

FOR THE  
RADIO LISTENER

# shortwave magazine

## SATELLITE RADIO

WHAT'S UP THERE AND HOW  
TO FIND IT!

*Plus*

RECEIVER SPECIFICATIONS - 1

A FURTHER LOOK AT THE LIZARD'S  
RADIO HISTORY

*Reviewed*

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LOWE PR-150 PRESELECTOR



August 1994 £1.90  
ISSN 0037 - 4261

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# short wave magazine

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## Cover Subject

This month we look at TV and Satellite Listening. We thank both Lowe Electronics and Aerial Techniques for the loan of the equipment shown on the cover.

Photo:  
Craig Dyball



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## 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



## Changes

If you are a regular follower of Ron Ham's 'Propagation' and 'DXTV News' columns you will be interested to know that the columns in this issue will be the last. However, Ron will be replacing these two columns, as from the September '94 issue, with a new one. Called 'Reflections', this column will range over most of Ron's wide interests associated with radio. I am looking forward to Ron's first 'Reflections'.

Also starting in the September issue will be the new regular, monthly, Propagation Forecast charts. The test charts published earlier proved to be popular - one of the most frequent comments from you was "about time, too!" The standard of presentation was also praised and we intend to keep to that style. The nine charts will cover the same areas as the trial ones, but I am always willing to listen to reasonable suggestions for alternatives - with your reasons, of course. Ron Ham's monthly barometric pressure chart will also be retained - so those readers who are into propagation predicting will still be able to correlate conditions with atmospheric pressure.

**Dick Ganderton G8VHF**

# letters

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

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

## Dear Sir

I would like to comment on the letter from Ivor Nathan published in *Short Wave Magazine* for July 1994.

It would seem that he heard the output from a cordless telephone on a frequency of 1.6MHz. These instruments transmit from base unit on one of several frequencies in the 1.7MHz band. The signal he heard would almost certainly be an i.f. image and not a harmonic as thought. Harmonics only occur at frequencies above the fundamental frequency, never below. The fault, therefore, would be in the receiver and not the transmitter.

The same problem seems to be the trouble with his reception of a CB signal on the short wave bands of his Vega receiver. At 29MHz the second harmonic would be 58MHz, and the third, normally the strongest, at 87MHz. No interference should occur at frequencies below 29MHz.

Normally the cause of these problems is poor r.f. selectivity at the receiver input and the use of a low i.f. frequency. We cannot do much about the second of these but we can certainly improve the first. Build a simple r.f. pre-selector and insert it between the antenna and the receiver input. This will reduce the chance of the strong out of band signals overloading the receiver input stages and generating spurious signals. Note that I say PRE-SELECTOR and not pre-amplifier, the use of a pre-amplifier is a sure way of making things worse.

Unfortunately I cannot think of a way of getting rid of TV time base harmonics. This is a perennial plant that refuses to die.

**Ron Gouldstone G3TAG  
Toft  
Cambridge**

## Dear Sir

I am a long standing reader of the *Short Wave Magazine*, and am wondering whether you would be so kind as to help me, the reason I will explain, I am 1921270 (Ex Boy Entrant) trained as a Telegraphist at RAF Compton Bassett, Calne, Wilts. 1948/9.

I and other Boy Entrants are endeavouring to trace our colleagues from those early years and, myself being a member of our newly formed Boy Entrants Association, my efforts are the tracing of Ex Boy Entrants. Would it be possible to put a small article under Letters to the Editor? If this is possible, would you kindly print the following:

Calling all Ex Boy Entrants who may be short wave listeners or amateur radio, 1921270 (Ex Boy Entrant) John Martin, formerly of No. 3 Radio School.

RAF Compton Bassett, Clane, Wilts, 1948/9 trying to trace Ex Boy Entrants (communications trained), interested in joining our association? Please write to: Mr John Martin, 67 Carr Barn Brow, Bamber Bridge, Preston, Lancs PR5 8LD or telephone (0772) 322088.

Hoping you can help.  
**John Martin  
Preston  
Lancs**

# letters

## Dear Sir

I read G0IYZ's letter regarding rallies and Special Interest Groups (SIGs), with great interest.

On behalf of BARTG, (the SIG for data comms), I too have been involved in booking (or trying to book) rally stands for an SIG. I have also actually run some of those stands. Finally, I have been involved in organising an annual major rally run by an SIG.

I, too, have found that some rally organisers viewed BARTG in an identical fashion to any commercial trading company. BARTG operates on a non-profit making basis but was expected to pay the same rate for its stand as companies which employ salaried staff and which have to make and return a profit for their owners.

Fortunately, some rally organisers have much more benevolent view towards SIGs. Some allow us a small stand without any charge, others give us a generous discount. In fairness to those rally organisers who charge SIGs the commercial stand rates, it must be noted that some rally venues are not all expensive to hire and the rally organisers have to cover their costs.

Yes, the rally organisers could increase charges to the companies in order to offer stands to SIGs at reduced rates. Yes this would appear to be cross-subsidy but surely the traders benefit from the presence of those SIG stands. Many would-be customers of those companies' stands like to get a second opinion before parting with their money. I've found that the opinion of the BARTG stand's people has been sought before TNCs, software and radios have been bought. We've also created customers for some companies simply by being so enthusiastic about data comms that our own 'customer' has gone straight off and bought a TNC.

As G0IYZ rightly points out, amateur radio rallies are not just for selling and buying. They are places where we amateur radio enthusiasts can meet up and chat about our hobby. I've certainly found that the BARTG stand at rallies has been a focal point of data comms discussions and also a contact point for the newcomer to data comms modes. I've not always sold my 'customers' anything at all but I have helped many of them surmount their apprehension about data comms and open up a new and fascinating (and useful) aspect of amateur radio for them. After all, amateur radio is a hobby and not a profession or vocation for most of us.

Our annual BARTG rally shows that BARTG does treat other SIGs as BARTG itself would like to be treated. Our rally manager Peter Nicol G8VXY does invite a selection of SIGs to attend our rally at very preferential rates. He does remember that the rally is primarily for amateur radio enthusiasts rather than being just another Sunday market. This year's BARTG rally is on September 11th for those who wish to judge Peter's work for themselves.

Finally, I have an extra point to add to those raised by G0IYZ. SIGs are usually run by volunteers working in their spare time. In the past, I have been quite amused by 'phone calls enquiring about the opening hours of the BARTG shop. If we ran a shop then the BARTG subs would have to increase very significantly to cover the overheads. Less amusing have been the very occasional enquirer who has expected a 24 hour response to a letter and then complained that ours was 'no way in which to run a business' even after the volunteer aspect of BARTG was carefully explained. Sorry folks, but SIGs such as BARTG are run by amateurs for amateurs and I believe this gives us SIGs a freedom to concentrate on the hobby itself rather than any commercial aspects.

**Ian Brothwell G4EAN, Secretary - BARTG**

## Dear Sir

Chris Carrington has said a lot of things which needed saying in his letter about the radio rally in your July issue. I thank you for giving publicity to this matter in your excellent magazine.

I have just returned from an enjoyable day at Longleat. Good to see some special interest groups there and nice to have a natter with people of like mind in the vicinity of the International Short Wave League stand. I would like to see the special interest group fraternity extended to organisations like EDXC, DDXC, World DX Club and Medium Wave Circle. Perhaps some of them could get together on this like they did at

Picketts Lock in 1993. The price of a table would have to be affordable, of course. How helpful it would be if an authoritative body like the RSGB could be a watch dog on prices charged to special interest groups at a radio rally.

At Longleat I was also pleased to see *Short Wave* and *Practical Wireless Magazine* represented. In addition, I enjoyed looking round the craft fair section, having an opportunity to purchase ball point pens, pvc tape, some small plants and other non-related bric-a-brac. There are, it would seem, various aspects to a good radio rally.

**Sheila Hughes  
Morden  
Surrey**

## Dear Sir

I was very interested to read the excellent Airband features in the March 1994 edition of *Short Wave Magazine*. The Pacific HF article was particularly enlightening.

Please forgive me, therefore for pointing out some minor, but significant errors regarding ATC phraseology.

1) On page 30, column 2, it is stated that the correct word meaning 'yes' is affirmative and not affirm. In fact, the opposite is the case. The word for 'yes' is AFFIRM.

2) On page 30, column 2 it is stated that numerals are spoken as individual digits. This is not always the case. The circumstances in which the numerals are being used determine how they are to be spoken.

3) On page 30 column 3 the distress frequency is incorrect. It should be 121.5MHz.

4) On page 31 column 2 it is stated that QFE is spoken as Quebec Foxtrot Echo. In fact, it is normally spoken as three letters 'QFE'.

Changing the subject - you may be interested to know that the fifth edition of my book on Air Traffic Control will be published later this summer.

