FOR THE RADIO LISTENER

shortwave magazine

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First UK Review

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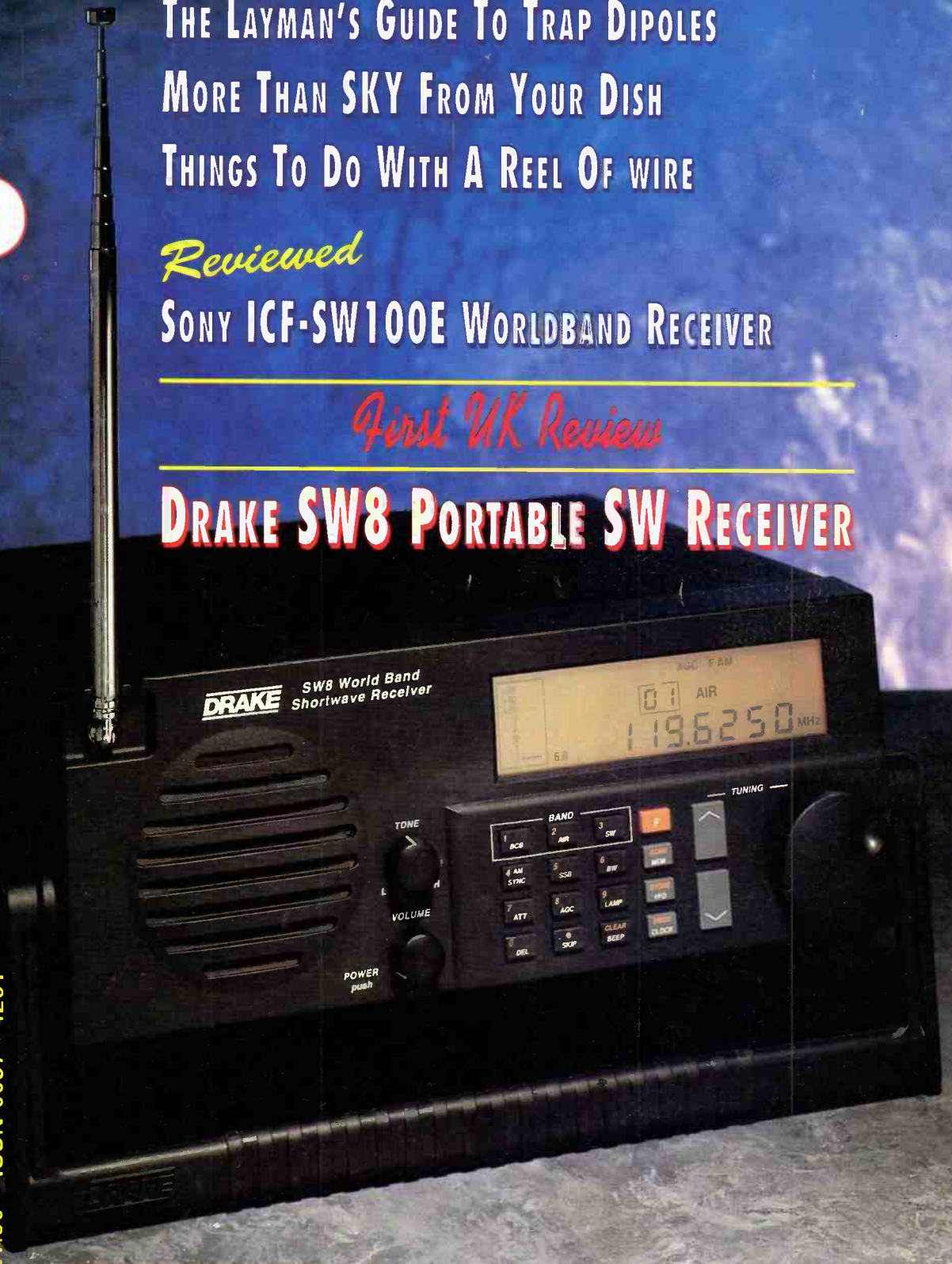

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short wave magazine

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EDITOR: Dick Ganderton, C. Eng., MIEE, G8VFH
ASSISTANT EDITOR: Kevin Nice
ART EDITOR: Steve Hunt **Layouts:** *Richard Gale*

EDITORIAL
Arrowsmith Court, Station Approach,
Broadstone, Dorset BH18 8PW
Tel: (0202) 659910
FAX: (0202) 659950

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Roger Hall G4TNT
TEL: 071-731 6222 Cellphone: (0850) 382666
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***ADVERTISEMENT PRODUCTION** (Broadstone)*
Lynn Smith (Sales) Ailsa Turbett (Production)
TEL: (0202) 659920
FAX: (0202) 659950

Cover Subject

Drake's new portable short wave receiver has aroused considerable interest. Mike Richards has been looking at the first set to arrive in the UK.

Photo: Craig Dyball

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Features

Regular Columns

Good Listening

SWM SERVICES

Subscriptions

Subscriptions are available at £22 per annum to UK addresses, £25 in Europe and £27 overseas. Subscription copies are despatched by accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both *Short Wave Magazine* and *Practical Wireless* are available at £39(UK) £42 (Europe) and £45 (rest of world).

Components for SWM Projects

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

The printed circuit boards for *SWM* projects are available from the *SWM* PCB Service, Badger Boards, 87 Blackberry Lane, Four Oaks, Sutton Coldfield B74 4JF. Tel: 021-353 9326.

Back Numbers and Binders

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

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

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

Credit card orders (Access, Mastercard, Eurocard or Visa) are also welcome by telephone to Broadstone (0202) 659930. An answering machine will accept your order out of office hours and during busy periods in the office. You can also FAX an order, giving full details to Poole (0202) 659950.

editorial

You should have noticed that last month there was no name alongside the Assistant Editor position on the Contents page. Well, the position has now been filled and I would like to introduce the new member of the Editorial Team, Kevin Nice. Kevin replaces Peter Hirons as Assistant Editor, who has left to make his fortune elsewhere.

Kevin has a background in electronics engineering and has been in the industry for the past ten years. He has recently returned to listening after a considerable absence. His listening station is currently minimal with amateur high frequency coverage only, but he assures me that he is busy with the soldering iron, so this should change soon.

So, please join me in welcoming Kevin to the magazine.

The New Look

Thanks to all of you who have made favourable comment on the new look layout of *SWM*. The Art Department like to know that their efforts are appreciated by you, the readers. I have also had a sneak look at a few of the Reader Survey forms to see if I could detect any trends. It would seem that, by and large, the majority of you are happy with the magazine as it is, although, of course, when the result have been properly processed I could be proved wrong.

Dick Ganderton G8VFH

letters

IF YOU HAVE ANY POINTS OF VIEW THAT YOU WANT TO AIR PLEASE WRITE TO THE EDITOR. IF YOUR LETTER US 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 article on the Signal R535 Air Band receiver in the March '94 *SWM* by Bob Sayers, which I found to be most interesting as I live near to the flight path to Manchester Airport, and use an R535.

My approach to the battery used in the R535, whilst it is different and easy to construct, has proved its worth costwise. I used the standard dry battery box, but fitted with NiCad AA batteries. The box is drilled for a 2.5mm plastics socket, which could also be used for 12V car use.

To charge these I used a simple circuit (from ARRL, I think). All parts are cheap to buy as a beginner, and easy to assemble.

The dial lamp DL1 is used to limit the current. One with a rating of 60. 100mA is fine. The should to be the same as the charging source, say 12V.

The voltage regulator shown D2 - 18 is based on the fact that a forward biased diode will not conduct until 0.75V d.c. is applied.

By adding a suitable number of diodes in series as shown, a voltage regulator for the maximum battery voltage can be built easily.

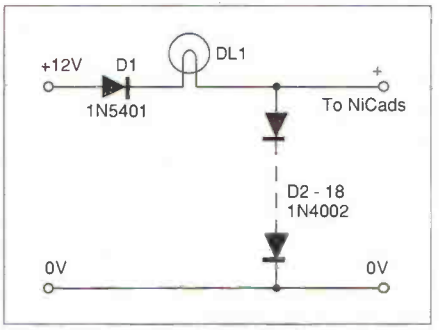
It will draw little current until the battery voltage reaches the set value during charge. Once that point is reached, the diodes start to conduct and so limit any further charge.

After the circuit is wired and checked, apply power (without a battery connected for charging). The bulb should light with less than full brilliance. Measure the voltage across regulator. It should be 3 - 8% above the rated battery voltage to be charged. Add or remove diodes from D2 - 18 to adjust. Connect partially discharged NiCad batteries - the current should be some 100mA (or the bulb current). The current will decrease as charging time increases and a value of 5mA indicates a fully charged condition. No damage will result if batteries are left on charge continuously.

I am pleased to see the R535 being still so highly thought of and agree that the receiver's computer port to change banks of memories has not really received the attention it so richly deserves. So many people use computers to control radios, (Icom R7000, Yaesu FRG-8800 & FRG-9600, etc.) but little is commented on the Lowe Electronics interface and software.

W. Atkinson
Denton
Manchester

Simple NiCad charger for Signal R535.



letters

Dear Sir
I am sure that I do not need to remind you or fellow readers of the importance of short wave radio, both as a hobby and a source of information, news, culture and much more besides. Amateur radio is also very important, no matter whether you are Class A, B or Novice. However, all this is under attack and some people do need a reminder, most of all the British Government and its radio authorities.

The levels of radio frequency noise are at an all time high and are on the increase. It is spreading like a bush fire to many areas where no problem existed before. The major sources are domestic and industrial. We are all aware of crowded bands and stations interfering with one another. Little can be done about this due to narrow bands, international conferences and so on. We are also aware of natural noise sources, all this is taken as the norm by all short wave listeners and radio amateurs.

However, radio frequency abuse from domestic and industrial equipment is unnecessary. It can be reduced to very low levels or eliminated. The radio authorities are perfectly happy to legislate against pirates, they are perfectly happy to enforce amateurs to restrict operations if domestic users are interfered with, but, when it comes to interference from domestic sources, they don't want to know.

The television set is in widespread use and the noise it radiates is appalling. Depending on the model, it's vile noise can be heard across the whole short wave spectrum, long and medium wave too are affected. Not only is there a constant rasping buzz, there can be white noise, certain burbling sounds, they can also be distorted loud sound carriers.

Due to one particular set in my area, I know what programmes they watch, a very loud distorted sound carrier can be heard on 5995kHz. Add to this white noise from the same TV, which can peak at 10dB over 9 and heard all over the short wave spectrum as well as buzzing, you can imagine my problem. It doesn't end there, because these are loud bursts of noise. Pulses which appear regularly for a few months, then disappear. These pulses can be heard from long wave up to 2m. Various switch type clicks which can be heard constantly throughout the year knocking out my a.g.c. I've no idea where this interference comes from, but they are heard all over the Brentwood area and possibly beyond. I do not interfere with the pursuits of my local community. In fact, I mind my own business and keep myself to myself. I do not even indulge in the local malicious gossip. Why then, does the government allow manufactures to produce naff equipment which allows the community to interfere with me?

I am obviously not alone, there are many others with similar or worse problems. I know of two people who have given up short wave radio because interference is so grossly high in their areas. I am tired of manufacturers poor excuses. They claim that any screening or other measures taken to reduce or eliminate interference would add to production costs which would be passed onto the consumer considerably resulting raising retail prices, etc. What total and utter nonsense. Most of the manufacturers produce their equipment for sale all over the world. Some countries have legislation to quite a varied extent to reduce domestic and industrial interference to a minimum. These manufacturers do screen equipment for some markets and their products are sold at considerably lower prices than in the UK. I am told that the United States is one such country, but do they protect the listener from television sets? I am not against television or those who watch it. As far as I am concerned people can watch television all day, it is the hardware that I object too, the people who design and build such crude equipment and the British Government who very stubbornly refuse to legislate against radio vandalism. It is not just TV sets either, there is a list longer than your arm, of devices I could mention. I don't know the situation in other countries around the world, but it would be interesting to find out. My reception is not, as yet, totally obliterated but it is difficult in spite of a long wire fed via a coaxial cable and m.l.b.

Many methods have been tried to reduce or eliminate the problem, but nothing works. Instead, some people argue about Morse code or whether people should build or buy. Let's concentrate on the problem of interference. I am looking at the possibility of setting up some sort of ? group in this respect, more research needs to be done before I try this. If we don't pull together and get something done, there will soon be no short wave to argue about.

Save our short waves!

T. A. Smith
Brentwood
Essex

Dear Sir
I have just moved my QTH to a farm and, in desperation, asked my brother (the farmer) if he had any long wire for an aerial for my HF150 receiver and AT1000 tuner. He suggested 25m of electric fence wire. This 'wet string' aerial has now survived two months of a Scottish winter and really works well!

I. Birse
Aberdeenshire

Dear Sir
I was most interested in Mr W. Caley's letter in the March 1994 *SWM* regarding his request for a stockist for the BF254 transistor. This transistor can easily be obtained from a firm called Grandata Ltd. Their address **is KP House, Unit 15, Pop In Commercial Centre, Southway, Wembley, Middlesex HA9)HB. Tel: 081-900 2529.**

They regularly advertise vast numbers of transistors and linear ICs in *Television* magazine. Incidentally, I built this reflex one transistor receiver myself and obtained two of these transistors and the OA91 diode from this firm, the price of which was under a pound, not counting the postage.

Perhaps it would be a good idea if this firm were to advertise some of their large stock of semi-conductors in *Short Wave Magazine*. I am sure a lot of would-be constructors would appreciate it. I didn't get very good results on short wave with this receiver, but after I adapted it to medium wave using an old Denco plug-in coil, it performed much better.

I was very interested in the Air Band edition this month. I am now monitoring all the various h.f. frequencies mentioned for what I can hear. I have a Sangean 803 type receiver which I can use for this.

B. Curtis G4UEY
Stalbridge
Dorset

Dear Sir
Noise from discone antennas
The noise caused by the radials vibrating in the wind can be a nuisance - see the divorce figures amongst scanner enthusiasts.

This can be remedied by fitting a short length (115mm approx.) of small bore, flexible rubber tube, similar to the type used for Calor Gas appliances, on to the end of each radial leaving about 75mm to dangle freely on the end. Any vibration of the radials is cancelled out by the 'wigglement' of the rubber tube.

This does not affect the performance of the antenna.

A. L. Heathcote G0RAJ
Essex

Dear Sir
The excellent article by R.O. Ball on the 'Pacific Airband' will have persuaded many newcomers to the h.f. airband to 'have a go'.

I have found two things that are useful in finding when propagation conditions are good for the Pacific.

One is to monitor the Volmet stations in that area and a list of these is in *Short Wave Communications* by the late Peter Rouse.

The other way is to monitor WWVH, which is the Hawaii outlet for the well known WWV time and frequency standard broadcast. These two stations broadcast at the same time, carefully synchronised, but the WWV male announcer who speaks the exact time at one minute intervals from Fort Collins, Colorado is preceded by the female WWVH voice giving the announcement from Hawaii.

Therefore, on those occasions when you can hear the female voice, there is a path open to the Pacific. Remember that WWV/WWVH is on the air 24 hours a day, every day of the year.

P. A. Finn
Dyfed

These Standard Time Stations are well worth monitoring to get an idea of reception conditions, as P.A Finn suggests. The frequencies to try are 2.500, 5.000, 10.000 & 15.000MHz. Ed.

grassroots

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

rallies

May 1: The BATC Rally, Sports Connextion, Coventry will be among the largest indoor radio events of 1994 - around 320 trading tables, flea market, outside TV displays etc. **Mike Wooding G6IQM.**

May 2: Dartmoor Radio Rally will be held at Yelverton Memorial Village Hall, Meavy Lane, Yelverton, Devon. Trade stands, Bring & Buy, refreshments etc. Parking, access for disabled, doors open 10.30, talk-in on S22. **Ron on (0822) 852586.**

May 2: Mid-Cheshire ARS Rally will be held at Civic Hall, Winsford, Cheshire. Doors open at 11am, (10.30am for disabled visitors). £1 entry and ample free car parking, full catering and bar plus Bring & Buy. **Dave G4XUV on (0606) 77787.**

May 8: Midland Amateur Radio Society/Drayton Mobile Radio Rally is being held at Drayton Manor Park, Tamworth, Staffs (A4091). Doors open at 10.30am, usual traders, flea market, car boot and club stands. **Peter G6DRN on 021-443 1189.**

May 8: The 10th Yeovil QRP Convention will be held at the Preston Centre, Yeovil, Somerset. Doors open 9am - 5pm, free car parking. Traders, QRP kits and components plus club Bring & Buy and QRP club stand. Natter area and refreshments. **Peter G3CQR, QTHR on (0935) 813054.**

May 15: The Mid-Ulster Amateur Radio Club GI3VFW are holding their Parkanaur Rally at the Silverwood Hotel, Lurgan. Doors open at 12.00 noon. Proceeds in aid of The Stanley Eakins Memorial Fund.

May 22: The 37th Northern Mobile Rally will take place at the Flower Show Hall on the Great Yorkshire Show Ground, Harrogate, North Yorkshire. **Mike G0MKK. (0423) 507653 evenings or G0MKK @ GB7CYM.**

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

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

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

June 12: The Royal Navy Amateur Radio Society is holding its annual rally on the sports field HMS *Collingwood*, Fareham, Hants between 10am and 5pm on Sunday. This site, with its easy road access and good car parking, is a splendid successor to the previous venue. Trade stands, Bring & Buy, flea market, local repeater and radio clubs and also a large arts and crafts exhibition. A full range of entertainment for all the family along with refreshments. Talk in on 144 and 432MHz to guide visitors from the nearby M27 (leave at junction 11 and follow the A27 towards Fareham). **Clive Kidd G3YTQ on (0705) 3327621 daytime or (0329) 234143 evenings.**

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

* Short Wave Magazine & Practical Wireless in attendance

AVON

Shirehampton ARC: Fridays. April 29 - PCB techniques, May 6 - CW night - SARC contest simulator, 13th - HF NFD planning, 20th - Use of EI5DI software for NFD. Ron Ford G4GTD. (0272) 770504.

South Bristol ARC: Wednesdays. Whitchurch Folkhouse Assoc., Bridge Farm House, East Dundry Rd, Whitchurch. May 4 - 20m activity evening and committee meeting, 11th - Cellular radio, 18th - Simple computer programming.....logging?, 25th - Working Lundy station. For more information ring (0275) 834282 on a Wednesday evening.

BEDFORDSHIRE

Shefford & DARS: Thursdays, 8pm. Church Hall, Ampthill Road, Shefford, Bedfordshire. May 5 - Cooperating, the making of wooden barrels, a talk by Brian Palfrey of Bury St Edmunds, 26th - Mobile DF hunt. Paul G1GSN (0462) 700618

BERKSHIRE

Maidenhead & DARC: 8pm, The Red Cross Hall, The Crescent, Maidenhead. May 5 - Static electricity, talk and demonstration by Paul Sallom G3BGL, 17th - Preparations for HF & VHF field days. Neil Savin G0SVN. (0628) 25952.

DERBYSHIRE

Derby & DARS. Wednesdays, 7.30pm. 119 Green Lane, Derby. May 4 - Surplus sale, 11th - AOR wideband receivers - illustrated talk by Richard Hillier G4NAD, 18th - The CAIRO system - a practical demonstration by Peter Best G8CQH of Aston University, 25th - Technical topics discussion. Mrs Hayley Winfield, 2 Hilts Cottages, Crich, Matlock, Derbyshire DE4 5DD. (0773) 856904.

DEVON

Torbay ARS: Fridays, 7.30pm. ECC Social Club, Highweek, Newton Abbot. May 20 - Second hand sale. Peter G4UTO. (0803) 864528.

DORSET

Dorset Police ARS: 1st and 3rd Thursday at Force HQ at 7.30pm. May 5 - RAE revision, 8th - Yeovil QRP convention, 9th - Radio Amateur Exam, 19th - Visit to the club by the staff of *Practical Wireless*. PC915 Richard Newton at Ferndown Police Station. (0202) 229351.

EAST SUSSEX

Hastings Electronics & RC: 3rd Wednesdays, 7.45pm. West Hill Community Centre, Croft Road, Hastings. May 18 - Talk by Dr. John Craig G3SGR entitled 'Images of Man'. G3YYF on (0424) 830454.

FIFE

Dundee ARC: Tuesdays, 7pm. College of Further Education, Graham Street, Dundee. May 3 - Construction night, 10th - Lecture by C. H. Matthews, Curator Museum of Communications, Bo'ness, 17th - Club awards evening, 24th - Construction night. GM4FSB, 30 Albert Crescent, Newport-on-Tay, Fife DD6 8DT.

Dunfermline & DARC: Thursdays, 7.30pm. The former RAF radio station, Duth Muir, located by the A823 Dunfermline to Crief Road, one mile from the Knockhill Racing Circuit. April 28 - The packet system, a SysOps perspective by Stuart GM1VBE, May 5 - Natter night, 12th - HF operating evening (an ideal time for Class B amateurs to gain some operating experience), 19th - Contest logging by computer, a demonstration of G3WGV and Super-Duper by Wallace GM0GNT, 26th - Junk sale. Wallace Shackleton GM0GNT (0577) 864050.

GRAMPIAN REGION

Aberdeen ARS: Fridays, 8pm. Queen Mother House, Aberdeen. April 29 - 'Wet String' Listening Competition, May 6 - Junk sale, 13th - Unlucky for some, 20th - Building the Yearling - Part 3. Gordon Stuart GM7PXW (0224) 780591.

GREATER LONDON

Crystal Palace & DRC: 3rd Saturdays, 7.30pm. All Saints Church Parish Rooms, Beulah Hill, London SE19. May 21 - Fibre Optics by A. Ogden G6JZN. Wilf G3DSC on 081-699 5732 or Bob on (0737) 552170.

Edgware & DRS: Thursdays, 8pm. Watling Community Centre, 145 Orange Hill Road, Burnt Oak. April 28 - Morse training evening plus station on the air, May 12 - F. J. Camm - The man and his 'Comic'. Rod Bishop. 081-204 1868.

Wimbledon & DARS: 2nd & last Fridays, 7.30pm. St Andrews Church Hall, Herbert Road SW19. April 29 - The simple spectrum analyser by Bernard G8TB 081-540 2180.

HEREFORD & WORCESTER

Bromsgrove ARS: 2nd & 4th Tuesdays. Lickey End Social Club, Alcester Road, Burcot, Bromsgrove. May 10 - AGM, 24th - Night on air (HF). Barry Taylor. (0527) 542266.

Droitwich Spa ARC: 1st Tuesdays, 8pm. Droitwich Community Hall. Many interesting evenings already booked. Jenny Read. (0905) 771571.

HERTFORDSHIRE

Hoddesdon RC: Alternate Thursdays, 8pm. Conservative Club, Rye Road, Hoddesdon. April 28 - Talk by John Taylor and colleague from the Radiocommunications Agency Radio Investigation Service with video, May 12 - Junk sale and natter night, 26th - A talk entitled 'Photography is my profession' by Rod of the Grafton ARC. John G7OCI (0920) 466639.

KENT

Medway AR & TS: Fridays, 7.30pm. Tunbury Hall Catkin Close, Tunbury Avenue, Walderslade, Chatham. May 6 - 'Satellite TV' by Colin Turner G3VTT, 20th - 'Air traffic control and airband radio' by Dave Lawrence G6HXR. Gloria. (0634) 710023.

LANCASHIRE

Preston ARS: Thursdays, 8pm. The Lonsdale Sports & Social Club, Fulwood Hall Lane, Fulwood, Preston. March. Eric Eastwood G1WCQ. (0772) 686708.

Rochdale & DARS: Mondays, 8pm. Cemetry Hotel, 470 Bury Road, Rochdale. May 16 - Talk 'PMR Gear' by G3RTU. G7OAI (0706) 376204.

LINCOLN

Lincoln SW Club: Wednesdays, 8pm. City Engineer's Club, Waterside South, Lincoln. May 11 - AGM, 18th - Japanese Morse by Norman Kendrick G3CSG, 25th - Trip to Guildhall. Pam G4STO (0427) 788356.

MERSEYSIDE

Sefton ARC: 1st & 3rd Thursdays at The Liverpool Prison Officers Club. Details from Phil Taylor G4KIN. 051-531 0991 or G8YPL, QTHR.

NORFOLK

Norfolk ARC: Wednesdays, 7.30pm. Formal meetings: University Arms, South Park Avenue, Norwich, Informal meetings: Hewett School, Hall Road, Norwich. May 4 - (informal) Night on air, construction QRP, Morse practice, 11th - (formal) Simple frequency counter by Mike G4EOL, 18th - (informal) Night on air, construction QRP, Morse practice, 25th - (formal) Final h.f. NFD briefing. Sheila Snelling G0KPW. (0603) 618810.

NORTHANTS

Kettering & DARS: Tuesdays, 7.30pm. The Electricity Board Sports & Social Club, Eskdaill St., Kettering. May 17 - A talk by the Radio Investigation Service. C. P. Bourne G4RPG (0536) 523230.

NOTTINGHAMSHIRE

Mansfield ARS: 2nd Mondays, 7.30pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. May 9 - AGM. Mary G0NZA. (0623) 755288.

OXFORD

Oxford & DARS: 2nd and 4th Wednesdays, 7.45pm. The North Oxford Grove House Club. Terry Hastings G0CFN. (0865) 863526.

SHROPSHIRE

Salop ARS: Thursdays, 8pm. Oak Hotel, Shrewsbury. April 28 - The under a fiver construction competition. April 28 - The under a five construction competition, May 5 - Natter night, 12th - The SARS radio junk sale, 19th - Foxhunt - chase 2, 26th - A talk by Dave Gourley G0MJY, the representative for the RSGB. Sheila Blumfield G0SST (0743) 361935.

SOMERSET

Yeovil ARC: Thursdays, 7.30pm. The Red Cross Centre, 72 Grove Avenue, Yeovil. May 5 - Discussion/Preparation for the QRP Covention on the 10th, 12th - Post-mortem on QRP Convention & Introduction to amateur radio for new members. This night is also enrolment night for RAE classes in preparation for the RAE in December, 19th - Negative resistance oscillators by G3MYM, 26th - Club station on air and committee meeting. Cedric White, QTHR (0258) 473845.

STRATHCLYDE

Milton of Campsie ARS: 2nd Wednesdays, 7.30pm. Milton of Campsie Community Hall. Alan Foulis GM7PGT. 041-779 1444.

SUFFOLK

Sudbury & DRA: 1st & 3rd Tuesdays, Wells Hall, Old School, Great Cornard, Five Bells Public House, Bures Road, Great Cornard. May 3 - Operating evening and talk by Tony G4ZVR - Magnetic loop aerials, 15th - Special event station - Kesgrave, 17th - Natter and Noggin. Tony Harman G8LTY (0787) 313212.

WARWICKSHIRE

Stratford-upon-Avon & DRS: 2nd & 4th Mondays, 7.30pm. Home Guard Club, Main Street, Tiddington, Stratford-upon-Avon. May 9 - Old Pye communications equipment by 'The Pyeman' from Bewdley, 23rd - 2m d.f. hunt. Mr A Beasley G0CXJ (0608) 682495.

WEST MIDLANDS

West Bromwich Central Radio Club: Sundays, 7.30pm (talks begin at 8pm). The Sandwell Hotel (upstairs function room), High Street, West Bromwich. May 15 - Talk by H. Nevett 'Just the tonic'. Ian Leitch. 021-561 2884 (home) or (0902) 353522 ext. 2093 (office).

WILTSHIRE

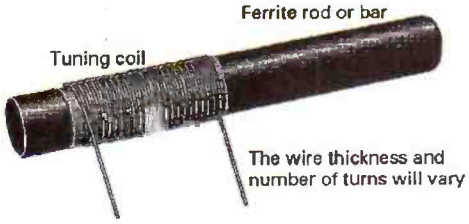
Salisbury Radio & Electronic Society: Tuesdays, 7.30pm. 3rd Salisbury Sea Scout Hut, St Marks Avenue, Salisbury. May 3 - Talk 'Microwave, Part II' by G4LDR and G8OFA, 10th - Talk 'Raynet' by Gordon G6ZHJ, 17th - HF operating evening, 24th - Construction and advice clinic. David Kennedy. (0722) 330971.

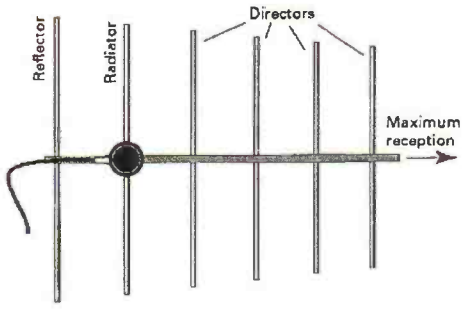
Trowbridge & DARC: 3rd Wednesday, 8pm. The Southwick Village Hall, Southwick, Trowbridge. May 4 - Amateur satellites, talk by G7AZP, 18th - Natter night. Ian G0GRI (0225) 864698.

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

junior listener

Why Choose that Antenna?





What's the difference between a ferrite rod, telescopic, beam or active antenna and why would you use them?

Starting with the ferrite rod antenna, this is pretty well universally used in portable radios. To look at, these antennas take the form of a bar or rod of ferrite material around which is would many turns of wire to make an inductor. One of the important properties of ferrite is that it is both an excellent magnetic material and a good insulator. It's the combination of these two properties that make it so useful for antenna systems.

Once the ferrite bar or rod inductor is combined with a capacitor to make a tuned circuit the result is a surprisingly sensitive and compact antenna system. Another feature of the ferrite antenna is that it has some very good directional properties. This means that it can be rotated by the listener to get the best signal. The only snag with ferrite antennas is that they are only really effective at frequencies below 2MHz, so they are generally restricted to long and medium wave use.

The telescopic antenna, on the other hand, is better suited to the reception of higher frequency signals. This is why you find that most multi-band short wave receivers have an internal ferrite antenna and an external telescopic whip. Although the telescopic antenna works reasonably well, it's no substitute for an external antenna. The main problem being that the antenna is far too short for the frequencies being received. Just to illustrate the point, the wavelength of an amateur signal on 14MHz is around 20 metres. To receive this effectively with a simple whip antenna you would need a system around 5 metres long - hardly portable!

If you're short of space for antennas (like most of us), the next step up is to consider one of the many active antennas on the market. One of the problems with using a short whip antenna, or any system that's much smaller than the wavelength of the signal you want, is that the antenna has a very high resistance. If you connect this high resistance antenna direct to the 50Ω input of your receiver you will shunt away most of the signal. The active antenna tackles this with some special electronic circuitry designed to provide a good match between the short antenna and your receiver. The end result is a very compact and sensitive system. But like all things in life, you don't get something for nothing! There are a number of drawbacks with active antennas, the most serious is usually intermodulation. This is a type of noise or distortion that's caused by the matching circuit being overloaded by strong signals. Not only does this cause problems in the active antenna itself, but also in your receiver.

Finally, the beam antenna is a rather specialised unit that's used by amateurs and commercial stations, rather than short wave listeners. As the name suggests, these antennas have a very directional response, rather like that of a torch beam. To create this effect, a beam antenna is made up from several components or elements that are spaced at precise intervals from the main element. The narrowness of the antenna's beam is determined primarily by the number of elements. Because of the physical problems in constructing full size beams, they are generally restricted to frequencies above 10MHz.

The Exploratory

The Exploratory is a 'hands-on' type museum in Bristol that has a very interesting approach to science and learning. Not only are you allowed to touch the exhibits, you are actively encouraged to take part and experiment. One of the sections is on Electricity and Magnetism. You can experiment with static electricity using a balloon, make your own electromagnet, see how electric motors work and experiment with magnets. Other sections include Light, Vortices, Structure, Mechanics, Colour, Hearing and Sound and Illusions. There are plenty of skilled helpers (or pilots) around to help with the experiments so you find the answers out for yourself.

The Exploratory is next to Temple Meads station in Bristol and it's open between 10am and 5pm each week (except Christmas week). For up-to-date information on times and prices you can call (0272) 225944.

All through the booklet on The Exploratory there are facts and questions - here's one for you. "The current flowing in a wire is measured in amperes. In a current of 0.5A (such as that flowing through the filament of a torch bulb) over 1 000 000 000 000 000 000 electrons are passing any point on the filament each second!"

Build-Your-Own

So, if you think you'd like to have a go at building your own antennas, where do you get the information from. Well, there's several sources - books and magazines mainly, but also from fellow members of the local radio club. If you decide to go for books, you may find your local library has them in stock, failing that you can always buy them from *SWM*.

Some of the easiest experiments can be found in the range of Babani books - they are also some of the cheapest reference books too. *Aerial Projects BP105, 25 Simple Indoor & Window Aerials BP136, 25 Simple Short Wave Broadcast Band Aerials BP132* and *25 Simple Tropical & MW Band Aerials BP145* are good books to start with. Their prices range from £1.75 to £2.50 and so represent quite good value for money. Projects such as loop antennas, dipoles and helical antennas are all reasonably cheap to experiment with.

As for suppliers of the various bits, an amateur radio rally can often provide everything you need for your experiments. Failing that, the small adverts in the back of radio magazines will provide a long list of those who can supply all kinds of antenna bits and pieces.

If you have a go at some antenna experiments and you think the world at large would be interested in your story, drop me a line.

Good Advice

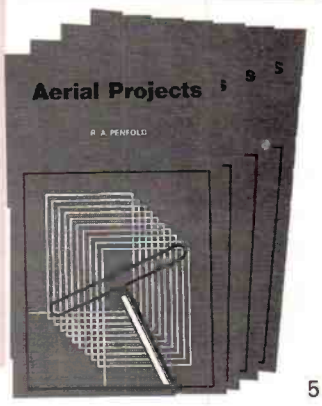
Basil Parylo has written with some advice for those thinking of buying a new scanner for the first time.

First telephone some of the companies that advertise in *SWM*. He found they were very helpful and pleased to give advice and views, even though he was just making a general enquiry.

Then you should try to have some sort of idea of what frequencies you want to listen to, for example is it h.f. or v.h.f., etc., and decide what you want your scanner to do.

Another tip from Basil is to read the book *Scanners* by Peter Rouse. He found it to be written in layman's terms that any newcomer can understand. It also explains those annoying abbreviations - like a.m., s.s.b., RTTY, etc.

The trouble is, now that Basil has got his scanner he's got a whole load of new questions that need answering now. I'll see what I can do over the next couple of months.



news

New French SWL Club

A bulletin from a new French short wave listening club, the QSL Club De France, has recently landed on the news desk.

Franck Parisot QCF010, Marketing Manager for the QSL Club De France says that the club is interested in all aspects of radio and that the club bulletin, *Courrier* is published every two months in French. Also published twice yearly is a guide to French programmes on short wave called *Contact*.

If you would like to become a member of the QSL Club De France you should send 72 Francs, 12$, 16 IRCs (EEC) or 20 IRCs (rest of the world) to **QSL Club De France, 40 Rue de Haguenau, 67700 Saverne, France.**

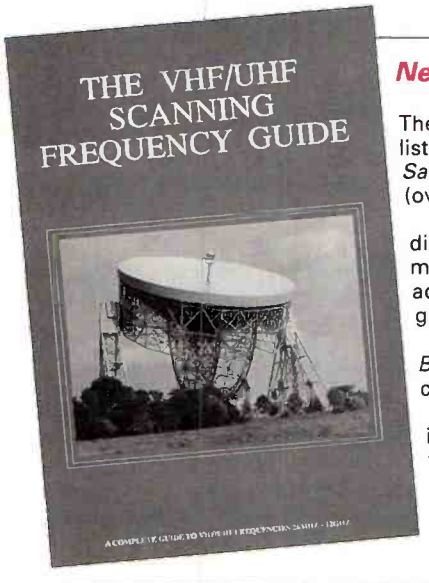
South Midlands Break-In

Short Wave Magazine has received news of a late night break-in at the South Midlands Communications Head Quarters, Chandlers Ford, Eastleigh. The break-in occurred at the end of March and the following items were stolen.

Model No	Type	Serial No.
1 x MVT5000	Scanner	
1 x FT-26	144MHz hand-held	1G064794
1 x FT-76	430MHz hand-held	1I080984
1 x FT-415	144MHz hand-held	1L061036
1 x FT-11R	144MHz hand-held	3K022304
1 x AR1500	AOR scanner	0015843
1 x 200XLT	Bearcat scanner	
25 x RL102	Rexon 144MHz H/H	033842/033880/033858 033983/033846 (5 of each stolen)
36 x FT-530	Yaesu dual-band	3F160336/3F160309/3F160229/ 3F160328/3F160367/3F160307 (6 of each stolen)
1 x TH-28E	Kenwood 144MHz H/H	40900045
1 x TH-78E	Kenwood dual-band	40900453
2 x Airhandy RX KE3000		
2 x Poky Toky		
1 x FT-411	Yaesu 144MHz hand-held	9N181221
4 x MVT7100	Yupiteru scanner	21101622/30800958 (2 of each stolen)

Also stolen was a variety of NiCad batteries and chargers.

If anyone can offer any information to help recover any of the stolen goods they are asked to contact **South Midlands Communicatons Ltd., S.M. House, School Close, Chandlers Ford Industrial Estate, Eastleigh, Hampshire SO5 3BY. Tel: (0703) 255111.**



New Books

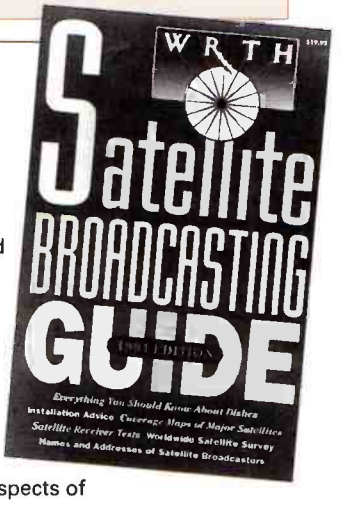
The *Short Wave Magazine* Book Service has added two useful books to its lists. The first of these is the 1994 edition of the *World Radio TV Handbook Satellite Broadcasting Guide* for £15.95 plus £1 P&P (UK), £1.75 P&P (overseas).

The *WRTH Satellite Broadcasting Guide* contains details on satellite dishes, extensive tests of newly released satellite receiving equipment, and maps of worldwide satellite coverage areas. There are also names and addresses of major satellite operators and programme providers and a glossary of common satellite terminology.

If you own a satellite receiving system the *WRTH Satellite Broadcasting Guide* is a must for your bookshelf. Don't delay order you copy from the *SWM* Book Service today.

The second book is the *VHF/UHF Scanning Frequency Guide* which is now back in print. This popular 156 page book gives details of frequencies from 26MHz to 12GHz as well as information on equipment requirements and antennas. There are also chapters covering the legal aspects of listening using a scanner.

The *VHF/UHF Scanning Frequency Guide* is available from the *SWM* Book Service for £9.95 plus £1 P&P (UK), £1.75 P&P (overseas).



Dial-In Time

The BBC have recently sent *SWM* news of a newly introduced service called Dial-in Time. This new service has been designed to provide accurate time data that can be used for various purposes.

The BBC's time signals for broadcasting are developed from a highly accurate Time Standard maintained at Broadcasting House, London. The Time Standard service is now accessible via the telephone to anyone requiring an accurate time reference providing they have a suitable computer and a modem

The BBC Radio Time Standard is based on a pair of Global Positioning System receivers working in dual-redundant set-up, together with an MSF Receiver. The time data is accurate to within 500µs and is passed from the Time Standard to a pair of Leitch Clock System controllers which are connected to modems for access by callers.

The telephone numbers that are needed to access the service are **(0891) 516880 for Co-ordinated Universal Time and (0891) 516888 for UK Time of Day.** Calls are charged at 39 pence per minute cheap rate and 49 pence per minute at all other times.

For more information on the Dial-In Time Service contact BBC Engineering Information, White City , 201 Wood Lane, London W12 7TS. Tel: (0345) 010313 (from UK), +44 81 7525 04 0 (from overseas).

United Kingdom Radio

The British DX Club has just published its 1994 edition of *Radio Stations In The United Kingdom.* The A5 sized booklet is now in its 12th edition and lists all British m.w. and f.m. radio stations, together with their location and transmitter power. To help with the identification of stations, each frequency is cross-referenced to show possible parallel channels.

Radio Stations In The UK also contains a reference section which gives the full postal address, telephone and FAX numbers of each station. Also given is a summary of the various BBC and Radio Authority services, their future plans, Restricted Service Licences, advice on reception reports and RDS identifications. The publishers say that the aim of *Radio Stations In The UK* is to be the most accurate and comprehensive guide to British domestic radio for the DXer and local radio enthusiast.

To get your copy of *Radio Stations In The UK* just send £2.50 sterling/6 IRCs or 4US$ to **British DX Club , 54 Birkhall Road, Catford, London SE6 1TE.** All cheques/money orders should be made in sterling and payable to British DX Club.

news

Radio And TVDX News

The Department of Trade and Industry (DTI) have confirmed the release of the final segment of Band 2 (105-108MHz) for radio broadcasting and applications from broadcasters will be invited later this year.

The right wing Afrikaner Volksfront (AVF) have drawn up defensive lines to protect Radio Pretoria, now transmitting on f.m., against government forces if any attempt is made to close them down. The AVF intend to install a series of f.m. repeaters (from R.Pretoria) across the Transvaal. This is in addition to AVF supported stations of Radio Koppies (Donkerhoek), Radio Vryheid (Bloemfontein) and a 3rd in the Orange Free State.

In Finland the YLE-TV1 transmits 24 hours a day either on programme or test card. The other TV networks YLE-TV2, TV3 and TV4 transmit test cards from 0900 local (Mon, Wed & Fri); Tues on selected transmitters only including Lahti, Turku and Tamapere; no test card transmissions on other days.

The Dutch are now well into their first year of digital audio broadcasting (DAB) tests operating from Haarlem (1kW in Band 3, ch.E7- 189.25MHz). Hilversum uses a 30W transmitter on the same frequency. Rotterdam is due on air with DAB shortly also on E7.

Philips meanwhile at Eindhoven have been using ch.E57 UHF for their DAB tests at 762.00MHz running 100W. Haarlem radiates the classical radio programme 'Radio 4' whereas Philips, when transmitting, run a straight CD to air.

The Bangladesh government is funding the opening of a 2nd TV channel to provide more educational and instructional programming. This is in addition to the construction of three regional production TV studios in the regions, currently all programme making is completed in the capital, Dhaka.

There are possible changes in Russia with talk of reducing the four national TV networks to just one. The other networks will be passed to commercial operation, leaving Ostankino-1 as the national state channel.

Robert Copeman has just formed Australia's first ever TV/FM DX correspondence group (ICDX) which will also publish a newsletter *Crossfire*. Basically an exchange of ideas and reception forum, Australian readers are invited to write to **Robert at 10 Cratloe Road, Mount Waverley, Victoria 3149.** Coverage will be limited to DX in the v.h.f./u.h.f. bands (**not** slow scan or satellite); f.m. radio and the 30-50MHz band.

In the Czech Republic 'TV NOVA' is now transmitting over the former CT-2 TV network. The CT-2 programme is now aired over the former CT-3/OK-3 network, a mainly low power network. To re-establish the CT-2 coverage the following transmitters will be opened this year.

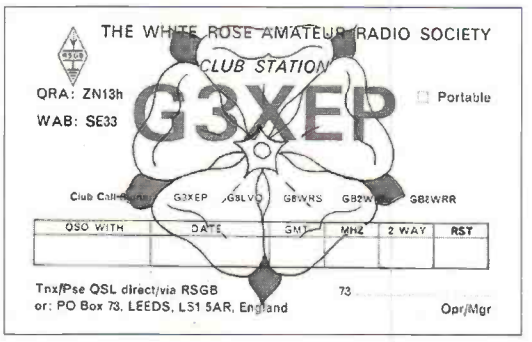
Transmitter	Channel	Power (kW)	Month
Brno	ch.R46	200kW	May.
Jesenik	ch.R50	200kW	Aug.
Plezn	ch.R48	200kW	Sep.
Chomotov	ch.R35	50kW	Sep.
Trutnov	ch.R40	200kW	Oct.
Jihlava	ch.R42	10kW	Oct.
Hradec-Kralove	ch.R57	200kW	Nov.

March 2 saw DX catch ZH-TV open at 1800 local on ch.E49 horizontal running 10kW e.r.p. from the 200 metre tower of the PTT at Rotterdam-Waalhaven omni-directional. March will only see a single day's programming per week, expanding later in the year. At other times the Noxema colour bar pattern will be shown. The station has been received in the south east UK.

The Palestinian TV station as previously reported on-air is still not operational due to disputes between Israel and Jordan over the possible siting of the studio, Israel wanting Jericho whereas the Palestinians favour Ramallah. The promised funds of £1 million still have not materialised from European sources.

Listening Contest

The White Rose Amateur Radio Society is running its Midsummer Set Listening Period contest from 1800UTC on June 18 to 1800UTC on June 19. The contest is open to short wave listeners throughout the world and will be run in two sections, s.s.b and c.w.



The idea of the contest is to log as many stations and countries as possible on each of the specified bands during the set listening times. The following bands and times will be used:
21MHz - 1800 - 2100UTC,
14MHz - 0600 - 0900UTC,
7MHz - 2100 - 2400UTC,
28MHz - 0900 - 1200UTC,
1.8MHz- 0000 - 0300UTC,
24MHz - 1200 - 1500UTC,
3.5MHz - 0300 - 0600UTC and
18MHz - 1500 - 1800UTC.

Scoring for the award will be one point for each station and one point for each country heard on each band. The final score will be the totals of each band added together. All log sheets to be submitted must have each band on separate sheets and the following columns should be displayed, Date, Time, Station Heard, Station begin worked, RS(T) at s.w.l. QTH.

If you wish to try and win an award in the White Rose Amateur Radio Society's Midsummer Set Listening Period contest then you should send your completed entry to the **Contest Manager, Mr David A. Whittaker, C/O The White Rose Amateur Radio Society, 57 Green Lane, Harrogate, North Yorkshire HG2 9IP. Entries should be postmarked no later than July 18 1994.**

National Channels Transmitter News

Short Wave Magazine has recently received details of the following changes to the BBC's national radio and television networks:

March 1 1994 - New BBC transmitter called **Ullapool**, situated 2km south east of the town centre carries these transmissions: Radio 1 - 97.9MHz, Radio 2 - 88.3MHz, Radio 3 - 90.5MHz, Radio 4 - 96.1MHz, Radio Scotland 92.7MHz, Radio nan Gaidheal 104.9MHz.

March 1 1994 - New Radio 1 f.m. transmitters at **Barnstaple**, Devon on 98.1MHz, **Isles of Scilly** on 98.4MHz, **Exeter (St. Thomas)**, Devon on 98.6MHz and **Fenham**, Tyne & Wear on 99.4MHz.

March 4 1994 - New television relay, called **Conlig**, situated 5km south of Bangor, NI (NGR 1J 503783) carries these transmissions: BBC1 N. Ireland - Ch39, BBC2 N. Ireland - Ch45, ITV Ulster - Ch49, C4 - Ch42. All vertically polarised.

March 16 1994 - New Radio 1 f.m. transmitter at **Madingley**, Cambridge on 98.5MHz.

March 17 1994 - New Radio 1 and Radio 4 Llanidloes transmitter is now open and provides a five channel service on the following frequencies: Radio Cymru on 92.5, Radio 1 on 97.7MHz, Radio 2 on 88.1, Radio 3 on 90.3 and Radio 4 on 104.8MHz. Polarisation is mixed.

March 25 1994 - New Radio 1 f.m. transmitters at **Hebden Bridge**, West Yorkshire on 98.0MHz, **Wharfedale**, 13km south west of Harrogate on 98.0MHz, **Stanton Moor**, Derbyshire on 99.4MHz.

More News on Page 49

Worked All Britain Awards

The Worked All Britain Awards (WAB) is celebrating its silver jubilee this year. The group and awards were devised in 1969 by the late John Morris G3ABG to promote interest in amateur radio in Britain.

To commemorate the 25th anniversary of WAB an appeal has been set up to raise £10 500 to provide a 'D' class lifeboat for the Royal National Lifeboat Institution. Funds for the appeal have already been raised from the sale of WAB books and awards and members have organised sponsorships for mobile runs, walks and other activities .

