R1000 SW Digital Receiver average cond **£245**
Icom R7100 Wideband Receiver (25-2000 MHz) vgc **£799**
Icom R71E Shortwave Receiver c/w remote option... **£650**
Sony IC2001 Portable Receiver c/w airband (rec.)... **£185**
Sangean Portable Receiver (ATS803A) good cond **£70**
Bearcat 200XLT H/H Scanner (c/w 900 MHz) ... **£145**
Yupiteru VT-125 Pocket Airband Scanner **£99**
Sony Air 7 H/H VHF Receiver, boxed, as new **£175**
Yupiteru VT-225 VHF/UHF Dual Airband RX..... **£185**
Sony ICF7600 Small Portable Receiver, boxed, as new **£99**
Sony Air 6 similar spec to Air 7 ..... **£165**
Realistic PRO2006 Hyper Scan Base (no box)..... **£210**
Icom ICR1 the smallest pocket scanner..... **£299**
Telereader CD660 RTTY/CW Decoder Unit..... **£185**
Abis Scanner Pre-Amp (identical to JIM M-75)..... **£35**
Sony AN1 Active Base Antenna, boxed as new **£35**
Bearcat 800XLT Base Scanner (with 900 MHz) ... **£125**

THIS MONTH'S SPECIAL P/X DEAL
Get the very latest in handheld scanning receivers – the AR1500, by part exchanging any of the following:-
Fairmate HP100, HP200 & HP2000,
AOR 1000, 2000, 850 & 900s
Yupiteru MVT5000, 6000 & VT125s
Bearcat 200XLT, 100XLT, 100XL 50/55XLTs & 70XLTs

Call us now – even if we haven't listed your radio, for what we know to be unbeatable P/X deals.

BOOKS...

UK Scanning Directory
Everything you wanted to know but were afraid to ask **£14.95**
Shortwave Confidential Frequency List. 0-30MHz **£8.95**
VHF/UHF Frequency Guide A real must for serious users ... **£5.95**
Marine Frequency Guide Near the coast? Ideal book **£4.95**
VHF/UHF Airband Guide At last, now back in print..... **£6.95**
Scanners 2 by Peter Rouse,Bath books full of good info..... **£8.95**
Scanners 3rd Edition **£10.95**
Short Wave Communications. **£8.95**
Air Traffic Radio 1991 (updated for '92)..... **£3.95**
Sounds Easy Guide to Britain's Radio Stations..... **£2.95**
Flight Routings Guide Book (1992 version) **£4.95**

Directory of Military Aviation Communications.

SAVE £8

Space Shuttle operations, War games, in-flight refuellings, interception of Soviet **BEAR** Recon-Bombers,Military Airshows, secret coded transmissions, these are only a taste of what's in store in this publication. Frequency, Locations & some maps for Europe & North Africa are included for reference ..... was £17.95 – **now £9.95**

Maritime Distress, Urgen

Whatever your listening capabilities, marine monitoring is interesting and - sometimes - exciting, as J.L.Griffiths explains in this article.

Maritime Distress, Urgency and Safety messages - DUS - are handled in a wide variety of ways - each well within the reception capabilities of an average short wave listener. For those with higher specification equipment and the ability to demodulate modes then the full spectrum of DUS messages is open.

Behind the messages is an organisation known as UKSARO - United Kingdom Search and Rescue Organisation - which is the body responsible for the swift execution of all incidents around the coast and inland. Britain is required by international convention, SOLAS - Safety Of Life At Sea - to provide an adequate level of SAR cover. It is well known that the UK has arguably the best SAR facillities in the world. UKSARO consists of Her Majesty's Coastguard, the RNLI, RAF SAR units, RN SAR units, British Telecom Coast Radio Stations, Air Traffic Control Centres as well as the Ministry of Agriculture Fisheries and Food and Lloyds of London. The latter two concentrate on fishing vessels and the despatch of salvage tugs, though are involved, nonetheless. The entire organisation uses radio links at m.f./h.f. & v.h.f. levels as well as satcomms via dedicated terminals afloat and ashore, Telex links, EPIRBs and SARBEs.

In this article we will look at what's available and on what frequencies as well as giving a brief overlay of how the system works. It is better to begin with the most common sort of marine casualty - a ship. For the purposes of this article we'll make the ship an average merchantman trading around the UK coast and Europe, fitted with the most available forms of radio equipment. Statute requires that 'our' ship observes all silence periods - SPs - as a part of the Merchant Shipping (Radio) Regulations on 500kHz and 2.182MHz, both of which are the principal marine distress frequencies. Silence is just that, with every ship ceasing to call on those frequencies at set times UTC in order to allow distress messages a better chance to be heard and acted upon.

Congested

If you're lucky enough to be able to hear 2.182MHz, you will know what sort of traffic goes on there and how congested it can get! SPs run as follows: W/T on 500kHz 15-18 minutes and 45-48 minutes past each hour UTC. R/T on 2.182MHz 00-03 minutes and 30-33 minutes past each hour UTC. During these periods a watch **must** be maintained on all ships covered by the Radio Regulations and owners of small vessels are also asked to keep a watch and, if necessary, to log details. On 'our' ship it is a requirement that any DUS messages are logged, with details such as position and nature of distress noted down. The ship's master must be informed if there is any reaaonable chance his vessel can attend the incident.

'Our' ship is fitted with a main TX/RX covering all m.f. and h.f. bands, two v.h.f. receiver-transmitters and two multi-channel hand-helds. She has a telex terminal aboard, too. By law she must carry a portable lifeboat radio, which is for emergency use only. She also carries an EPIRB Emergency Position Indicating Radio Beacon - and one SARBE - Search and Rescue BEacon - though these are 'extra' to her minimum complement. Also, a watchkeeping receiver - whose sole purpose is to be 'tripped' by the two-tone distress call on R/T. The two-tone DUS signal on R/T consists of two tones at 2.200kHz and 1.300kHz of 250µs duration each, seperated by less than 50ms over 30 seconds. After two minutes, the DUS in plain speech will follow and give a standard format message. For W/T, though it is not as common at sea nowadays, the alarm signal is 12 four second dashes, separated by one second spaces, SOS in Morse three times, the word DE (This Is), the call sign three times and two 10-15 second dashes which allow for a DF fix to be obtained. Both these methods are auto-keyed, and will trip other ship stations' radios accordingly.

Emergency Drill

We'll assume the weather is bad and that our ship is in trouble. The ship's Master decides it is time to abandon and the crew follow their emergency drills. While the Master transmits his Distress on 2.182MHz, the crew take the lifeboat radio to the rafts - which have been inflated - and are preparing to board. The SARBE is taken aboard, too, as 'insurance'. When the abandonment has taken place, and the 'Mayday' sent, the first thing to happen while the crew rig the lifeboat antenna and set up the radio is that the EPIRB, which is fastened to the ship, is started. The EPIRB is operated by hydrostatic release, and begins to transmit on 406MHz and 121.5MHz simultaneously. Two 'dedicated' satellites - SARSAT or its Soviet equivallent, COSPAS - would receive the 406MHz signal and detect the location whilst passing the information on to the Local User Ground Terminal. A Mission Control Centre would then alert the Marine Rescue Control Centre, run by HM Coastguard and part of UKSARO. If the SARBE has also been activated, then it will transmit on 121.5MHz and 243MHz - 121.5MHz being Aero Distress as is 243MHz. This will enable Air Traffic Control Centres and aircraft near to the scene to pick the beacon up. Once again, UKSARO is instigated and messages begin to get transmitted as the information comes in regarding the distress. With the satellites, the United Kingdom has access via Falmouth MRCC. Also, the UK Coast Earth Station at Goonhilly, which reports all civil, marine, aeronautical and military distress calls in the satellite portion of the North Atlantic. Alerts are received via Lasham and then sent on to the Mission Control Centre which is located at Regional Control Centre, Plymouth. It can be seen by now that the location is determined, that beacons are 'squawking' and something is being done - and this after a 'Mayday' on 2.182MHz, but before the liferaft's radio is used! NAVTEX is also used for IDAs, Initial Distress Alerts. Controlled by Portishead Radio, this will broadcast the IDA via Cullercoats, Niton and Portpatrick to all ships on 518kHz.

The Coast Radio Stations also broadcast the 'Mayday' as a 'Mayday Relay' and will continue to do so until told

APPENDIX ONE

Distress Frequencies Under UKSARO.
Maritime.
500kHz CW
2.182MHz R/T
156.8MHz v.h.f. Channel 16.
Maritime SAR & Intership.
8.364MHz
156.0MHz v.h.f. Channel ZERO
156.3MHz v.h.f.Channel 6
156.5MHz v.h.f.Channel 10
156.375MHz v.h.f.Channel 67
156.675MHz v.h.f. Channel 73.
Aero Distress, EPIRBs & SAREEs.
121.5MHz
243MHz

Aero SAR.
3.023MHz
5.680kMHz
123.1MHz
Land Rescue - RAF Helicopters & Mountain Rescue Teams.
3125kHz
84.3MHz
86.3MHz
252.8MHz.
Government Frequencies - RAF, RN & HMCG.
3.085MHz
4.340kHz
5.695MHz
121.6MHz
282.8MHz

ıcy and Safety Messages

otherwise, when a cancellation message will be broadcast. The message will be preceeded by the alarm signal, thus notifying all ships in the area of the nature of the ship casualty. The distress is also 'onpassed' to all Coastguard Control Centres, to Marine Rescue Co-ordination Centres, Maritime Rescue Subcentres. In shore - v.h.f. - messages will be broadcast on channel 16 v.h.f. So, at this stage, we can see that 'our' ship is being heard! In the liferaft, the emergency radio is set up and used to further give survival a fighting chance. It is a three frequency set, two-way and is operated on 500kHz, 2.182kHz and 8.364kHz. It has an auto-transmit SOS and DF facility on 500kHz and 8.364kHz and a two-tone trigger on 2.182MHz. It is ruggedly built and fully transistorised. It will float, has a 25m line attached, and can withstand a drop from 20 metres! It comes with three forms of antenna - a fully collapsible, sectioned vertical whip, a wire and a triatic wire. It also has an earth, which is a sinker attached to a wire and slung over the side. Instructions are printed on the case and it is easy to use. Recommendations for ensuring good coverage ask that you transmit and listen on each of the three frequencies for between 3 to 5 minutes, alternating between each in order to maximise your chances of being picked up.

By now the situation has been determined ashore and the rescue operation is underway. Lifeboats of the RNLI are launched and an RAF Helicopter at the nearest base is put on stand-by. Other ships are informed and a full scale SAR operation is underway. Should any aircraft come on the scene, then two-way communicationa between it and ships would take place on 4125kHz - but only with the authority, on demand, of HMCG. Within an hour the rescue operation has been completed, all survivers are safe - and every available means of transmitting the distress has taken place using normal R/T frequencies, satellites and NAVTEX and co-ordinating the efforts of everyone under their umbrella of UKSARO. Quite a feat - and comfort to those who use the sea for business and pleasure.

Recall List

D	DISTRESS	Preceeded by word 'MAYDAY'.	Three times.
U	URGENCY	Preceeded by word 'PAN PAN'.	Three times.
S	Safety	Preceeded by word 'SECURITE'.	Three times.

m.f. is from 1.6MHz to 4MHz.
v.h.f. is From 156.0 to 174.0 MHz.

Standard Emergency Card

MAYDAY! MAYDAY! MAYDAY! This is....(ship's name)....Three times. My position is....(in latitude and longitude or by bearing from land). I require....(nature of distress). I have....x....number of crew or crew/passengers aboard. I will....Intentions.

Also used is the Urgency message 'PAN MEDICO'....which denotes urgent medical attention is required.

Confusing

If you are new to the hobby, or looking for a place to start, then all the ads within this pages of this magazine may be confusing! When I began some years ago I was fortunate in having a friend who knew the business and who pointed me in the right direction - a bulky AR88 valved receiver and a long wire for £10! Once I had 'mastered' that, I moved on to a sophisticated Yaesu FRG7700 and branched out into Code Masters, a v.d.u., active antennas, a base scanner and a small watchkeeper portable, permanently on v.h.f. Channel 16! Marriage came along and I had to sell the lot - and have only just got back 'into' it all with a Sony ICF PR0-80 plus a stand-by Pathfinder multi-band that I swopped a Selena *Vega* for! I'm now able to monitor 2.182MHz as well as Ch 16 v.h.f. If this is your first time, or you want to know where to begin and for how much then I'd ask you to heed the following. Scanners are great, **but**! That but is simple: If you know where to look you can plan the radio to fit your budget. If, for example, you **only** want marine v.h.f. then it is a waste of money buying a £300 scanner operating 25 - 1300MHz when £90 will get you a Tandy *Patrolman*! For about £170 brand new you can get a h.f. receiver that will cover 2.182MHz and all the SAR allocations in h.f. **plus** a multi-band radio which will cover the entire marine v.h.f. range. Secondhand, obviously cheaper! They will be very basic sets, but the h.f. receiver has got a tunable b.f.o. on it so reception of s.s.b. signals is easy to obtain. If you haven't got a b.f.o. then you will not resolve s.s.b. Worth remembering! The v.h.f. set is tuned by s rotary knob, so accuracy depends-on nimble fingers and patience! A scanner, of course, can be set accurately on a specific frequency but in costing I'd be inclined to go for cheap and cheerful - witness my own v.h.f. 'stand-by' set above.

You also do not get the long technical problems associated with antennas with both these sets. They have in-built telescopic whips so are OK on most of their coverage. In time, when you decide you are interested, a more dedicated s.w. receiver can be coupled to a decent external antenna. I use a Datong AD370 on my Sony and it's better than the supplied whip, though not always....

For v.h.f., the telescopic will do though you can - with scanners - buy a discone for under £30 which will do a better job. Key to good reception is The Higher The Better ! Height - not price! In rounding off, I'd say go for the basics first! If you decide that you do wish to continue then, obviously, go for higher spec gear. If you want to resolve Morse code, RTTY (Telex) and NAVTEX then you will need a fair receiver and something like the Microreader plus a good antenna. Decode programs are also available via your home computer and for far less than a stand-alone unit. In a very confusing market place it pays to shop around and to heed good advice. I trust that I've given you some here.

Hooked

For the radio listener the reception of such messages is a fascinating adjunct to the hobby. The unseen, but plainly heard, drama being played out catches you up and you will be hooked - make no mistake about it! One further, very important point. If you hear a distress message and feel 100% certain that no-one else has, then telephone your local Coastguard! Get the details as in the *Standard Emergency Card* - or as many as you can - and do pass them on. Someone, somewhere may need help - and who knows - you could save a life! ■

Abbreviations

DUS	Distress, Safety, Urgency
EPIRB	Emergency Position Indicating Radio Beacon
h.f.	high frequency
IDA	Initial Distress Alerts (NAVTEX)
kHz	kilohertz
m.f.	medium frequency
MHz	megahertz
MRCC	Maritime Rescue Co-ordinating Centres
MRSC	Maritime Rescue Sub-Centre
ms	millisecond
R/T	Radio Telephony (Speech)
RTTY	Radio TeleTYpe
RX	receiver
SAR	Search And Rescue
SARBE	Search and Rescue BEacon
SOLAS	Safety Of Life At Sea
TX	transmitter
UKSARO	United Kingdom Search and Rescue Organisation
UTC	Universal Co-ordinated Time (=GMT)
v.h.f.	very high frequency
W/T	Wireless Telegraphy (Morse)
µs	microsecond

S.R.P. TRADING

SANGEAN ATS 803A

(Direct key-in world receiver with quartz alarm clock timer)

unable BFO SSB/CW.

Specifications and features

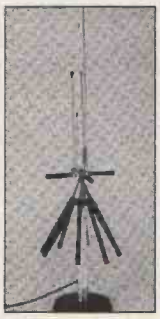
★ 150-29.999 continuous tuning with no gaps. Phase locked loop-double conversion Superheterodyne ★ Full shortwave/AM/SSB 150-29999kHz no gaps! + FM87.5-108 mono/stereo ★ Five tuning functions: Direct press button frequency input auto scanning, manual scanning memory recall and manual tuning knob

★ Built-in clock and alarm. Radio turns on automatically at preset time and frequency. ★ Large digital frequency display. ★ Fourteen memories – nine memory channels for your favourite station frequencies. Last setting of mode and waveband stored in five memories. ★ Direct press-button access to all 12 shortwave broadcast bands. ★ Two power sources – battery or AC mains adaptor. ★ General coverage of all AM bands in LW/MW/SW (dedicated broadcast band coverage on all versions), plus of course the FM band for quality sound broadcasts in headphone stereo. ★ SLEEP function turns the radio on or off after an adjustable time of 10-90 minutes. ★ Separate BASS and TREBLE controls for maximum listening pleasure. ★ External antenna jack for better reception. ★ Adjustable RF GAIN control to prevent overloading when listening close to other strong stations or if there is interference. ★ New improved wide/narrow filter (6/2.7kHz) ★ BFO control (Beat Frequency Oscillator) enables reception of SSB/USB/LSWB (single side band) and CW (Morse Code) transmissions. ★ Illuminated display to facilitate night-time use. ★ Designed for both portable and desk top use. ★ Five dot LED signal strength indicator.
DIMENSIONS: 29.2cmx16.0cm (11.5inx6.3inx2.36in).
OUTPUT: 1200mW (10%THD) WEIGHT: 1.7kg (3.75lbs) without batteries. Wide/narrow filter switch.

£109.95 + £5 check, test and p&p.

SKY SCAN

Desk Top Antenna Model Desk 1300

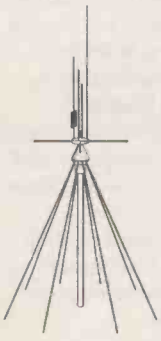


Built and designed for use with scanners. Coverge: 25 to 1300MHz. Total height – 36ins – 9ins at widest point. Comes complete with 4 metres of RG58 coax cable and BNC connector fitted.. Ideal indoor – high performance antenna and can also be used as a car antenna when your car is static. REMEMBER YOUR SCANNER IS ONLY AS GOOD AS YOUR ANTENNA SYSTEM!

£49.00 + £3.00 p&p

SKY SCAN

V1300 Antenna



Most discones only have horizontal elements and this is the reason that they are not ideal for use with a scanner. Most of the transmissions that you are likely to receive on your scanner are transmitted from vertically mounted antennas. The Sky Scan V1300 discone has both vertical and horizontal elements for maximum reception. The V1300 is constructed from best quality stainless steel and aluminium and comes complete with mounting pole. Designed and built for use with scanners.

£49.95 + £3.00 p&p

SKY SCAN

Magmount MKII

For improved performance, wide band reception, 25 to 1300MHz. Comes complete with protective rubber base, 4m RG.58 coax cable and BNC connector. Built and designed for use with scanners.

£24.95 + £3.00 p&p

SANGEAN

Portable SW Antenna

ANT 60

NEW

- Greatly improve reception power of portable shortwave receiver
- Easy hookup to snap onto telescoping rod antenna or plug into radio's external AM antenna jack extends to 7 metres (23 feet).
- Portable for indoors and outdoors.
- Suitable for all kinds of shortwave radios.

£14.99 FREE POST AND PACKING WITH THIS ISSUE ONLY

YUPITERU

MVT 7000 HANDHELD

PROBABLY THE UK'S MOST POPULAR HANDHELD SCANNER!

★ Receives 8 to 1300 MHz 100kHz-1300MHz (at reduced sensitivity)
★ 200 Memory channels
★ Rotary or keypad freq. control
★ AM/FM/NFM
★ Large display with signal strength ..mete

EACH SET IS SUPPLIED COMPLETE WITH:- Full set of high power NiCads, AC charger, DC power lead and corry strap.

February Special Offer .....**£PHONE**

MVT 8000 MOBILE/BASE

This new model is the mobile version of the popular MVT 7000 Handheld abave.

★ Receives 8 to 1300MHz, 100kHz to 1300MHz (at reduced sensitivity)

THIS RADIO IS ESPECIALLY SENSITIVE AT UHF FREQS. Set is supplied with mains power unit.

February Special Offer .....**£PHONE**

MVT 6000 MOBILE/BASE

An economy version of the new MVT 8000 above -housed in the same case.

★ Receives 25-550MHz, 800-1300MHz
★ 100 Memory channels

February Special Offer .....**£PHONE**

AIRBAND RADIOS

This month we are pleased to introduce **THE WORLDS FIRST DEDICATED CIVIL/MILITARY AIRBAND RECEIVER, THE VT225.**

A powerful pocket scanner that leaves the competition standing. - A super sensitive set designed for optimum performance on the Civil/MilitaryAirbands.

★ Receives 108-142 MHz Civil Airband 222-391MHz Military Airband 149.5-160MHz Marine Band
★ 100 Memory channels
★ AM/FM on VHF
★ Priority channel function

EACH SET IS SUPPLIED COMPLETE WITH:- NiCads, earphone, carrying strap and mains charger

February Special Offer .....**£PHONE**

VT-125 UK CIVIL AIRBAND RECEIVER

Using the same technology as the VT-225, this set covers the full Civil Airband - hearing distant signals that are inaudible on some other scanners.

★ Covers 108-142MHz
★ 30 Direct entry memories
★ Search steps 25, 50, 100kHz SUPPLIED COMPLETE WITH NICADS AND UK

February Special Offer .....**£PHONE**

FAIRMATE

HP2000

STILL ONE OF THE MOST POPULAR HANDHELD SCANNERS ON THE MARKET.

Over the last year the HP2000 has outsold almost all other models.

★ Continuous coverage from 500kHz to 1300MHz
★ 1000 channels of memory
★ Keypad or rotary control
★ AM, FM and WIDE FM modes
★ Search steps from 5 to 995kHz

EVERY SET COMES COMPLETE WITH:-

Full set of high power NiCads, 2 antennas, carrying case, earphone, DC cable, belt clip and strap, UK charger

February Special Offer .....**£PHONE**

MS1000 BASE/MOBILE SCANNER

MOBILE VERSION OF THE HP2000 HANDHELD BUT WITH SEVERAL ADDITIONS:-

★ Switchable audio squelch
★ Tape recorder output socket
★ Automatic - signal operated tape recorder switching
★ All metal case for improved EMC compatibility
★ Receives:- 500kHz - 600MHz, 805 - 1300MHz. Supplied with mains power supply

February Special Offer .....**£PHONE**

AOR SCANNERS

AR1500 HANDHELD

Covers 500kHz to 1300MHz receiving NFM, WFM, AM, and SSB. Supplied with a large selection of accessories including:-

★ Charger
★ Dry cell battery case
★ 5 mtr LW antenna
★ Ear piece
★ Soft case

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Long Range Maritime CW Services

One of the subjects that receives little attention these days is that of the Long Range Maritime CW (Morse) Service. There are still many stations working ships throughout the world and there are great opportunities to listen to them before they disappear, as Graham Biggs G0DSF explains in this article.

With the advent of new legislation, ship-owners are no longer forced to carry Radio Officers and this, coupled with the ease of satellite communcations, must mean that the days of the h.f. c.w. stations are numbered. These days you don't even need to be able to read Morse, just plug in one of the well-advertised black boxes and off you go.

The Maritime Services have frequency segments allocated in the 4, 6, 8, 12, 16, 22 and 24MHz bands. These are divided up into Ship Calling, Ship Working and Coast Station c.w., RTTY (Radiotelex) and Radiotelephone Frequencies. The ships now have designated frequency channels to call stations on and once contact has been established they will then use their working frequencies. Both RTTY and RT modes use frequency pairs with the coast stations on one and the ships on the other.

To show just how many stations there are, **Table 1** is a list of those that I have logged during the past few weeks. I have included some which may not strictly be maritime and have listed stations from the former Soviet Union under USSR. I use an Icom IC-R72 with the 250Hz c.w. filter because the c.w. stations can be very close together. You can receive c.w. using an s.s.b. receiver, although in this case some form of a.f. filtering would be an advantage to be able to get rid of interfering signals. (The frequency of the station would also be slightly different to that shown).

Portishead Radio

A good starting place for monitoring such stations is Portishead Radio. This is the

Table 1. (Continued on the following pages).

Frequency (MHz)	Call	Mode	Station	Country	Notes
4.24100	LGW	CW	Rogoland	Norway	Also LGB/LGJ/
4.27390	GKB	CW	Portishead	UK	LGX/LFX/LGG
4.28600	GKA	CW	Portishead	UK	Listening frequency
4.28600	VHP	CW	Sydney	Australia	LST/EVRY/HR only heard if GKA QRT
4.30280	OXZ	CW	Lyngby	Denmark	
4.32010	IAR	CW	Rome	Italy	
8.44000	UAT	CW	Moscow	USSR	
8.44780	A9M	CW	Bahrain	Bahrain	
8.45310	HWN	CW	Unknown	France	
8.46600	UJY	CW	Unknown	USSR	
8.47100	NMN	CW	Portsmouth	USA	Coastguard Station
8.47350	A7D	CW	Doha	Qatar	
8.47545	FUX	CW	Unknown	France	
8.47600	9VG	CW	Singapore	Singapore	
8.47800	OST	CW	Ostend	Belgium	
8.48190	SPH	CW	Gdynia	Poland	
8.48360	DAN	CW	Norddeich	Germany	
8.48530	4XO	CW	Haifa	Israel	
8.48980	AQP	CW	Karachi Naval	Pakistan	
8.49800	SAG	CW	Gothenberg	Sweden	
8.50180	XSG	CW	Shanghai	China	
8.50600	UDH	CW	Riga	USSR	
8.51600	GKC	CW	Portishead	UK	Working Frequency
8.52000	PPO	CW	Olinda	Brazil	
8.52350	CTV	CW	Monsanto	Portugal	Also callsign CTW
8.54590	GKA	CW	Portishead	UK	
8.55150	CTP	CW	Unknown	Portugal	
8.56790	FUV	CW	Unknown	France	
8.57990	URL	CW	Sebastopol	USSR	
8.60000	XSV	CW	Tianjing	China	
8.61000	UXN5	CW	Arkhangelsk	USSR	
8.62190	PCH41	CW	Scheveningen	Holland	
8.62360	5BA	CW	Cyprus	Cyprus	
8.62370	XSQ	CW	Guangzhou	China	
8.63000	WCC	CW	Chatjham	USA	
8.63840	DAM	CW	Norddeich	Germany	
8.65190	OST	CW	Ostend	Belgium	
8.65360	JCS	CW	Choshi	Japan	
8.66100	XSQ	CW	Guangzhou	China	
8.67000	IAR	CW	Rome	Italy	
8.67890	IQX	CW	Trieste	Italy	
8.68110	SV14	CW	Athens	Greece	
8.68200	EAD	CW	Aranjuez	Spain	
8.69230	SVD4	CW	Athens	Greece	
8.69390	VXO	CW	Unknown	Canada	
8.69700	CFH	CW	Unknown	Canada	
8.69800	7TF	CW	Skikda	Algeria	
8.70000	YUR	CW	Rijeka	Yugoslavia	
8.70390	SVB4	CW	Athens	Greece	
12.59644	UAH	CW	Tallin	USSR	
12.60360	SVS	CW	Athens	Greece	
12.60736	WNU	CW	Slidell	USA	
12.63738	UMV	CW	Murmansk	USSR	
12.66200	7TF	CW	Skikda	Algeria	
12.67788	9MG	CW	Pinang	Malaysia	

largest of the UK Maritime Radio Stations and is exclusively h.f., although it now has the capability of remotely controlling all the southern short range m.f. stations. The station isn't actually at Portishead, which is near Bristol, but is situated between Burnham-on-Sea and Bridgewater in Somerset. The receivers and receiving antenna systems are located at Somerton and the transmitters at sites such as Leafield or Dungar. These transmitters have a power capability of between 5 and 15kW, so there should be no problems in hearing them. One of Portishead's broadcast frequencies is 8.5459MHz for weather forecasts, navigational warnings, CQ (all ships) messages and 'Traffic' lists. 'Traffic' is a general term for Telegrams, Radiotelphone calls, etc., and a 'Traffic' list is a list of ships callsigns for which that station has 'Traffic'. By monitoring this station on the hour you will get an idea of the broadcasts made, with *North Atlantic Weather Bulletins* at 0930 and 2130UTC as well as *Navigational Warnings* at 1330UTC.

Portishead Radio also sends an *OTF (Optimum Traffic Frequency) Guide* to assist radio officers in using the nearest band to the Maximum Useable Frequency. These are usually sent on Sundays after the 0800 and 2000UTC lists. An example of this guide is shown in **Table 2.**

Every maritime country has its own radio stations for the use of the Merchant Service, such as Germany with Norddeich (DAN) under the control of its country's Ministry of Posts and Telecomms, to Hong Kong (VPS), a Cable & Wireless station. In the USA the stations are run by large companies, such as ITT and RCA.