**Graham Duke  
Newport  
Gwent**

## Dear Sir

Although the issues raised by Mr I. Nathan in the July edition are quite valid and do show up inadequate design and/or cost cutting by manufacturers, there are a couple of points which are not correct.

It seems that, judging by the description, the CB user could well be using an illegal aerial, modern sets running legally should not produce vast amounts of harmonics as described in his letter. However, sets that have been 'tweaked' are notorious for this, all the sake for an extra couple of watts or do. I would

like to remind Mr Nathan that first generation cordless 'phones transmit on 1.722-1.782MHz on the base station and 47-50-47.54 from the handset, what he was hearing was the direct slope detected NBFM signal from the base station. I do remember an excellent article on this matter in *SWM* some years back, there were reports of some illegally imported units from Italy (where else!) which could be heard over 10 miles away!

**A. J. Golskof  
Tewkesbury  
Gloucestershire**

## Dear Sir

Please can you help me? I am looking for details of a good short wave scanner club in England.

**Keith Artherton  
Fakenham  
Norfolk**

## Dear Sir

I am writing in response to the letter from S. K. Nathalal (*SWM* July 1994 Page 16).

The mystery symbol is a product approved label from Germany 'BZT' stands for Bundesamt fuer Zulassungen in der Telekommunikation (Telecommunications Licensing Authority). The K refers to the nature of the licence, and UO2216 is the licence number.

The symbol is equivalent to the 'green circle' found on modems, faxes and telephones on the UK market. BZTs function is similar to that of BABT (British Approvals Board for Telecommunications).

Unlike the UK, Germany has strict rules concerning EMC, hence the need for approval of a receiver (which contains local oscillators, and hence can radiate radio signals).

May I take this opportunity to draw your readers' attention to The CQ Centre Bulletin Board? On line 24 hours a day, access is available at all speeds from 300 to 14400bps on (0753) 595468. PC and modem owners will find hundreds of megabytes of radio related software, plus networked (FidoNet) message areas on amateur radio, packet radio, CB, short wave listening, satellite TV, modems, ISDN and amateur datacommunications. Access costs no more than the price of the 'phone call - which is local rate for the M4 corridor as far west as Maidenhead.

**Mike Gathergood G4KFK, Datchet, Berkshire**

# grassroots

## rallies

**July 31:** The Rugby Amateur Transmitting Society are holding their 6th Annual Amateur Radio Rally at the BP Truckstop on the A5, 3 miles east of Rugby and approximately 3 miles north-west from Junction 18 of the M1 motorway. Doors open at 10am, admission is £1 per car and facilities include a good cafeteria and toilets. Talk-in on S22 by GB6CBS. Peter on (0455) 552449.

\***August 7:** The Woburn Rally will be held at the Woburn Abbey, Woburn, Bedfordshire. The rally is open from 10am to 5pm.

\***August 14:** Flight Refuelling ARS Hamfest will take place at the Flight Refuelling Sports Ground, Merley, Wimborne. The event will run from 10am to 5pm and will include the usual mix of traders, Bring & Buy, car boot sale and field events. Richard Hogan G4VCC on (0202) 691021.

**August 14:** The Derby and District Amateur Radio Society will be holding its annual radio rally at the usual venue, Littleover Community School, Pastures Hill, Littleover, Derby. The venue for the Rally is on the A5250, just north of its junction with the A38, on the southern outskirts of Derby. There will be the usual attractions, including the famous monster junk sale. Martin Sherdlow G3SZJ, QTHR on (0332) 556875 or packet G3SZJ @ GB7LTN

**August 21:** The Southend and District Radio Society are holding their rally at the Rocheway Centre, Rochford, Essex. Doors open at 10am with ample parking for all. Weather permitting, there will be a boot sale for computer, radio, and electronic equipment will also be on the site on the sports ground to the rear of the centre. Further details from The Rally Organiser, PO Box 88, Rayleigh, Essex SS6 8NZ.

**August 21:** The West Manchester Radio Clubs 'Red Rose Rally' will be held at the usual venue of the Bolton Sports & Exhibition Centre, Silverwell St., Bolton (town centre). All the usual trade stands (over 75), societies, Bring & Buy, etc. all at pavement level, with facilities for the disabled visitors. Refreshments available all day plus bar. Doors open 10.30am for disabled visitors, 11.00am for general public. Admission £1, children free. Dave G110G on (0204) 24104 evenings only.

**August 21:** King's Lynn Amateur Radio Club are holding their 5th Great Eastern Rally at the Cattle Market, Hardwick Narrows, King's Lynn (off A10/A47 roundabout). Doors open at 10am (9.45am for disabled visitors). Attractions include a spacious indoor area with major international exhibitors, outdoor car boot area, Bring & Buy, Talk-in on S22, easy access for disabled, all one level, free parking, refreshments available. Entry £1. G0BMS on (0553) 765614.

**August 27, 28 & 29:** A Computer Fair including a Radio Rally and Electronics Fair is being held on the site of what used to be Walsall Airport, and is situated off the main A434 Aldridge to Walsall Road and is approx four miles from the A5, or five miles for Junction 7 of the M6 motorway. Mr A. Wood on (0543) 372807 after 5pm or anytime weekends.

**August 28:** The Fourth Gloucester Radio Rally is being held at Naas Lane, Quedgeley, Gloucester (off the old Bristol road). Doors open at 9am to 4pm. There will be a Bring & Buy, a car boot sale and flea market stalls. For more details 'phone Mike on (0452) 503786.

**August 28:** The Galashiels Club are holding their Open Day at the Focus Centre, Livingstone Place, Galashiels, Scotland. Doors open at 11am till 4.30pm. There will be a Bring & Buy, traders, club stalls, a raffle and refreshments. J. G. Campbell on (0835) 822686.

**August 28:** The East Coast Amateur Radio & Computer Rally will be held at the Clacton Leisure Centre, Vista Road, Clacton-on-Sea, Essex. Doors open at 10am to 4pm. There will be a Bring & Buy, and a bar and cafeteria available from 11am. Free car park and talk-in on S22 and SU22 (GB0CR). For further information contact (0473) 272002.

**August 28:** The 30th Torbay Rally will be held at Clenon Valley Leisure Centre, Paignton, Devon. Doors open at 10am. There will be trade stands, Bring & Buy, special interest displays, use of leisure facilities, restaurant and bar. Only four minutes walk away there is a beach, boating lake, steam railway and a flume water park. John G3YCH, QTHR on (0803) 842178.

**August 29:** The Huntingdonshire Amateur Radio Society are holding their Rally at St. Germain Street, Huntingdonshire. Admission is £1 per person and the car parking is free. There will be hot and cold refreshments available, and a talk-in on S22. Doors open at 10am. Further details from David Leech G7DIU on (0480) 431333.

\***August 29:** Scarborough Amateur Radio Society will hold their radio electronics and computer rally at the Spa, South Foreshore, Scarborough. Doors open at 11am. Many traders, Bring & Buy, refreshments and bar. Ross Neilson on (0723) 514767.

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

The Editorial staff of SWM cannot be held responsible for information on Rallies, as this is supplied by the organisers and is published in good faith as a service to readers. If you have any queries about a particular event, please contact the organisers direct. Editor

### AVON

**Bristol International RC:** Tuesdays, 8pm. The Fighting Cocks Public House, Hengrove. All visitors are welcome. The club has been formed so that all radio enthusiasts, whether it be Hams, s.w.l.s or CBers can get together and have a good natter and do things that you do in radio clubs. PO Box 28, Bristol BS99 1GL.

**RSGB City of Bristol Group:** last Tuesdays, 7pm. New Friends Hall, Purdow, Bell Hill, Stapleton, Bristol BS16 1BG. Aug 23 - Biasing transistors. Dave. (0272) 672124.

**South Bristol ARC:** Wednesdays. Whitchurch Folkhouse Assoc., Bridge Farm House, East Dundry Rd, Whitchurch. Aug 3 - 70cms activity evening and committee meeting, 10th - Computer shareware - please bring some, 17th SBARC BBQ evening, 24th - Astro photography slide presentation. For more information ring (0275) 834282 on a Wednesday evening.

### DEVON

**Torbay ARS:** Fridays, 7.30pm. ECC Social Club, Highweek, Newton Abbot. July 30 - GB2APF Apple Pie Fair at Marldon, Aug 13 - GX3NJA at Manaton Fair, 19th - Monthly meeting. Peter G4UTO. (0803) 864528.

### DORSET

**Dorset Police ARS:** 1st and 3rd Thursday at Force HQ at 7.30pm. Aug 1 - Introduction to the winter construction project by Clive Hardy, 4th - ATV talk/demo at HQ by SDRS organised by Bob Knight, 15th - Club project update and committee meeting. (0202) 229351.