Special event stations and awards, such as the Lifeboat Award, have been active from various lifeboat stations and will continue until March 1995. To qualify for the award, ten stations must be worked on h.f or five stations on v.h.f. All applications should be made to the **Awards Manager G3UQT, QTHR** with a donation of £3. All WAB awards are available to s.w.l.s.

Lowe Electronics

EVERYTHING FOR SHORTWAVE

DSP NOISE REDUCTION PRODUCTS FROM JPS COMMUNICATIONS!

JPS Communications specialises in low cost ***Digital Signal Processors*** - the hi-tech way to filter out noise and heterodynes and what's more, they'll work with anything from your home-brewed short-wave receiver to the latest all-singing all-dancing receivers and scanners on any band you care to mention! Ideal for voice, Morse, RTTY and FAX.

NIR10

Noise / Interference reduction unit

The NIR10 allows reception of difficult to read signals. NIR mode helps to reduce or even eliminate heterodynes, white or ignition noise, RTTY interference and power line noise. PEAK function reduces white noise interference. NOTCH FILTER mode removes multiple heterodynes and acts in 3 milliseconds! BANDPASS mode has a continuously adjustable centre frequency

Just £399.00.....*Carriage £10.00*

NTR1

Wide band noise and tone remover

The NTR1 provides wideband operation for AM or FM reception and narrow band operation for SSB, CW or Data reception. State-of-the-art DSP rapidly removes multiple tones.

Just £199.00.....*Carriage £10.00*

All JPS DSP filters require a 12V power supply to run from the mains but it needs to be fairly beefy. Run it from your shack supply or from our dedicated 1 Amp PSU available at £29.95

NEW! MODEMASTER2

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

- Current and Forecast Weather Facsimile Maps.
- Weather Forecast Broadcasts in FEC, Morse, NAVTEX and RTTY formats.
- Cloud Cover Pictures.
- NAVTEX and Marine Navigation Warning Broadcasts.
- News Broadcasts and Press Photographs.
- Amateur Radio Transmissions

New features in Version 2 include a new map driven front end and ability to apply false colour to fax pictures - great value at the new lower price - it's now just **£139.00!**
Existing users can upgrade to Version 2 for just **£49.00**

Lowe Electronics Ltd.

Chesterfield Road, Matlock,
Derbyshire, DE4 5LE
Tel 0629 580800 Fax 0629 580020

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

SIX OF THE BEST!

HALF A DOZEN BELTING GOOD RADIOS!

AR3030 - £699

A new short wave receiver from AOR with many new features and the promise of more enhancements to come.

HF225 - £479

Still the most popular choice for many serious DXers. Superb AM and SSB performance and it's made in the UK !

HF225 EUROPA - £699

Superior performance version of HF225, ideally suited to the dedicated BC band DXer

HF150 - £389

Very popular with raw beginners because it is so easy to use but highly praised by the more experienced.

FRG100 - £529

Good performance from this popular set from Yaesu, drawing on their many years of design experience

R5000 - £999

Despite its age, still sought after by those that really know its capabilities

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

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

SCOTLAND
Cumbernauld Airport
Cumbernauld
Strathclyde
Tel 0236 721004

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

YORKSHIRE
34, New Briggate
Leeds,
Tel 0532 452657

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

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

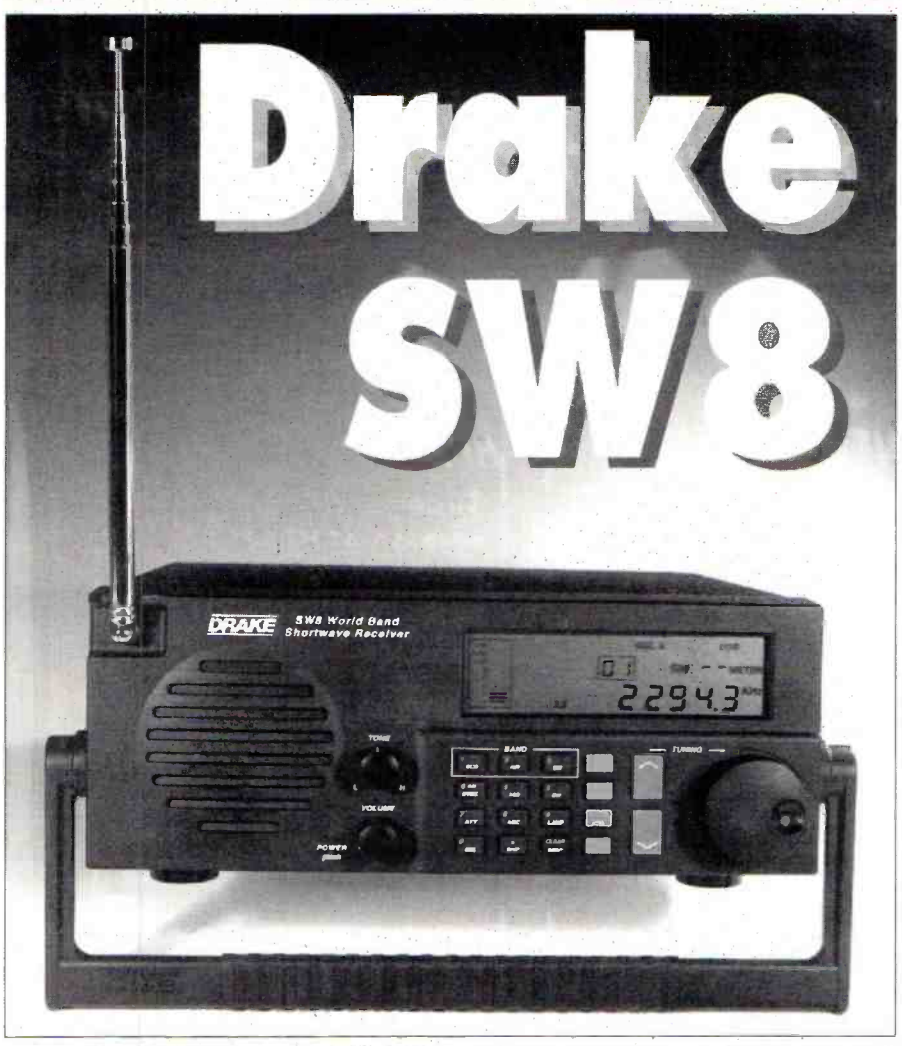
SOUTH WEST
117, Beaumont Road
St. Judes
Plymouth,
Tel 0752 257224

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

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

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

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



A portable short wave receiver from Drake! This must be worth a closer look. Mike Richards takes the covers off the latest offering to arrive in the UK.

Large, easy-to-read display and front mounted speaker feature on this pleasing front panel.

Drake have held a well respected position in the communications market for many years so a new receiver is always viewed with great interest. One of the great points about Drake is they're not afraid to break new ground when it comes to putting together a new product. The SW8 stays with that tradition and represents a unique combination of features and styling. As you have no doubt noticed from the photographs, the SW8 aligns with its RX8 big brother with its matt black colour scheme. In addition to the expected 500kHz to 30MHz coverage the SW8 included the broadcast f.m. band and civil air band a.m. coverage from 118 through to 137MHz.

Drake have also recognised a gap in the market for a mid-range communication receiver that can operate portable and offer slightly more than plain h.f. coverage. To take full advantage of this the SW8 is supplied with a built-in whip antenna and battery compartment.

Clean Lines

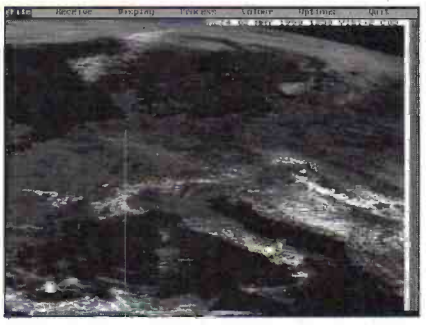
One feature of the SW8's styling is the very clean lines and simple layout. I was particularly pleased to see that a good sized front facing speaker has been included. This represents a great improvement over the all too common scenario where the speaker is tucked away on the top or bottom panel. The result being that most have to go out and buy an external speaker to get anything like a reasonable sound quality. The Drake's 70mm internal speaker performed extremely well and gave a surprisingly good bass response. I'm sure this was aided by the comparatively roomy case.

Like many modern receivers the SW8 employed a large l.c.d. unit to communicate with the operator. Not only did this carry frequency, memory and mode information but all the other functions such as attenuator, a.g.c.,

Portable Communications Receiver

RADIO WEATHER DATA SYSTEMS FOR IBM-PC COMPATIBLE COMPUTERS

Whether it's up to the minute front positions from live satellite pictures, five day forecasts from the Meteorological super computers or simply plotting up to date observation from around the globe, ICS have the solution.



Met-2b

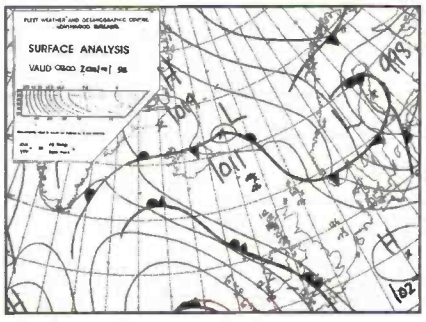
A complete, easy to use, system for receiving live weather pictures direct from the Meteosat geostationary satellite. A new picture of Europe every 30 minutes. Automatic full screen animation. Colour and 3D display. Zoom. Too many features to mention here. Dish antenna, receiver, software and all leads included. Nothing more to buy.

Met-2b: £999.95 – Carriage: £12.95

NOAA-2b

An extension to the Met-2b system, allowing direct reception from low earth orbiting satellites. Includes 6 channel scanning receiver, antenna, leads and software. Automatic read out of surface temperature at cursor position, orbit prediction software. "You are here" indicator etc. Greater image definition from lower level satellites.

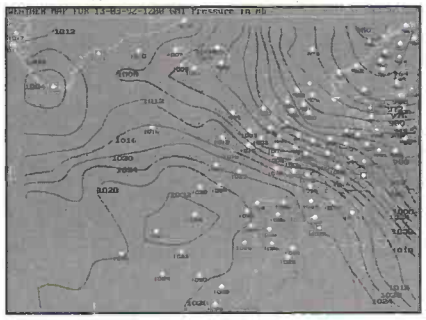
NOAA-2b: £599.95 – Carriage: £12.95



ICS-FAX III

The most successful computer program we've ever sold! Over 17,000 users worldwide. Compact surface mount interface connects directly to any SSB receiver. Covers Weather Facsimile, Navtex, FEC, RTTY and CW. Remote receiver control via optional interface. Really easy to use. Unique graphics map database of available stations. In use by many of the boats in the current Whitbread Round the World Race, including the current (at time of writing) leader, 'Tokio'.

ICS-Fax III: £149.95 – Carriage: £4.70



ICS-Synop III

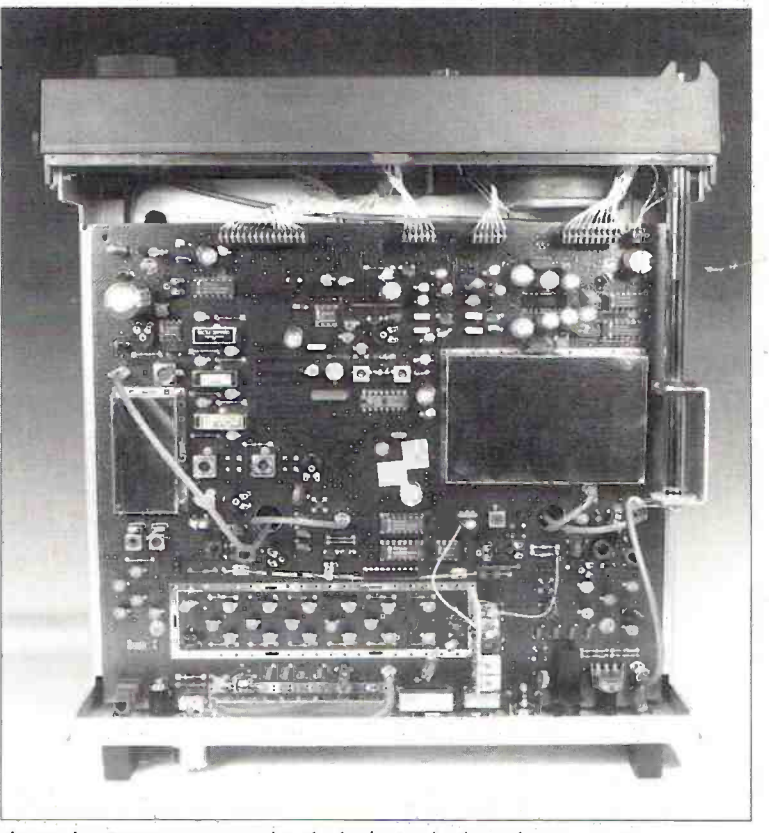
A natural companion to ICS-Fax III. Whereas weather facsimile gives you historic and forecast weather information (up to 5 days ahead), ICS-Synop III plots current observation information real time from around the globe. Typically at 3 hour intervals. This latest version even plots Isobars and Isotherms automatically. Requires a good quality SSB receiver. Special versions for use with Kantronics KAM and AEA PK-232 available.

ICS-Synop III: £149.95 – Carriage: £4.70

Prices include VAT at 17.5%. Literature available on request.
Open Monday to Friday, 9:00 to 12:30, 13:30 to 17:30

Access VISA

ICS Electronics Ltd.,
Unit V, Rudford Industrial Estate, Ford, Arundel, West Susssex BN18 0BD
Telephone: 0903 731101 Facsimile: 0903 731105



The Drake SW8 is constructed to the high standards we have come to expect from Drake.

S-meter, etc. were displayed here. The use of the single display unit makes life easier for the operator as you can concentrate your attention on just this area of the front panel.

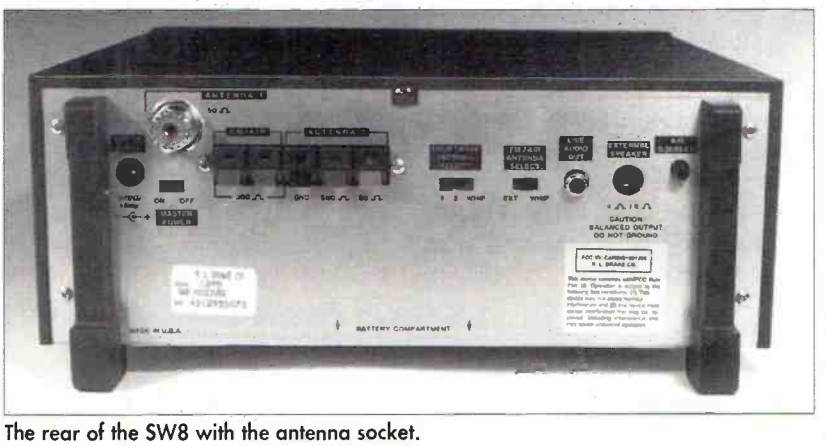
To support portable operation a good sized (1.04m) telescopic antenna is supplied on the front panel. For base station operation the antenna fully retracts into the case but is easily extended and locked into place when operating portable.

The clean lines were completed by the full width carrying handle that doubled as a tilt stand for convenient viewing.

Simple Interfacing

One of the potential problems associated with receivers featuring a wide frequency coverage is coping with the different antenna systems that are needed. Drake have got this well covered on the SW8 as it features no less than four antenna connection points. For h.f. reception there was a standard SO-239 coaxial socket on the rear panel for use with an external antenna. This was supplemented by two other connectors for handling wire antennas. The two options being for a 50 or 500Ω antenna impedance. The selection of internal or external antenna was made via a small slide switch, also on the rear panel. For v.h.f. broadcast and Air Band a single 300Ω wire antenna socket was supplied again with its own selection switch.

Power could be supplied either via the external socket on the rear panel or by fitting six D cells in the battery compartment on the underside of the receiver. As the review model was supplied with a mains supply, this was used for most of the review. If you like to make recordings from the radio or use data decoding equipment you will be pleased to hear that the SW8 featured both a line output and external speaker socket. The line output had a nominal output of 300mV into 4.7kΩ while the external speaker output could supply 2W into a 4Ω load with a t.h.d. of 5%.



The rear of the SW8 with the antenna socket.

Headphone operation is essential for the keen DXer and this was supported with a standard 3.5mm stereo socket on the side panel. An added bonus here was the built-in stereo decoder for broadcast f.m. reception a feature that is rarely seen on communications receivers.

Multi-mode Reception

The SW8 is well set-up to receive a wide variety of transmissions types. For the broadcast enthusiast, both standard and synchronous a.m. modes are provided with selection via the front panel push-buttons. The normal a.m. detector provided a very pleasant sound quality that could be tailored using the front panel tone control. Although the provision of a simple tone control seems to have fallen out of fashion over recent years, I found the system used in the SW8 to be very helpful. It was great for taking the sharp edge of some of the short wave transmissions.

The provision of synchronous a.m. is starting to become a standard feature of modern receivers and a very welcome trend it is too. The implementation used in the SW8 featured automatic switching that enabled the mode to remain enabled whilst tuning around. Without automatic switching you are faced with very loud heterodynes as you tune between stations. The SW8's switching monitored the rotation of the main tuning knob and anything other than slow fine tuning caused the receiver to revert to normal a.m. until the tuning movement stopped. The timing and sensitivity of this automatic switching proved to just right and you could tune around whilst hardly noticing the switch. Like most synchronous systems you did have to be accurate with your tuning to avoid a very low growl from the speaker. In practice this was

not difficult to achieve.

To add to the versatility of the a.m. modes there were three i.f. bandwidths available plus switchable a.g.c. response times. The three Muratra filters provided -6dB selectivities of 2.3, 4 and 6kHz respectively. The 6kHz unit was just about right for normal a.m. reception on a clear channel, but the facility to reduce down to 2.3kHz was extremely useful on the busier bands.

All of these facilities could be combined to provide controlled reception of signals suffering quite severe fading. In these circumstances you simply select synchronous a.m. reduce the i.f. bandwidth and set the a.g.c. response to fast. Final trimming can be done with the tone control. So, despite the apparently simple array of broadcast features they all worked well together to provide a very competent system.

Single side band reception is the main stay of the utility modes and the SW8 includes this along with simple upper and lower sideband switching. Reception of s.s.b. demands good quality filtering and the Drake is configured to automatically select the 2.3kHz filter when receiving s.s.b. This automatic setting of bandwidth with mode can be disabled and stored as a default at start-up if required. This is done by holding the BW button depressed whilst turning-on the power.

The s.s.b. audio quality from the SW8 was extremely clean without the unpleasant intermodulation problems associated with some systems. I tried the SW8 with a wide variety of stations ranging from Shannon Volmet on 3.413MHz through to amateur transmissions on Top Band (1.8MHz). One of the unusual features of the SW8 was the 50Hz tuning steps which were rather coarser than normal for this type of receiver. Having said that, I didn't experience any problems when tuning s.s.b. signals. The only area where the 50Hz steps could be a problem would be when receiving the utility data modes.

To test this out I used the SW8 with a number of popular decoding systems and all coped fine even when receiving 170Hz shift RTTY signals. If you're into the more advanced modes you may find that some of the multi-tone systems, e.g. Piccolo, are difficult to resolve, but this will depend on the facilities included with your decoder. Many modern systems include software driven fine tuning that can compensate for coarse tuning steps on your receiver. Perhaps more important than fine tuning steps is the frequency stability. This is particularly true of FAX reception where the receiver may be required to stay within a few tens of hertz for extended periods. The Drake's performance in this area was tested by setting-up on Northwood Met and checking for successful FAX reception over a period of several hours. The Drake stood this test with no problems at all.

The provision of air band reception was a very welcome extra as many short wave listeners have at least a passing interest in civil aviation. The tuning range of 118 to 137MHz covered the entire civil band and gave access to the bulk of airport traffic. Selecting the air band was

SPECIFICATIONS

Frequency Range:	500kHz-30MHz, 87-108MHz, 118-137MHz	
Modes:	a.m., u.s.b., l.s.b., sync a.m., f.m.	
Sensitivity:	s.s.b.	<0.5µV, 0.5-30MHz (10db S+N/N)
	a.m.	<2µV, 0.5-30MHz (10dB S+N/N)
	a.m.	< 4µV, 118-137MHz (10dB S+N/N)
	f.m.	<4µV, 87-108MHz (20dB S/N mono)
Stability:	±10p.p.m. 0 to 50°C	
Accuracy:	>±100Hz @ 25°C	
Selectivity:	s.s.b/a.m.	-6dB 6kHz
		-60dB <12kHz
		-6dB 4kHz
		-60dB <9kHz
		-6dB 2.3kHz
		-60dB <5kHz
IF Frequency:	s.s.b./a.m.	55.845MHz, 455kHz
	f.m.	10.7MHz single conversion
Image Rejection:	0.5-30MHz	>60dB
	118-137MHz	>60dB
	87-108MHz	>50dB
IF Rejection:	55.845MHz	>80dB
	455kHz	>80dB
Dynamic Range:	0.5-30MHz	>95dB @ 20kHz spacing (s.s.b., 2.3kHz bandwidth)
IP3-Intercept Point:	>+10dBm @ 20kHz spacing >-20dBm @5kHz spacing (50Ω ant. no attenuator)	
AGC Performance:	Threshold 1.0µV	
Attack Time:	1ms	
Release Time:	Slow	3s
	Fast	300ms
Antenna Inputs:	0.5-30MHz	SO-239 or 3 terminals (50/500Ω)
	87-108MHz	2 terminals
	118-137MHz	300Ω balanced input
External Speaker:	2W into 4Ω @ less than 5% t.h.d.	
Line Output:	300mV into 4.7kΩ	
Headphone Jack:	3.5mm stereo/mono type	
DC Power:	7-10V d.c. @ 1A or six internal D cells	
Operating Temperature:	0-50°C	
Weight:	4.55kg	
Size:	292 (w) x 133 (h) x 330mm (d)	

done with a single button press which not only changed the frequency, but selected a.m. reception, the 6kHz filter and adjusted the tuning steps to 100Hz. Tuning across the band could then be done either with the rotary knob or better still by using the UP and DOWN buttons. Pressing these caused the frequency to change in 12.5kHz steps so providing alignment with the 50kHz channel spacing that's used throughout the air band. As with the other modes the audio quality was extremely good and was perhaps even more noticeable in contrast with the poor audio quality of many dual purpose scanners/air band receivers.

The range of receive modes is completed with the provision of broadcast f.m. As with air band, selection was via a single button press which set all the important parameters. Quality remained very good and I was particularly pleased to see that a stereo decoder was included for headphone reception. This greatly adds to the versatility of the SW8. To facilitate tuning around the v.h.f. band the tuning steps were automatically increased to 50kHz with the UP/DOWN buttons taking on a 100kHz step.

Tuning Options

The photographs show that the SW8 features a 40mm main tuning knob that is mounted to the right of the front panel. This knob has a serrated edge and an offset dimple for rapid frequency changes. In use the control has a very smooth damped feel that was just right for fine tuning. This was helped by the fact that the knob was directly coupled to a digital position sensor so there was no backlash. In common with most modern synthesised receivers, tuning the SW8 was done in small frequency steps which changed according to the mode selected. The finest steps of 50Hz were used for s.s.b. reception with 100Hz for all the a.m. modes and 50kHz for broadcast f.m.

The main tuning control was supplemented by a pair of UP and DOWN buttons to provide a coarser frequency change well suited to moving within a pre-set band. The tuning steps available with these buttons were 9/10kHz on medium wave, 100kHz on short wave, 100kHz on broadcast f.m. and 12.5kHz on the air band.

To facilitate rapid frequency changes the SW8 keypad could be used for direct frequency entry. To do this you just pressed the F key tapped in the frequency in kHz and then pressed the . twice. This proved to be a very quick way of moving around the bands. However, I did hit a minor problem with the timing of the software controlling the keypad. Once you had pressed the F key you were only allowed three seconds between each keypress before the SW8 returned to normal operation. I found that this delay was not really long enough because it left no time for you to double check a frequency part way through entry. I'm sure this could be corrected with a minor software patch. This three second limit applied to many of the keypad facilities.

You could also use the SW8's keypad for direct selection of the short wave broadcast bands. All that was required was two presses of the SW button and the band wavelength, e.g. SW SW 13 for the thirteen metre band.

Versatile Memories

Also in the SW8's array of features was a set of seventy user programmable memories. These memories were very easy to program and stored full operational data. In addition to the expected frequency, mode, bandwidth and a.g.c. settings the memories also stored the attenuator and synchronous a.m. To help make best use of the memories they were arranged in seven groups of ten. This organisation then linked directly with the scanning functions where you could choose to automatically scan through any one bank of memories. In practice, I found the scan a little tedious as the only option was to step through the memories with a five second pause on each one. You could speed this process by using the memory skip to step over unwanted channels but it was still very slow.

Timer Functions

Just to complete the SW8's range of facilities was a built-in clock and dual timer system. Each of the two timers could be set with separate on and off times so the system was very versatile. The only snag was that there was no remote socket for controlling a tape recorder. The timers were therefore limited to providing alarm facilities for the operator.

The dual clock was useful for storing local and UTC time with a simple toggle between the two. The only other limitation to the clock and timer facilities was their reliance on the main D-type batteries to keep things going when the mains supply was removed. Whilst this was fine if you do a lot of portable work, these batteries are a bit over the top for those that use the SW8 as a base station receiver. ■

Summary

As you can see from this review, the Drake SW8 is a little different to the run of the mill communications receiver. I thought the combination of short wave receiver with broadcast f.m. and air band was particularly attractive and will appeal to many. The overall feel of the receiver was very good and I was particularly impressed with the consistently good sound quality. Although the timing problem associated with the keypad operation was rather irritating, I'm sure the manufacturers will arrange an early fix to the software.

The Drake's strong points are its wide frequency range, excellent stability and good quality audio.

The Drake SW8 costs £599 and can be obtained from **Nevada Communications, 189 London Road, North End, Portsmouth PO2 9AE Tel: (0705) 662145.** My thanks to Nevada for the

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

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

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

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

AOR

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

The New Classic **AR3030** General Coverage Receiver 30 kHz ~ 30 MHz using DDS. All mode AM, S.AM, NFM, USB, LSB, CW & FAX. Fitted with the Collins 6 kHz AM mechanical filter as standard, also has Murata 2.4 kHz SSB and 15 kHz NFM filters. TCXO is also fitted as standard. Other options available. **£699.00** inc VAT (carriage free)

Collins Inside

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

AORSC is a powerful DOS program for the IBM PC (and 100% compatible) computer, which allows you to control an AR3000/A receiver using a serial port (RS-232 interface) of the computer. **£75.00 plus £2.00 P&P.**

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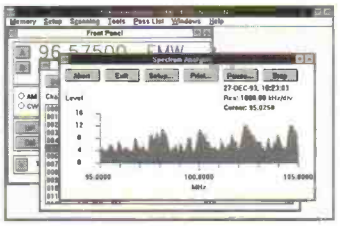

ACEPAC3A is also available for the AR3000/A receivers. Features are similar to AORSC but ACEPAC3A has a more versatile spectrum graph type display. **£139.00 plus £2.00 P&P**

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

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

YUPITERU

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

ICOM

On display will be the ICOM **IC-R1** hand held receiver and the **ICR7100** all mode base receiver with other models such as the **IC-R72**, **IC-R9000** and **IC-R100** plus accessories available to order.

DRAKE

Represented from the USA will be the Drake **R8E** and new **SW-8** General Coverage receivers.

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

A limited number of ex-demonstration and end of line products are available:

AR1500E receiver - hand-held all mode 12 month warranty
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- 30 CH Per Second Scan
- 500 Search Pass Frequencies
- Signal Strength Meter
- Battery Save Function
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TRF3 + HA33R Hardware pack

DXR10 + DCS2 Kits + HA10R Hardware

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AA2	150kHz to 30MHz Broad-band Active Antenna Amplifier	£8.90	£13.90
AA4	25 to 1300MHz Compact Active Antenna for scanners	£19.90	£27.90
AB118	118 to 137MHz Optimised VHF Air-band Antenna	£18.80	£25.90
SPA4	4 to 1300MHz Receiver Pre-amplifier	£15.90	£22.90

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DUAL BANDWIDTH AF FILTER: £29.80

• Reduce noise and interference! • Sharp SSB/Speech filter with faster roll-off than IF crystal filters! • 300Hz bandwidth CW filter • Printed and punched front panel • All aluminium case • Simply connects between radio and external 'speaker or 'phones • Suits all general coverage receivers and transceivers • Excellent receiver upgrade!

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GET TRAPPED

It is intended for those of us that live in suburbia on what was a standard plot 13.5m wide by 52m deep with the bricks and mortar located about one third of the way along the plot and are interested in the h.f. bands. If you live in a recently constructed property then it is unlikely that you will have a plot of this size because with the maximising of profits and the relaxation of building controls. Plots today may be about the same size width but are usually shorter, if you are unfortunate to live in one of these plots, don't despair, you can build a half size version of the antenna, if you are even more unfortunate and do not think you have any space to rig up a good antenna, read on, as it might jog the mind on how you can adapt the ideas to your own situation.

Entry Level

Most people are introduced to short wave listening today by means of the small low-cost transistor radio with a telescopic whip antenna, which opens up a whole new world that they have never heard before, their interest being held by the number and variety broadcasters. After a period of time, however, they realise that the set they own does not have the performance or the facilities they would like and after reading the words of wisdom in *SWM* they feel it is time to upgrade to a 'base' station.

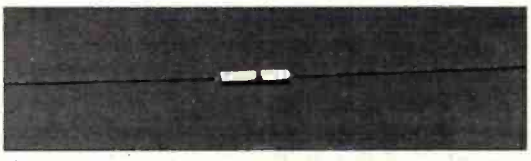
The Upgrade

With the arrival of the upgrade there is one big snag. There is no telescopic whip antenna, the usual quick answer is to fix an odd length of wire around the room as a temporary measure, which in some cases becomes permanent until complaints from other occupants which is the first snag, the second is, most communication receivers have a low impedance input and connecting an odd length of wire, which is high impedance, the performance from the new piece of hardware is only mediocre and the new owner wonders why he has parted with so much hard earned cash for so little, may as well have saved the cash and carried on using the old set. Do not worry, the answer is in a 'proper' antenna. After all, if you have spent that much cash on a professional receiver, why not a professional antenna?

The Professional Antenna

The easiest way, if you have plenty of cash, is to decide what bands you want to listen on and buy a ready made professional antenna and get it installed. But, if you are strapped for cash, as most of us are, there is a way out - make your own. For the average DIY man it is easy and the cost of making your own antennas is small compared to the cost of a 'Ready Made', I made the antennas described out of my junk box!, true not everyone has a junk box as big as mine, but the cost is minimal and it is extremely interesting and rewarding, in fact it becomes rather addictive and adds a new dimension to the hobby.

Fig. 1.



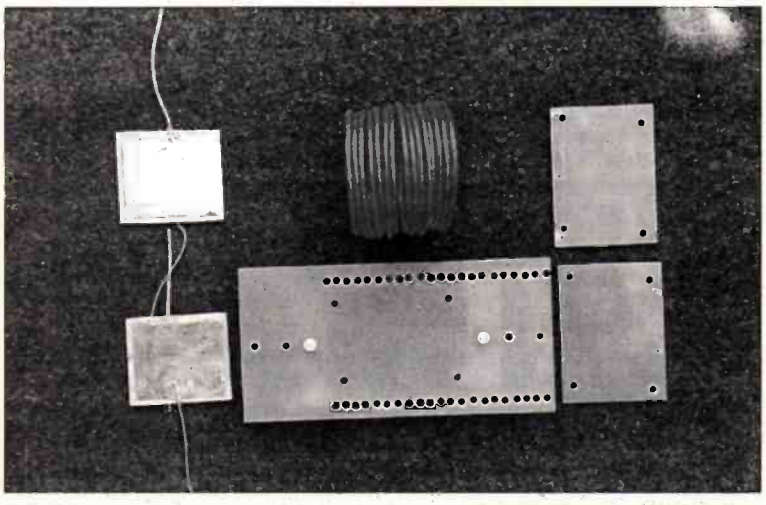


Fig. 2: The component parts of the transmitting grade trap. The pair of holes on the centre line at each end are for anchoring the antenna wires.

History

No, not of antennas, but of how this article came to be written, as I am sure that my experience will be of interest to many s.w.l.s.

When I moved into my present shack it was in great need of repair and maintenance, having been neglected for 22 years. One of the first things I did was to erect a long wire from one of the chimney stacks to a mast at the bottom of the garden, so that in between the building activities I could have a little light relief. This

Antenna design and construction is one of the few 'hands on' items open to the serious s.w.l. today. Some never progress beyond the telescopic whip or the odd bit of wire hung around the room. Others think that 'proper' antennas are far too complicated and/or expensive and best left alone. Nothing is further from the truth and if you follow this 'layman's guide' by Ken Lee-Rand G3UXA you will end up with an extremely good all round antenna, a lot of enjoyment and a warm sense of satisfaction of all your own work.

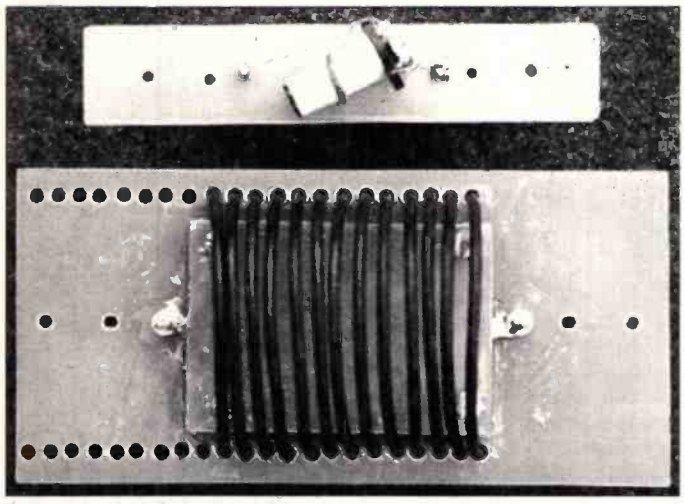


Fig. 3: The receiving grade trap is shown at the top.

brought an immediate complaint from a neighbour who did not like my 'pole' as he called it. Why is it that there is always someone who will complain? In my case it happened to a local magistrate. However, after a few words he saw my point of view - at least I think he did, as he hasn't complained since. This is the only snag I have ever come across in erecting antennas, so be prepared for a friendly persuasive chat.

I am fortunate in that the Lowe HF225 that I use has a high impedance input, so I was quite content with its performance for the limited time I had available. After the building works were finished and I was listening one weekend, I got fed up with the overpowering quantity and strength on the 14MHz amateur band of the east European and Asian stations calling "CQ contest——QSL", which I find rather boring, never having been a contest man. I know that this sort of activity drives a lot of people off the air, but those brave non-contestants who did come up were swamped and were extremely difficult to copy, I decided therefore that something had to be done. The main problem was that my antennas direction was 60 degrees, a long wire's directivity is the way it points, so the radiation pattern needed to be turned around 90°. As my garden roughly runs east-west, this meant going to a rotatable or a dipole of sorts, but what sort of dipole?

Decision Time

The requirement was for a wide band antenna - but as wide band antennas are a compromise, what specific band of frequencies should it be tuned to? The answer is to pick out those bands of interest that have the weakest signals and you have your answer, in my case it was easy as the weakest signals are in the amateur bands. If your interest is in the broadcast bands, and amateur band antenna will perform reasonably well as most of these are adjacent if not spill over into the amateur bands and remember that amateurs use at the most, hundreds of watts, broadcasters use megawatts, so there is an enormous range in the signal strength received.

However, there is sufficient information given in this article to make up an antenna to your own requirements. It also had to be cheap, professional and unobtrusive to pacify the neighbours and planners. A wire dipole would fulfil these requirements.

Preliminary Tests

To test my thoughts I looked into the junk box and found a multiband dipole I made several years ago from 300Ω ribbon cut for 28, 21, 14, 7 & 3.5 MHz that at the time I did not much think of - but it would show me whether I could attenuate those signals from the east. It was fixed along the wooden garden fence parallel to the long wire but only 2m high. Now, the HF225 has a low (coaxial) and high impedance input controlled by a slider switch and although it is not a good idea to run balanced to unbalanced, it was good enough for the test, and with the slider switch on the back of the case, I could switch over from one antenna to the other for instant comparisons. Needless to say all signals were down on the garden fence antenna but the overpowering eastern signals were down even more, checking on the broadcasters, some 10-15dB according to the meter, so a dipole was the answer. Now, what sort of dipole? It would be nice to cover Top Band to 28MHz, but using the well known formula; 468 over frequency, 1.6MHz, gives 90m - a little difficult to accommodate in a garden only 52m long! So the most that I could hope for was 3.5 to 28MHz. An alternative would be to construct a fan antenna. This consists of quarter wave verticals for each band required, spread out in a fan shape. This antenna was rejected as it is non-directional, and direction was what I wanted. It needs a good earth, which means digging up the garden to bury wires - the feed point is low impedance, about 20Ω so, it would require a balun. Worst of all, it requires a lot of 'sky hooks' which would bring down the wrath of my neighbour. The cobweb antenna, which is two fans on their side, was rejected for much the same reason, although it is a directional dipole. The 300Ω ribbon multiband never impressed me, so why not make up a G5RV? This I did using feeders of 10.5m of 300Ω ribbon and 72Ω coaxial cable.

Now, if there has ever been a controversial antenna, the G5RV must come top of the league. You either like it or loathe it, and in my case the performance was disappointing. In my opinion to get a G5RV working really well, it must have adequate height so that the tuned feeder falls vertically, is clear of all obstacles and should be of the open wire type terminated by a balanced a.t.u. If, like me, you can't meet these points, then I think you will be disappointed. I would like to have tried a 20m dipole feed with 10m of 600Ω open wire tuned feeders, but the physical layout prevented this. There now appeared only one multiband wire dipole left that would fit into my plot - the trap dipole. The good news was that it was unobtrusive. The bad news was that it needed traps and I had never constructed traps before. However, this was not so much of a problem as it seemed.

Antenna	5-band	4-band
Length of each inner arm	10.15m	5.23m
Length of each extension	6.77m	3.38m
Trap required	7MHz	14MHz
Total length	33.85m	17.23m

Table 1

A Trap Antenna?

Trap antennas are not new, so why are they not more popular? Well, they are popular for multiband beams, that is the reason why they are multiband, most of which are purchased over the counter ready made. Where their use is rare is for long wire multiband dipoles, which seems to fall in the d.i.y. area. Not many people seem prepared to have a go at constructing traps, so what is a trap?

It is just a coil and capacitor forming a tuned circuit. The difficult part is in its construction and weather proof manufacture. The principal is to cut a dipole at the highest desired frequency, attach a trap of that frequency to each arm, add extensions for the next lowest frequency, attach another pair of traps and so on until you have covered the bands of your choice.

It should be mentioned that adding traps shortens the overall length of the antenna, so they have to be built up stage by stage, testing the resonant frequency at each stage.

Design Considerations

The first thing to understand is that antenna design is not an exact science in the same way as machining metal. If for instance you purchased a new crankshaft for an engine that

was made hundreds of miles away, you would expect it to fit exactly. However, move an antenna a few metres away and things can change quite dramatically. So take all formulae, figures and polar diagrams you see as an indication and starting point - nothing else. Every location is different, so prove by testing and adjusting yourself. There is one piece of radio folk law that is certain - the higher the better. Count the height from the nearest earthed object like trees and buildings. The average amateur will find that, because of the cost, it is impossible to obtain too much height. It was shown by DJ2NN that signals fall off very quickly below 10m and that the optimum height for DX on the h.f. bands was 23m. (*SWM* December 83, pp 530-532.)

The Amateur Band Antenna

For a five-band antenna covering 3.5 to 28MHz you will need a 34m run. For a four-band antenna covering 7 to 28MHz you will need a 17m run. If you haven't got that much space, use one arm of 9m against ground, but pay particular attention to making a good earth. It will perform better than a telescopic whip. The starting dimensions - and I say starting because you have to trim for optimum performance - are shown in **Table 1**.

Did you notice the good news? Instead of requiring ten traps for the 5-band and eight traps for the 4-band we only require two traps for each band. This is because the amateur bands are harmonically related. We now have to decide on the size of the coil and capacitor. The characteristic impedance of a long wire dipole is about 480Ω. However, if we make the traps 480Ω, the extensions are very short, so it is better to take half that value, 240Ω, from this figure. You can calculate, or look up using a reactance and resonance chart, which is easier, the values of the L & C for any frequency you like. For 7MHz it is 5μH and 100pF, and for 14MHz it is 3μH and 55pF.

It is easier to tune the antenna by shortening the antenna than to increase its length, so always make the wire slightly longer than the calculation indicates.

An Essential Accessory for Perfection

Before we get into the manufacture of the trap there us one piece of test equipment you will need - a dip oscillator. This is an oscillator with plug-in coils and an indicator to show when oscillation stops. The oscillation will stop when held close to a tuned circuit of the same frequency - hence 'dip', which refers to the meter needle's actions indicating that oscillation has ceased.

I made up the G3HBW design when it appeared in 1966 and it has served me well. However, if you do make it up, a word of warning - R1 the 68Ω feed back resistor is the most critical component. In my case it crept up to 72Ω over the years, causing the two most used ranges to oscillate only over half of their range. It was replaced with two high stability resistors in parallel giving 62ΩΩ. Unfortunately this meant recalibration, but calibration is now a lot easier than it was if you have a digital read-out receiver. Check the receiver's calibration against a local known transmission and its accuracy is then sufficient for the hobbyist. If you do not have a copy of this circuit it can be found in the *Radio Communication Handbook*, 1977 edition in your local library, ask for 621.38415. I believe this book is now out of print. Whether you make, borrow, or buy one, you will need a dip oscillator to obtain maximum performance.

The Receiving Trap

The trap with its cover and rigged in **Fig. 1**, all the bits used in my construction were found in the junk box, there is no need to follow this design exactly, try to adapt what you have got. The chassis which acts as strain insulator is a piece of 1.6mm plain epoxy glass fibre board with eight holes drilled into it, four to take the antenna wire, two for solder pins and two for lacing cord to hold the coil assembly in place. Size the holes to fit the items you use. The coil assembly was made from a 6.mm dia. compression moulded former 19.mm long. Close wind some 31s.w.g. (0.03mm) enamel wire for most of its length to make the 7MHz trap, about half for the 14MHz trap.

Fig. 4: End-on view of the transmitting grade trap. The capacitor is assembled either side of the chasis plate.

Now for receiving, the characteristic impedance is not that critical and we can use this to our advantage. Just remember that a high C and low L will give a long extension - a low C and high L will give a short extension. so you can tailor the length to the space you have got within reason, but if you can use the values given above, do so.

Solder a high grade capacitor, such as a silvered mica or polystyrene type across the coil, screw in the core so that it is just level with the top of the former and then, with the dip oscillator set to the required frequency checked against your digital receiver, adjust the coil to give resonance by removing a few turns at a time. Remove the core, insert the rubber thread and then replace the core. Wind some electrical tape round the coil, solder and secure it to the board, check and adjust with the dip oscillator and coat with electrical varnish. The antenna wire is secured by passing it up through the board, down through the board and soldering it onto the solder pin as this method is not inductive.

If you use a 'round turn and half hitches' to secure your antenna wires, then the added inductance made must be shorted out by soldering. This also applies to the insulators at the ends. The most important thing to consider now is weather protection. A polythene bag would only last a few days. What I did and what has proved most successful against water and the salt sea spray was to use a piece of 25mm plastics waste pipe. End plugs were made from an off-cut of plastics weather boarding and the whole lot sealed with BS5889 Type A silicone sealant. The result was neat, weather-proof and unobtrusive, as shown in **Fig. 1**. Living on the coast, I get more than my fair share of Force 10 gales and this method and the materials used have never failed.

The Feeder

The feeder's sole purpose in life is to be transparent to the equipment and fool the equipment into believing that the antenna is connected directly to it and not some distance away. This, as you may have already guessed, is not easy and has led to tomes being published on the subject, so only a few words here.

A perfect dipole one quarter wave length above electrical earth in free space has an input impedance of 72Ω. In the real world it can range between 50Ω and 90Ω, depending upon height and location, and can be measured with an impedance bridge. In the multiband harmonically related dipole that is being described, the feed impedance also varies with the multiples of half wave lengths. A rough guide, in wave lengths is, one eighth 3Ω, a quarter 12Ω, a half 72Ω, three quarters 1kΩ, a full wave length 5kΩ, one quarter and a quarter 1kΩ, one and a half 90Ω. A 20m dipole is a quarter wave on 3.5, half wave on 7, full wave on 14, one and a half waves on 18 and two full waves on 28MHz.

A dipole is also a balanced system, i.e., the two arms are identical and therefore a

Continued on page 23

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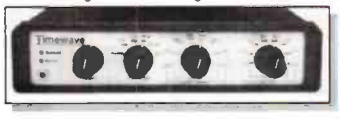

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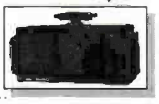

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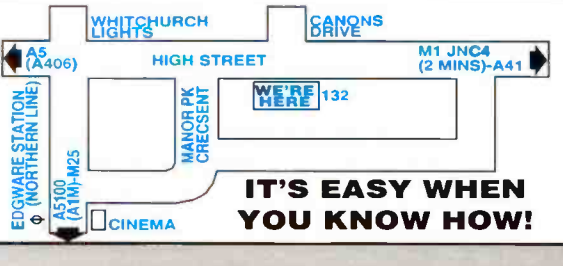

balanced twin feeder should be used. If an unbalanced or coaxial feeder is used, the arm connected to the outer conductor carries less signal than the inner which is not good practice. For long wire antennas on the lower frequency amateur bands, connecting unbalanced feeder to a balanced antenna is of very little consequence, but the higher the frequency the greater the losses. For 24MHz and frequencies above the losses are considerable and it is far better to construct a dedicated dipole if optimum performance is required, a multiband dipole however will give a good account of itself.

It can now be clearly seen that multiband antennas and feeders are a very big compromise.

Rigging

Attach the feeder to the centre insulator and solder to the highest frequency arms with the traps, in my case this was 10.15m complete with the 7MHz traps. Attach fishing line cord to the other end of the traps and hoist the antenna into its operating position. This means what it says, not part way up if you intend to use it higher and not on different supports or in a different position. Solder a one turn loop onto the end of the feeder and with the dip oscillator check the resonant frequency, it should dip at the same frequency as the trap, but it is most unlikely that it will be correct first time. This means that you will have to adjust the length of the arms by lowering the antenna. Cut off small lengths at a time until it dips at the correct frequency, checked at its operating height. Now add the extension arms, 6.8m, hoist to operating height and check all the resonances, making a note of them. Adjust the extension arm length in the same way as before for the lowest frequency keeping an eye on all the resonances to obtain the best compromise of a resonance in each amateur band. Unsolder one turn loop from the feeder and solder on the connector to suit your receiver and you are ready to start listening.

Results

In a nut shell, results were excellent. The receiver was left on the 18MHz amateur band and when switched on no signal was present. But on tuning the first station heard was ZL2HBW! This struck me as being rather odd as I was not expecting anything like this. According to the published polar diagrams of dipoles it had a null in that direction and yet I had never heard a ZL on the long wire that was roughly in their direction. True he was using 400W into a rhombic, but as the time has gone on this signal has proved to be the strongest and most consistent signal from ZL/VK area, the one to beat, in fact, and incidentally the only one I have heard using a rhombic, which must be telling me something. Alas, I have no room for such a luxury.

I am glad to say that this good start was not a freak, VKs also being heard on 7MHz. The performance of this antenna has proved to be constantly amazing and I am very pleased with its performance, even on 28MHz where I expected poor results. This antenna has exceeded expectations. For instance, I never listen on 14MHz when the band is open because the noise on this band is the shortest way to a migraine headache I know. So I only listen when the band is flat, which has produced some amazing results. Like an F6 working a string of JAs, neither of which lifted my S meter needle off of the stop, but were R5. Where was that howling pack of DXers? Why were there no Gs calling? Is it the antenna? - the receiver - or a combination of the two? The overpowering signals from the east have been tamed, no complaints have been received from the neighbours so the original design specification has been met. The effort was very worth while and I can recommend it as a multiband general coverage antenna. It will never out-perform a dedicated monobander on any particular band - but that was not the design intention.