Callsigns

Coast station callsigns are usually a group of three letters or letters and numbers. In order to distinguish between frequencies of the same station on the same band either the last letter of the station callsign would change, such as GKA, GKB, GKC etc.,

Frequency (MHz)	Call	Mode	Station	Country	Notes
12.68693	OFG	CW	Helsinki	Finland	
12.68839	UQK	CW	Riga	USSR	
12.68940	PPJ	CW	Juncao	Brazil	
12.69107	FUX	CW	Unknown	France	
12.69762	ZSC	CW	Cape Town	South Africa	
12.69910	HPP	CW	Pan. Intelmar	Panama	
12.70000	XSQ	CW	Guangzhou	China	
12.70900	A9M	CW	Bahrain	Bahrain	
12.71206	HLW	CW	Seoul	Korea	
12.71843	NMN	CW	Portsmouth	USA	Coastguard Station
12.72000	SVI	CW	Athens	Greece	
12.72740	LGB	CW	Roagaland	Norway	Also LGW/LGJ/LGX/LFX/LFG
12.73640	TAH	CW	Istanbul	Turkey	
12.74084	HWN	CW	Unknown	France	
12.74790	IRM	CW	Rome	Italy	Radiomedical Station
12.76350	DAM	CW	Norddeich	Germany	
12.78000	D3E	CW	Luanda	Angola	
12.78044	YUR	CW	Rijeka	Yugoslavia	
12.78141	OST	CW	Ostend	Belgium	
12.78792	JFA	CW	Chuo	Japan	
12.79942	PCH51	CW	Scheveningen	Holland	
12.80090	TAH	CW	Istanbul	Turkey	
12.82349	CTP	CW	Unknown	Portugal	
12.82670	JCS	CW	Choshi	Japan	
12.83290	SVA	CW	Athens	Greece	
12.83540	GKB	CW	Portishead	UK	Listening Station
12.83540	URL	CW	Sebastopol	USSR	
12.84700	WCC	CW	Chatham	USA	
12.84900	ZSJ	CW	Cape Naval	South Africa	
12.85343	PCH52	CW	Scheveningen	Holland	
12.85620	XSG	CW	Shanghai	China	
12.85700	6WW	CW	Unknown	Senegal	
12.85910	SVD	CW	Athens	Greece	
12.86102	4XO	CW	Haifa	Israel	
12.86390	XSW	CW	Kaohsiung	Taiwan	
12.87397	VCS	CW	Halifax	Canada	
12.87943	WSC	CW	Tuckerton	USA	
12.88047	SAG	CW	Gothenberg	Sweden	
12.88780	EAD	CW	Aranjuez	Spain	
12.90740	VHP	CW	Unknown	Australia	
12.91255	FFL	CW	St. Lys	France	
12.91652	OXZ	CW	Lyngby	Denmark	
12.92540	URD	CW	Lenningrad	USSR	
12.93998	LZW	CW	Varna	Bulgaria	
12.95260	VIS	CW	Sydney	Australia	
12.95842	PPO	CW	Olinda	Brazil	
12.96300	HAR	CW	Unknown	Bulgaria	
12.97803	ICB	CW	Genoa	Italy	
12.97940	PPL	CW	Belem	Brazil	
12.99384	VIP	CW	Perth	Australia	
12.99740	UDE	CW	Odessa	USSR	Also callsign UFB
12.99963	CTV	CW	Monsanto	Portugal	
13.01090	AQP	CW	Karachi Naval	Pakistan	
13.01970	GKC	CW	Portishead	UK	Working Frequency
13.02882	SVB	CW	Athens	Greece	
13.03810	KLC	CW	Galveston	USA	
13.04240	FUV	CW	Unknown	France	
13.07000	UDH	CW	RIGA	USSR	
16.90502	FUV	CW	Unknown	France	
16.91193	SUH	CW	Alexandria	Egypt	
16.91640	WSC	CW	Tuckerton	USA	
16.91800	PPJ	CW	Juncao	Brazil	
16.91882	VIS	CW	Sydney	Australia	
16.92281	OFJ	CW	Helsinki	Finland	
16.93198	7TF	CW	Skikda	Algeria	
16.93311	WCC	CW	Chatham	USA	WX FCST 1700UTC
16.94250	YUR	CW	Rijeka	Yugoslavia	
16.94844	VCS	CW	Halifax	Canada	
16.95150	6WW	CW	Unknown	Senegal	
16.96149	FUF	CW	Unknown	France	
16.96600	SVB	CW	Athens	Greece	
16.97420	SPE	CW	Szczecin	Poland	
16.97600	NMN	CW	Portsmouth	USA	Coastguard Station

Frequency (MHz)	Call	Mode	Station	Country	Notes
16.98036	DAM	CW	Norddeich	Germany	
16.98590	CTP	CW	Unknown	Portugal	
16.99750	WLO	CW	Mobile	USA	
17.00700	PCH	CW	Scheveningen	Holland	
17.01382	5BA	CW	Cyprus	Cyprus	
17.01720	OST	CW	Ostend	Belgium	
17.02687	FFL	CW	St. Lys	France	
17.03789	WNU	CW	Slidell	USA	
17.04516	HKC	CW	Buenaventura	Columbia	
17.04560	LPD	CW	Gen. Pacheco	Argentina	
17.04795	DAF	CW	Norddeich	Germany	
17.05000	4XZ	CW	Haifa Naval	Israel	
17.06000	4XO	CW	Haifa	Israel	
17.06471	EAD	CW	Aranjuez	Spain	
17.06831	OXZ	CW	Lyngby	Denmark	
17.07440	LGB	CW	Rogaland	Norway	
17.07938	SAG	CW	Gothenberg	Sweden	
17.08400	IQX	CW	Trieste	Itlay	
17.09090	XSQ	CW	Guangzho	China	
17.09300	JOR	CW	Nagasaki	Japan	
17.09350	AQP	CW	Karachi Naval	Pakistan	
17.09470	SVA	CW	Athens	Greece	
17.09850	GKA	CW	Portishead	UK	Broadcast Frequency
17.10306	XSG	CW	Rome	Italy	Radiomedical Station
17.11300	GKB	CW	Portishead	UK	Listening Frequency
17.13120	UJQ2	CW	Kiev	USSR	
17.14100	UFN	CW	Novorossiysk	USSR	
17.14360	DAN	CW	Norddeuch	Germany	
17.14510	LZW	CW	Varna	Bulgaria	
17.14638	NRV	CW	Guam	USA	Mariana Is/Pacific
17.14665	4XO	CW	Haifia	Israel	
17.14700	URL	CW	Sebastopol	USSR	
17.16190	PPO	CW	Olinda	Brazil	
17.17040	ZLW	CW	Wellington	New Zeland	
17.17240	WLO	CW	Mobile	USA	
17.17500	A9M	CW	Bahrain	Bahrain	
17.17517	VAI	CW	Vancouver	Canada	
17.17690	URL	CW	Sebastopol	USSR	
17.17770	DAL	CW	Norddeich	Germany	
17.18000	HWN	CW	Unknown	France	
17.18212	ICB	CW	Genova	Italy	
17.18290	DHS	CW	Unknown	Germany	
17.18475	KES	CW	San Francisco	USA	
17.18710	OST	CW	Ostend	Belgium	
17.18800	SVD6	CW	Athens	Greece	
17.18960	D3E	CW	Luanda	Angola	
17.19200	VPS	CW	Hong Kong	Hong Kong	
17.91944	PPR	CW	Rio	Brazil	
17.19840	HZG	CW	Dammam	Saudi Arabia	
17.19880	PCH60	CW	Scheveningen	Holland	
17.20380	OXZ	CW	Lyngby	Denmark	
17.20600	IAR	CW	Rome	Italy	
17.21380	SPH	CW	Gdynia	Poland	
17.23016	CWA	CW	Punta Carretas	Uraguay	
17.23295	9VG53	CW	Singapore	Singapore	
22.42550	LGB	CW	Rogaland	Norway	LGW/LGJ/LGX/LFX/LCG/LFR
22.44600	FAD	CW	Aranjuez	Spain	
22.44700	FUV	CW	Unknown	France	
22.44860	GKB	CW	Portishead	UK	Listening Frequency
22.45000	PPO	CW	Olinda	Brazil	
22.45800	WNU	CW	Slidell	USA	
22.46690	GKA	CW	Portishead	UK	Broadcast Frequency
22.47150	SVD	CW	Athens	Greece	
22.47590	DAM	CW	Norddeich	Germany	
22.48100	DHS	CW	Unknown	Germany	
22.49088	4XO	CW	Haifa	Israel	
22.49600	PPJ	CW	Juncao	Brazil	
22.50000	SV47	CW	Athens	Greece	
22.50100	UFN	CW	Novorossiysk	USSR	Also callsign UDN
22.51200	UAT	CW	Moscow	USSR	
22.51303	KFS	CW	San Francisco	USA	
22.51590	DAN	CW	Norddeich	Germany	
22.51790	WCC	CW	Chatham	USA	

or numbers would be added as a suffix to the callsign such as PCH61 and PCH60 (Scheveningen Radio). Ship stations are usually a group of four letters or letters and numbers, such as GWUS (*Galconda*), but some Cypriot ships have the group '5B' followed by four more numbers. British passenger ships and other 'high traffic' ships are given letters at the beginning of the alphabet such as GBTT (*QE2*) and GBVC (*Canberra*) so as to appear earlier in an alphabetical traffic list, whereas the lower traffic ships, such as tankers and cargo ships will be allocated callsigns which appear later in the list such as GYLB (*Ardtaraig*).

To enable readers to listen to these stations and understand what is going on I will explain how some stations operate. Maritime stations run a call tape on their transmitters when they are not being used to enable ships to tune in correctly. These tapes broadcast 'CQ DE' their callsign and sometimes where they are listening and what bands are open or a broadcast is imminent etc. Some stations operate a 'search and work' system, which is to say listen on the calling channels until they hear a ship calling, when they take control of the TX and send the ship up to its working frequency. They will exchange whatever 'traffic' (messages, etc.) they have when finished the coast station will revert to listening on the calling channels again.

Other stations like Chatham Radio (WCC) on the US Atlantic Coast, will listen after a broadcast such as their 'traffic' list or Weather Forecast. They will then answer as many ships can be heard, sending them up to their working frequencies and giving them each a QRY (Your turn is number nn). Once all the ships have been answered the station ceases listening on the calling frequencies and will then work each ship on its QRY list. There are also a few stations in the world, such as Portishead Radio, which operate a more sophisticated system. It has the broadcast frequencies on each band with the GKA callsign. These GKAs do all the broadcasts, such as 'traffic' lists, usually on the

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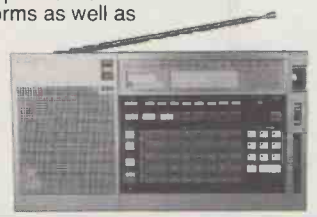

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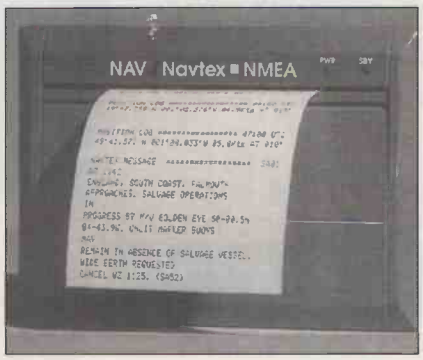

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hour. These broadcasts are carried out using a machine and are quite slow in comparison to normal working in order to be easily copied.

Then there are the listening frequencies, using the GKB callsign, inviting ships to call. The operator is listening for ships to call and when heard they will be sent up to their working frequencies, given a QRY number and asked to listen to either a GKC or GKD transmitter. GKC and GKD have call tapes running but there may be more than one operator controlling the keying so it can be difficult to understand what is happening. These operators will take messages from the ships, but if the station has any for the ship then they will be asked to listen to one of the transmitters in the range GKF to GKD. These message sending transmitters do not have call tapes running, so they can only be heard when a message is being sent. All the frequencies are published in the *Admiralty List of Radio Signals Volume 1*, although my list is based purely on personal observations.

Don't be discouraged if you cannot hear a station. Remember that some stations so not operate 24 hours and those that do don't have all the frequencies open all of the time. These stations are not nearly as busy as they used to be. Another factor is the propagational conditions. As it gets dark the ionisation layers combine and reduce in number and as a general rule the lower frequencies will go further and the the highest frequencies, such as 22MHz, can be severely attenuated. To give some examples, the USA stations are good on 16 and 22MHz during late afternoon and early evening, UK time, whereas Australia is good on 16MHz around six in the morning. By monitoring the bands at different times of the day you will get a feel for the best times and frequencies for a particular area of the world. Something else to look out for is that the Russians and others have their own Morse code to cope with their different alphabets, so do not be surprised if you come across this.

One word of warning - don't forget that the traffic carried by these stations is supposed to be confidential between the sender and recipient with the radio stations as a silent third party. All radio officers in the UK sign the *Official Secrets Act*. Any messages 'inadvertantly' received should not be passed on.

I would be grateful for any information on those stations that I have marked as unknown. ■

Frequency (MHz)	Call	Mode	Station	Country	Notes
22.52500	IRM	CW	Rome	Italy	Radiomedical station
22.52700	UDC	CW	Jdanovdonetskoi	USSR	Also callsign UBN
22.52996	URL	CW	Sebastopol	USSR	
22.53700	FUF	CW	Unknown	France	
22.53900	PCH71	CW	Scheveningen	Holland	
22.54790	TAH	CW	Istanbul	Turkey	
22.56000	URL	CW	Sebastopol	USSR	
22.56360	YUR	CW	Rijeka	Yugoslavia	
22.56499	XSW	CW	Kaohsiung	Taiwan	
22.56500	XSW	CW	Kaohsiung	Taiwan	
22.58740	LPD	CW	Gen. Pacheco	Argentina	
22.58950	SVA	CW	Athens	Greece	
22.59230	A9M	CW	Bahrain	Bahrain]	
22.59580	SVB	CW	Athens	Greece	
22.61060	CLA	CW	Havana	Cuba	
22.61940	VCS	CW	Halifax	Canada	
22.62350	URL	CW	Sebastopol	USSR	
22.63040	IAR	CW	Rome	Italy	
22.63540	URL	CW	Sebastopol	USSR	
22.65490	OST	CW	Ostend	Belgium	
22.66620	DAL	CW	Norddeich	Germany	

Table 2: An example of Portishead Radio's OTF (Optimum Traffic Frequency) charts:

HF Propagation Forecasts April 1992. Forecasts are in MHz and show the optimum working frequency every two hours in each 24 hours. Letter X indicates no predicted path available.

Time GMT =	00	02	04	06	08	10	12	14	16	18	20	22	24
Location							**Frequency**						
Aden	17	15	16	23	26	28	28	28	27	25	21	18	17
Ascension	22	21	16	17	27	30	29	29	30	30	26	24	22
Athens	13	12	12	15	18	20	21	21	21	21	17	14	13
Bahrain	14	13	13	18	20	22	23	22	22	20	16	14	14
Capetown	15	11	8	21	28	30	30	30	30	29	27	21	15
Colombo	16	15	15	19	21	26	27	27	27	24	18	17	16
Falklands	21	22	19	17	14	20	29	30	30	30	26	23	21
Hong Kong	12	0.9	12	16	18	19	20	20	20	18	14	13	12
Honolulu	12	11	10	0.9	12	15	15	15	18	16	15	14	12
Lagos	20	18	14	18	24	26	29	30	28	27	23	21	20
Laspalmas	15	15	14	15	18	20	23	23	23	23	20	17	15
Lisbon	10	0.9	0.9	10	11	14	15	15	15	15	13	11	10
Madagascar	21	16	18	24	29	30	30	30	28	27	22	24	21
New York	12	11	10	10	11	14	15	17	17	18	18	15	12
Osaka	12	10	11	13	16	17	20	17	16	14	14	11	12
Perth	16	14	18	25	27	25	22	18	17	17	14	15	16
Rio de Janerio	21	21	18	16	15	26	30	30	30	29	23	23	21
Singpore	14	11	14	20	22	24	25	25	25	21	16	15	14
Stockholm	0.7	0.7	0.7	0.9	13	14	15	14	13	13	10	0.8	0.7
Suez	17	16	17	21	24	27	27	27	27	25	21	19	17
Sydney	20	20	18	17	24	25	26	23	20	18	16	23	20
Valparaiso	19	19	17	16	16	18	30	30	30	30	27	21	19
Vancover	13	11	0.9	0.9	10	10	11	12	13	15	16	14	13
Wellington	23	22	19	14	18	19	19	29	18	16	17	23	23

=+

The + sign is **Di - Dah - Di - Dah - Dit** in Morse and means 'end of message'.

The Interpretation of a Facsimile Weather Map

There is considerable interest in facsimile weather maps and charts and in this article Philip C Mitchell explains how to decode these fascinating signals.

The considerable variety of decoding equipment and decoding computer software that is now available has enabled accurate reception of radio facsmile broadcasts, the majority of which are used for the transmission of world-wide weather information as part of the World Meteorological Organisation (WMO) communication network. Weather maps and charts are one of the end products from the Global Observation System (GOS) within the WMO.

Decoding equipment linked with a dot matrix or the superior definition laser printer is capable of producing high resolution weather maps and weather data, and providing a good, selective short wave receiver capable of receiving s.s.b. is at hand, this operation presents no great difficulty for the average short wave listener. Those DXers who also have an interest in the weather have, therefore, a vast mine of comprehensive information readily obtainable from the various facsimile radio stations concerned with the broadcast of weather maps and charts.

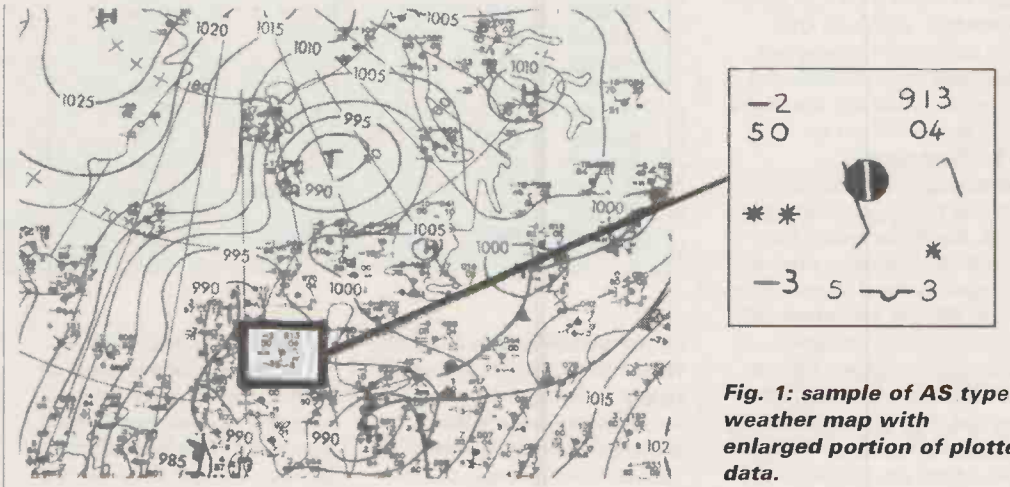


Fig. 1: sample of AS type weather map with enlarged portion of plotted data.

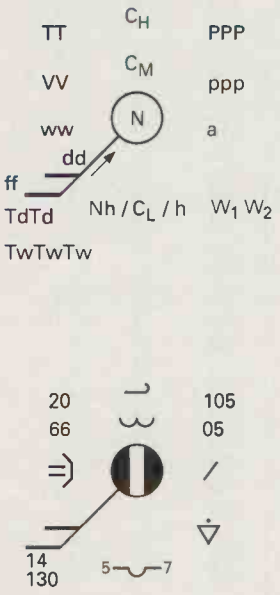
The identification of these FAX stations, their frequencies and broadcast schedules is essential and this information can be found in several appropriate reference books, amongst them the Klingenfuss *Guide to Facsimile Stations* is probably the most helpful. Another is the *Pocket Guide to RTTY and FAX Stations* by Bill Laver, both of which are obtained from the *SWM* Book Service.

Surface Analysis

A good starting point for a detailed weather map is one of the surface analysis type and coded AS which are broadcast from several stations at regular intervals. These show a current graphical picture of surface weather conditions existing at a particular area of the globe at a specific time and in this respect those maps originating from Offenbach, Germany are very detailed and informative.

Maps described as including 'plotted data' contain specific weather details which, when interpreted, give information relative to present and past weather at the many reporting points of the map.

A good example of this map is the one broadcast from Offenbach on 134.2kHz daily at 1000UTC codes ASEU (surface analysis - Europe) with plotted data, indicating conditions existing at 0600UTC. Reception of this station appears to be at best in the earlier hours of the day, as it is prone to some interference in the afternoon and evening. Being in the l.f. band below 1MHz the signal is remarkably steady and does not therefore suffer from the vagaries of propagation problems that the higher frequencies are prone to. Due to the narrow shift of



Key

CH	High Cloud Type (Coded Symbol)
CM	Medium Cloud Type (Coded Symbol)
PPP	Sea-Level pressure in hPa
a	Barometer Trace (Coded Symbol)
W1 W2	Past weather (coded symbols)
Nh	Low cloud cover in Oktas
CL	Low cloud type (coded symbol)
h	Low cloud base height (coded number)
TwTwTw	Sea surface temperature (tenths of °C)
TdTd	Dew-point temperature (°C)
ff	Wind speed in knots (one whole fleche = 10kt)
dd	Direction of wind
N	Total cloud cover in oktas (coded symbol)
ww	Present weather (coded symbol)
VV	Visibility
TT	Temperature (°C)

(For coded number key refer to Klingenfuss Air & *Meteo Code Manual*. For Coded Symbols refer to Fig. 3).

Fig. 2: Basic station model, example and key for plotting weather data.

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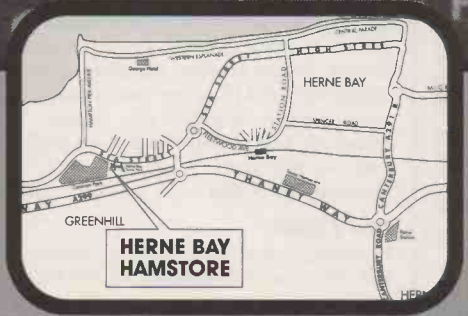

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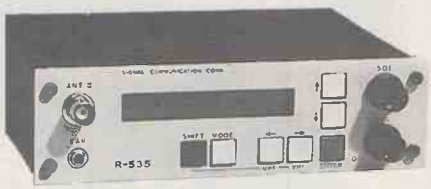

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this station, fairly accurate tuning is required to enable a good definition map to be printed.

A sample of this type of map is given in **Fig. 1**. together with an enlarged portion of individual plotted data and it can be seen that these plots cover both land and sea areas, the latter being obtained from ships at sea and manned and unmanned maritime weather stations. Some method of interpretation of this data should be adopted and it is better to work around the data in say a clockwise direction commencing with temperature (TT). Ensure that each symbol is identified accurately from **Fig. 3** and subsequently cross referenced and matched with the key as given in Klingenfuss *Air & Meteo Code Manual* or the *Weather Observers Handbook* published by HMSO. Data from the plots can also be confirmed by reference to the isobars and fronts appearing on the map, e.g. barometric pressure, speed and direction of wind. Thus an accurate assessment will emerge of the past and present weather at that particular point on the map.

Other AS (surface analysis) maps that include plotted data are broadcast from Moscow Meteo on 4.2025MHz and 12.165MHz at 1420UTC covering Northern Siberia and 1500UTC for Western Siberia. Some most interesting weather data originates from these intensely cold, permafrost regions.

Assistance in compiling this article is acknowledged with thanks to Education Services, The Met Office, Bracknell, Berks.

■

Equipment Used

ICS FAX-1 Demodulator
Lowe HF 225 Receiver
30m random wire antenna
Maplin a.t.u.
Amstrad DMP300 dot matrix printer.

Abbreviations

a.t.u.	antenna tuning unit
AS	surface analysis
ASEU	surface analysis Europe
DXer	listener who looks for 'long distance' stations
FAX	facsimile
GOS	Global Observation System
HMSO	Her Majesty's Stationery Office
kHz	kilohertz
l.f.	low frequency
m	metres
MHz	megahertz
RTTY	Radio TeleTYpe
s.s.b.	single side-band
UTC	Universal Co-ordinated Time (=GMT)
WMO	World Meteorological Organisation

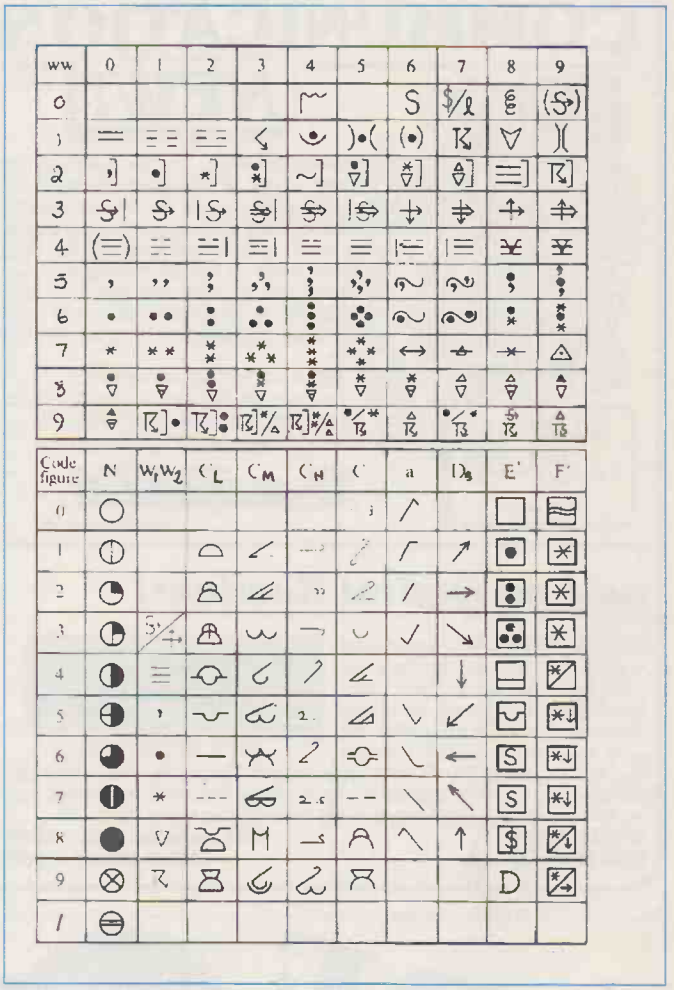

***Fig. 3: Internationally agreed symbols for plotting past (W_1W_2) and present (WW) weather data read in conjunction with Klingenfuss* Air & Meteo Code Manual.**

First Aid

I am looking for an interconnection diagram from the PTR175 to the control box. Also I want the interconnecting sockets and control box itself.
Mr Paul Allberry. Tel: (0225) 703024.

I have a Redifon GR674 Marine Band v.h.f. transceiver, which I use in receive mode only. Could anyone suggest a circuit to build a converter to use with the above to receive an s.s.b. signal of about 5.6MHz. Alternatively recommend a commercial unit.

Also, I have a PK232MBX for decode listening, is there anyone in the N. Wales area who would like to swap information?
Ralph Foyx, The Moorings, Waterloo Port, Caernarfon, Gwynedd LL55 1LP.

Having purchased the latest PRO-37 hand-held scanner from Tandy. This is an excellent buy at £230, especially being 9V making for longer use between charges, it will compete with most others on the market.

Unfortunately, friends and I are having problems with bleep over unwanted pips and the loss of very good airband channels. The frequencies from 154-156 are interfering with 132-133 channel and 154 to 155 channels are coming across distorted. This does not happen on our 2006 Realistic home base. Are other readers experiencing this?

Letters to the Editorial Office for this one and we'll forward them.

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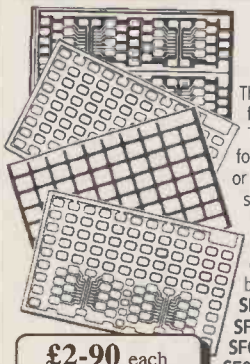

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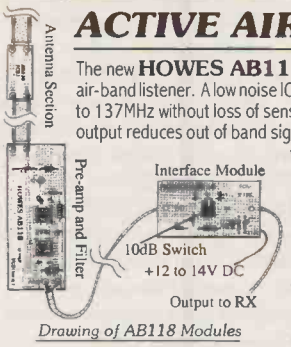
ACTIVE AIR-BAND ANTENNA



Drawing of AB118 Modules

The new **HOWES AB118** Active Antenna has been optimised for the VHF air-band listener. A low noise IC preamplifier gives excellent performance from 118 to 137MHz without loss of sensitivity at the band edges. A band-pass filter on the output reduces out of band signals to help your receiver's performance. The half-wave, end-fed antenna element is formed with ribbon cable, so it can be easily rolled up and packed for holiday use. It also fits in standard 1.5inch plastic water pipe for permanent weather resistant installation at home. The total antenna length is 1.65M. The **HOWES AB118** gives excellent air-band performance that will help pull in those more distant signals from both home and portable locations.

Kit: £17-70 **Assembled PCBs: £24-70**

Add-on Digital Readout!

Digital Frequency Readout

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DFD4 Kit: £39-90 **DFD4 Assembled PCBs: £59-90**
PMB4 Kit: £9-90 **CA4M Hardware: £19-90**

Some kits from the range:-

		Kit	Assembled PCB
AA2	150kHz to 30MHz Active Antenna	**£8.50**	**£12.90**
AA4	25 to 1300MHz Active Antenna for scanners	**£19.80**	**£26.80**
ASL5	External sharp SSB/ narrow CW Audio Filter	**£15.90**	**£24.60**
CTU30	Antenna Tuning Unit for all shortwave bands	**£31.50**	**£38.40**
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SPA4	4 to 1300MHz Broadband receiver pre-amp.	**£14.90**	**£20.90**
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PLEASE ADD £1.50 P&P for kits & boards, or £4.00 if ordering hardware.