### DYFED

**Aberystwyth & DARS:** 2nd Thursdays, 8pm. Scout Hut, Plascrug Avenue, Aberystwyth. Aug 7 - Amateur radio demonstration/Ceredigion Flying Club Open Day - Talk-in on S22, 25th - GW0ARA on the air, listen on S17. Katy GW0SFO. (0545) 580675.

### EAST SUSSEX

**Hastings Electronics & RC:** 3rd Wednesdays, 7.45pm. West Hill Community Centre, Croft Road, Hastings. Aug 13/14 - Hastings Town & County Fair, all day in Alexander Park, 17th - Main meeting, the annual bring your 'Thingy' competition. G3YF on (0424) 830454.

### ESSEX

**Vange ARS:** Thursdays 8pm, Barnstable Community Centre, Long Riding, Basildon, Essex. Aug 4 - Junk Sale, 11th - Natter night, 18th - Rally arrangements, 25th - Team quiz. Doris. (0268) 552606.

### GRAMPIAN REGION

**Aberdeen ARS:** Fridays, 8pm. Queen Mother House, Aberdeen. July 29 - 'Wet String' listening competition - Round 5, Aug 5 - Junk Sale, 12th - Visit to Police Comms Department, 19th - Beetle drive & social evening. Gordon Stuart GM7PXW. (0224) 780591.

### 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.

### GREATER LONDON

**Crystal Palace & DRC:** 3rd Saturdays, 7.30pm. All Saints Church Parish Rooms, Beulah Hill, London SE19. Aug 20 - Evening on the air. Wilf G3DSC on 081-699 5732 or Bob on (0737) 552170.

**Edgware & DRS:** Thursdays, 8pm. Watling Community Centre, 145 Orange Hill Road, Burnt Oak. July 28 - Morse practice evening, Aug 25 - SSB field day. Rod Bishop. 081-204 1868.

**Wimbledon & DARS:** 2nd & last Fridays, 7.30pm. St Andrews Church Hall, Herbert Road SW19. July 29 - Camp Briefing. 081-540 2180.

### HAMPSHIRE

**Horndean & DARC:** 1st Thursdays, 7.30pm. Horndean Community School, Barton Cross, Horndean. Aug 4 - Digital signal processing by Nigel Gerdes G7CAW. S. Swain (0705) 472846.

### HEREFORD & WORCESTER

**Bromsgrove ARS:** 2nd & 4th Tuesdays. Lickey End Social Club, Alcester Road, Burcot, Bromsgrove. Aug 9 - EMC discussion/problems, 23rd - DF Hunt (on foot). Barry Taylor. (0527) 542266.

### HERTFORDSHIRE

**Hoddesdon RC:** Alternate Thursdays, 8pm. Conservative Club, Rye Road, Hoddesdon. Aug 4 - Club natter night, 18th - Club informal evening and preparation for Special Event Station. John G70CI. (0920) 466639.

### KENT

**Bromley & DARS:** 3rd Tuesdays, 7.30pm. The Victory Social Club, Kechill Gardens, Hayes. Aug 16 - Electron Waves by Mark Foreman G7LSZ. A Messenger. 081-777 0420

**Medway AR & TS:** Fridays, 7.30pm. Community Hall, Catkin Close, Tunbury Avenue, Walderslade, Chatham, Kent. Aug 14 - Visit to Duxford Air Museum, 19th - Raynet video by G1OMH. George Packham. (0634) 685585 or Alan Stanley. (0634) 201462.

### NORFOLK

**Norfolk ARC:** Wednesdays, 7.30pm. Formal and informal meetings at The Norman Centre, Bignold Road, Off Drayton Road between 'Asda' and Three Mile Cross Roundabout, Norwich. Aug 3 - Foxhunt, 7th - RSGB Woburn Rally, 10th - Night on the air, construction QRP and Morse practice, 17th - Science for all by Arnold Tomalin G3PTB, 24th - Night on the air, construction QRP and Morse practice. Mike G4EOL. (0603) 789792.

### NOTTINGHAMSHIRE

**Mansfield ARS:** 2nd Mondays, 7.30pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. Aug 8 - Amateur television by Barry G6LIC. Howard G1JGY. (0623) 423697.

**South Notts ARC:** Fridays, 7pm. Highbank Community Centre or Fairham Community College, Farnborough Road, Clifton Estate,

Nottingham. July 29 - Breedon Hill Servicing, 30th - BBQ at Breedon and Radio On Air activity, 31st - On Air Activity until close at 12 noon. Julie Brown G0SOU. (0602) 211069.

### 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. July 28 - Antenna construction by Charlie GW3JPT, Aug 4 - Natter night, 11th - Notice to members of the AGM (nominations and information etc.), 18th - Natter night, 25th - Telford Rally Group meeting. Sheila Blumfield G0SST. (0743) 361935.

### SOMERSET

**Yeovil ARC:** Thursdays, 7.30pm. The Red Cross Centre, 72 Grove Avenue, Yeovil. July 28 - Club station on the air and committee meeting, 31st - A social gathering of all radio clubs in the surrounding area, Aug 4 - Choosing passive components by G3MYM, 11th - A home-brew QRP station by G0FUW, 18th - Strange happenings on Amateur radio by G3KSK, 25th - Club station on air and committee meeting. Cedric White, QTHR. (0258) 473845.

### SUFFOLK

**Haverhill & DRC:** 2nd Mondays, 7.30pm. Samuel Ward Upper School, Chalkstone Way, Haverhill. Aug 6-7 - Club portable weekend. Rob Proctor G4PZW. (0440) 704637.

**Sudbury & DRA:** 1st & 3rd Tuesdays, Wells Hall, Old School, Great Cornard, Five Bells Public House, Bures Road, Great Cornard. Aug 2 - Aerials by Mike G4GGC, 16th - Natter & Noggin night. Tony Harman G8LTY. (0787) 313212

### WARWICKSHIRE

**Mid Warwickshire ARS:** 2nd & 4th Tuesdays, 8pm. St. Johns HQ, Warwick Div., 61 Emscote Road, Warwick. Aug 9 - Fox hunt, 23rd - BBQ at No. 70, at home with Don G8HRI. Don on (0926) 424465.

### WEST MIDLANDS

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

### WILTSHIRE

**Trowbridge & DARC:** 3rd Wednesdays, 8pm. The Southwick Village Hall, Southwick, Trowbridge. Aug 3 - Yagi antennas by G3ZXX, 17th - Natter night. Ian G0GRI. (0225) 864698.

# Junior Listener

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

## Reference Guide

*A Reference Guide to Practical Electronics Terms by F.A. Wilson is listening to Morse code contacts if you are going to have a go at Morse code. This is because abbreviations, 'this is because' people sending Morse are always looking for ways to speed up the contact without having to send at amazing speeds, so they use a shorthand when in contact with an amateur to whom English is not their first language as you can make up a pretty good conversation out of these standard abbreviations and the message will be understood by the other station.*

*Unfortunately, for the beginner cover everything you could want to know, but it would certainly help any studies into the complicated world of electronics. The book costs £5.95 and I believe that the SWM Book Service now holds stocks, so that should make it easy to obtain.*

## Mainly Morse

CO	This is one of the best-known Morse abbreviations and it means calling all stations. For example, CO CO CO DE G4LFM K.
DE	This means from as you can see from the previous example another commonly used abbreviation, this means back to you or over.
73	This numerical abbreviation means best wishes. For example, 73 DE G4LFM.
88	not quite used so often as this means love and kisses!
YL & XY	my least favourite abbreviations, these mean young lady and wife (ex-YL) respectively. The opposite is OM (old man!) but there doesn't seem to be an equivalent for husband. Perhaps this shows that the hobby was originally dominated by men and its popularity with so many women is a much more recent thing.
FEB	now this is a strange one, commonly used to mean FOR. Why? Well the Morse code symbol for O is - - - but as for the Morse code symbol for E is - it's much quicker to send FEB than FOR!
TKS or TNX	this is thanks or thanks you
ES	this is another strange one and it means AND, but again you can see how much quicker ES is to send in Morse.
HI	This is used to denote an exclamation mark in a sentence or something funny (meaning a laugh).
GM	an obvious one this as it means good morning, look out for GA and GE for good afternoon and good evening.
ABT	again obvious, meaning about.
UR	this one means YOUR.
ANT	a nice simple one this as it means antenna.
CUL	see you later.
WX	this means weather.
PSE	you'll hear this one a lot as it means please and you'll find that by and large Morse code operators are a polite lot.

There are many more I could list, but these should get you started 'decoding' your first Morse contact.

## Navigating the Ether!

One of the commonest questions from new listeners is what can I listen to, where do I find it and what do I need to receive it, etc! Looking through the available books it seems that straightforward answers are not that easy to come by - so I'll have a go here.