Traps for Transmitting

If you are expecting to obtain your transmitting licence in the future it would be beneficial to make up a pair of transmitting traps so that on receipt of the 'Ticket' you could plug in and be on air in seconds. There is no difference electrically, it is only a power difference between the receiving and transmitting 40m traps shown in **Fig. 3**.

The components are shown in **Fig. 4** and are made as described in the following text, referring to the construction of traps for 7MHz (40m).

Chassis

This is constructed from 1.6mm plain epoxy glass fibre board 127x64mm and is the largest component. Holes are required to secure the antenna wire, lead through pins, capacitor compression plates and coil securing. The spacing of the coil holes determines the inductance and is, therefore, fixed when the coil is designed. In the illustration shown the spacing is 4mm. One line should be drilled half a pitch out from the other to allow the coil to be 'screwed' in.

Capacitor Plates

The capacitor for a transmitting trap must be non-inductive and have a very high working voltage. Care must be exercised in its selection construction otherwise you could become a member of the illustrious Order of Trap Blowers. You can use a manufactured capacitor - if you do, make sure it is of the type used in a transmitting tank circuit - but it is easy to make your own.

These were constructed from 1.6mm double-sided copper-clad epoxy glass fibre board measuring 41x38mm. Two boards are required to give 100pF for the 40m trap with a margin 1.6mm wide all the way round as a flashover prevention, this margin is then trimmed to give the required capacitance. Samples of board tested varied between 20 and 25pF per square inch (645mm^2) due no doubt to the dielectric constant varying with the mix, so check this capacity if you can. Make a lead out wire on either side using fine stranded cable, and solder to the copper plate by fanning out the strands so as not to form a large hump, which would prevent the individual capacitor plates coming togetherand reducing the final capacity.

Compression Plates

The compression plates are made from 1.6mm plain epoxy glass fibre board measuring 41 x 57mm. Four holes are required in each corner to take the clamping bolts.

The Coil

A coil is required with an inductance of 5µH. A 12 turn coil 50mm diameter wound at 4mm pitch will suffice, so wind on 14 turns to allow for adjustment. I used single core house wiring cable because it is robust, has good insulation and weather protection and was readily available. Wind it on a former slightly smaller than the final size to allow for the spring in the wire.

Assembly

1: Insert the lead-through pins.

2: Assemble the capacitor in the following order, compression plate, capacitor plate, chassis, capacitor plate, compression plate, four securing nuts and bolts. Make sure that the conductive copper plates are in alternate order. Tack leads to the lead-through pins, check for 100pF and adjust the capacitance if necessary. Lock the nuts by your favourite method so that wind vibration does not loosen them and change the capacitance. Seal the capacitor with silicone rubber (bath tub caulk).

3: 'Screw' the coil into position, solder to the lead-through pins and check the resonance with a dip oscillator and adjust the frequency by adjusting the coil.

4: A completed trap is shown end-on in **Fig 4.**

Weather Proofing

Although this is usually the last thing to be considered it should be the first because it's important, dampness causes oxides to form which form diodes which in turn are a good source of TVI. So give it a good coat of varnish and encase it for primary protection. If you have used the sizes above primary protection can be given by the lower parts of plastics bottles, one each side, held together with waterproof tape in the middle. The waterproof tape used for securing cardboard boxes doesn't last long, so use the waterproof tape made for the building industry. Pierce the holes for the antenna wire with a sharp pointed tool, don't drill them. Piercing a hole pushes up the plastics material, helping to grip the wire. With the addition of some waterproof mastic this makes a waterproof joint that prevents the water running down the wire and filling up the trap! ■

An Experimental 14MHz Loopstick Antenna

Richard Q Marris has been conducting a long-term experimental programme into the design of ferrite rod antennas. This article explains the thinking behind one of his designs.

The Loopstick is an experimental ferrite loop antenna intended for receiving purposes only. Although designed for the 14MHz amateur band, it covers from 9.2 to 22MHz and works on all bands in that range. Main performance tests have been on 14 and 21MHz, where DX reception has been quite acceptable.

The heart of the antenna is a large diameter rod, made from a high-grade, nickel-zinc material. The actual material is type R61-050-750 from Amidon Associates, USA.

The circuit (**Fig. 1**) is simple, but has to be constructed with considerable care. It consists of L1, which is resonated by a 2-gang, 125pF per section, airspaced variable capacitor (C1 & 2). Polythene covered wire is used on L1 to obtain the necessary spacing between individual turns and between the turns and core without needing a coil former. The 14MHz band resonates with the plates of C1 & 2 approximately 50% enmeshed. Coupling coil L2 is wound over the centre of L1, using pvc. covered flex, and the coupling is adjusted by C3 (200pF). The unit is coupled to the RX input using about 750mm of RG58 coaxial feedline (50Ω).

An r.f. pre-amplifier is necessary between antenna and RX, though at this QTH it has been possible to eliminate this with a 'souped up' RX on 14MHz. Commercial pre-amplifiers are readily available complete, or in kit form, or can be fabricated from text book designs, adjustable r.f. gain is recommended on the amplifier.

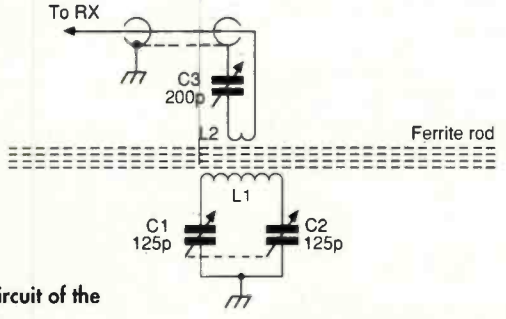

Fig. 1: Circuit of the Loopstick.

When first using the antenna it may appear, on the better signals, that coupling capacitor C3 does not do very much. It should, however, always be adjusted on a very weak signal. Over coupling produces a 'double hump' effect, under coupling gives a noticeable signal strength reduction.

The regular figure-of-eight polar diagram could be expected to produce highly directional rotatable facilities to eliminate QRM/QRN. However the directional profile works well on many signals, but not so much on others, and in some cases not at all. It presumably depends on the signal angle of the arrival. So QRM is not eliminated/reduced in all cases, as is the case with m.w. ferrite antennas. QRN elimination/reduction is very effective. In service the antenna should be located at least 600mm from any mains wiring, etc.

Construction

The whole device is built onto a piece of copper-clad board 200 x 90mm with the copper on top (**Fig. 3**). The overall height being about 38mm.

The 190mm long x 13mm diameter ferrite rod is mounted on a wooden base, suspended by two plastics-coated Terry Clips, **Fig. 2**. L1 consists of 6½ close-wound turns of polythene insulated wire, **Fig. 2**. The wire used being the insulated centre conductor from RG58 coaxial feedline, i.e., braid and pvc outer removed. This wire is 'springy' when wound round a 13mm diameter rod, and the ends are secured to the ferrite rod with strong thread. After initial frequency range tests, Superglue is run along the junction of the turns. This glue is deadly and a pair of old kitchen rubber gloves should be used, otherwise you may end up with a ferrite rod secured to a couple of fingers!

L2 is a single dead centre turn of thin pvc covered flex, with the ends twisted as shown in **Fig. 2b.** Sufficient 'tails' should be left on L1 and L2 and cut back when soldered to C1 & 2 and C3, etc.

The layout used is shown in **Figs. 3a & b**, built onto a piece of single side copper-clad board 200 x 90mm. No screws are used on this board. C1, 2 & 3 are soldered to the board. Firstly the variable capacitors are held in place with spots of Superglue, and their metal frameworks soldered to the copper clad board. Any trimmers on the variable capacitors should be carefully removed. The rod/coil assembly is also 'Superglued' to the board. The RG58 feedline to the RX is secured to the rod/coil assembly with cable clips, **Fig. 3a**. The leads from L1 to C1 & 2 should be straight

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point to point.

Arrangements had been made to fit an epicyclic slow-motion drive to C1 & 2 at the point shown in **Fig. 3a**. In the event it got fitted to another experimental project, so a shaft and shaft coupler were fitted. This was found to be acceptable, though no doubt a slow-motion drive would be preferable.

Testing

Testing is a simple matter of connecting the Loopstick to the RX input via a pre-amp, selecting the appropriate amateur band (10-14-18-21MHz) and bringing C1 & 2 to resonance, and adjusting C3 for maximum signal on a weak station. Of course a general coverage. RX will get 9.2 to 22MHz coverage.

This is an 'experimental' Loopstick. The word experiment is defined as 'something done to test a theory' among other definitions. The Loopstick was designed to test the theory that a ferrite loop antenna could be made to operate efficiently over a specified frequency range. ■

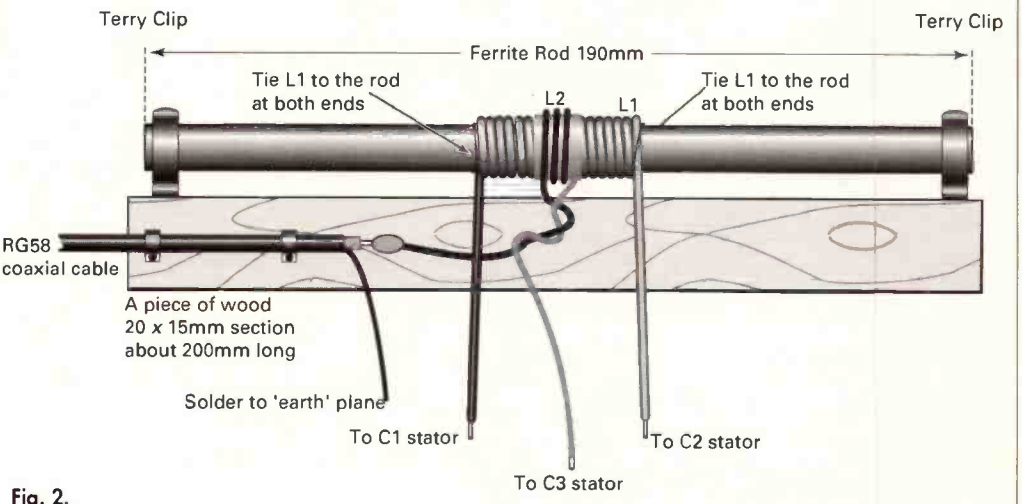


Fig. 2.

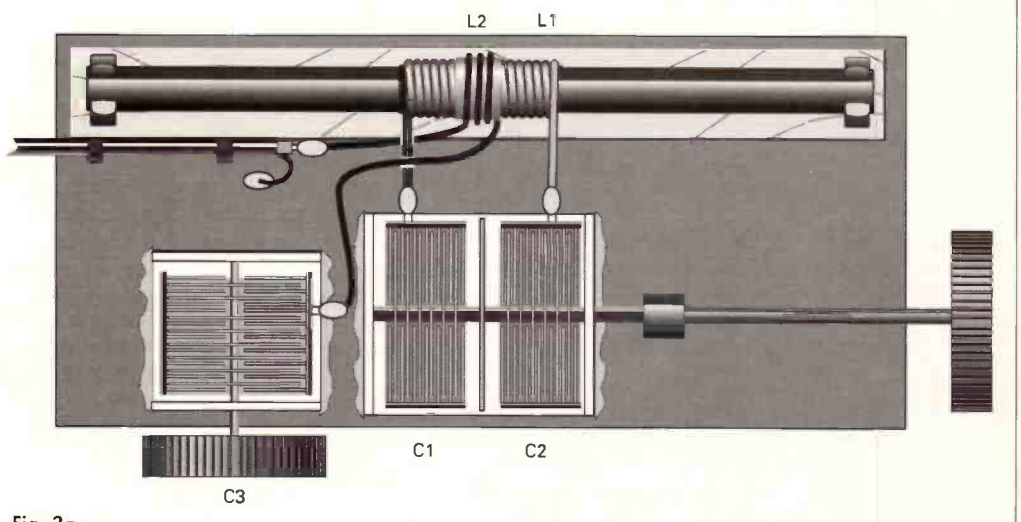


Fig. 3a.

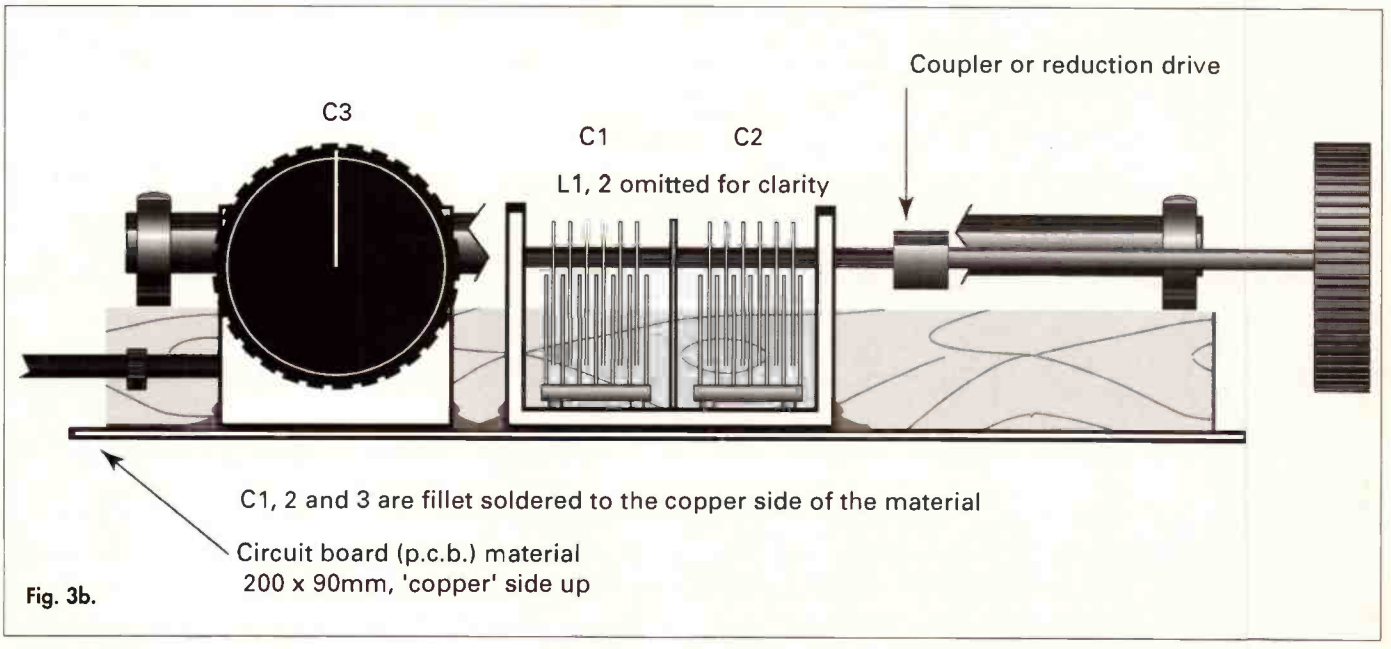


Fig. 3b.

A Trio of Ga

Peter Hirons G1CEI investigates three items from Garex Electronics intended for the Airband and scanner enthusiast, but with potentially wider uses.

Most portable airband scanning receivers are more than adequate for the purpose for which they were designed, namely for carrying around in the vicinity of airfields and air shows while monitoring the 'traffic' on the airbands. In these areas signal strengths are fairly high, particularly from the control tower and the 'rubber duck' antenna usually attached is sufficient for the job, as well as being reasonably safe.

When used as home-based receivers then, if like me you live some distance from an active airport, the lack of sensitivity, particularly when used with the 'rubber duck' becomes apparent. Three items, either used singly or in combination, from Garex Electronics can help you get better results.

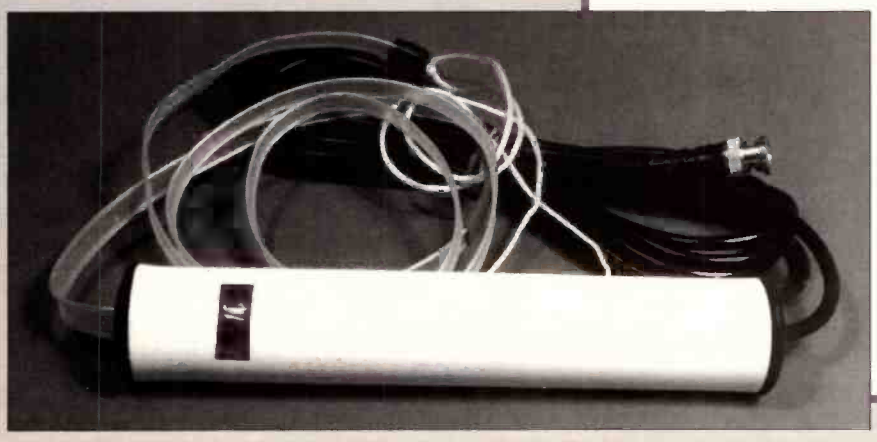
Revco Nomad Portable VHF/UHF Receiving Antenna

The Nomad is a passive portable antenna, of the well-known J-pole design, consisting of a length of ribbon cable attached to a matching unit fed by a 4 metre length of co-axial cable. The top of the ribbon cable was provided with two short lengths of cord in order to hang the antenna. For this review it was hung in the loft and the co-axial cable fed through a hole in the ceiling to the room below.

The literature supplied with the antenna gives no clue as to the frequency coverage, but measuring the length of the antenna elements would indicate a centre frequency somewhere near 180MHz. I tried the antenna with three different receivers: a Yupiteru VT-125 Airband Receiver, a Yaesu FT-209 144MHz amateur transceiver, and a converted p.m.r. radio covering some of the amateur 430MHz band.

Without the use of an extremely complex test range it is virtually impossible to measure accurately the gain figures of different antennas. All that is possible in normal circumstances is to tune to a signal from a fixed transmitter and compare signal strength readings. Those who read reviews of receivers will know how non-linear most S-meters are even on the most expensive, so all I can hope to give here is comparative results. In all cases a noticeable increase in signal strength was registered - at least one bar on the VT-125 display and 1 or 2 S-points for the FT-209. The 430MHz rig did not have an S-meter, but the background hiss increased on clear channels and reduced when a signal was present, indicating a reasonable gain.

Overall the antenna performed well on the frequencies used for the test, although it should be remembered that this design is primarily a single frequency antenna and performance will drop off as you tune away from this frequency. Although the feed cable length can be increased, the antenna is not suitable for extended outdoors use. For the serious scanner user, intending to monitor a wide spread of frequencies, a better (but much more expensive) investment would be one of the 'discone' type antennas.



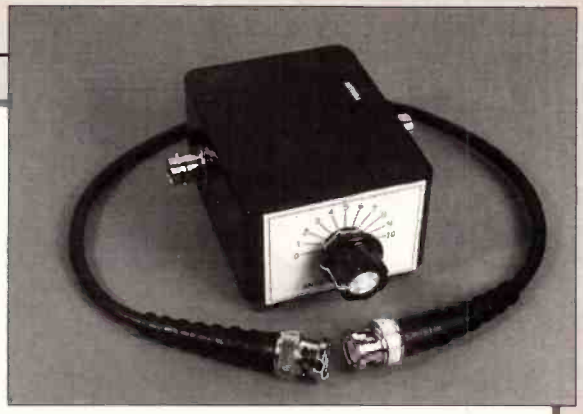
The most important result of changing to a higher antenna was, for me, the reduction of computer 'hash' picked up by all of the receivers when my computer was switched on. This in itself would be sufficient justification for the purchase of one of these antennas.

This antenna is ideally suited to those who need to travel; the whole thing can be folded up and stowed in the corner of a bag or a pocket.

£15.95 including postage and packing.

rex

Garex Tunable Aerial Filter



A receiver without a very selective front-end will suffer blocking when a strong signal, fairly close in frequency to the wanted signal, is also received. You will not be able to hear the interfering signal, but your receiver will appear to become 'deaf'. Once the signal is inside the receiver there is nothing that can be done, however a suitably tuned filter can reduce the strength of the interfering signal without affecting the wanted signal.

Inserting the Garex filter between the pre-amplifier and the receiver then adjusting the tuning until the interfering signal was at a minimum considerably reduced the problem.

The Garex filter provides a deep tunable notch which will considerably attenuate any signal at the tuned frequency. The range shown on the accompanying calibration chart is from 86 to 171MHz. If you suffer from breakthrough or blocking from anything in that range then this device could be of use to you, provided the signal to which you want to listen is not within about 10MHz of the interfering signal. So if you have a local Band II broadcast f.m. transmitter interfering with your airband receiver, local 144MHz amateur signals causing problems to your airband or broadcast reception or a local Police or p.m.r. signal interfering, this could be just what you need. It could also be used to reduce interference to the 144MHz amateur band from any of the sources already listed, but should not be used in a transmitter antenna feed line.

I have only one minor quibble with the filter - the box (80x60x40mm excluding feet, connectors and tuning knob) was not of metal. Potentially, the interfering signal could be picked up directly by the output of the filter, reducing its effectiveness. In most cases this will not be a problem.

£26.80 including postage and packing.

Garex VHF Airband Pre-amplifier

My first impression of this amplifier was of its minute size - a die-cast box a mere 50x37x30 mm (excluding connectors). Inside the box was what looked like a single transistor amplifier with tuned circuits on both the input and output.

The literature supplied with the pre-amplifier claims a gain of 16dB, which was exceeded across the full airband and some way outside.

This device was connected to a 12V supply and then connected to the VT-125 with the short lead and the ubiquitous 'rubber duck' antenna. The pre-amplifier brought some almost inaudible signals up to a comfortable listening level. Unfortunately the noise level was also raised to the point where the weakest of signals could still not be resolved. When used with the `Nomad' antenna these very weak signals were just that bit stronger than the noise and the preamplifier was then able to amplify them to the point when they became audible.

Out of curiosity, I took the Nomad antenna, the pre-amplifier and the VT-125 to the top of Walbury Hill in Wiltshire - over 300m a.s.l. and well away from noise sources. A long bamboo pole provided the support for the antenna, the car battery provided the 12V supply. Using the scanner with its standard antenna many signals were heard - with the full set-up, all I can say is that the results were amazing! Unfortunately I forgot to take a scanning directory with me so I could not identify the source of some of the signals, but they were certainly coming from far and wide.

Pre-amplifiers can only amplify what they are fed with - there is no substitute for a better antenna and any preamplifier is a compromise, particularly if you live in an electrically noisy environment. If you suffer from noise then try to get your antenna higher before using a preamplifier. If you still need to improve your signal then one of the active antennas, that is an antenna with an amplifier built-in, should provide a better signal-to-noise ratio.

I also suffered from another problem, more pronounced with the pre-amplifier in circuit but still present without. I run a packet radio station; I also live on a hill top and am in some demand as a digipeater. If you do not understand the significance of this then it is sufficient to say that my transmitter on 144.650MHz can suddenly burst into life without any action by me. The antenna for this is just a few feet away from the position chosen for the Nomad antenna resulting in an extremely strong signal only just outside the designed coverage of the VT-125 and considerable blocking resulted, particularly at the top end of the coverage. This provided an ideal test case for the third item for review.

£28.95 including postage and packing.

Conclusion

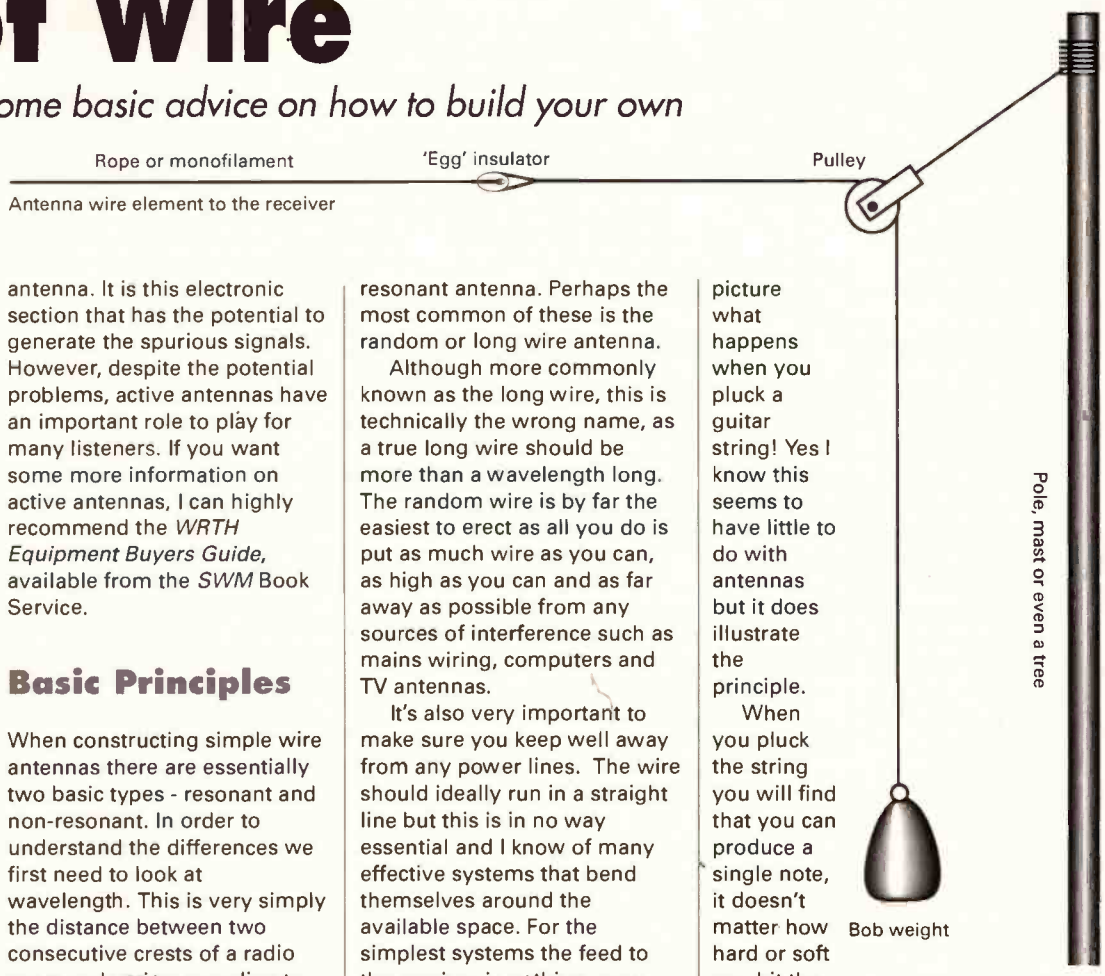
Individually, all the items reviewed performed well and can be recommended. Together they provide a versatile receiving setup for airband or for someone wanting to listen on the 144MHz amateur band.

My thanks to **Garex Electronics, Station Yard, South Brent, South Devon, TQ10 9AL. Tel: (0364) 72770** for the loan of the review items and to **Nevada Communications, 189 London Road, Portsmouth PO2 9AE. Tel: (0705) 662145** for the loan of the Yupiteru VT-125 used to carry out the tests.

■

What To Do With a Reel of Wire

Mike Richards gives some basic advice on how to build your own simple wire antennas.



One of the commonest questions raised by newcomers to short wave listening is what type of antenna should be used. The situation is not really helped by the mass of antenna books and advertising hype that surrounds the selection of an appropriate antenna. Perhaps one of the great things about short wave antennas is that this is one of the few areas where the listener can freely experiment at very low cost. In this short feature I will attempt to straighten out a few common misconceptions and provide some ground rules to help you build your own system.

Active Antennas

Although I will be concentrating my efforts on simple wire systems, I ought to make mention of the active antenna. Many listeners become very confused about the merits of these antennas when compared with more conventional systems. The main reason for turning to an active antenna is a lack of space to erect a conventional antenna.

Whilst an active antenna can provide similar signal strengths to its larger cousins there can be a performance penalty in terms of overload from strong signals. This can cause all manner of spurious signals to appear on your receiver that can counteract any benefit from the good signal strength of the active unit. The basic principle of most active antennas centres around the matching of a very short antenna to the 50Ω impedance of your receiver.

This matching is usually performed by an electronic circuit hence the name active antenna. It is this electronic section that has the potential to generate the spurious signals. However, despite the potential problems, active antennas have an important role to play for many listeners. If you want some more information on active antennas, I can highly recommend the *WRTH Equipment Buyers Guide*, available from the *SWM* Book Service.

Basic Principles

When constructing simple wire antennas there are essentially two basic types - resonant and non-resonant. In order to understand the differences we first need to look at wavelength. This is very simply the distance between two consecutive crests of a radio wave and varies according to the frequency of the radio signal. Whilst you can't see or touch a radio wave, you can use the following simple formula to calculate its wavelength:

Wavelength (metres) = 300 x 10^6/frequency (Hz)

There's nothing like a few examples to illustrate the point, so here's the calculation for a couple of popular short wave bands.

For the 25MHz band

Wavelength = 300 x 10^6/25000000 = 12 metres

For the 7MHz band

Wavelength = 300 x 10^6/7000000 = 42.9 metres

Bearing in mind that a resonant antenna system generally needs to be at least a quarter of a wavelength long, it's not surprising that few listeners have room to erect these systems. The alternative for most is to use a simple non-resonant antenna. Perhaps the most common of these is the random or long wire antenna.

Although more commonly known as the long wire, this is technically the wrong name, as a true long wire should be more than a wavelength long. The random wire is by far the easiest to erect as all you do is put as much wire as you can, as high as you can and as far away as possible from any sources of interference such as mains wiring, computers and TV antennas.

It's also very important to make sure you keep well away from any power lines. The wire should ideally run in a straight line but this is in no way essential and I know of many effective systems that bend themselves around the available space. For the simplest systems the feed to the receiver is nothing more than a continuation of the wire to the antenna socket. I recently set-up a simple, but effective, random wire in the loft of my bungalow following my recent house move.

The only problem with the simple downlead is the risk of interference as it enters the house and runs in close proximity to computers and TVs. One very effective way to overcome this problem is to use a magnetic long wire balun. This is a specialist unit that enables a random wire antenna to be fed by coaxial cable, thus taking advantage of its screening capabilities.

Resonant Antennas

Having learnt how to calculate the wavelength we can move on to learn how a resonant antenna system works. Perhaps the simplest way to do this is to picture what happens when you pluck a guitar string! Yes I know this seems to have little to do with antennas but it does illustrate the principle.

When you pluck the string you will find that you can produce a single note, it doesn't matter how hard or soft you hit the string, the note always stays the same. This note is in fact the resonant frequency of the string. You will also notice how even a very gentle touch of the string produces a marked vibration in the string. Another important point to note is that shortening the string produces a higher pitched note.

When dealing with antennas, the same effect is present but you can't see or feel it because we are dealing with radio waves. In these circumstances you can substitute your antenna wire for the guitar string and the shorter the wire the higher the resonant frequency. One of the great benefits of the resonant antenna is that, like the guitar string, it is particularly sensitive to signals at its resonant frequency. The disadvantage, of course, is that the only occurs at one frequency. You will therefore generally find

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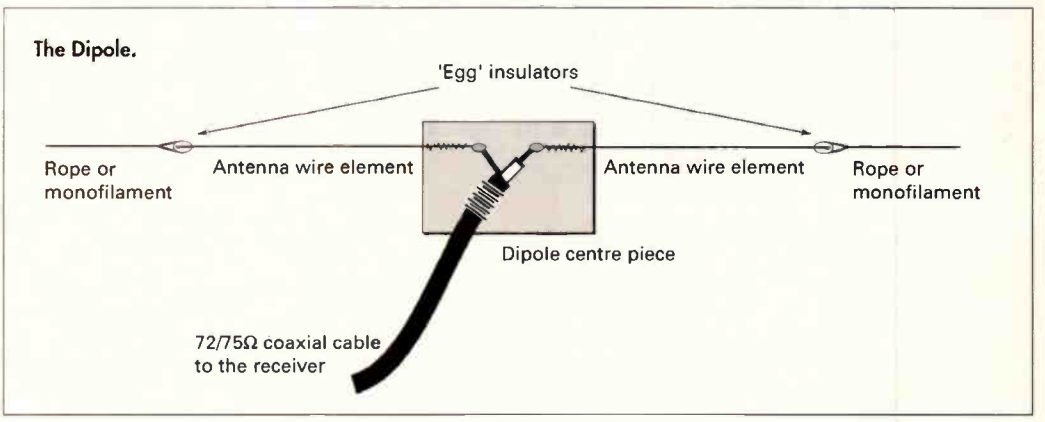
- *Noise blanking and passband tuning*
- *Tunable notch filter*
- *Fine tuning to 1Hz resolution*

that resonant antennas are used for specialist reception needs.

So how do we build a resonant antenna? Well you can't just put up a wire of the appropriate length and expect it to work perfectly because we have to have a way of harnessing the signal captured by the antenna and passing it without loss to our receiver. In order to do this we have to connect what is known as a feeder. Let's therefore take a look at a practical system to see how it's done.



The Dipole

By far the most common type of resonant antenna is the half wave dipole, which is simply a length of wire cut to be a half wave long at the desired frequency. In a practical system the theoretical measurement for a half wavelength has to be reduced by 5% to compensate for the slower speed of a radio wave as it travels through the wire. The connection to the receiver is made using 75Ω coaxial cable that connects to the mid-point of the antenna as shown in the diagram. An additional feature of the dipole is its ability to receive signals better from the side that from the ends. Although this may seem something of a mixed blessing, it can be very handy for minimising some types of interference.

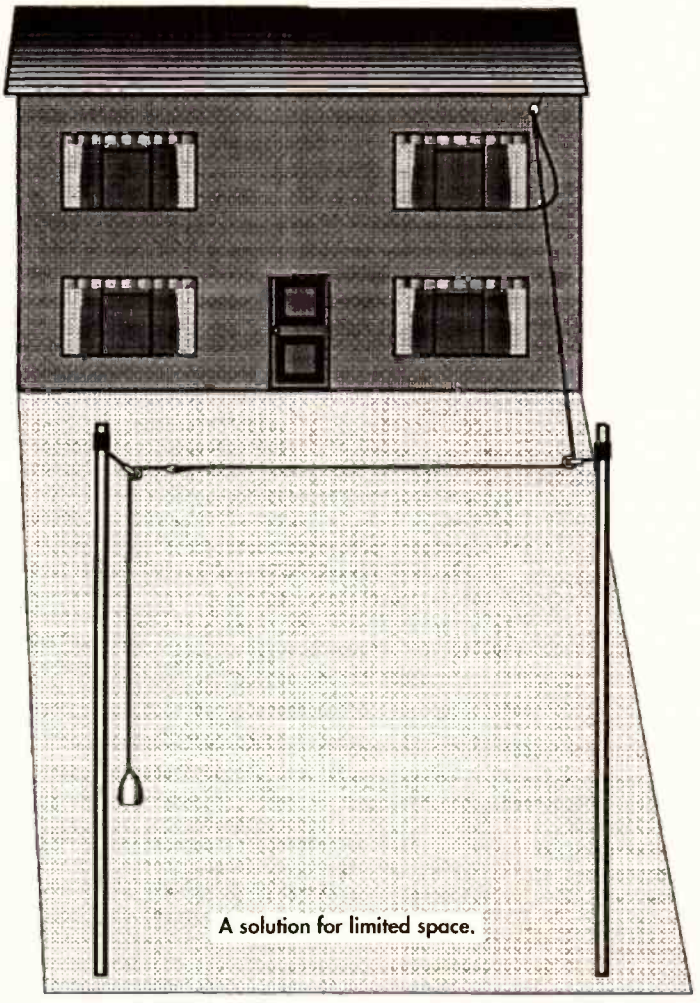
Once you've built your simple dipole you can carry out a number of modifications to create a range of interesting effects. If you have a need to receive transmissions from a particular direction, you could try building a dipole where each leg is threequarters of a wavelength or more long with an angle of around 60° between the arms. This creates what is known as a V beam.

Practical Tips

Having decided to have a go and build your own antenna you need to make sure you select the best materials for the job. As far as the antenna wire itself is goes the best choice is hard drawn copper wire. This gives a system that's both strong and inconspicuous.

When using this wire you will also need to ensure that the ends of the antenna are adequately insulated from the supporting ropes or wire. This type of wire and suitable 'egg-shell' insulators are readily available from most amateur radio suppliers. A second choice, and perhaps more manageable for the experimenter, is to use plastic coated multi-stranded cable. For my experiments I used a 100m reel of 16-strand 0.2mm cable that cost just £5.65 from Maplin. This is ideal for making 'invisible' antennas as it's very thin and light, but surprisingly strong. It's also available in a good range of colours that can again help to camouflage the antenna. Because the wire is insulated you can usually get away without having to buy special insulators.

If you're using a tree to support your antenna I would recommend that you don't just tie the support rope directly to the tree. If you do you will probably find that your antenna will be damaged every time there are any high winds. What you need to do is provide some compensation for the inevitable movement of the tree. One of the simplest ways to do this is to pass the support rope through a pulley with a suitable weight at the bottom to maintain the tension. In this way you can ensure that the antenna tension stays about the same regardless of any movement in the tree.


A solution for limited space.

Lightning Protection

If you're putting up an outside antenna it's also worth considering adding some lightening protection. This can be done either by fitting one of the many commercial systems, by making your own spark gap or just ensuring that the antenna lead is connected to a good earth when not being used. I know that the Editor remembers having a large 'knife' switch screwed to his bedroom window sill when he was a lad. This was used to earth the long wire antenna he used with his crystal sets. They are, I believe, still available.

I hope you've enjoyed reading this and it has started you thinking about trying your hand at antenna experimentation.

Good Luck!

■

Getting More of the Sky Fro

Despite the now almost natural presence of satellite dish antennas on most homes there is still a lot of misunderstanding and lack of knowledge when it comes to trying to receive anything other than 'SKY' programmes. Ben Nock answers one or two of the more usual questions and hopefully gives you the impetus to try and receive other signals.

Tuning in

Firstly, assuming one has the ubiquitous 600mm dish and 16-channel receiver, can one get anything else on this equipment? The answer is **yes**. The 'standard' installation uses what is termed an 'Off Set' focus dish with a fixed mount, i.e. it is fixed in both the direction it points East to West and the angle at which it looks up at the sky. The Off Set dish is in fact only a petal of a much larger dish, much like a flower's petal is only part of the whole flower. The LNB (Low Noise Block converter) is mounted at the focal point of the dish, usually below and clear of the signal path (**Fig. 1a**). The LNB collects the very, very high frequency radio waves from the satellite and converts them to a lower frequency which it feeds down the coaxial cable to the satellite receiver.

Dish types

The other most commonest form of dish is the 'Prime Focus' type. This is where the dish is a full bowl with the LNB mounted at the focus of the dish, i.e. the centre. But, as can be seen from **Fig. 1b,** the LNB and mounting struts do block a small amount of signal. The Prime Focus type of dish appears to have a bigger tilt backwards than the Off Set type. This is because the Off Set dish is, in fact, only the top half of the bigger dish.

Clarke Belt

To understand what is needed in receiving other satellites it must be understood that the satellites in the sky form an arc or band across the sky, ranging east to west through south. This band is termed the 'Clarke Belt', after Arthur C Clarke, who is credited with first thinking of the idea of fixed stationary satellites, that is, a satellite that appears to maintain the same position in the sky.

Moving the dish

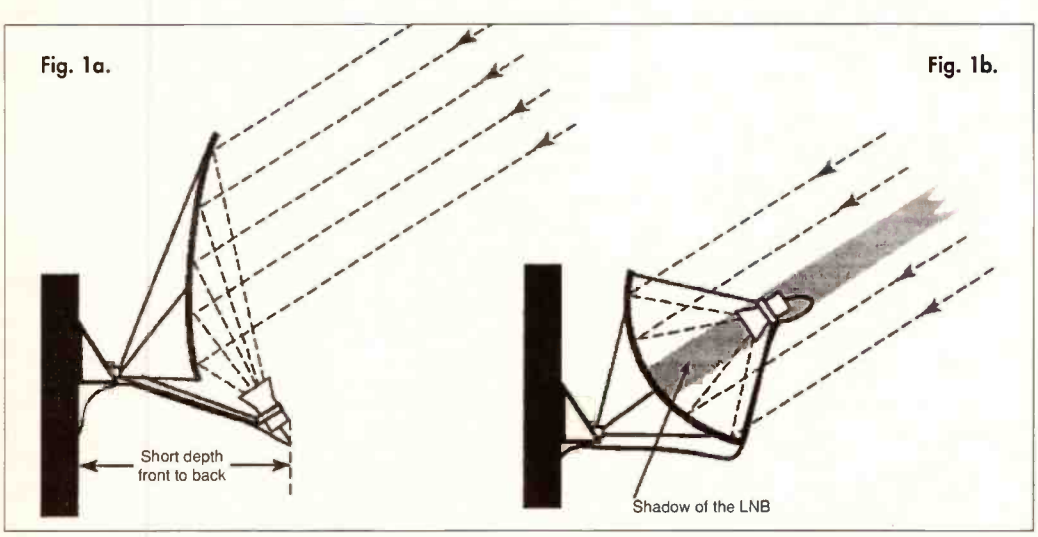
Is it difficult to receive other satellites by moving the dish? Not really, but a few pointers are needed. Mounting a dish on a vertical pole and rotating it would not move the dish in the correct path. **Fig. 2** shows, much exaggerated, that a dish mounted on a vertical pole and rotated would trace a path through the sky that would miss the satellites completely. To compensate, the dish has to be tilted back, or elevated, so that the sweep of the dish approaches that of the Clarke Belt. Even this, though, is not enough. **Fig. 3** shows what the path of the dish looks like if the elevations are too high or too low. Added to this the path of an elevated dish still does not exactly match the Clarke Belt. To compensate for the differences a further adjustment in declination is required. These adjustments are provided in what is termed a Modified Polar Mount. Both the elevation and declination are dependent upon your location on the earth. The further north, the lower the elevation, the nearer the equator, the higher the elevation.

Using the Small Dish First

Assuming you want to experiment with your existing 600mm dish and fixed mount, more correctly termed an Az-El (Azimuth-elevation) mount, then one can simply slacken the bolts that hold it in the vertical and elevation planes (**Not the bolts holding it to the wall!**) so that the dish can move, albeit tightly, from left to right and up and down. If the dish is presently pointing to SKY then make some form of mark on the two moving surfaces so that you can return it after messing about - sorry, experimenting - with it.

A lot is made of the requirement of complicated equipment to align dishes correctly, and great fees are charged by installers. I have no equipment other than a compass and a good sense of direction and have experienced no difficulty whatsoever in getting a good picture from small and large dishes.

If we assume that the dish is pointing to SKY again, then by rotating the dish towards the right, that's going west, within a few degrees of movement you should see other pictures from one of the Eutelsat satellites. One of the many satellite magazines in the newsagents will list the many satellites and their channels. Pre-set the satellite receiver to one of the channels on a Eutelsat, say, and either move the TV so you can see it or have someone watching whilst you swing the dish. At some point you will get a picture. It may not be perfect because as you swing the dish east and west it has to nod up and down to follow the Clarke Belt. The main thing to remember is that the most southerly point is the one of highest elevation, it then falls off the further east or west you go. So going from SKY in an westerly direction the dish needs to tip back slightly until you are pointing directly south, then fall again.



m Your Dish

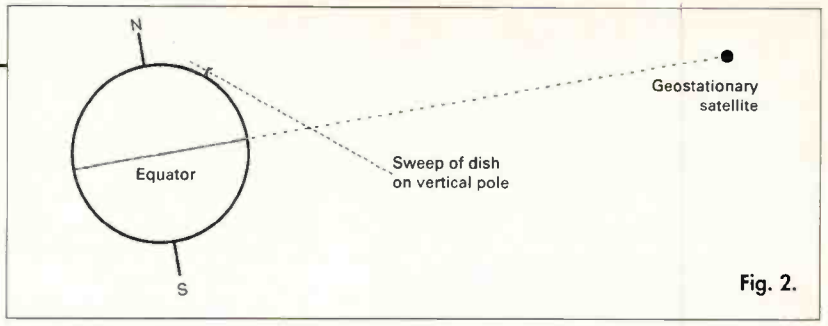


Fig. 2.

So, having found another picture by moving west you can gently nod the dish back and forth until the best quality is obtained. With the dish loosened you can experiment by swinging the dish east and west. Using one of the charts in a satellite magazine you can look for other stations and languages to watch. If you want the comfort of playing whilst in your armchair then you will need a motorised dish with a modified polar mount, you can then swing the dish remotely and the mount will take care of the tracking for you.

Bigger Dishes

Setting up a free standing Prime Focus dish can be a wee bit more time consuming, but again does not require vast equipment outlays as some would suggest. The most important thing in this instance is that the base should be perfectly flat and horizontal and that the vertical mounting pole be just that, vertical in all planes. With those two surfaces correct the rest is easy. **Fig. 5** shows the two important angles to be considered, the Polar Angle and the Declination Offset Angle. It must also be said that if you intend to buy and use a motorised dish, then a 1m or even bigger, 1.5 or 1.8m, is required to make it worthwhile.

The Polar Angle is the axis around which the dish is rotated. The Declination Offset Angle compensates for the difference between the rotation and the path of the Clarke Belt. As stated before the various angles depend upon the user's position on the earth. Assuming somewhere in the UK the following table gives the Polar and Declination Angles for various latitudes throughout out the UK. Penzance 50°, London 51.5°, Birmingham 52.5°, Manchester 53.5°, Newcastle Upon Tyne 55°, Edinburgh 56°, Aberdeen 57°. Any other locations can be fairly well guessed at.

As can be seen from **Table 1**, the degrees are measured to rather accurate settings. In reality though, slight blemishes in the dish, the struts, etc., in the signal path, all mean that such accuracy is not really need, 55.12 can really be 55°.

Again it must be stressed that before any attempt to set these angles the base and vertical support should be horizontal and perpendicular respectively. This is the really important bit of the whole procedure. Any attempt to set the various angles with these two out of alignment is a waste of time.

Fig. 3.

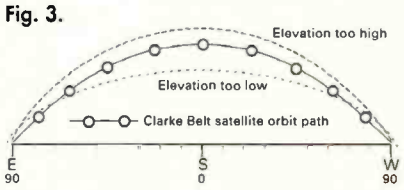


Fig. 4.

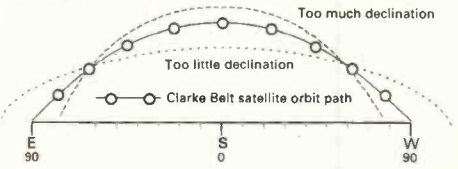
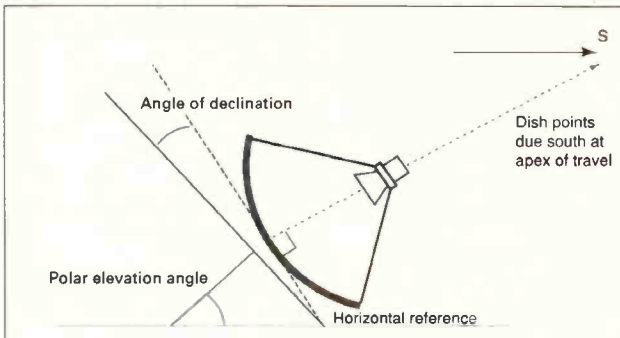


Fig. 5.



Alignment Method

Assuming the base is set as required then rotate the dish to point South. A magnetically corrected compass is a useful tool but a simple understanding of one's geography is usually enough. If in doubt the local library should have an Ordnance Survey map for your area, you can use this for obtaining both south and the latitude of your location.

Having the latitude will give you the elevation angle, the dish should be pointed upwards by the required amount, a line vertically across the face of the dish is now pointing upwards towards the Polar axis. This is the axis around which the motor will pull or push the dish. The whole dish and rotator system is elevated to this new position.

There should now be an additional adjustment between the main rotator plate and the dish itself. This is used to set the Off Set Angle from the table, the dish should now be pointing slightly lower than it was.