HOWES KITS are produced by a professional RF design and manufacturing company. They contain good quality printed circuit boards with screen printed parts locations, full clear instructions and all board mounted components. Sales and technical advice are available by phone during office hours. Please send an SAE for our free catalogue and specific product data sheets. Normally all items are in stock and delivery is within seven days.

72 & 73 from Dave G4KQH, Technical Manager.

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73's – Alan and Jez.

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Sony PYXIS Satellite-ba

The Sony PYXIS is a sophisticated satellite-based navigation system that sits neatly in the palm of your hand. Not only can the PYXIS tell position to within a matter of metres, but it also sets navigation tracks and measures speed and altitude. Truly James Bond material, as Mike Richards found out!

Although the Sony is certainly impressive, I thought it would be interesting to spend some time looking at the GPS satellite system that it utilises.

So what is GPS? Well, the letters stand for Global Positioning System, which is pretty much self explanatory. To work out your position, you first need to know the distance to at least two known points. With the GPS system the satellites form the known points for the fix. As you imagine, setting-up a comprehensive satellite based system is hardly going to be cheap. GPS is a prime example of where we can all take advantage of what is a high tech US Defense system. The system is formally know as Navstar GPS and has its origins in an early US system called Transit. This was first established in the early 1960s and has since been developed into the current GPS system. In addition to their navigational role, the satellites carry secondary nuclear-detection equipment similar to that employed on the Defense Support Program (DSP) satellites. Incidentally, the Soviets have their own high altitude system called Global Navigation Satellite Systems (GLONASS).

Because of the strategic importance of GPS, it features a very high inherent reliability and accuracy. The scale of the system is really very impressive as it will shortly be supported by 24 orbiting satellites. Of these twenty-one are used to provide the navigation service, with the remaining three available for use as spares in the event of a satellite failure. All satellites orbit at 20 - 200km above the Earth and are phased to provide twenty-four hour coverage throughout the world. The only exception being the polar regions. At any one point in time there will normally be around eight satellites above the horizon for the GPS receiver to work from. It's here that the first clever bit happens. The receiver contains a look-up table so it can choose the best satellites to lock on to. Although simple positioning requires just two points, the GPS system needs three satellites for a conventional two dimsional position. If you want to be able to measure altitude the system will have to lock-on to four satellites.

You may well be wondering just how you can find your position by receiving three satellites that are orbiting the Earth every twelve hours? The trick is in the information radiated by each satellite. The frequency used is around 1.575GHz and the transmitted signal includes the exact time and the satellite's position. The positional data is supplied by the US Department of Defense and takes account of the effects of the various gravitational pulls experienced by the satellite. You can now see that we have two key pieces of information for each satellite. One of the most important elements is accurate time and this is provided by an atomic clock in each satellite. The receiver also has an accurate clock, but of the cheaper quartz type. In order to use this data to work out the receiver's position, we need to work out how long the signal took to reach the receiver. The trick here is within the data pattern radiated by the satellite. Both the start time and the 'pseudo random' pattern is reproduced exactly, within the receiver. To determine the transmission delay, all the receiver has to do is compare the received waveform with its internal signal. The principle is fairly simple, but the timing is absolutely critical. The reason for needing three satellites for a simple fix, relates directly to the timing problems. To keep the receiver prices at a competitive level a quartz clock is used rather than an atomic unit. The resultant errors are equalised out by using a third satellite.

As the system has a military background, it's not surprising to find that there are a few quirks designed to limit the system's accuracy, as perceived by the civillian user. The most significant of these is know as Selective

ised Navigation System

Availability and is controlled by the US Department of Defense. When activated, this introduces a deliberate error in the satellite's atomic clock. The inclusion of this 'feature' limits the accuracy of the system to about 100m. However, this is still very useful. The military implementation not only compensates for this, but utilises an additional signal that's sent on 1.227GHz. Using this signal, the receiver can compensate for the differing propagation delays between the satellite and receiver. These delays are caused by varying atmospheric conditions and even polution levels.

The PYXIS

Having had a look at the satellite system, let's examine Sony's implementation. As you can see from the photo, the PYXIS is an extremely neat and attractive unit. Like many of Sony's up-market products, it was supplied in a handy transit case that afforded very good protection. The essential instruction manual was quite weighty and very comprehensive. In addition to the basic unit, there was a pair of mounting brackets for the antenna and control unit plus a d.c. adaptor lead. This enabled the PYXIS to be run from an external 12 or 24V d.c. power supplyc - ideal for boats or cars.

When operated in its hand-held state, the antenna is mounted onto the control unit by a single large screw. As the circular antenna has to be kept horizontal, the antenna mount includes a pivot. Whilst hand-held operation is fine for small vessels or walkers, most people will need a more permanent arrangement. The solution offered is to detach the antenna and mount it in a clear external position. As the Sony comes complete with a 7m extension lead, remote mounting was easily achieved.

In addition to showing position on its forty character display, the Sony had several advanced features. Included among these were the ability to store upto nine routes with a total of ninety-nine waypoints. The inclusion of a four-channel parallel receiver enables the PYXIS to operate from fast moving craft. This made it suitable for use by light aircraft.

Once the initial familiarisation had been completed the PYXIS proved simple to use. The initial satellite lock period seemed to take a very long time. However, this process was only required when moving significant distances, such as between continents. Once the initial set-up had been completed, subsequent readings were usually obtained within about thirty seconds. I tested the review model over a number of routes and spot points in the New Forest and found the maximum error to be around thirty metres. The reference for the test was known points on a standard Ordinance Survey *Pathfinder* map.

Although the PYXIS is designed for general purpose use, I feel there's a danger of it becoming a jack of all trades and master of none. When you look at the fierce competition in the marine market, it's difficult to see how the Sony will survive.

However, I'm sure the PYXIS will prove popular for those who need an adaptable navigation unit.

The Sony PYXIS costs £849.99 and can be obtained from Sony outlets. My thanks to **Lee Electronics** and **Sony (UK) Ltd., Sony House, South Street, Staines, Middlesex TW18 4PF** for the loan of the review model. ■

Printed circuit boards for *SWM* constructional projects are now available from the SWM PCB Service. The boards are made in 1.5mm glass-fibre and are fully tinned and drilled. All prices quoted in the table include Post and Packing and VAT for UK orders.

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SR004	PRO-2004 Modifications	Oct 89	6.63
SR003	HF to VHF Converter	Aug 89	5.22
SR002	Weather Satellite Reception	Jun 88	3.88

Propagation

by Ron Ham
Faraday, Greyfriars, Storrington, West Sussex RH20 4HE

My sentiments were echoed by **Gordon Foote** (Didcot), when he summed up his 28MHz beacon report for October/November by saying, "It certainly proves that this cycle is going out with some fight in it!". I don't think the sun can ever be really quiet, Gordon, because of its size and make up and that's why every little snippet of information in your reports is so important.

Solar

Although the current sunspot cycle is on the wane, **Ron Livesey** (Edinburgh), using a 2.5in refractor telescope and a 4in projection screen, identified four active areas on the sun's disc almost daily from October 18 to 31.

Cmdr Henry Hatfield (Sevenoaks), using his spectrohelioscope, located 2 sunspot groups, 6 filaments and 3 small quiescent prominences at 0948 on the 21st. He found two groups, 6fs, the remains of a flare in the group near the west-limb, 1 medium 'hedgerow' prominence on the east-limb and 5 other small qps at 1232 on the 30th and 2grps, the one on the west still active with a small bright plage, 7fs and 6 small qps at 1200 on the 31st. Early in November he noted 2grps, 5fs, 4qps at 1139 on the 3rd and, despite high cloud, he saw 1 grp, 5fs and 4 small qps at 1235 on the 5th.

Patrick Moore (Selsey) kindly sent a drawing of that group, **Fig. 1**, taken from his projection screen at 1140 on the 5th. The rise in solar flux toward the end of October is clearly shown on the computer print-out, **Fig. 2**, supplied by **Neil Clarke** (Doncaster). Neil reports that the solar flux rocketed to 229 units on the 29th and 30th due to a massive flare at 1816 on the 29th which lasted for 193 minutes. Henry's radio telescopes recorded many individual bursts of solar noise at 136MHz on October 21 and a noise storm all day on November 1st. A single burst, lasting about 6 minutes, from 1224 on October 30, was recorded on 1297MHz.

Fig. 1.

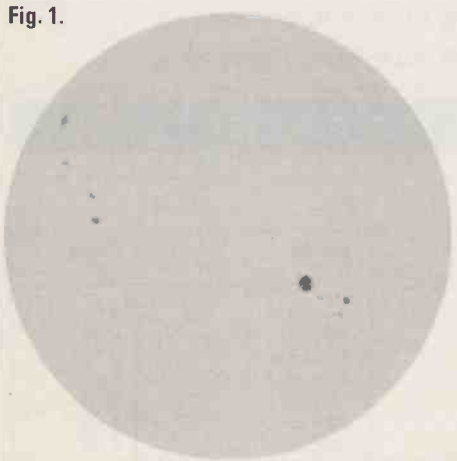

Fig. 4.

	October						November																				
Beacon	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
DF0AAB					X										X							X		X							
DK0TEN				X																											X
DL0IGI	X	X		X	X		X			X	X				X	X		X	X		X			X	X		X	X	X	X
EA3JA	X		X	X	X		X					X	X					X						X	X	X			X		
HG5GEW		X	X				X				X		X	X		X															
IY4M	X		X	X	X							X				X		X	X			X	X				X		X		X
KA1NSV	X					X	X					X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KC4DPC																					X										
KD4EC	X		X			X	X				X		X	X			X	X			X	X				X		X	X	X	X
KF4MS						X	X										X														
KJ4X			X			X	X						X																		
KV4XP																						X		X							
LU1FHH	X		X					X																							
NX2O	X		X			X	X				X	X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OH2TEN	X	X			X	X	X			X		X	X										X								
OH9TEN	X		X				X			X	X		X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
PT7BCN	X														X							X	X								X
PY2AMI	X						X		X	X	X	X	X	X		X		X	X	X			X	X	X	X	X	X	X	X	X
SK2TEN	X												X	X		X	X		X	X					X	X	X	X			
SK5TEN		X							X		X		X	X	X	X		X	X					X			X	X			
SV3AQR		X	X	X		X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
VE3TW0																								X	X	X		X			
VE3TEN	X					X	X						X				X		X		X	X	X	X	X			X	X	X	X
VK2RSY	X	X	X						X							X	X			X					X			X			
VK5WI			X																												
VK6VF		X				X							X						X						X		X	X			
WC8E	X					X	X					X			X									X	X			X	X		X
W3VD	X		X		X	X	X			X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
W9UX0												X					X				X		X	X						X	
Y02X											X		X																		
ZS6PW				X																											
Z21ANB		X	X		X						X	X		X		X	X	X	X	X		X	X	X	X	X		X	X	X	X
5B4CY	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Auroral

Ron Livesey, the auroral co-ordinator for the British Astronomical Association, received reports of 'quiet glow' from observers in Scotland each night from October 18 to 22 and from 25 to 28. 'Pulsating glows' and 'active storm' were sighted from Co. Tipperary on the 23rd and 30th respectively and 'rays' and 'rayed arc' were seen from Aberdeen on the 29th and Kirkwall on the 30th. **Gordon Foote** reported hearing 'echoey' signals on 28MHz during the evening of November 25.

Magnetic

The magnetometer used by **David Pettitt** (Carlisle) recorded storm conditions on October 14, 27 and 29. Further evidence came from Neil Clarke's print-out of the 'A' index, **Fig. 3**, for the period showing violent fluctuations in the geo-magnetic field.

Propagation Beacons

First, my thanks are due to Gordon Foote, **Simon Griggs** (Chelmsford), Henry Hatfield, **Ted Owen** (Maldon) and **Ford White** (Portland) for their 28MHz beacon logs which have enabled me to prepare this month's chart, **Fig. 4**, of the beacons heard in the UK.

Gordon Foote, Simon Griggs and Ted Owen reported hearing a new QRP (low power) beacon, K4VXP on 28.274MHz, from Camp Bellsville, KY. on the days indicated on the chart. Henry Hatfield pointed out that the signal from the Spanish beacon, EA3JA, was very strong on October 30.

Simon Griggs uses an ex-military AR88LF communications receiver with a loft mounted multi-band inverted 'V' dipole antenna. Although he cannot get this antenna outside he has logged stations from 138 countries on all bands with this arrangement. I used one of these sets for many years, Simon, and know how ideally suited it is for serious work on the h.f. bands.

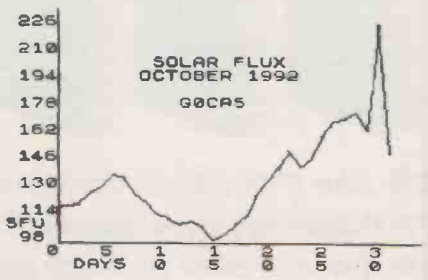

Fig. 2.

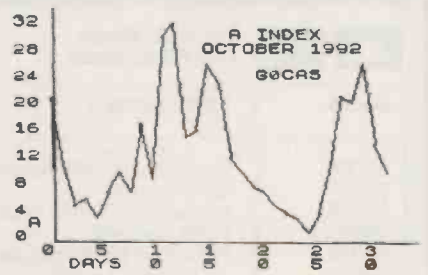

Fig. 3.

Tropospheric

On November 30, **George Garden** (Edinburgh) tuned his Sharp car-radio while parked at a high-spot overlooking the North Sea coast-line. From this location he heard Classic FM and Clyde 1 FM from Black Hill and by careful tuning among the weaker signals he added Radio Borders, Tay and TFM to the log. A graph showing the daily changes in atmospheric pressure and details of forthcoming meteor showers, appear in my Television column elsewhere in this issue.

Satellite TV News

Roger Bunney, 33 Cherville Street, Romsey, Hants SO51 8FB

With an earlier copy deadline this month (early December) due to the Christmas recess at Enefco House when - it is rumoured - the *SWM* editorial staff will stagger home to a well earned rest and perhaps too much to eat (and drink), I've made a slight change in the make-up of the February column and a review of a popular 'DXers' satellite receiver has been included.

As a hobby, satellite reception has much to commend it, a dish only 1m diameter can produce remarkable results and without the tall 30m Versatower and anguish of the local planning department, the dish can sit on a small garden stand looking at a clear view of the southern sky - or as much as possible - in an arc rising in the south east to due south at about 30° elevation and then falling again to the horizon in the south-west - the Clarke Belt where all the geostationary satellites are parked.

Most satellite receivers (or perhaps more correctly - tuners) are upmarket devices, infrared remotes, 99 memories, on-screen graphics, band scanning and so on.... The DXer however is a person that will work for his signals, doesn't need (or want) the hi-tech bells and whistles and perhaps as important the tuner must not cost the earth.

The Echosphere SR-50 is the current production tuner that fulfills the DXers needs. It is manually tuned and controlled, it has lots of front panel knobs and equally a mass of switches and sockets at the rear - as a brand new receiver it will sell around the £140-150 level - and is capable of modification to enhance reception performance. It will outperform top of the range Chaparrel Monterray in the weak signal field and is capable in its fully modified state of reaching signals that no other receiver can touch.

Made In Taiwan

The SR-50 is a badge engineered tuner out of the Benjamin Electronics factory in Taiwan, it's available in Turkey under the SGS banner and in France under another variation badge. As a general purpose receiver it will operate in C, S and/or Ku band and initially was designed for the weaker signal regions of the globe where cheapness is a prime consideration. The photograph shows a front elevation bristling with knobs! This is where the SR-50 scores. Note the 2nd knob from the right hand side. This adjusts the i.f. bandwidth from 30MHz right down to 12MHz - so if you have a weak signal masked under noise, reducing the bandwidth will improve the signal/noise performance and lift that signal out of the snow. There's even an audio bandwidth control that will drop the 400kHz b/width down to about 150KHz. This receiver is a real DXers dream!

Fig. 1: The Echosphere SR-50 satellite receiver

A brief rundown on the controls from left to right offers an on/off push button with adjacent l.e.d. and a satisfying glow from the nearby signal level meter. A second push switch provides vertical and horziontal polarisation selection, again with coloured l.e.d.s indicating polarity in use. This switch also offers a 0/12V control facility for an external H/V switch unit via terminals at the rear (vertical supplies +12V). In addition a 14/18V switching facility is provided for auto polarity selection (such as use on the Astra satellite) - horizontal selection provides 18V for LNB polarityy switching. Next the skew control fine tunes the polarity setting in each polarity. Next to the audio bandwidth control are 2 audio subcarrier tune pots which allow stereo tuning (i.e. left and right) or to individual radio programme subcarriers - once the main vision carrier has been tuned in. The i.f. bandwidth control varies between 12-26MHz though in practice the bandwidth extends to nearly 30MHz. Finally the main tuning control is extreme right, a large 270° rotation though using a totally uncalibrated scale!

More Features

Rear panel facilities are unusually comprehensive for such a budget receiver. Again left to right is featured the LNB i.f. input F socket, coverage is 910-1780MHz. A pair of F sockets offer i.f. looping for any 70MHz device that is available such as a decoder (unlikely in the UK) or a bandpass filtering (unnecessary since on-board variable filtering is included). A provided U link shorts these sockets for normal use. Preset controls are a video gain and a.g.c. adjusatment. Two video output sockets are offered, one being switchable to either a flat MAC (unclamped, non de-emphasised, non filtered) or baseband video (unclamped, de-emphasised, non-filtered) and the other a video clamped, de-emphasised and filtered output for a video monitor. Two audio outputs (left/right etc) follow and a bank of 4 push connectors give connection to a 3 wire mechanical servo motor for polariser control (+5V, pulse and ground). The 4th connector provides the 0/12V switching as noted above. Unusually this is a dual standard output receiver, the internal modulator will offer system B/G 5.5MHz or System I 6 MHz sound switchable at u.h.f. tuneable Ch.30-40, a 2nd slide switch nearby gives 'test' on/off, this to offer a bar pattern for tuning the u.h.f. receiver to the output of the satellite tuner. The coaxial r.f. output socket carries the modulated satellite signal and also provides diplexing with terrestrial signals via the nearby 'Ant In' socket. Finally the '18 14/18 volt' slide switch provides a variable voltage supply for LNB switching between vertical and horizontal, or a fixed 18 volts - depending on the switch setting. The mains supply is via 1.8m twin flex extreme right hand.

Though featured as a 'low threshold' receiver, at around 7dB (26MHz b/width) it's not wonderful though reducing the IF bandwidth will enhance weak signal working considerably. In operation the receiver is easy to use once the controls and their purpose are understood. Operating with a standard Ku, Telecom or C Band LNB the receiver is happy with all comers. Aggressive a.f.c. control means that once a strong signal is tuned in, tuning off to an adjacent transponder will result in the original signal remaing until suddenly the a.f.c. falls out and the tuning itself abruptly changes. I found this disturbing in use, the a.f.c. within the sound subcarrier is also positive but less 'possessive'. The receiver is of course intended as a cheap weak signal unit in Africa and the Middle East and for a non technical user hence the AFC control. There is no output for the familiar magnetic polariser which is almost standard Ku practice in the UK, the mechanical 3 wire output can be adapted to 2 wire magnetic with the use of the familiar and inexpensive interface box. The writer has handled over 8 specimans of the Benjamin receiver and there appears to be several versions, the later and preferred model are those with i.f. looping sockets and called the 'SR-50 Plus'. Early versions suffered with a poor tuner dynamic range resulting in overloading on very strong signals - if you use a large dish - and images would appear l.f. of the main signal. Careful adjustment of the a.g.c. preset will minimise this problem though on dishes of 1 metre or less the problem does not arise.

As a basic, simple to operate manual satellite DXing receiver, the SR-50 takes a lot of beating - it's cheap and impressive to look at. Measuring 320mm wide by 250mm deep (excluding knobs and rear socketry) and 75mm high including feet, constructed in a heavy steel case with dark grey ventilated cover and black front/rear panels. I have used one for over a year as a main receiver together with modifying numerous other SR-50s. They are reliable in use, stable and I can honestly recommend the model for a versatile DXing and general useage receiver. Your friendly local satellite dealer can order the SR-50 or in difficulty try Aerial Techniques who advertise elsewhere in these pages for both the SR-50 basic and upgraded GTX versions!

Orbital News

With the increasing need for business communications between East and West Europe, Eutelsat have requested the launch of their new II F5 craft 'as soon as possible'. The construction/testing of the bird will be completed late April '93 and launch will follow as soon as practicable. The Eutelsat II F6 craft will fly late Summer '94 slotting at 13°E alongside II F1. By that time some 96 transponders will be in service (currently there are 64 available with only 2 not in use).

Many sat-zappers will have noticed the 'Antenna Hungaria' test card over trdr 33 on Eutelsat II F3 at 16°E, this is the uplinking company for the Movi company of Budapest that are compiling an entertainment channel - Duna 7 - opening December 24th intended for cable systems in Hungary and for Hungarian nationals in Europe, estimated at 5 million. Another new channel is the 'Kanal Market' shopping channel that is transmitted over II F4 7°E (trdr 27) - yet another Turkish originated offering from 'Plus Communications and Technology' that also operate the Kanal 6 programme.

January 1993 saw the ending of the West (EBU) and East (OIRT) European system of programme distribution with the formation of a combined transmission system for both terrestrial and satellite transmission. Additional Earth stations are now under construction in Prague, Bucharest, Budapest and Sofia to further improve Eurovision access via Eutelsat II F4 7°E and with possible further inject points in Kiev, Minsk, Moldavia and Moscow. EBU transmissions now carried on Eutelsat I F2 21°E will transfer to 7°E early 1993 using 4 transponders which will allow access across Europe and into the Urals.

'Australian Television International', the ABC satellite channel for East Asia will begin in February '93 offering between 8-10 hours of locally produced material from both the ABC, SBS and commercial networks.

Hong Kong based AsiaSat (Star TV) have given the contract for the AsiaSat 2 satellite to the US company GE Astro Space with options for a 2nd craft order within 12 months. Hughes Aircraft manufactured the currently operating and successful AsiaSat 1. The new craft will carry an increased C Band loading of 24 transponders with 9 Ku band trdr. and a design life of 15 years. The launch vehicle has yet to be decided which may be Arianespace, China or even Russia. The Star TV operator Hutchvision have signed to take 8 trdr on the new craft for international TV transmission. The new slot may be as far west as 77°E which would enable the footprint to extend into Europe (Berlin) and to Tokyo, Jarkarta, Northern Australia and the important Middle East. The other parking orbit however may be at 105°E.

Correction - Marco Polo-2, formerly in BSkyB service has moved and is now testing at 1°W for services into Scandinavia, the satellite is now called 'Thor'. I had earlier suggested that the bird would move to 5°E alongside the Tele X satellite.

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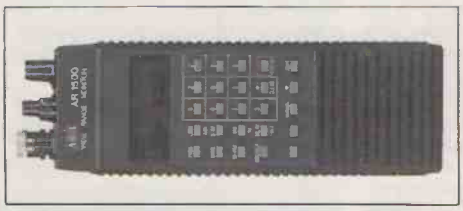

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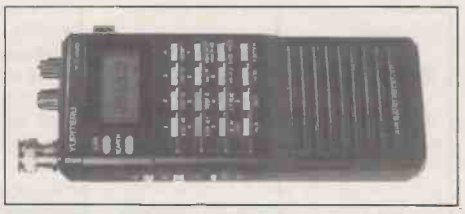

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1/ Is the equipment to full U.K. spec with appropriate serial no.?

2/ Is the equipment 'factory prepared' to match U.K. spec?

3/ If imported, is your potential supplier authorised by the official U.K. distributor to market that model?

4/ Can they guarantee your personal after - sales support, technical advice and upgrades, plus immediate availability of all spares and the full range of accessories?

MARTIN LYNCH
G4HKS
THE AMATEUR RADIO EXCHANGE CENTRE

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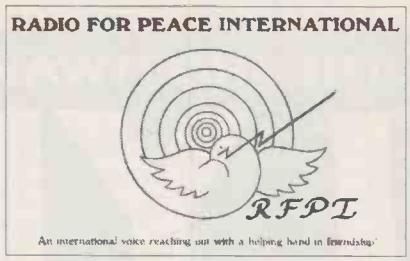
Bandscan

North America
Gerry L. Dexter

Radio for Peace International is airing an anti-Haitian government programme. The station is also issuing a special QSL marking the inauguration of higher power transmitters, but this isn't it!



Appropriately enough, we'll start out this month with an item filed under 'A' - for Antarctica. The world is that the long inactive US Armed Forces Antarctic Network at McMurdo is to return to short wave on its former 6.012MHz frequency and may, in fact, even be active by the time this is read. This one kilowatt station has always been very difficult to hear. The few North American receptions in the past have been around local dawn. AFAN-McMurdo sends a QSL card in response to correct reception reports. The address is AFAN McMurdo, US Naval Support Force, Antarctica, 651 Lyons St., Port Hueneme, California 94303-4345, USA.

USA Broadcasters To Be

The mammoth WEWN, mentioned last time, has still not come on the air at this writing but should certainly be active as you read this. Frequencies to watch are: 5.825, 7.465, 7.520, 7.540, 9.350, 9.410 (so long, BBC!), 9.870, 9.985, 11.735, 11.885, 11.970, 13.615, 17.760, 17.890, 18.930, 21.670 and 21.735MHz. Also watch 21.840MHz for test broadcasts. Fortunately, none of the frequencies are in continuous operation. Note the use of 18.930MHz, which has to be one

Fig. 1: Radio Exterior de Espana's Costa Rica relay station is now on the air, using 5.97, 15.110 and 17.845MHz.

of the first incursions into the newly designated 15m band.

A recent news release from Radio Miami International indicates it plans to be on the air early in 1993, 'depending on construction schedules'. A 50kW transmitter will operate on 9.955MHz. Initial plans call for operation between 2200 to 0600 and 1000 to 1400. Radio Miami International now brokers time on other US short wave stations and says it expects several of its clients to air their shows over WRMI's own transmitter. The organisation also does its own programming via WRNO in New Orleans so if you hear the Radio Miami International identification on 7.355MHz it's not the new WRMI. An hour long weekly programme on WRMI will be priced at $300.

And In Honduras

Radio Copan International, the WRMI-owned station in Honduras has run into technical problems. Brief test broadcasts in 1992 were unsatisfactory, the culprit thought to be the antenna. The initial station location in Tegucigalpa had too little room for an improved antenna so the entire facility is being moved to a new location on the outskirts of the city. New test broadcasts are planned - eventually - on 15.675MHz and the power, initially 100W, will be up to 1kW.

Also in Honduras, La Voz de Mosquitia, at Puerto Lempira, has become active again, using its old frequency of 4.910MHz, slightly variable. It's heard as early as 2330 with cultural educational and religious programmes in Spanish and the local indian language. There's an English segment around 0200.

More From Central America

Radio For Peace International in Costa Rica, known for airing programmes quite different from much of what's heard on other stations is carrying one called Radio Negmaon. The broadcast supports ousted Haitian President Jean Baptiste Aristade and is on the air in Creole Saturdays at 0400 and 2000, and 1200 Sundays on 7.375, 7.385 (s.s.b.), 13.630 and 15.030MHz. The station is also using a new frequency of 6.2MHz (sometimes varying upwards 1kHz) during the daytime hours. Reception reports can be sent to Rocklanders for Democracy, PO Box 127, Nyack, New York 10960, USA. RFPI is issuing a special series of numbered QSL cards to commemorate the introduction of their new 30kW transmitter.

Also in Costa Rica, the long awaited Radio Exterior de Espana relay is now on the air from its site at Cariari. It is widely heard using such frequencies as 5.970MHz (for Central America and the Caribbean), 15.110 and 17.845MHz (for 'the south-eastern American continent'). The Costa Rican government, which has a right to use the facility for its own station, has not yet begun to do so. The site features three 100kW transmitters and is located about 90km from San Jose.

A new station in the Dominican Republic is Radio Cima Ciento in Santo Domingo, which plays mostly up-tempo salsa and other Latin dance styles and airs very little talk. Originally on 4.962 but more recently they've slipped down to 4.960MHz and are often very well heard late in the north American evening, on occasion even all night long. The address is Apartado 804, Santo Domingo. Some reports say mail service to this country is unreliable, which may be why no QSLs from this station have been received yet, at least as far as we know.

Radio Havana Cuba is running tests of a single sideband transmitter on 13.660, heard around 0000.

Virtually all of the short wave stations in Guatemala are being heard well these days, starting with the most difficult of the bunch - La Voz de Atitlan on 2.390MHz, which often competes with the Mexican, Radio Huayacacotla, on the same frequency. Atitlan has been heard by several DXers with a lengthened schedule running well past 0200 with local indian languages and marimba music. Other stations and frequencies showing up are: Radio Maya de Barillas on 3.325MHz; La Voz de Nahuala on 3.360 and 5.040MHz; Radio Tezulutlan at Coban on 3.370 and 4.835MHz; Radio Chortis on 3.380MHz; Radio Buenas Nuevas, San Sebastian on 4.8MHz; Radio Mam, Cabrican on 4.825MHz; Radio K'ekchi, Fray Bartolome de las Casas on 4.845MHz and, the oldest of all Radio Cultural/TGNA on 3.3 and 5.955MHz. Reception of these is best around 1000-1100 and 0000-0300, by which time most have left the air.