Let's work through methodically, starting with the very lowest frequencies. The range from around 3kHz up to about 180kHz is used for a number of specialised transmissions that supply maritime and navigation information, for commercial use. To make any use of these signals you would need a receiver capable both of tuning this low and with the facility to receive single sideband transmissions. You will also need to add a specialist decoder to turn the whistles and gurgles into something useful. Just to give you an example of what can be found, Offenbach Met operate a FAX station on 134.2kHz that sends almost constant weather charts, including Meteosat photographs (see Fig. 1). There's also the Rugby MSF standard time frequency transmission on 60kHz.

Moving up to the next group of frequencies comes the main long wave broadcast band from 140.5 to 283.5kHz. Most of you will be familiar with this band and its range of reliable stations. This band, along with the other broadcast bands just needs a receiver capable of receiving a.m. signals. The gap between the long wave broadcast band and the medium wave band (526kHz to 1,606.5MHz) is filled with mainly radio navigational stations. These are rather like radio lighthouses, but instead of sending a characteristic flash of light, they send a unique radio signal.

Once we move above the medium wave band we are dealing with the very heavily used short wave bands. Life can get quite complicated here as there are so many transmission systems in use. For the sake of this tutorial I'll just list the main areas.

Perhaps the most listened to sections are the short wave broadcast bands. There are a total of ten, with starting frequencies of:

3.2; 5.95; 7.1; 9.5; 11.65; 13.6; 15.1; 17.55; 21.45 & 25.67MHz.

The vast majority of these stations use a.m. so they can be received quite easily. However, it's whilst dealing with these congested bands that the advantages of a good quality receiver really start to pay off.

Interspersed with the broadcast bands are a wide range of what have become known as 'utility stations'. These can be grouped into two main categories: data and speech. The speech signals can be received using any

The one exception to this is Morse code. Not to be forgotten in amongst all this is the amateur bands. As you would expect there are a wide range of transmission systems in use but by far the most common is s.s.b. Amongst the most reliable bands are 3.5MHz for inter-UK working, 7MHz for trans-Europe and 14MHz for world-wide communications.

That's about all I've got room for this time, but look out for more details later.

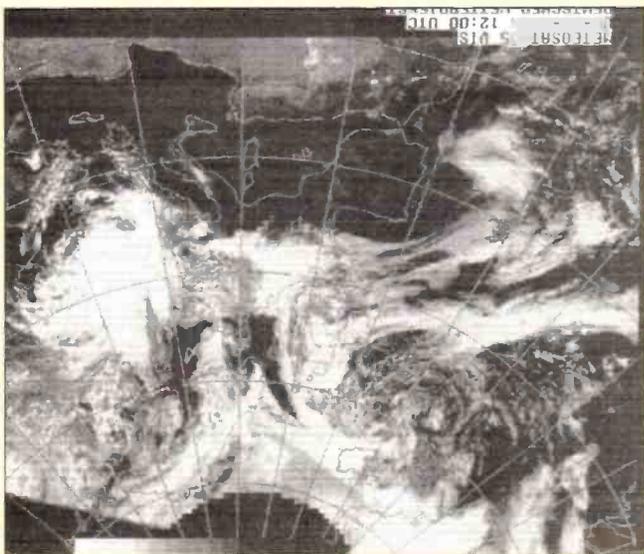


Fig. 1: Weather chart from Offenbach Met station.

## 'RRS Discovery' Special Event Station

Captains Scott used *Discovery* for his 1901-1904 expedition to the Antarctic, there the ship was trapped in the pack ice for 2 years before being dynamited free to allow her return to the UK. The vessel is now berthed in Dundee, the city where she was built. September 25th and 26th will see the members of the Dundee ARC mount a station in the original radio cabin. The station will operate on 7, 14, 21 and 144MHz. For further details contact: **George Millar GM4FSB, 30 Albert Crescent, Newport on Tay, Fife DD6 8DT.**



## New Date for Vintage Radio Auction

Academy Auctioneers and Valuers have decided to reschedule its next vintage radio auction due to a clash of dates with a similar auction on 14 September, the next event will be held later in the autumn season, the actual date should be announced shortly.

For further details contact: **Bettine Bauer at Academy Auctioneers and Valuers, Northcote House, Northcote Avenue, Ealing, London, W5 3UR.**  
Tel: 081-579 7466, Fax: 081-579 0511.

## Paint Used For Screening

We have received the following information from Peter Longhurst, G3ZVI of Garex Electronics regarding the review of the Garex Tunable aerial filter. Whilst they are very pleased with the favourable comments from our reviewer, they wish to respond to one point that was raised.

The product was criticised for being housed in a plastics rather than a metal box, raising concerns that the interfering signal could be picked up again at the output. Garex are pleased to confirm that this is not a problem since the filter has been very carefully designed. The interior of the plastics box is sprayed with an RF shielded paint and the filter construction is a screened trough.

## Hoka Electronics Appoint Distributor

Due to time constraints and therefore difficulties in providing the level of high service deserved by their customers, Hoka Electronics have appointed Neil Thompson of NTech Communications to take over support for all retail sales of the CODE3 and CODE30 products.

Neil Thompson Ntech Communications, 36 Dalling ton Road, Hampton Park, Eastbourne, BN22 9EG. Tel/Fax: (0323) 5007249.

## RF/Wireless Communication Components Designer's Data Book

Anglia Microwaves Ltd. announce the availability of RF Micro Devices new RF/Wireless Communication Components Designer's Data Book. The book gives a block diagram of a complete r.f. solution and goes on to cover a wide range of components, including i.c.s that aid digital systems and LNA/mixer i.c.s that ease wireless receiver design. For further information please contact: **Salvatore Grosso, Anglia Microwaves Ltd.** Tel: (0277) 630000.

Each product is fully and demodulators. front-ends, i.f. amplifiers and demodulators.

## Addition to SWM Book Service

### Scanners 3 Putting Scanners into Practice

Now in its 4th edition, the Scanners series of books continue to be the most comprehensive scanner guides ever published in Britain. This 4th revision of Scanners has seen the largest number of changes and additions, to the point of actual rewrite. The resultant title of *Scanners 3* has been chosen to avoid confusion. It follows on from *Scanners 3rd* edition and encourages better use of scanning receivers. Fully illustrated throughout, including a comprehensive section featuring the actual scanners currently available plus a useful guide to scanner and accessory dealers in the UK, this book contains all the information you need to put your scanner into practice. 271 Pages **£9.95.**



## Domestic Appliances To Be Fitted With Plugs

The Department of Trade and Industry has announced that as from 1 February 1995, most domestic electrical appliances manufactured in or imported into the UK must be fitted with a correctly fused 13A plug. In a written answer to a Parliamentary Question from Lord Gainsford, Lord Strathclyde, Consumer Affairs Minister, said: "Regulations under the Consumer Protection Act 1987 will be laid before parliament shortly, and from 1 February 1995 most domestic electrical appliances manufactured in or imported into the UK must be supplied with a correctly fused plug. Fatalities and injuries occur each year because of incorrectly fitted electrical plugs. These regulations represent an important step forward in consumer safety for the British public."

## Frankenstein V

For the fifth year in succession, a valiant band will tempt fate and run an amateur station from the ancient and scary dungeons of Castle Frankenstein, near Darmstadt in Germany. The station DA1WA/P will be operating from the evening of 29 July to midday 31 July. QSL manager (if he survives Saturday night and Igor's pals!) will be Rob Kipp DJ0PU. The brave band will be operating on most bands and in most modes running 100W. A special blood red QSL will be available, please remember to include sufficient postage and a self addressed envelope, at least 15x10.5cm. Don't forget to listen at midnight!



## National Transmitter News

### Radio 1 FM:

**June 22 Okehampton**, Devon entered service after a period of test transmissions which began April 28. Using a frequency of 98.3MHz, the transmitter is sited 2km north of the town and offers good stereo reception to over 5000 people in the town and the surrounding area. The Station also carries Radio 2, 3, 4 and Radio Devon.

**June 22 Plymton**, Devon located 5km east of Plymouth entered service providing good reception including stereo, to around 11500 people in the Plymton and east Plymouth areas. Frequency used is 98.1MHz. Antenna polarisation is vertical. The Station also carries Radio 2, 3, and 4.

**June 8 Idle**, West Yorkshire located some 5km north of Bradford commenced service after a period of test transmissions. The frequency is 98.1MHz being vertically polarised. The Station provides good f.m. reception including stereo to around 10 000 people in Shipley and the surrounding area north of Bradford. The Station also carries Radio 2, 3, and 4.

### Television Relay Stations:

**July 4 Horndean**, Hampshire jointly operated by the BBC and the Independent Television Commission (ITC). Located 8km north of Havant, bringing good television and teletext reception to about 450 people in Horndean including the residents of Downwood Way and Southdown Road.