A useful check is that there is a satellite, Intelsat 512, at 1°W. Tune your receiver to 11.016GHz H, nudge the dish a fraction west and look for TVN Norge. On anything less than a 1.5m dish it may be too weak to see, my 1.5m motorised dish and 0.8dB LNB gets a fair picture from it. From charts in the various mags move the dish to point to a satellite at either end of the travel, east and west and check reception, the satellite looked for will depend upon your field of view, just how much of the east and west sky you can see from your location. Correctly aligned you should see your dish nodding up and down as you pan across the sky. Ensure that the coaxial feed cable does not rub or chaff on anything as the dish moves.

Experiment

Although the procedure for setting up a motorised dish is a little complicated there is nothing stopping one from simply experimenting with the smaller dish. Pictures from SKY and other satellites have even been received using a dustbin lid ! Real rubbish TV! The nice thing about satellite antennas over those for either land based TV or amateur radio work is that they do not need to be high, so long as the antenna can 'see' the southern sky in a clear swing then several satellites could be received with ease. Go on, give it a try this summer, do some satellite TV DXing. Good hunting. ■

Latitude	Polar Axis Angle	Declination Offset Angle
50.0	50.65	6.66
50.5	51.15	6.71
51.0	51.65	6.75
51.5	52.14	6.80
52.0	52.64	6.84
52.5	53.14	6.89
53.0	53.63	6.93
53.5	54.13	6.98
54.0	54.63	7.02
54.5	55.12	7.06
55.0	55.62	7.10
55.5	56.12	7.14
56.0	56.61	7.19
56.5	57.11	7.23
57.0	57.60	7.27

Table 1.

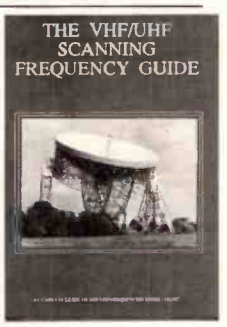
0702 206835 Waters & Stanton Electronics

NRD-535 *Short Wave Receiver*

£1349 Carriage £6 *Great Value*

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

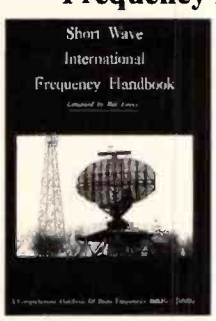
VHF/UHF Scanning Frequency Guide



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

£9.95
Carriage £2

Short Wave International Frequency Directory



"Best Value & Accurate!"

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

£9.95
Carriage £2

Aerial Rotator

AR-300XL
VHF Rotator.
£59.95!
Carriage £6

Suits 8 el 2m Yagi etc.
Mast size 28-44mm

Datong FL-3 AF Filter

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

£149.95 Carriage Free

Howes Audio Filter Kit £15.95

Case £13.95 extra
Carriage £2

New!

* CW 300Hz Bandwidth * SSB Low Pass filter

Feed receiver audio into filter and hear the DX. Requires 12V DC

MFJ-956 Passive Preselector

150kHz - 30MHz £49.95 Carriage £2.50

This new item is designed to improve the front end of your receiver by greatly increasing its selectivity. Requires no power, just connect between aerial and receiver and adjust for maximum signal. You'll get less noise at night, rid yourself of image problems and hear a lot more! Matches all short wave receivers.

DJ-X1D Scanner

200kHz - 1300MHz
AM - NFM - WFM

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

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

~~£349~~
£299

Offer ends 31st. May

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

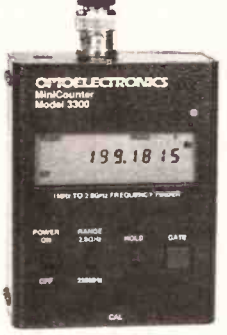
Optoelectronics 3300 £169.95

Carriage £4.50

LED's Are Out!

No problem in daylight
Lower battery consumption

1MHz - 2.8GHz



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

LOWE HF-150 Receiver

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

£389
Carriage Free

Inc. AC supply & Internal Battery Hod *Great Value*

Yupiteru *With UK warranty cards*

Plus the proper chargers!

MVT-7100

SSB-NFM-WFM-AM
530kHz - 1650MHz
12 Month Warranty

£389.95 *Carriage £4.50*

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

Latest Versions

MVT-7000

NFM-WFM-AM
100kHz - 1300MHz
12 Month Warranty

Great Value

£329.95 *Carriage £4.50*

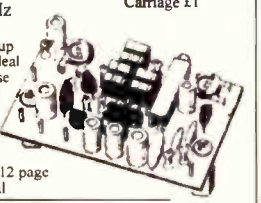
A great value receiver that covers the entire spectrum of HF, VHF and UHF. Its reliability and sensitivity are outstanding and at this special offer price you have an absolute bargain!

Ramsey Kits - USA

SA-7 RF Pre-Amp £19.95

Carriage £1

100kHz - 1.3GHz



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

AA-7 Active Aerial £29.95

1.6MHz - 400MHz Carriage £2

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

AT-1000 SWL ATU £89.95

Carriage £4.50

The ultimate atu for all aerial systems 0.5 - 30MHz

* Long Wire * Balanced Feed * Coax feed

MFJ-16010 £49.95

Carriage £4.50

Random Wire Tuner

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

MFJ-959B £109.95 *Carr. £4.50*

HF Receiver Pre-selector

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

Wideband *Scanning Aerials*

D-707 ..... £129.95
D-505 ..... £99.95

Great Value

HX-7000 ..... £20.95
HX-9000 ..... £32.95

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

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

HX-7000 100 - 950MHz whip 19cm BNC

HX-9000 100 - 950MHz whip 47cm BNC

UK's Centre For Listeners

0702 206835

Annual Open Day

Sunday 22nd May, 10am - 5pm Hockley

**** Free Food * Free Drink * Discounts***
**** Bargains * End of Lines***
**** Bring & Buy * 3 Floors Open!***

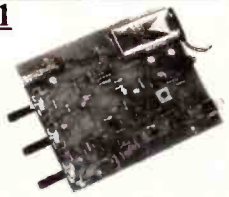
NEW

MFJ Short Wave *Regenerative ReceiverKit*

AM/SSB/CW/RTTY Super Sensitive

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

Ramsey AR-1 *Airband Receiver Kit*



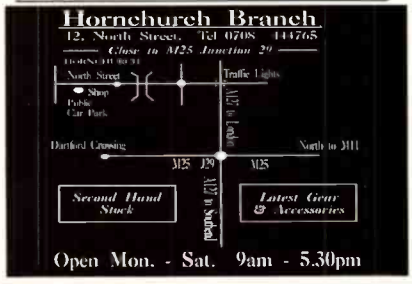
£29.95 *Carr. £2*

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

Yupiteru VT-125 *VHF Airband Scanner*

£189.95 Carr. £4.50

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



Sangean ATS-803A Short Wave Receiver

£128.95

Carriage: £6

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

New! 24 Hour Clock

£24.95 Carr. £2.00

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

W9GR Digital Audio Filter

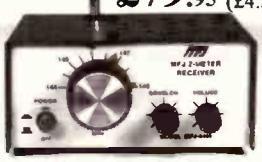
299.95
Carr. £4.50

Reduces: * Static * Power Line Noise
**** Ignition Pulses * TV Time Base* Computer Hash***
The top seller in USA. Need we say more!

There's a full review in our catalogue.

MFJ-8400 2m Rx Kit

£79.95 (£4.50)



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

Sangean Ant-60 £14.95 Carr. £2

7 metre long extendable short wave antenna. Rolls up into "tape measure" case. Comes with 3.5mm jack and telescopic whip clip for portables without antenna sockets. **Ideal for scanners.**

Free! 1994 *New Catalogue*

Best Ever!

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

Just send two first-class stamps

SONY ICF-SW55

~~£279~~ **£239** Carriage £6

Great Value

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

AOR ABF-125 *Airband Receiver Filter*

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

Magnetic Longwire Balun

MLB £39.95 *Carr. £2*

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

Yaesu FRG-100 Receiver

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

Tune in to Packet P-IBM Kit

£59.95! Carr. £2.00

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

SAB-11 Airband Monitor

Special Offer **£14.95** Carr. £2

Gives complete coverage of the VHF airband plus FM & AM broadcast bands. Powered from 4 x AA cells. This really is great value! Hurry as stocks limited.

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

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

MOMENTUM COMMUNICATIONS

MCL 1100 DATA DECODER

SEE REVIEW IN THIS ISSUE

The MCL 1100 Easyreader Data Decoder will automatically make sense of some of the strange noises that you can hear on your H.F. Radio Receiver enabling you to make FULL use of your equipment. The MCL-1100 processes data transmissions without the need of a separate computer and displays a full screen of text on your video monitor.

Why make-do with one or two lines of information as offered by other manufacturers. And it's designed and manufactured in the U.K.

STANDARD FEATURES:

- SMARTLOCK system for easy tuning.
- Full screen of readable text with on-screen tuning indication.
- Automatic decoding of RTTY, CW, FEC (NAVTEX) and ARQ.
- Auto or manual selection of transmission speeds.
- Extremely rapid lock onto signal.
- Connection for a parallel type printer.
- Made in the U.K.

PHONE EASYREADER HOT-LINE FOR SPECIAL STARTER PACK DETAILS

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EASYREADER STILL ONLY £255.00 inc. VAT + Postage

Authorised Dealers Martin Lynch Lowe Electronics ARC

6 & 7 Clarkson Place, Dudley Road, Lye, West Midlands DY9 8EL

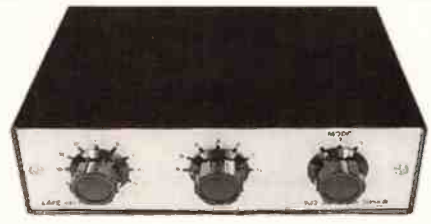
CD RECORDING OF MODULATION TYPES

71 emissions • 2½ hours • £ 43 or DM 100

This unequalled product is based on 25 years of experience in the radio monitoring and publishing field. Two standard audio compact discs include 71 different recordings with superior digital quality. These CDs allow rapid access to the typical sound of all conventional and exotic radio communication systems found nowadays on HF. Connect your audio CD player to state-of-the-art decoding hard- and software and practice tuning these professional teleprinter and radio paging systems for easy analysis and display. Synchronization is perfect as a result of digital recording techniques that prevent any play-back speed deviations. Registered airmail within Europe included! Major credit cards accepted - please fax or mail your order to ☺

Klingenfuss Publications
Hagenloher Str. 14
D-72070 Tuebingen
Germany
Phone 01049 7071 62830
Fax 01049 7071 600849

NEW! TU3 Antenna Tuner



- ★ Ideal for receivers with a long wire Antenna on the H.F. bands, 1-30MHz.
- ★ Versatile! The touch of a switch gives any one of 3 different arrangements.
- ★ Quality case - black with printed aluminium front & back facias. Measuring only 170-140-50mm.
- ★ Kit complete with ALL components and hardware including pre-punched case and panels.

Price £44 Plus £4.00 P & P

Ready made £54 Plus £4.00 P & P

Send SAE for Brochure or call Alan, G4DVW on 0602 382509

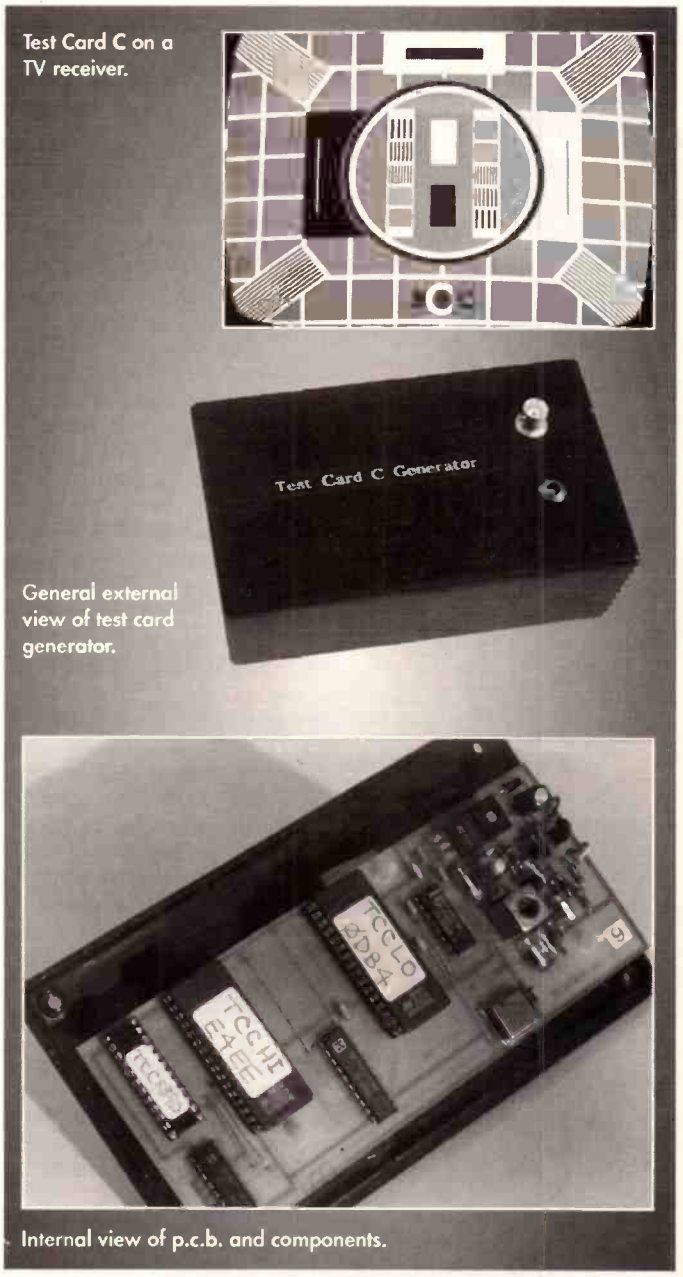
LAKE ELECTRONICS

7 MIDDLETON CLOSE, NUTHALL, NOTTINGHAM NG16 1BX

(Callers by appointment only)

Test Card C Generator

There is seemingly a great interest currently in the 'good old days' of 405-line, black and white TV and the chance to reproduce a 'real' vintage test card picture on your own equipment must be sheer bliss. Roger Bunney tried one out and was suitably impressed.



Test Card C on a TV receiver.

General external view of test card generator.

Internal view of p.c.b. and components.

This Test Card C Generator from HS Publications produces not just any old Test Card C, but a digitally generated version, including the BBC identification. In fact it displays an identical version to that transmitted in 1948. The handout from HS suggests that the generator is an excellent service tool for checking linearity, convergence and grey scale alignment in modern televisions - particularly now, with the complete lack of test cards transmitted on-air.

Intrigued

I was intrigued with this unit, having myself serviced TVs with a rental firm in the early 60s using Test Card C (off air!). Garry Smith kindly sent down a loan generator for this review and the results were impressive - if not a little sentimental!

It's a small unit, the black abs case measuring just 95(d) x 157(w) x 55mm (h) excluding the 3mm thick feet and weighs in at 270 grams. There are no controls, merely BNC video output and power supply input sockets. Power is provided from the supplied 240V a.c. mains to 9V d.c. regulated p.s.u., a 13A socket mounting type. Plug in the p.s.u., power up the generator and out comes the composite baseband video signal. The video output should be connected into the video input of a VCR or a TV receiver via the Scart or phono video in if available. There should then appear on your screen, once the TV/monitor is correctly tuned/adjusted, a pristine BBC Test Card C.

Digitally Generated

The test card is digitally generated from an on-board EPROM at 625 lines, **not** 405 lines as was the original card in the 1940s. The frequency response gratings on the generated card relate to 1.5; 2.25; 3; 3.75 and 4.5MHz. The photograph shows the test card using a Maplin video to u.h.f. modulator with the TV tuned to ch.36, the height is reduced showing the castellations around the border.

The HS Test Card Generator also includes a Teletext information page (100) with more details of this unit should a Teletext receiver be used to display the generator output - Teletext was not around in 1948!

Impressive

Results were impressive and if you are into testcard viewing then act now. The BBC have only allowed a certain number of these generators, with their copyright Test Card C to be manufactured! The cost of the unit is £185, including UK postage, from **HS Publications, 7 Epping Close, Mackworth Estate, Derby DE3 4FS. Tel: (0332) 513399.** ■

SONY

ICF-SW100 E W

It will slip into a pocket and yet bring you the world. It is the latest short wave receiver from Sony - the tiny ICF-SW100. Peter Shore has been taking a look at the newest set on the world band market, released in Britain just a few weeks ago.

If you thought that Sony were content to let the ICF-SW1 carry on as the world's smallest digital short wave receiver as it approached its seventh birthday, then you were wrong. This Spring saw the release of its successor, the ICF-SW100, so-called because, say Sony's marketing people, it is one hundred times better than the SW1. Without a revolutionary change in technology, it is unlikely that it could be a hundred times more sophisticated, but the new set does have more to offer.

Small!

The new receiver is small, little bigger than an audio cassette box. The whole unit is protected by a carrying case that is fixed on to the set rather like the case for a 35mm camera with a screw holding it in place. Undo the Velcro fastening, lift up the cover, and the radio is revealed: almost. In fact all you can see at this stage is the Sony logo, the set's name and a curious semi-circular recess in the case.

Press a minuscule button on the front side of the set, and up flips the lid giving access to the control pad. It seems that the designers have taken the ever more popular laptop computer as their inspiration, for once the lid is open, it looks like a portable computer. On the now upright lid is the backlit liquid crystal display with a loudspeaker grill alongside. A digital clock 'ticks' away on the screen, while on the main body of the set are all the control buttons, including the number keypad and waveband selector.

A thin 11-section, 660mm long whip antenna has been cleverly hidden away in the back of the set. It pulls out easily and can be aligned in any orientation.

The SW100 has the f.m. band (with stereo through headphones as is the convention with most digital portable short wave receivers these days), long wave, medium wave and short wave and all the frequencies in between as all models sold in Europe, with the exception of Italy, have continuous coverage from 150kHz to 30MHz.

Display

Switch on the receiver and the wave band is displayed on the l.c.d., together with the frequency. Then it is possible to tune manually using four buttons to the right of the keypad. On short wave the outer buttons change the frequencies in 5kHz steps while the inner two offer 1kHz increments up or down the band. Select single sideband on the set (s.s.b. is switchable between upper or lower sidebands) and the buttons switch to allow 1kHz step tuning on the outer two and 100Hz on the inner two.

You can also scan automatically up and down the bands: hold one of the outer buttons for a second and it will start to scan up or down in frequency, stopping on each signal for about three seconds.

In addition you can go select a particular broadcast band by holding the AM BAND button down and pressing one of the tuning keys. A frequency at the lower end of each broadcast band is then tuned and the metre band is shown in the display.

As well as single sideband, the SW100 has synchronous detection, a feature that up until now has only been found on much larger portable sets. Synchronous detection is useful when listening to short wave broadcasts and there is

PREVIEW

/orldband Receiver

The bottom of the ICF-SW100 carries a variety of information including a world time zone map. The telescopic antenna is shown in its intermediate position.

distortion and fading as the two sidebands carrying the programme's audio, fade at slightly different times. Select the detector and the set picks up just one of the two sidebands and you can choose which of the two gives best audio quality.

Memories

In common with all modern digital sets, there is a memory facility. Whereas the older SW1 had just ten memories, the SW100 has 50. Some have been programmed in the Sony factory with the main frequencies of the BBC World Service, Voice of America and Radio Japan. In all, 30 channels have been input. The memories have been put into ten separate pages of five frequencies each.

To call up a particular page, you simply press the PAGE FEED button and the page number is shown on the screen. The number of memories that have been stored in that page are also shown. To select, say, Radio Japan on page 8, press the page button until '8' shows. Alongside are the numbers 1 to 5 and by pressing the appropriate number on the keypad you can call up that individual memory. The display shows the station name at the same time, in this case 'R JAPAN'.

If you wish to store your own frequencies, simply find a vacant memory in a page, and a couple of key pushes later the frequency is stored, together with the reception mode: USB, LSB or SYNCH U or L. You can also assign an alphanumeric label to a memory which will be displayed every time you recall it.

Universal Clock

The in-built clock can be set to UTC (GMT), and has key cities around the world already stored, from Bangkok to Anchorage. This means that wherever you travel to with the set, you can find out what time it is locally and with the difference from UTC always shown you need never miss a favourite programme. If you cannot find the particular place you are in, it is a simple job to reset the clock to your destination, with the city or country name displayed on the screen.

If a country is on daylight saving time, do not worry. Press the button labelled DST and the local time changes by an hour, and a sun and clock symbol appears on the display to remind you.

Naturally the clock serves as an alarm to switch the set on in the morning.

Flexible

So what is this new miniature receiver like? It has not yet been put through its paces on a test bench, but I have had the chance to play with it for a few days. It is easy to get the hang of operating it as it works much like any other digital receiver. Short wave reception seems to be fine with all the major broadcasters easily received and the synchronous detector works well. The addition of this facility, combined with switchable single sideband means that this new set is suitable not just for the broadcast listener but for amateur reception too.

Clearly, however, this radio is aimed at the regular traveller who wants to slip a pocket-sized set into his or her luggage and be able to pick up news from home anywhere in the world. The batteries are claimed to last about 18 hours, provided they are alkaline. With stereo f.m. through the tiny headphones supplied with the set, the SW100 is probably the most flexible radio on the market in such a small package. In fact it is the smallest digital set available at the moment.

All this technology does not come cheap, though, as it will retail here in Britain at about £199. This probably represents good value, though, if you do travel a great deal and value your baggage allowance, for it weighs in at just 220g. One hundred times better than the SW1? Maybe not, but it certainly does give you more for your money! ■

SPECIFICATIONS

Frequency Range:	AM:	150kHz to 30MHz
	FM:	76.0 to 108.0MHz
IF:	AM:	55.845MHz and 455kHz
	FM:	10.7MHz
Connectors:		Stereo headphones (3.5 mm jack) (supplied) Line out (stereo 3.5 mm jack) External 3V d.c. power supply External antenna (Sony compact antenna supplied)
Power:		Two AA size cells 3V d.c. from external adaptor (not supplied)
Size:		110 x 24 x 73 mm
Weight:		220g including batteries

YOU CAN BANK

SCANNERS

AOR AR 8000
New! Fantastic! Amazing! 50% off! Buy 2 get 1 Free!!!!

It's so new, nobody knows what it looks like, what it costs, what it does, or when it will be available! If AOR delivery on a new product is as fast as it usually is, then send me an open cheque dated for 1997! Even AOR UK don't know when it will arrive! Phone me today and I might be able to tell you more. Don't, however, hold your breath for a realistic delivery date.

He's gone mad again, ED.

MVT 7100 The worlds most favourite scanner is One Year Old today. Whilst the others are still catching up, send me a cheque for £49.00 and pay the balance over twelve months - interest free. Of course, if you'd rather wait until 1997...

AR 1500EX I remember when you had to wait almost six months to get your hands on this one - no more, they're in stock and excellent value.

AR 3000A It's too good to call a scanner, an all mode, 100kHz through to 2036MHz receiver with computer control for just £949.00? How much? What about £949 with £100 worth of MARTIN LYNCH GIFT VOUCHERS absolutely FREE!!

VT125 The no nonsense, simple to use Air Band handie. It only retails at £189.00 and it comes complete. Give yourself a birthday present. Order one today and I'll pay the delivery charge. (U.K. only mind).

VT225 The same as it's little brother, but this ones matured to enable you to listen to Military AIR Traffic as well a civil. Just a touch more green backs and I'm still throwing in FREE CARRIAGE and the very latest AIR BAND FREQUENCY GUIDE. Deposit your £269.00 with me today.

Other "scanners" stocked: AR2000, ICR7100, PRO 2006, ICR1E, ICR9000 plus a massive selection of used examples.
Send for your FREE LIST!

RECEIVERS

NEW Drake SW-8E

If you press your nose hard enough against my shop window, you'll spot it on the left. Unlike other well known manufactures, this NEW receiver from Drake was announced last month and it's available this month! Just shows what you can do when you put your mind to it, (or keep your mouth shut until it actually exists!) Anyway, back to the radio. It's built in the same factory as it's big cousin, the famous Drake R8E, covers around 150kHz to 30MHz and has AirBand and the FM music band. Including AM synchronous, full portable use, (employs internal batteries and telescopic whip), it's a great second receiver, or an ideal first time buy. Thinking of a Grundig Satelit 999000 mk87? perhaps a Sony SW33&1/3D? Look at the new Drake SW8E first. Then buy it. £599.00 buys one, with no cuddly toys or the odd £10 or £20 quid off.

AOR 3030 Out of the massive quantity ordered, I've so far had twelve. That leaves the same amount plus a few more still waiting. It's very good. I actually had one to play with November last year, and from what I remember, it was very good. If the men at AOR have worked overtime this month, I may have just a few more to play with...

Joan Collins Inside

FRG100 Now the new AM filters are installed, this one's taken off like a rocket! It's simple to use and makes the ideal step up the ladder to serious short wave listening and it's still only £499.00 from Mr Lynch.

Drake R8E My mark up on this one has been slashed to the bone, but because Mike Dev. is a nice bloke and the receiver is even nicer, I still rate this one at the top of the list. I've said this all before, but for those of you that are too mean to buy SWM every month, here goes..

ALL THE FILTERS ARE FITTED AS STANDARD. COMPUTER CONTROL IS EASY WITH THIS ONE. IT's STILL ONLY £995.00. I WONT CHUCK IN CHEAP NASTY HEADPHONES or FREE DELIVERY, but I will give you the expert service and attention this masterpiece deserves. I may just have the odd EX-Demo at lower prices too.

HF 150 MAJOR PROBLEM REVEALED!!

SHOCK!! There is one major problem with the Lowe HF-150. I don't make it! Mr Wilson and his chums at Lowe Production do. I've asked him to let me in on the action and he said something to do with going to the bathroom. I didn't understand it either so I'm left to tell you this is still the very best £389 you could ever spend on a receiver. In fact it's the best £389 you could probably spend on anything, ever. If you want to get into ShortWave listening and would still rather afford to eat the occasional hot meal over the next six months, then buy one. Yes, I'm still offering it on £89.00 down and the rest over twelve months, INTEREST FREE.

HF 225 & HF 225 Europa The latter named after a rather tatty little sports car in the seventies, these two machines still set the standard in ShortWave receivers. With more flexibility than that of the HF150, the performance is still unmatched in the all important "Price per Pound" stakes. £479 & £699 respectively. Both available on FREE FINANCE.

R 5000 Like it or not, the R5000 is the oldest amongst the receivers but it still rates No. 2 in the best receiver sales group. It's well made, very reliable and holds its value. A brilliant receiver from a class leading company. It's still under a grand and I'll make it even easier to pay, this month only - How about EIGHTEEN PAYMENTS OF ONLY £44.44, with a deposit of just £199.00? Good eh?

Don't forget the hugemongous range of USED receivers available. From Drakes to Yaesu to Lowe to Kenwood, they start at a mere £249 and are available on my super low rate finance purchase plans. Phone for your FREE LIST!

NOISE REDUCTION FILTERS Not just one make, but the lot, on demo in one shop. No biased opinions - you choose for yourself. They ain't cheep, but technology never is. Yes they do work and after playing with all of them side by side, we all agree if you're using a receiver without one, then your brain is getting unnecessarily fried for no reason. Reduce the listeners noise fatigue instantly! Fit a DSP!!
AEA PK-900 **£549.95**. AEA PK-232MBX **£385.00**. AEA PK-88 **£169.95**. Tiny 2 TNC **£139.00**. KAM **PHONE!!**. KPC-3 **£139.00**. MFJ 1278 **£339.95**. Momentum MCL 1200 **£229.00**. ERA Microreader **£189.00**

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Direct from the USA, the EAVESDROPPER is a fully developed multi-band receiving antenna for the dedicated listener. Including 100ft of 72 ohm transmission line*50ft of 450-pound test nylon support rope*Automatic bandswitching by trap circuits*All connections soldered & enclosed in ultrasonically sealed, weather resistant trap covers*Heavy 14SWG hard drawn stranded wire*Zap Trapper Lightning Arrestor*Only 42ft long*Full 12 month warranty & built like no other wire antenna you've ever seen!

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The U.K. SCANNING DIRECTORY

Compiled by Interproducts and now in it's 3rd edition, this is the definitive "bible" for the intrepid scanner enthusiast. Thousands of frequencies listed between 25 to 1213MHz, order one today, before it's taken off sale again!

£16.95

Outdoor Scanning Antennas

Scanmaster Base (500kHz-1500MHz)
New high quality wide band scanning antenna.
£39.95

Scanmaster Mobile (25 - 1000MHz)
High quality wideband mag-mount mobile.
£29.95

Scanmaster Discone (25 - 1300MHz)
Complete with stainless steel 'N' type connector, mounting pole, clamps, 8-ele with vertical whip.
£49.00

Scanmaster Double Discone
100 - 1300MHz giving outstanding performance. Nearly 2.5dB gain over standard discone!
£59.95

MyDEL TPA Tunable PreAmp Antenna

Housed in one neat unit, the MyDEL TPA is the latest innovation from the USA. Ever wished you could increase the input signal just a little bit when the going gets tough? MyDEL thought so, and for the first time, the TPA offers an effective ATU for short random wires together with a pre-amp, and as an alternative a telescopic whip for the occasional indoor short wave listening. Powered by one 9V PP3 type battery, it could be the answer to your tuner problems! Ideal for listeners who only have limited space for antenna systems.

£69.95 incl. VAT. (9V battery not supplied)

MyDEL ATU-1

A more conventional approach to resonating that length of wire or centre fed dipole for an antenna system is the NEW MyDEL ATU-1. Built in the U.K. to our own specification, the ATU-1 is housed in a strong metal case and employs two good quality tuning capacitors with a tapped coil in the standard "Pi" configuration. Almost identical to a similar Japanese model costing nearly 40% more, isn't it time you bought British?

£59.95 incl.VAT and patch lead to your radio.

Attention all Yupiteru MVT7100 & 7000 owners!

The new MyDEL SCAN-2513

Wide band scanner antenna

Ideal as a direct replacement to the telescopic antenna offered with the Yupiteru models, the NEW MyDEL SCAN-2513 flexi antenna covers 25 - 1300MHz. It's a far more convenient than the standard unit and a lot safer! Will suit any hand-held scanner.

£19.95 incl. VAT, plus £2.00 p&p.

Datong FL3

The best selling audio filter available today, ideal for the HF-150/225 owner.
£149.95

Datong AD270/AD370

The very best in outdoor and indoor active antennas. Supplied with mains PSU, the overall length is only 2 metres and covers the entire 200kHz-30MHz band.

AD370 outdoor £79.95
AD270 indoor £59.95

UNIVERSAL RANGE OF DECODERS

M-400

As featured in August Short Wave Magazine, the NEW UNIVERSAL M-400 decoder is a must for those who want a serious RTTY, SITOR, FEC, WEATHER FAX plus much more CODE CONVERTOR at a sensible price. Available from stock.

£399.95 Incl. VAT
PSU extra at £19.95.

M-900

Similar in features to the M-400, the M-900 has a powerful FAX-to-SCREEN processor built in, enabling weather and other 'picture' transmissions to be viewed by a simple video monitor, before dumping to printer.

£529.95 incl. VAT
PSU extra At £19.95

M-1200

Got a PC and want a powerful decoder using your own computer as part of the system? The UNIVERSAL M-1000 is a complete CODE CONVERTOR on a single card, ready to slot into an IBM compatible PC. Full colour on screen graphics are at your disposal. This one IS fully recommended - our Chief Engineer uses one!

£399.95 Incl. VAT

M-8000

The ultimate in all mode code convertors.

Mainly used by commercial organisations throughout the world, UNIVERSAL have managed to engineer the package at a price within reach of the true hobbyist. A true colour VGA output is given to enhance the incredible definition obtainable in all modes by this advanced piece of hardware. It's easier to use than you think - a few hours will soon bring decoded data to your own screen from around the world. Open your eyes to a new world just waiting for you to explore. Put your NRD535 or R5000 or Drake R8E to real use today!

&1299.95 incl. VAT.
A 10" VGA HIGH RES COLOUR Monitor is available for only £179.95 incl. VAT

NEW IMPROVED OPERATING FIRMWARE AND MORE MODES

STOP PRESS

Introductory price of only £39.95 incl. VAT. p&p £3.00

FRG-100 "SPRITE" SOFTWARE PROGRAMME

Specially designed for the new Yaesu FRG-100, the "Sprite" software allows full control of the receiver in a windows environment. Just look at these features:

- **Sprite is a genuine windows programme Microsoft's Multiple Document Interface and Common User Access, for ease of use and a standard "look & feel"**
- **On line context sensitive help**
- **Unlimited number of disk based memory channels Upto 10 can be viewed on screen at once**
- **Front Panel Window. A simple to use window provides you with the ease of "keypad frequency entry" from your mouse**

Systems requirement: 386PC running at 25MHz or above

- **4MB memory *Microsoft Mouse At least 2 RS232 ports**
- **1MB free disk space**
- **Microsoft Windows V3.1 or higher**
- **Printer optional**
- **Yaesu FRG 100 with suitable RS232 interface**

STOP PRESS

For those of you who are mourning the demise of LOWE SHOPS in the London area, worry no more! From the first of May, I've agreed to stock as much of their range as my "vault" will stand. Here's just a small listing of what's currently available:

WireMatch antenna system.....£89
HF-150.....£389
HF-225.....£479
HF-225 Europa.....£699
HF-235 Professional RX.....£1116
PR-150 a must for the HF150.....£235

Plus the Watkins Johnson HF1000 receiver, (Part Exchange on your house, wife & kids, all gladly taken), all their DSP Audio Filters and lots more. Support your very best BRITISH RECEIVER MANUFACTURER, buy a LOWE RECEIVER or accessory from your favourite MARTIN LYNCH STORE today!

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VISA RSGB SWITCH AMERICAN EXPRESS

Momentum MCL-1100 EasyReader

With many newcomers nervous of PCs, this stand-alone decoding package from Momentum will please many. Mike Richards has been trying it out.

Although Momentum Ltd are comparatively new to the short wave decoding market they have settled into a vital area of the market. From experience through my 'Decode' column it's clear that there is a constant flow of new people into this fascinating hobby.

Although these newcomers have bags of enthusiasm, they often have no special technical or computer skills. As a result, they are looking for a system that's both easy to set-up and operate. Momentum have tackled this problem by including their MCL-1100 EasyReader decoder in a starter pack that contains all you need except the receiver. As the MCL1100 features fully automatic reception of most of the more popular utility modes it should prove a great success.

As you can see from the photograph, the EasyReader decoder itself comprises a compact desk-top cabinet with a key pad to control the decoding functions. In addition to the decoder itself, the starter pack includes a 9in green screen monitor, a.c. mains power pack and a lead pack to interconnect these items.

To help you get started there was also an eight page, A4 user manual. Although this was just a photocopied and stapled manual, it contained sufficient information to get started. I believe this is an area where the package could be improved, especially as the main users will be new to the hobby. It would be great to see more use of illustrations with some tutorial material as well. The only problem being that this would increase the price of the system, which would directly affect the newcomers choice of decoder.

For those that want more information, a full technical manual can be supplied for an additional £6.99. This provides a much more detailed description of all the features and includes a full circuit diagram and components list.

Connections

Connecting-up the EasyReader proved to be extremely simple. All you had to do was:

1. Connect the video lead between the decoder and the monitor.
2. Connect the audio lead between the decoder and the receiver's audio output.
3. Plug the power supply into the decoder.
4. Connect the power unit and monitor to the mains supply.

With those four simple steps complete, all you have to do is tune around and find your first utility station. Even this stage is helped by the inclusion of a short frequency list with the instructions. To help you remember the key-pad combinations they were printed on the top panel of the decoder. The only snag being the omission of ARQ/FEC modes. Maybe this will be changed on later models.

If you buy the EasyReader as a stand-alone decoder you will need to supply your own power unit and video monitor. However, the requirements were easily met as the video output was a standard 1V composite signal with a 50Ω source. If you want to use a TV for the display Momentum can supply an optional u.h.f. modulator. You can also set the video drive to give an 80- or 40-line display. The 40-line display is particularly useful when using a TV as the definition is not usually good enough for 80-lines. Power requirements were also easy to match, needing just 9-13V d.c. at around 600mA.

Although this completes the basic requirements for a decoding system many listeners like to be able to printout some of the received messages. The EasyReader supports this with the provision of a standard IBM parallel printer port, using a 25-way D connector. You can also have an optional serial port that can be used to send the decoded text to a serial printer or a computer for storage and further processing.

On the Air

With all the connections complete and a little familiarisation with the manual, I was ready to start decoding. For the review, I connected the EasyReader to the line output of my Lowe HF-150 receiver. One of the great advantages of being able to use the line-out as opposed to the speaker jack is that it in no way effects the operation of the receiver. If you use the speaker jack you end up having to use an external speaker. In fact, the Easy Reader was very flexible in terms of input signal range as it could handle signals between 200mV and 10V peak-to-peak. This equates to around 70mV to 3.5V r.m.s.

When first switched-on and, after choosing 40- or 80-line display, you are presented with the main menu that facilitates selection of the desired receive mode. The selection is made by using the keypad to enter a two-digit code corresponding to the required mode. The screen then clears to show a status bar at the top displaying all the important information.

Perhaps one of the most important elements is the tuning indicator as accurate tuning is absolutely essential for error free decoding. The EasyReader's tuning indicator comprised a vertical arrow that moved between two vertical bars as the receiver was tuned across the signal. Although very simple, it proved to be a very effective indicator with a clean, fast response time.

The rest of the status bar is used to show the mode, baud rate, auto/manual operation, inversion, letter/figure shift, printer and software version.

Starting with RTTY

Let's start with a look at RTTY reception, as many of the features carry through from one mode to another. Although

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RC818 (SSP £219.99)

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Comes complete with a mains adaptor.

• 5 Tuning methods – direct frequency keying, auto-scan, manual scan, memory recall and rotary • 45 memory presets • SW metre bands from 120m to 11m • BFO control for reception of CW and SSB • FM stereo on headphones • AM wide/narrow filter. • Waveband coverage: LW 150-519kHz; MW 520-1620kHz; SW 1.621-29.999MHz; FM 87.5-108 MHz • Radio standby function • Pre-programmable radio to tape recording • LCD display • Signal strength and battery condition indicator • Sleep timer • Safety lock switches • Adjustable RF gain • 700 mW Power output

R817 (SSP £189.99)

Multi-band Digital Preset Stereo World Radio

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

R808 (SSP £119.99)

Multi-band Digital Preset Stereo World Radio

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

R621 (SSP £69.99)

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

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

R101 (SSP £59.99)

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

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

Roberts radios are now available from all branches of Lowe Electronics

See our main advertisement for full contact details

LOWE

Lowe Electronics Ltd

Chesterfield Road, Matlock, Derbyshire DE4 5LE

Tel. 0629 580800 Fax. 0629 580020

SPECIFICATION

Demodulator:	Baudot (ITA2)	45/50/75 baud;
	a.f.s.k. shifts	150-850Hz;
	ASCII	110/200 baud;
	c.w.	2 to 99w.p.m.;
	ARQ/FEC	CCIR476-3 Mode A and B;
	code plus literal;	
	100 baud	150-850Hz shift
Audio Input:	200mV to 10V p-p (5kΩ)	
Video Out:	Composite video 1V 50Ω	
	80/40 characters per line and 50/60Hz	
Expansion:	MCL COMNET socket	
Options:	RS232C serial interface;	
	u.h.f. modulator	
Environment:	10° to 40°C, 5% to 95% humidity	
Power Supply:	9-13V d.c. at 600mA	
Dimensions:	292 (wide) x 148 (deep) x 50mm (high)	
Weight:	1.1kg	

the EasyReader features manual selection of speed, inversion, etc., most listeners will, I'm sure, opt to use the fully automatic receive mode. When using this, the decoder beavers away working out the correct settings whilst you just wait for the decoded text to appear on the screen. This wait was extremely short as the EasyReader was very quick to lock-on to most signals. When dealing with signals that were very weak or suffering interference, I found it was usually best to change over to manual selection. Whilst checking-out the EasyReader's performance in difficult conditions the addition of an external audio filter was a great help and reduced the error rate and lock time considerably.

A key feature of the EasyReader was its Smartlock tracking system.
This takes advantage of the internal Z8 processor to handle most of the signal processing. The incoming audio signal is first tidied-up using some active filtering before being applied to the microprocessor for decoding. One of the advantages of this is that the decoder can track small amounts of drift in either the signal or the receiver.

The next most popular mode for utility listeners is Morse code, primarily because it is so plentiful on the h.f. bands. Here again you have the option of manual or automatic operation though there is rarely any need to use the manual mode.

The tuning indicator was slightly different when using Morse code and comprised a square block that flashed in synchronisation with the incoming signal. All you had to do was adjust the receiver's tuning to achieve this synchronisation. This proved to be very easy as the tuning block reacted very quickly to the signal. Decoding Morse transmissions is notoriously difficult as the software has to be able to handle widely varying qualities of transmission from the inexperienced amateur to perfect machine Morse. The EasyReader proved itself to be very competent with a remarkably quick lock period. This meant you could tune around a selection of signals of different speeds and quickly determine which one you wanted to monitor.

For those interested in maritime transmissions, the provision of ARQ and FEC modes is a great boon as they are used extensively for ship-to-shore communications. ARQ is the error correcting system used for communications between two stations and is often to be found carrying Telex traffic. Decoding these transmissions with the EasyReader involved a little more work on the part of the operator. Once a signal had been selected for decoding and roughly tuned-in you had to press the Smartlock button to start the lock process. Provided the signal was reasonably clear of interference the EasyReader locked-on to most signals very quickly indeed. Once locked, it provided clear error free decoding.

It was also able to cope reasonably well with fast changes of transmission direction. The tuning indicator operated in a slightly different manner whilst in ARQ mode and was used to indicate the state of lock. When first tuning around, the indicator showed the usual up arrow. However, this changed to an X (cross) when lock is achieved and subsequently an * (asterisk) to show that data is being received. You also had the option to show the transmission in what is called literal mode. In this case the ARQ control characters were displayed along with the received text. This can be useful for the technically minded to examine exactly how the link is performing.

The FEC broadcast mode was equally competent though it did need to receive idles in order to lock to the signal. This is a common phenomena with FEC decoding systems. ■

Abbreviations

%	per cent
a.c.	alternating current
a.f.s.k.	audio frequency shift keying
ARQ	Automatic Repeat Request
c.w.	continuous wave (Morse)
d.c.	direct current
FEC	Forward Error Correcting
Hz	hertz
in	inch
kg	kilogrammes
kΩ	kilohms
mA	milliamperes
mm	millimetres
mV	millivolts
p-p	peak to peak
r.m.s.	root mean square
TV	television
u.h.f.	ultra high frequency
V	volts
w.p.m.	words per minute
°C	degrees Celsius
Ω	ohms

Summary

Although the MCL-1100 EasyReader Starter Pack is clearly targeted at the new utility listener, its performance and range of receive modes will also make it attractive to experienced listeners. The main area for improvement lays with the user manual. I'm sure some additional effort here would be a great help to the newcomer and maybe even save Momentum a few phone calls.

Overall, the MCL1100 EasyReader and starterpack proved to be a very compact and effective decoding system. The current price for the complete starter pack is £329.95, if you already have a power supply and display system, the basic MCL1100 EasyReader costs £255.00. All prices are inclusive of VAT, but not postage. My thanks to Bob Taylor of **Momentum Limited, 6 & 7 Clarkson Place, Dudley Road, Lye, Stourbridge, West Midlands DY9 8EL. Tel: (0384) 896879** for the loan of the review model.

SHORT WAVE MAGAZINE
PCB SERVICE

Printed circuit boards for *SWM* constructional projects are 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.

Board	Title of Article	Issue	Price £
SR010	A Green Bandspread Dipper	Jun 93	5.75
SR008	Experimental VHF Receiver	Jun 91	5.81
SR007	VLF Receiver	Dec 90	5.24
SR006	Medium Wave AM Radio	Nov 90	3.34
SR005	R210 Converter	July/August 90	6.87
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

Orders and remittances should be sent to: **Badger Boards, 87 Blackberry Lane, Four Oaks, Sutton Coldfield B78 4JF. Tel: 021-353 9326,** marking your envelope **SWM PCB Service**. Cheques should be crossed and made payable to **Badger Boards.** When ordering please state the Article Title as well as the Board Number. Please print your name and address clearly in block capitals and do not enclose any other correspondence with your order.

Please allow 28 days for delivery. Only the p.c.b.s listed here are available.

Badger Boards, 87 Blackberry Lane, Four Oaks, Sutton Coldfield B78 4JF.
Tel: 021-353 9326

news EXTRA

Radio Romania

Radio Romania International broadcasts daily, news, international commentries, reviews of the Romanian press, reports on current events and music. The latest schedule for Radio Romania is as follows:

All times are given in UTC and frequencies in kHz.

For Europe

1300-1400	17720, 15365, 11940
1900-2000	11940, 11810, 9750, 9690
2100-2200	11940, 9750, 9690, 7225

For North America

0200-0300	11940, 11830, 9570, 9510, 6155
0400-0430	11940, 11830, 9570, 9510, 6155

For the Pacific Area

0645-0715	17805, 17720, 15335, 15250, 11775

For Asia

1430-1530	17720, 15335, 11775

For Africa

0530-0600	17790, 15380, 15340, 11810
1730-1800	17805, 15365, 15340, 11830

For Europe

0632-0641	11810, 9665, 9550, 7225

Waters & Stanton Open Day

Waters & Stanton Electronics are holding their fourth annual Open Day on Sunday 22 May 1994, at 22 Main Road, Hockley, Essex. Doors open at 10am.

The Open Day is your chance to see how a radio dealer operates and Waters & Stanton say it will be the biggest yet. A vast number of discountinued lines, reconditioned goods and samples to be sold off on the day have been accumulated.

Free food and drink will be available as will free parking behind the building and all Hockley car parks are free on Sundays. Alternatively the showroom is a five minute walk from Hockley station on the Liverpool Street/Southend Victoria line.

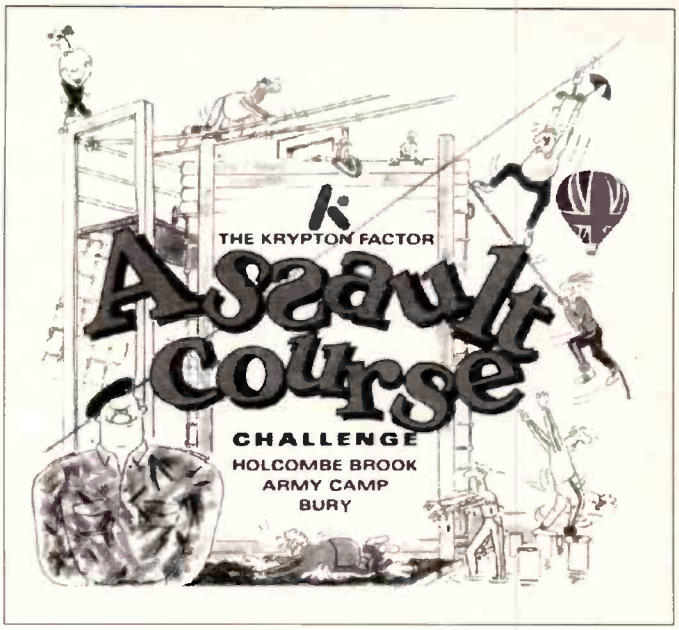
The advice from Waters & Stanton is get there early to increase your chances of picking up a bargain and enjoying what promises to be a great social occasion.

Late News - Trident Receivers

Nevada Communications of Portsmouth have sent *SWM* advance news of a new range of scanners they will be launching during May. The new range of scanning receivers will be carried under Nevada's own brand name of **Trident.**

Initially there will be three models introduced - the TR980, TR1200 and TR2400.There is already a fourth in the pipeline, details of which are expected to be announced in September. Prices for the Trident range of scanners will start at £249 for the TR980 and will go up to £369 for the TR2400.