In South America

Radio Fides, the long established Bolivian religious station has added a new frequency to its line-up. Now, 9.625MHz with 10kW, is being used along with 4.845MHz (5kW) and 6.155MHz (15kW).

Other Bolivian stations being heard on occasion include Radio San Gabriel on 6/085MHz at 0930, La Voz del Tropico on 5.935MHz, also at 0930, Radio Illimani 6.025MHz with religious programming around 0200, Radio Reyes 4.450MHz variable at 0000, Radio Perla del Acre on 4.6MHz.

A new frequency for SODRE, Montevideo, Uruguay is 6.125MHz - a station I haven't heard or seen reported in quite some time. It relays the 1290kHz medium wave outlet in Montevideo.

In Colombia, a new Caracol network outlet is appearing on 4.803MHz - but not on a regular basis, it would seem.

Old time Venezuelan station Radio Continente has been re-activated and is well heard mornings and evenings with a Spanish language, commercial format on 5.030MHz.

Back Up North

Radio Canada International airs special programmes for its peace-keeping forces on assignment in Yugoslavia, Cyprus and Somalia at 2000 to 2029 using 5.995, 7.325, 11.945, 13.650, 1.670, 15.140, 15.323, 17.820 and 17.875MHz.

KNLS, Anchor Point, Alaska has discontinued its *Chariots of Fire* interval signal and replaced it with a new one composed especially for the station. The station is offering DX groups audio tapes about the station and life in Alaska. More information is available from Kevin Chambers, Manager, KNLS, Box 473, Anchor Point, Alaska 99556, USA.

Thank You, St Helena!

It's just a memory now, and a very happy one for the many, many DXers in North America who caught the special broadcast from Radio St. Helena last October. The broadcast was very well and widely heard and a several DXers made 'phone calls to the station during the broadcast. Some listeners in the eastern part of the US were following the broadcast on their portable sets! No we all anxiously await those QSL cards!

A Treat From Tampa

A number of US DXers have come across an interesting short wave curiosity. Tampa, Florida medium wave broadcaster WFLA (970kHz) is being heard on 25.870MHz during the daytime carrying its news and talk commercial formal. QSLs replies have explained that the frequency is used by a 100W transmitter to 'cue' the station's air traffic reporters. The transmissions are in narrow band f.m. At least one DXer in the UK has picked this up. The station will QSL reports sent to PO Box 25870, Tampa, FL 3681-0097, USA. The signer is the Chief Engineer, Wilson Welch.

Mid-Winter Fun

One thing that makes the winter season much more bearable for those of us who have a decided bias against cold, snow and ice is the Winter SWL Feast. The 6th edition of this great weekend event will be held February 18-21 at the Holiday Inn, Kulpsville, Pennsylvania, just off the turnpike, about 40 minutes from the Philadelphia airport. Limo service is available from the airport to the hotel. At last year's gathering we had the special pleasure of meeting EDXC Chairman Michael Murray for the first time.

That's all the news from this part of the world for now, but there's always something new happening on the short wave bands and I'll be back to tell you about it in three months. Until then, good listening!

DXTV Round-up

Ron Ham, Faraday, Greyfriars, Storrington, West Sussex RH20 4HE

Although, as I write this in early December, there are very few Sporadic-E openings to talk about, the first reports of disturbances in the upper 'F2' region of the ionosphere are coming in. These often occur in the mornings during the winter months and usually produce smeary pictures from the Middle and Far East areas in Band I, especially on Chs. E2 (48.25MHz) and R1 (49.75MHz). Station identification under these circumstances is not easy, however, if you can spare the time, some clues, in the form of captions, clocks and logos are most likely to appear at the change of each hour.

On this subject, and with new readers in mind, I suggest that a good addition to your observers library is the 3rd edition of the book *Guide To World-Wide Television Test Cards* by two very experienced TVDXers, Keith Hamer and Garry Smith (HS Publications, Derby). This is available, price £4.95 plus £1 P&P. from *SWM* Book Service at, PW Publishing Ltd., FREEPOST, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW Tel: (020) 659930.

Band I

Smeary and fluttery pictures, typical 'F2', were received by **Lt. Col. Rana Roy** (Meerut, India) on October 7, 8, 12, 14 & 15. A good example of this type of propagation is the signal that he received from Thailand, **Fig. 1**, on Ch. E2, at 2249 on the 8th. At times, on those days he has recognised pictures from Bangkok TV and Dubai TV and also identified Thailand, late one night, by their '3' logo and the words 'Goodnight' in Thai by a YL announcer.

Bob Brooks (Great Sutton) noticed 'F2' activity, around Ch. E2, at 1145 on November 9. He also logged Denmark's 'DR' test card, on Ch. E3 (55.25MHz), via short periods of Sporadic-E, at 1100 on the 9th, 1210 on the 14th, 0909 on the 17th and 0955 on the 23rd.

Meteors

During its annual orbit around the sun, the earth, encounters great swarms of meteor particles which, on a clear dark night, can be seen burning up as they collide with the earth's atmosphere. They appear, for a few seconds, as a streak of bright light darting across the night sky. Each one leaves a decaying trail of ionised gas from which radio and television signals are randomly deflected and reflected. The amount of picture seen is limited to just a 'ping' because of the short life of the trail. For the interest of TVDXers, it's worth monitoring all channels in Band I while a 'shower' is in progress to see how many bursts or 'pings' of picture you can identify.

1993 Showers

According to the Meteor Diary in my members' copy of the British Astronomical Association Handbook, the predicted peaks of meteor showers for the rest of 1993 are:

April 11 (Virginids)
April 22 (Lyrids)
April 27 (Scorpiids)
May 5 (Aquarids)
May 12 (Scorpiids)
June 9 & 19 (Ophiuchids)
July 8, 15 & 26 (Capricornids)
July 21 (Cygnids)
July 29 (Aquarids)
August 2 (Capricornids)
August 6 (Aquarids)
August 12 (Perseids)
September 8 & 21 (Piscids)
October 13 (Piscids)
October 22 (Orionids)
November 3 (Taurids)
November 17 (Leonids)
December 9 & 26 (Puppids-Velids)
December 13 (Geminids)
December 23 (Ursids).

Although these tiny particles burn-up a mere 100km above the earth's surface, each shower is named after the constellation of stars, light-years away, from which the radiant of the meteor appears to come. If you also have a scanning receiver you can enter the precise vision or sound frequency of one or more of the television channels in Band I and then patiently listen to the background noise.

For instance, on Ch.R1 vision (49.75MHz) a number of brief 'buzzes' of synchronising pulses will be heard and on the sound frequency (56.25MHz) there should be frequent bursts of speech or music depending upon what is being transmitted at the time. The length and strength of the signal depends upon the size of the particle and the angle of entry relative to your station and the transmitted signal.

Picture Archives

With newcomers in mind, Bob Brooks sent two pictures from his DXTV archives. The first is a useful display of German regional logos, **Fig. 2**, received while a tropospheric opening was in progress and the second is a London scene, **Fig. 3**, that he saw during a programme from Spain's TVE 2 in the summer of 1984. Don't be fooled into thinking that such a signal came from a weak UK station, keep in mind that a large number of programmes from and about Great Britain are used by many overseas television networks.

Satellite TV

"Pakistan TV has been transmitting test signals from Asia Sat between 1900 and 2245. It is called channel 2", (**Fig. 3**) wrote Rana Roy and continued, "The non-residential Indian have started transmitted programmes in Hindi, **Fig. 4** (ZEE TV), via Asia Sat from October 1". Rana reports that they show Hindi serials, programmes concerning India and Indian life and Hindi movies on Sundays.

From Leiden, Holland, **Peter de Jong** sent a photograph of 'The Comedy Channel' test-card/caption, **Fig. 5**, that he received a while back from Astra 1b.

Weather

"The weather is changing here at a very fast pace. Temperatures are between 22°C during the day and 10°C at night," wrote Rana Roy on November 14.

"November has been dominated by low-pressure systems and a continuous assault by weather fronts", wrote **David Glenday** (Arbroath) and continued, "At least the snow up in the hills up here has been washed away. The only tropospheric DX to appear came on the 23rd. The pressure was only 29.55in (999mb) but there was warm moist air coming all the way from the Azores thanks to the high over Spain and Southern France". Dave

Fig. 1: Thailand.

Fig. 2: German regional logos.

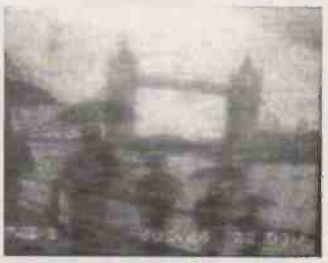


Fig. 3: Channel 2.

Fig. 4: Zee TV.

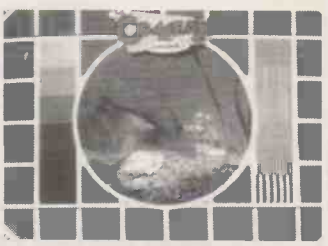


Fig. 5: Test-card from Astra 1b.

Fig. 6: Skies over southern England.

Fig. 13: SSTV QSL card.

Fig. 7: NOAA WEFAX picture.

Fig. 8: Amritsa TV.

Fig. 9: Pakistan TV.

said that this event came to a sudden end when a cold front passed over at noon.

The atmospheric pressure readings from October 26 to November 25, **Fig.14**, were taken at noon and midnight from the recording chart on the Short & Mason barograph installed at my home in Sussex. The undulating trace on this graph and the amount of

Fig. 10: SSTV from DJ4IG.

Fig. 11: SSTV from GJ4YGR.

Fig. 12: SSTV from SM5EEP.

rain we had shows just how unsettled conditions were throughout the period. During November, I logged 6.76in of rain compared with 3.85in for the same period in 1991. Heavy falls of around 0.5in were recorded on days 9, 11, 15, 28, 29 & 30 and of 0.75in on the 2nd, 25th & 26th. One sure sign of bad weather is a halo around the moon. I saw a large one of these at 2000 on the 3rd which I understand is caused by the moonlight being refracted by ice crystals that are present in the atmosphere at the time.

In general, November was mild with relative humidity between 78 and 84% on many days. The skies over our part of Southern England looked like **Fig. 6**, many times during the month as the storm clouds came and went. It is interesting to see thunderstorms building up from above, **Fig. 7**. This picture was received by Peter de Jong from the weather satellite NOAA on October 12.

"Very wet, damp and stormy the last few days," wrote **Simon Hamer** (New Radnor) on December 1. "A weak high pressure ridge was covering all of the UK & during the day it was quite cold with clear skies," wrote **George Garden** (Edinburgh) on November 30 and remarked, "a welcome break between all the WX fronts we have had lately".

Tropospheric

Rana Roy received pictures in Band III from Amritsa, **Fig. 8**, on Ch. E7 and Marhi (Pakistan, TV) **Fig. 9**, on Ch. E8, during tropospheric openings at 0830 on August 23 and 1710 on September 12, respectively. While similar events were in progress during these two months he also logged signals from Kasauli on Ch. E6, Jalandhar (E.9), Sialkot (E.10) and 'STN' (Shaalimar Television Network) Rawalpindi on Ch. E11.

Despite the unfavourable conditions in November, **David Ashley** (Norwich), received u.h.f. pictures from Holland (NED3), with co-channel interference, all day on the 6th, Central **TV** in the evenings of the 7th, 8th & 28th, Tyne Tees TV on the 8th & 28th and Yorkshire TV on the 28th.

However, in Scotland, David Glenday received pictures in the u.h.f. bands from stations in Germany (ZDF) and Holland (NED 2 & 3) between 0955 and 1200 on the 23rd.

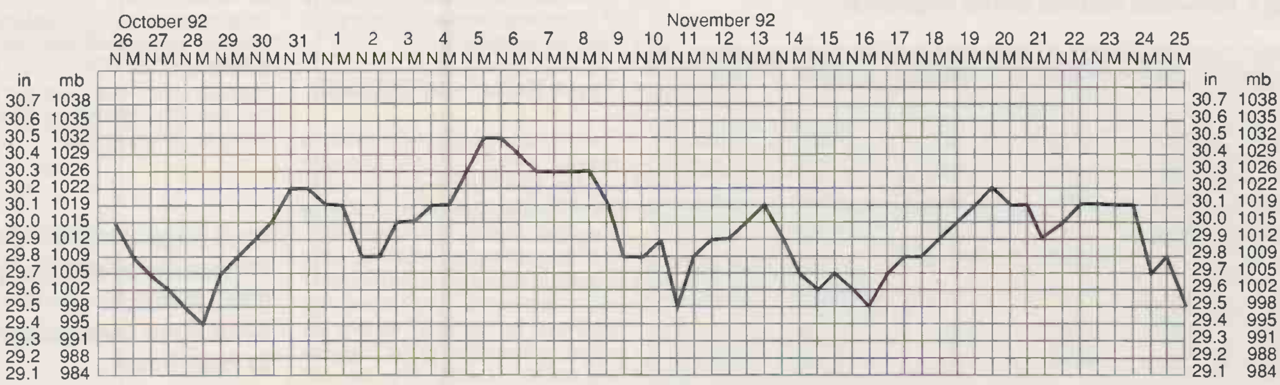
"Only two bits of tropos this November," said Simon Hamer who logged Band III signals from Denmark (DR) and Germany (ARD1 & ZDF) on the 5th and Austria (ORF1) and Switzerland (+PTT/SRG1) on the 8th. He also found Denmark (TV2) on the 5th and Austria (ORF2) and Switzerland (+PTT/TS1) on the 8th, in the u.h.f. band.

SSTV

Like in many other modes of communications, graphics now plays an important part in the work of the slow scan television enthusiast. For instance, take a look at the ident captions transmitted from Germany by DJ4IG, **Fig. 10**, Jersey by GJ4YGR, **Fig. 11** and Sweden by SM5EEP, **Fig. 12**. These were received by **John Scott** (Glasgow) during November. Along with the detailed SSTV signal reports that he sends out John plans to enclose a QSL card, **Fig. 13**, giving details of his station. This card was designed and produced for John by his friend **David Martin** (Cornwall) using a PC. John's November report for the slow scan slots in the 14MHz band, around 14.230MHz, was busy at times with not so much activity now in the late evenings. But, on the 3.5MHz band, around 3.732MHz, he can log signals, on most nights, from the German and UK SSTV nets.

The latest addition to his technical library is *Slow Scan Television Explained* by Mike Wooding and published by the British Amateur Television Club. "A very interesting book, which I am busy reading," said John. David Glenday copied slow-scan signals from Holland, on 14.230MHz, in the form of a test-card from PA3OTF, **Fig. 15**, on November 22 and, I think, the operator's photograph from, PA3CIZ, on the 29th.

Fig. 14: Tropospheric chart.



SSB Utility Listening

Peter Rouse,GU1DKD, Barcroft, Rohais de Bas, St. Andrews, Guernsey.

I know that many of the readers of this column use the G5RV dipole (either full or half size versions) as a moderately broadband antenna. In the past I have regularly stressed the need for this antenna to be fed to the coaxial cable via a balun, but unfortunately they have tended to cost considerably more than the antenna .

I am therefore delighted to report that a new ferrite sleeved choke balun has appeared that is not only inexpensive, but is specifically designed for use with the G5RV. It is available from Ferromagnetics of PO Box 577, Mold, Clwyd CH7 1AH at a cost of £23.25 inclusive of post and packing. It works with either the full or half size versions of the G5RV and is claimed to dramatically overall performance. I have not yet tried this balun but G5RV himself (Louis Varney) has confirmed the claims made for it and says its performance is excellent.

You Write

Keith Elgin recently asked if competitors in the Round the World Yacht Race were likely to use h.f. I replied that several of the yachts were fitted with Inmarsat satellite equipment but I added that it was possible some would use h.f. and my guess was that they would work through Portishead. Keith now reports that they have done just that. *Interspray* and *Nuclear Electric* were logged and a third was heard but the call sign was missed. All were working Portishead GKT on channel 1602 which uses the split frequency pair 17.245/16.363MHz. Keith also heard the Australian warship *Malsey* with a phone patch via Sydney Radio on the same frequency. For future reference, in **Table 1** below, is a list of the frequencies used by Portishead for their maritime service:

Keith queries the listings for marine channel numbers 1201 to 1241 on page 61 of the companion book *Short Wave Communications*. Horror of horrors. What has happened is that all the columns except for channel 1221 have shifted one column to the left. We have never noticed this before. Our apologies for the error - just shift each column one space to to the right and all will be well.

Keith has been monitoring some of the UN flights in and out of Yugoslavia and says there has been a lot of talk of their Satcom being down. He wonders which satellite system they are refering to. As far as I am aware the American u.h.f. satellite, Fleetsatcom West, is working normally so I doubt if it is that one. Maybe it is Skynet or another system. Anyone got any suggestions? Two other items stand out from Keith's log. On 11.176MHz he heard SAM602040 phone patching with the Royal Navy air station at Yeovilton which is a little unusual and on 13.201MHz he heard United Nations One Three on the ground at Sarajevo tell Croughton that he was going to have to get out quick because shells were exploding just a quarter of a mile from the airport.

Following on from the recent correspondence about the KC-135 tanker 'Quid' a reader signing himself Retro-32 adds that other tankers operating out of Mildenhall are using the call signs Gucci, Primo and Shamu (all are KC-10s).

Christopher Frank Beevers heard Rainbow Radio talking to Delta 72 about North American track W and Route A on 8.819MHz in the early hours of November 6 and is puzzled by the callsigns and frequencies used particularly as reference was also made to 5.604 and 5.614MHz as well. I am a little puzzled as well but Delta is the normal callsign prefix for Delta Airlines and all the frequencies mentioned do fall into recognised civil aviation allocations. Does anyone know about Rainbow Radio (it rings a faint bell with me) and the track and route mentioned though?

Table 2.

Region	Primary	Secondary	Times		
1	4.466	4.509	0000-0230	1300-1700	2100-2400
2	4.585	4.469	0000-0200	1230-1600	2100-2400
3	4.604	4.509	0000-0230	1330-1600	2130-2400
4	4.469	4.585	0000-0230	1230-1500	2230-2400
5	4.705	4.585	0000-0400	1200-1600	1800-1830
6	4.627	4.630	0000-0400	1300-1430	2300-2400
7	4.599	4.604	0100-0400	1345-1530	1600-1800
8	4.585	4.506	0130-0630	1450-1600	2130-1400

Recap on CAP

I am indebted to several readers including Tom Sevart who is stationed with the USAF in Britain, **Michael Schulsinger** from Springfield in Ohio and **Len Spindler** from Hertfordshire who have all provided more details of the Civil Air Patrol and some time schedules, shown in **Table 2** above. As I have mentioned previously no one seems to have logged the CAP, so now is your chance.

All frequencies are megahertz (upper sideband) and times are Eastern Standard Time (EST), which is currently five hours behind the UK. The national command net checks-in daily on 7.635MHz (u.s.b.) at 1115EST and on 14.905MHz (l.s.b.) at 1130EST. Credit for the schedule must go to Bob Grove of *Monitoring Times* who I understand compiled the original data.

Forget Dayton - try Kulpsville

I have mentioned before that I keep in regular touch with my opposite number, Don Schimmel, who writes the utilities column in the American magazine *Popular Communications*. Don has just made me green with envy by sending me details of the Grove/MT convention in Atlanta in October. It is organised by the other leading US magazine *Monitoring Times*. The three day seminar covers a wide range of short wave and scanner related topics and has exhibits from manufacturers and this year included a visit to the CNN news studios. The next convention along similar lines is the SWL Winterfest at Kulpsville in Philadelphia, which is held on the 19th, 20th and 21st of February. Don has been trying to talk me into going to this event for a couple of years now but so far I have not been able to manage it.

If anyone else wants to try it I can tell you that Kulpsville is within easy driving distance of New York's Newark airport and if you shop around there are some very cheap fly/drive deals available. Last year Don sent me a mass of leaflets from the event showing that dozens of manufacturers and listening clubs were represented and there were talks by many of the leading writers. If you want more details and special accommodation rates contact the organisers: SWL Winterfest, PO Box 591, Colmar, PA 18915, USA.

Give us a Number

Some while back I did a jokey piece banning number station logs unless the authors could come up with something new. I clearly offended you all because since then I have never had a single letter mentioning a number station. Come on chaps I did not ban you entirely. Things have settled down in eastern Europe so what has happened to all the numbers stations? Did Simon Mason marry Bulgarian Betty and emigrate? Was the Laughing Cavalier terminated with extreme prejudice by the KGB? Let me know (logs can even be on a microdot left in the usual dead letter box) and I will be happy to include details.

Table 1. Portishead maritime service frequencies.

Channel	Shore	Ship	Channel	Shore	Ship
402	4.360	4.071	1602	17.245	16.360
816	8.764	8.243	1611	17.272	16.390
822	8.782	8.261	1615	17.284	16.401
826	8.794	8.273	1618	17.293	16.411
831	8.809	8.288	1623	17.308	16.426
1201	13.077	12.230	1632	17.335	16.453
1230	13.164	12.317	1637	17.350	16.468
1232	13.170	12.323	1640	17.359	16.477

All frequencies in megahertz.

Amateur Bands Round-up

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

Conditions covered the whole gamut from excellent to awful - with the proviso that my commitments got in the way whenever the band was at its best!

Let's just say that all the continents have been available, for one who is prepared to listen round at different times: on 14/21/28MHz for VK & ZL around 0800, again before lunch, Ws from around noon till close with the Western reaches showing at teatime, and so on. The low bands come to life in darkness rather than daylight, though occasionally carrying on a little after dawn or starting before dusk. If one can establish, by computer or other means, where the 'grey line' is, dividing light from darkness, look for a brief spell of improved conditions when greyline joins your station to some DX place.

New Countries

Croatia 9A, Slovenia S5, Bosnia-Hercegovina 4N4 are new countries in DXCC terms says ARRL. Macedonia 4N5 was NOT accepted as a new one or even voted on. More news on this in due course.

Letters

One from **Cliff Stapleton** in Torquay contained a letter for forwarding to Gerald Bramwell in Manchester. I addressed it and mailed it onwards. The next day's post contained a letter from Gerald saying he was moving to a new QTH. So - one hopes the letter reached base!

Still with Gerald, he uses RTTY & c.w. as well as sideband telephony. On Top Band c.w. he winkled out YL2PQ, UA4YHF, UA2DK/MM, GJ3YHU, ON7TK, GD4BEG, HA4EHQ, F6GOK, ON4UN, OZ7ABX, G3RXP, SP5ZIM, IV3PRK, OZ2RH, SM5EDX, OH2BCI, DF3DS, OK3TZW, G3YRO, G3YAO, DJ9KG & OE1XTU, with roughly the same spread on sideband. 3.5MHz showed lots of W-VE-VO stations on sideband and c.w., a crop of European RTTY stations, plus phone from C31LL, 3A2HB, T77J, OY9JD, HV4NAC just to show DX can in fact be in Europe(!), and the ones Gerald rated as DX by way of CN8GI, loads of JAs, CN8NS, VK6LK, KP4SL, CN8HR, 9K2HA, TZ6VV, 9V1XQ, PY4RR, FM5BH, A92BE, TI4CF, JX3EX, CT3GU, 9V2XQ, VK5BGZ, OD5/SP1MHW, 3B8EO, TA3D & XU2UN.

For 7MHz the best RTTY signal was from UL7PBY; the c.w. crop covered lots of Ws, including K7SV, VEs, mainly European ex-USSR stations, 3A2LU, 9H1EU, HV4NAC; the other DX was predominantly sideband: 7Q7XX, P30ADA, 7X2RO, LU6AMW, 4X1EL, JY40CI, TL8TM/P/6W4, JAs, OD5/SP1MHV (both c.w. & sideband), CE6BDN & PY7KK. 14MHz is not deeply mined, but I notice N2LWD, VE3BGE, WA8AO, FG4FI all on RTTY plus sideband from WA1APR, VO1WA, K8GU, N4ANV, VE7IM, WB1AOK, W5FO, AA8U, LU7JHM, CE2II, EA8TE, ZS6AZQ & CU3CN. On 18MHz just W2YD & 7X2BK, though 21MHz showed K2SG, WV1X (RTTY), WA8ALN, KC9BI, LU8EKL (RTTY), XX9AW, PT7WX & FR5ZN. For 24MHz, there were some Ws, and on 28MHz we find yet another mode - narrow f.m. this time for K2WEI, W3NLD, while s.s.b. yielded N1CER, K8KBB, VE3DZ, KA0GGQ, K1SVC, VG2W & CO2NA. Add Europeans to taste on all bands, of course!

Welcome Return

A welcome return from **Philip Davies** (Market Drayton) who - er - specialises in specials. Spain offered EF92EXPO, AO92DYY, EH92T at EXPO; EH0JOB & AM25KBV for the Olympics. France gave F92JO & HX6BGJ for the Winter Olympics. The 500th anniversary of the Columbus landing was covered by such as HI500A, YV500RCV, ZP500Y, ZS500A, while Canada celebrated the first land crossing with VA3200M and Australia had VI150SYD for the 150th anniversary of the founding of Sydney.

What about GB2SFL from South Foreland Lighthouse (Marconi Day), GB8TS from Perch Rock Light on the Mersey for the Tall Ships. JOTA, of course, and the Towers, where GB2TWB (Blackpool) and GB2BT from the GPO Tower in London. GB2ILA was in the same event by the International Listeners Association. GB2MGY reminded us of the *Titanic* sinking, MGY being the ship's call. J40CH was the 40th anniversary celebration for King Hussein of Jordan, JY1, and of course EA0OLC is the call of the King of Spain. GB2RS & EI0RTS are both news bulletin stations, EJ3GZ was on Achill Island, Co. Mayo, and EI6O was what the Irish described as a 'Wild card'.

The Poles had 3Z25PAZ for a 25th anniversary, while P30ES was a 30th anniversary from Cyprus. K4GSO commemorated the 16 000 phone patches during 'Desert Storm'. Among the ones in what was USSR, U1A for the first Rotary Club in Kiev. EK4HF/MM was going round the world under sail, while RE92C was waving the flag for the Russian space organisation. EU10 & EU00 reminded of the Chernobyl disaster. Environmental Net had K3SRO for Earth day, VG4AOZ covered the 150th anniversary of its survey and H25STT was saving the turtles. SV0VOA from Rhodes commemorated the 50th anniversary for VOA & GB67XX was an amateur station - the last transmission from Daventry before close down, G5XX having been the oiginal callsign.

Geoff Crowley in Hafnarfjordur, Iceland, is restricted by the presence of local TVs, and computer noises (sounds familiar?). Nothing has yet been heard on Top Band, but I note a brace of Ws on Eighty, JAs & VKs on 7MHz, and on 14 MHz, apart from the 14313 mob, TF3KM for some real long-distance stuff! 18MHz gave Ws and Europeans, and 21MHz lots of Ws, South America, Europeans and Africa.

On 24MHz VP8PK was the pick of the crop along with lots of Ws, Europeans and South America. Finally 28 MHz where the openings gave Ws, 4X1BS, and the v.h.f.-style propagation periods, Europe.

On a different tack, Geoff was speculating about the power of some stations; in fact it is necessary to work on the antenna rather than the power output if you really want a good signal. For example, a monoband beam on 14MHz will give a better signal than a similar tribander. A high tower gives low angle radiation and a better signal at DX - by the converse argument, contesters have been known to lower the antenna somewhat in order to increase the high-angle signal and so pick up some nearby countries for multipliers.

Likewise the directive antenna: you have only 'x' amount of power, so to improve the signal in a given direction involves reducing in some other direction. Practically, since the 'isotropic radiator' of theory is a mere 2.15dB down on a half-wave dipole, for most of us the problem reesolves itself neatly into one of pure loss-reduction. To be fair, though, ANY antenna is markedly more useful than none!

Selective Loop

Simon Griggs is in Chelmsford, and he writes that he is still seeking a Spectrum computer to use with his SSTV software, but there is a hint of a 'borrow' in the offing! Simon says 28MHz has been good, with, for example the beacon station W3VD on the band almost daily. The listening is divided between s.s.b. & c.w. Taking 'phone first we have VP5JM (7060kHz, 0349Z) in contact with HK2JFF, .SV9ZP (14296, 1745) working OE8RFS. 28 MHz around lunchtime gave PY5TT, JX3EX & HH2PK.

Turning to c.w. we find far more. On 3.5MHz I note UA9CAD at 0120, W1CFZ at 0526, on 7MHz, Simon started at 2110 and found EA8AB right at the bottom band-edge, K1DC (2243) working TA4A, AA3B (0115) VP2V/KG6WI (0155), OD5/SP1MHV (0329), W4XI (0332), KP4TK (0418) & PY3ZY/PY0F (0437). On 10MHz we see the keying of KM2R, 7P8SR, KG4O, CT3FN, the latter two in mid-evening.

On 14MHz, Simon notes SV1YR early in the morning & ZS6AJS in early evening; with 21MHz for EA8AT, RA1AMW, EC9LQ, UL7QCX, W8HXX, N7SIJ, W7PJM, UA0FH, SV5/W4PRO & EA8UF. Notice the times in brackets for the low-band catches, given as 'Z' or UTC.

Next time, contributors may find it interesting to be a mite more selective with your listings - for example deleting the commoner Europeans, but adding instead, frequency and maybe time in UTC for the best ones. This will help others to get to know when to be on the band for a particular area.