### Station Details

Channels:	BBC1	South	56
	BBC2 <td>South <td>64</td> </td>	South <td>64</td>	64
	ITV <td>Meridian <td>52</td> </td>	Meridian <td>52</td>	52
	Channel 4 <td></td> <td>62</td>		62

Antenna Group: C/D  
Polarisation: Vertical  
Effective Radiated Power: 12W (to the S & E only)

## Radio and TV DX News

A new voice on the scanner airwaves will be the DSS Sector Fraud Investigation Department who have just invested £4 million's worth of 200 PMR systems units. This includes 2,500 vehicle units (Key) and 2500 handhelds (Kenwood) and handfree units by Technotrend. Delivery is between now and Winter 1996.

The Civil Land Mobile Radio Committee are pressing for more spectrum allocation and reckon they'll need another 100MHz bandwidth. The CLMRC considers that this might come from reduced defence requirements and transfers in terrestrial TV broadcasting by making use of cable/satellite delivery. The committee argues that "mobile radio users must have available a number of identified harmonised frequency bands within which mobile radio will be the dominant service throughout Europe".

In Poland the Broadcasting Council have awarded 117 regional and local radio licences, together with the establishment of 4 large regional private TV networks. In Switzerland the German RTL-TV group have been refused a broadcasting licence to transmit in that country. RTL had planned an RTL-TV expansion but with regional (Swiss) opt outs.

Canal Plus TV has received permission to expand into Israel with a terrestrial PAY-TV service. And Zambia is also planning a 2nd TV network again based around a PAY-TV format using the South African M-NET service though no on-air dates have as yet been advised.

On the PAY-TV theme still but in chillier climes, the Stod-2 station in Reykjavik has been losing up to 10% of income due to pirate decoder usage. The local Parliament has now passed several new clauses in their Broadcast Bill that makes illegal the manufacture, sale, installation or repair of decoders outside of the known list of subscribers. Reception of coded transmissions unlawfully (ie, without paying the correct fee) is also unlawful and wrong do-ers will be fined or imprisoned.

Let July will see a unique court case in which London's Canary Wharf Ltd, owners of the metal clad high tower block will be taken to the High Court for prolonged public nuisance during years 1988-92 during which time severe ghosting was caused to TV viewers, particularly in Poplar. Elsewhere Arsenal Football Club paid for nearly 150 antennas to be replaced following erection of their new North Bank Stand and loss of TV signals.

Green Channel' is a new f.m. station in Kampala, Uganda which will expand local broadcasts, news etc. Though currently operating a reduced programming hours, changes have resulted in other services. Radio Uganda's Kawa programme for the West Nile is now starting 1715 local, 1815 Sundays. The Lutimira/Bantu language service has now extended to 30 minutes starting Saturdays 1430 local. Evening news in Kiswahili is now 2100 with local 2045 local for frequency change. Source *World Broadcast News*.

Egypt - A Benelux DX Club member has recently had a holiday in that area and can confirm that at Dumyat there two transmitters, each of 900 watts e.r.p. The ch.2 transmitter carries the ERTU-2 programme with an offset of 8P. The ch.4 900 watt e.r.p. transmitter carries ERTU-1 with a zero offset and has many signals including teletext in the sync bar. After close down pages of teletext are transmitted, Arabic on ch.4 and English on ch.2. ERTU-2 airs lower together with teletext pages. ERTU-1 is on-air earlier.

And finally DAB - Digital Audio Broadcasting - which currently testing with 2 transmitters in North/South Paris at 50MHz - looks like opting for an eventual European allocation at ch.12, Band 3 TV @ 223-230MHz. With an East German main transmitter now in E12 may push Poland and Czechoslovakia into using Band 1 for DAB. With the 1.5GHz equation also in the air, the manufacturers are experiencing much head scratching as to the r.f. receiver front ends to develop

## BARTG Guide to RTTY launched

The second in the series of the new *BARTG Guides to Data communications* has now been released. These new guides describe the basics of setting-up the various modes of data communications over radio.

The *BARTG Guide to RTTY* is illustrated, with many easy to follow diagrams and explanations. Ideal for the beginner and newcomer to RTTY, it is also very interesting and informative reading for the RTTY enthusiast. Price is 75p inc. P&P.

The Guide is available from the BARTG's Publications Manager: **Mark Ashby G6WRB, 47 Ryton Close, Luton, Beds. LU1 5SR**

For details of how to join BARTG or for general information on the group contact: **Peter Adams G6LZB, BARTG membership Secretary, 464 Whippendell Rd., Watford, Herts. WD1 7PR, Tel: (0582) 36094. Packet: G6LZB@GB7BST.**

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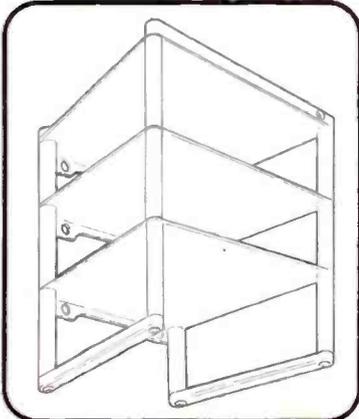
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# Receiver Specifications Explained - 1

This month Peter Buchan begins a three part series to help remove some of the mystery behind receiver specifications

**A**s radio enthusiasts we are following a hobby with a strong scientific bias, though to enjoy the hobby one does not have to be a highly skilled, engineer, technician or research worker. In fact, the operation of receiving apparatus is a craft, an art, and remains so for those who operate their equipment manually.

As with so many pursuits, the satisfaction and enjoyment of the hobby is enhanced by studying the fundamental principles which govern the working of the equipment we use.

An area where there seems to be a lack of understanding is in the reading of manufacturers data sheets and specifications.

There is little on the subject either in text books or the literature. Specifications are written to enable the interested party to get some idea how a particular piece of apparatus stands up against the competition. It is possible to gather together several glossy brochures, and compare the figures which describe the various parameters, and assume one is making an objective decision, as to which is the best buy. But instead of just comparing the figures would it not be much better to understand each parameter in some depth. Not only does this make the exercise more interesting but it will add confidence to your choice, and in addition will be a form of self training. A requirement of those intending to become licensed and indeed an on going procedure for those already licensed.

For example look at a manufacturers data sheet or brochure for a communications receiver or transmitter, almost certainly the first thing to be found in the specification is the receiver sensitivity. Couched in technical terms it will read something like this:

> 0.15µV for 10dB S+N/N.

What this is telling you is that, less than (it does not tell you how much less) 0.15microvolts across the antenna terminals are required to lift the output of the receiver, which will include the signal and the noise, to a level ten times greater than the noise alone. This sensitivity will be for a range of say from 2.0 to 30MHz, and will be for the reception of c.w., s.s.b. and

RTTY. Sensitivity goes hand in hand with bandwidth, and bandwidth is not always mentioned, however, s.s.b. was mentioned, and so we may assume the bandwidth to be around 2.5kHz. What other information is there to be found in the statement of sensitivity? Well with a little arithmetic one can discover that the noise floor of this receiver, referred to 1mW, is -133dBm, and at the same time that the receiver is operating at a level of -123dBm at its sensitivity figure, i.e. ten times or 10dB above the noise floor).

Probably a large percentage of the readers know that these measurements were taken under laboratory conditions, using really very expensive instruments. This of course is necessary because without some form of standardisation impossible. But at the same time do these measurements tell us how the receiver will perform with an antenna connected. The answer to this must be no; up to say 20MHz, noise, external to the receiver, is so much greater than the thermal noise generated in the components of the receiver, that the sensitivity figures are virtually academic.

To prove this to your own satisfaction, replace the antenna of your receiver with a matched dummy load, or if no such load is available, just simply take off the antenna. Set the gain to give you a good audible output. Now starting at say 2.0MHz and going up in 5.0MHz steps reconnect the antenna at each 5.0MHz step. In a normal reasonably sensitive receiver, you will notice a substantial

increase in the noise output, each time the antenna is reconnected. You will need to find a quiet frequency (difficult) to do this at each step, but as you approach 20MHz the noise on an antenna reconnection will become less and less, until a point, as you go above 20MHz, is reached where you cannot tell whether the antenna is connected or not. Above this point the manufacturers sensitivity figures become more meaningful.

It is possible to put comparison figures on this noise question, providing we are prepared to make one or two assumptions. For example, assume that this receiver requires 50+ volts on the antenna terminals to give an S9 reading on the S meter. Also that one S point is equivalent to 5dB. There is some comparison would be made clear that excessive gain at the front end of a receiver, will only aggravate the situation by amplifying the and external noise of course. Perhaps this brief look at sensitivity would not be complete without some mention of thermal noise and its origin. Science has shown by the study of thermodynamics (Boltzmann, Maxwell and others), that down at the atomic level free electrons are constantly on the move. The degree of movement is proportional to the absolute temperature T (Kelvin). The result of this movement is to generate very small voltages which, due to the random nature of the phenomenon average out to zero, the r.m.s. value of these voltages does not. It is the r.m.s. value of the voltages that are heard as noise in our receivers, and it is in the

level of the receiver would be -133dBm (i.e. 40dB down on S9). The significance of this is that even at the low level of noise of S1, the receiver is working at 10dB above the sensitivity level, and 20dB above the noise floor.