Short Wave Magazine hopes to be in a position to bring you technical specifications, photos and more details on the new Trident scanners next month. More information can be obtained direct from **Nevada Communications, 189 London Road, North End, Portsmouth, PO2 9AE. Tel: (0705) 690626.**



Special Event Assault Course

The Manchester and Bury Contest Group are operating a special event station in conjunction with the Childrens' Hospitals Appeal over the weekend of August 27, 28th and 29th 1994 at the Holcombe Brook Army Camp, Bury.

The Manchester and Bury Contest Group are hoping to entice teams of radio amateurs and short wave listeners to take part in the Krypton Factor assault course challenge. They would also like Novices, under 16, from the North West area to help with the operating of the special event station.

The sponsored special event station callsigns, to listen out for will be GB2CHA and GB4CHA.

For more information on how to take part in the Childrens' Hospital Appeal contact the Krypton Factor Hotline on 061-741 5098.

New Zealand News

The latest frequency schedule from Radio New Zealand is as follows. This schedule is effective from 1900UTC April 30 to October 1 1994:

Frequency kHz	Time UTC	Comments
6100	1650-1849	Mon-Fri
11735	1850-2136	Daily
15115	2137-0458	Daily
11900	0459-0758	Daily
6100	0759-1206	Daily
6100	1207-1649	Occasional Use for Sports Broadcasts

Radio New Zealand welcome letters and DX reception reports from listeners. All DX reception reports should contain detailed programme information for verification and should be accompanied by three IRCs if a QSL card is required.

All enquiries, letters etc., should be sent to **Radio New Zealand, PO Box 2092, Wellington, New Zealand.**

Sub-miniature Encoder

The Hampshire based company Diplomat Communications Systems has developed a sub-miniature CTCSS encoder. The CTCSS encoder has been specifically designed for the Philips PRM80 mobile radio.

The Diplomat encoder plugs directly into the D socket on the PRM80 and modulates the transmitter audio with a CTCSS tone. This facility allows both trunk and p.m.r. operators to add CTCSS to their system and as the module is factory set and plugs into the external facilty socket it can be fitted without the aid of tools or test equipment.

For more information on the CTCSS encoder contact **Diplomat Communication Systems Limited, Unit 3 Summerlea Court, Herriard, Basingstoke, Hants RG25 2PN. Tel: (0256) 381656.**

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

Propagation

In January, **Ron Livesey** (Edinburgh), using a 2.5in refractor telescope and a 4.0in projection screen, located two active areas on the sun's disc on days 1, 7, 16, 19, 21, 23 and 28 and three on the 4th and 27th.

'Dead' Band

"Things will pick up eventually, I dare say!," said **Ted Waring** (Bristol) after a couple of quiet months of beacon watching on 28MHz. In addition, Ted reports counting three sunspots on his solar projection screen on February 5 and two on the 21st. Despite cloud cover on many days, **Patrick Moore** (Selsey), was able to see the sun on the 17th and kindly sent a drawing of the large spot group that he projected at 0920, **Fig.1**. Now readers, take a look at the 28MHz beacon chart, **Fig. 2**, I wonder, were those spots that Ted saw on the 5th responsible for that almost 'blank' area from the 7th to the 14th? And, as the band began to pick up on the 15th, perhaps a flare from the group that Patrick saw on the 17th 'closed' it again on the 18th, because our beacon observers found it 'dead' throughout that day. Further evidence of disturbance came from Ron Livesey, the auroral coordinator for the British Astronomical Association, who said that "both **Dr Tom Rackham** (Goostrey) and **Tony Hopwood** (Upton-on-Severn) reported a sudden drop in h.f. propagation from the 6th, followed by low levels to the 15th and then a slow recovery to the end of the month. There was a local sudden rise in propagation on the 21st."

Auroral

Ron Livesey received reports of visual aurora described as 'glow or patch' for the overnight period on January 12/13, 13/14 and 15/16, 'quiet arc or band' on 12/13, 14/15, 16/17 and 21/22, 'rayed or arc band' on 1/2, 'ray bundles or veils' on 11/12 and 'active movement, flaming flickering or pulsating' on 11/12, 19/20, from observers in Canada, North-America and Scotland. In addition, Tony Hopwood reported auroral tone on h.f. radio signals on the 11th and 15th. Active auroral storms were reported by about 14 observers ranging from Southern and Northern England, Wales and Scotland to Canada during the overnight periods on February 5/6 and 6/7.

Magnetic

The various magnetometers used by **John Fletcher** (Mt. Tuffley), Tony Hopwood, Ron Livesey, **Karl Lewis** (Saltash), **David Pettitt** (Carlisle) and Tom Rackham, between them, recorded strong disturbances to the earth's magnetic field on January 1, 2, 11, 12, 13 and 15 and lesser events on days 5, 8, 14, 17, 18, 19, 20, 21, 24, 26, 28, 29, 30 and 31. In Ron Livesey's February report to the BAA he says that the magnetic storm on the 13th "temporarily incapacitated the Canadian communications satellite ANIK E-1 and permanently disabled ANIK E-2." That is a great pity Ron, because so much work goes into the design, manufacture and launching of these satellites before they start to provide valuable scientific information.

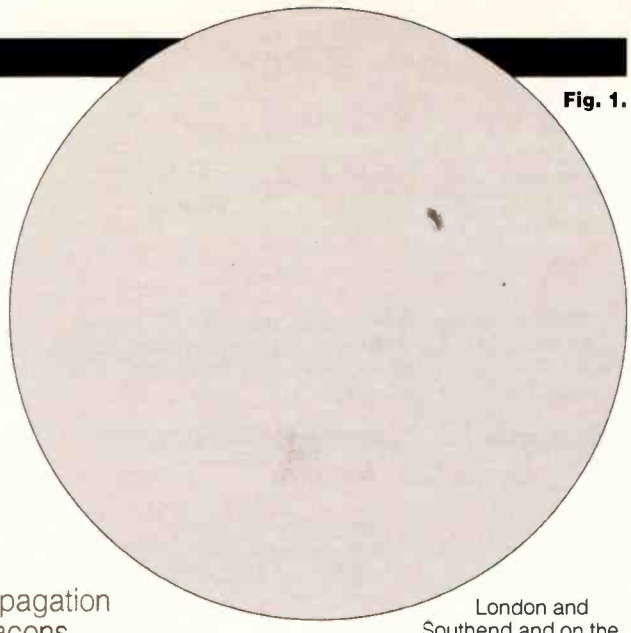


Fig. 1.

Propagation Beacons

As usual, my thanks are due to **Gordon Foote** (Bristol), **Cmdr Henry Hatfield** (Sevenoaks), **Ian McDermid** (Comrie), **Ted Owen** (Maldon), **Ted Waring, Ern Warwick** (Plymouth) and **Ford White** (Portland) for their 28MHz beacon logs from which I compiled the chart in **Fig. 2**. Ford White and Ern Warwick added AB8Z, on 28.241MHz, to our list this time.

Tropospheric Band II

During February, **Arthur Grainger** (Carstairs Junction), using a Pioneer receiver and a five element beam on a rotator, found that the month's "very changeable" weather produced "some very good lifts with signals coming in mainly from North East, South East and the Midlands of England." While the night of the 2nd was very cold and frosty, Arthur logged signals in the early hours from broadcast stations in London and Southend and on the 3rd came Radios Derby and Leicester. However, his best came during an opening which began on the 18th when he again heard Radio Leicester and added 'Minster FM' (York) and 'Metro FM' (Newcastle). The signal from 'Metro' was the strongest Arthur had heard them to date and he reports that the station was "coming through in stereo, with an 'S4', with very little noise and virtually no interference from 'Forth FM'." The atmospheric pressure, here in the South, was high and/or falling on the days Arthur refers to.

More precise details of the changes in atmospheric pressure, for the period January 26 to February 25, can be seen in my 'DXTV Round-up' column elsewhere in this issue.

Fig. 2: 28MHz beacon chart.

	January						February																					
Beacon	26	7	8	9	30	1	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5
AB8Z		x	x	x	x																										
DF0THD																						x	x								
DK0TEN					x														x			x	x								
DL0IGI					x						x										x	x	x								
EA3JA	x	x	x		x					x	x		x								x						x	x			x
HG5GEW					x																										
IY4M					x													x			x										
KA1NSV	x				x																										
KB9DJA	x	x		x	x			x																							
KD4EC				x		x		x			x																				
KF4MS		x		x				x			x																				
LA5TEN		x																													
LU4XS								x																							
NX20	x			x	x			x																							
OH2TEN	x	x		x						x																	x	x	x	x	
OH9TEN	x																														x
SK5TEN	x	x								x			x										x								x
SV3AQR	x	x		x	x			x	x	x	x																x		x	x	x
S55ZRS	x					x																x									
VK6RWA				x	x		x																		x					x	
WA4SLT		x						x																							
WB4WOR		x																													
WC8E	x	x		x	x			x																							
W3VD	x	x	x	x	x			x																							
WJ9Z		x		x																											
W9UXO		x		x																											
ZS1J		x	x	x	x	x		x			x															x	x		x	x	x
ZS1LA			x	x	x	x	x		x		x	x													x	x	x		x	x	x
ZS5VHF		x	x	x	x	x					x																				
ZS6PW	x	x	x	x	x	x				x																				x	
Z21ANB		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

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

Satellite TV News

The Latest from the Clarke Belt

Unfortunately the planners in the UK seem to have no interest in the plight of the satellite (and radio) enthusiast. With the official maximum dish size allowed being 700mm and 900mm in the south and north UK respectively, it makes envious reading to scan the satellite dish planning regulations sent in by reader **George Gaskin** (Gibraltar) and what you can erect on the Rock.

Paul Origo, the Town Planner, is an enlightened soul for he has allowed two dishes per house as a norm when applying for planning permission and up to 3m diamater each! On buildings less than 15m high, the dishes must be screened and all ground level dishes must have 'appropriate screening'. Any 15m+ high building must have the dishes at roof level. The only restrictions seem to be dishes erected in the Old Town and other sensitive environmental areas.

Compare this attitude to **Ian Waller** in Lincoln that had in his garden a 3.7m dish for some two years, the fence blew down, it was seen and council action was taken, enforcement action followed, Ian landed in court and now has dismantled the system.

The Jason Project, an educational expedition into Belize, Central American region was supported with live video hookups via the PanAmSat PAS-1 satellite at 45°W, linking back into the UK and the main centre at Liverpool's Maritime Museum. Satellite zapper **John Locker** popped in to find out more - a few questions to the organisers clearly revealed John a satellite expert, he was 'roped in' to assist with the UK end of the project and gave considerable help. He was instrumental in gaining a model satellite and information from PanAmSat and generally projected an excellent image for the UK satellite enthusiast.

The Jason Project ran from the end of February until March 12 using a compressed video circuit into the UK, Maxat providing the downlink receiving capability. Jason Project (sponsored by Barclay Life) featured several UK receive-only terminals across the UK which were open to public view though unfortunately admission was typically £3 each.

Several readers report that CNN has appeared on Eutelsat I F4 @ 25°E, 11.092GHz though the east spot that is very weak even on my 1.5m dish. It's thought that CNN have taken up this downlink following the demise of Turksat 1 that never made the sky when Ariane V63 failed taking Turksat and the new Eutelsat II F5. CNN had committed a Turkish feed for cable systems via Turksat and now have opted for Eutelsat pending the launch of Turksat 2 later this year.

John Womersley (Bradford) is well into sports viewing using his 800mm dish with 1.3dB noise Continental LNBs for FSS and Telecom bands. His unique antenna rotation system operates via a Mini windscreen wiper motor! A modified Trac BSB Ferguson receiver completes the system and results are excellent. John's listed a few sporty type satellite feeds - Sunday Italian football check out Eut.II F3 16°E 11.164GHz horizontal, audio 6.6MHz from about 1300 onwards. Eut. II F1 @ 13°E is more active, listed are Premier football/Ice Hockey at 11.678GHz horizontal 1300 onwards, Belgian football Sundays 11.596GHz horizontal 1500 onwards, Telecom 1C 3°E with many clear PAL feeds for German TV at 12.655, 12.568 & 12.606GHz - the latter horizontal - with many tea-time football feeds on Saturdays.

The mystery of SUN TV, an Indian TV service beaming from 125/128°E is thought to be APStar 1 rather than a Russian Statsionar bird, this from **Alan Smith** in Thailand. He kept in touch with the Lillehammer Winter Olympics as the C Band Intelsat V F5 at 66°E was 'lit up like a Christmas tree'! Unlike Europe, all reception at this time is in C Band with little if any Ku band signals active. The situation will, however, change with several Ku Band downlinking satellites launching during the next 9 months.

Back with Eutelsat I F4 at 25°E and **Fred Hartley**, Hayes reckons this bird has taken on a new lease of life - apart from the CNN feed as above and the daily SIS racing feeds on 11.489, 11.657GHz vertical. Fred advises checking out 10.969, 11.133 and 11.170GHz horizontal for a variety of sports, the dogs, pony trotting, etc.

On February 28, I monitored via Eutelsat II F3 an unusual video sighting, passengers disembarking from and being ferried ashore to a rocky cove on a barren island. It then transpires that the remote island is Lundy Island off of the north-west Devon coast and the passengers a 'give up smoking' group. The 'Nicontinell' project places the enthusing non-smokers on remote outposts such as Lundy for 10 days where the air is fresh and no cigs can be bought. The live pictures + VTR playoffs were fed via Eutelsat 16°E - I assume via the wind powered SNG equipment ('UKI-31 LUNDY') and seen later that same week in ITV's breakfast show.

New Product News

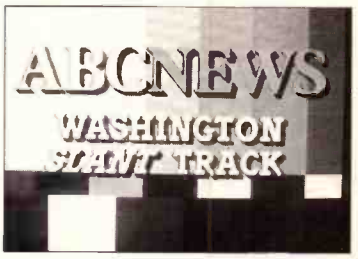
NKM, well known in Europe, have just released a u.h.f. threshold extension board that will internally fit most receivers relatively simply. One connection runs to the tuner i.f. output SAW filter and another to the first video amplifier stages. A 0-12V switching voltage actuates the circuit (such as with the i.f. bandwidth filtering if switchable) though a small toggle switch will also suffice. In circuit the static threshold is reduced to 4dB from the typical 6-7dB ofmodern receivers. Called a 480MHz upgrade demodulator, it costs DM298.00 (incl. pp and 15% EC VAT).

The Digital Picture Processor (DORSY) works on a frame store basis whereby picture frames are progressively stored, noise impairment and dropouts (sparklies) are reconstructed from stored information thus restoring greatly improved picture images during periods of inferior or weak reception. This will effectively create a threshold quality of typically 3dB. Weak signals also suffer from poor synchronisation and Dorsy will correct such problems by generating internal sync pulses to give hard lock. Dorsy is an upmarket unit and this is reflected in the price - DM1298 though for a short period it's on offer at DM1148. NKM live at PO Box 1705, 79507 LORRACH, Germany (Tel: 07621 18571 or fax 07621 18840).

Satellite News

Good news for news zappers, ITN have taken a fulltime lease on the Eut. I F4 bird at 25 East to provide easy access for their news units across the UK, Europe and the Middle East. Check out 11.011GHz horizontal for their SNG offerings though the mature craft is in an inclined orbit and signal levels will vary, small dishes under 90cms may have extreme difficulty in resolving worthwhile signals - even on a 1.5m prime focus signals can be exceedingly weak when at the extremes of inclination.

China Entertainment Television broadcast (CETV) will operate a 24 hour satellite born TV service into mainland China during 1995 with a 50/50 mix of local to imported programming. The Mandarin language service will open via the new Apstar satellite though it's hoped to expand to 4 services by the year 2000. Ted Turner of CNN fame is to rival the Star TV service out of Hong Kong with an Asian version of the Turner cartoon/old film network (TNT) using the Apstar 2 bird. Coverage will be greater than the AsiaSat (Star TV) service covering down to Australasia, Japan and into Saudi. Meanwhile in India



1) John Locker asks 'What is a slant track'? A caption seen via Intelsat K @ 21° West

2) The former DBS/BSB bird Marco Polo 1 was sold by BSkyB to Sweden, moved to 5.2° East, name changed to SIRIUS, and now is transmitting into Scandinavia. The bird has been slanted and provides a tight spotted footprint into that region, signal levels in the UK are small as the example shows, a large dish is needed for a useable signal.

3) A classic test card of the old school, in monochrome as transmitted from Intelsat 601 @ 27° West (NOT as shown on the test card!) during a period of encryption problems.

4) A beautiful 16/9 test card via TV-SAT at 19° West, received by Berry Habekotte, Holland

5) Home grown stuff this, a Central TV (UK) satellite feed from Banbury via Eutelsat I F4 25° East for their local political programme *'It's your Shout'*.

Doordarshan has reduced the 5 satellite channels recently opened to 3 channels, 'One' being the national service, 'Two' the Delhi channel with involvement from 10 other cities involved and 'Three' a channel aimed at the more mature viewers and an education strand.

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

Amateur Bands Round-up

Yesterday I finally got around to mending my valve milli-voltmeter; a wire-wound resistor had quit, removing h.t. volts from various places. However, the interesting point from my point of view was just this: With a 2m length of wire poked into the input connector, the meter was 'pinned' on the two lowest ranges. It was being hit by all the signals picked up within its range by a 2m wire; nearly a volt, peak-to-peak! No wonder the receiver front-end grunt a bit when shown 7MHz on a long wire or dipole, is it?

Different subject now. Lots of amateurs and listeners use battery power extensively. Using dry cells, the power from a battery costs about **one hundred** times the same quantity of power drawn from the mains socket. Thus, the use of rechargeable cells can save a lot of money in the long run, if the owner, never leaves a flat battery but recharges it immediately, never over charges it and always stops a discharge instantly when the terminal volts on load reaches the specified low value.

Nothing is perfect, of course, so a cell needs around 30% more charge putting in each time than you can expect to get out. For the best economy though it is well worthwhile to consider building stabilised mains power supplies for all your battery equipment.

Water

Back in December, I 'had a go' in the column on the subject of waterproofing antenna/feeder connections. **Gerry Haynes** in Bushey Heath says he swears by an American heat-shrink sleeving called 'Splice-Pak' that has an adhesive on its inside. Certainly heat-shrink sleeving is the answer to in-line joints, but, alas, the SK-239 socket into which the PL-259 is connected is also not watertight. In particular, I was driving at the centre joint of a dipole for which nothing seems to be available for a home-brewer.

Occasionally one can see heat-shrink sleeving at rallies - I bought a big lot a couple of years ago at Llandudno. Don't forget, if you use this stuff, to cover it over with ordinary tape to keep out ultra-violet light.

A letter from **Frank Lennon** of Hyde, Cheshire, notes that he bought an antenna tuner at the Manchester Great Northern Rally, to go along with his HF-150. It helped to produce a nice crop of DX covering Top Band up to 21MHz, and all the continents. On a totally different tack, Frank mentions hearing on 21.249, a station signing 'X5EGL' from the 'Republic of Srpska.' That's not one to waste a card on; just another of the **umpteen** assorted variations in the independence theme on the other side of what was once the Iron Curtain. A few are now recognised countries with representation at UN, but most seem not to quite know what they are. The form seems to be that country A splits into B and C, whereupon half of C calls itself D and says it wants to be 're-united with B'. The mind boggles!

TV Time base Noise!

A first letter from **Paul Logan** in Lisnaskea who operates between the 3.5 and 28MHz bands. On the latter, he caught openings to the Mediterranean by way of 9H4B, 9H1DE, SV9ANK for Crete, SV5TS on Rhodes, plus ZS6BBP, 5X5YE and AP2JZB; down on 3.5MHz Paul found lots of East Coast Ws, V44KM, P40J, 9K2MU, PT7OO, FY5GJ, PY2BW, CN8GI, V44NK, PZ1EE, HH7PV and YV5NCJ. 7MHz was the source for TA1BM and P49V, on 18MHz I note PJ8AD, JW5NM, 7X2JF, 4L1FL (Tbilisi) 7X2DE and 8P9DX. 14MHz was given a miss but on 21MHz Paul found YI1MH, VE3ODC/V2, C53HG, ZA1E, 7X2WAK, 4X1MO, 5T5MS, OD5ZZ, X5EGL claiming to be 'Serbian Bosnia' CM6RJ, 9K2ZC, W6JAH/6Y5, EX0A, OD5IM, 5B4ES, YC2EWZ, 8P6QM, AP2JZB, ZS6TIM, 4S7PE, J52AG and FR5KH.

Paul has a problem with the noises from TV line time-bases. This arises from the shape of the waveform needed, and also the high power requirement. Often the field around the line transformer cuts the mains lead and so the noise is shoved into the mains. Personally, I have the surplus length of each and every mains lead in the station (and the TV/video leads too) either wound on to a ferrite ring (TV and transceiver) or at least coiled up tightly at the equipment end. Likewise any surplus coaxial cable is coiled. It all seems to have reduced the problem - but the best way is to switch the TV off! Is there anyone out there with useful ideas on this that they would share with us?

Mark Borthwick tried out Top Band recently from Hawick; Lots of Europeans! For the **real** DX on this band, it is a matter of early mornings for the Americas, study of the 'grey line' and plenty of c.w. night-owling. Perhaps it was Top Band they thought of back in the Twenties when the Yanks invented the 'Order of Boiled Owls' for DX operators! 3.5MHz was a bigger hit, with 9K2MU, A92BE, 4Z4UR, EA9KB, 5B4ADA, GU2FRO (Sark) for a rare bit of the UK, KO1F and W3YVV. At 7MHz I see 4X6UO, SU2MT, HZ1AB, ZL2APW, SV9BGH, 4U1ITU, GB2PLY, GB2IWM and GB2NCL. On Twenty, there's YBs, 4X1CG, 4Z85TA for 85 years of Tel Aviv, EA9KB, A71BH, KB5WZG/AM 6100m above the Adriatic, OD5US, VU2WAP, VU2DK, EP2MKN, 9K2YA, 5B4KH, ZS5JR, CN2GF, 3Y0PI - the big Peter I Island show, JAs, VEs, VAs, VK, ZLs, a fine assortment of Ws and, of course, the smaller fry. For 18MHz again a fine crop, with possibly YS1RRD as pick of the bunch. Finally, 21MHz where again Mark was able to log just about everything going.

John Collins in Birmingham 10 found conditions pretty poor on the higher bands, but he did hear and telephone to our local Radio Maldwyn; John may not have realised but he was then probably talking to a radio amateur! On a different subject, John spotted that the two Yugoslav amateurs shown on a recent TV *Newsnight* were on a different frequency from that mentioned and wonders why. Probably a genuine error. After all, Fleet Street men will tell you that the paper's name on the masthead and the date are facts, but all else is fiction - and the same goes for the TV news!

Packet and the Listener

Further to Gerald Bramwell's recent question, we have a letter from G4EAN, Hon Sec of BARTG. **Ian Brothwell** says it **is** possible to copy packet; Ian Brothwell notes that the same bit of information may be picked up several times until the packet link verifies correct reception, but that aside there should be no serious problem. He adds a little 'puff' for British Amateur Radio Teledata Group, which welcomes all listeners to the data modes; for details, contact Peter Adams G6LZB, 464 Whippendell Road, Watford, Herts WD1 7PT (0923) 220774.

Gerald Bramwell himself comes next, from Swinton; and he notes that he has been a listener for forty years and never known such variable conditions. I tend to agree, though to be sure time does tend to leave rose-coloured images in memory! Looking at the c.w. first, there's GW3YDX on Top Band and UT8NA on 7MHz. 14MHz gave 9A1A and HG5A, while on 18MHz UT5LB and VE1CZR were copied, leaving 24MHz for G0CMM and RA6AU.

Turning to the RTTY, we start on 3.5MHz where a dozen Europeans were decoded, while on 7MHz we find Asia and Africa added. Turning to 14MHz perhaps the most notable station was G0RBT/MM, but for the rest it was Europeans again. On 21MHz the mode accounted for ZD8M, Ws, HH2PK, PY1FO, 9H1ET, SV9CAG and 24MHz saw off ER3ED. We now look at the sideband crop, and here on Top Band we find Europe and some Asian Russian station. 3.5MHz was oddly enough all Europeans, with IS0DWB as the pick. On 7MHz it was Europeans plus UT8NA and C31LU for Andorra. Even 14MHz wasn't very good, though 9H1AL and TA1ZA, ZB2JI weren't to be sneezed at. JW5NM came across on 18MHz while 21MHz added 9H4CM. TA1BE, 9H1MF and JW0G starred on 24MHz; nothing was mentioned for 28MHz.

A new listener and contributor is **Hugh McMahon** from Monkstown Co Dublin who hopes to have his own ticket ere long, so for the moment he receives on a Kenwood TS-950SDX the signals picked up by his Isoloop antenna in the attic. At 1500UTC on February 13, Hugh found a pile up on 14.205MHz and a fat RS59 JW8UHA causing it. Yes Hugh, Svalbard is normally quite unusual, but there seems to have been much activity there of late for some reason.

Scottish Expedition Group

Just too late to catch me last time, GM2TW writes to mention the group's activities this year. June 10-11-12 sees them at Hermitage Castle, Borders. August 5-6-7 is set aside for Balmacara in Wester Ross, and in October they will be up at Dunnet Head, which lies north of John o' Groats, and about 16km west of that point. The gang also operate GB2NCL every Sunday from North Carr lightship, which can be visited given around a week's notice. For more details, contact, George Leishman GM2TW at his address in the 1994 RSGB *Call Book*.

Cards Again!

My comments on this subject brought a reply from someone as well qualified as anyone to know: G3DRN who has been involved with the Bureau for about forty years, either as a sub-manager or for thirteen years running the RSGB Bureau from home. Ted says, "of course there is no way of knowing whether a Bureau is behind with the work or the amateur is naturally long-winded" - but I know that had Ted not been very sharp in dealing with them, he would have been out of house and home for want of space to put 'em. Ted goes on, "I have lost count of the number of cards plus IRCs/dollar bills that have gone missing, purloined either by dishonest postal workers or by amateurs". Summing up, Ted is quite clear that he sees NO reason for QSL Managers except in places where there is poor or non-existent bureau or postal service.

So, there you are for another month. Send your mail as usual to reach me by the start of the month at Box 4, Newtown, SY16 1ZZ. The more the merrier!

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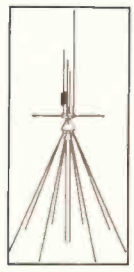

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TRANSMITTER KITS – expandible into transceivers with matching receiver and VFO kits			
CTX	40 or 80M Band versions very popular QRP TX	£15.50	£22.90
MTX20	20M 10W CW TX - work the World!	£29.90	£39.90
AT160	Dual Band 80 & 160M AM/DSB/CW .5 to 10W PEP	£39.90	£62.90
HTX10	10 & 15M SSB/CW Exciter (matching PA etc. available)	£49.90	£79.90

AA2 150kHz to 30MHz ACTIVE ANTENNA

The **HOWES AA2** is the active antenna for general coverage HF reception. Broad-band performance that does not tail off at the higher frequencies. The neat compact answer for those with limited space, holiday use, mobile operation etc. Two selectable gain settings, local or coax powering (12 to 14V). Good strong signal performance, IP3 +38dBm. Easy to build, and much liked by customers!

AA2 Kit: £8.90 **Assembled PCB Module: £13.90**

AA4 ACTIVE ANTENNA FOR SCANNERS

Covers 25 to 1300MHz. Broad-band performance in a neat, compact package. Just over 16 inches long – the answer to space/visibility problems for home or portable use. A low noise microwave IC gives good performance with a low parts count, making construction straightforward. Excellent performance in a small space!

AA4 Kit: £19.90 **Assembled PCB Modules: £27.90**

AB118 AIR-BAND ACTIVE ANTENNA

Optimised for the VHF air-band, 118 to 137MHz. Excellent long range reception with omni-directional coverage using an end-fed half-wave antenna element with low noise pre-amplifier, band-pass filter and switchable 10dB attenuator. Fits standard 1.5 inch plastic water pipe for easy weather-proof installation, or use it "naked" in the loft. Should transform your air-band reception if you are still using a general purpose antenna!

AB118 Kit: £18.80 **Assembled PCB modules: £25.90**

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DUAL BANDWIDTH AF FILTER: £29.80

• Reduce noise and inteference! • Sharp SSB/Speech filter with faster roll-off than IF crystal filters! • 300Hz bandwidth CW filter • Printed and punched front panel • All aluminium case • Simply connects between radio and external 'speaker or 'phones • Suits all general coverage receivers and transceivers • Excellent receiver upgrade!

ASL5 Filter Kit (£15.90) + HA50R Hardware (£13.90) = £29.80

PLEASE ADD £1.50 P&P for kits or £4.00 P&P if ordering hardware.

HOWES KITS 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 a good size SAE for our **new (and bigger) free catalogue** and specific product data sheets. We have lots more kits in the range! Delivery is normally within seven days.

73 from Dave G4KQH, Technical Manager.

THE MAGNETIC LONGWIRE BALUN

SUCCESSFUL LISTENING STARTS HERE...

All the experts agree - the secret of successful listening starts at the antenna. Skimp on the antenna and you might as well not bother! For years many of us struggled with longwires and ATUs, getting increasingly frustrated at the growing level of interference generated by household wiring and appliances. Then along came the MLB - half the price of my ATU but promising to do twice as much - match my longwire to 50Ohms AND cure my interference problem. So, I tried one - a week later my three ATUs were up for sale - most of the domestic interference gone and fewer knobs to twiddle!

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DXTV Round-up

Fig 1.

On 2 November 1936, the BBC began their 405-line television service, on 45MHz in Band I, from London's Alexandra Palace. Its range was about 65km and the programme time was limited.

Unfortunately, because of the outbreak of war in September 1939 the infant television was closed for the duration of hostilities. The war ended in July 1945 and television transmissions resumed on 7 June 1946. Those early post-war sets were single channel and tuned to 45MHz only. Nevertheless, as the number of viewers grew, the BBC opened five channels in Band I with strategically sited transmitters to provide an almost national coverage. Television became so popular that there were demands for a second system and the Independent Television Authority introduced their service in the mid-50s using about five channels in Band III.

Many people who wanted to watch the ITA, but could not afford one of the new 13-channel receivers, had a convertor fitted to their existing set and a Yagi array, on a cranked arm, added to the mast that supported their Band I 'H' or 'X' shaped antenna. A side view of the convertor, made by Bush for their range of Band I receivers, is shown in **Fig. 1**. The unit has two valves and was powered from the main chassis of the set. From memory, part of the Bakelite cover, top half **Fig. 1**, protruded through the back of the set and the control knob for the tuning spindle (right **Fig. 1**) was fitted on the side of the cabinet. BEWARE, if you obtain one of these convertors, do take care, because, in most cases, all the metal parts are connected to one side of the mains and could be 'LIVE' relative to earth. Those 'flaps' each side of the top cover are made from an insulated material to cover the heads of the four fixing bolts when the unit is fitted. Always use extreme caution with any mains operated equipment, especially if it's elderly and is designed to have a 'live' chassis.

Band I DXing

Although television transmissions in Bands I and III ended in the UK several years ago, many countries still use it, but with 625-lines. That's where the present day TVDXer comes in. Briefly, during the Sporadic-E season, mid-April to mid-September, with peaks in June and July, you can expect to see pictures from overseas in Band I. When there is a tropospheric opening, due to weather conditions, Continental and Scandinavian signals often appear in Band III.

"I have not seen any out of season Sporadic-E so far this year," wrote **Peter Barber** (Coventry) on March 6. I agree, Band I has been quiet Peter, but, let's hope by the time you read this we will have seen the first of the 1994 openings. However, although the stations were unidentifiable, **Simon Hamer** (New Radnor) noted a Sporadic-E disturbance at 1145 on February 13, when he found signals on Chs. E2 (48.25MHz), R1 (49.75MHz) and E3 (55.25MHz).

Reflections

For the past two years Peter Barber, using an ex-WWII Hallicrafters S27 communications receiver, in conjunction with his Citizen DD-T126 television set, to study the signals on Ch. E4 (62.25MHz) from Lopik in the Netherlands. Under normal atmospheric conditions Peter can see something from Lopik every day therefore he has a definite signal source to work with.

In order to avoid the eye strain of continually watching receiver noise on the screen, he lets the S27 do that for him. Briefly, when the vision pulses from Lopik are audible on the Hallicrafters, he then looks for a picture building up on the Citizen's screen and takes it from there. That is a sensible precaution Peter.

Of course, scanning receivers are also very useful for 'slave' monitoring too. For instance, if four buttons on a scanner were set to 48.25, 49.75, 53.75 and 55.25MHz, during the Sporadic-E season, you would be made aware of activity by the 'buzzing' of synchronising pulses coming from the loud-speaker. These are the vision frequencies of Chs. E2, R1, Ia and E3 respectively and vulnerable to disturbance by enhanced reflections in the 'E' region of the ionosphere. The corresponding sound frequencies are 53.75, 56.25, 59.25 and 60.75MHz. During a wide-spread opening you should have some fun with sound and vision signals from different countries appearing on 53.75MHz. But that's what 'DXing' is all about.

Fig 6.

Fig 2.

Fig 3.

Aircraft Reflection

Peter has been noting the effect of aircraft on the signal from Lopik. "Until approximately mid-1993, the incoming audio signals could be heard at three minute intervals - standard aircraft flight path spacings and any gaps noted would be multiples of three minutes in length," said Peter. He added, "Thereafter things slowly changed as aircraft flight patterns were altered to make better use of the previously unused air space".

Back in the 1950s, when the v.h.f. TV transmitters were few and widely spaced in the UK Peter, viewers had a lot of trouble with aircraft flying through the space between the TV transmitter and their antenna. This produced deep fading and sometimes the signal would completely disappear for a few seconds.

Power Line Interference

Early one morning, in January, the sky was clear and the full moon was setting 'behind' the power lines that cross the countryside for some distance near my home, **Fig. 2**. I include this picture to please the many readers, like Peter Barber, who are interested in astronomy and to show a typical span of 11kV lines.

Many years ago, when we used Band III, foggy or damp conditions, especially after a dry spell, caused arcing across these high voltage insulators. The result was a couple of unstable lines appearing on the screen accompanied by a 'burring' on the sound. However, after heavy rain the insulators would be clean and the trouble cleared. If the interference persisted, some viewers looked along the line with binoculars and any visible arcing was reported to the area electricity board. It amazes me how birds can sit on high voltage lines, **Fig. 3** and not get 'fried', hi.

Fig 4.

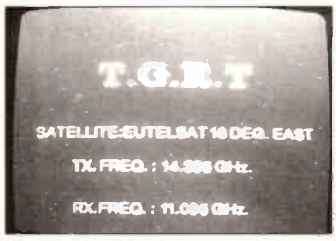


Fig 5.

DXTV continued

Fig 7.

Satellite TV

A technical information caption from Turkey, **Fig. 4** and a Moroccan test-card, **Fig. 5**, were among the strong pictures received by **Peter de Jong** (Leiden) in Holland, via Eutelsat II F3, on 19 and 20 of February 1993 respectively.

Weather

As far as the weather was concerned, February was a month of extremes, sometimes changing daily from very cold to mild, rain to snow and sun to cloud. During the month, I recorded 3.44in of rain, which was a considerable increase on the 0.28in for the same period in 1993. The heaviest fall was 1.0in on the 3rd and further amounts of 0.50, 0.59, 0.35 & 0.39in on the 7th, 11th, 15th & 23rd respectively. The figure for the 15th resulted from 'indoors melted' snow that filled my rain gage. The instrument looked like a super ice cream cornet, with a good head, hi, after an approximate 4.0in snow fall. Smaller amounts of snow fell on days 13, 14, 20 and 22 and hard frosts, with outside temperatures as low as 18 and 23°F, occurred early on the 8th, 10th, 11th, 12th, 13th, 14th, 19th & 21st.

At a Glance

In addition to my standard rain gauge that is checked and emptied around 1800 each day, I have used, for the past year, a large one, **Fig. 6**, which holds and is calibrated for 5.0in or 125mm of water. The tube is approximately 41mm in diameter and 660mm high. It is supplied with a 305mm high plastics cradle, lower area **Fig. 6**, which can be secured to a fence by two wood screws, or, as I have, fixed to a metal pole in the ground with a modified antenna clamp. Both this and my 'daily' rain gage have approximately 95mm diameter 'funnels' at the top.

From memory, this instrument cost about £13 and was advertised in either a gardening magazine or one of the TV programme magazines. Apart from last December when the total was almost 9.0in, this container can usually remain untouched throughout the month. In **Fig. 6**, the indicator, a red floating disc, is on the 0.25in line. It's ideal for watching the rain fall build up during the month.

The daily variations in atmospheric pressure for the period January 26 to February 25, seen in **Fig. 13**, were taken at noon and midnight from the recording chart on my own barograph.

Tropospheric

While a large high pressure system was moving toward the UK from Norway, around February 12, **George Garden** (Edinburgh) found a weak black and white signal from the u.h.f. transmitter at Chatton. He could read the programme title *The Beat* and, with a bit of detective work in the papers he realised that the signal was coming from Tyne Tees. On this occasion George used his JVC 610 receiver and rooftop antenna. The JVC, seen on the right of his desk, **Fig. 7**, is normally used for his portable DXing activity while his large sets are used from home.

SSTV

John Scott (Glasgow) tells me that slow-scan television pictures can be received most evenings around 1900 on 3.730MHz and, almost daily, on the 14MHz band. For the benefit of new to this mode of reception who are looking for stations, John suggests that you tune to the 'buzzing' vision pulses of the regular operators who transmit in a net on Saturdays and Sundays on 14.233MHz. That's good advice John, because experience on a strong signal helps when looking for DX.

During February John copied pictures from a station in Germany, **Fig. 8**, on the 3.5MHz band and received some interesting captions from Denmark, **Fig. 9**, England, **Fig. 10**, Russia, Sweden, **Fig. 11** and Spain, **Fig. 12**, on the 14MHz band.

Computers

The rapid advance in the design of software and hardware means that computers now play a major roll in the decoding of SSTV signals and the preparation of captions etc. To keep up with this John has upgraded his PC to a 386DX-40MHz, 128 cache and 2Mb of RAM. After the new motherboard and controller card arrived John had a 'late night session' replacing and fitting the new hardware in the existing case. "All went well when I first booted-up and everything came on hard disc, floppy, etc.," said John.

However, the half-size motherboard cards fit vertically and the original ones were horizontal, so, until the new tower case arrives, his new 386 system is working, but, standing out on top of the old case on a plate of Perspex with all the connection ribbons, etc., in full view. Pity you can't see all those electrons racing round at the speed of light each time you press a key John, hi.

CD-ROMs

As I write this in mid-March three computer magazines, *PC Home*, *PC Power* and *PC Today* have special editions with a compact disc attached to the front cover. Having fitted a ROM drive to my Packard Bell 486SX, I purchased all three and found the discs loaded with games and demos. In my view, this is just the beginning of a whole new computer ball game.

Fig 8.

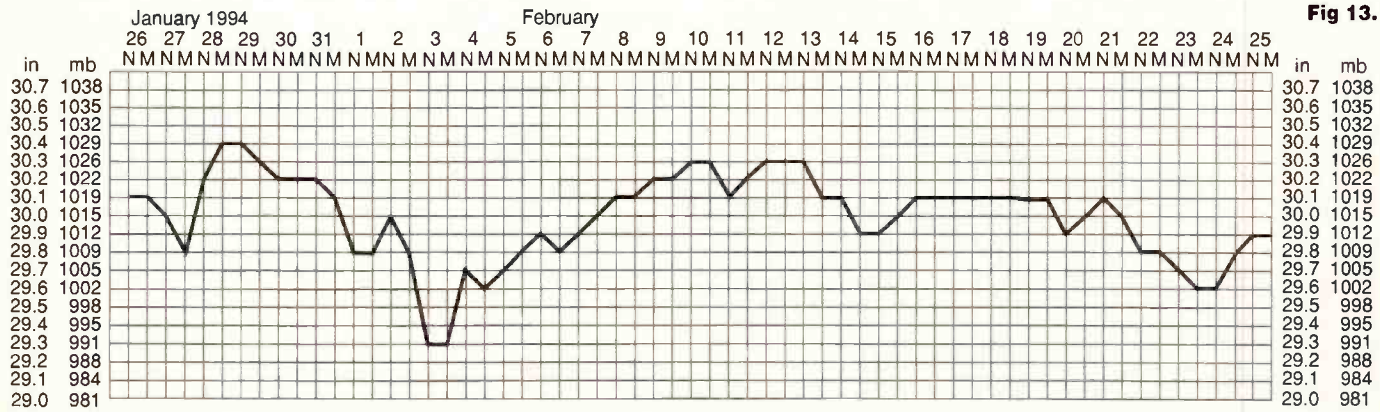
Fig 9.

Fig 10.

Fig 11.

Fig 12.

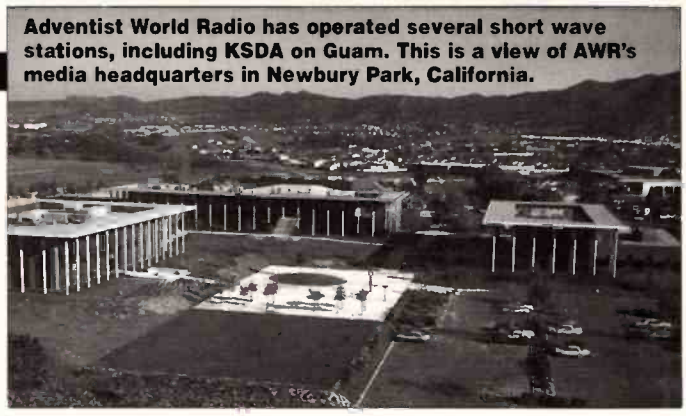
Fig 13.



Peter Shore, c/o SWM Editorial Offices, Broadstone

Bandscan

America



Adventist World Radio has operated several short wave stations, including KSDA on Guam. This is a view of AWR's media headquarters in Newbury Park, California.

Time for another Bandscan America tour, checking short wave broadcast news from North, Central and South America, along with the Pacific.

Colombia: A new, and probably unlicensed station in the town of Tuquerres is Radio El Sol, operating on variable 5.874MHz. Radio Nacional is now using variable 11.725MHz, running to 0300UTC.

Armonias del Caqueta has been reactivated, using 4.915MHz. Sign on is probably around 1100UTC.

The Colombian clandestine station Radio Patria Libre, continues to be noted using 15.050MHz variable, on an irregular basis at such hours as 1100, 2200 and 0030UTC.

Dominican Republic: There are plans to put a Christian religious short wave station on the air from the town of Saraguro. The project is the work of OMS International, headquartered in the state of Indiana. 4VEH in Haiti is also connected with OMS International.

Honduras: Radio Copan International now has this rather varied schedule: daily except Sundays from 1400-1500UTC; also Monday, Wednesday, Thursday and Saturday from 2100-2230UTC, Tuesday 2000-0100UTC, Fridays 220-2230UTC, Sundays 1900-0200UTC, all on 15.675MHz in Spanish and English. Look for this schedule to increase. The station is carrying several commercial programmes with anti-Castro content. The power is 1kW.

Radio Pas is a fairly new station from the town of Choluteca, operating on 4.325MHz (variable). Radio Litoral, mentioned last time, is now being heard on 4.830MHz.

Pacific Notes

Radio Kiribati is using 9.825MHz and still signing on at 0600UTC but operations are apparently somewhat irregular. Let's hope that's not a sign of impending doom.

You may have heard the sad news that Tony King, the popular host of Radio New Zealand International's *Mailbox* programme has left those duties.

New Zealand's other short wave station, Radio for the Print Disabled (ZLXA) has been heard in Canada on 3.935MHz around 0745UTC. This difficult DX catch has adjusted its schedule, dropping the use of 7.290MHz between 1900-0900UTC in favour of 5.960UTC. 7.290MHz is still used between 0500 and 0800UTC.

Here's the current schedule for World Harvest Radio's new station in Hawaii, KWHR at Naaiehu:

0000-0200UTC on 15.595MHz
0200-0600UTC on 17.510MHz
0600-1600UTC on 9.930MHz
1600-1800UTC on 7.425MHz
1800-2200UTC on 13.625MHz
2000-2200UTC on 13.720MHz
2200 to 0000UTC on 17.510MHz

Trans World Radio's KTWR on Guam is now scheduled with English at 0755-0915UTC on 15.200MHz, 0855-1000UTC on 11.805MHz and 1500-1615UTC on 15.610MHz, although this runs to 1630UTC on Tuesdays and 1700UTC Wednesday to Saturday.

Adventist World Radio's KSDA, also from Guam, is scheduled with English Monday, Wednesday and Friday at 0100-0200UTC on 15.610MHz, Saturday and Sunday from 0200-0300 on 13.720, 1600-1700 on 7.455, Saturday and Sunday from 1700-1800 on 13.720, Saturday and Sunday 1900 on 13.720 and Saturday and Sunday, 1900-2300 on 5.980. Also daily 2300-0000UTC on 15.610MHz.

KHBN on Palau now has a second transmitter on the air. Its schedule runs from 0700-1600 and 2000-0100UTC on 9.830MHz. Also on 9.965 from 1200-1900 and 2100-0000UTC, 15.395 from 0800-1200 and 17.630MHz between 0000 and 0800UTC.

The National Broadcasting Commission of Papua, New Guinea has discontinued its long-used 4.890MHz frequency from Port Morseby and has established an international service. The new outlet is on 9.625MHz and operates with 50kW from 2000-1400UTC. It's been widely heard in North America.

Peru: The radio scene in this country remains one in which there seems to be almost weekly changes!

A new station is Radio La Voz de Andamachay, 5.547MHz, apparently located in a small town of this name, in Celeden province. It signs off around 0110UTC. Radio Centinela, 6.5445MHz is logged at around 1100UTC.

Radio Tingo Maria, which is seldom reported, has been heard on 4.759MHz at 1000UTC.

Radio Internacional del Peru is active on 3.395MHz. Another new one is Radio Horizonte, using 5.020MHz.

United States: The planned shipboard radio station due to operate from the motor vessel *Fury* in Belize waters was raided and closed by agents of the FCC and US Coast Guard and all its radio equipment seized. This after what the FCC claimed was an illegal broadcast made from the ship while docked at Charleston, South Carolina. The final touches were being put on the ship and its equipment before it was to set for sail.

As noted last time, much of the programming on Christian Science station WCSN is now provided the 'World Voice of Historic Adventism' produced by Prophecy Countdown, the people who'll take control of the station in the fall. Chances are pretty good that the change in ownership will also bring a change in call letters.

The WRMI - Radio Miami International should be on the air with its regular schedule by the time you read this. The first appearance of the station on 9.955MHz was on a test basis only, after which the station went silent until some technical problems could be cleared up.

Texas religious broadcaster KCBI plans to add a second transmitter by the ends of this year. The station currently uses 9.815MHz between 0300-1400UTC, 13.740 between 0000-0200 and new 15.725MNHz from 1500 to 2330UTC.

WINB, Red Lion, Pennsylvania has moved to 15.715MHz and is scheduled on that frequency to Europe from 1600-0000. It then operates on 11.950MHz, running from 0000 to 1100, beamed at the Caribbean.

The Organization of American States has discontinued its long time programme *The Voice of the OAS*, which aired in Spanish nightly via Voice of America facilities.

WHRI relays Radio Bosnia-Hercegovina, Monday, Wednesday and Friday at 2330UTC on 7.315MHz. The segment includes news in English.

Costa Rica: Radio for Peace International has discontinued the use of 7.385MHz u.s.b. and replaced it with 9.375MHz u.s.b., running 5kW.

Argentina: Radio Malargue is being noted quite regularly on 6.160MHz and a fraction, around 1000UTC despite the Canadian on that frequency.

Radio Nacional, Mendoza is back on 6.180MHz and can be heard prior to 0900UTC.

Antarctica: Radio Nacional Arcangel San Gabriel, from Argentine Antarctica is active again and being heard by some North American DXers on its usual 15.476MHz (also announcing 6.030MHz) running to around 2330UTC.

Guatemala: A rarely heard station is the Guatemalan clandestine La Voz Popular, which claims to operate on 3.500 and 7.000MHz on Tuesdays and Fridays from 2300 to 0045UTC and 0200 to 0300UTC. The station is the voice of the URNG (National Revolutionary Unity of Guatemala) and claims to have been active since 1987. It supposedly runs 2000W from a transmitter in the Sierre Madre mountains.