Don't, though forget that some parts of Europe classify as DX if only because they are very rarely heard - C31 springs to mind. The other thing to remember is that when you come upon a pile-up, you need to be certain you have actually heard the station, rather than one of those calling him. Bear in mind he will deal with a pile-up by listening a few kHz (or maybe more) on one side or the other of his own transmit frequency.

Computer Programs

If you happen to have a computer running either MS-DOS or CP/M, you could look out for a decent propagation program, such as the one by Sheldon E Shallon W6EL that I have seen in versions for either operating system. Obviously such a program has its limitations; but it is still mighty useful.

There is a lot of information to be had from GB2RS each week too, for example a solar flux number to plug into the program. There is an explanatory text for the GB2RS News data available in both the latest RSGB *Call Book* and the previous 1991/2 issue. I must confess though that when I have to read the words 'solar factual data' I shudder - if data isn't factual it isn't data at all!

What the computer program can't do, alas, is handle the 'negative' factors. Thus the program will tell you the best time to look for a given country on a given band for a given sunspot number or flux, and gives a likely signal strength assuming a dipole at a given height. Thus, your program gives you a good clue as to when to look, but also the times when it just isn't worth bothering. You must accept the chance that the sun has chosen this time to go berserk, or that someone in that country is sitting in their shack radiating a signal! However, a listen to the RSGB News the next week should tell you if the sun has upset your applecart for you!

That's all for this time. As usual, the deadline will be the about the beginning of the month and the address is as it appears at the head of the piece. Good Hunting!

Airband

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

How does air-to-air refuelling work? This will interest **Nigel Conn** (Co. Durham). Weight and space have always been limited in the smaller, more manoeuvrable aircraft such as fighters. Even larger transports have finite endurance. In military operations, it might not be convenient to make a refuelling stop when flying deep over enemy territory! Civil flights plan to not need refuelling during the proposed sector, but if things don't work out then possible *en-route* diversions will always have been selected in advance.

Two methods of air-to-air refuelling are in service today: Hose and Drogue Unit (HDU) and flying boom. Of these, the RAF favour the HDU. The tanker aircraft is fitted with one or more HDUs which enable a length of hose to be reeled out and trailed behind the aircraft. Terminating the trailing end of the hose is a funnel-shaped drogue, the narrow end being attached to the hose and the wide end being open and facing rearwards. At the end of the hose is a valve. The receiving aircraft is fitted with a forward-facing rigid tube or probe. On some faster types, this retracts when not required so as to reduce drag. The tanker is often equipped with closed-circuit television so that the flight crew can watch the progress of the receiver. If the HDU is mounted in an underwing pod, it will often have a small propeller attached to the front of it. Actually, the propeller is really a turbine and spins in the slipstream to power the drum's mechanism.

All (!) the pilot of the receiving aircraft has to do is to poke the leading end of the probe into the drogue funnel - and hold it there! The tanker maintains a steady altitude and course and the receiving pilot must hold position precisely. This is a demanding hand-flying task. Slipping out of reach could disconnect the hose and this might be critical if the receiver is already low on fuel. A more clumsy approach could mean the receiver colliding with the tanker from behind. I've tried a simulated version of this, and can tell you it isn't as easy as the experienced pilots make it look!

The approach is made by the receiver at 5kt faster than the tanker, so the receiver catches up from behind. Fluorescent markings on the tanker help the receiving pilot to line up correctly. At night, very little other light shows from the tanker - so as to avoid visual detection by the enemy. Radio silence is often maintained for security reasons and if the tanker requires the receiver to break off, flashing light signals are available. The hose is pressurised with fuel to stiffen it and thus make it easier for the receiver to pick up. Whereas a really long hose would seem safer, as separation between the two aircraft would be increased, in practice it would flay around unmanageably. There is little danger of the soft drogue hitting the receiving aircraft since the latter's slipstream would tend to deflect the drogue away to one side.

The American flying boom is similar in many respects, but is rigid and hangs down from the tanker at around a 45° angle. The receiving aircraft is fitted with a receptacle on its upper surface. The receiving pilot lines up behind and below the tanker, and then it is up to the tanker's boom operator to literally fly the trailing end of the boom into the receiver's receptacle. The boom has small wing-like control surfaces for this purpose. I inspected the rear of a KC-135 tanker at an airshow and found a prone-position station in the floor in which the boom operator lies. The receiver is viewed directly through a rear-and-down facing window and the station is equipped with a joy-stick for boom manipulation and other sundry controls pertaining to fuel flow.

EGWN-92-1 Harvard disguised as a Mitsubishi Zero!
Christine Mlynek.

Receiver Hardware

Nigel experiments with v.h.f. reception from a long-wire antenna. Although resonant antennas are of practical size at these wavelengths, thus making long wires unnecessary, the technique is not unheard of. Better results will be obtained when a suitable a.t.u. is connected between the antenna and the receiver, there being a large impedance mismatch to cope with since the antenna is so many wavelengths long. For the design of an a.t.u. to suit this special requirement, reference to the appropriate textbook is recommended.

Tim Christian (North Walsham, Norfolk) would like to remind us that v.h.f./u.h.f. airband transmissions are vertically polarised; so are discones - useful to know. I'm sure I've seen a selection of discone antennas on the control tower roof at Duxford.

Global Positioning System (GPS) is a navigational technique in which a small portable receiver determines its position to an accuracy of better than 200m by reference to a satellite signal on 1575.42MHz. Another, military, frequency enables greater accuracy. A direct readout of position is shown on the receiver's built-in l.c.d. display. The price of receivers has fallen at a remarkable rate and some amateur radio magazines carry advertisements for one product at less than £700. What disadvantages does such an accessible and accurate system have when applied to aeronautical navigation?

Whereas GPS is the system of the future, it is important to remember that the network is still under development. Not all of the required satellites are functioning yet, and those that do exist are liable to go off the air without notice. GPS receivers usually display either accurate information or a warning that they are not working, but don't be caught out whilst in the air. Use GPS for confirmation of position while gaining experience with it but don't rely on it as a sole means of navigation.

Air Experiences and History

Now retired, **Brian Lythgoe** (Gloucester) once worked for the Ministry of Defence. His leaving celebration included a flight in a Jet Provost Mk.5A from Boscombe Down. He notes that this military aircraft was equipped with u.h.f. communications only. He is most grateful to his colleagues who made it a memorable day.

From Shropshire, **M. Hartford** reports on a museum piece. The RAF Museum, Cosford, holds Bristol T188 serial XF926. Until recently, this aircraft was missing its instrument panel but this has now been restored. The appearance of the panel in a newspaper article suggests instruments that are well post-war and probably of very late 1950s vintage. Beyond this, I regret that I have no more information on this rare aircraft.

Staying on a historical note, **Paul Hilton** (Newbury) discovered a 1936 photograph showing Woodley Aerodrome which was then home of the F.G. Miles aircraft factory. The Peregrine and the unique Mohawk G-AEKW (built for Charles Lindbergh) are depicted. Whereas some accounts describe Lindbergh as flying the aircraft in '36, company records show delivery as being in the following year. Miles was later absorbed into Handley-Page. In the '60s, this company failed - with a little government help - as it wanted to remain independent and not join a proposed British aircraft manufacturing consortium. Its main products at the time were the Government-funded Victor and the newly-developed Jetstream which was still to recoup its development costs. Whereas the Victor is only now about to fade into history, the Jetstream ironically goes from strength to strength as British Aerospace's only really successful current civil product. I'm sorry Paul's photo won't reproduce very well here for all to see.

Information Sources

Airport Timetables UK (ISSN 0959-6895-05) is now available in the Winter 1992/3 edition. All of you who find callsigns confusing will benefit from a copy! For each UK airport, flights are listed per day by arrival time. Origin, flight number, aircraft type, configuration, departure time, destination and number of onward flight, validity dates and charterer/tour operator are detailed in each case. Indigenous carriers are omitted at Heathrow as these would require a book in themselves! Additionally, there are lists of IATA aerodrome and 2-letter airline codes as well as ICAO 3-letter airline codes. Finally, flight routings are listed by flight number.

You can order by post from Airtime Publishing Ltd., 13 The Hollows, Long Eaton, Nottingham NG10 2ES, enclosing a cheque for £11.25 inclusive of UK postage (an extra £1.08 should get it surface mailed anywhere in the world, it weighs just short of 300g).

A mine of information on half-ship half-aircraft hovercraft is **Peter Mugridge** (Epsom). September 1991 was supposed to mark the end of the SRN-4 Dover-Calais service. Hoverspeed have now started advertising their hourly crossings again - I conjecture that it has been deemed necessary to compete with the Channel Tunnel, and I know which means of transport I favour! The operational craft are 300 tonne SRN-4 Mk.3s registered GH 2006 and GH 2007. Also in open storage at Dover are 200 tonne Mk.2s GH 2004, GH 2008 and GH 2054. These three are expected to be sold to Indonesia. I wonder how they will get there?

Frequency and Operational News

As so often mentioned, pilots must consult the up-to-date NOTAMS and other official sources just before a flight - things change so rapidly! Information in this column reflects longer-term changes of general interest; pilots can

CONTINUED ON PAGE 53➡

Scanning

Alan Gardener
PO Box 1000, Eastleigh, Hants SO5 5HB.

My thanks to all those readers who have sent information on the subject of radio communication and major sporting events. The most detailed letter came from **Tom Bruce** of Ayrshire who is a very keen cycle race official and takes an interest in the radio side of the hobby.

Races in Britain tend to fall into one of two categories the first can be described as 'Local' races. These are held on public roads around Great Britain nearly every week from mid February to late September and are promoted by clubs and divisions of the British Cycling Federation. The size of these races vary considerably but the most common means of communication between the Organiser, Lead car, First aid, Judges and service vehicles is to use CB radio. The decision on which channels are to be used is usually taken just before the race starts. A lot depends on the level of general CB activity in the area but normally one channel is assigned as the 'Prime' channel with another used as a 'Reserve' if the race moves into an area where the 'Prime' channel is already in use. Channels 32 and 23 are the most commonly used for this purpose, but it may vary around the country. Most CB operators are very co-operative when races are on and frequently monitor the progress of races without causing any interference problems.

The second category includes the various National and International level races. These tend to be much larger with national companies promoting well known events such as the Kellogg's tour of Britain, The Milk race and Leeds World cup race. At this level it is more common to make use of hired p.m.r. equipment with channels assigned from a number of frequencies which are available for 'Short Term Hire'. Three channels are typically used for race control, channel 1 being a general race control and information channel, channel 2 tends to be used to pass confidential information between the organisers and senior officials and finally channel 3 which is used by the motorcycle marshals' handhelds. Other channels may occasionally be used for support services including a continuous information service which is intended to keep the assembled press, radio and TV crews up to date with the latest happenings. As well as the race promoters many teams also extensively use radio communications to keep in touch with each other. Once again most of the frequencies used for these purposes are found amongst the short term hire channels. Some teams have been experimenting with miniature transceivers fitted in the riders helmet or jersey pocket. The frequencies used for this are a closely guarded secret and no doubt carry some very interesting traffic.

Phillip Murphy from Eire has also contributed information about cycle racing in Ireland. As is the case in Britain CB radio tends to be used at the smaller events and short term hire p.m.r. equipment at the larger meetings. There are one or two slight differences between Irish and British frequency allocations but team communications have been heard around 78MHz and 169MHz although this may change at future events as a result of new frequency allocations.

I have also heard that the DTI may allow foreign teams to use frequencies outside the bands normally allocated for such purposes. This is to ease the burden on international race teams who would previously have to use different sets of radio equipment in order to comply with the licensing conditions in each country they visit. The main stipulations being that equipment can only be used for a limited period of time and must not interfere with other radio systems operating on the same frequencies. This is a major change in licensing policy and demonstrates a much more liberal attitude towards frequency management by the Radiocommunications Agency.

As well as race team communications, a major event is likely to attract TV, film and press crews many of whom will be using some form of radio communication to help co-ordinate their coverage of the event. TV and radio companies often use their own radio equipment which usually operates in different frequency bands to that used by the race officials. Bands commonly used for these purposes include 52-56, 62-64, 69-70, 76-77, 141-142 and 455-456MHz.

The communications are usually very easy to identify as they often continuously transmit a race commentary at low level which is occasionally punctuated with instructions from the director at a significantly higher volume level. Several readers have commented that it is particularly interesting to monitor these transmissions whilst the event is being televised as it gives a good insight into how the programme is produced and the camera shots selected.

I would welcome any further information on subjects similar to this, particularly regarding motor racing teams. If you think you may be able to contribute something why not drop me a line.

Table 1.
Frequencies available for use by all Short Term Hire licensees.
Duplex frequencies may also be used for Simplex operation.

Duplex		
Base	Mobile	
85.875	72.375	
167.200	172.000	
456.925	462.425	
Simplex		
169.0125	169.1375	169.1625
169.1875	462.475	

The following frequencies are also available for new licensees.
The 163MHz Base TX frequencies can also be used for Simplex operation.

Duplex		
Base	Mobile	
163.900	159.400	
163.925	159.425	
456.9875	462.4875	
Simplex		
159.4875	159.500	159.5875
159.625	159.6875	163.900
163.925	163.9875	164.000
164.0875	164.125	164.1875
456.8625	456.9875	462.3625

Short Term Hire

As I mentioned before the frequencies allocated for Short Term Hire use have recently been revised. This is because the existing allocation at 169MHz has been modified in order to provide frequencies for a new European paging system known as ERMES. The DTI Radiocommunications Agency has now allocated a number of new frequencies in a band which was previously used by the forerunner of cellular telephones, BT's System 4. You may wish to make a note of these if you are considering taking your scanner to the races.

Alinco DJ-580E

Although the Alinco DJ580E Amateur transceiver is not a true scanning receiver it does have a wideband receive capability and permit a.m. airband reception, so the following information may be of interest to readers of this column. The details were sent to me by **Tony Cox** of Surrey, whom I think I met at the Newbury Amateur Radio car boot sale a few years ago! Tony wanted to test some ex-p.m.r. a.m. radios he had obtained and he wondered if he could use his Alinco transceiver. After examining the circuit diagram he couldn't see any reason why the set could not provide a.m. reception outside the v.h.f. airband. After some experimentation he found a method which worked consistently.

1: Enable wide-band receive (using FL, #212)

2: Set programable limits (memories P1 & P2) to include the frequency of interest.

3: Disable wide-band receive (using FL, #212)

4: Start programme band scan.

5: On alternate steps the a.m. detector is enabled, with the squelch open, use the up/down keys to select the desired frequency and mode

6: Halt the scan and adjust the squelch for normal listening

7: The frequency can be saved to memory P1 or P2 but no others.

With trial and error in selecting the scan limits it is possible to tune to an exact frequency. Alternatively by selecting 5kHz steps you can quickly tune close enough to the desired frequency for most purposes. The i.f. filter bandwidth is sufficiently wide for little degradation of the signal to occur.

I would think that it may be possible to fool other Alinco models in a similar way to this method, so my thanks to Tony for passing on this information.

PRO-2004 Interference

Peter Barber of Coventry is experiencing problems with his Tandy PRO-2004 Scanner interfering with TV reception. I have previously mentioned this subject in the June 1988 column, but it seems to feature fairly regularly in your letters, so I think it is it worth taking another brief look at the subject. This is usually only a problem with modern continuous coverage scanners as they use a first i.f. of around 600-700MHz. The interference arises when the scanner is tuned to a particular frequency band because of an effect known as local oscillator radiation. One of the frequency determining circuits inside the scanner, termed the local oscillator, operates on frequencies in the uhf TV band and is acting as a low power transmitter. The signal causes diagonal lines to appear on the TV screen with the type and severity of pattern depending on the frequency relationship between the scanner and the TV signal.

The first thing to do is to identify how the interference is being transmitted to the TV set. It may be radiated directly from the circuit board inside the scanner or via external leads, alternatively a small proportion of the local oscillator signal may be finding its way out of the scanner via your antenna.

Try disconnecting the antenna from the scanner and see if it reduces the level of interference. If there is little or no change the interfering signal must be radiating directly from the scanner case or any external wiring such as power supply or speaker leads. Try changing the location of the scanner and interconnecting leads, if this reduces the interference you can try adding additional screening to the cabinet or passing the leads through ferrite chokes. These are available from Tandy and are sold to reduce computer noise radiation from PC interconnecting leads. You could try operating the scanner inside a screened cabinet such as a desk which has been lined with aluminium foil. I found this was a very effective way of reducing the level of hash being radiated from a cheap PC I used to use in conjunction with RTTY decoding software. Adding an earth to the screen is not likely to make much difference as the impedance of the connecting cable is too high to be effective at vhf or uhf. You may have use several different techniques before you reduce the level of interference to manageable proportions.

Once you have reduced the level of directly radiated interference you can turn your attention to signals leaking out via the antenna. Try reconnecting the antenna lead - does the interference return? If it does, just try connecting the outer of the coaxial cable to the antenna socket. If the interference returns it must be being conducted along the outer braid of the coaxial cable which is acting as an antenna. Using better quality coax or moving it away from the TV antenna may help and ferrite sleeves placed over the coax near the scanner antenna socket could be tried in severe cases.

If the interference is only present when the antenna is properly connected the interfering signal must be transmitted directly from the antenna. The most effective way of reducing the problem is to move the TV and scanner antenna further away from each other. If the problem continues it may be necessary to provide additional isolation between the scanner and antenna. This can be achieved by fitting a pre-amp in circuit. In this application the amplifier is not used to provide additional gain but to act rather like a one way valve in that it only allows signals to flow from the antenna to the scanner. If you try this method it is worthwhile fitting a resistive attenuator between the pre-amp output and the receiver input. This performs two functions, it improves the isolation and secondly, it prevents the increased signal level from overloading the receiver.

In really severe cases you may have to fit a 470MHz low-pass filter in the scanner antenna lead. As far a I am aware there are no commercial units available so you would have to make one based on designs published in either the *RSGB* or *ARRL Amateur Radio Handbooks*. The disadvantage of fitting such a filter is that it prevents any signals above 470MHz from being received by the scanner, but this may still be preferable to causing interference. I hope that this information is of help to you Peter. Please let me know if you solve the problem.

SCAN-PRO BBS

And finally this month news of the first UK computer bulletin board aimed specifically at scanning enthusiasts. Called SCAN-PRO the system currently operates using V22bis from 18.30-08.00 Mon-Fri and 24 hours at the weekend. The BBS is intended to provide scanning enthusiasts with a means of confidentially interchanging information and news. Callers hoping to download frequency lists may be disappointed but will be able to examine a wide range of scanning related topics and software. There has been a very positive response to the BBS, even though it has not received much publicity other than by word of mouth. The system operator should have enhanced the system by the time you read this, so why not call it on (0305) 860086 and see what it has to offer. As is the case with most BBSs, new users will only initially be given limited access until the system operator has verified their details, this helps prevent misuse of the system. Until Next Month - Good Listening.

Airband

CONTINUED FROM PAGE 49

take this as a guide but must check current details.

Described in the November 1992 CAA *GASIL*, the inactive RAF airfield at North Coates, near Grimsby, is now operational for civil traffic. Flights should call Donna Nook 122.75MHz to liaise clearance with this nearby danger area. Colerne, near Bath, has acquired an Aerodrome Traffic Zone and the frequency for this is 122.1MHz. To the Lower Airspace Radar Service has been added Honington (135.2MHz). Good to see that the service is being maintained despite the loss of some other participating RAF centres, as mentioned in previous issues.

AIC 97/1992, from the CAA, reassigns the Danger Area Activity Information Service (DAAIS) originally provided by Brawdy (which has now closed). London Information (124.75MHz) should be contacted instead. Danger Area D116 Hartland has been replaced by D112(N) Hartland (North) and D112(S) Hartland (South) whose Danger Area Crossing Service is available on the same frequency or from Chivenor (130.2MHz). Honington no longer offers DAAIS for D208 Stanford on 129.05; call instead 128.9MHz. *AIC* 101/1992 withdraws the runway 23 i.l.s. at Heathrow which will be interesting whenever a strong south-westerly blows, like the early December afternoon on which I am writing this!

DUX-92-3 Catalina JV 928 at Duxford. *Christine Mlynek.*

The next three deadlines (for topical information) are February 5, February 26 and April 8. Replies always appear in this column and it is regretted that no direct correspondence is possible. All letters to 'Airband,' c/o The Godfrey Manning Aircraft Museum, 63 The Drive, Edgware, Middlesex HA8 8PS. Genuinely urgent information/ enquiries: 081-958 5113.

Abbreviations

AIC	Aeronautical Information Circular
a.t.u.	antenna tuning unit
CAA	Civil Aviation Authority
g	grams
GASIL	General Aviation Safety Information Leaflet
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
i.l.s.	instrument landing system
ISSN	International Standard Serial Number
kts	knots
l.c.d.	liquid crystal display
m	metres
MHz	megahertz
Mk.	Mark
NOTAMS	NOTices to AirMen
RAF	Royal Air Force
SRN	Saunders-Roe Nautical
u.h.f.	ultra high frequency
UK	United Kingdom
v.h.f.	very high frequency

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Info in Orbit

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

This new year should see some significant changes to the WXSAT scene, coming from several directions. On the equipment side the relentless fall in computer prices creates an irresistible opportunity to set up a state-of-the-art WXSAT receiving station.

Glimpses of the future can be seen by looking around the extensive offerings currently available from the UK suppliers of WXSAT equipment. Arrangements are underway for me to review some of this new hardware for the benefit of newcomers to this fascinating hobby.

The launch of the new NOAA 13 should have taken place by mid-January; launch date has been postponed since late autumn. When it is operational, either NOAA 9 or 10 will be switched off.

The Russian GOMS geostationary WXSAT has similarly suffered launch delays, as has also the next Chinese polar orbiting WXSAT FENGYUN 1-3. The eventual launch announcements could well be after the events, so it could be a case of "when you hear the signals, you will know it has been launched!"

New Features

During 1993 I am proposing to run features on both METEOSAT Primary Data systems (PDUS) and NOAA High Resolution Picture Transmission systems (HRPT). It is important to recognise that while we will all continue to collect NOAA and METEOR a.p.t. data, and METEOSAT WEFAX data, whether using home-built framestores or modern computers, the technology for decoding continues to progress.

What was once merely a pipe-dream - (the reception and decoding of the high resolution pictures from METEOSAT and NOAA) - is now more than around the corner. I know of at least one correspondent to 'Info in Orbit' who has ordered an h.r.p.t. unit, and, apart from me, there are some half-dozen people within Britain who are now operating PDUS equipment.

This edition includes an introduction to h.r.p.t. and I hope to hear your comments on this aspect of imaging. Remember that before you bought your WEFAX/a.p.t. equipment you probably spent some time reading the magazines and asking around. I know I did! I had a little advantage in having come from a background in professional satellite work.

Selecting the most suitable hardware and software for your own purposes is not easy. You can pick up the phone and order a 'turn-key' unit (one which simply connects together without any need for elaborate construction) and spend over a thousand pounds. If all you wanted to do was to 'weather pictures', there are cheaper ways!

I wanted to pick up the original satellite signals, not simply tune my h.f. receiver into a FAX station and collect one. That isn't to say that FAX isn't interesting - far from it! I collect v.h.f. FAX transmissions as well. But having previously worked with satellites I really wanted to hear them myself, and the University of Surrey satellite UoSAT 2 was an excellent and very economical way in.

This year I will try to present summaries of the available WXSAT products in a form that readers can easily digest. Product selection for review is not an easy matter. The price spectrum is enormous -ranging from 'shareware' satellite tracking software to perhaps a £40 000 (or more) ground terminal for h.r.p.t!

I welcome comments and suggestions from readers, but please remember to enclose an s.a.e. if you want a personal reply, and please note that several questions will find their way into this column, especially if they are of interest to others.

Current WXSATS

For several days near mid-November the WXSAT scene entered a state of near hibernation when NOAAS 11 and 12 were the only WXSATS transmitting. I can't recall any time in the past when this was all that was available.

The next transmission that I received from METEOR 3-4 was on November 21 for the morning passes. It has remained on since, but only giving visible imagery. When it entered the night time part of its orbit, its telemetry switched to blank images with only phasing bars. This could be clearly heard even without decoding the signal.

In early December, as I write, it is making valiant attempts to resume infra-red transmissions! Listening carefully as it changes over, it is transmitting bars for about four minutes, then one line of infra-red, before giving up and returning to bars only.

Looking at the current positions of recent METEOR satellites shows that METEOR 3-5 is currently receiving poor illumination from the sun, so I wouldn't expect it to be on for at least a few weeks. However, both METEORS 2-19 and 2-20 are well placed (plenty of sunshine during their orbits) so I presume that the METEOR 2 series has now been formally retired. Long live the METEOR 3 series!

During several nights I have left my receiver tuned in on 137.85MHz or 137.40MHz but nothing has been recorded. Some other 'Info in Orbit' readers have been doing this as well, but similarly without success.

This edition of *SWM* has been compiled slightly earlier than normal so further changes may occur after this is written.

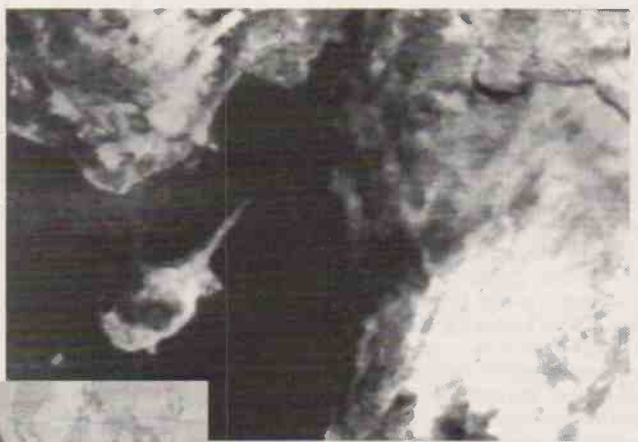


Fig. 1: Roger Ray and daughter Joanne

Fig. 2: Cyprus - METEOR 3-5 from Roger Ray

WXSAT Interference

Last August a satellite called S80/T was launched. Built by Matra Marconi Space and the University of Surrey for the French Space Agency CNES, it is being used to study the use of the v.h.f. band for mobile communications.

The satellite has a nominal lifetime of about one year and is really a 'pathfinder', which if successful, could lead to a constellation of five satellites in low earth orbit. Transmissions are reported to be in the 137.0 to 138.0MHz band - not unknown for weather satellite transmissions!

There have been reports of interference to NOAA 10 infra-red images, but personally, I'm not sure whether the frequency used by S80/T is responsible. I have not yet received convincing transmissions from this satellite at either 137.50 or 137.85MHz, both having been reported. More news as it becomes available.

Other Satellites

During November the MIR manned space station was passing over Britain during daylight hours and so for the first time in some months I logged reception of their communications on 143.625MHz. This is a powerful transmission that can be received with minimal antenna requirements.

Also continuing its transmissions on 137.56MHz is X3, better known as PROSPERO, an early British scientific satellite, launched in 1971. Having an orbital inclination of about 82° it passes over the UK several times per day.

If you monitor UoSAT-2 (OSCAR 11) on 145.825MHz, you may also hear INFORMATOR-1 which transmits on 145.815MHz, virtually the same frequency. OSCAR 11 telemetry is easily decoded, but further information is published in *Practical Wireless*.

Letters

Roger Ray of Telford is a regular correspondent and he has sent in some WXSAT pictures of very good quality, plus a 'domestic' one including daughter Joanne - see **Fig. 1**. Roger's QTH seems to have a good south-easterly horizon judging from his WXSAT prints. The photograph in **Fig. 2** shows Cyprus as seen by METEOR 3-5. From its higher orbit (some 1200km up) it lets us see much further afield than the NOAA WXSATS.

Roger uses Timestep's PROsatII hardware/software, which I reviewed some months back, and comments that he is very pleased with the results. He has tried re-running old tape recordings of satellite signals and found pictures that he didn't realise he had. I have some more of Roger's pictures which will be included in future editions.

He also has the Track2 option

Fig. 3: Spain and region from F Slater

added. I found this program particularly useful for predicting the operations of NOAAs 9 & 10. Track2 shows the simultaneous positions of up to six satellites (or five if you include the solar display), so the overlapping footprints of NOAAs 9 & 11, plus those of 10 & 12 can be identified.

F Slater of Spalding sent in some colour pictures of which **Fig. 3** shows Spain taken during June 1991. Those readers who are new to satellite imagery could be confused by reference to colour pictures. The satellites do not actually detect any colour information - only brightness level. However, modern software and hardware can replace dark areas of the picture with blue, giving the visual impression that it is genuine colour. Similarly land, normally seen as an intermediate grey, can be replaced with shades of green. Under optimum conditions a most realistic colour rendition can be achieved.

Colour perfection is almost impossible to achieve because of the ambiguity of dark rain clouds (which the software may give a green colour), or solar reflections in the sea (which similarly can result in a green shade).

Given these limitations, it is still not too difficult to set up a colour palette for individual pictures, which produces a superbly realistic colour rendition. The problem that I have found is wanting to store ALL of these pictures!

Mr Slater receives both METEOSAT transmissions, and the polar orbiters, and uses an Amstrad PC3286 fitted with a Timestep board, as well as having built his own framestore.

METEOSAT Re-transmissions

Martin Hazelgrove of Brighton asks about METEOSAT retransmissions, and wonders why GOES-W and GMS are not included. I don't know the specific answer to this, though I shall ask EUMETSAT shortly, since it is of interest to everyone. I would speculate that the answer might be the availability of scheduled transmission time, if not problems of access.