Another way the receiver is working at a level of -98dBm. Even if the noise registered only with our 5dB per S point the S4 is five S points below S9, and S4 is five S points below S9, and the sensitivity figures are

level of -123dBm. Next let us take a look at the noise level which might be say S4, in the absence of a signal. A reading of S4 is five S points below S9, and with our 5dB per S point the noise is 25dB down, or to put it

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(For frequencies, say, between 2.0 and 20MHz).

Remember that 10dB is ten times, and that 20dB is 100 times, which means in simple terms that for an S1 noise level the noise input power is ten times greater than the sensitivity signal input power, and a hundred times greater than the noise floor input power. The difference at a noise level of S4 will be left for the reader to work out for themselves. The accuracy and linearity of S meters is generally very poor, but nevertheless the argument does give one a feel for the situation.

The conclusion one must reach is that it is not necessary to have sensitivities greater than those found in today's specifications. In addition, it must be made clear that excessive gain at the front end of a receiver, will only aggravate the situation by amplifying the and external noise of course. Perhaps this brief look at sensitivity would not be complete without some mention of thermal noise and its origin. Science has shown by the study of thermodynamics (Boltzmann, Maxwell and others), that down at the atomic level free electrons are constantly on the move. The degree of movement is proportional to the absolute temperature T (Kelvin). The result of this movement is to generate very small voltages which, due to the random nature of the phenomenon average out to zero, the r.m.s. value of these voltages does not. It is the r.m.s. value of the voltages that are heard as noise in our receivers, and it is in the

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Abbreviations:	
%	percent
dB	decibels
dBm	decibels reference 1µV
dBµ	decibels reference 1µV
K	Kelvin (absolute)
kHz	kilohertz
MDS	Minimum Discernible
MHz	megahertz
mW	milliwatts
S+N/N	Signal plus Noise to Noise ratio
SINAD	Signal to Noise and Distortion ratio
°C	Degrees Celsius
µV	microvolts
Ω	ohms

Some times the SINAD measurement is made with a signal modulated to only 30%. For completeness a SINAD expression should include modulation percentage and the modulating frequency.

Receiver sensitivity 0.15µV in dBm  
 Signal input power  $P_{sig} = (e_{sig})^2 = (0.150 \times 10^{-6})^2$   
 $\frac{50}{50} = 450 \times 10^{-18} \text{ W}$   
 Refer to 1mW ( $1 \times 10^{-3} \text{ W}$ );  
 $10 \log_{10} 450 \times 10^{-15} = -123 \text{ dBm}$   
 -123dBm is 10dB above noise. Therefore noise floor is (-123dBm - 10dB) = -133dBm  
 NB -133dBm is also the minimum discernable signal level, in this case;  
 $10 \log_{10} P_x = -133 \text{ dBm}$   
 $10 \log_{10} P_x = -13.3$   
 $\frac{1 \times 10^{-3}}{1 \times 10^{-3}} = P_x$   
 $P_x = 1 \times 10^{-3} \times 50 \times 10^{-15}$   
 $\frac{1 \times 10^{-3}}{50} = 50 \times 10^{-18} \text{ W}$   
 $50 \times 10^{-18} \text{ W} = (e_{sig})^2$   
 Therefore,  $e_{sig} = (50 \times 50 \times 10^{-18})$   
 $= 50 \times 10^{-9} \text{ V}$   
 Reading of S9 (50µV on antenna terminal)  
 $P_{sig}(S9) = (50 \times 10^{-6})^2$   
 $\frac{50}{50} = 50 \times 10^{-12} \text{ W}$   
 Referred to 1mW.  
 $10 \log_{10} 50 \times 10^{-12} = -73 \text{ dBm}$   
 $\frac{1 \times 10^{-3}}{1 \times 10^{-3}} = 50$   
 A noise reading of S4 is 5 'S' points down. At 5dB per 'S' point, the noise reading is 25dB less than S9. Since S9 is -73dBm, the S4 noise is (-73dBm-25dB) = -98dBm.

with a 1kHz tone. Sufficient signal is injected into the receiver to obtain a receiver audio output to suite the SINAD meter which is connected across the speaker terminals. As before a 4 or 8Ω match is needed. The SINAD meter is switched to 'Distortion' and the level control of the meter adjusted for a 100% reading. Now the 1kHz tone is nulled out by adjustment of the frequency and phase controls. When a good null is obtained the signal generator output is reduced until the SINAD reading shows 12dB. These steps are repeated until the best null, coupled with correct 100% level readings, are obtained. When satisfied, the signal generator output reading indicates the input signal required for 12dB SINAD measurement. 12dB SINAD is a standard recognised for domestic and amateur equipment, it indicates a distortion level of 25%. For commercial quality, a SINAD reading of 20dB is called for.

The generator is tuned to the same frequency as the receiver, with the resistor alone. This level of input indicates the Noise Floor and the MDS. A 3dB increase indicates a doubling of the power input, therefore the noise floor is one half of the signal generator output reading. It only remains now to increase the reading by another 7dB to reach the sensitivity reading for 10dB S+N/N. Remember, laboratory generators are calibrated in dBm. The SINAD reading is more involved. Bridge circuits must be balanced, and percentage level controls must be set. The r.f. input signal usually requires to be modulated to 100%. The generator also needs to have a really good sinusoidal output. To make the measurement, receiver and generator are tuned to the same frequency. The signal is modulated to 100%

be encountered. One is the dBµ, which would express 0.15µV for 10dB S+N/N as -16.5dBµ for 10dB sensitivity voltage S+N/N. Here, the sensitivity voltage is referred to 1µV (1µV is 0dB). The other quite popular method is the SINAD measurement. Most brochures reserve this to express f.m. sensitivity and might read 0.5µV for 12dB SINAD. The µV, and dBµ measurements, are made by first determining the impedance of signal sources such as signal generators, and so becomes a standard. Another point to notice is that bandwidth is a factor in the equation. If the bandwidth of our receiver mentioned earlier were reduced from 2.5kHz to 500Hz, that is by five times, a 7dB reduction of the noise floor to -140dBm would be realised, with a corresponding increase in sensitivity. The temperature is taken as being 290K, (17°C) and this is internationally agreed. In general Noise Figures, are not quoted for the h.f. receiver, but for interest this particular receiver would have a noise figure of about 7dB. Noise Figures for h.f. receivers run between 5 and 15dB. Some people are very surprised to find that a 45 year old receiver, that is properly aligned and serviced will perform, in essence, as well as the latest 'state of the art' receiver on the market. In fact this old receiver has both r.f. and i.f. gains it might well be able to winkle out very weak c.w. signals which do not attract the attention on the more recent receiver. This by virtue of the fact that the overall gain can be varied so much more with the two controls. Summing up then, it should be said that high gain is not required at the front end of a receiver, low noise is very important but plays a less crucial role up to 20MHz, and that noise external to the receiver can be a deciding factor in the successful establishment of communication, despite the sensitivity of the receiving equipment.

front end of the receiver, where signal voltages are very small, that noise causes a problem. The magnitude of noise voltage at ambient temperatures may be calculated using the following formulae;  
 $e_n = \sqrt{(4kTB) V}$   
 Where,  $k$ , is Boltzmanns constant  $1.38 \times 10^{-23} \text{ J/K}$   
 T is the temperature in Kelvin  
 B is the bandwidth in hertz, over which the noise is present.  
 R is the resistance in Ω across which the noise is calculated.  
 Nowadays the value of resistance R is understood to be 50 Ω. That is when noise is spoken of in terms of receiver front ends, because 50 Ω is the value generally accepted, of the impedance of signal sources such as signal generators, and so becomes a standard. Another point to notice is that bandwidth is a factor in the equation. If the bandwidth of our receiver mentioned earlier were reduced from 2.5kHz to 500Hz, that is by five times, a 7dB reduction of the noise floor to -140dBm would be realised, with a corresponding increase in sensitivity. The temperature is taken as being 290K, (17°C) and this is internationally agreed. In general Noise Figures, are not quoted for the h.f. receiver, but for interest this particular receiver would have a noise figure of about 7dB. Noise Figures for h.f. receivers run between 5 and 15dB. Some people are very surprised to find that a 45 year old receiver, that is properly aligned and serviced will perform, in essence, as well as the latest 'state of the art' receiver on the market. In fact this old receiver has both r.f. and i.f. gains it might well be able to winkle out very weak c.w. signals which do not attract the attention on the more recent receiver. This by virtue of the fact that the overall gain can be varied so much more with the two controls. Summing up then, it should be said that high gain is not required at the front end of a receiver, low noise is very important but plays a less crucial role up to 20MHz, and that noise external to the receiver can be a deciding factor in the successful establishment of communication, despite the sensitivity of the receiving equipment. There are two other ways of expressing sensitivity which will

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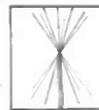
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*This month in the second of our series on DSP noise reduction filters Kevin Nice takes a close look at the Timewave DSP-9 and comes to some interesting conclusions.*

# DSP-9 Digital Noise Filter

## The problem

QRM prevails it is the plague of a modern society. We constantly improve our life style with more and more gadgets of convenience, every thing from cordless telephones, car alarms to central heating systems. The downside to most of these means to making life more pleasant is to increase the amount of man made r.f.i.