Brazil: Old time operator Radio Gazeta has returned to the short wave bands after an absence of more than a year. It operates on 5.955 and 9.865 with plans also for 15.325MHz, all running to 10kW.

Another standby from Brazil, Radio Inconfidencia, is not now heard on its 15.910MHz frequency as replacement parts are on order for that transmitter. 6.110MHz continues to be active from 1200-1500 and 1800-2000. The power here is just 5kW.

Watch for Radio Gaucha to show up on 6.020MHz.

Radio Guarani, 6.050MHz is inactive at the moment as, the transmitter is awaiting replacement parts.

Chile: With the possible exception of Radio Nacional on 15.140MHz, Chile can be pretty difficult to catch on short wave. And one of the hardest of the few Chileans to hear is Radio Triunfal Evangelica, which has been sporadic on 5.825MHz with very low power. Try for it around 0000 or 0100.

That wraps things up for this time but I'll be back with more in the three months time. Until then, good listening!

This Radio Canada QSL card dated back to 1952!

Papua New Guinea's government radio now operated an international service on 9.625MHz.

Graham Tanner, 42 David Close, Harlington, Middlesex UB3 5EA

SSB Utility Listening

HF Sideband

During February I received a lot of letters regarding the tragic loss of the 26 000 ton Greek ship MV *Christiniaki* that sank off the south-west coast of Ireland in early February. The original MAYDAY message was transmitted during the afternoon of the February, 3 and rescue operations were still taking place over 24 hours later. This gave many listeners ample chance to hear a real SAR operation, and marvel at the expert way that the RAF conducts these operations.

By early on the 4th, there were three Nimrods (Rescue 54, 55 and 56), three Sea Kings (Rescue 129, 190, 191) and a number of surface ships (including HMS *Herald*) involved in the search. During the day, they were joined by an RAF Chinook that arrived from RAF Odiham, and used the callsign 'Rescue 50'. This is the first time that I know of where a Chinook has been used in operations such as this, although they have often been used in the past, for their heavy lifting capability, for the recovery of crashed aircraft. During the morning of February 4 one of the Rescue helicopters took part in a phone-patch to BBC News; for this, the helicopter QSYed to 5.713 MHz, and worked via Architect.

Ken Chilcott gets a mention for sending in the quickest and most comprehensive log of this event. Ken asks if anyone has the postal address of Plymouth RCC (I presume that he wants to write for a QSL card?). He also asks about the callsign 'Alpine' that he has heard on 5.680MHz communicating with Edinburgh RCC. Well, I can tell you that all the 'Alpine' callsigns are used by Mountain Rescue Teams from the various RAF stations. The callsign 'Alpine' is followed by a letter, which indicates which MRT is calling; they also use numbers, but I do not know which numbers relate to which MRTs. The following Mountain Rescue Teams are known:

callsign	base
Kilo	RAF Kinloss
Tango	RAF Leeming
Lima	RAF Leuchars
Sierra	RAF St Athan
Hotel	RAF Stafford
Victor	RAF Valley

Each team is radio equipped, but when you remember that these radios are small and low-powered, hearing them is quite an achievement.

Ahoy There!

Derek Cooper from Norfolk writes, asking about shipping and other maritime matters. He wants to know if the larger shipping fleets (Cunard, Shell, etc.) have their own 'company frequency'? Quite coincidentally, I recently received a letter detailing just such a frequency (or series of frequencies) used by vessels in the North Sea. I am still studying the frequencies in the letter to confirm that it is still in use, however I would like to know about any other similar maritime networks so that I can mention them all together in one go.

Does anyone know of any maritime 'company' frequencies, or details of when the vessels in the fleets are supposed to check-in.? Derek also mentions hearing early one morning a 'MAYDAY' call from the ship Grape One that was answered by Lands End. Later, he saw the pictures on TV of the ship sinking.

XV233 Nimrod MR-2P at RAF Leeming during July 1993.

Your Letters

In the February column I briefly mentioned the series of letters transmitted after the hourly 'Architect' weather broadcast. **Ron** from London writes to say that the letter (or letters) refer to high frequencies that are currently being used for various air-ground communications; one is for routine comms, one is for 'voice direction' (passing directions to aircraft), and another is for data comms.

P Smith from Swindon says that the 'Architect' transmission comes from a large RAF facility known as RAF Bampton Castle, near the village of Bampton, which is just a few miles south of RAF Brize Norton. His letter also supports the theory about the letters and active high frequencies.

David D from Yorkshire reports that the ADRU site at Staxton Wold is still 'alive and kicking', but it is now controlled remotely from Neatishead (north-east of Norwich). The only staff at Staxton are technicians and security; all radio traffic comes from Buchan or Neatishead and is re-transmitted at Staxton. There is a limited h.f. capability using 3.916MHz and 4.707MHz (both u.s.b.). David also says that the Ministry of Agriculture, Fisheries and Food (MAFF) are moving to York later this year, and wonders if the MAFF control centre will also move to York. Finally, David asks about an establishment known as 'CSOS Irton Moor' near Scarborough. There are lots of antennas and dishes which overlook the North Sea, and he would like to know what they do.

Several readers (including **Barry Stoyles** and **Alex Landa**) have written to say that they have found a number of Coastal Control frequencies listed in the 8th edition of *Ferrell's Confidential Frequency List*. Rather than list them here, if you are interested in this subject I would suggest that you investigate this book (which is available from the *SWM* book service).

Finally, **Scotty** writes from Tonbridge with a brief list of civil airliner traffic heard around the world. On one particular day he heard three of the new Lufthansa A-340 Airbuses all heading westbound across the Atlantic. He asks about my 'press dates' for information to be included in this section of *SWM*. Generally speaking, my column has to be at the *SWM* offices by about the 20th of each month, so any time before then suits me fine (but the earlier the better!). Sometimes I will hang on to a letter so that I can group similar subjects together, but everything gets used in time.

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

1.641	Haifa Radio (Israel) with weather and navigation warnings.
1.797	Swedish marine weather broadcast for sea areas around Sweden.
2.689	Ships *St Thomas* and *St Matthew* working via Humber Radio, with phone-patches to their base and passing details and weights of their days fishing catches.
3.485	Gander Radio broadcasting aviation weather for US and Canadian airports.
4.711	Extensive communications involving the UN blockade of Yugoslavia. Callsigns change daily, and involve ship, helicopters and aircraft. A very active frequency.
4.933	Station '8EMC' talking with '6PMG'.
5.310	Stations OSV and CNB directing aircraft to investigate 'track 005' which turned out to be an Albanian ship! Traffic relating to the UN blockade of Yugoslavia.
5.340	German numbers station, transmitting using a computer-generated female voice.
5.643	Britannia 607 calling Sydney ACC.
5.680	Plymouth Rescue co-ordinating SAR helicopters and a Police Islander searching for the wreckage of a crashed RAF Harrier near Worcester.
5.710	SAM 202 and Andrews discussing pre-flight Foxtrot channels for a flight later the same day. The channels mentioned were 989 Upper and 768 Upper.
5.713	RAF Rescue Sea King, involved in the MV *Christianiki* incident, with a phone-patch to the BBC News.
6.735	Stations 'FT', 'I' and 'C' working each other. Joined by station 'Hershey' at one point. All have US accents. This is the US blockade of Haiti, 'Hershey' is the USN Joint Air Reconnaissance Center at Key West in Florida.
6.736	UN Layounne working UN Samara. These are Australian Army soldiers assigned to the UN for peace-keeping duties in Western Sahara.
6.740	Buchan ADRU and 8XP working Jesse, passing details of a new track at position MKHQ4010 heading 130 degrees. This frequency has been identified as 'EF'.
8.765	USCG station Virginia broadcasting a high-seas weather forecast.
11.234	RAFAIR 5K30 working Gibraltar Flightwatch. 5K30 was just south of Sardinia and made a phone-patch to RAF Kinloss, so this aircraft may have been an RAF Nimrod.
11.2705	DHN66 (NATO, Geilenkirchen, Germany) working AWACS 'Magic 51' and 'Magic 55' throughout the day. DHN66 has been heard using voice, RTTY and FAX on this frequency, all in communications with various AWACS flight.
17.425	Portishead working an unidentified Italian ship, with a phone-patch to Italy.

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

Airband

DR 220 at the PFA Rally, Wroughton.
Photo: Christine Mlynek

Now that spring should be here, readers in north London might like to pop up to Old Redding, near Stanmore. Clearly marked on the 1:50000 Ordnance map at TQ143927 is a south-facing viewing area about 450ft above sea level. There's plenty of room for parking (but large vehicles are not accepted). With x10 binoculars, Heathrow is easily seen, the radar tower being clear. Sometimes aircraft can be picked out on the ground. Descents into Northolt are also in view. Watch the way in which aircraft are radar-vectored for approach. No radar - just eyes - needed!

Crop Circles in the Sky?

Also visible by eye - this time, the electronic eye of a meteorological satellite - were circular tracks over East Anglia and the North Sea ('Airband,' March). No irrational explanation is required. I've finally confirmed the origin of these. **Squadron Leader Nick Byatt** (8 Squadron, RAF Waddington) has confirmed that an E-3A AWACS aircraft made the trail while operating between FL270 and 350 on a day when conditions favoured unusually long persistence of the vapour. However, this was not a Waddington-based aircraft but rather one from the NATO base at Geilenkirchen, Germany. This has been a useful reminder that these early warning aircraft are on patrol to protect us. Case closed.

Receiver Hardware

Nearly 15 years ago **Geoff Powell** (Sycamore Cottage, Church Lane, Seckington, Tamworth, Staffordshire B79 0LD) had a Johnson's Radio tuned radio frequency airband receiver. If anyone can supply a circuit diagram for it, please contact Geoff directly. Another regenerative receiver enthusiast is **Tim Christian** (157 Mundesley Road, North Walsham, Norfolk, NR28 0DD). He designs 'em! If you want to share design experiences, again I suggest contacting Tim direct.

Congratulations to **Geoff & Mrs. Powell** on their 25th wedding anniversary - celebrated by a flight on Concorde! Also going back (more than) a quarter of a century is the Hawker/de Havilland Trident, many pieces of which appear in my Museum. Geoff tells me that this type is still flying in China. Good on them!

A frequency associated with temporary helipads is 121.175MHz, writes **G.P.** (Oxford) who notes that this was allocated at the last Cheltenham Races and Henley Regatta. Iona have company ops on 122.525MHz. To answer G.P.s questions, the callsign 'Channex' belongs to Channel Express and they do indeed operate mail flights. Also, v.o.r.s do not cut carrier at regular intervals because if they did then the airborne navigational equipment would give erroneous indications. The callsign is modulated intermittently, of course.

The correspondent goes on to explain how important it is that a scanning receiver can be set to have no delay while scanning each memory in turn. In other words, once a transmission has finished on one frequency, the scan resumes immediately without any further pause. This is to enable several busy frequencies to be monitored with minimal loss of information. During a pause, another transmission on a different frequency could be missed. If no such other transmission takes place then the scanner will come back round to the original frequency quickly enough to hear any reply to the first transmission. I know from previous correspondence that many radio dealers don't understand this important point, so if buying a scanner, do ask.

Information Sources

There are now three versions of Airport Timetables from Airtime Publishing Ltd. (13 The Hollows, Long Eaton, Nottingham NG10 2ES). Write for up-to-date postage-inclusive prices; areas covered are UK (indigenous airlines excluded from the Heathrow listing), Heathrow/Gatwick, or Frankfurt/Dusseldorf (depending on which title you buy). As flight numbers are listed in order of arrival time at each airport, this should help sort out some of the more obscure callsigns.

The International Listener's Association (1 Jersey Street, Hafod, Swansea SA1 2HF) sent me the March issue of their periodical *Just Listening*. Thirty-six A5 pages include news on all aspects of radio, aimed at the listener; broadcast, amateur and other services are included so only a small part is aeronautical. This will appeal to those of you who have a general interest in wireless communications and there are even constructional articles.

British chart suppliers are listed on Airband Factsheet which can be yours if you send a stamped reply envelope (to hold one A4 page) to the Broadstone editorial office. A reader from South Wales has found an American source. The Dept. of Defense (National Ocean Service, Distribution Branch N/GC33, 6501 Lafayette Avenue, Riverdale, MD 20737, USA) accept payment by Visa. Chart H3/H4 has Shannon, Warsaw and Tunis as its boundaries and H5/H6 includes northern UK, Paris, Shannon and Frankfurt.

Follow-Ups

I hope you read my article 'Flying: What Do the Numbers Mean?' on page 30 of the March issue. **Mike Yorke G6WBX** (Surrey) did. He's a professional pilot and tells me that 'Affirm' has now been adopted as the opposite of 'Negative' so that only one of the words ends in '...ative' hence reducing confusion. Yes, but how do you pronounce it: 'A' as in 'Apple' or as in 'hAy'?

What happens to local time whilst flying supersonically? **Denis Bosher** (Gwynedd) had me reaching for a globe when I tried to work this one out. On page 60 of the March issue I reported an eastbound Concorde flight that would involve two New Year's Eves in the air. Imagine the view from the earth; the sun's projection moves around the circumference in one (sidereal) day which, at about 904kt is slightly slower than Concorde's still-air ground speed (say 1170kt). If Concorde had the endurance to stay airborne for 24hr on a westerly flight, it would be sun-synchronous. That is to say, if it took off at mid-day then it could keep pace with the sun's position over the ground and everywhere it flew over would be at local mid-day. It could land back at its destination at mid-day on the day after departure!

Eastbound is a different story. Again, imagine a mid-day start. As the sun moves off to the west, so Concorde flies east but at the same speed. By the time Concorde has gone a quarter of the way round the world, so has the sun - but in the opposite direction. Concorde and the sun are now at opposite sides of the globe, 180° apart. And that's after only 6 hours! Twelve hours into the flight, Concorde meets the sun coming the other way and is overflying the antipodeal point at its local mid-day. Completing the flight, Concorde lands at mid-day on the day after departure - its third encounter with the mid-day sun in 24 hours!

Biggin Hill's fate has appeared in previous issues of 'Airband' and now **Peter Wade** (Sevenoaks) reads that IAL will be taking the airport over from the local authority. Apparently, the Dept. of Transport can force local authorities to sell their airports to the private sector - regardless of the economic consequences! In the present case, though, the new owners are optimistic about the future (including the safeguarding of jobs). Peter also saw some TV programmes about airports, but unfortunately with a six week lead time these will have been and gone by the time you read this. Sorry, Peter, but thanks for trying.

Frequency and Operational News

Plenty to take note of in the February GASIL from the CAA. Bristol (Lulsgate), as reported in April's 'Airband,' really has had its Approach changed from 132.4 to 120.6MHz, that includes Lower Airspace Radar and Danger Area Activity Information for area D121. Bristol (Filton) has had its Tower change from 124.95 to 132.35 and Radar from 132.35 to 127.975 (confusing); Dunsfold's Approach changes from 125.875 to 135.175; and Wellesbourne changes from 130.45 to 124.025MHz. Humberside loses its direction finder on 124.675MHz. Syerston now has an ATZ.

One navaid change: Jersey loses its n.d.b. (JEY, 367kHz).

Now a really sad loss: Leavesden Aerodrome is permanently closed. Once the home of Rolls-Royce's helicopter engine division, it has fallen foul of our country's economic plight with associated job losses. Some say that the recession is over and recovery is here; when heavy industry permanently closes parts of its major capital investment, I find it hard to have any confidence in the foregoing statement.

From Suffolk, **Roger Jones** is interested in the Army Air Corps activities at Wattisham as their Lynx helicopters regularly pop over his house to see him! The new frequency for Wattisham Military ATZ is 124.925MHz. Talking of helicopters, **Bob Sayers G8IYK** (Redditch) noticed the item on DEPCOM (March) and wonders if this frequency (122.95) is related to 130.425MHz? My only comment is that I can find no official allocation for using the latter frequency in this way.

P51 Mustang. *Photo: Christine Mlynek*

Cessna 120 at the PFA Rally, Wroughton. *Photo: Christine Mlynek*

You Asked For It

As a result of your requests made at the time of the last Christmas Quiz, there are a few topics that I will explain each month. Let's make a start by listing the locations of the National Air Traffic Service relays, clockwise as seen on a map: Davidstow Moor (West Country), Winstone (near Bristol), Clee Hill (mid-Welsh border), Kelsall (near Mersey), Preston (Cumbria), Great Dunfell (Scottish border), Grantham (Midlands), Trimmingham (Norfolk), Chedburgh (East Anglia), Swingfield (South-East coast), Warlingham (Surrey) and Birdlip (Gloucestershire). On the islands are Ventnor (Wight) and Snaefell (Man).

The next three deadlines (for topical information) are May 13, June 17 and July 15. 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 or enquiries: 081-958 5113 (before 2130 local please).

Abbreviations

ATZ	Aerodrome Traffic Zone
CAA	Civil Aviation Authority
FL	flight level
ft	feet
GASIL	General Aviation Safety Information Leaflet
hr	hours
kHz	kilohertz
kt	knots
MHz	megahertz
n.d.b.	non-directional beacon
v.o.r.	very high frequency omni-directional radio range

Alan Gardner, c/o SWM, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW

Scanning

Mobile Radio's rugged data terminal is mounted directly onto the dashboard for ease of operation.

Last month's mention of the new AOR AR-8000 hand-held was more of a scoop than I expected, last minute production problems prevented its first public appearance at the London Amateur Radio Show at Picketts Lock. So it would seem that my revelation of the model number turned out to be a world exclusive!

The delay is due to a shortage of the microprocessor control chips, they are of the same type that are used in cellular telephones and current demands on the manufacturer have created a world shortage. As soon as the backlog is cleared production should be able to continue. One bonus of this delay is that it should give us all a little bit more time to save up for the new model. Just remember where you read it first.

UHF Marine Communications

My request in the March column for further information on the use of u.h.f. for Maritime Communications has produced a large response from readers. You may remember that **Jeff Dryburn** had asked if any use was made of 457.525, 457.550 457.575, 467.525, 467.55 & 467.575MHz, which he had seen listed in a frequency guide.

The first to reply was **John Vears** of Surrey; he used to use the channels when he operated a motor cruiser on the River Thames. This was permissible as he held a full ship radio licence (as opposed to the more common v.h.f. only licence) that gave him access to the various marine bands including the six u.h.f. channels previously mentioned. John was good enough to send me a copy of the relevant clauses in the licence that permit the establishment of on-board communication or repeater stations. The main purpose of this allocation is to permit the sending of verbal messages concerning internal communications on-board the ship; or between the ship and lifeboats during drills; or for towing, line handling and mooring instructions. The licence specifies the frequencies as being used singly for simplex operation or paired when used as a repeater station and additionally lists 156.75, 156.85, 161.35 and 161.45MHz as available for on-board communication purposes.

As an aside the full marine radio licence also permits operation on 123.1MHz a.m. for co-ordinated search and rescue operations with aircraft and 121.5MHz a.m., 156.525 & 156.8MHz n.b.f.m. and 243.0MHz a.m. for emergency operations from lifeboat stations.

The main reasons for using u.h.f. channels seem to be that it provides better communications inside the steel hull of the ship and it is less likely to interfere with other v.h.f. marine communications when it is used in congested areas such as ports.

Rob Ball of Somerset, **Cdr. RNR (Rtd) Philip R Noel** of Sussex and **Ron Thompson** of Tyne & Wear all commented that the main use of the channels tended to be simplex for the purposes of cargo handling, mooring, engineering, fire drills and loading/unloading car ferries. Many people said that they were surprised at the range from which they could monitor transmissions, although some of the larger vessels may be making use of an on-board repeater to improve communication inside more screened areas of the superstructure.

It would seem that the frequencies are regularly used by ferry operators and it is likely that you will hear something on the 457MHz channels if you live near to a main ferry port. Some operators also make use of the p.m.r. simplex band at 169MHz for passenger handling so this may also be worth monitoring for an insight into commercial marine operations.

My thanks to all the readers who supplied information on this subject.

Satellite Reception

Following recent mentions of satellite reception in *SWM*, **Peter Ansell** of Hampshire gave me a photocopy of an item published in the German magazine *Satellit*. The article entitled A primer on FDM describes the process of connecting a short wave receiver to the video output of a domestic satellite receiver in order to demodulate the Frequency Division Multiplex telephone traffic carried by a few of the geostationary satellites currently in orbit.

The article described reception of signals from Intelsat 605 at 24.5°W on a frequency of 11.154GHz using vertical polarisation. A minimum dish size of 1.5m was suggested, but a smaller dish may be adequate if you live in the southern part of Britain. The article was particularly interesting in that it was the first one that I have seen which specifically mentioned a satellite that was within the geostationary arc observable from the UK Most other descriptions are in American publications and only seem to apply to satellites serving the US mainland or Pacific region. Does anyone have any experience of monitoring these transmissions from the UK?

Meteorological Sondes

After I mentioned weather balloons in the March column, a couple of coincidences occurred. Whilst eating breakfast one morning I happened to see part of an Open University programme on Meteorology that included a segment describing the operation and tracking of radio Sondes. This sequence included an operator listening to the signals on a special receiver prominently displaying 403.00MHz on the large l.e.d. digital readout. It would seem that two balloons a day are launched from each of the 12 UK meteorological office upper air sounding stations located at various sites around the country.

As a point of interest the balloons are not as I thought filled with helium, but use hydrogen, as it is cheaper. However this does make launching the balloons potentially more hazardous as hydrogen is highly flammable, so protective clothing has to be worn.

The second coincidence was that I obtained a transmitter module from a Sonde at an amateur radio rally. The electronic circuits are contained in a rectangular polystyrene box measuring approximately 150 x 100 x 250mm containing the transmitter, battery, coding mechanism and air pressure sensor. The temperature and humidity sensors are attached to the side of the box inside a semi-circular aluminium tube. The only active devices are two transistors that form the transmit oscillator and buffer circuit operating on 27.95MHz. All the remaining operations are performed electro-mechanically by means of moving rods attached to the various instruments.

The rods have a small stylus attached at the end that makes contact with a rotating drum driven by a small electric motor. The drum has a series of electrical contacts etched on it that are arranged to produce a form of binary coding, the value of which varies as the stylus moves across the drum. The drum only makes contact with one stylus at a time so the data from each sensor is transmitted in a fixed sequence. The whole unit is an amazing piece of engineering and I would guess that the design is still in production as it would be difficult to make a more effective solid state version for the same price.

Outside Broadcasts

Several readers have commented on monitoring of TV and radio outside broadcast transmissions. A lot of these have already been published in various frequency guides so I don't really want to make a regular feature of them. However, a couple of people have noticed that the signals are not always transmitted on exact multiples of 25 or 12.5kHz channels normally used for p.m.r. purposes.

Well, yes this is true, most TV and radio companies share small segments of the radio spectrum and have a mutual agreement about who uses a particular frequency in each area. In order to make maximum use of the limited allocations they have adopted 6.25kHz channel spacings. This is only possible because of the type of use, and the way they are assigned geographically.

Each company can usually make a choice from a few

different frequencies that are assigned on a priority basis. This gives a limited amount of freedom in the assignment of channels that otherwise could cause problems when several different systems are operating in close proximity to each other. If you can't get your scanner to tune in 6.25kHz steps, try 5kHz instead. This is usually accurate enough to bring the wanted signal within the i.f. bandwidth of the receiver. The frequencies I listed in the March column tend to just be used by the smaller independent production companies. The major TV and radio companies mainly use the 78, 141 & 455MHz bands although if you are lucky you may hear radio microphones operating around 53, 61, 173, 208 & 224MHz.

What is it? - Part 2

More mystery signals to identify this month. The first letter is from **Al Lindfield** of Berkshire. He has monitored what sounds like a 'chuffing' noise on several channels in the 440-441MHz band. The thinks that they may be some sort of data system as they sound similar to the network operated by Ram mobile data, which I mentioned as operating at approximately 453MHz. I have also noticed these transmissions, they seem to be present in most large urban areas so they may be some form of regional network as opposed to the services which are intended to provide national coverage.

Bert Smith from Cheshire has a job that takes him around the country quite frequently and he has noticed an increasing number of antennas attached to the grey metal roadside boxes that you see on motor way embankments. The antenna usually consists of a glass fibre shrouded vertical element at the end of an aluminium pole. Because of this it is very difficult to determine the frequency of operation. He has a few theories about the possible uses for such installations including small cellular telephone base stations providing fill-in coverage, remote control of traffic signs from police vehicles or traffic flow monitoring radio linked to a central control point.

Although it is not directly related to radio transmission, Bert has also occasionally seen unusual signs on poles mounted parallel to the road. These consist.of a series of different width horizontal stripes painted with reflective paint on a small vertical panel. The overall impression is that of a large supermarket bar code that could be scanned from some distance by a vehicle fitted with a suitable optical reading system. He wonders if the new radio installations could be performing the same function, acting as some form of radio marker beacon.

One other possibility that occurs to me is that it could be a trial scheme for the introduction of electronic road tolls that the government is keen to introduce before the end of the century. Although I believe that the interrogation signal from the base station to the electronic tag mounted in the vehicle is likely to operate at around 3GHz it may be that tests are initially being performed at lower frequencies as Doppler shift and rapid fading due to movement of the vehicle become a problem in the gigahertz region.

Nigel Williams of Lancashire is puzzled by simple musical tunes that he can hear on several different frequencies in the range 30-70MHz. This is an easy one to solve, it is almost certain to be interference from some form of computer game. This used to be quite common in the early days of computers as they did not have to be built to such high standards with regard to electrical filtering and screening. The very fast switching action of the electronic circuits within the computer generates harmonics that are radiated by the printed circuit board tracks and interconnecting leads acting as antennas. Modern machines have to meet international standards with regard to the amount of interference that they produce but there are still a lot of old machines around that tend to be passed on for children to use - very often just to play games. The tunes are generated electronically within the machine by switching circuits on and off very quickly to produce audio tones. The signals you can hear are harmonics of this switching action.

Along similar lines I have heard sequential tones on various frequencies around 37MHz. These sound as if they could be spurious signals generated by some form of microprocessor controlled burglar alarm system that scans each sensor in turn.

And finally, still no theories on the 'electronic organ' tones mentioned by **John Gebbie** in the March column. If you have any information on this or any of the other signals mentioned why not drop me a line?

Until next month - Good Listening.

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

Info In Orbit

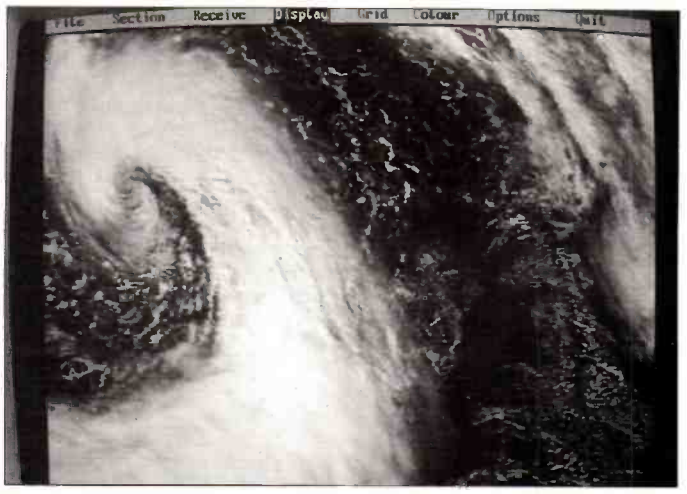


Fig. 1: METEOR 3-3 image of UK and Ireland; 4 April from T Lane.

This month includes notes on JVFAX plus software offers. To get the review in quickly, I have summarised the features. Space is always a problem, and rather than wait until the Editor can fit it as a full review I have included it in this month's column.

Severely cold weather in Scandinavian countries during January and February quickly caused the formation of large icebergs within the Gulf of Bothnia and surrounding areas. Reservoirs in northern Russia froze over. Watching a pass by METEOR 2-21 on 137.40MHz on February 23 showed that the Skagerrak - the waterway between Denmark and Norway/Sweden - was in the process of freezing. Inland lakes, such as Lagoda and Peipus, often freeze, changing their appearance as the ice sheet progresses.

By February 26 the morning pass of 2-21 showed that three-quarters of the Gulf of Bothnia had frozen over, and the Gulf of Riga was solid! After the Gulf of Finland froze over, its ice sheet extended out towards Stockholm on the other side of the water. I haven't seen such a large area of frozen landscape for some years.

Current WXSATs

I was surprised to find METEOR 2-21 switched from 137.85 to 137.40MHz on February 21. It was off from early March. Whether a case of testing that transmission frequency, or a prelude to other changes was not clear. I believe that all the CIS METEORs are able to transmit on any of their normal frequencies - i.e., 137.30, 137.40 and 137.85MHz. METEOR 3-5 returned on February 28 using 137.85MHz, transmitting in sunlight only. NOAA 9 was off during March while in v.h.f. conflict with NOAA 11.

METEOSAT

Until early February, METEOSAT-4 was the operational geostationary WXSAT. Sudden severe image corruption caused a speedy change-over to the nearby METEOSAT-5, which was about to move to replace METEOSAT-3. METEOSAT-5 also has an image anomaly, but this is largely corrected by ground control. The switch-over required a delay of about 30 minutes per image.

As from March 23, a new METEOSAT schedule was implemented. The change reduces image dissemination delays to eight minutes, and EUMETSAT plan to return to real-time image dissemination by May. The new schedule involves significant changes to several familiar slots. The D2 (European) image moves to six and thirty-eight minutes past each hour - with the visible formats (C02 and C03) following on as usual.

LRIT

Primary Data from METEOSAT is due to become permanently encrypted from 1995. Currently, only certain water vapour slots are encrypted. Reception of analogue data will not be affected for some years. A new digital data transmission system will be implemented with the start of the METEOSAT Second Generation (MSG) satellite in the year 2000. This new system will be called LRIT - Low Rate Image Transmission.

I am personally optimistic that we will see a considerable improvement in the nature of the information available. Digital data offers advantages over analogue transmission systems. If you are currently considering the purchase of PDUS hardware, you will need to take all costs into account. I expect to provide full details in this column by summer.

WXSAT and JVFAX

Some months ago I received a letter from **Greg Jameson** of Tonypandy, an electronics technician at a local university. He referred me to a recent version of JVFAX (5.2), the program written by Eberhard Backeshoff DK8JV of Germany. While writing notes for this column, version 6.0 was received from **Mark Pepper**!

With most of the programs currently available for decoding WXSAT images, one tends to expect more facilities the more you pay. This theory breaks down completely with JVFAX! This is one of the most sophisticated WXSAT/h.f. decoding programs that I have had the opportunity to test - and it's free!

It has a wide range of features wanted by WXSAT monitors and radio amateurs for the reception of weather charts and photographic style FAX broadcasts. In addition there are facilities for slow scan TV (SSTV), both reception and transmission. These notes cover that section of the program catering for the reception and processing of WXSAT transmissions - both polar orbiting and the geostationary satellites. Other columnists have dealt with other sections.

Hardware

JVFAX requires an interface to convert audio output from the receiver to data for conversion by the computer running JVFAX. I am grateful to Greg for providing me with a suitable module.

Other interfaces can be constructed to use either the serial or parallel ports on the computer, and the author even includes GIF images of suitable interface alternatives.

With a suitable interface and an SVGA monitor, the program can provide up to 256 grey levels from the audio signal. Selection of fewer grey levels means that stored images occupy less disk space.

Using the mode editor (see later), each type of image (e.g., METEOSAT) can be adjusted for the optimum number of pixels per line, so further minimising subsequent disk storage space. Spatial resolution up to 2400 dots per line can be achieved.

The computer must be PC-compatible, and run faster than 7MHz, with 12MHz or more recommended. All modern computers should exceed this minimum. The program runs under DOS version 3.0 or better, with later versions recommended. The software includes printer drivers for both 9 and 24-pin printers, plus the HP-Laserjet.

For these tests I used a '386' computer with SVGA monitor and 4Mb RAM (as recommended), then moved the system on to my 286 computer, also fitted with 4Mb RAM. The author states that JVFAX will not run under WINDOWS or other multi-tasking environments (now there is a challenge!) Installation from floppy disk is straight forward, files being copied into a separate directory (JVFAX).

Main Menu

The program is structured around the main menu, and has many features, so I started off by extracting sections of the large manual (called ENGLISH.DOC) on a word processor. This 118Kb file is a comprehensive description of the entire program (written in better English than some texts that I have seen), so careful study is well worthwhile.

The following options are offered, and give an insight into the available features:

FAX and SSTV reception (FAX includes WXSAT); show and send pictures (this is mainly for radio amateur use - specifically for licensed amateur FAX transmissions); movie options (METEOSAT animation); scheduling WXSAT reception; mode editor; screen and printer tests; software configuration.

Configuring the system correctly is essential and involves specifying your graphics card and interface type. The use (or not) of XMS - extended memory is also set. When this is completed, you can check by selecting the option screen TEST. After configuration, parameter choices are displayed above the Main Menu.

Using the program for the WXSATs is straightforward, once you understand the selections appropriate for this decoding. The mode editor is on the main menu, and can be used later to optimise settings for each type of WXSAT transmission. It has been preset for several standard ham utility transmissions, and a selection of WXSAT options; for example, mode 2 is set for METEOSAT channel 2, mode 6 for METEORs passing from south to north, and mode 9 for NOAAs moving from north to south. These can be edited after you gain experience using the software, and there are surprises in store!

General Facilities

The usual options for picture storage and printing are available; stored images can be zoomed and have their aspect (width/height ratio) changed. Files are stored in GIF format, so subsequent importing into other software is possible, or further conversion to other well-known formats (TIFF, PCX) done using shareware or other programs. Additionally, you can store an individual zoomed image. It is worth noting that live pictures are normally held in XMS (extended) memory, that area of RAM above the 1Mb base. This feature can be disabled if your computer has only limited RAM.

Starting Reception

Having connected a suitable signal source, e.g., the audio input from your WXSAT receiver to the connector on the interface, the program performs a quick virus check. From the main menu you can select FAX (that includes WEFAX and a.p.t.) and gives a screen that is mostly clear in readiness for the image, but includes a window displaying a tuning indicator. This shows signal content, allowing manual adjustment of black and white levels.

Adjustment (manual or automatic) may be required for the first few passes. The manual gives a complete description of picture edge alignment - that depends on whether you are locking on to a METEOR or NOAA WXSAT. Single key presses activate alignment, grey scale levels, printer activity or phasing adjustments. You can synchronise to the visible or infra-red portions of NOAA transmissions (or even both).

If picture synchronisation (to the edge of the image) is missed during the early part of a live pass, (perhaps due to a noisy signal,) you can force a re-sync. Mis-aligned pictures can be re-set using the R (rotate) key, after first setting other options.

I found it helpful to prepare a keyboard template listing the available options for each key press during live reception. This also proved useful with the hidden keys - those not on display in the prompt window. The space key removes the window - useful after initial adjustments are complete.

Key presses include T (automatic software tuning for best decoding), F (frequency counter - of greater use within h.f. operations), / (oblique skew correction of the picture), and C (calibration of the intensity level).

There seemed to be a large number of choices during my early encounters with JVFAX, but it gets easier as experience increases. So many parameters can be stored with the mode editor that customisation for each type of satellite is feasible. This is especially helpful if you wish to accommodate the different signal strengths transmitted by NOAA and METEOR WXSATs, in order to obtain the best quality image from each.

Satellite Direction

There are separate modes for each direction and each satellite, so a realistic image can be obtained in realtime. Selecting NOAAvisSN (visible section south-to-north) for the mid-afternoon NOAA-11 pass means that the image will be correctly oriented. You can also select the infra-red section if required, e.g. for stored overnight passes.

METEOSAT

This provided the biggest surprise for me! If you look at the filenames supplied with the program disk, you will notice several mask files. METEOSAT scans the earth from a (virtually) fixed point in space - that is why land boundaries are subsequently added to the image formats because, for a given image, they are always in the same place. The author of JVFAX has cleverly superimposed a mask for the land, so by shifting those pixels within the mask to a different band - e.g., incrementing each pixel value, colours can then be attributed that are appropriate to the pixel location. Consequently you are unlikely to see blue areas within the land boundary, nor green areas within the sea! Clever stuff.

Animation

As indicated on the main menu, you can set the software to collect a sequence of images - e.g., the D2 format (infra-red section of Europe). This involves editing a file to include transmission times of the required images. If you wish, you can limit the maximum number of pictures that will be stored in the movie file. Animation always shows the most recent pictures.

For users of the ET4000 video card, the extra option of 640 by 480 pixels with 256 colours is also available. A colour palette can be specified in the mode editor so you will quickly discover the ease with which colour animation can be used! The author has used the masking technique mentioned previously to avoid wrong colours spilling over land boundaries.

Image processing

Remembering that JVFAX provides an extremely comprehensive facility covering a.p.t., WEFAX and h.f. image reception, this software does not cover the complete spectrum of post-pass image processing. The most important facilities - contrast adjustment and histogram equalisation are included with version 6. For those wanting to experiment with further enhancement possibilities, GIF format images can easily be exported to other packages. Check 'Info' for forthcoming offers in this area.

Mode Editor

This feature deserves special mention. A selection of reception modes have already been set up, including METEOSAT and the other WXSATs. Selecting this option reveals preset parameters. As you become more proficient with JVFAX you can use this editor to customise your system. Customisation can involve changing spatial resolution (pixels per line) and intensity (number of grey levels). Why use 256 levels for METEOSAT when the image transmitted is 8-bit (corresponding to 64 levels), or even less for GMS images?

The 'miscellaneous settings' menu includes parameters for NOAA and METEOR-sync threshold levels. After experience has been gained, small adjustments can be made to optimise reception of synchronised pictures. The manual makes suggestions for changing some of the parameters if you experience problems. With most modern WXSAT receivers you will obtain a clear signal, so are unlikely to want to change these settings.

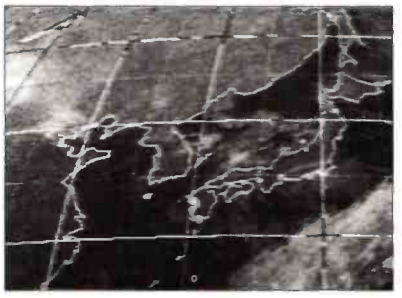


Fig. 2: GMS-4 image of Japan region, relayed by METEOSAT-4 on 7 December 1993, from Frank Slater.

Fig. 3: NOAA 12 infra-red image of Europe on 25 November 1993 from Andy Freeman.

Conclusions

Readers will appreciate that the original 118Kb file reflects the wide capabilities of this software, so cannot be comprehensively described in detail in this type of review.

The choice of decoding systems for the beginner is now quite wide. With commercial hardware of the 'plug in and go' type readily available, some may prefer to write a cheque, plug in the decoder, and watch the images. If you have already bought such a system but have found some missing features, there is much to be said for having a look at Eberhard's JVFAX program just to see the features. You don't have to construct the interface yourself - Martelec Communication Systems are about to produce them.

For those wanting copies of Greg Jameson's interface design, he has kindly agreed to provide such copies - please send £1 to him at 65 Brynhyfryd St., Clydach Vale, Tonypandy, Mid-Glamorgan CF40 2DY.

If you are new to WXSATs and want to set up a system on your PC at the lowest possible cost, you now have an unusual opportunity. You can obtain the JVFAX software from a variety of sources such as BBSs and other suppliers.

Caution!

I recently had an extremely rare experience with my computer. A caller asked me if I had discovered an 'undocumented feature' in a certain WXSAT decoding program. I had not. I tried his unusual sequence of key and mouse presses. That was a mistake - the computer crashed. I mean really crashed. I have rescued computers and data before, but this one actually corrupted the CMOS settings!

It took three hours to get the machine to recognise the existence of the drives because I had to identify the exact model number of the hard disk! Could you lay your hands on that information within a few minutes?

There are lessons to be learnt from this experience! You cannot know when your computer will crash so first ensure that you have a clean floppy disk containing system files. I had one ready for just such a contingency. Your MS-DOS manual explains how to prepare one, and it only takes a few minutes. Secondly, make a list of all of the computer's CMOS settings: reset the computer (Control + ALT + DEL), then press the DEL key - after checking that this combination is appropriate for your machine. When the menu is offered, select each option and write down the settings. Finally exit without saving. Keep your notes handy. If you ever need them you will remember the day that you did this job!

Next month

I have again moved the new feature on high resolution picture transmissions from the NOAAs to next month, when I also plan to show one of the best pictures I have ever received! More software should also be available.

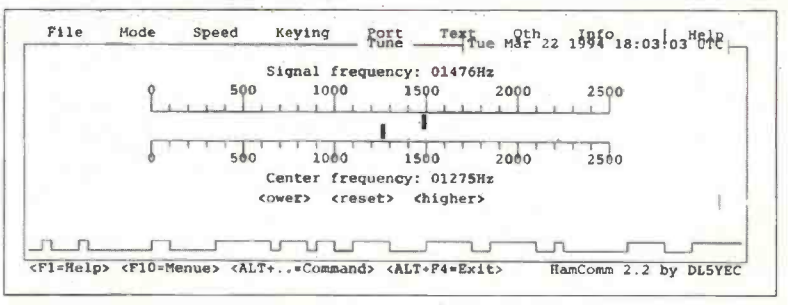
Kepler Elements

I will send a print-out of the latest elements upon receiving an s.a.e. and extra stamp. All known weather satellites plus MIR can be included, together with transmission frequencies if operating. This data originates from NASA. A disk copy of my large satellite elements file, in ASCII, is available by sending cash/cheque/postal order for £3, plus a disk with a self-addressed, stamped envelope. The costs of obtaining this data are not minimal; this is offered as a service that will be expanded shortly.

Mike Richards G4WNC, PO Box 1863, Ringwood, Hants BH24 3XD

Decode

All the Data Modes



Hamcomm tuning display.

Phil Simpson of Beverley, North Humberside has written asking if I could answer four specific questions via the column. As the questions are similar to those I've received from other readers, I'll give it my best shot.

Q1: Is a preselector really any benefit or is it a glorified a.t.u?

A1: It is certainly true that a.t.u.s and preselectors are frequently confused. However, they have two different roles to perform. A preselector is a device that's connected between the antenna and the first stages of the receiver to increase the selectivity. This means that its prime role is to let only the required signals through to the receiver. It is in fact a tunable r.f. filter system.

The a.t.u., on the other hand, is required to match the antenna impedance to that of the receiver. The reason for the confusion between these two devices is that the a.t.u. normally includes at least one tuned circuit and behaves very much like a filter. If you're in the business of transmitting radio signals the a.t.u. is extremely important as it ensures that the maximum power is transfered from the transmitter into the antenna system. For the listener however, the matching qualities of the a.t.u. are of limited benefit. It's the filtering performance that gives the greatest improvement. This is particularly true when using cheaper receivers. From this you've probably already worked out that the preselector is the first choice with the a.t.u. being a close second.

Q2: Is it true that you don't require an a.t.u. with either a Magnetic Longwire Balun or an active antenna?

A2: With both of these systems the main benefit from using an a.t.u. is the filtering out of strong out-of-band signals.

Q3: In your opinion what range of i.f. filters would be best for data reception, i.e. 2.3, 4, or 7kHz?

A3: For the vast majority of signals the 2.3kHz filter would be the preferred choice. For good quality c.w. reception a 500Hz filter would be a worthwhile addition. The only occasion where a wider bandwidth may be useful is when receiving FAX pictures from a very strong clean signal.

Q4: Is it worth considering the use of an audio filter similar to the FL3?

A4: The answer here is a straightforward **yes**. I have been using an FL3 for some time now and I find it extremely useful for optimising the quality of the received signal.

Trial RTTY/CW Software

Following hot on the heels of the JVFAX offer (well over 500 so far) comes Hamcomm 2.2 from Wilhelm Schroeder. Having written to the author, I now have permission to distribute copies of this decoding system for IBM PCs via 'Decode'. The only usage difference with this program is that the software is distributed for evaluation purposes for a period of thirty days. You can continue to use the program after that period, but you are required to pay the author a modest registration payment of DM30. Full details of the licensing agreement are supplied with the disk-based documentation. With the formalities over we can now move on to take a practical look at the Hamcomm package.

As the name suggests, Hamcomm was primarily designed for use by radio amateurs, but it's equally suitable as a economical introduction to utility decoding.

To use Hamcomm you will need an IBM or compatible PC running MS DOS 3.x or higher with at least 320Kb of free memory. The computer ideally needs to be a fast XT type preferrably with a 286 or better processor. Hamcomm has been designed to operate with a wide range of video adaptors and features automatic detection of MDA, CGA, EGA, VGA and Hercules units. Although a hard disk is not essential it does speed access and enable the storage of received data to disk. The program has not been designed to operate under multi-tasking environments such as Windows so if you're a Windows user you will have to revert to DOS. The reason for this incompatibility is Hamcomm's requirement to directly access serial port hardware and the interrupt controller.

Installation of the software has been made very easy through the use of a self-extracting compression utility. All you have to do is create a new directory on your hard disk called Hamcomm and copy the floppy disk files over. You then type HAMCOM22 to start the self extraction process. Once this is complete you just type HC to start the main program.

Linking Hamcomm with your receiver couldn't be easier as it uses the same simple comparator interface as JVFAX. A full circuit diagram of the interface is included in the disk documentation. However, unless you're determined to build your own I would strongly recommend you contact Pervisell Ltd as their ready built interface at £16.99 inclusive is exceptional value for money. The contact details are: Pervisell Ltd, 8 Temple End, High Wycombe, Bucks HP13 5DR. Tel: (0494) 443033.

With the software loaded and interface connected, you're now ready to complete the set-up and receive your first RTTY and c.w. signals. However, before you start you need to make sure Hamcomm is using the correct serial port. This is done by selecting the appropriate drop down menu and choosing either COM 1 or 2.

Hamcomm makes extensive use of these drop down menus to provide quick access to the extensive facilities. These menus can either be selected using a mouse pointer or by using the short-cut key presses. One great time saver is the provision of a macro recorder. This is a wonderful system that lets the operator record a sequence of up to two hundred and fifty keystrokes against one of the ten keys from ALT-1 to ALT-0. By using this system you can store all your favourite operating modes and very rapidly change from one to another.

At this point you can start receiving your first RTTY signals. For UK listeners probably the most reliable source of RTTY is Bracknell met on 4.489MHz using 50 baud RTTY with a 400Hz shift. To prepare the decoder you select the appropriate menu and set the speed to 50 baud, shift or keying to 400Hz and mode Baudot. You are then presented with the main receive screen and you should start receiving RTTY if you're correctly tuned. Finding the right tuning point is essential for error free reception and Hamcomm has some great tuning aids to help out. The simplest of these is the basic tune indicator. This displays the RTTY signal as a pair of flashing lines that need to be adjusted so that they straddle the fixed line. Whilst this tuning is normally done by altering the receiver, you can use the computer's arrow keys to move fixed line. This is particularly handy for use with receivers having coarse tuning steps.

An alternative tuning aid is to be found in the spectrum display system. This provides a very impressive spectrum analyser type display with two vertical lines indicating the correct tuning point and a moving display showing the spectrum of the received signal. This display is also very effective for showing the effect of interfering signals and is brilliant for setting-up variable audio filters such as the Datong FL-3.

When used with a fast 486 based machine the spectrum analyser provides a very fast moving picture of the activity in the immediate vicinity of the required signal. Just to complete the suite of analysis/tuning tools is what the author calls a Bitlength display. This enables the operator to study an incoming signal and determine the baud rate. To use it all you do is adjust the tuning of your receiver then switch to Bitlength and watch the signal build-up. After a short period of around 30 seconds the display will build-up and you can position the marker to align with the left most peak and read the baud rate. You will also see that the Bitlength function tries to identify the left most peak automatically but this will only work with very clean signals.

You will no doubt have noticed by now that the top of the screen will display any characters you type on the keyboard. This is perfectly normal as this part of the screen is set up as the transmit buffer. Should you use Hamcomm to transmit RTTY you use this screen to prepare your message prior to transmission.