The METEOSAT 4 (European broadcasts) schedule is almost completely full. The raw data received by the ground station is processed in realtime and transmitted by the satellite, within minutes, if not seconds, of its acquisition. There are short time slots between some frames, during which maintenance may be performed.

METEOSAT 3 WEFAX images broadcast by METEOSAT 4 are currently received directly at the ground station. In the case of GMS, which is positioned near Japan, such direct reception is clearly impossible. I expect that inter-satellite links or land lines could be organised, much as was done during my days as a satellite controller at the Rutherford Appleton Laboratory, but such links have to be paid for, and unfortunately the images are probably only of interest to the amateur. Weather forecasters in Britain don't need to know if it is raining in Tokyo (even if Tony Hancock did!)

It is always interesting to receive mail from foreign parts, so a letter from **Jean-Yves Le Bihan FD1GMU** of Louvigne de Bais, France was welcome. Jean-Yves was wanting further details about Ray Howgego's Lindenblad antenna, which has created quite an interest. His own equipment currently includes the Cirkit receiver module, but he plans to enhance his system.

Matt Taylor of Woking has produced a very good infra-red picture from NOAA 10, taken on a warm, sunny evening last May. Britain had a warm spell in spring that I thought indicated a warm summer to come! So I was wrong! Matt's picture clearly shows many towns and rivers. The suburbs of London and Liverpool show much darker than their surroundings. The cities of Europe are similarly made visible by their relative warmth.

Fig. 4: Britain in May; NOAA 10 from Matt Taylor

High Resolution Pictures

This description is a somewhat vague one because there are several different types of imaging satellite, eg., SPOT, COSMOS, METEOSAT, NOAA and others. All of these produce pictures which, at their best, can be considered to be of high resolution.

Different requirements lead to different data transmission methods. For some military reconnaissance purposes, recoverable photographic films have been used by some COSMOS satellites. The other extreme is a.p.t!

Understanding the names given to the various types of picture transmission systems is helpful. The NOAA WXSATS were the first to use the standardised form of picture transmission - a.p.t. - and this term is used to describe both METEOR and NOAA low resolution images. It stands for automatic picture transmission, and refers to the fact that these satellites transmit continuous pictures on a line-by-line basis, as they orbit the earth.

All of the polar orbiting satellites, METEORs, NOAAs, OKEANs and FENGYUNs (whenever operating) use this method of picture encoding. Consequently, as has been mentioned before, any hardware that can decode one, can decode them all.

METEOSAT (and similar geostationary WXSATS such as GOES, GOMS and GMS) use an identical image coding process, but with the addition of different start and finish tones - which are completely inapplicable to the polar orbiters because, as mentioned, they (the polar WXSATS) transmit continuous pictures - not four minute frames.

The American NOAAS collect all of their imagery using an instrument called a radiometer. This consists of a Cassegrain telescope (an optical instrument of the type often used by amateur astronomers - though of course this is made to higher standards). The instrument is designed to look at five specific wavelength regions, centred near 0.6, 0.8, 3.5, 11 & 12microm. These are individually called channels 1 to 5.

The channels are carefully selected to look through 'windows' - frequency bands occupying gaps in the spectrum of radiation which can penetrate the atmosphere.

Channel 1 is in the visible part of the spectrum and so shows cloud and land particularly well during the summer. Channel 2 is nearer the red end of the spectrum but still provides good visible images. Channels 3, 4 and 5 are all in the infra-red, but are positioned for optimum responses to reveal temperature differences on the surface of the sea and clouds.

All the a.p.t. data that we receive from the NOAAS on 137.50 & 137.62MHz originates from two of these channels. A fully functional receiver for h.r.p.t. must therefore provide outputs from each of these five channels. More in future columns.

METEOSAT-6 (MOP-3)

This satellite currently has a launch date around September 1993, from Kourou in French Guiana on an Ariane 4 launch vehicle.

New Products

Products are constantly being updated and it is my hope that suppliers/distributers will keep me informed so that I can pass the information on. I have received two press releases containing details of such products, but unfortunately neither gave details of either the suppliers or manufacturers! One product is for upgrading Nimbus computers with image processing software.

Kepler Eements

Julian Hucksted of Dover asks about the possibility of including Kepler elements in the magazine. This was actually done for some years but times have changed. Because of magazine printing schedules, such elements are out of date by the time of publication and you can imagine just how much space they'd take up, too! Also, many amateurs now have access to Bulletin Boards via their computers, and many BBS now carry Kepler elements, some of which may be only a few hours old.

For those that cannot obtain recent Kepler elements, I will send a print-out of these upon receiving an s.a.e. and separate stamp. All known weather satellites are included, together with their transmission frequencies if operating. This data is supplied courtesy of NASA.

Frequencies

NOAAs 9, 11 a.p.t. on 137.62MHz; NOAAs 10, 12 on 137.50MHz; NOAA beacons on 136.77 & 137.77MHz; METEOR 3-4 or 3-5 on 137.30MHz; OKEAN 3 on 137.40MHz occasionally; FENGYUN 1-3 monitor 137.06 and 137.80MHz.

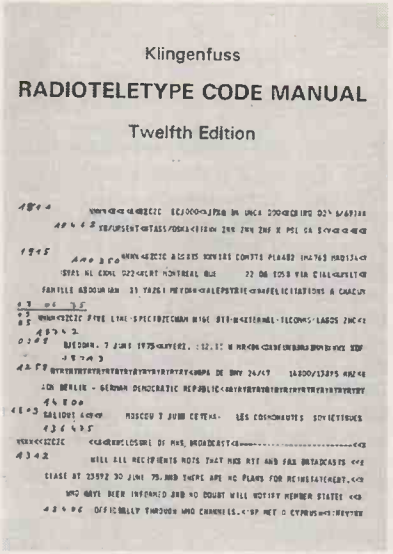
Decode

Mike Richards G4WNC
200 Christchurch Road, Ringwood, Hants BH24 3AS.

John Lundy of Andover writes with some good advice for all listeners - join a club! Although the vast majority of local radio clubs are amateur radio based, many have sections for short wave listeners. If your club hasn't a short wave section - why not start one? One of the most common problems with short wave listening is the lack of a forum to share ideas and solve problems. Membership of a club can be a great help.

John has also written with help for a request I made for Archimedes software. He has located a source in Exeter. The address is Arch Angel PD, PO Box 41, Exeter, Devon EX4 3EN.

Those who noted my recent mention of the Lloyd Register of Shipping will notice that I omitted to include the address. It is: Lloyds Register of Shipping, 71 Fenchurch Street, London EC3M 4BS. Thanks to Graham ... for reminding me.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PC-SWL Update

Having just received the latest version of this popular IBM-PC package from Peter Cotton of Comar, I thought I'd give a mini review here.

Let's start with some background. The program originates in the USA and is produced by John E. Hoot of Software Systems Consulting. As John states in his manual, the program was developed initially to satisfy his own personal monitoring requirements. Although the early versions performed well, I felt the package could be developed into something far more powerful. This latest release, as you will see, goes a long way in that direction.

One of the important points for any computer based system is the demands made on the systems itself. PC-SWL calls for a minimum of 512K memory and MS-DOS version 2.1 or greater. With so many video systems now available, it was good to see that all the common types were acceptable. The program could also be set-up to take account of some of the unusual clock rates used by some PCs. For those that have uses for their serial ports, There was an option for the operator to select from ports 1-4.

Connecting PC-SWL to the radio was via a lead with a 25-way D connector at one end and a 3.5mm jack at the other. Incidentally, the decoder hardware was very neatly built into the 25-way connector. As you can see, the interconnections have been made very simple.

Installation of the software was equally simple, with all the appropriate files expanded and transferred automatically by the install program. For hard disk users PC-SWL is automatically placed in a sub directory. It was also possible to operate the program from a floppy drive.

With the connections made and the program running, you are presented with a clear, well laid-out screen. The top row listed the various command options, whilst the bottom line conveyed an assortment of status information. Accessing the command menus was done using the now standard system of pressing the ALT key followed by the first letter of the required command. On selecting a command option you were presented with a pop-up menu showing the available choices and current settings. The use of a standard system like this makes for quick and easy movement around the program. Whilst this system is good for groping around an unfamiliar part of a program, it can become a little slow for the experienced operator. PC-SWL copes with this by using a series of short cuts via the function keys. These proved to be very quick and easy in practice.

In addition to handling RTTY, ASCII, c.w. and FEC, the latest version includes full support for SITOR/AMTOR ARQ signals. The RTTY/ASCII mode includes a number of pre-set baud rates with the option for the operator to enter special rates. The standard rates provided were 45, 50, 57, 75 and 100 baud. You could also compensate for reverse polarity signals with a single key press.

Accurate Tuning

One of the problems facing many newcomers is how to accurately tune a data signal. PC-SWL has this well and truly taped-up with an excellent set of tuning aids. The first and most commonly used is the tuning scope. With this system you're presented with an oscilliscope type display. This has a horizontal line that represents the centre point of the tuning display. The signal is then represented by a line that moves vertically inline with the data signal. To ensure accurate tuning all you have to do is set the signal to exactly straddle the centre line. Those of you without the benefit of fine tuning steps will be pleased to hear that the tuning centre point of PC-SWL can be adjusted from within the program. In addition to this very effective system, there was also a digital scope. This gave a display of the signal after the decoding process and was useful for checking the effects of interference.

Tuning c.w. signals requires a different system and PC-SWL has a special tuning aid for this mode. This looks similar to the tuning scope except that the horizontal line is nearer the top of the screen. To tune a c.w. signal you adjust the receiver so that only the bursts of c.w. cross the line. This proved to be a very fast and accurate tuning system. The final tuning aid was an analysis mode that provided some useful data on the received signal. This was mainly of use when attempting to decode a new signal.

Enhancements

In addition to PC-SWL, Comar distribute FAX and SSTV packages. The latest version of PC-SWL can be configured to access these programs directly. This is a great boon as it speeds operation considerably.

One of the most significant enhancements to PC-SWL is the inclusion of a frequency database. This includes fields for frequency, time, code, rate, mode, bandwidth, ID and a short description. The program comes with a useful list that can be altered and updated by the operator. You can even generate you own printed listings of all or just specific types of station. The database commands provided were very comprehensive and should prove very useful. One added bonus was the facility to upload or download the decoding parameters. What would really finish this off would be some additional software to link with popular receivers. You could then download both the decoder and receiver settings. This could even be extended further to create a scanning utility receiver!

Just to complete the picture you can now run PC-SWL using a script file. If you create a simple text file with a series of PC-SWL commands, this can be automatically executed when PC-SWL is started. This powerful option gives the operator the ability to generate automatic routines for unattended operation.

That's about enough for now, but I'm sure you can see that PC-SWL is beginning to look very attractive to the PC user. For more details contact Comar Electronics, Unit 10, Samuel Whites Estate, Medina Road, Cowes, IoW PO31 7LP. My thanks to Peter Cotton of Comar for supplying the review copy.

Klingenfuss Update

Just before going to press I received copies of the latest releases from Joerg Klingenfuss - the new *Guide to Utility Stations* and *Radioteletype Code Manual*. Rather than rush in a short review I'll include a full details in next month's column, but see the Book Service pages for price details.

Satellite Utilities

As a number of utilities have migrated to satellite based systems, I thought it about time we had a look at how these operate. Probably the best way to do this is to look at one of the latest systems. For this, I've chosen the powerful INMARSAT-C system that gives global access to the small operator.

The key to any satellite system is the international coordination and funding. This is provided by the INMARSAT organisation. Not only do they set-up the satellites, but they also define the operating parameters for the systems users. To give the required global coverage, INMARSAT have divided the globe into four ocean regions. Each of these is in turn served by a satellite in geostationary orbit. The only areas outside the coverage are the polar regions where the satellites are just below the horizon. This is not serious omission, as there's little commercial activity in these regions.

In addition to the C system I'm covering here, INMARSAT also have A, B and M systems. Whilst B and M are new systems that are yet to be launched, the A system has been developed into a primary communication system for the larger maritime mobile operators. One of the limiting factors with the A system is the need for a 1m steerable, tracking antenna system. This is hardly practical for the land mobile operator!

Let's now take a closer look at the INMARSAT-C system. The flexibility to use the system in a land mobile environment has been achieved mainly by reduced antenna requirements. A typical mobile installation would operate with a simple enclosed helical antenna about 290mm long. It's this simple fact that makes satellite communications accessable to small

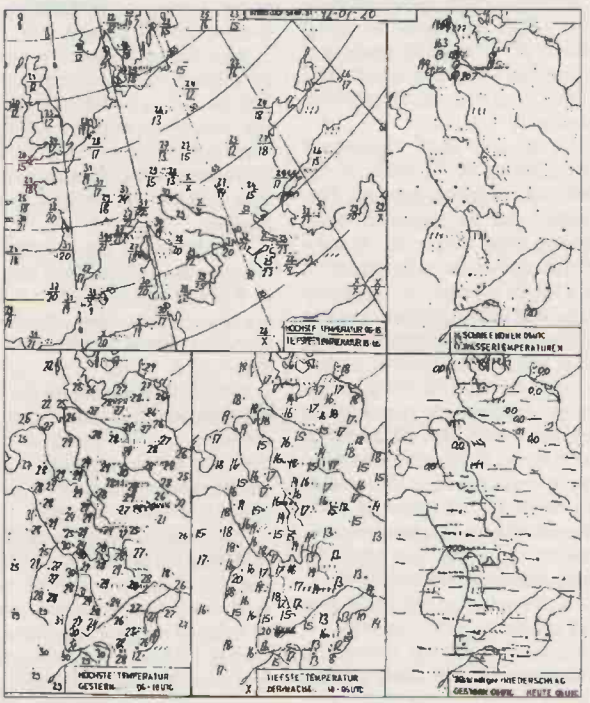
mobile operators. Just imagine the potential for the international road haulage operator. He'd be able to send messages to his vehicles anywhere in the world.

Let's now have a look at how the network is set up to support this service.

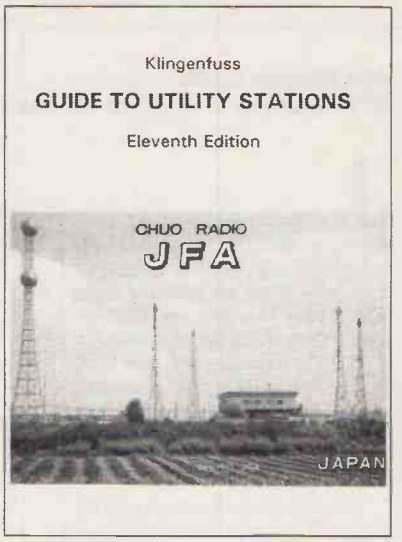
Each of the satellites is controlled by a single Network Co-ordination Station that performs an administrative role. One of the key activities is maintaining a database of all the mobile stations that are logged on to the system. To enable a mobile station to be located anywhere in the world, the four coordinating stations are all linked together. While the coordinating stations provide the administrative control of the network there are a range of Land Earth Stations (LES) that handle the communications in and out of the network. These LES are owned and operated by competing network suppliers in an attempt to keep costs down. The LES also provides the vital link between the satellite system and the conventional telecoms networks. The LES are also linked to the coordinating station.

When a mobile station switches on, it sends a log-on request to the satellite using a signalling channel. This request is passed to the appropriate LES who then informs the coordinating station that the mobile station is active in that area. When the mobile wants to send a message, it's allocated a free messaging channel by the LES. All the messages are sent using what is known as X-25 protocol. This is very similar to that used packet radio, where each message is sent in short bursts and includes the address information within each packet. The great advantage of this system is that it allows communications to be shared and features full error correction. Once a message has been sent it can be mixed with other messages but retains its unique identity. As the INMARSAT-C system has been designed to handle data communications, there needs to be a link from the satellite network to conventional data networks. There are several ways to do this. The most basic is to use the standard Telex network. By using this anyone can gain access to a mobile unit. A perhaps more sophisticated option is to use BT's Packet SwitchStream data network. This is an advanced X-25 based data network that can be accessed either via dedicated land lines or using the telephone network. When accessing the satellite using this system you have a more advanced range of messaging services available.

That about concludes this brief insight to a satellite system. However, some of you may be asking what frequency do they use and can we listen in. I don't know the exact frequencies other than that they are s.h.f. As to the feasability for monitoring, this is very limited. Not only are the modulation systems quite advanced, but they are soon to introduce message scrambling specifically to improve the security.



A selection of FAX charts from George Newport.



The new *Guide To Utility Stations* from Joerg Klingenfuss.

Weather Charts

Philip C. Mitchell of Newbury has just finished producing a book dedicated to the interpretation of weather maps and charts. Knowing that many Decode listeners have a keen interest in weather maps, I thought it deserved a mention. In its prototype form, the book comprised some forty-three A4 pages with a spiral binding. The print quality was good quality dot matrix and there were plenty of sample charts to aid understanding.

The main core of the book covered a wide range of common chart types. Each section was complimented with at least one sample chart and a detailed description of the key features. The main topics covered were:

Surface analysis
Geostrophic wind scale
Surface forcast and wind
Significant weather, tropopause, max Wind forecast
Upper wind and temperature forcast
Contour map 300 hPa analysis
Height 500 hPa and thickness chart 500-1000 hPa forecast
Rainfall precipitation forecast
Multi function chart analysis
Air sample trajectories forecast
Agrometeorological chart analysis
Temperature, height, wind speed and direction analysis
Upper air tephigram analysis
Wave and swell forecast.

As you can see, the coverage is really quite comprehensive. If you would like a copy, they are available from Philip Mitchell, 2 The Marlowes, Newbury, Berks RG14 7AY. The inclusive price is £6.50.

Frequency List

The Beginners list continues to be extremely popular and is running at well over two hundred so far. The list is aimed primarily at the beginner so lists just a selection of the most reliable signals. The other important point is the the list is set out in chronological order not frequency order. This shows active stations to be found at virtually any time of day or night. There is a also a brief introduction to the SITOR system used extensively for marine communications. If you'd like a copy of this list just send three first or second class stamps to the address at the head of the column asking for the Beginners list. It would be helpful if you could include an address label. If you'd like my ordinary listing mark your letter Decode list and include stamps and address label.

Now for this month's selection of frequencies. The format is the usual: frequency, mode, speed, shift, callsign and notes.

0.518MHz, SITOR B, 100, 170, -, 2158, Niton Radio NAVTEX

2.5456MHz, AUTOSPEC, 68.5, 85, ?, 2346, Oil rig

5.15MHz, FAX, 90, 576, RVO73, 2317, Moscow Met

5.22MHz, RTTY, 75, 400, SUA94, 2143, MENA Cairo

7.4285MHz, RTTY, 50, 850, -, 0049, TELAM Buenos Aries - press

7.806MHz, RTTY, 50, 400, YZD7, 2309, TANJUG press

8.070MHz, RTTY, 75, 1100, ZRH, 0035, San Capetown

8.1537MHz, RTTY, 75, 250, SNN299, 0709, MFA Warsaw

9.797MHz, RTTY, 50, 500, YOJ27, 0958, ROMPRESS Bucharest

9.9825MHz, FAX, 120, 576, KVM70, 1810, Honolulu met

9.994MHz, RTTY, 50, 800, CSY, 1002, Santa Marina Air

11.090MHz, FAX, 120, 576, KVM70, 1803, Honolulu Satellite

11.1235MHz, FEC A, 96, 400, DFL26, 0653, PIAB Bonn press

12.994MHz, CW, -, -, VIP04, 1810, Australia

14.367MHz, RTTY, 75, 400, BZP54, 1119, Xinhua Beijing

14.4817MHz, ARQ-E3, 48, 400, RFFA, 0730, FF Paris

14.405MHz, SITOR, 100, 170, ?, 0935, UNHCR Geneva

15.462MHz, RTTY, 50, 400, -, 1110, JANA Tripoli

19.8225MHz, RTTY, 50, 350, 5AF, 1022, Tripoli Air

20.0117MHz, TWINPLEX, 100, -, ?, 0649, Pakistan Emb, Bucharest

20.8015MHz, SITOR, 100, 170, ?, 0750, Red Cross

22.533MHz, CW, -, -, ZLW, 1040, New Zealand

22.694MHz, CW, -, -, XSG, 0945, China

22.6285MHz, CW, -, -, VTG, 1340, India

Long Medium & Short

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

Freq kHz	Station	Country	Power kW	Listener
520	Hof/Hurzburg	Germany	0.2	M*
531	Ain Beida	Algeria	600	D*,M*,W*
531	Torshavn	Faroe Is	5	F
531	Leipzig	Germany	100	D*,L*,N,R*,W*
531	Oviedo	Spain	10	D*,L*,M,N
540	Wavre	Belgium	150/50	B,D*,G*,L*,N,O,R*
540	Sidi Bennour	Morocco	600	D*,L*,M*,N*,U*,W
549	Les Trembles	Algeria	600	D*,M*,N*
549	Bayreuth	Germany	200	B,D*,L*,N,O,R*
549	Minsk	CIS	1000	M*
549	Moscow	Russia	100	W*
558	Espoo	Finland	100	D*,L*
558	Valencia	Spain	20	D*,L*,N*,W*
567	Berlin	Germany	100	L*,M
567	Tullamore	Ireland (S)	500	B,D*,E*,F*,I,J*, N,O,R*,V,W*
576	Stuttgart	Germany	500	B,D*,L*,N*
576	Barcelona	Spain	20	D*,E*,L*,N*,R*
585	Orf Wien	Austria	600	M
585	FIP Paris	France	8	B,D*,L*,M,N
585	Madrid	Spain	200	D*,L*,N*,O*,R*,U*,V*
594	Frankfurt	Germany	1000/400	D*,L*,N*,O*,U*
594	Oujda-1	Morocco	100	N*
594	Muge	Portugal	100	D*,L*,N*,R*
603	Lyon	France	300	N*
603	Sevilla	Spain	20	L*,N*
603	Newcastle	UK	2	L*,R*,V*
612	Kiel	Germany	10	M,N*
612	Athlone	Ireland (S)	100	B,D*,E*,F*,N*,O,R*,V
612	Moscow	Russia	50	U*
612	Lerida	Spain	10	N*
621	Wavre	Belgium	80	B,D*,L*,N,R*
621	Barcelona	Spain	10	L*,N*
630	Vigra	Norway	100	D*,F*,L*,N*
630	Tunis-Djedeida	Tunisia	600	D*,N*
639	Praha (Liblice)	Czechoslovakia	1500	L*,R*
639	La Coruna	Spain	100	D*,L*,N*,R*,U*
648	P. de Mallorca	Spain	10	N*
648	Orfordness	UK	500	D*,E*,F*,I,L*,N,O,R*
657	Burg	Germany	250	D*,L*,N*
657	RCE-2 Madrid	Spain	20	D*,N*,R*
657	R.Wales	UK	2	L*,M*
666	Bod'sender	Germany	300/180	D*,L*,R*
666	Lisboa	Portugal	135	L*,N*
666	R.Vilnius	Lithuania	500	M*
675	Marseille	France	600	D*,F*,L*
675	Lopic	Holland	120	B,D*,J*,L*,N,O*,R*,V
684	Sevilla	Spain	250	D*,L*,N*
684	Beograd	Yugoslavia	2000	D*,N*,R*
693	Berlin	Germany	250	L*
693	Droitwich	UK	150	F*,O,R*,V
702	Presov (Haniska)	Czech	400	R*
702	Aachen/Fl'burg	Germany	5	B,L*,M,N*
702	Monte Carlo	Monaco	300	L*
702	Zamora	Spain	5	N*
711	Rennes 1	France	300	B,D*,L*,M*,N,R*
711	Heidelberg	Germany	5	M*
711	Laayoune	Morocco	600	D*,M*
711	COPE Murcia	Spain	5	M*,N*
720	Lisnagarvey	Ireland (N)	10	N*
720	Norte	Portugal	100	L*,N*
720	Sfax	Tunisia	200	D*
720	Lots Rd	London, UK	0.5	E*,N,O*,R*,V
729	RTE-1 Cork	Ireland (S)	10	D*,E*,L*,M,N,O
729	Oviedo	Spain	50	D*,L*,N*,R*
738	Paris	France	4	D*,N*
738	Skjaldarvik	Iceland	5	F*
738	Poznan	Poland	300	N*,R*
738	Barcelona	Spain	250	D*,L*,N*
747	Flevo	Holland	400	D*,L*,N,O,R*
747	Gobabis	Namibia	100	H*
756	Brunswick	Germany	800/200	D*,F*,L*,N*,R*
756	Redruth	UK	2	L*,N,V
765	Sottens	Switzerland	500	D*,L*,N*,R*
774	Enniskillen	Ireland (N)	1	L*
774	San Sebastian	Spain	60	D*,L*,N*
783	Burg	Germany	1000	B,D*,L*,N*,O*,R*
783	Miramar	Portugal	100	M*,N*
783	Tartus	Syria	600	M*
792	Limoges	France	300	O*,N*
792	Sevilla	Spain	20	D*,L*,N*,R*
801	M'chen-Ismaning	Germany	300	D*,L*,N*
801	Ajlun	Jordan	2000	M*
801	St.Petersburg	Russia	1,000	M*
801	Burgos	Spain	10	L*,N*
801	Castellon	Spain	5	M
801	RNE-1	Spain	20	M*,R*
810	SER Madrid	Spain	20	O*,L*,N*
810	Burghead	UK	100	F*,V
810	Westerglen	UK	100	D*,E*,L*,N*,O
819	Batra	Egypt	450	M*,N*
819	Toulouse	France	50	D*,L*
819	Trieste	Italy	25	N*
819	Warsaw	Poland	300	D*,N*,P*,R*
828	Hanover	Germany	100/5	N*
828	SER Barcelona	Spain	20	L*
837	Nancy	France	200	D*,L*,N*,R*
837	Sevilla	Spain	10	D*,L*,N*
846	Rome	Italy	540	D*,N*,O*,R*,V*
855	Berlin	Germany	100	D*,L*,N*,R*
855	Murcia	Spain	125	D*,L*,N*,U*
864	Santah	Egypt	500	M*
864	Paris	France	300	B,D*,L*,M*,N
864	Dammam	Saudi Arabia	500	M*
864	RNE-1	Spain	10	D*,M*
873	AFN via Frankfurt	Germany	150	D*,I*,L*,N*,O*,R*,U*
873	Zaragoza	Spain	20	L* N*
882	COPE Malaga	Spain	5	L*
882	Washford	UK	100	L*,N,O,R*,W*
891	Algiers	Algeria	600/300	D*,L*,M*,N*