It is very rare to listen to a frequency and not hear some form of interference, lets face it who can get very far away from some form of radiation or another. In a society where most homes have at least one television set.

Faced with this problem there is an ever increasing need to pursue the noise reduction path.

The other side of the coin is the increased pressure on the radio spectrum, which causes the inevitable overcrowding of bands.

In an attempt to listen to that exotic DX or even in extreme cases just listen to what should be a relatively easy to copy signal it is becoming increasingly essential to have a very capable receiver and or an effective audio filter.

I have spent many hours using the DSP-9, to find out more read on.

## The DSP-9

The DSP-9 is an audio noise filter for voice and c.w. operation. The DSP-9 filters and reduces noise and interference to improve radio reception. The unit uses digital signal processing technology to implement algorithms that perform three basic filter functions. Random noise reduction, adaptive multi-tone notch filtering (tone noise reduction) and bandpass filtering. Push-button switches permit simultaneous selection of the three functions.

The unit is used in audio path of a receiver, it requires therefore

an audio input I used the speaker output into the rear phono with the unit input impedance set to 22Ω, an external speaker (or headphones) are required, rear panel has also a phono plug for speaker output. Two plugs are supplied as is a power jack. There is however no power supply so you will need a 12 to 16V 1A d.c. supply. Once you have connected it the receiver's audio gain on the must be set to a level that illuminates the normal l.e.d. on the front panel care must be taken to not illuminate the overload indicator.

## Random/Tone Noise Reduction

The noise reduction functions of the DSP-9 operate by examining that characteristic of signals and noise called correlation, and dynamically filtering out the undesired signals and noise. The degree of correlation is relative. Random noise, such as white noise or static, is uncorrelated. While speech is moderately correlated. Repetitive noise such as heterodyne is highly correlated. The DSP-9 measures correlation and filters out signal and noise that are outside its correlation thresholds. There is little degradation of the desired speech signal. The amount of noise reduction varies according to the correlation characteristics of the noise. Typical noise reduction ranges from five to 20dB for random noise and up to 50dB for heterodynes.

## Bandpass Filters

The DSP-9 has bandpass filters that are used in both the voice and c.w. modes of operation. The voice mode of the DSP-9 uses bandpass filters to filter the audio baseband. An example of a situation where these filters improve baseband performance in the voice operating mode is broadband s.s.b. audio signal which is difficult to copy because of poor signal-to-noise condition. Removing the high and low frequency components of the baseband that do not contribute significantly to the speech intelligibility with a bandpass filter, will remove noise and therefore improve signal quality. Another example is a s.s.b. signal corrupted with in-band and adjacent channel interference (QRM) from other signals overlapping into the desired signal. The steep skirts of the bandpass filters allow the interference to be eliminated with minimal impact on the desired signal. In the voice mode of operation, the low frequency edge of the bandpass is fixed at 300Hz. The high frequency edge of the bandpass response is set to either 2.1, 2.7 or 3.4kHz dependent upon the bandwidth selected i.e. 1.8, 2.4 or 3.1kHz respectively.

Morse signals require bandpass filters with steep skirts and linear phase response. Linear phase response minimises the usable signalling rate for a given bandwidth and

minimises ringing often heard on extremely sharp filters. The DSP-9 has six different c.w. filters with skirts so steep that a signal literally falls off the edge of the passband as you tune through a c.w. signal. The bandwidths of these filters can be selected at either 500, 200 or 100Hz. The centre frequency for the c.w. bandpass filters can be either 600 or 750Hz. The narrow filters are useful for trying to dig out extremely weak signals from the noise and QRM. The wider filters allow easy tuning and listening to multiple c.w. signals simultaneously.

## Audio Input

The audio input of the DSP-9 is an RCA phono connector on the rear panel of the DSP-9. Matching the output level of the radio to the input level of the DSP-9 is necessary to take maximum advantage of the wide dynamic range of the DSP-9. The best way to make these levels match is to use an adjustable audio output of the radio (typically the speaker output) as the input as the DSP-9. After connecting the DSP-9 to the radio, follow this simple procedure to match the audio levels. First, tune the radio to a strong signal after setting the radio output level gain control to a convenient midrange position. Then, adjust the output level control on the radio so the overload indicator l.e.d. on the front panel of the DSP-9 rarely



flashes and the normal indicator l.e.d. always flashes with the normal audio input levels. Proper adjustment ensures optimum signal-to-noise ratio and minimum distortion. Adjust the radio output level only to maintain the proper input level to the DSP-9. Use the gain control on the DSP-9 to control the listening volume.

The factory default input impedance of the DSP-9 is 22Ω. This impedance is appropriate for most radios when driven by the speakers output of the radio. The DSP-9 can be configured for a high input impedance by removing a jumper which can be accessed by removing the back bezel and the back panel of the filter unit.

## Operation

The power switch is intergal with the rotary a.f. gain control. Mode of operation are selected by use of the bank of buttons as can be seen in the photograph.

The two leftmost push buttons on the DSP-9 select one of three operating modes for the DSP-9. Depressing the Bypass push-button places the DSP-9 into a straight through mode. In this mode, the audio input of the DSP-9 is digitised by the analogue-to-digital converter and then looped back to the digital-to-analogue converter. The loopback through the converter is done without any digital signal processing of the signal. The DSP-9 must be powered to operate the bypass mode. This active bypass mode allows the DSP-9 signal processing functions to be switched in and out without any changing gain settings to maintain a desired audio output level. The bypass mode has precedence over the voice and c.w. modes. When the DSP-9 is in bypass, the setting of the mode select push buttons do not affect the bypass operation.

When the bypass push button is not engaged, the voice/c.w. push button selects the operating mode of the DSP-9 and the four parameter select push buttons operate. Depressing the red voice/c.w. push button places the DSP-9 in c.w. mode. The red text below the push buttons indicates the c.w. filter choices.

In c.w. mode the DSP-9 filters the audio input using one of six c.w. bandpass filters and can reduce random noise. First, the c.w. filter centre frequency and the bandwidth is selected using three of the four parameter select push buttons. Depressing the button marked '600/750 Centre' in red text to selects 600Hz centre frequency. In the out position of the '600/750' push

## Specifications

<b>Audio Input:</b>	22Ω or 10kΩ impedance			
<b>Voice Filters:</b>	<i>Frequency Range</i>	<i>Attenuation</i>	<i>Type</i>	<i>Delay</i>
Random	entire range of bandpass filter	<20dB	Adaptive	<10ms
Tone reduction (automatic notch)	entire range of bandpass filter	<50dB	Adaptive	<10ms
Bandpass	300-3400Hz 300-2700Hz 300-2100Hz	60dB at 180Hz outside the pass band	FIR linear phase	<10ms
<b>CW Filters:</b>	<i>Frequency Range</i>	<i>Attenuation</i>	<i>Type</i>	<i>Delay</i>
Random	entire range of bandpass filter	<20dB	Adaptive	<10ms
Bandpass	B/W 100Hz 200 & 500Hz Centre freq. 600 or 750Hz	60dB at 50Hz outside the pass band	FIR linear phase	<30ms
<b>Signal Processing:</b>	A-D/D-A converter Signal Processor	16 bit linear, sigma-delta conversion 16 bit 81ns Analog Devices ADSP-2105		
<b>Audio Output:</b>	1.6W into 8Ω at 13.8V 3.2W into 4Ω at 13.8V			
<b>Distortion:</b>	<1% at rated output			
<b>Input Power:</b>	12-16V d.c. at 1A			
<b>Dimensions:</b>	153 (w) x 153 (d) x 45mm (h)			
<b>Weight:</b>	0.9kg.			

button, the centre frequency of the c.w. filter is 750Hz.

Two push buttons, marked 'Bandwidth' in red, select the bandwidth of the c.w. filter. These buttons select a bandwidth of either 500, 300 or 100Hz. When both bandwidth select buttons are out, the bandwidth is 500Hz. When the '200/500' button is pushed in and the other bandwidth select button is out, the bandwidth of the c.w. filter is 200Hz. If the '100/500' bandwidth select button is pushed in, it has precedence and the c.w. filter bandwidth is 100Hz, independent of the state of the other button. No matter what the state of the c.w. filter switch settings on the DSP-9 front panel, one of the six c.w. filters is always in use.