Once you have mastered the basic operation it's well worth taking a look at Hamcomm's configuration file HC.CFG. This is a very well presented ASCII text file that's used every time you start Hamcomm. Within this file are a wide range of configuration options that can be changed to tailor the system to suit your personal requirements. When reading through this you will see that Hamcomm is set to start up ready to receive amateur transmissions sending 45.5 baud with a 170Hz shift. This start-up setting can be changed by modifying Hamcomm's main configuration file. The author has made this very simple by using a simple text file complete with full descriptions of all the available commands. The file is called HC.CFG and this is scanned Hamcomm every time you use it. To help you customise your system here's a copy of my adaptation of the configuration file.

```
# Utility Settings
select port com2
set timezone UTC
set mode baudot
set baud 50
set wpm 20
set afcenter 1275
set afshift 400
set autounshift off
set keying reverse
```

You can see that all the main operating parameters can be adjusted to suit your individual

listening preferences. A word of warning though - before you alter this file, I would recommend you make a back-up copy of the configuration file. Then if you get into a mess you can simply reload the back-up copy.

Once RTTY reception is under way you have a number of options available for dealing with the received text. One of the most useful for the utility listener is the log file. This lets you save all the received text to a disk file for review later.

The icing on the cake must be the inclusion of a weather decoder for handling Synoptic coded weather reports. This option provides real time decoding of these reports into plain English. The following text shows an example received from Bracknell met.

10291 [Germany, 53x02'N 014x00'E ANGERMUENDE]
41460 [manned] [cloud height:300-600m] [visibility:10km]
82209 [cloud cover:8/8] [wind dir:220 deg, speed:9]
10046 [air temp:+4.6]
200-6 [dew-point temp:+-.6]
30138 [pressure at station level:1013.8hPa]
40207 [pressure at sea level:1020.7hPa]
580072162 [pressure:decreasing rapidly] [change in 3h:0.7hPa]
8759/ [cloud info]

As you can see, this option prints the raw data followed by the decoded information contained in square brackets. Whilst not as the best Synoptic decoding systems, it still provided very interesting information.

In addition to the comprehensive RTTY functions, Hamcomm also includes a very good Morse code package. This provides automatic speed tracking and simple tuning options. To change to c.w. reception you just select c.w. from the MODE menu tune-in your receiver and the decoder does the rest. Whilst you could use the RTTY tuning options for c.w., I found it was much easier to use the flashing cursor that's found next to the speed readout. The receiver tuning is adjusted so that the cursor moves in synchronisation with the incoming signal. This was one mode where some narrow external filtering gave considerable performance improvements. This applies to most systems as it's very difficult for automatic tracking systems to differentiate between a genuine dot and a burst of interference.

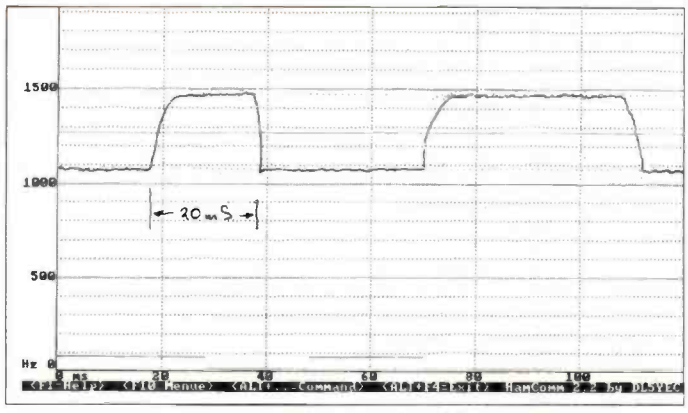
That about completes this introduction to Hamcomm and if you would like a copy to trial see my Offers section at the end of the column. My thanks to Wilhelm Schroederfor permission to distribute Hamcomm.

PIAB Schedule

Day Watson recently managed to capture a full schedule for this popular station. The transmission mode for all stations is FEC A 96 baud with a 400Hz shift.

Baud Rate Measurement

Mike Greatrex from Stone in Staffordshire wonders if there's an easy way to determine the baud rate of a RTTY signal. Whilst I don't know of a program designed solely for achieving this, there are one or two alternatives. You could use the bit length feature of Hamcomm as described elsewhere in this column but this is not always conclusive. The standard method for determining the baud rate of a signal is to measure the duration of the shortest element of the transmission. The reciprocal of this period then gives the baud rate. As an example, the smallest element in a standard 50 baud RTTY signal is 0.02s. So to find the baud rate you just take the reciprocal which is



Hamcomm oscilloscope display. Bracknell Met at 50 baud.

1/0.02 = 50 baud.

Your next question, of course, is how can I find out the duration of the shortest element. You can use Hamcomm or one of the many other decoding systems that feature an oscilliscope display (you could even use a real oscilliscope!). All you then do is observe the signal for a while so you can spot the shortest element. The duration can then be readout from the oscilliscope's display scale. I've shown a printout from Hamcomm whilst receiving Bracknell Met at 50 baud.

Special Offers

Over recent months I've put together a number of special offers designed to help utility enthusiasts get the most from the hobby.

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

This month I've moved away from asking for postage stamps to a small contribution. This is quite simply because I can't pay for my printer paper and ink with stamps! The ordering details and prices for the various combinations are as follows.

JVFAX or Hamcomm: For each program send a blank formatted 3.5in disk (720Kb or 1.44Mb) plus 50p coin.

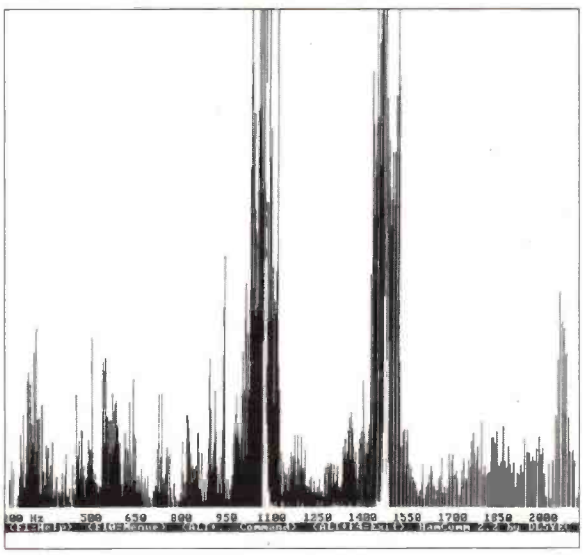
Beginners List and/or Decode list - 50p coin.

Both lists plus JVFAX or Hamcomm send a blank formatted 3.5in disk (720Kb or 1.44Mb) plus £1 (coin).

Frequency List

Now for this month's selection of loggings sent in by Decode readers. I'm always looking for new information so if you can help please drop me a line at the address at the head of the column.

Hamcomm spectrum analysis display.



Freq (MHz)	Mode	Speed	Shift	Call	Time	Notes
4.250	CW			PCH20	1605	Scheveningen
6.995	RTTY	50	400	-	1504	Spanish
7.639	Sitor	100	170	Unid	1321	
8.553	CW	-	-	CTP	1917	Portuguese Naval
8.629	CW	-	-	WCC	2207	Chatham USA
12.860	CW	-	-	4X0	1730	Haifa Israel
13.4245	T-PLEX	100	170	-	-	Pakistan Embassy
13.4288	DUP-ARQ	125	300	HGX39	-	Hungarian Embassy
13.8467	ARQ-E3	100	450	RFVI	-	French Army
13.9684	FEX	100	170	ICRC	-	Geneva
14.3741	PACKET	300	300	-	-	USA Mars
14.4545	RTTY	50	500	KCNA	-	Pyongyang
14.5725	RTTY	50	360	JANA	-	Tripoli Arabic News
18.264	RTTY	50	360	JANA	-	VNA Hanoi
19.0769	RTTY	50	400	CLP7	-	Cuban Embassy
19.117	Sitor	100	200	-	1302	Indonesia news
19.294	RTTY	50	400	-	1425	Cuban information
20.300	FAX	120	576	NKW	-	USN Diego Garcia
20.724	Sitor	100	170	HCB	1310	UN Switzerland

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

LM&S

Long, Medium and Short Waves

Under the terms of an international agreement short wave broadcasters are permitted to alter their transmission schedules in March, May, September and November to take account of seasonal variations in propagation. Unfortunately a few ignore the agreement and introduce changes with little warning.

Owing to the changes in March, some of the s.w. information herein may no longer be applicable by the time this issue arrives on the bookstalls.

Long Wave Reports

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT). Unless stated, logs compiled in the four week period ending February 26.

While visiting Malta, **Tim Bucknall** (Congleton) checked the band during daylight and after dark. Some broadcasts he picked up at night came from Polati, Turkey (1200kW) on 180kHz; Ouargla, Algeria (1000kW) on 198; Azilal, Morocco (800kW) on 207; Grigoriopol, Moldova (1000kW) on 234. There was no mention in his report of BBC R-4 on 198 from Droitwich (500kW), Burghead (50kW) and Westerglen (50kW) - no doubt it was masked by the transmission from Ouargla.

Medium Wave Reports

UK listeners who searched the band at night in February for m.w. transatlantic signals found conditions were often unfavourable. This was unexpected, because many signals reached our shores at night in January.

In the early hours of February 10, **Ted Bardy** (N.London) heard CBF in Montreal, PQ on 690kHz. Although their signal rated 22332 at 0125 others were too weak to be identified.

Signals from WSSH in Boston on 1510 were heard at 0240 by **Ron Damp** in E.Worthing on February 13. The signal was peaking 32222 so he continued to search the band. At 0320 he picked up an ident from WINS in New York on 1010, but reception was poor, at best their signal was 12221. WBBR in New York, on 1130 also became audible and peaked 21221 at 0328.

Over in Co.Fermanagh, **Paul Logan** (Lisnaskea) was surprised by the lack of signals, but on February 25 he logged R.Vibracion (YVSY), Carupano on 1470 at 0140; Harbour Light R, Carriacou on 1400 as weak at 0200; also R.Dos Mil (YVRZ), Cumana on 1500 at 0215.

Good reception from some stations in N.Africa and the Middle East was noted after dark by **George Millmore** in Wootton, IoW. He logged the BSKSA signals from Damman on 783 (100kW) and Qurayyat on 900 (1000kW) as SIO222.

Following the closure of the 400/800kW WestDeutscher Rundfunk outlet from Langenburg on 1593kHz, **Roy Merrall** (Dunstable) found that four fairly weak signals could be heard instead: Ukraine R3 via Dnipropetrovsk, with clear UR3 idents from 1600 until well after midnight; R.Romania, easily identified from 1900; Balarus Ext Service with German heard around 1930; Egyptian R&TV via Matruh in Arabic, heard around 1920 with a parallel on 864.

Short Wave Reports

The closure of the 16, 19 and 25m bands early in the evening has forced some broadcasters to move to the 31, 41 and 49m bands. It may become necessary to use them more extensively as the minimum of the present sunspot cycle approaches.

The **25MHz (11m)** band is still being used by four broadcasters to reach listeners in Africa, but once again there were no reports from there. From time to time their signals arrived in the UK via back scatter and other unreliable modes. Although they were weak the absence of interference helped reception. R.Norway Int, Oslo 25.730 (Norw 1300-1329) was 15111 at 1314 by **Fred Pallant** in Storrington; R.Denmark via RNI 25.730 (Da 1330-1355) 15231 at 1330 by **Eric Shaw** in Chester; RFI via Allouis 25.820 (Fr 0900-1555) 15331 at 1145 by **Simon Hockenhull** in E.Bristol; R.Nederlands via Flevo 25.970 (Du 1030-1125, Sun only) SIO252 at 1100 by **Kenneth Buck** in Edinburgh.

In contrast, conditions in the **21MHz (13m)** band have enabled many signals to reach our shores in the daytime. Quite often R.Australia's signals from Darwin could be heard here: 21.525 (Eng to S.Asia 0100-0900) was 24211 at 0755 by **Eddie McKeown** in Newry; 21.725 (Eng to Asia 0100-0900) SIO444 at 1045 by **Bill Clark** in Rotherham.

Also heard here in the morning were Slovak R.Int via Rimavska Sobota 21.705 (Eng to Aust 0830-0857) 23333 at 0822 by **Chris Shorten** in Norwich; R.Japan via Moyabi 21.525 (Eng, Jap to Eu, M.East, Africa 0700-0900) 34443 at 0855 by **Tim Allison** in Middlesbrough; also 21.640 (Jap to Eu, M.East 0800-0900) 44444 at 0855 in Lisnaskea; BBC via Rampisham 21.745 (Russ, Eng to CIS 0900-0930) 55555 at 0900 by **Bernard Curtis** in Stalbridge; R.Portugal via Sines 21.655 (Port to Brazil 0700-2000 Sat/Sun) 35433 at 0924 by **Chris Haigh** in Huddersfield; R.Moscow Int 21.450 (Eng WS 0800-1300) 54444 at 0938 by **John Eaton** in Woking; UAE R, Abu Dhabi 21.735 (Ar to Eu 0800-1300) 35433 at 1000 in Chester; R.Moscow Int 21.845 (Eng WS 0800-1100) 43444 at 1005 by **Peter Pollard** in Rugby; BBC via Kranji 21.715 (Eng to SE.Asia 0900-1030) 34333 at 1017 by **Gerry Haynes** in Bushey Heath; UAE R.Dubai 21.605 (Eng to Eu 1030-1055) 54444 at 1032 in E.Worthing; R.Pakistan, Islamabad 21.520 (Eng to Eu 1100-1120) SIO212 at 1100 by **Tom Smyth** in Co.Fermamagh; BSKSA, Riyadh 21.670 (Ind to SE.Asia 1000-1200) 45555 at 1140 in Storrington; RFI via Allouis? 21.620 (Fr to Africa, M.East 0800-1230) 34333 at 1200 by **Rhoderick Illman** in Oxted; DW via Kigali 21.705 (Fr to W.Africa 1200-1300) SIO333 at 1200 by **Phillp Rambaut** in Macclesfield.

In the afternoon, RFI via Issoudun 21.645 (Eng to C.Am 1200-1300) was SIO455 at 1205 in Edinburgh; RAI Rome 21.520/21.535/21.710 (It [Home Service relay to Africa, Lat.America & USA] 1330-1700, Sun only) 35553 at 1402 by **David Edwardson** in Wallsend; HCJB, Quito 21.455 (Eng u.s.b. + p.c.) 55444 at 1545 by **Ronald Kilgore** in Co.Londonderry; R.Japan via Moyabi 21,700 (Jap to M.East, Eu, Africa 1600-1700) 35433 at 1600 by **Darren Beasley** in Bridgwater; WYFR via Okeechobee 21.615 (Eng to Eu, Africa 1600-1700) 24222 at 1631 by **Vera Brindley** in Woodhall Spa; also 21.500 (Eng to Eu, Africa 1700-1900) 33333 at 1700 by **Sheila Hughes** in Morden; BBC via Ascension Is 21.660 (Eng to Africa 0730-1745) SIO333 at 1711 by **Julian Wood** in Elgin; R.Nederlands via Bonaire 21.590 (Eng to Africa 1730-2025) 44444 at 1752 by **Howard Seddon** in Wigan.

Broadcasters using the **17MHz (16m)** band during the morning include Channel Africa, Johannesburg 17.710 (Eng to Africa 0600-0700) 44344 at 0653 in Norwich; R.Australia via Darwin 17.695 (Eng to S.Asia 0700-0900) 22222 at 0808 in Newry; R.Pakistan, Islamabad 17.900 (Eng to Eu 0800-0845) 44444 at 0820 in Lisnaskea; R.Japan via Yamata 17.860 (Eng to Oceania 0900-1000) 23332 at 0906 in Middlesbrough; AIR Delhi 17.387 (Eng to Aust, NZ 1000-1100) 22222 at 1025 by **Robert Connolly** in Kilkeel; BBC via Mayhe 17.885 (Eng to E.Africa 0800-1400) 13231 at 1030 in Chester; RTM via Tanger 17.815 (Fr, Eng, Sp 1045-1400) 54544 at 1100 by **Ross Lockley** in Stirling; R.Pakistan, Islamabad 17.900 (Eng to Eu 1100-1120) 34444 at 1101 in E.Worthing.

Those noted after mid-day were R.Norway Int, Oslo 17.830 (Eng to ? 1200-1230 Sun) 33333 at 1200 by **Clare Pinder** in Appleby; R.Tashkent, Uzbekistan 17.745 (Eng to Eu 1200-1228) 33333 at 1216 by **Leo Barr** in Sunderland; R.Romania Int, Bucharest 17.720 (Eng to Eu 1300-1400) 44444 at 1300 in Morden; Africa No.1, Gabon 17.630 (Fr, Eng to W.Africa 0700-1600) 45444 at 1550 in Storrington; BBC via Antigua 17.840 (Eng to S.Am 1400-1615) 54333 at 1552 in Bushey Heath; WEWN, Birmingham 17.510 (Eng to Eu 1600-1700) 55433 at 1600 in Co.Londonderry; RFI via Issoudun

Long Wave Chart

Freq kHz	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	Q
153	Donebach	Germany	500	A,B,E*,G*,H,J*,M,N,O,Q*,R
153	Brasov	Romania	1200	J*,L*
162	Allouis	France	2000	A,B,D*,E*,F*,H,J*,M,N,O*,Q*,R
171	Kaliningrad	Russia	1000	A,E*,J*,K*,M,N,O*,P,R
171	Medi 1-Nador	Morocco	2000	C,F*,N*,Q*
177	Oranienburg	Germany	750	A,B*,E*,J*,K*,M,N*,O*,Q,R
180	Polati	Turkey	1200	C*
183	Saarlouis	Germany	2000	A,B,C*,D*,E*,F*,H,J*,M,N,O*,Q,R
189	Caltanissetta	Italy	10	C,E*,L*
189	Tbilisi	Georgia	500	A
198	Ouargla	Algeria	1000	C*
198	Warsaw 3	Poland	200	K*
198	BBC Droitwich	UK	500	A,D*,H,J,M,O*,P,Q*,R
198	St.Petersburg	Russia	150	J*
207	Munich	Germany	500	A,C*,E*,G*,H,J*,M,N,O*,R
207	Reykjavik	Iceland	100	P*
207	Azilal	Morocco	800	C*,N*
207	Kiev	Ukraine	500	E*,L*
216	RMC Roumoules	S.France	1400	A,B,C,E*,F*,H,J*,M,N,O*,Q*,R
216	Oslo	Norway	200	H*,J*,N
225	Raszyn Resv TX.	Poland	?	A,E*,G*,H*,J*,M,N,O*,P*,Q*,R
225	TRT-1 Van	Turkey	600	L*
234	Beidweiler	Luxembourg	2000	A,C,E*,F*,H,J*,M,O*,R
234	Grigoriopol	Moldova	1000	C*
234	St.Petersburg	Russia	1000	A,J*,O*
243	Kalundborg	Denmark	300	A,E*,G,H,J*,M,N,O*,P*,Q*,R
243	Alma-Ata	Kazakhstan	500	L*
243	Erzurum	Turkey	200	L*,Q*
252	Tipaza	Algeria	1500	C,H*,M,N*,Q*
252	Atlantic 252	S.Ireland	500	A,B*,D*,E*,F*,H*,I,J,K*,M,N,O*,P,Q,R
261	Burg	Germany	200	A,B,C*,E*,H,M,N,O,R
261	Taldom(Moscow)	Russia	2000	F*,J*,N*,O*
270	Topolna	Slovak Rep.	1500	A,C*,E*,F*,G*,H,J*,M,N,P,Q*,R
270	Orenburg	Russia	40	L*
279	Ashkhabad	Turkmenistan	150	L*
279	Minsk	Belarus	500	A,E*,J*,L*,M*,N,Q,R

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

Listeners:
A: Ted Bardy, N.London.
B: Vera Brindley, Woodhall Spa.
C: Tim Bucknall, Malta.
D: Martin Dale, Stockport.
E: John Eaton, Woking.
F: Chris Haigh, Huddersfield.
G: Simon Hockenhull, E.Bristol.
H: Sheila Hughes, Morden.
I: Ronald Kilgore, C.Londonderry.
J: Eddie McKeown, Newry.
K: Mary McPhillips, Co.Monaghan.
L: Roy Merrall, Dunstable.
M: George Millmore, Wootton, IoW.
N: Fred Pallant, Storrington.
O: Harry Richards, Barton-on-Humber.
P: Tom Smyth, Co.Fermanagh.
Q: Andrew Stokes, Leicester.
R: Phil Townsend, E.London.

Medium Wave Chart

Freq kHz	Station	Country	Power (kW)	Listener
520	Hof-Saale (BR)	Germany	0.2	B*,H*
520	Hof/Hurzburg (BR)	Germany	0.2	R*
531	Ain Beida	Algeria	600	F,H*,L*,O*,U
531	Torshavn	Faroe Is.	100	O
531	Leipzig	Germany	100	B,F*,O*,P*,S,U*,V*
531	RNE5 via ?	Spain	?	O*,P*,S*
531	Beromunster	Switzerland	500	X
540	Wavre	Belgium	150/50	B,G*,M,O,P,S,U
540	Solt	Hungary	2000	F*,O,P*,U
540	Conamara	Ireland (S)	2	O
540	Sidi Bennour	Morocco	600	O*,S*
549	Les Trembles	Algeria	600	F*,L*,O*,P*,S*,U
549	Bayreuth(DLF)	Germany	200	B,G*,H*,O,P*,U*
549	Quarayyat	Saudi Arabia	2000	R*
558	Espoo	Finland	100	S*
558	Rostock(NDR)	Germany	20	H*
558	RNE5 via ?	Spain	?	O*,P*,U,V*
567	Berlin	Germany	100	H*,O*,P*,Q*
567	Tullamore(RTE1)	Ireland (S)	500	B,E,H*,I*,O,S,U,V
567	RNE5 via ?	Spain	?	O*,S*
576	Muhlacker(SDR)	Germany	500	B,L*,O,P*,S,U
576	Barcelona(RNE5)	Spain	50	B,L*
585	Paris(FIP)	France	8	B,L,P*,S,X
585	Madrid(RNE1)	Spain	200	B,G*,H*,O,P*,S*,U,V
585	Gafsa	Tunisia	350	F*,S*
585	Oumfries(BBCScot)	UK	2	U
594	Frankfurt(HR)	Germany	1000/400	B,L,O*,P*,U
594	Oujda-1	Morocco	100	B,H*,O*,S*
594	Muge	Portugal	100	O,P*,S*
594	Duba	Saudi Arabia	2000	R*
603	Lyon	France	300	O,P*
603	Sevilla(RNE5)	Spain	50	O*,P*,S*,V*
603	Sousse	Tunisia	10	F
612	Athlone(RTE2)	Ireland (S)	100	B,H*,K,O,S,U,V
612	Sebaa Aioun	Morocco	300	O*
612	RNE1 via ?	Spain	10	O*,S*
612	Sarajevo	Yugoslavia	600	F*
621	Wavre	Belgium	80	B,L,M,O,P*,S,U
621	Batra	Egypt	2000	F*,O*
621	RNE1 via ?	Spain	10	O*
621	Barcelona(OCR)	Spain	50	P*,S*,U*
630	Dannenberg(NDR)	Germany	100	V*
630	Vigra	Norway	100	O,P*,S*,U
630	Sta. Isabel	Portugal	50	O*
630	Tunis-Djedeida	Tunisia	600	F,P*,S*
639	Praha(Liblice)	Czech	1500	B,F*,S
639	RNE1 via ?	Spain	?	G*,H*,O,P*,S,U
648	Tobruk	Libya	300	F*
648	RNE1 via ?	Spain	10	G*,P*
648	Orfordness(BBC)	UK	500	F*,H*,L*,P*,S
657	Neubrand'g(NDR)	Germany	250	O*,P*,U*
657	Napoli	Italy	120	F,H*
657	Madrid(RNE5)	Spain	20	O*,P*,S*,V*
657	Wrexham(BBCWales)	UK	2	B,L,U
666	Bodensees'dr(SWF)	Germany	300/180	O*,P*,S*,U,V*
666	Lisboa	Portugal	135	O,S
666	Barcelona(COPE)	Spain	10	U*
675	Marseille	France	600	F*,H*,S*
675	Lopic(R10 Gold)	Holland	120	L*,O,P
675	Benghazi	Libya	100	F
675	Bodo	Norway	10	U
684	Hof-Saale	Germany	100	B
684	Seville(RNE1)	Spain	500	B,F,G*,H*,O,P*,S*,U
684	Kairouan	Tunisia	10	F
684	Beograd	Yugoslavia	2000	F,H*,P*,S*
693	Ain el Hamam	Algeria	5	O*
693	Berlin	Germany	250	Q*
693	Viseu(ROP1)	Portugal	10	O*
693	Enniskillen(BBC5)	UK	1	V
702	Flensburg(NDR)	Germany	5	B,P*,R*
702	Monte Carlo	Monaco	300	R*
702	Presov	Slovak Rep.	400	H*
702	Zamora(RNE1)	Spain	10	O*,P*
711	Rennes 1	France	300	B,C,H*,K,M,O, P*,S*,U,W*
711	Laayoune	Morocco	600	L*,O*
720	Langenberg	Germany	200	E,S
720	Norte	Portugal	100	O*,P*,Q*
720	Sfax	Tunisia	200	F,S*
720	Lots Rd,Ldn(BBC4)	UK	0.5	H*,K,S,V
729	Cork(RTE1)	Ireland (S)	10	O,U
729	RNE1 via ?	Spain	?	H*,O,P*,S*,U*,V*
738	Paris	France	4	S
738	Poznan	Poland	300	F*,G*,O*,P*,S*,U,V*
738	Barcelona(RNE1)	Spain	500	F*,G*,O*,P*,S*,U,V*
747	Petric	Bulgaria	500	F*
747	Flevo(Hilv2)	Holland	400	B,E*,H*,M,O,P*,S,U
756	Braunschweig(DLF)	Germany	800/200	B,E,G*,O*,P*,S,V*
756	Lugoj	Romania	400	F*,R*,S*
756	Bilbao(El)	Spain	5	O*
756	Redruth(BBC4)	UK	2	P*,S
765	Sottens	Switzerland	500	C,F*,L*,O*,P*,S*,U,V*
774	Abis	Egypt	500	F*
774	Enniskillen(BBC4)	Ireland (N)	1	P*
774	RNE1 via ?	Spain	?	G*,L,O*,P*,Q*,S*
783	Burg	Germany	1000	E,P*,U
783	Miramar(R.Porto)	Portugal	100	O*
783	Dammam	Saudi Arabia	100	S*
783	Tartus	Syria	600	O*,R*
792	Limoges	France	300	S,U
792	Lingen(NDR)	Germany	5	P*
792	Kavala(VOA)	Greece	500	F*
792	Sevilla(SER)	Spain	20	O*,P*,S*,U*,V*
801	Munchen-Ismaning	Germany	300	B,P*
801	Ajlun	Jordan	2000	F*
801	RNE1 via ?	Spain	?	O*,P*,U*,V*
810	Skopje, Macedonia	Greece	1000	F*
810	Madrid(SER)	Spain	20	P*,U
810	Westerglen(BBC)	UK	100	K*,P*,S
819	Batra	Egypt	450	F*,O*,S
819	Toulouse	France	50	P*,U
819	Trieste	Italy	25	S*
819	Rabat	Morocco	25	O*
819	Warsaw	Poland	300	P*,S*
819	S.Sebastian(El)	Spain	5	O*
828	Hannover(NDR)	Germany	100/5	P*
837	Nancy	France	200	L*,M,O,P*,V*
837	COPE via ?	Spain	?	L*,O,P*,S*
837	Kharkov	Ukraine	150	U*
846	Rome	Italy	540	B,F*,H*,P*,S*,U
855	R.Bucharest	Roumania	750	F*
855	RNE1 via ?	Spain	?	G*,O,P*,S*,V*
864	Yerevan	Armenia	150	C*
864	Santah	Egypt	500	F*,R*
864	Paris	France	300	B,O,P*,S*,U,X
864	Errachidia	Morocco	15	O*
864	Socuellamos(RNE1)	Spain	2	H*,O*,P*,S*
873	Frankfurt(AFN)	Germany	150	D*,H*,K*,L*, O*,P*,S*,U*
873	Zaragoza(SER)	Spain	20	L*,P*,S*,U*
873	Enniskillen(R.UI)	UK	1	J,O,U
882	COPE via ?	Spain	?	P*,S*,U*
882	Washford(BBC)	UK	100	L,P*,S
882	Titograd	Yugoslavia	300	F*
891	Algiers	Algeria	600/300	H*,O*,P*,S*,U*
891	Huisberg	Netherlands	20	P*
891	Vila Moura	Portugal	10	O*
900	Milan	Italy	600	F*,O*,P*,U*
900	COPE via ?	Spain	?	O*,P*,U*
900	Qurayyat	Saudi Arabia	1000	F*,R*,S*
909	Mallorca(RNE5)	Spain	10	O*,Q*
909	B'mans Pk(BBC5)	UK	140	S
909	M'side Edge(BBC5)	UK	200	G
918	R.Ljubljana	Slovenia	600/100	C*,F*,O*,S*,U
918	Madrid(R.Int)	Spain	20	O*,P*,S*,U
927	Wolvertem	Belgium	300	B,O,P*,S,U
927	Evora(RRE)	Portugal	1	O,P*,R*
927	Izmir	Turkey	200	B*,O*,R*
936	Bremen	Germany	100	P*,S*,U,V*
936	Venezia	Italy	20	S*
936	Agadir	Morocco	600	O*
936	RNE5 via ?	Spain	?	O*,P*
936	Lvov	Ukraine	500	F*,U
945	Toulouse	France	300	O,P*,V*
954	Brno(Dobrochov)	Czech Rep.	200	P*,U,V*
954	Madrid(CI)	Spain	20	H*,O*,P*,U
963	Pori	Finland	600	B,O*,P*,S*,U
963	Paris	France	8	S
963	Tir Chonaill	Ireland (S)	10	O,S*
963	Seixal(RRE)	Portugal	10	O*
963	Tunis-Djedeida	Tunisia	200	F
972	Hamburg(NDR)	Germany	300	B,H*,P*,U,X
972	RNE1 via ?	Spain	?	O*,P*,S*
981	Alger	Algeria	600/300	O*,P*,S*,U,W*
990	Berlin	Germany	300	P*
990	R.Bilbao(SER)	Spain	10	O*,P*
990	Tywyn(BBC2)	UK	1	O*,O,W*
999	Delimara	Malta	5	F
999	Madrid(COPE)	Spain	50	O*,P*,V*
1008	Las Palmas(SER)	Gran Canaria	?	O,P*,R*
1008	Kerkyra, Corfu Is.	Greece	50	R*
1008	Flevo(Hilv-5)	Holland	400	B,E*,O,P*,S
1017	Rheinsender(SWF)	Germany	600	B,F*,G*,O*,P*,S*,V,W*
1017	Burgos(RNE5)	Spain	10	O*,P*
1026	Graz-Oobl	Austria	100	P*
1026	SER via ?	Spain	?	L,O
1035	Tallinn	Estonia	500	V
1035	Caltanissetta	Italy	2	F
1035	Milan	Italy	50	O*
1035	Lisbon(Prog3)	Portugal	120	O*,P*
1044	Dresden	Germany	250	O*,P*
1044	Sebaa-Aioun	Morocco	300	O*,P*
1044	S.Sebastian(SER)	Spain	10	O*,S*
1053	Iasi	Romania	1000	F*
1053	Zarogoza(COPE)	Spain	10	O*,Q*
1053	Droitwich(BBC1)	Uk	150	G,S
1062	Kalundborg	Denmark	250	B,O*,P*,S*,X
1062	Cagliarl	Italy	25	F
1062	Diyabakir	Turkey	300	Q*,R*
1071	France-Inter.	France	?	B,P*,S,W*
1071	Bilbao(El)	Spain	5	O*
1080	Katowice	Poland	1500	P*,S*
1080	Toledo(OCR	Spain	5	O*
1080	SER via ?	Spain	?	O*,P*,U
1089	B'mans Pk(BBC1)	UK	150	G,S
1098	Nitra(Jarok)	Slovakia	1500	P*,S*
1098	RNE5 via ?	Spain	?	O*,P*
1107	AFN via ?	Germany	10	O*,K*,P*
1107	RNE5 via ?	Spain	?	O*,P*,S,W*
1107	Wallasey(BBC1)	UK	0.5	U,W
1116	Palermo	Italy	10	F
1116	Pontevedra(SER)	Spain	5	O*,P*,U,V*
1125	La Louviere	Belgium	20	P*,S*
1125	Oeanovec	Croatia	100	C*
1125	RNE5 via ?	Spain	?	O*
1125	Llandrindod Wells	UK	1	U
1134	Zadar	Croatia	600/1200	C*,F,Q*,S*,W*,X
1134	COPE via ?	Spain	2	O*,P*,S*
1143	AFN via ?	Germany	1	O
1143	Stuttgart(AFN)	Germany	10	P*
1143	Messina	Italy	6	P*
1143	Reus(COPE)	Spain	2	O*
1152	RNE5 via ?	Spain	10	O*
1161	Strasbourg(Flnt)	France	200	O*,P*,W*
1170	Vila Real	Portugal	10	O*
1170	Beli Kriz	Slovenia	300	R*
1179	SER via ?	Spain	?	P*,W*
1179	Solvesborg	Sweden	600	B,E,G*,K*,M,O,P*, S*,U,V*,W*
1188	Kuurne	Belgium	5	B,O*,P*,S,X
1188	Reichenbach(MDR)	Germany	5	R*
1188	Szolnok	Hungary	135	S*
1197	Munich(VOA)	Germany	300	P*
1197	Virgin via ?	UK	?,	B,O,M,O,P*,S
1197	Cheltenham(V)	UK	1	K
1206	Bordeaux	France	100	O,P*,S*
1206	Wroclaw	Poland	200	P*
1215	Lushnje	Albania	500	F
1215	Castellon(COPE)	Spain	2	P*
1215	Virgin via ?	UK	?	B,D,G,I*,N,O,S,V,W*
1224	Vidin	Bulgaria	500	F,P*,S*
1224	COPE via ?	Spain	?	O
1224	Virgin via ?	UK	?	B,O,M,V
1233	Liege	Belgium	5	P*,S
1233	Tanger	Morocco	200	O*
1233	Virgin via ?	UK	?	B,D,K,L,O*
1242	Marseille	France	150	P*
1242	Virgin via ?	UK	?	B,O
1251	Marcali	Hungary	500	P*,U*
1251	Tripoli	Libya	500	F,O*
1251	Huisberg	Netherlands	10	S*
1251	Porto	Portugal	10	O*
1260	SER via ?	Spain	?	O*,P*,S*
1260	Virgin R, Guildford	UK	?	B,L,M
1269	Neumunster(DLF)	Germany	600	B,E,G*,O*,P*, S*,U*,V,W*
1269	COPE via ?	Spain	?	U
1278	Strasbourg	France	300	S*
1278	Dublin/Cork(RTE2)	Ireland (S)	10	G*,O,P*,S,U,V*,X
1287	Litomysl(RFE)	Czech Rep.	300/200	P*,S*,U*
1287	Lerida(SER)	Spain	10	O*,P*,U*
1296	Pirsagat	Azerbaijan	150	R*
1296	Valencia(COPE)	Spain	10	O*,P*,Q*,U*
1296	Orfordness(BBC)	UK	500	P*
1305	Marche	Belgium	10/5	U
1305	Rzeszow	Poland	100	P*,S*
1305	RNE5 via ?	Spain	?	O*,P*,U
1314	Kvitsoy	Norway	1200	B,G*,O,P*,S,U,V*
1314	RNE5 via ?	Spain	?	O*,P*
1323	Wachenbrunn(RMWS)	Germany	1000/150	C,G*,O,P*, U*,W*
1323	Safi	Morocco	5	O*
1332	Palermo	Italy	10	F
1332	Rome	Italy	300	C,P*,S*,U*,W*
1341	Lisnagarvey(BBC)	Ireland (N)	100	K*,S*
1350	Nancy/Nice	France	100	G*,O,P*,S*
1359	Melilla	Morocco	5	P*
1359	Arganda (RNE-FS)	Spain	600	O*,R*,U,V*
1368	Foxdale(Manx R)	IOM	20	O*,G*,L*,O,P,S*,U,V*
1368	Catania	Italy	2	F
1377	Lille	France	300	B,O,S,U*
1386	Athens	Greece	50	B*,F,O*,R*
1386	Kaliningrad	Russia	500	G*,K*,L*,P*,S*
1395	Lushnje(Tirana)	Albania	1000	F*,L*,P*,S*,U*,W*,X
1402	Tripoli	Libya	20	F,O*
1404	Ajaccio	France	20	F
1404	Brest	France	20	G*,O,P*,S,X
1413	Masirah Is(BBC)	Oman	1500	F*
1413	RNE5 via ?	Spain	?	O*,P*
1422	Heusweiler(SR)	Germany	1200/600	G*,O*,P*,S*,U,W*
1431	Nikolayev	Ukraine	400	I*,V*
1440	Kyzylorda	Kazakhstan	?	R*
1440	Marnach(RTL)	Luxembourg	1200	I*,O*,S*,U*
1440	Damman	Saudi Arabia	1600	O*,P*
1449	Berlin	Germany	5	O,P*,U
1449	Catania	Italy	6	F
1449	Redmoss(BBC4)	UK	2	O*
1458	Lushnje(Tirana)	Albania	500	U
1467	Esfahan	Iran	200	S*
1467	Monte Carlo(TWR)	Monaco	1000/400	L*,O,P*,S*,U,V*
1476	Wien-Bisamberg	Austria	600	G*,P*,S*,U
1481	Dubai	UAE	1500	O
1485	SER via ?	Spain	?	O
1485	Bournem'th(BBC1)	UK	2	S*,V
1494	Clermont-Ferrand	France	20	O,W
1494	Amman	Jordan	?	O*
1494	St.Petersburg	Russia	1000	O*,P*,U
1503	Stargard	Poland	300	A*,L*,P*,S*
1503	RNE5 via ?	Spain	?	O*
1512	Wolvertem	Belgium	600	A*,G*,L*,O,P*, S,T,U*,V*
1512	Palermo	Italy	2	F
1512	Jeddah	Saudi Arabia	1000	O*,R*
1512	R.Ukraine Int.	Ukraine	?	O*,R*
1521	R.Beijing	China	500	R*
1521	Kosice(Cizatice)	Slovakia	600	P*
1521	Duba	Saudi Arabia	2000	F,O*,R*,U
1521	R.Manresa(SER)	Spain	2	O*
1530	Vatican R	Italy	150/450	F*,O,P*,S*,U*,V*
1539	Mainflingen(DLF)	Germany	700	G*,O*,P*,S*,U
1557	Nice	France	300	Q,U*,W
1557	Cyclops(DW)	Malta	600	F
1566	Mayak	Russia	?	P*,R*
1566	Sfax	Tunisia	1200	F,O*,P*
1575	Genova	Italy	50	F,P*,T,S*,U*
1575	SER via ?	Spain	5	O,R
1575	Villanueva(OCR)	Spain	5	R*
1584	SER via ?	Spain	2	O
1593	Matruh	Egypt	10	R*
1593	Dnipropetrovsk	Ukraine	5	R
1602	SER via ?	Spain	?	S*
1602	Vitoria(El)	Spain	10	O,U*
1611	Vatican R	Italy	15	B*,F*,R*

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

Listeners:
A: Tim Allison, Middlesborough.
B: Ted Bardy, N.London
C: Leo Barr, Sunderland.
D: Clive Boutell, Dovercourt.
E: Vera Brindley, Woodhall Spa.
F: Tim Bucknall, Malta.
G: Martin Dale, Stockport.
H: John Eaton, Woking.
I: Alec Griffiths, Inverness.
J: Gerry Haynes, Bushey Heath.
K: Simon Hockenhull, E.Bristol.
L: Sheila Hughes, Morden.
M: Rhoderick Illman, Oxted.
N: Ronald Kilgore, Co.Londonderry
O: Paul Logan, Lisnaskea.
P: Eddie McKeown, Newry.
Q: Mary McPhillips, Co.Monaghan.
R: Roy Merrall, Dunstable.
S: George Millmore, Wootton IoW.
T: Clare Pinder, while in Appleby.
U: Martin Price, Shrewsbury.
V: Tom Smyth, Co.Fermanagh
W: Andrew Stokes, Leicester.
X: Phil Townsend, E.London.

Local Radio Chart

Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum R	I	7.50	A,E,L,M,P
585	R.Solway	B	2.00	A,J,M
603	Cheltenham(CD603)	I	?	A,E,G,L,M,P
603	Invicta SG (Coast)	I	0.10	A,E,H*,J*,L,P
630	R.Bedfordshire(3CR)	B	0.20	A,E,G,I,L,M,P
630	R.Cornwall	B	2.00	B,E,J*,L
657	R.Clwyd	B	2.00	A,E,L,M,O,P
666	DevonAir R	I	0.34	A,E,G,L
666	R.York	B	0.80	A,E,P
729	BBC Essex	B	0.20	A,E,H,I,P
738	Hereford/Worcester	B	0.037	A,E,G,L,M,P
756	R.Cumbria	B	1.00	E,J
756	R.Maldwyn	I	0.63	A,E,G,L,M
765	BBC Essex	B	0.50	A,E,H,J*,L,M,P
774	R.Kent	B	0.70	A,E,H,I*,L,P
774	R.Leeds	B	0.50	K*
774	Gloucester (3CSG)	I	0.14	E,L,M
792	Chiltern (S.Gold)	I	0.27	A,E,I,L,P
792	R.Foyle	B	1.00	J*
801	R.Devon	B	2.00	A,E,G,J,L,M,P
828	Chiltern (S.Gold)	I	0.20	A,E,I,P
828	R.WM	B	0.20	M
828	2CR (Cl.Gold)	I	0.27	G,L,P
837	R.Cumbria/Furness	B	1.50	M
837	R.Leicester	B	0.45	A,E,I,L,M,O,P
855	R.Devon	B	1.00	L
855	R.Norfolk	B	1.50	A,E,I,P
855	Sunshine R	I	0.15	A,E,G,M,P
873	R.Norfolk	B	0.30	A,E,I,L,M,P
936	Brunel R (Cl.Gold)	I	0.18	E,L,M,P
945	R.Trent (Gem AM)	I	0.20	A,D,E,J*,L,M,O,P
954	DevonAir (Cl.Gld)	I	0.32	J*,L,P
954	R.Wyvern (WYVN)	I	0.16	E,M,P
990	WABC (Nice & Easy)	I	0.09	E,M,N*,P
990	R.Aberdeen	B	1.00	J*
990	R.Devon	B	1.00	A,E,L,P
990	Hallam R.(Gt.Yks)	I	0.25	E
999	R.Solent	B	1.00	E,H,L,P
999	R.Trent (Gem AM)	I	0.25	A,E,M,P
999	Red Rose (Gold)	I	0.80	B
1017	Beacon R (WABC)	I	0.70	A,D,E,L,M,P
1026	Downtown R	I	1.70	N
1026	R.Cambridgeshire	B	0.50	A,E,H,L,P
1026	R.Jersey	B	1.00	E,H,I,L,P
1035	NorthSound R	I	0.78	E
1035	R.Kent	B	0.50	A,E,L,P
1035	R.Sheffield	B	1.00	E
1035	West Sound R	I	0.32	J
1107	Moray Firth R	I	1.50	A,E,J*,N*
1116	R.Derby	B	1.20	A,C*,D,E,I,M,O,P
1116	R.Guernsey	B	0.50	E,H,I,L,P
1152	BRMB (Xtra-AM)	I	3.00	F*,M
1152	LBC (L.Talkback R).	I	23.50	E,H*,L,P
1152	Piccadilly R(Gold).	I	1.50	D
1152	R.Broadland	I	0.83	J*,P
1161	Brunel R.(Cl.Gold).	I	0.16	E,L,M,P
1161	R.Bedfordshire(3CR)	B	0.10	A,E,P
1161	R.Sussex & Surrey	B	1.00	E,L,P
1161	R.Tay	I	1.40	C*
1170	Hi Wycombe 1170AM	I	?	E,P
1170	Portsmouth (SCR)	I	0.12	A,H,L,P
1170	R.Orwell (SGR)	I	0.28	E
1170	Signal R.(S.Gold)	I	0.20	D,M
1242	Invicta Snd(Coast)	I	0.32	A,E,H*,I,K,P
1242	Isle of Wight R.	I	0.50	E,G,J*,L
1251	Saxon R. (SGR)	I	0.76	A,E,J*,K,N*,P
1260	Brunel R (Cl.Gold)	I	1.60	L
1260	Marcher Snd (Gold)	I	0.64	D,M
1260	Sunrise R	I	0.29	A,L,O
1278	Bradford (Gt.Yks)	I	0.43	A,E,L
1305	Barnsley (Gt.Yks)	I	0.15	D,E
1305	Red Dragon (Touch)	I	0.20	A,E,L,P
1323	R.Bristol (Som.Snd)	B	0.63	E,K*,P
1323	Brighton (SCR)	I	0.50	A,E,H,L,M,P
1332	Hereward R.(WGMS)	I	0.60	A,E,K*,O,P
1332	Wiltshire Sound	B	0.30	E,F,J*,L,M,P
1359	Essex R.(BreezeAM)	I	0.28	A,E,K,P
1359	Mercia Snd(Xtra-AM)	I	0.27	E,M,O*
1359	Red Dragon (Touch)	I	0.20	J*
1359	R.Solent	B	0.85	L
1368	R.Lincolnshire	B	2.00	E,O,P
1368	R.Sussex & Surrey	B	0.50	A,E,H*,L,P
1368	Wiltshire Sound	B	0.10	E,J*,L,M
1413	Sunrise R.	I	0.125	A,E,F,H*,L,P
1431	Essex R.(BreezeAM)	I	0.35	A,B*,E,J*,K,L,M,P
1431	R 210 (Cl.Gold)	I	0.14	E,L,P
1449	R.Peterboro/Cambs	B	0.15	J*,L,O,P
1458	R.Cumbria	B	0.50	J*
1458	R.Devon	B	2.00	L,P
1458	Radio WM	B	5.00	M,O
1458	Sunrise R.	I	50.00	A,C*,D*,E,H*,J*,L,P
1476	County Sound	I	0.50	A,B,E,H*,K*,L,M,P
1485	R.Humberside	B	1.00	E,F
1485	R.Merseyside	B	1.20	D,E,J*,K,M
1485	R.Sussex & Surrey	B	1.00	A,E,L,P
1503	R.Stoke-on-Trent	B	1.00	C*,D,E,J*,L,M,P
1521	Reigate (Cty Snd)	I	0.64	A,B,E,H*,K*,L,M,P
1530	Sheffield (Gt.Yks)	I	0.74	D,E,J*,N*
1530	R.Essex	B	0.15	A,E,H,P
1530	R.Wyvern (WYVN)	I	0.52	E,J*,L,M
1548	Capital R (Cap G)	I	97.50	E,H*,L,N,P
1548	R.Bristol	B	5.00	J*,K*,L
1548	Liverpool (City G)	I	4.40	M,D*
1548	R.Forth (Max AM)	I	2.20	J*
1557	Chiltern R.(Gold)	I	0.76	B,E,J*,N
1557	Southampton (SCR)	I	0.50	E,J*,L,M,P
1557	Tendring (Mellow)	I	?	P
1584	Kettering (KCBC)	I	0.04	C,E,P
1584	R.Nottingham	B	1.00	A,D,E,J*,O,P
1584	R.Shropshire	B	0.50	E,M
1584	R.Tay	I	0.21	J*
1602	R.Kent	B	0.25	A,B*,E,H,I*,J*,L,N*,P

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

Listeners:
A: Ted Bardy, N.London.
B: Leo Barr, Sunderland.
C: Clive Boutell, Dovercourt.
D: Martin Dale, Stockport.
E: Gerry Haynes, Bushey Heath.
F: Francis Hearne, N.Bristol.
G: Simon Hockenhull, E.Bristol.
H: Sheila Hughes, Morden.
I: Rhoderick Illman, Oxted.
J: Eddie McKeown, Newry.
K: Mary McPhillips, Co.Monaghan.
L: George Millmore, Wootton, IoW.
M: Martin Price, Shrewsbury.
N: Tom Smyth, Co.Fermanagh.
O: Andrew Stokes, Leicester.
P: John Wells, East Grinstead.