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

Freq kHz	Station	Country	Power kW	Listener
891	Huisberg	Netherlands	20	B,L*,N,R*
891	Vila Moura	Portugal	10	M
900	Milan	Italy	600	D*,L*,N*,R*
900	Bilbao	Spain	10	L*,N*
900	Qurayyat	Saudi Arabia	1000	M*
909	Brookmans Pk	UK	140	O
918	Madrid	Spain	20	L*,M,N*,R*
918	R.Ljubljana	Slovenia	600/100	N*
927	Wolvertem	Belgium	300	B,D*,F*,L*,N,O,R*
927	Velke Kostolany	Czech	40	L*
927	Izmir	Turkey	200	B*
936	Bremen	Germany	100	D*,L*,N*,R*
936	Venezia	Italy	20	N*
936	SER Lerida	Spain	2	L*
945	Toulouse	France	300	D*,L*,N*,R*
954	Brno (Dobrochov)	Czech	200	L*
954	RCE Madrid	Spain	20	D*,L*,N*,R*
963	Sofia	Bulgaria	150	L*
963	Pori	Finland	600	D*,F*,L*,N*,O,R*
963	Paris	France	8	M*
963	Tir Chonaill	Ireland (S)	10	N*
972	Hamburg	Germany	300	B,D*,L*,N*,R*,U*
972	Nikolayev	Ukraine	500	L*
981	Alger	Algeria	600/300	D*,L*,M*,N*,R*
981	Megara	Greece	200	B*,M*
981	Coimbra	Portugal	10	M*
990	Berlin	Germany	300	L*
990	Bilbao	Spain	10	M
990	BBC-Redmoss	UK	1	L*,V
990	BBC-Tywyn	UK	1	D*
999	Torino	Italy	20	M*
999	Madrid	Spain	20	D*,L*,M*,R*
1008	Flevo	Holland	400	B,D*,E*,L*,N,O*,R*
1008	Malaga	Spain	?	L*,M*
1017	Rheinsender	Germany	600	D*,E*,L*,N*,O*,R*
1017	RNE-5 Burgos	Spain	5	L*,M
1026	Graz-Dobl	Austria	100	D*,L*,N*,R*
1026	SER Alicante	Spain	3	N*
1035	Lisbon	Portugal	120	D*,L*,N*,R*,S*
1035	Tallinn	USSR	500	C*
1044	Tbilisi	CIS	100	U*
1044	Oresden	Germany	250	D*,F*,L*,M,N*,R*
1044	Sebaa-Aioun	Morocco	300	D*,M*,N*,S*
1044	San Sebastian	Spain	10	M*,N*
1053	Droitwich	UK	150	F*,O,R*
1062	Kalundborg	Denmark	250	D*,F*,N*,R*
1062	Norte	Portugal	100	L*,M*
1071	Brest	France	20	B,D*,L*,N*,R*
1080	Katowice	Poland	1500	F*,L*,N*
1080	SER-Granada	Spain	5	N*,R*
1089	Brookmans Pk	UK	150	O,R*,V
1089	Moorside Edge	UK	150	F*
1098	Nitra (Jarok)	Czech	1500	E,F*,I*,N*,R*
1098	RNE-5	Spain	10	I*,L*,M*
1107	AFN via Munich	Germany	40	E,J*,L*,M,R*
1107	RNE-5 Caceres	Spain	5	L*,N*
1107	RNE-5 Santander	Spain	10	M
1116	Bari	Italy	150	M*,N*
1116	Bologna	Italy	60	M*
1116	SER-Pontevedra	Spain	2	L*
1125	La Louviere	Belgium	20	L*,N,R*
1125	Tovamik	Croatia	300/100	M*
1125	RNE 5	Spain	10	N*,R*,S*
1134	Valencia	Spain	10	I*,N*
1134	Zadar	Yugoslavia	1200	F*,K*,L*,N*,O*,R*,S*
1143	AFN/Stuttgart	Germany	10	I*,J*,L*,N,R*
1143	Messina	Italy	6	L*,M*,N*
1143	Kaliningrad	Russia	150	M*
1143	COPE Reus	Spain	2	M*
1152	RNE-5	Spain	10	L*,U*
1161	Stara Zagora	Bulgaria	500	L*
1161	Strasbourg	France	200	L*,N*
1170	Vila Real	Portugal	10	M*
1179	Santiago	Spain	10	L*
1179	Solvesborg	Sweden	600	B,C,F*,J*,L*,N*,R*
1188	Kuurne	Belgium	5	L*,N
1188	Al-Hiswah	Yemen	400	A*
1197	VOA/Munich	Germany	300	F*,J*,L*,N*,O*,R*
1197	Vitoria	Spain	5	N*
1197	Minsk	CIS	50	U*
1206	Bordeaux	France	100	N*
1206	Wroclaw	Poland	200	E*,I*,N*,P*,R*,U*
1215	Lushnje	Albania	500	M*
1215	Kaliningrad	Russia	500	F*,M
1215	COPE Castellon	Spain	2	L*,M*
1224	Vidin	Bulgaria	500	L*,N*,R*
1233	Liege	Belgium	5	L*,N*
1233	Cape Greco	Cyprus	600	M*
1233	Nitra	Czech	40	L*,R*
1242	Marseille	France	150	R*
1251	Marcali	Hungary	500	F*,M*
1251	Huisberg	Netherlands	10	L*,N*,R*
1260	VOA/Rhodes	Greece	500	R*
1260	Valencia	Spain	20	L*,N*
1269	Neuminster	Germany	600	E*,F*,I*,L*,N*,R*
1269	COPE Leon	Spain	5	M*
1278	Strasbourg	France	300	L*,N*
1278	Dublin/Cork	Ireland (S)	10	J,L*,N*,O,V
1287	(Pohodli)	Czech	300/200	L*,N*
1287	(Chloumek)	Czech	400	F*,R*
1287	Lisboa	Portugal	2	5 M*
1296	COPE Valencia	Spain	5	M*
1296	San Sebastian	Spain	5	L*,N*
1296	Sennar	Sudan	1500	M*
1296	BBC Orfordness	UK	500	M*,N,R*
1305	Marche	Belgium	10/5	R*
1305	Rzeszow	Poland	100	L*
1305	Orense (RNE5)	Spain	5	L*,N*
1314	Kvitsoy	Norway	1200	C*E*F*L*N*O* R*V*W*
1314	Dabiya	UAE	1000	M*
1323	BBC Zyyi	Cyprus	200	A*
1323	R.M'cow/Leipzig	Germany	150	L*,R*

Freq kHz	Station	Country	Power kW	Listener
1332	Rome	Italy	300	F*,L*,N*,R*
1341	Lakihegy	Hungary	300	F*,L*
1341	Lisnagarvey	Ireland (N)	100	F*,N*,O,R*,V
1351	OCR Almeria	Spain	2	M*
1341	SER Tarrasa	Spain	2	M*
1350	Nancy/Nice	France	100	L*,M,N*,O*,R*,U*
1359	Berlin	Germany	250/100	L*
1359	Melilla	Morocco	5	M*
1368	Foxdale	IOM	20	I*,L*,V,W*
1377	Lille	France	300	F*,L*,N,R*
1377	Porto	Portugal	10	M*
1386	Kaliningrad	Russia	500	L*,N*,O*,R*
1395	R/Tirana/Lushnje	Albania	1000	I*,L*,O*,P*,R*,T*
1404	Brest	France	20	L*,N*,R*
1413	BBC/Masirah Is	Oman	1500	A*
1413	RCE Zaragoza	Spain	20	L*,N*,R*
1413	Pristina	Yugoslavia	1000	N*,R*
1422	Heusweiler	Germany	1200/600	L*,N*,R*
1422	Riyadh	Saudi Arabia	20	A*
1431	Nikolayev	Ukraine	400	R*
1440	RTL Marnach	Luxembourg	1200	F*,L*,N*,O,R*,U*
1449	Berlin	Germany	5	L*
1449	Squinanzo	Italy	50	N*
1458	R.Tirana, Lushnje	Albania	500	F*,M*
1458	Brookmans Pk	UK	50	R*
1467	Monte Carlo	Monaco	1000/400	I*,J*,L*,N*,O*,R*,U*
1476	Wien-Bisamberg	Austria	600	F*,L*,N*,R*
1476	Bilbao	Spain	20	F*,N*
1485	Bournemouth	UK	2	N,V
1494	Clermont-Ferrand	France	20	L*,N*,R*
1494	St.Petersburg	Russia	1000	J*
1503	Stargard	Poland	300	F*,I*,J*,L*,N*,R*
1512	Wolvertem	Belgium	600	1*E*I*J*,L*,M,N,R*,U*
1512	Jeddah	Saudi Arabia	1000	B*
1521	Kosice (Cizatice)	Czech	600	L*,N*,R*
1521	Dubai	Saudi Arabia	2000	M*
1521	Oviedo	Spain	5	N*
1530	Rome	Italy	150/450	I*,J*,L*,N*,O*,R*
1539	Mainflingen	Germany	700	J*,L*,N*,O*,R*
1539	Valladolid	Spain	5	N
1557	Nice	France	300	L*,R*
1566	Sarnen	Switzerland	300	J*,L*,N*,R*
1566	Sfax	Tunisia	1200	L*,N*,R*
1575	Burg	Germany	250	L*,N*,R*
1575	Genoa	Italy	50	M*,N*
1575	Porto-Canidelo	Portugal	10	N*
1575	Cordoba	Spain	5	M*,N*
1584	SER	Spain	?	N*
1593	Langenberg	Germany	400/800	F*,L*,N*,O*,Q*,R*,W*
1602	Vitoria	Spain	10	M*,N*,R*
1611	Rome	Italy	5	L*,M*

Medium Wave Chart

Listeners:

1: Tim Allison, Middlesborough
A: Jana Arunachalam, Thumrait, Oman
B: Ted Bardy, N.London
C: Leo Barr, Sunderland
D: Darren Beasley, Bridgwater
E: Vera Brindley, Woodhall Spa
F: Geoff Crowley, Hafnarfjordur, Iceland
G: John Eaton, Woking
H: P.R. Guruprasad, Swartruggens, S.Africa
I: Sheila Hughes, Morden
J: Rhoderick Illman, Oxted
K: Cyril Kellam, Sheffield
L: Eddie McKeown, Newry
M: Roy Merrall, Dunstable
N: George Millmore, Wootton IOW
O: Sid Morris, Rowley Regis
P: Roy Patrick, Derby
Q: Peter Pollard, Rugby
R: Harry Richards, Barton-on-Humber
S: Alan Roberts, St. Bernard de Lacolle, Quebec
T: Chris Shorten, Norwich
U: Steve Smith, Cwmbran
V: Tom Smyth, Co.Fermanagh
W: John Stevens, Largs

Quite a number of UK local radio stations have changed their name and this has tended to confuse listeners. Most DXers object to their use of four letter station idents beginning with W, since they resemble USA radio callsigns.

Some well-known international broadcasters are also making changes to their name. At first some added the term 'International' to the original name, but the latest approach is to change the name entirely. Typical examples are R.Beijing, now known as China Radio International, BRT International as R.Vlaanderan International and RSA as Channel Africa.

Long Wave Reports

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT). Unless stated, all logs compiled in the four week period ending November 21.

The Polish R-1 service on 225kHz has been carried by a newly-installed l.w. transmitter at Raszyn since October 26. Recent reports from UK DXers shows how well R-1 may be heard here. In daylight, it was SIO333 in Edinburgh by **Kenneth Buck** and SIO222 in Largs by **John Stevens**. After dark, a SINPO 33233 was noted in Woodhall Spa by **Vera Brindley**, 34333 in Morden by **Sheila Hughes** and 33233 in Newry, Co.Down by **Eddie McKeown**. No doubt the station engineers would welcome further reports, send them to Polski Radio 1 Telewizja, PO Box 00-950, Warszawa, Poland.

Local Radio Chart

Freq kHz	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum R	I	7.50	G,H,N,O
585	R.Solway	B	2.00	F,H*
603	Invicta Snd(Coast)	I	0.10	G,H,N
630	R.Bedfordshire	B	0.20	C,G,H,N
630	R.Cornwall	B	2.00	G,M*
657	R.Clwyd	B	2.00	G,H,L,N
657	R.Cornwall	B	0.50	G
666	DevonAir R.	I	0.34	G,N,O
666	R.York	B	0.80	A,D,H*
729	BBC Essex	B	0.20	A,D,E*,G,N
738	Hereford/Worcester	B	0.037	G,H,N
756	R.Cumbria	B	1.00	F,I,L,1
765	BBC Essex	B	0.50	D,E*,F*,G,H*,N
774	R.Kent	B	0.70	H,N,O
774	R.Leeds	B	0.50	J*
774	Severn Sound (3CR)	I	0.14	G,H
792	Chiltern R.	I	0.27	A,G,H,N
801	R.Devon	B	2.00	F*,G,H*,N
828	Chiltern Radio	I	0.20	N
828	R.Aire(Magic 828)	I	0.12	J*
828	2CR	I	0.27	G,N
837	R.Cumbria	B	1.50	F*
837	R.Leicester	B	0.45	C,G,H,N,O
855	R.Devon	B	1.00	G,N
855	R.Lancashire	B	1.50	F
855	R.Norfolk	B	1.50	A,N
855	Sunshine R.	I	0.15	H,I,N
873	R.Norfolk	B	0.30	A,G,H*,N,O
936	GWR (Brunel R.)	I	0.18	D,G,H,N
945	R.Trent (GEM-AM)	I	0.20	D,F*,G,H,N,O
954	DevonAir R.	I	0.32	G,N
954	R.Wyvern	I	0.16	C,H,N
990	WABC (Nice & Easy)	I	0.09	H,N
990	R.Devon	B	1.00	G,K,N
990	Hallam R.(Gt.Yks)	I	0.25	A,J*
999	R.Solent	B	1.00	G,N
999	R.Trent (GEM-AM)	I	0.25	N
999	Red Rose R.	I	0.80	F,L
1017	WABC Shrewsbury	I	0.70	G,H,N
1026	R.Cambridgeshire	B	0.50	A*,N
1026	R.Jersey	B	1.00	G,K,N,O
1035	R.Kent	B	0.50	G,N
1035	West Sound	I	0.32	F
1107	Moray Firth R.	I	1.50	B*,D,F,L
1107	R.Northampton	B	0.50	F*,G
1116	R.Derby	B	1.20	D,F*,H,N
1116	R.Guernsey	B	0.50	G,N,O
1152	BRMB (Xtra-AM)	I	3.00	C,H
1152	LBC (L.Talkback R)	I	23.50	B*,D*,E*,G,N
1152	R.Broadland	I	0.83	F*,N
1161	GWR (Brunel R.)	I	0.16	D,G,H,N
1161	R.Bedfordshire	B	0.10	N
1161	R.Sussex	B	1.00	D,G,N
1161	R.Tay	I	1.40	1
1161	Viking R.(Gt.Yks)	I	0.35	A,J*
1170	Ocean Sd.(SCR)	I	0.12	G,N
1170	R.Orwell (SGR-FM)	I	0.28	D,N
1170	Signal R.	I	0.20	H,1
1170	Swansea Sound	I	0.58	F*
1242	Invicta Snd(Coast)	I	0.32	H*,N
1242	Isle of Wight R.	I	0.50	F*,G,O
1251	Saxon R. (SGR-FM)	I	0.76	D,F*,N
1260	GWR (Brunel R.)	I	1.80	D,G,K,N
1260	Sunrise R.	I	0.29	D,H,I,N
1260	Marcher Sound	I	0.64	L
1278	Pennine R(Gt.Yks)	I	0.43	G
1305	R.Hallam (Gt.Yks)	I	0.15	J*
1305	Red Dragon (Touch)	I	0.20	D,G,K,N
1323	R.Bristol (Som.Snd)	B	0.63	F*,N
1323	S'thern Sound(SCR)	I	0.50	G,N
1332	Hereward R.(WGMS)	I	0.60	E,F*,H,N
1332	Wiltshire Sound	B	0.30	F*,G,K,N
1359	Essex R.(Breeze)	I	0.28	E,N
1359	Mercia Snd(Xtra-AM)	I	0.27	H,N
1359	Red Dragon (Touch)	I	0.20	D,K
1359	R.Solent	B	0.85	G
1368	R.Lincolnshire	B	2.00	J*
1368	R.Sussex	B	0.50	D,G,N
1368	Wiltshire Sound	B	0.10	F*,G,H*
1413	Sunrise R.	I	0.125	G,N
1431	Essex R.(Breeze)	I	0.35	E,N,1
1431	R.210 (Cl. Gold)	I	0.14	G,N
1449	R.Peterboro/Cambs	B	0.15	D,G,N
1458	GLR.	B	50.00	B*,G,N
1458	R.Cumbria	B	0.50	F
1458	R.Devon	B	2.00	G,N
1458	R.Newcastle	B	2.00	F*
1476	County Sound	I	0.50	G,N
1485	R.Humberside	B	1.00	A*,J*
1485	R.Merseyside	B	1.20	D,F,H,L
1485	R.Sussex	B	1.00	D,E*,H,N
1503	R.Stoke-on-Trent	B	1.00	D,F*,G,H,N
1521	County Sound	I	0.64	D*,F*,G,N
1530	Pennine R(Gt.Yks)	I	0.74	F*
1530	R.Essex	B	0.15	G,N
1530	R.Wyvern	I	0.52	G,H
1548	Capital R. (Gold)	I	97.50	G,N
1548	R.Bristol	B	5.00	F,G,K,N
1548	R.Forth (Max AM)	I	2.20	M*
1548	R.Hallam (Gt.Yks)	I	0.74	J*
1557	Chiltern R.(Gold)	I	0.76	H
1557	Ocean Sound (SCR)	I	0.50	E,G,N
1557	Tendring R.(Mellow)	I	?	N
1584	R.Nottingham	B	1.00	A,G,N
1584	R.Shropshire	B	0.50	H
1584	R.Tay	I	0.21	D,F*,M*
1602	R.Kent	B	0.25	E*,F*,G,M*,N

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

Listeners:
A: Vera Brindley, Woodhall Spa.
B: Geoff Crowley, Hafnarfjordur, Iceland.
C: Francis Heame, N.Bristol.
D: Sheila Hughes, Morden.
E: Rhoderick Illman, Oxted.
F: Eddie McKeown, Newry.
G: George Millmore, Wootton, IOW.
H: Sid Morris, Rowley Regis.
I: Roy Patrick, Derby.
J: Harry Richards, Barton-on-Humber.
K: Steve Smith, Cwmbran.
L: Tom Smyth, Co.Fermanagh.
M: John Stevens, Largs.
N: John Wells, East Grinstead.
O: Michael Williams, Redhill.
1: Ross Lockley, Stirling.

Medium Wave Reports

A marked improvement in m.w. propagation over transatlantic paths was noted by **Jim Willett** in Grimsby. Using a 4m square fixed loop with an RCA AR77 he heard two broadcasts from stations in St. Johns, NF before midnight - CJYQ on 930 and VOCM on 590 - both signals rated SIO233 at 2330. Between midnight and 0410 he logged three more Canadian stations and three in the USA, see chart. Later, he heard R.Vision (YVKG) in Caracus, Venezuela on 950 (SIO233); Caribbean Beacon, Anguilla 1610 (SIO222) and a station called 'Harbour Light of the Windward Carriacou - Grenada' on 1400 (SIO222), which is not listed and may be new.

Unusual conditions were noted on November 1 by **Ron Damp** in Worthing. Whilst checking the band with a Racal RA17 and large hexagonal loop, he was amazed to find CJYQ on 930 peaking 43333 at 0245. He was so impressed by their signal that he listened on his Sangean ATS-803A portable, using just the internal ferrite rod, it was clearly readable! Strangely though, no other transatlantic signals were found.

The signals from CJYQ were also heard in N.London by **Ted Bardy** on November 13, 14 & 19. At best they were 21221 at 0124. He heard the Caribbean Beacon, Anguilla 1610 on November 11 & 19, when their signal was 14331 at 0125. Over in Co.Down, **Robert Connolly** (Kilkeel) heard R.Globo in Rio de Janeiro, Brazil on 1220 at 0100. He also logged WOGL on 1210 at 0050, both 22222.

In the reverse direction, **Alan Roberts** (Quebec) heard four transatlantic signals at night on November 7, during a DXpedition to St.Bernard de Lacolle, Quebec. Using a Lowe HF-225 with a Beverage antenna (292m long pointing east), he logged Lisbon, Portugal on 1035kHz (135kW) at 0230; Sebaa-Aioun, Morocco 1044 (300kW) at 0235; Zadar, Croatia 1134 (500kW) at 0240; RNE5 via Castellon, Soria or Vitoria, Spain 1125 (10kW) at 0535.

Long Wave Chart

Freq kHz	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	G*
153	Donebach	Germany	500	A,B,E*,F,H,I*,J*,K,L,M
153	Brasov	Romania	1200	B,F*,L,M
162	Allouis	France	2000	A,B,C*,D*,E*,F,H,I,J*,K,L,M
171	Kaliningrad	Russia	1000	B,C*,E*,F,H,I,J*,K,M
171	Medi 1-Nador	Morocco	2000	L,M
177	Oranienburg	Germany	750	A*,B,E*,F,H,I*,J*,K,L,M
183	Saarlouis	Germany	2000	A*,B,E*,F,H,I*,J*,K,L,M
189	Caltanissetta	Italy	10	G*,M
189	Tbilisi	CIS	500	G*,M
198	BBC Droitwich	UK	500	A*,C*,D*,E,F,H,I*,J*,K,M
198	BBC Westerglen	UK	50	B,L
207	Munich	Germany	500	A,B,E*,F,H,J*,K,L,M
207	Vatnsendi	Iceland	100	C*
207	Azilal	Morocco	800	F*,G*,M
207	Kiev	Ukraine	500	G*,M
216	RMC Roumoules	S. France	1400	A,B,E*,F,H,I,J*,K,L,M
216	Oslo	Norway	200	B,E*,F*,M
225	Raszyn Resv TX	Poland	?	A*,B,E*,F*,I,J*,L,M
234	Beidweiller	Lux'bourg	2000	A*,B,E*,F,H,I,J*,K,L,M
234	St. Petersburg	Russia	1000	B,F*,J*
243	Kalundborg	Denmark	300	A*,B,C*,E,F*,H,I*,J*,M
252	Tipaza	Algeria	1500	E*,F*,G*,M
252	Atlantic 252	S. Ireland	500	A,B,C*,D*,E*,F,H,I*,J*,K,L,M
261	Sofia	Bulgaria	60	M
261	Burg	Germany	200	E*,H,J,L,M
261	Moscow	Russia	2000	B,E*,F*,H,J*,M
270	Topolna	Czech	1500	A,B,E*,F*,H,I,J*,L,M
270	Orenburg	CIS	15	F*
279	Minsk	CIS	500	B,E*,F*,H*,I*,J*,L,M

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

Listeners:
A: Vera Brindley, Woodhall Spa
B: Kenneth Buck, Edinburgh
C: Geoff Crowley, Hafnarfjordur, Iceland
O: John Eaton, Woking
E: Sheila Hughes, Morden
F: Eddie McKeown, Newry
G: Roy Merrall, Dunstable
H: George Millmore, Wootton, IOW
I: Sid Morris, Rowley Regis
J: Harry Richards, Barton-on-Humber
K: Tom Smyth, Co.Fermanagh
L: John Stevens, Largs
M: John Wells, East Grinstead

The sky wave signals from stations in Algeria, Cyprus, Egypt, Jordan, Morocco, Saudi Arabia, Syria & Tunisia were logged after dark by **Roy Merrall** in Dunstable, see chart. Most Middle East signals were on the resolution limit of his Kenwood R5000. He says, "The 1296 & 1314kHz loggings did surprise me, considering the strength of the two resident 'locals', but sideband selection confirmed the loggings beyond reasonable doubt, backed by s.w. correlation."

Numerous stations in Spain were also reported by Roy and by other DXers. **George Millmore** (Wootton, IOW.) added Palma de Mallorca 648 (10kW); Bilbao 1476 (10kW); Oviedo 1521 (5kW); Cordoba 1575 (5kW); also SER relays on 1584 (5/1kW) to his list, bringing the total logged in the last two months to 44. He asks, "Will it ever end?".

Very unusual m.w. conditions was noted in Largs by John Stevens. He says, "The most outstanding example was on the afternoon of November 8, when I received European transmissions at great strength and very free from interference".

The broadcasts from Sunshine Radio, the new station in Ludlow on 855kHz, are being received 'quite well' during the morning by **John Wells** in E.Grinstead. They are also reaching **Roy Patrick** in Derby. So far, reports from listeners in the southern half of the UK and two from Finland and Sweden have been sent to the station. Detailed reports from all areas are welcome, send them to Sunshine Radio (Engineering Dept), Sunshine House, Waterside, Ludlow, Shropshire SY8 1PE.

Short Wave Reports

Solar activity resulted in fewer propagation disturbances in the h.f. bands than expected and good reception from many areas was reported.

The most noticeable effects were in the **25MHz (11m)** band, where daily variations were evident. However, reports indicate that the broadcasts usually reached their intended target areas well and were often heard in other areas too. The lack of co-channel interference is a notable feature in this band.

R.Australia's signals to Japan, China and N.Europe on 25.750 (Eng 0800-0900) were clearly heard in the UK some mornings. They are beamed on a trans-polar (Arctic) route from Darwin. A rating of 34533 at 0807 was noted by **David Edwardson** in Wallsend.

Signals to the M.East, E.Asia from DW via Julich on 25.740 (Ger 1100-1355) were rated 44434 at 1110 in

Tropical Bands

Freq MHz	Station	Country	UTC	DXer
2.310	ABC Alice Springs	Australia	1730	H,T,X,1
2.325	ABC Tennant Creek	Australia	1030	X
2.560	Xinjiang BS, Urumqi	China	2308	I,T
3.200	TWR	Swaziland	1919	O
3.205	AIR Lucknow	India	0025	I,O,T
3.215	R.Orange	S.Africa	1810	O,T
3.220	R.Togo, Lome	Togo	2110	2
3.230	Channel Africa	S.Africa	1853	O
3.235	AIR Gauhati	India	1550	R
3.240	TWR	Swaziland	1807	T
3.255	BBC via Maseru	Lesotho	1811	O,T
3.270	SWABC 1, Namibia	S.W.Africa	1810	T,2
3.275	AIR Srinagar	India	1720	T
3.280	R.Beira	Mozambique	1715	O
3.295	Reykjavik	Iceland	0040	G
3.300	R.Cultural	Guatemala	0410	2
3.315	AIR Bhopal	India	1640	R,T
3.320	RSuid Afrika	S.Africa	1820	O,T
3.325	R.Maya de Barillas	Guatemala	1105	X
3.325	FRCN Lagos	Nigeria	2105	N,2
3.300	R.Cultural	Guatemala	0441	N
3.355	R.Botswana	Gabarone	1740	J,O,T,1
3.355	AIR Kurseong	India	1608	O,R
3.365	R.Rebelde, La Julia	Cuba	0441	N
3.365	GBC Radio 2	Ghana	2058	P,T,Z,1
3.375	AIR Gauhati	India	1550	R
3.385	R.Educacao Rural,Tefe	Brazil	0047	G
3.905	AIR Delhi	India	1600	O,R,T
3.915	BBC Kranji	Singapore	1652	T
3.945	AIR Gorakhpur	India	1525	R
3.955	BBC Skelton	England	2100	C,E,F,H,N,S,W,3
3.965	RFI Paris	France	2100	C,E,F,G,H,K,N,P,W
3.970	RFE Munich	Germany	2210	F,H,L,W
3.975	BBC Skelton	England	2100	H,N,W
3.980	VOA Munich	Germany	2155	C,E,F,N,O,W
3.985	China R via SRI Berne	Switzerland	2200	C,E,F,N,O,W,Y,3
3.995	DW via Julich	Germany	2150	C,E,F,H,K,N,W
4.000	Bofoussam	Cameroon	1753	O
4.010	Bishkek, Kirghizia	CIS	0102	T
4.055	Tver relays R.Moscow	CIS	1839	C,E,F,O,W
4.220	Xinjiang PBS, Urumqi	China	0118	G
4.330	Xinjiang BS, Urumqi	China	0015	I
4.485	Petro'sk Kamchatskiy	CIS	0012	G,W,1
4.500	Xinjiang BS, Urumqi	China	0005	A,G,I,W
4.635	Yangi-Yul	Tadzhikistan	0210	T,2
4.700	R.Waira, Chota	Peru	2230	E
4.735	Xinjiang	China	0120	I,K,N,P,T,W
4.740	Ashkhabad	Turkmenistan	2330	H,N
4.740	R.Afghanistan, Kabul	Afghanistan	1933	G,O,W
4.750	Xizang BS, Lhasa	China	2317	T
4.755	R.Maranhao	Brazil	0041	G
4.760	Yunnan PBS,Kunming	China	2318	I,T
4.765	Brazzaville	PR. Congo	2205	C,F,K,M,P,Q,S,T,W
4.770	FRCN Kaduna	Nigeria	2114	C,E,F,I,K,M,N,O,Q,T,Z
4.775	R.Gabon, Libreville	Gabon	1950	2
4.775	AIR Gauhati	India	0025	I
4.780	RTD	Djibouti	1906	1
4.785	R.Baku	Azerbaijan	0300	N,T
4.790	Azad Kashmir R	Pakistan	0111	T
4.790	TWR Manzini	Swaziland	1805	H,2
4.795	R.Douala	Cameroon	1905	P
4.795	R.Moscow (Kharkov)	Ukraine	2100	A,F,H,N,O,S,W,Z,3
4.800	PBS Xinjiang	China	0033	I
4.805	R.Nac.Amazonas	Brazil	2123	O
4.810	R.Orion, Jo'burg	S.Africa	2315	O,W
4.810	Yerevan 2	Armenia	1841	N,O,Q,T,2
4.815	R.diff TV Burkina	Ouagadougou	2237	F
4.820	La Voz Evangelica	Honduras	0256	N,2
4.820	Khanty-Mansiysk	Siberia	2215	N,T,U,W
4.825	Yakutsk	Siberia	2220	W
4.825	Ashkhabad	Turkmenistan	1935	N,Q,3
4.830	Gaborone	Botswana	1939	J,M,O,Q
4.830	R.Tachira	Venezuela	0035	I,M,P,T
4.832	R.Reloj	Costa Rica	0800	I,V
4.835	R.Tezulutlan, Coban	Guatemala	0145	N,2
4.835	RTM Bamako	Mali	1942	A,G,K,N,P,Q,T,W,2
4.840	Heilongjiang, Harbin	China	2320	O
4.840	R.Valera, Trujillo	Venezuela	2300	O
4.845	R. Fides	Bolivia	0205	2
4.845	ORTM Nouakchott	Mauritania	1942	B,F,N,P,Q,S,T,W
4.850	R.Yaounde	Cameroon	2107	E,F,N,Q,W,1
4.850	AIR Kohima	India	2107	Q,2
4.850	Tashkent 2	Uzbekistan	0134	N
4.860	AIR New Delhi	India	1610	Z
4.860	Tver relays R.Moscow	Russia	1942	B,C,F,H,K,N,Q,W,Z,3
4.865	PBS Lanzhou	China	2230	2
4.865	V. of Cinaruco	Colombia	0032	G,M
4.870	R.Cotonou	Benin	2220	E,F,K,P,T
4.880	AIR Lucknow	India	0005	1
4.885	R.Caraja, Anapolis	Brazil	0318	G
4.885	R.Clube do Para	Brazil	0305	G,T,2
4.885	China R, Beijing	China	2326	T
4.885	Voice of Kenya	Kenya	2110	Q,T
4.890	RFI Paris	via Gabon	0447	N
4.895	Voz del Rio Arauca	Colombia	0030	G
4.895	Tyumen	Siberia	1944	Q
4.897	Murun	Mongolia	2323	1
4.900	V. of the Strait 2	China	2210	Q
4.900	RTG Conakry	Guinea	1945	E,Q
4.900	SLBC Colombo	Sri Lanka	0002	T
4.905	R.Nat.N'djamena	Chad	1919	M,N,P,Q,T,1
4.915	R.Anhanguera	Brazil	0003	G,M,T
4.915	GBC-1, Accra	Ghana	2134	E,F,M,N,P,Q,S,T,2
4.915	Voice of Kenya	Kenya	1946	Q
4.915	R.Cora, Lima	Peru	0325	2
4.920	R.Quito	Ecuador	0115	G
4.920	AIR Madras	India	0038	J,T
4.930	Tbilisi	Georgia	2230	W
4.930	Ashkabad	Turkmenstan	1946	C,E,K,N,Q
4.935	R.Capixaba	Brazil	0505	G
4.935	Voice of Kenya	Kenya	1946	P,Q,T,1
4.940	Kiev 2	Ukraine	1947	A,B,E,F,H,K,N,P,Q,T,W
4.950	R.Nac.Luanda	Angola	1926	Q
4.955	R.Marajoara, Belem	Brazil	2200	O
4.958	Baku	Azerbaijan	1948	N,Q,T,1
4.960	AIR New Delhi	India	0030	K,T
4.965	R.Alvorada	Brazil	0132	G
4.970	PBS Xinjiang	China	0010	I
4.970	R.Rumbos, Caracas	Venezuela	2350	E,G,1,2
4.975	R.Uganda, Kampala	Uganda	1923	Q,1
4.975	R.Dushanbe	CIS	0010	N
4.980	PBS Xinjiang	China	0008	I
4.980	Ecos del Torbes	Venezuela	2305	E,F,G,I,M,N,T
4.985	R.Brazil Central	Brazil	2300	F,G,M
4.990	AIR via Madras	India	0000	S
4.990	FRCN Lagos	Nigeria	0540	C,K,N
4.990	Yerevan	Armenia	1948	N,Q,T
5.005	R.Nacional, Bata	Eq.Guinea	1927	F,G,M,Q,1
5.005	R.Nepal, Kathmandu	Nepal	1715	T
5.010	R.Garoua	Cameroon	2050	C,M,N,P,Q,S,T,1
5.015	Arkhangelsk	CIS	2300	W
5.020	PBS-Jiangxi Nanchang	China	0007	G
5.020	ORTN Niamey	Niger	0043	2
5.025	R.Parakou	Benin	0506	N,1
5.025	R.Rebelde, Habana	Cuba	0010	1
5.030	R.Catolica, Quito	Ecuador	0005	E,F,G,H,N
5.030	R.Los Andes	Peru	0030	G
5.030	R.Continente Caracas	Venezuela	0019	G
5.035	R.Aparecida	Brazil	2310	H,M
5.035	R.Bangui	C.Africa	2205	E
5.035	Alma Ata 2	Kazakshtan	2130	P,W,Z
5.040	Tbilisi 1	Georgia	2215	B,C,E,F,T,W
5.045	R.Cultura do Para	Brazil	0035	E,G,K,M,T
5.047	R.Togo, Lome	Togo	2137	E,K,N,O
5.050	Em Jesus Gran Poder	Ecuador	0040	K
5.050	SBC Singapore	Singapore	2215	M,2
5.050	R.Tanzania	Tanzania	0943	F
5.052	SBC R-1	Singapore	2318	V,1
5.055	Faro del Caribe	Costa Rica	0040	G,N,1
5.055	RFO Cayenne(Matoury)	French Guiana	0443	K,N
5.075	Caracol Bogata	Colombia	0002	A,F,H,K,M,N,Y,1,2
5.260	Alma Ata 2	Kazakhstan	2210	E,M,N,P,S,T,W,1
5.800	Xinjiang BS, Urumqi	China	2347	H,I