17.620 (Eng to Africa 1600-1700) 24242 at 1610 in Woodhall Spa; HCJB, Quito 17.790 (Eng to M.East 1630-1800) 44334 at 1746 in Woking & 17.490 (Eng [u.s.b. + p.c.] 1900-2000) 24322 at 1925 in Bridgwater; RNB Brasilia, Brazil 17.750 (Port to Africa 1800-1920) SIO211 at 1815 in Macclesfield; R.Nederlands via Bonaire 17.605 (Eng to Africa 1930-2025) 55444 at 1940 by **Michael Griffin** in Ross-on-Wye.

Good DX reception has been noted in the **15MHz (19m)** band by listeners in the UK. R.Australia via Carnarvon on 15.170 (Eng, Chin, Cant to China, Korea 0900-1400) was 44333 at 0911 in Huddersfield. The signal on 15.565 (Eng to Asia 1100-1300) was 44444 at 1128 in Newry.

In the morning the BBC via Limassol 15.575 (Eng to M.East, India 0400-1500) was 44444 at 0750 by **Robin Harvey** in Bourne; R.Slovakia Int via Velke Kostolany 15.605 (Eng to Aust 0830-0857) 35443 at 0835 in Middlesbrough; BBC via Ascension Is 15.400 (Eng to W/C.Africa 0815-1130) SIO333 at 0945 in Macclesfield; R.Moscow Int 15.345 (Eng WS 0830-1600) 43333 at 1045 in Rugby; SRI via Schwarzenburg 15.505 (Eng, Fr, Ger to Far East, SE.Asia 1100-1230) 23332 at 1109 in E.Worthing; R.Prague, Czech Rep 15.355 (Eng to Eu 1130-1157) SIO323 at 1130 in Co.Fermanagh.

In the afternoon, UAE R.Dubai 15.395 (Eng to Eu 1330-1350) was SIO344 at 1330 in Edinburgh; Israel R, Jerusalem 15.640 (Eng to Eu, USA 1400-1425) 45434 at 1400 in Ross-on-Wye; RCI via Sines 15.325 (Eng to Europe, M.East, Africa 1430-1500) 54454 at 1435 in Norwich; ISBS Reykjavik 15.770 (Ic to N.Am 1410-1440) 44444 at 1435 in Lisnaskea; VOA via Tangier 15.205 (Eng to Eu, M.East, N.Africa 1500-2200) 53443 at 1550 in Co.Londonderry; R.Veritas Asia via Palauig 15.140 (Pil 1505-1530 [Eng ident 1529], Sat/Sun/Mon 1530-1600) 43433 at 1600 in Bridgwater; Vatican R. 15.090 (Eng to Asia 1600-1620) SIO212 at 1610 by **John Sadler** in Bishops Stortford; Channel Africa, Johannesburg 15.240 (Eng to W.Africa 1600-1755) 33333 at 1620 in Morden; China R.Int, Beijing 15.130 (Eng to E/S.Africa 1600-1657) 45444 at 1623 in Woodhall Spa; KCBI, Denton 15.725 (Eng to USA C.Am 1400-0000) 24222 at 1734 in Bushey Heath; Africa No.1 via Gabon 15.475 (Fr to W.Africa 1600-1900) 44444 at 1755 by **Charles Beanland** in Gibraltar.

Later, WINB, Red Lion 15.715 (Eng to Africa, Eu 1600-2100?) was 35533 at 1900 in Stirling; R.Rwanda, Kigali 15.340 (Fr 1800-2100) heard at 1925 in Dunstable; HCJB Quito 15.270 (Eng to Eu 1900-2000) SIO433 at 1930 in Rotherham; RNB Brazil 15.265 (Eng, Ger to Eu 1800-2020) 45433 at 1945 in Chester; WWCR, Nashville 15.685 (Eng to Eu 1100-0000) SIO333 at 1945 by **John O'Halloran** in Harrogate; BBC via Ascension Is 15.260 (Eng to S.Am 2000-0330) 45344 at 2001 in Woking; WYFR via Okeechobee 15.566 (Eng to Eu, Africa 2000-2200) 33222 at 2055 in Stalbridge; R.Havana, Cuba 15.165 (Eng to Eu 2100-2200) 34333 at 2100 in Oxted; RAE, Buenos Aires 15.345 (Eng, It, Fr, Ger to Eu, Africa 1800-2300) 34533 at 2100 in Wallsend.

There is also plenty to interest the listener in the **13MHz (22m)** band! R.Australia's broadcasts are beamed to Asia, but they usually reach the UK well on 13.605 from Darwin (Eng, Chin 0900-1400) 44333 at 0907 in Huddersfield; also 13.755 from Carnarvon (Kh, Eng to S.Asia 1230-1430) SIO344 at 1301 in Edinburgh.

While beaming to other areas Monitor R.Int via KHBI, Saipan 13.615 (Eng to Oceania 0800-1000) was 45444 at 0830 in Stirling & via WCSN 13.770 (Eng [Fr Sun] to Africa 2000-2057) 33332 at 2030 in Stalbridge; SRI via Sottens? 13.635 (Eng, Fr, Ger to Far East 1100-1230) 32222 at 1111 in E.Worthing; ISBS Reykjavik 13.855 (Ic to N.Am 1410-1440) 44434 at 1435 in Lisnaskea; R.Nederlands via Flevo 13.700 (Eng to S.Asia 1330-1625) 54344 at 1540 in Norwich; R.Pakistan, Islamabad 13.590 (Eng to M.East 1600-1630) 45334 at 1609 in Newry; VOA via Selebi-Phikwe 13.710 (Eng to Africa 1600-2200) 24322 at 1752 in Sunderland.

Some broadcasts to Europe in this band come from R.Austria Int via Moosbrunn 13.730 (Ger, Eng, Fr, Sp 0400-1700) SIO444 at 0830 by **Francis Hearne** in N.Bristol and 43434 at 1535 by **George Tebbitts** in Penmaenmawr; Croatian R, Zargreb 13.640 (Cr [Eng 1003-1006?]) 55544 at 1006 in Bridgwater; UAE R.Dubai 13.675 (Eng 1030-1100) SIO333 at 1052 in Rotherham; R.Bangladesh, Dhaka 13.614 (Eng 1230-1300) 24232 at 1230 in Bushey Heath; UAE R, Abu Dhabi 13.605 (Ar 1600-1900) SIO433 at 1833 in Macclesfield; R.Kuwait via Kbad 13.620 (Eng 1800-2100) 25333 at 1950 in Chester; WHRI, South Bend 13.760 (Eng 1700-0000) 44444 at 2135 in Kilkeel; R.Havana, Cuba 13.715 (Sp [u.s.b. + p.c.] 2100-2300) 33433 at 2224 in Wigan.

R.Australia uses several frequencies in the **11MHz (25m)** band. They include 11.910 from Shepparton (Eng to Pacific 0630-0900) SIO444 at 0815 by **Cyril Kellam** in Sheffield, 11.880 (Eng to Pacific 1630-2100) 53222 at 1625 in Bushey Heath & 11.695 (Eng to Pacific 1430-2055) SIO322 at 1940 in Rotherham; 11.660 (Eng to S.Asia 1430-1800) 35553 at 1610 in Wallsend & (Eng to China, Korea 1800-2100) SIO232 at 1900 in Harrogate; .

Also logged here were Slovak R.Int via Velke Kostolany 11.990 (Eng to Aust 0830-0857) 33443 at 0834 in Middlesbrough; KTWR, Agana 11.805 (Eng to S.Pacific 0855-1000) 33222 at 0913 in E.Worthing; FEBC, Manila 11.690 (Eng to China, New Guinea 0900-1100) 13322 at 1005 in Sunderland; VOA via Udorn 11.785 (Chin to E.Asia 1100-1400) SIO111 at 1220 in Macclesfield; Voice of the Mediterranean, Malta 11.925 (Eng, Ar to N.Africa 1400-1600) 33333 at 1400 in Chester; RFI via Moyabi 11.705 (Eng to Africa 1600-1700) 42442 at 1603 in Co.Londonderry; R.Pakistan, Islamabad 11.570 (Eng to M.East 1600-1630) 44444 at 1612 in Newry; R.Kuwait via Kabd 11.990 (Ar to N.Africa 1315-1745) SIO455 at 1715 in Edinburgh; VOA via Selebi-Phikwe 12.080 (Fr to Africa 1830-2200) 34232 at 1955 in Oxted; UAE R, Abu Dhabi 11.885 (Eng to USA 2200-0000) 43333 at 2243 in Wigan; BBC via Ascension Is 11.750 (Eng to S.Am 2200-0330) SIO444 at 2300 in Co.Fermanagh; R.Sweden via Horby? 11.910 (Eng to Pacific 2330-0000) 45544 at 2335 in Ross-on-Wye.

Some of the programmes for European listeners stem from HCJB Quito 11.835 (Eng 0700-0830) 54444 at 0810 in Norwich; R.Algiers Int via Bouchaoui 11.715 (Ar, Eng 1500-2100) 44434 at 1516 in Woodhall Spa; R.Kuwait via Kabd 11.990 (Eng 1800-2100, also to USA) 44444 at 1800 in Morden; R.Damascus, Syria 12.085 (Eng 2008-2108) 43334 at 2011 in Woking; R.Japan via Moyabi 11.925 (Eng 2100-2155) 55454 at 2120 in Bridgwater; AIR via Bangalore 11.620 (Eng, Hi 1745-2230) 44444 at 2150 in Kilkeel; VOFC Taiwan via Okeechobee, USA 11.915 (Eng 2200-2300) 43333 at 2212 in Bourne; RCI via Sackville 11.945 (Eng, Fr 2130-2300, also to M.East, Africa) 44434 at 2220 in Penmaenmawr; R.Nac da Amazonia, Brazil 11.780 (Port 0900-

0200) 33333 at 2220 in Lisnaskea.

The **9MHz (31m)** band carries R.New Zealand's broadcasts to Pacific areas in the morning. Their 100kW signals from Rangataiki on 9.700 (Eng 0659-1206) often reach the UK. They were 22211 at 0915 in Stalbridge and 22442 at 1130 in Chester. Some of R.Australia's broadcasts in this band also reach the UK: 9.580 from Shepparton (Eng to Pacific 0730-2100) was 23322 at 1141 in Bushey Heath; 9.770 from Carnarvon (Eng to Asia 1430-1630) was 33543 at 1605 in Wallsend.

Amongst the many other log entries were SRI via Sottens? 9.885 (Eng, Fr, Ger to Far East, SE.Asia 1100-1230) 55545 at 1100 in Penmaenmawr; R.Jordan via Al Karanah 9.560 (Eng to Eu 1500-1730) 42223 at 1600 by **Bill Griffith** in W.London; R.Nederlands via Talata Volon 9.605 (Eng to Africa 1730-1925) SIO222 at 1800 in Co.Fermanagh; TWR Manzini 9.500 (Eng to E.Africa 1800-1845) SIO322 at 1821 in Dunstable; VOA via Gloria 9.760 (Eng to Eu 1700-2100) SIO444 at 1930 in Harrogate; Africa No.1, Gabon 9.580 (Fr to C.Africa 0430-2300) 34344 at 2100 in Storrington; Voice of Turkey, Ankara 9.445 (Eng to Eu 2100-2200) SIO222 at 2101 in Bishops Stortford; R.Cairo via Abis 9.900 (Eng to Eu 2115-2245) SIO222 at 2117 in Elgin; AIR via Delhi? 9.950 (Eng to Eu 2045-2230) 33333 at 2202 in Bourne; R.Bulgaria, Sofia 9.700 (Eng to USA 2245-0015) 54444 at 2326 in Wigan.

In the **7MHz (41m)** band R.Australia via Carnarvon 7.260 (Eng to S.Asia 1430-2100) was 54344 at 1555 by Alec Griffiths in Inverness and SIO322 at 1905 in Harrogate; VOA via Selebi-Phikwe 7.415 (Eng to Africa 1900-2200) SIO444 at 1922 in Rotherham; Voice of Nigeria, Ikorodu 7.255 (Eng, Fr, Ha to W.Africa) 42343 at 2000 in Newry; Israel R, Jerusalem 7.465 (Eng to USA 2230-2300) 55544 at 2240 in Bourne; R.Bulgaria, Sofia 7.455 (Eng to USA 2245-0015) SIO444 at 2300 in N.Bristol; Voice of Turkey, Ankara 7.185 (Eng to USA 2300-0000) 53333 at 2335 in Norwich; WJCR, Upton 7.490 (Eng to E.USA 2100-1000) 33222 at 2345 in Stalbridge; WWCR, Nashville 7.435 (Eng to USA 0000-0100) 22222 at 0000 in Lisnaskea; WHRI, South Bend 7.315 (Eng to E.USA 2000-1300) 33333 at 0009 in Gibraltar.

While broadcasting to Europe, TWR Monte Carlo, Monaco 7.385 (Eng 0740-0920) was SIO444 at 0811 in Bushey Heath; Int Red Cross BS via SRI 7.210 (Eng 1100-1130, last Sun of month) 54444 at 1100 in Ross-on-Wye; Polish R, Warsaw 7.285 (Eng 1600-1655) 43343 at 1636 in Oxted; REE via Noblejas 7.275 (Sp 1900-2300) 45554 at 1940 in Wallsend; Voice of Greece via Avlis 7.450 (Gr, Alb, Bul, Rom, Serb 2000-2050) SIO455 at 2010 in Edinburgh; R.Tunisia Int via Sfax 7.475 (Ar 1800-2300) 54554 at 2040 in Bridgwater; AIR via Aligarh? 7.412 (Hi, Eng 1745-2230) 34443 at 2110 in Chester; R.Romania Int, Bucharest 7.195 (Eng, Ger 2100-2200) 54444 at 2140 in Middlesbrough; R.Ukraine Int, Kiev 7.195 (Eng 2200-2300) 53443 at 2200 in Stirling; also 7.240 (Eng 2200-2300) 45444 at 2241 in Woking; DW via Cyclops 7.140 (Ger 2230-?) 22222 at 2230 in Rugby; Monitor R.Int via WSHB 7.510 (Eng 2100-0000, also to E.USA) 24222 at 2340 in Morden.

In the **6MHz (49m)** band R.Austria Int via Moosbrunn 6.155 (Ger, Eng, Fr, Sp to Europe 0400-2300) was SIO444 at 0830 in N.Bristol; RFI via Allouis 6.175 (Eng to Europe 1600-1700) 55555 at 1602 in Co.Londonderry; R.Australia via Carnarvon 6.080 (Eng to S.Asia 1630-2100) 23222 at 1947 in Sunderland; R.Pyongyang, N.Korea 6.576 (Eng to Eu 2000-2050, also to M.East, Africa) 34333 at 2035 in Woodhall Spa; China R.Int, Beijing 6.950 (Eng to Eu 2000-2155) 54555 at 2100 in Appleby; R.Prague, Czech Rep 5.930 (Eng to Eu 2100-2127, 2200-2227) 44444 at 2115 in Rugby; R.Yugoslavia, Belgrade 6.100 (Eng to Eu 2200-2230) SIO221 at 2210 in Bishops Stortford; Croatian R via Deanovec 5.920 (Cr, Eng to Eu 24hrs) 33333 at 2212 in Gibraltar; BBC via Antigua 5.975 (Eng to C/S.Am 2000-0430) 43333 at 2310 in Kilkeel; R.Nederlands via Flevo 6.020 (Eng to USA 2330-0100) 33333 at 2350 in Penmaenmawr; RAI Rome 6.005 (Eng to USA 0100-0120) 44534 at 0105 in E.Bristol.

Station Addresses

Sunrise Radio, Sunrise House, Sunrise Rd, Southall, Middlesex.

Radio Station KCBI International, Dallas, TX 75221, USA.

Red Cross Broadcasting Service, 19 Ave de la Paix, 1202 Geneva, Switzerland.

Slovak Radio International, 81290 Bratislava, Mytna 1, Slovakia.

Radio CBF, PO Box 6000, Montreal, PW, H3C 3A8.

Radio WBBR, 655 3rd Ave, New York, NY 10017, USA.

Tropical Bands Chart

Freq MHz	Station	Country	UTC	DXer
2.310	ABC Alice Springs	Australia	2031	H,L,T
2.325	ABC Tennant Creek	Australia	1915	L
2.340	Fujian 1, Fuzhou	China	2215	G,L
2.850	KCBS Pyongyang	N.Korea	2220	G,H
3.200	TWR Ndebele	Swaziland	1855	L,R
3.210	Em Nacional, Maputo	Mozambique	1839	L
3.215	RRI Manado	Indonesia	2000	G
3.220	CPBS 1, Beijing	China	2215	G,R
3.220	R.HCJB Quito	Ecuador	0150	D
3.220	R.Togo, Lome	Togo	1850	L,R
3.230	SABC Oranje Meyerton	S.Africa	1930	L,R
3.235	AIR Guwahati	India	1627	L
3.240	TWR Shona	Swaziland	1855	I,L,P
3.245	AIR Lucknow	India	0057	G,I,P,R
3.255	BBC via Maseru	Lesotho	1700	I,L,T
3.260	Guizhou 1	China	2245	G
3.270	SWABC 1, Namibia	S.W.Africa	1850	I,L,Q
3.277	AIR Srinagar	India	0150	E,G,I,L,R
3.290	SWABC 2, Namibia	SW.Africa	2350	D
3.300	R.Cultural	Guatemala	0140	D,G,P,Q
3.310	Jilin PBS, Changchun	China	2057	R
3.315	AIR Bhopal	India	0150	D,G,I,L,R
3.316	SLBS Goderich	Sierra Leone	2204	C,G,H,L, P,T
3.320	Pyongyang	N.Korea	0300	D,G
3.325	R.Tupi, Sao Paulo	Brazil	0150	D
3.325	FRCN Lagos	Nigeria	2033	C,L,Q
3.355	AIR Kurseong	India	1640	G,I,L
3.356	R.Botswana	Gabarone	1852	L
3.359	RTV Malagasy	Madagascar	1815	I,R
3.365	R.Rebelde, La Julia	Cuba	0155	D
3.365	GBC R-2	Ghana	2207	B,C,D,F, L,P,Q,T,V
3.365	AIR Delhi	India	1825	I,R
3.370	R.Tezulutlan	Guatemala	2345	D
3.380	R.Malawi	Malawi	1850	I,L
3.395	RRI Tanjungkarang	Indonesia	2250	D
3.815	Taiwan 1 Sce, Beijing	China	2110	R
3.870	Voz de la Esparanza	Peru	0035	D
3.900	Hulunbeier, Hailar	China	2300	G
3.905	AIR Kingsway(Feeder)	India	1631	I,L,R
3.915	BBC Kranji	Singapore	1701	A,B,D,L, L,P,T
3.940	PBS Hubei Wuhan	China	2250	F,G,R
3.945	Vatican Radio	Italy	2050	B,L,M,Q
3.950	Qinghai PBS, Xining	China	2350	D,G
3.955	BBC Skelton	England	2156	A,B,D,F, Q,W
3.955	R.Budapest	Hungary	1645	L,R
3.955	Novosibirsk r/y A.Ata	Kazakhstan	0103	L,P,Q
3.960	Xinjiang PBS, Urumqi	China	2335	D,G,L,R
3.960	RFE/RL Munich	W.Germany	2300	D,Q
3.965	RFI Paris	France	0110	A,B,D,E,F, M,Q,S,W
3.970	Nei Menggu PBS,Hohhot	China	1632	L
3.970	RFE Munich	Germany	2201	B,Q
3.975	BBC Skelton	England	0451	Q
3.980	VOA Munich	Germany	2045	A,B,D,M, N,Q,W
3.985	China R via SRI	Switzerland	2200	B,M,N,Q,U
3.985	SRI Beromunster	Switzerland	2050	A,B,M, N,Q,W
3.990	Xinjiang BS, Urumqi	China	0100	D,L,P
3.990	RFE Munich	Germany	1825	B
3.995	DW via Julich	Germany	0030	A,B,D,E, F,Q,S,X
4.000	Bofoussam	Cameroon	1855	D,L
4.005	RRI Padang	Indonesia	1605	L
4.020	China R, Beijing	China	2019	R
4.035	Xizang PBS, Lhasa	Tibet	2355	R
4.190	CPBS Minority Sce	China	2130	R
4.200	China R, Beijing	China	2025	R
4.220	Xinjiang PBS, Urumqi	China	1616	D,L,R
4.330	Xinjiang BS, Urumqi	China	1603	L
4.409	R.Eco, Reyes	Bolivia	2305	G
4.460	CPBS 1, Beijing	China	2300	G,R
4.470	R.Movima	Bolivia	2310	G
4.500	Xinjiang BS, Urumqi	China	1617	D,H,L
4.650	R.Santa Ana	Bolivia	2250	G
4.735	Xinjiang, Urumqi	China	2359	C,D,H,I, L,P,R
4.750	Xizang BS, Lhasa	Tibet	2255	G
4.753	RRI Ujung, Padang	Indonesia	2220	G
4.755	R.Educ CP Grande	Brazil	0055	D,P
4.760	Yunnan PBS,Kunming	China	2324	F,G,I,S
4.760	ELWA Monrovia	Liberia	2119	C,G,I,K,L, M,Q,P,T
4.765	Brazzaville	PR.Congo	2200	C,L,S
4.765	RRI Medan	Indonesia	2230	G,R
4.770	FRCN Kaduna	Nigeria	2155	B,C,D,K,L, M,P,Q,S,T
4.770	R.Mundial, Bolivar	Venezuela	0203	Q
4.783	RTM Bamako	Mali	2157	A,B,C,D,I, K,L,P,T,X
4.785	Zhejiang PBS,Hangzhou	China	2235	G
4.785	R.Tanzania	Tanzania	2105	K,L
4.790	Azad Kashmir R.	Pakistan	0110	D,I,L,P
4.790	TWR Manzini	Swaziland	1815	D,I,R
4.800	CPBS 2 Beijing	China	2350	F,G,I,R
4.800	AIR Hyderabad	India	0055	G,I,L,P
4.800	LNBS Lesotho	Maseru	2030	C,D,I,L,T
4.805	R.Nac.Amazonas	Brazil	0050	D,G,R,S
4.810	R.San Martin Tara	Peru	0100	D,G,Q
4.810	SABC Meyerton	S.Africa	2115	D,I,K,L
4.815	R.Difusora, Londrina	Brazil	2345	G
4.815	China R, Beijing	China	2325	D,I,R
4.815	R.diff TV Burkina	Ouagadougou	2213	C,D,K,L, Q,T
4.820	La Voz Evangelica	Honduras	2305	D,G
4.820	AIR Calcutta	India	1830	I,L,R
4.820	Xizang, Lhasa	Tibet	2355	P,R
4.825	R.Cancao Nova	Brazil	2340	L,P,Q
4.830	R.Botswana, Gaborone	Botswana	2000	C,K
4.830	R.Tachira	Venezuela	2355	A,C,D,F, G,L,P,Q
4.835	R.Tezulutlan, Coban	Guatemala	0110	D,P,S
4.835	RTM Bamako	Mali	2113	A,B,C,D,F, H,K,L,P,Q, T,W
4.840	Heilongjiang, Harbin	China	2240	G
4.840	AIR Bombay	India	1710	P
4.840	R.Valera, Trujillo	Venezuela	2315	G
4.845	R.Fides, La Paz	Bolivia	2330	G
4.845	R.Cabocla, Manaus	Brazil	0123	G
4.845	R.Bucaramanga	Colombia	0712	L
4.845	RTM Kuala Lumpur	Malaysia	1420	I
4.845	ORTM Nouakchott	Mauritania	2113	C,D,K,L, P,Q,T
4.850	R.Yaounde	Cameroon	2100	C,K,L,Q
4.850	Ulan Bator 1	Mongolia	2315	P
4.865	PBS Lanzhou	China	2310	D,I,T
4.865	Caracol	Colombia	0458	Q
4.865	LV. del Cinaruco	Colombia	0105	D,G,L,P
4.870	R.Cotonou	Benin	2144	B,C,K,L, P,Q,T
4.875	R.Roraima, Boa Vista	Brazil	0210	P
4.879	R.Bangladesh	Bangladesh	1538	I
4.880	R.Nac.Espejo, Quito	Ecuador	0220	D
4.885	R.Clube do Para	Brazil	0155	D,P,Q,S
4.885	R.Difusora Acreana	Brazil	0250	D
4.885	China R, Beijing	China	2312	I,R
4.885	KBC Nairobi	Kenya	2107	Q,T
4.890	RFI Paris	via Gabon	0426	K,L,P
4.890	ORTS Dakar	Senegal	1856	L
4.895	Voz del Rio Arauca	Colombia	0135	D,L
4.895	AIR Kurseong	India	0112	P
4.896	Pakistan BC	Pakistan	1850	I,L,P
4.897	Murun	Mongolia	1622	L
4.900	SLBC Colombo	Sri Lanka	2145	I,P,R,T
4.905	Anhanguera	Brazil	2325	R
4.905	R.Relogio, Rio	Brazil	2315	D
4.905	R.Nat.N'djamena	Chad	2125	B,C,K,L, M,P,Q,T,V
4.905	CPBS 1, Beijing	China	2325	G,R
4.910	Tennant Creek	Australia	2138	T
4.910	AIR Jaipur	India	1650	I,L,P,R,T
4.910	R.Zambia, Lusaka	Zambia	1928	C,D,I,K,L, P,R,S,T
4.915	PBS Guangxi, Nanning	China	2310	D,G
4.915	Armonias del Caqueta	Colombia	0712	L
4.915	GBC-1, Accra	Ghana	2208	A,B,C,D,F, K,L,M,P, Q,S,T,V
4.915	Voice of Kenya	Kenya	1928	T
4.920	R.Quito	Ecuador	2330	R
4.920	AIR Madras	India	1700	G,I,L,P,R
4.925	R.Nacional, Bata	Eq.Guinea	2217	T
4.927	RRI Jambi	Indonesia	2335	R
4.935	R.Capixaba, Vitoria	Brazil	0711	L
4.935	Voice of Kenya	Kenya	1949	C,D,L,T
4.940	AIR Guwahati	India	1624	L
4.940	R.Abidjan	Ivory Coast	1915	L
4.950	R.Nac.Luanda	Angola	1833	L
4.955	R.Marajoara, Belem	Brazil	0155	P,X
4.960	R. La Merced	Peru	0250	D
4.970	PBS Xinjiang	China	1606	I
4.970	R.Rumbos, Caracas	Venezuela	0114	Q
4.975	R.Timbre, Sao Luiz	Brazil	0710	L
4.975	R.Uganda, Kampala	Uganda	1924	B,C,K,L, P,Q,T
4.980	PBS Xinjiang, Urumqi	China	2330	C,I,R
4.980	Ecos del Torbes	Venezuela	0115	A,D,G,P, Q,R,S,X
4.985	R.Brazil Central	Brazil	0125	D,G,L,P,S
4.990	Hunan 1, Changsha	China	2310	G
4.990	AIR Ext.Service	India	0010	R,S,X
4.990	FRCN Lagos	Nigeria	2211	C,D,K,L, P,Q,T
4.990	R.Ancash, Huaraz	Peru	0730	G
5.005	R.Nacional, Bata	Eq.Guinea	2035	C,L,Q
5.005	R.Nepal, Kathmandu	Nepal	1650	I,P,R,T
5.009	R.Madagasikara	Madagascar	0240	R
5.010	R.Garoua	Cameroon	2208	G,J,K,L, P,Q,T
5.010	Riobamba	Ecuador	0220	R
5.010	SBC Singapore	Singapore	0255	D
5.015	R.Brazil Tropical	Brazil	0709	L
5.020	PBS-Jiangxi Nanchang	China	2300	P,R
5.020	La Voix du Sahel	Niger	2123	B,T
5.020	ORTN Niamey	Niger	2022	I,J,K,L,Q
5.020	SLBC Tamil Home Sce.	Sri-Lanka	0140	R
5.021	Hanoi	Vietnam	2315	G,I
5.025	ABC Katherine	Australia	2135	T
5.025	R.Parakou	Benin	2036	C,K,L,P,T
5.025	R.Rebelde, Habana	Cuba	0125	P,R
5.025	R.Uganda, Kampala	Uganda	2000	L,P,Q
5.030	BBS Thimpu	Bhutan	1432	I
5.035	R.Aparecida	Brazil	2315	D,L
5.035	R.Bangui	C.Africa	2104	B,C,K,L, P,Q,T
5.040	PBS Fujian, Fuzhou	China	0014	R
5.040	R.Maturin	Venezuela	0420	R
5.045	R.Cultura do Para	Brazil	0130	A,D,G,J, P,R
5.047	R.Togo, Lome	Togo	2031	B,C,D,K,L, P,Q,T,X
5.050	Em Jesus Gran Poder	Ecuador	0105	G,P,R
5.050	R.Tanzania	Tanzania	1945	L,D,P,R,T
5.052	SBC R-1	Singapore	2320	D,I,S,V
5.055	R.Difusora, Caceres	Brazil	0300	D
5.055	Faro del Caribe	Costa Rica	0707	L
5.055	RFO Cayenne(Matoury)	Fr Guiana	0206	D,G,L,P ,Q,R
5.055	TWR Manzini	Swaziland	2000	R,T
5.065	R.Candip, Bunia	Zaire	1719	R
5.075	Caracol Bogata	Colombia	0702	B,J,L,Q, P,Q
5.090	Taiwan 2 Sce, Beijing	China	2305	G,R
5.125	Taiwan 1 Sce, Beijing	China	2315	G,R
5.131	R.Vis. 2000 Bambamarca	Peru	2325	G
5.163	CPBS 2, Beijing	China	2320	G,R
5.220	China R, Beijing	China	2025	R
5.256	RRI Sibolga, Sumatra	Indonesia	2335	G
5.320	CPBS 1, Beijing	China	2121	R
5.420	PBS Minority Sce	China	2133	R

DXers:

A: Tim Allison, Middlesborough.
B: Leo Barr, Sunderland.
C: Darren Beasley, Bridgwater.
D: Robert Connolly, Kilkeel.
E: Ron Damp, Worthing.
F: John Eaton, Woking.
G: Jim Edwards, Bryn.
H: David Edwardson, Wallsend.
I: P. G. Smith, Kingston, Moray.
J: Bill Griffith, W.London.
K: Chris Haigh, Huddersfield.
L: Gerry Haynes, Bushey Heath.
M: Sheila Hughes, Morden.
N: Rhoderick Illman, Oxted.
O: Ross Lockley, Stirling.
P: Paul Logan, Lisnaskea.
Q: Eddie McKeown, Newry.
R: Roy Merrall, Dunstable.
S: John O'Halloran, Harrogate.
T: Fred Pallant, Storrington.
U: Clare Pinder, Appleby.
V: Eric Shaw, Chester.
W: Phil Townsend, E.London.
X: Charles Beanland, Gibraltar.

Andy Emmerson G8PTH, 71 Falcutt Way, Northampton, NN2 8PM

Watching Brief

Our Quarterly Look At Amateur Television

It's easy to think that amateur television is all to do with transmitters and DXing. Whereas many people get a lot of pleasure from creating the pictures, many television and video hobbyists don't transmit at all, preferring to edit productions for viewing from tape.

Learning the techniques is made easier by monthly magazines aimed at camcorder users and now from a series of VHS video tapes made in Canada by a firm called Adita Video Inc.

The series title is *How to Shoot Super Videos* and I've bought three of them. Are they good? Yes, although whether you'll learn much from them depends on how proficient you already are. Are they worth buying? Again I'd say yes on balance. But read on.

What did I like about the tapes? I suppose I was impressed with the presenters' self-confidence and style, even down to their customised Adita sport shirts. The presentation is fairly informal and casual but that's no bad thing. It seems to have been filmed in front of a live audience of students, novices, neophyte videographers or whatever you want to call them, and they are encouraged to come up with dumb (and not-so-dumb) questions. As the audience's speech is always off-mic, their actual question is always shown as a subtitle on-screen - well done!

Techniques are taught by a mixture of drawing on the blackboard and tape inserts of actual examples. Pretty standard stuff. The topics covered on each tape are listed at the end of this column.

Any gripes? Of course! Actually, it is always easy to find something to complain about and often it is more constructive to find nice things to say in a review. All the same, the title of this series of videos is *Making Super Videos* and the single camera style of shooting soon gets boring for the viewer. The tapes last about 100 minutes each and that's too long to watch in one session. Good use is made of cutaway shots and captions for illustration purpose but a few different camera angles would liven up the proceedings.

Complaint number two is the tacky cardboard sleeve that the tape comes in. You'd think the tapes deserved a proper plastics library case with sleeve notes but all you actually get is a multi-purpose sleeve with a sticky paper dot to indicate which title you bought. Cheapskates!

Thirdly, it is left to you to suss that these tapes were made the other side of the Atlantic. There's nothing much wrong with the standards conversion, but all the products and model numbers mentioned are ones produced for North America and there are not always exact equivalent products over here in Europe. A little note to this effect would put viewers in the picture and remove that feeling that you've been taken for a mug.

Value For Money

And now the bottom line: are the tapes worth getting and are they value for money? Well, they have got to be value for money. They are the closest you'll get to a hands-on demonstration outside a real college or studio and you don't have the expense of shelling out for a evening studies course or the fare money to get there. Seen in that light, the tapes are fantastic value.

But are they worth getting? Yes. However smart you are, you will almost certainly learn something and the cost of a fouled-up tape or a ruined video opportunity would be far more than the cost of one of these tapes. I think anyone seriously into video can skip the basic level tape but the intermediate and professional level tapes are useful.

Shame about the cheapskate packaging though. People do judge books by the look of their covers and boy, do these tapes look tacky in their boxes!

Computers In Video

People often ask if their PC can be applied to some amateur television or home video task. The two chief applications are editing and graphics. In editing you use the computer to control two v.c.r.s to assemble different sequences of video into the edited tape of your choice, whilst in graphics you can create diagrams, pictorial backgrounds and compose static captions or scrolling titles. Be careful, incidentally, of investing in standalone automated edit controllers made by third party suppliers. They may be good but judging by some poor press reviews and by the number of units offered for sale as 'used only once', I have my doubts. The edit controllers made by the tape decks manufacturers (Sony, Panasonic, JVC and so on) are excellent and well-nigh essential when you get into serious editing. More on the creative side next time, when I name products and suppliers.

How To Shoot Super Videos, Volume 5 Basic Editing With Consumer Gear, Volume 6 Intermediate Editing With Prosumer Gear and *Volume 7 Advanced Editing With Professional Gear.* £14.99 each plus £1.50 post & packing per tape. Available from BVG, Units 6 & 18, Industrial Estate, Brecon, Powys, LD3 8LA. Tel: (0874) 611633, Fax: (0874) 622994.

The amateur radio rally season is with us again and if you keep your eyes open you'll see plenty of vision mixers and effects generators around. They're probably ten years old or so but if they've been made for the professional market they will probably be good enough for a few more years' service. Just two warnings: if no manual is supplied don't assume the manufacturer will supply one. They may not even be in business any more. Also these mixers will not contain framestores, so they will only take input signals that are already synchronised.
The Videomatte VM-1 is a good example of the breed. Electrocraft and VEL manufactured comparable products. Probably the only things you'll need to pay attention to are the fader pots - it might be worth replacing them.

TRADING POST

Fill in the order form in the March issue in BLOCK CAPITALS - up to a maximum of 30 words plus 12 words for your address - and send it, together with your payment of £3.00, to Zoë Shortland, Trading Post, Short Wave Magazine, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. If you do not wish to cut your copy of SWM, or do not wish to use the order form provided, you must still send the cornerflash from the foot of this page, or your subscription number, as proof of purchase of the magazine. Advertisements from traders, or for equipment which it is illegal to possess, use or which cannot be licensed in the UK will not be accepted.

For Sale

934MHz equipment, an amateur style band with no need for the RAE, see March '93 *PW* for informative article. Also Swan Astro 150 80-10m s.s.b./c.w. For more information contact Ian, Middlesex. Tel: (0992) 718105.

Airband scanner VT125 II, charger, earpiece, manual, bargain at, £85. Datong VLF converter, 0-500kHz, power supply, manual, as new, £40. Scanner PRO9600 homebase, mains adapter, manual, packing, as new, £85 o.n.o. Tel: Warwicks (0926) 54556.

Alinco DJ-X1 100kHz to 1300MHz, two aerials, manual and boxed, £120 cash only. Rankin, Wirral. Tel: 051-334 5501.

Amstrad PC1640 20mB, 3.5/5.25in disc drives EGA display, v.g.c., with original packing and manual, £195. Scanner SX200 v.g.c. a.m./f.m. modes, 16 memories, variable scan rate with p.s.u., £85. Tel: Watford (0923) 663170.

AOR 1500EX boxed, as new with all accessories, plus D-130N s/steel discone antenna, also mobile antennas, desk stand, books and charts, £285 o.n.o. Paul, Oxon. Tel: (0491) 571449 evenings.

AOR 2002 and Scanmaster controller with 3A 13.8V p.s.u., all v.g.c., complete with original manuals etc., £325 o.n.o. **Consider P/X for AOR 3000A**. Paul, S.O.T. Tel: (0782) 533016.

AOR 2002, p.s.u., manual, as new, £190 o.n.o. ICS FAX1 weather map decoder, as new, £160 o.n.o. Tel: Oxford (0993) 830115.

AOR AR3000 scanner, as new, little used, complete with all accessories and original packing, £495. Tel: Cleveland (0642) 765529.

AOR AR3000A multi-mode scanner, 100kHz to 2036MHz with manual and original packing, £595 cash. Also Scanmaster wide band antenna, frequency guides, scanning directory etc., £35 cash. Bob, West Sussex. Tel: (0243) 603910.

AOR AR3000A with free discone to buyer, had little use, boxed with manual, £650, cost £949 new. No offers. Buyer to collect or pay postage. Tom, Kettering. Tel: (0536) 522007.

AOR3000, mint condition, boxed with all accessories, £425. Tel: Hants (0590) 679428.

AR2002 scanner, little used, complete with p.s.u. and manual, only, £182 plus post. Tel: Gwent (0600) 713549.

Code 3 with all options and LF3 plus manual etc. Kenwood R5000 plus v.h.f., filters, PC software and cables etc., all v.g.c., excellent decode package P.O.A. all items. Steve, Bucks. Tel: (0296) 435690.

D100 De-Lux version converter, £50 plus Band 1 and Band 3 antennas for above, £25. Tel: Devon (0803) 324691.

Diamond SX-200 s.w.r. power meter 1.8-200MHz 5/20/200W, cost, £84.95 in December as brand new, £55 post paid. G3RDG, QTHR. Tel: London 081-455 8831 anytime.

ERA Microreader (1993) clean and may be seen working, £150. Roberts RC818 with s.w. range, l.w., m.w., stereo f.m. BFO ext. aerial (1993), mint, £150. Mr J. Bonfils, 47 Forest Park, Leixlip, Co. Kildare.

ERA MkII in original box with instructions, v.g.c., £90. Tel: Manchester 061-973 1780 after 6pm.

Grundig 700 brand new, £200. Yaesu FRG7700 with memories, £250. Sony CRF320, excellent condition, £375. Grundig 650 International, very little used, in mint condition, £200. Grundig 1400 PRO, £85. Grundig 600 m.w./l.w./f.m. 1.6-30MHz, N/limiter a.v.g.c., £85. Tel: London 081-813 9193.

Yupiteru MVT5000 hand-held scanner, £150. Sony ICF-SW 7600, £100. Both boxed. Tel: Bucks (0296) 81624.

Icom 735, 10 months old, as new, still in box, £800, will consider part exchange. Tel: Minehead (0643) 704927.

ICR-7000 25MHz - 2GHz, boxed with manuals, excellent condition. ICR-71E 100kHz-30MHz, this model with p.b.t./notch UX14 fitted plus f.m., also CT17 and scanning software if required (extra), fully automatic receiving station, £650, each o.n.o. Buyer collects. Tel: Wiltshire (0793) 861582.

JRC NRD515 receiver with upgrade filters, matching memory and controller unit, manuals, £500. Bush CTV 7020 v.h.f./u.h.f., £45. Sony 2001D with manual etc., £150. Mr A. Sherer, 53 Suggitts Lane, Cleethorpes, South Humberside DN35 7JG. Tel: (0472) 873823.

JRC NRD535 mint condition, boxed with manual, £950. Eddystone 770R, £80. 770V, £80. Racal Ra17L, £150. Tel: Essex (0245) 357055.

JRC NRD535, as new, original box, packing and manual etc., £795. Tony, Nottingham. Tel: (0602) 335292.

Kantronics all-mode TNC mailbox KA-NODE, Packet, WEFAX, RTTY, ASCII, AMTOR, c.w., all manuals, £160. John, Glasgow. Tel: 041-632 2793.

Kenwood R1000 receiver in as new condition with f.m. board and manual. Vintage radios Sky Queen and Pye suitcase type, domestic portable. Tel: Hawick (0450) 370937.

Kenwood R2000 receiver, v.g.c., £350. Sony 2001D receiver, boxed and in v.g.c., £170. Sony AN1 antenna, £30. ERA MkII micro-reader, boxed, v.g.c., £90. Martin, Yorkshire. Tel: (0532) 658619 evenings, after 5.30pm.

Kenwood R5000 receiver with v.h.f. converter fitted and s.s.b. filter for u.s.b., l.s.b., plus a.t.u. and manual and box, £650 o.n.o. Rik, Manchester. Tel: 061-436 7224.

Kenwood R5000 receiver, extra filter and v.h.f. board fitted, superb performance, boxed with workshop manual, £750 or **exchange for JRC535**. Tel: London 081-785 7314.

Lowe 150 receiver, £220. IBM PS/1 386SX mono, £275. Comar FAX60 system, £60. All in v.g.c., all handbooks with original boxes, accept £500 the lot. Mr G. Davidson, 19 Cavendish Avenue, London N3 3QP. Tel: 081-346 4353 anytime.

Lowe HF-150 short wave receiver, excellent condition plus p.s.u., £250. Panasonic D48 m.w., l.w., f.m., s.w., £125. Tel: Chester (0244) 544560.

Lowe HF-225, £250. ERA Microreader MkII, £80. ERA RS232 display unit, £100. SOAR FC-845 5Hz to 160MHz, £50. SR-9 2m receiver, £50. Converters, 70cms, 2 and 6 meter, £10 each. Complete with manuals. John Wilkes, Flat 40 Muir House, Beaulieu Road, Dibden Purlieli, Soton SO4 5NY. Tel: (0703) 848466.

Lowe HF150 receiver, keypad, p.s.u., plus Datong AD270 active antenna, v.g.c., £300. Tel: Telsford (0952) 610408.

Lowe HF150 receiver, p.s.u., boxed, £200 o.n.o. Yupiteru MVT7000 hand-held scanner, NiCads, charger, boxed, £240 o.n.o. Steve, Herts. Tel: (0920) 466516.

Lowe HF225 a.m./f.m. detector, keypad, NiCads, whip antenna, mint condition, £350. Tel: Surrey (0372) 456741.

MVT5000 (Yupiteru) scanner, NiCads, carry case, manual, arm strap, frequency list, no box, hence £90 o.v.n.o. Chris, London. Tel: 071-228 6158.

NRD 525, mint, ext. spk., v.h.f.-u.h.f. insert, two Xtals, Dressler ARA30 antenna plus ARA1500, cost over £2,000, asking £1,250 o.v.n.o. Uniden PRO620 CB base with accessories, also 12V p.s.u. etc., buyer collects. Ray, Sussex. Tel: (0273) 592528.

NRD 525G receiver with matching NVA-80 speaker, both absolute mint condition. 525G is improved model, no broadband hiss and better a.g.c., buyer collects or carriage extra, £650 (not selling speaker separately). Tel: Middlesex 081-570 5603.

NRD 535 h.f. communications receiver, in excellent condition with manual, £800. Tel: Essex (0268) 551996 after 6pm.

Palomar receiver preamplifier, mint condition, little used, with operating mnaual, £70. Geoff, Shropshire. Tel: (0746) 36287 after 6pm.

Passport To World Band Radio 1993, mint condition, £6. Mr Breckon, 76 Prince Street, Dalton in Furness, Cumbria LA15 8ET.

Phillips D2999 receiver, 150kHz to 30MHz, plus 88 to 108MHz f.m., perfect, only, £100 o.v.n.o. Also PC FAX, PC-SWL software with demodulator, only, £50 the lot. Tel: Redditch (0527) 529481.

Professional scanner, receives civil military airbands, marine, public bands, 2 metres, v.h.f., u.h.f., memories, l.e.d. display, a.m./f.m. modes, pass or lockout on memories, manual or auto up down select, only, £120. Tel: Warwick (0295) 670749.

RCA AR88D, £200. KW2000E plus p.s.u., £150. KW2000A plus p.s.u., £125. LCL 2740 f.m. CB transceiver, £50. MML 140/100S linear amplifier, £90. Bereavement sale, other items available, ask for list. Tel: Bucks (0296) 86578 evenings.

Realistic PRO-Scan 2006, 400 channel programmable scanner with Hyperscan and many other features, hardly used, boxed and in mint condition with frequency guide book, £225, no offers. D. Houlston, 192 Carlisle Street, Splott, Cardiff CF2 2PH. Tel: (0222) 464976.

SEM QRM eliminator, £60. DeeCom s.w.l. antenna tuner, £25. **Wanted Drake R4245** or Racal 6790GM in good condition. Tel: Lancs (0772) 704009 after 6pm.

SNOOP 51 a newsletter dedicated to military aviation monitoring, bi-monthly, free to all who send an A4 s.a.e. to this address: SNOOP 51, 20 Park Road, Hunstanton, Norfolk PE36 5BP.

Sony 2001D, as new, p.pack, £130, no offers. Mr R. Hyland, 12 Kuala Gardens, Norbury, London. Tel: 081-764 3154.

Sony 2001D, boxed, mains lead, **exchange for MVT5000** or MVT7000 with cash adjustment, or sell, £150. Tel: York (0904) 796384.

Sony CRF-320 f.m./s.w./s.s.b./l.w./m.w., 32 band receiver. Quartz clock timer with instructions, work shop manual, in very good condition, £350 post pack, £370. Tel: Lancs (0695) 28945 anytime.

Sony ICF SW77, mint condition, hardly used with manual, not boxed, £225. Mr F. Hunter, 7 Milland Court, Ambleside, Cumbria LA22 9BW (no phone).

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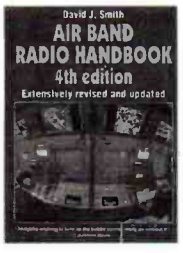

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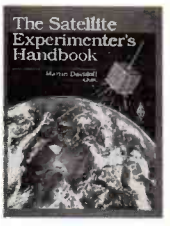

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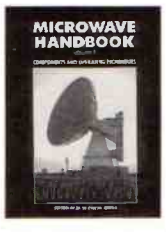

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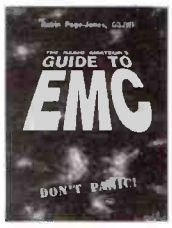

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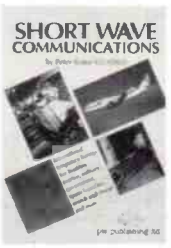

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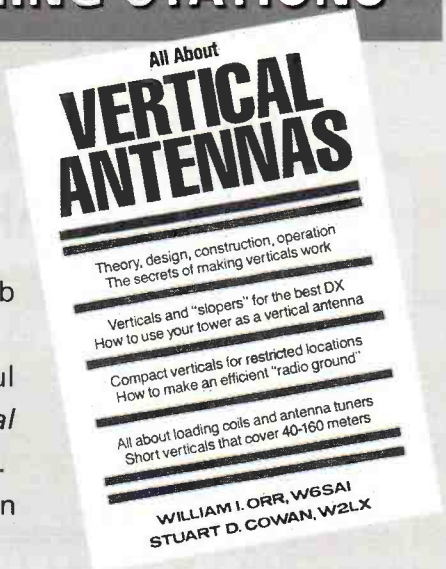

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