DXers:
A: Leo Barr, Sunderland
B: Charles Beanland, Gibraltar
C: Vera Brindley, Woodhall Spa
D: Bill Clark, Rotherham
E: Robert Connolly, Kilkeel
F: Geoff Crowley, Iceland
G: Antonio De Abreu-Teixeira, Evesham
H: John Eaton, Woking
I: David Edwardson, Wallsend
J: P.R. Guruprasad, Swartruggens, S.Africa
K: Sheila Hughes, Morden
L: Rhoderick Illman, Oxted
M: Ross Lockley, Stirling
N: Eddie McKeown, Newry
O: Roy Merrall, Dunstable
P: Sid Morris, Rowley Regis
Q: Fred Pallant, Storrington
R: John Parry, Northwich
S: Roy Patrick, Derby
T: Peter Perkins, Hemel Hempstead
U: Peter Pollard, Rugby
V: Richard Radford-Reynolds, Guildford
W: Harry Richards, Barton-on-Humber
X: Alan Roberts, St.Bernard de Lacolle, Quebec, Canada
Y: Chris Shorten, Norwich
Z: Darran Taplin, Brenchley
1: Vladimir Vassilev, Bratislava, Cz
2: Jim Willett, Grimsby
3: Michael Williams, Redhill

Thumrait, Oman by **Jana Arunachalam**. They have also reached S.Africa, **P.R.Guruprasad** (Swartruggens) logged them as 35333 at 1330. He can also receive RFI via Issoudun on 25.820 (Fr to E.Africa 0700-1550), but the best signal with him stems from R.Norway Int, Oslo on 25.730 (Norw* to W.Africa 1300-1330, *Eng Sat/Sun), it is often 55544.

Both DW (25.740) and RFI (25.820) have been clearly heard in Iceland by **Geoff Crowley** (Hafnarfjordur), he noted them as 45554 at 1110. He also logged UAE R.Abu Dhabi 25.690 (Ar to Far East? 0900-1200?) as 25432 at 1113. Their signals have been heard in many areas. In Sunderland they were 34323 at 0904 by **Leo Barr**. The Sunday morning Church Service broadcast by R.Nederlands on 25.970 (Du to W.Africa 1030-1115) was 35343 at 1040 in Newry, Co.Down.

Potent signals from R.Australia have been reaching the UK in the **21MHz (13m)** band during their Pacific broadcast areas via Carnarvon on 21.590 (Eng 0100-0900), they were SIO544 at 0740 by **Cyril Kellam** in Sheffield. Their broadcasts from Darwin have also been received well: 21.525 (Eng to SE.Asia 0200-0800) rated 43243 at 0700 in Newry; 21.725 (Eng to S.Asia 0800-1300), noted as 'excellent' at 1235 by **Gary Currah** in Peterborough.

During the morning, R.Japan via Moyabi 21.575 (Eng, Jap to Europe 0700-0900) was 33333 at 0745 in Swartruggens, S.Africa; R.Pakistan, Islamabad 21.520 (Eng to Europe 0800-0845) 55444 at 0805 by **Chris Shorten** in Norwich, SIO444 at 1105 by **Bill Clark** in Rotherham; R.Austria via Moosbrunn 21.490 (Ger, Eng to Australia 0800-1100) 33333 at 1035 in Oman; VOA via Kavala 21.455 (Eng to M.East, N.Africa 0800-1100) 44444 at 1000 in Kilkeel; UAE R.Dubai 21.605 (Ar, Eng 0615-1645) 44444 at 1040 by **Peter Polson** in St.Andrews.

Later, HCJB, Ecuador 21.455 (world-wide u.s.b. + p.c.) SIO444 at 1300 by **Antonio De Abreu-Teixeira** in Evesham; R.Norway Int, Oslo 21.710 (Norw to USA 1400-1430) 34333 at 1409 in Oxted; BSKSA, Saudi Arabia 21.505 (Ar [Home Service] 1030-1700) 45444 at 1450 by **John Eaton** in Woking; RAI, Italy 21.515 (It to Africa 1410-1730 Sun only, football reports) 45554 at 1504 in Wallsend; R.Portugal Int via S.Gabriel 21.515 (Eng to M.East 1530-1600) SIO455 at 1540 in Edinburgh; WYFR via Okeechobee 21.525 (Eng to Europe, Africa 1600-1700) 44333 at 1630 in Morden; WCSN Scotts Corner 21.640 (Eng to N/E.Africa 1600-1755) 55555 at 1645 in Worthing; RCI via Sackville 21.545 (Eng to Europe 1700-1730) 55555 at 1720 by **Darran Taplin** in Brenchley; BBC via Ascension Is 21.660 (Eng to Africa 0730-1745) 34222 at 1724 in Iceland and SIO545 at 1735 by **Sid Morris** in Rowley Regis; R.Nederlands via Bonaire 21.590 (Eng to Africa 1730-2025) SIO333 at 1735 by **Michael Williams** in Redhill; WYFR via Okeechobee 21.500 (Eng to Europe, Africa 1700-1900) 44444 at 1748 by **Peter Pollard** in Rugby; HCJB, Ecuador 21.480 (Eng 1900-2000) 24322 at 1955 by **Darren Beasley** in Bridgwater; VOA via Greenville 15.485 (Eng to Africa 2000-2200) SIO222 at 2015 by **Julian Wood** in Elgin.

Good DX reception has also been evident in the **17MHz (16m)** band. Some listeners in the UK have heard R.New Zealand's broadcasts to Pacific areas on 17.770 (Eng 2139-0655) during the early morning. Their signal in Norwich was quoted as 44344 at 0650. R. Australia's Carnarvon broadcast to Asia on 17.750 (Eng 0000-0400, 0700-0900) was logged in Iceland as 45534 at 0004.

Also heard here during the morning were the Voice of Greece, Athens 17.525 (Gr, Eng to Australia 0800-0950) SIO444 at 0900 in Sheffield; Voice of Israel, Jerusalem 17.543 (Eng to USA, W.Europe 1100-1130) 44433 at 1100 by **Martin Dale** in Stockport; R.Pakistan, Islamabad 17.900 (Ur, Eng to Europe 0800-1105) SIO333 at 1105 in Rotherham; HCJB, Ecuador 17.490

(u.s.b. + p.c. test txm) 25443 at 1123 by **Richard Radford-Reynolds** in Guildford; BBC via Mahe 17.885 (Eng to Africa 0500-1400) SIO423 at 1131 by **Philip Rambaut** in Macclesfield; Africa No.1, Gabon 17.630 (Fr, Eng to W.Africa 0700-1600) 35333 at 1132 in Woking.

After mid-day, R.Cairo via Abis 17.595 (Eng to S.Asia 1215-1330) SIO322 at 1215 by **Tom Smyth** in Co.Fermamagh; R.Romania Int, Bucharest 17.720 (Eng to Europe 1300-1400) 44444 at 1307 in Brenchley; RFI via Issoudun 17.650 (Eng to M.East, India 1400-1500) SIO222 at 1402 by **Ronald Kilgore** in Co.Londonderry; R.Nederlands via Flevo 17.610 (Eng to S.Asia 1430-1530) 23333 at 1437 in Oxted; Voice of Greece, Athens 17.525 Eng, Gr to Europe, USA 1500-1550) SIO444 at 1525 in Redhill; DW via Wertachtal 17.765 (Eng to M.East, E/S.Africa 1500-1550) 44444 at 1510 in Thumrait and 55555 at 1525 in St.Andrews; RFI via Issoudun 17.795 (Eng to N.Africa 1600-1700) 54434 at 1645 in Swartruggens, S.Africa; REE via Noblejas 17.845 (Sp, Port to S/C.America 0900-1900) SIO444 at 1650 in Evesham.

In the evening RCI via Sackville 17.875 (Fr, Eng to Europe 1900-2159) was 44444 at 1910 in Woodhall Spa; HCJB, Ecuador 17.790 (Eng to Europe 1900-2000) SIO222 at 1920 by **Leslie Biss** in Knaresborough; R.Nederlands via Bonaire 17.605 (Eng to W.Africa 1930-2030) SIO454 at 2020 in Edinburgh; VOA via Bethany 17.800 (Eng to Africa 1600-2300) 33333 at 2032 by **Charles Beanland**, Gibraltar; R.Havana Cuba 17.705 (Eng to Europe 2100-2200) 23322 at 2100 in Morden; WYFR via Okeechobee 17.750 (Eng to Europe, Africa 2000-2300) 34333 at 2200 in Bridgwater.

The **15MHz (19m)** signals to Asia from R.Australia via Darwin on 15.170 (Eng, Chin 0900-1400) have been clearly heard in the UK. The 44444 rating noted in St.Andrews at 1114 is typical. Earlier, their transmission to Pacific areas via Shepparton on 15.240 (Eng 0030-0830) has been audible here. In Newry it was 21312 at 0730.

Some of the broadcasts to Europe come from R.Algiers via Bouchaoui 15.160 (Sp 1100-1200, also to M.East) rated SIO333 at 1146 in Evesham; WWCR, Nashville 15.685 (Eng 1200-1300) 23222 at 1200 in Stockport; RNB Brasilia, Brazil 15.265 (Eng 1845-1920) 45544 at 1845 by **Ross Lockley** in Sterling; RCI via Sackville 15.325 (Fr, Eng 1900-1959) SIO322 at 1904 in Rotherham; WINB, Red Lion 15.295 (Eng 1900-2100, also to N.Africa) 34333 at 1931 in Woodhall Spa; WSHB, Cypress Creek 15.665 (Eng 1800-2155, also to USA) SIO333 at 2025 in Knaresborough; RAE Buenos Aires, Argentina 15.345 (Ar, Eng, It, Fr, Ger, Sp 1700-0100) 33333 at 2046 in Gibraltar and 32333 at 2145 in Kilkeel.

Those to other areas include SRI via Sottens? 15.505 (Eng to Australia, Far East 1100-1130) 33333 at 1100 in Thumrait; BBC via Antigua 15.220 (Eng to N/C/S.America 1100-1615) rated 55434 at 1101 in Guildford; BBC via Limassol 15.575 (Eng to M.East, N.Africa 0400-1500) 35333 at 1132 in Woking; Voice of Greece, Athens 15.650 (Gr, Eng to C.Africa 1300-1350) 35434 at 1300 in Brenchley; UAE R, Abu Dhabi 15.265 (Ar to M.East 1300-1600?) SIO455 at 1300 in Edinburgh; R.Austria Int, via Moosbrunn 15.450 (Ger, Eng to Far East 1100-1400) 55555 at 1340 in Norwich; R.Nederlands via Talata Volon 15.150 (Eng to S,Asia 1430-1530) 23321 at 1437 in Oxted; R.Veritas Asia, Philippines 15.140 (Eng ident 1500, Pil 1505-1600) 33322 at 1550 in Worthing; Channel Africa, Johannesburg 15.430 (Eng to Africa 1600-1800) SIO433 at 1600 in Sheffield; R.Pakistan, Islamabad 15.555 (Eng to M.East, N/W.Africa 1600-1630) SIO334 at 1615 in Rowley Regis; VOA via Greenville 15.580 (Eng to Africa 1600-2200) 55444 at 1841 by **Tim Allison** in Middlesborough; KTBN, Salt Lake City 15.590 (Eng to E.USA 1600-0200) 34323 at 1854 in Bridgwater; R.Vlaanderen Int. via Wavre 15.540 (Eng to Africa 1900-1930) 34333 at 1915 in Swartruggens, S.Africa; BBC via Ascension Is 15.400 (Eng to W/C.Africa 1500-2315) 33333 at 2115 by **Harry Richards** in Barton-on-Humber; China R. Int via Bamako 15.110 (Fr to Africa 2130-2230) 22121 at 2145 in Rugby.

Particularly good reception of R.Australia's **13MHz (22m)** broadcasts to Asia via Carnarvon on 13.755 (Eng 1300-1800) has been reported by many UK listeners. Their signal was 55444 at 1530 in Woking! Also from Carnarvon, 13.605 (Eng, Chin to SE/N.Asia 0900-1400) was SIO333 at 0900 in Knaresborough. Much later, 13.705 (Eng to S.Asia 2200-2300) was SIO433 at 2230 in Evesham.

More extensive use of this band is now being made by some other broadcasters. In the daytime, SRI via Sottens 13.685 (Eng to Australia 0900-0930) was 44434 at 0900 in Sunderland; also 13.635 (Eng to Australia 1100-1130) 45454 at 1102 in Newry; UAE R.Dubai 13.675 (Eng to Europe 1030-1100) 44344 at 1035 in Thumrait; R.Moscow, Russia 13.650 (Eng to ? 1000-1300) SIO545 at 1120 in Rowley Regis; ISBS Iceland 13.835 (Ic to Europe 1230?-1305) SIO433 at 1244 in Macclesfield; R.Nederlands via Flevo 13.770 (Eng to S.Asia 1430-1530) 23332 at 1437 in Oxted; AWR (KSDA), Agat, Guam 13.720 (Bur, Ta, Hi to S.Asia - Eng ident 1500) SIO322 at 1500 in Rotherham; KHBI, N.Mariana Islands 13.625 (Eng to SE.Asia, India 1000-1755) 23322 at 1640 in Worthing.

After dark, WWCR Nashville 13.845 (Eng to E.USA) rated 22222 at 1845 in Barton-on-Humber; R.Kuwait 13.620 (Eng to Europe, USA 1800-2100) 45434 at 1829 in Middlesborough; VOA via Selebi-Phikwe 13.710 (Eng to Africa 1600-2200) SIO333 at 1849 in Co.Londonderry; Voice of Israel, Jerusalem 13.750 (Heb to Europe, Russia, W.USA 0400-2300) 55555 at 1907 in Norwich; RCI via Sackville 13.650 (Eng, Fr to Canadian Forces in Europe 2000-2030?) 33333 at 2015 in Rugby; WHRI, South Bend 13.760 (Eng to Europe, Canada 1700-0000) SIO343 at 2050 in Edinburgh and 43444 at 2140 in Iceland; WCSN Scotts Corner 13.770 (Eng to Africa 2000-2300) 44444 at 2115 in St.Andrews; Croatian R, Zargreb 13.830 (Cr) 32332 at 2345 in Kilkeel.

Some of the **11MHz (25m)** broadcasts to Europe were noted in the reports: R.Czechoslovakia, Prague 11.990 (Eng 1130-1157) 44433 in Oxted; Polish R, Warsaw 11.815 (Eng 1300-1355) SIO444 at 1308 in Rotherham; AIR via Bangalore 11.620 (Eng 1745-1945) 43433 at 1745 by **Ken Milne** in Basingstoke and 33333 at 1823 in Gibraltar; R.Portugal Int via S.Gabriel 11.740 (Eng 1900-1930, Sat/Sun only) SIO433 at 1910 in Co.Londonderry; RAI, Italy 11.800 (Eng 1935-1955) SIO322 at 1935 in Co.Fermanagh; R.Pakistan, Islamabad 11.570 (Fr 1930-2030) SIO323 at 2004 in Knaresborough; Voice of Israel, Jerusalem 11.587 (Eng 2000-2030, also to USA) SIO222 at 2018 in Redhill; RCI via Sackville 11.945 (Eng 2000-2100) 55544 at 2030 in Barton-on-Humber; R.Damascus, Syria 12.085 (Eng 2005-2105) 44444 at 2035 in Newry; R.Japan via Moyabi 11.925 (Eng 2100-2200) 55444 at 2107 in Woodhall Spa.

Also noted were R.Australia via Brandon 11.855 (Eng to Asia? 1300-?) SIO333 at 1259 in Macclesfield; Voice of the Mediterranean, Malta 11.925 (Eng, Ar to N.Africa 1400-1600) 44444 at 1420 in St.Andrews; AWR (KSDA), Guam 11.980 (Chin/Eng to Asia 1500-1600, Eng ident 1600) 33333 at 1505 in Morden; FEBA, Seychelles 11.840 (Eng ident 1630) 32433 at 1630 in Guildford; KHBI, Saipan 11.580 (Eng to SE.Asia 1600-1755) 34433 at 1647 in Worthing; R.Australia via Shepparton 11.910 (Eng to Pacific areas 1600-2130) 43343 at 1720 in Norwich; R.Nac da Amazonia, Brazil 11.780 (Port 0800-2200) 34533 at 2002 in Wallsend; R.Damascus, Syria 12.085 (Eng to USA 2110-2210) 54454 at 2125 in Bridgwater; R.Gaucha, Porto Alegre, Brazil 11.015 (Port 24hrs) SIO222 at 2345 in Evesham; UAE R, Abu Dhabi 11.710 (Eng to USA 2300-0000) 44444 at 2350 in Rugby.

R.New Zealand's **9MHz (31m)** signals to Pacific areas have reached the UK some mornings. Their 100kW transmission from Rangataiki on 9.700 (Eng 0700-1100) was SIO333 at 0800 in Evesham. It has also reached Iceland at 24332. Some of R.Australia's broadcasts have also reached here: 9.580 via Shepparton (Eng to Pacific areas 0800-2130) rated SIO222 at 0815 in Sheffield; 9.510 via Carnarvon (Eng to S.Asia 1430-1800) 21121 at 1500 in Rugby; also 9.510 (Eng to N/SE.Asia 2100-0000) 44433 at 2125 in Brenchley.

Amongst the many log entries were some that came from distant places: WCSN, Scotts Corner 9.840 (Eng to Europe 0600-0955) SIO433 at 0745 by **Francis Hearne** in N.Bristol; TWR (KTWR) Merizo, Guam 9.785 (Chin to China 0845-1200) SIO333 at 0926 in Macclesfield; WYFR via Okeechobee 9.555 (Sp to S.America 0800-1100) 43433 at 0953 in Guildford; AIR via Delhi 9.910 Eng to Australia, NZ 2045-2230) SIO455 at 2105 in Edinburgh; R.Cultura, Sao Paulo, Brazil 9.615 (Sp 0800-0400) 32222 at 2320 in Kilkeel; R.Nac del Paraguay 9.735 (Sp 0800-0400) 24542 at 0040 in Wallsend.

Two of R.Australia's **7MHz (41m)** broadcasts have also been heard here: 7.150 from Darwin (Viet, Eng to SE.Asia 1300-1430) SIO222 at 1300 in Dunstable; 7.260 from Carnarvon (Eng to Asia 1800-2100) SIO433 at 1915 in Co.Londonderry.

In the **6MHz (49m)** band R.Australia via Shepparton 5.995 (Eng to Pacific areas 0800-2130) rated 14322 at 0806 in Sunderland; R.Pyongyang, N.Korea 6.576 was heard at 1904 by **Tim Bucknall** in Congleton.

Transatlantic DX Chart

Freq kHz	Station	Location	Time (UTC)	DXer
		USA		
1130	WNEW	New York	0120	E
1210	WOGL	Philadelphia	0050	B,E
1500	WTOP	Washington	0350	E
		Canada		
590	VOCM	St.John's	2330	D,E
930	CJYQ	St.John's	2330	A,C,D,E
950	CHER	Sydney	0005	D,E
1210	VOAR	Mount Pearl	0020	D,E
1400	CBG	Gander	0110	E
		C. America & Caribbean		
1610	Caribbean Beacon	The Valley, Anguilla	0115	A,E
		South America		
950	R.Vision (YVKG)	Venezuela	0420	D,E
1220	R.Globo	Rio, Brazil	0100	B,D

DXers:
A: Ted Bardy, N.London.
B: Robert Connolly, Kilkeel.
C: Ron Damp, Worthing.
D: Eric Duncan
E: Jim Willett, Grimsby.

Station Addresses

ILR Radio Forth (Max AM), Forth House, Forth Street, Edinburgh EH1 3LF.

ILR Radio 210 (Classic Gold), P.O.Box 210, Bath Road, Calcot, Reading RG3 5RZ.

AWR-Latin America, PO Box 1177, 4050 Alajuela, Costa Rica.

Radio Sweden, S-105 10 Stockholm, Sweden.

Radio VOAR, Box 2520, Mount Pearl, Newfoundland A1N 4M7.

Radio WTOP, 3400 Idaho Ave N.W., Washington, DC 20016, USA.

Sorry, just no space for the equipment list this month.

Watching Brief

Andy Emmerson G8PTH
71 Falcutt Way, Northampton NN2 8PH

It's not that often that a new book is published on amateur television, so when one as comprehensive as *ATV Secrets Volume II* appears it's time to put the flags out.

Keen ATVers, the types who enjoy building their own gear, are always thirsting after new ideas and with this book they'll certainly get their fill. For *ATV Secrets Volume II* is 280 pages thick (about the same size and weight as a phone directory), making it probably the most comprehensive book published yet on amateur television techniques. Yes, it is American but at least it's in a language that's intelligible to us, and 90 per cent of the content is applicable to European operation.

Just about everyone will find something of interest here: it's subtitled 'Television Topics and Projects for Novice to Expert'. It is presented in chapter form, although within these chapters the text is mainly in the form of articles, some of which have been printed already in *ATV Quarterly* magazine, but that's no bad thing - it's nice to have them all together in one handy book.

The print quality is similar to the magazine too: there's some spot colour for titles and p.c.b. overlays, but most is in black and white. The text is laser printed and is very clear in the main: a few of the diagrams have the look of photocopies and some pages are reproduced from FAXed documents. But everything is legible and these kind of compromises are acceptable in what is more of a work-book than a coffee-table book.

Above all, this is a practical book. A pull-out folder gives you a full-size test pattern, grey-scale chart, colour bars and a registration chart. The twelve chapters check out as follows:

1: Introduction
2: Amplifiers
3: Antennas and coaxial cable
4: DXing
5: Filters
6: FM-mode Television
7: Receiving and Receivers
8: HAM TV Repeaters
9: Test and Measurement
10: Transmitting
11: Video Toys
12: Glossary and miscellanea.

The text is enhanced by several cartoons (quite funny ones!) on ATV themes and a number of advertisements for American ATV equipment suppliers.

Mystery picture? Not really, just a worm's eye view of the 10m tower at the QTH of Marc F3YX, near Paris. The tower is home-made, like the bulk of Marc's station. Marc is the leading ATVer over there and deserves the credit for bringing the ATV mode to the state it has reached in France.

The authors are an international bunch: they are not all Americans! So the Severnside ATV Group gets a namecheck, as do GW3MEO, G8KUW, DJ6PI and DD9UK. The topics covered are pretty international too, although the power amplifiers for the 902MHz band are applicable only to North America (unless you intend giving your cellphone a bit of a boost!).

Good For Beginners

Beginners will find the first chapter useful: it covers how to get on ATV, where to find out more, which frequencies are used and identifying your station.

Finally, in this section is a detailed article on HDTV, which explains with great glee how every existing piece of television gear in the USA will be obsolete in the year 2008.

Chapter 2 covers amplifiers and one of the most useful chapters explains how to broadband valve amplifiers. 'Ever wondered how commercial TV stations get nice flat response from tetrodes, Klystrons and other tubes? Want your K2RIW to perform?' Here are the secrets on making that amplifier pass colour and sound!

Another article gives the real low-down on 2C39 cavities and why some designs are reproducible and others aren't.

Many people completely misunderstand the readings that power meters give on ATV; an article explains what they are really trying to tell you.

The antennas and coaxial chapter tells you how to make efficient low-cost connectors for Heliax and how to use 75Ω cable TV coaxial cable in a 50Ω system. Several designs are given for mobile and portable antennas too.

Microwave DXing is covered in the next chapter, with a really detailed article on how to exploit aeroplane reflection and weather conditions.

Filters get a whole chapter to themselves: combiners, duplexers, inter-digital filters are all described, also VSB and repeater filters.

Frequency modulation is still considered a bit of a black art in the States, so this subject gets the full treatment. 'Understanding FM Sidebands' is one of the things I never understood before I read this book. Construction articles from the USA, Germany and New Zealand complete this section, and 10GHz is not omitted.

The next chapter, on receiving and receivers gives many pointers on improving system performance, as well as an ATV received signal alarm to call you to the shack when there a picture in the air. Dynamic range, noise figures and those other factors that are seldom understood are explained to help you get the best pictures possible.

Repeaters

ATV repeaters are well established in the USA, so we have plenty of repeater-related circuits. A d.t.m.f. tone-controlled video switch is about the simplest idea included; there are many more. In the next chapter TV fundamentals are discussed thoroughly and Steve G8KUW contributes a valuable article on sync pulses and what they do for your picture. Signal sniffers, s.w.r. bridges and a vertical interval test signal monitor are also included.

Moving on to transmitting topics, we have three articles on ATV looky-talkies, and finally we come to the video toys! 'Stealing sync and other despicable pastimes' is one intriguing article, and we also have circuits for video a.g.c., colour video processing, chroma keying, auto recording on a v.c.r. and using a c.c.d. camera originally built into an American model railway loco. All in all a fascinating source book and well worth a space on your book-shelf.

How To Buy

ATV Secrets Volume II costs $24.95 in the USA; as it is a weighty book the UK price is a little higher to cover postage. To order in Europe, contact KM Publications on (0788) 890365.

Andy Emmerson's column appears on a quarterly basis. In the intervening two issues this page will be taken up by Brian Oddy's 'Long Wave Maritime Beacons' column followed by Andy Cadiers' 'Off the Record' column.

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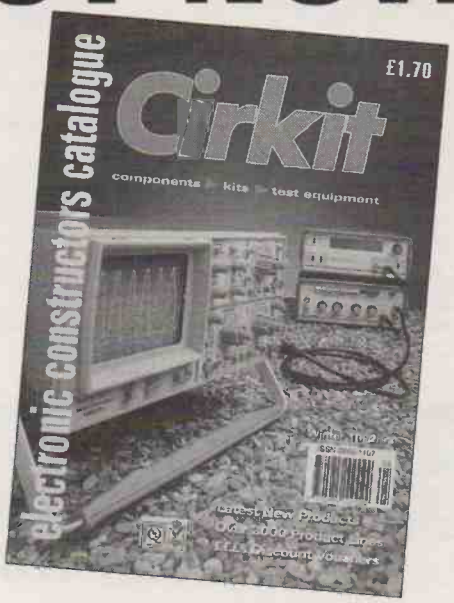

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