The c.w. mode can also operate with random noise reduction. To enable the random noise reduction feature for c.w. operation, simply press in the button marked 'NRR'.

## Voice Mode

In voice mode, the DSP-9, filters the audio input using one of the three bandpass filters, adaptively reduces random noise, adaptively eliminates heterodynes. These three functions can operate simultaneously. The legends that

refer to voice mode are in blue.

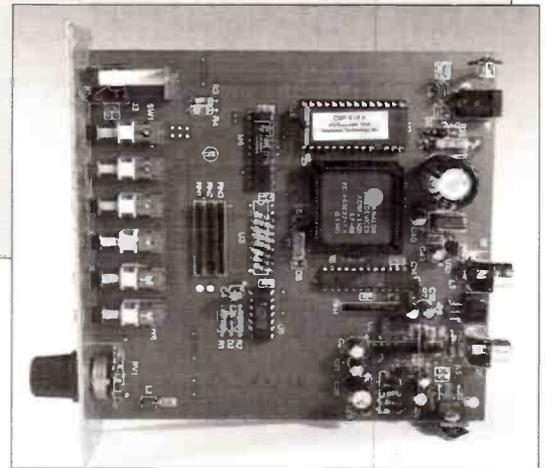
First of all, the selection of the voice mode bandpass filter is performed in a similar manner to the selection of the c.w. filter bandwidth. Two push buttons, marked 'Bandwidth', select the bandwidth of the voice filter. These buttons select a bandwidth of either 1.8, 2.4 or 3.1kHz. With both bandwidth select buttons out, the bandwidth is 3.1kHz from 300Hz to 3.4kHz. When the '2.4k/3.1k' button is pushed in and the other bandwidth select button is out, the bandwidth of the voice filter is 2.4kHz (300Hz to 2.7kHz). If the '1.8k/3.1k' bandwidth select button is pushed in, it has precedence and the voice filter bandwidth is 1.8kHz (300Hz to 2.1kHz), regardless of the state of the other button.

Adding tone and or noise

reduction to the voice filter, is accomplished by depressing the push button that controls the required function.

## Conclusion

Unless you are very lucky and live in a noise free enviroment, you cannot afford to be with some form of filter. It can make the difference between a signal being almost inaudible and perfectly readable. The DSP-9 would seem like an ideal choice if you can afford the not insignificant price.tag of **£189.00**. My thanks to Nevada Communications,189 London Road, North End, Portsmouth PO2 9AE. Tel: (0705) 662145 for the loan of the review unit.



## RC818 (SSP £219.99)

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

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

Comes complete with a mains adaptor.

- 5 Tuning methods – direct frequency keying, auto-scan, manual scan, memory recall and rotary
- 45 memory presets
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- FM stereo on headphones
- AM wide/narrow filter
- Waveband coverage: LW 150-519 kHz; MW 520-1620 kHz; SW 1.621-29.999 MHz; FM 87.5-108 MHz
- Radio standby function



- Pre-programmable radio to tape recording
- LCD display
- Signal strength and battery condition indicator
- Sleep timer
- Safety lock switches
- 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.

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

# ROBERTS

## R808 (SSP £119.99)

### Multi-band Digital Preset Stereo World Radio

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

## R621 (SSP £69.99)

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

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

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# TV Frequency Offsets Aid DXing

Looking for an early warning of good DXTV conditions? Tim Anderson GOGTF sheds a little light on the subject.

Scanning receivers can be used as an aid to identifying TVDX signals. There are many sophisticated scanners on the market today with a hundred, four hundred or even a thousand memories.

Many TVDX channels can be programmed into these memories and scanned either as an early warning aid to openings or during openings to monitor m.u.f.s and sound channels when using reduced i.f. vision bandwidths on the TV. Many enthusiasts use their scanners to measure the frequency offsets of the received signals as a further aid to identifying them. Putting the measured frequency offset together with a few other clues, time of day, antenna bearing and type of propagation can enable TVDXers to positively identify even the most noisy of pictures received via F2 propagation, for example.

Frequency offsets are used by many TV broadcasters to help reduce the effects of co-channel interference. Not just any old offset will do, broadcasters have found over the years that precise offsets are essential to reduce the patterning effects on the TV picture in enhanced propagation conditions. The best reduction in patterning effects between co-channel transmitters is achieved when the offset is a multiple of one twelfth of the line frequency. So, for the 625-line system one offset unit would be 15.625kHz (line frequency) divided by 12 = 1.302kHz. For the 525-line TV system, the line frequency is 15.750kHz making one offset unit 1.312kHz. In practice, multiples of zero to ±10 are generally used although there are a few larger and in the UK the broadcasting authorities use only five thirds, or twenty twelfths if you prefer, for their offsets. This means that in

Table 1. Band 1 TV Vision Offsets

STATION	LOCATION	CHANNEL	FREQUENCY	OFFSET	COMMENTS
RTQ0	Queensland, Aus.	A0	46.17185		As published in Australia
ABMNO	NSW, Australia	A0	46.239584	-8	
Telemarket	Italy	E2	47.680		
BRT	Antwerp, Belgium	E2	48.236980	-10	Only 100W I
SR1	Germany	E2	48.239584	-8	
SVT1	Orebro, Sweden	E2	48.239584	-8	
?	Indonesia ?	E2	48.239584	-8	Via reports from Brunei & Australia
RTM	Malaysia	E2	48.240886	-7	
CH 3	Thailand	E2	48.242188	-6	
RTP1	Muro, Portugal	E2	48.242188	-6	
IRIB	Iran	E2	48.244792	-4	
GBC	Kisi, Ghana	E2	48.246094	-3	
NRK1	Gulen, Norway	E2	48.246094	-3	
HR1	Germany	E2	48.247396	-2	
NRK1	Varanger, Norway	E2	48.248698	-1	
ORTAS 2	Homs, Syria	E2	48.250000	0	
TVE 2	Santiago, Spain	E2	48.250000	0	
TTL 1	Fih, Lebanon	E2	48.250000	0	
TTL 2	Jounieh, Lebanon	E2	48.250000	0	
TTL 3	Beit Mery, Lebanon	E2	48.250000	0	
TVE 1	Navacerrada, Spain	E2	48.250000	0	
SVT 1	Vannas, Sweden	E2	48.250000	0	
KBC	Kenya	E2	48.250000	0	
TVN	Equatorial Guinea	E2	48.250000	0	
DRCTV	Trade Centre, UAE	E2	48.250000	0	
SRG 1	Switzerland	E2	48.250000	0	
CH3	Sonkta, Thailand	E2	48.250000	0	Measured in Australia as 48.2510
IRIB	Iran	E2	48.250000	0	
RTM	Malaysia	E2	48.250000	0	Drifts ±5kHz
NRK 1	Grepstad, Norway	E2	48.252604	+2	
SVT 1	Bjepsfors, Sweden	E2	48.255208	+4	
NRK 1	Melhus, Norway	E2	48.256510	+5	
ZTV	Gwelo, Zimbabwe	E2	48.257812	+6	
RTM	Malaysia	E2	48.260416	+8	
?	Indonesia ?	E2	48.260416	+8	Via reports from Brunei & Australia
ERTU	Dumyat, Egypt	E2	48.261718	+9	Some reports give 0 offset
MTV	Budapest, Hungary	R1	49.739584	-8	
OK	Lvov, Ukraine	R1	49.739584	-8	
OK	Simferopol, Ukraine	R1	49.739584	-8	
OK	Voronezh, Russia	R1	49.739584	-8	
CST 1	Prague, Czech.	R1	49.739584	-8	
?	S.E.Asia	R1	49.739504	-8	525 lines seen during F2
OK	Minsk, CIS	R1	49.739584	-8	
MTV	Hungary	R1	49.744792	-4	
OK	Moscow	R1	49.747396	-2	Measured as 49.7476 MHz
CCTV	China	C1	49.748698	-1	
TVP 1	Poland	R1	49.748698	-1	
CCTV	China	C1	49.750000	0	525 lines seen during F2
?	S.E.Asia	R1	49.750000	0	
ORF 1	Austria	E2a	49.750000	0	
OK	Leningrad, CIS	R1	49.750000	0	
OK	Krasnodor, CIS	R1	49.750000	0	
CCTV	Nanking, China	C1	49.750000	0	
LBC	Lebanon	E2a	49.750		Accurate offset still needed
CCTV	China	C1	49.750000	0	Measured as 49.7506MHz
CCTV	China	C1	49.753906	+3	Measured as 49.7537MHz
CCTV	China	C1	49.755208	+4	Measured as 49.7554MHz
OK	Novosibirsk, CIS	R1	49.757812	+6	
OK	Sukhozero, CIS	R1	49.757812	+6	
OK	Asiatic CIS	R1	49.757812	+6	Measured as 49.758MHz
CST	Ostrava, Czech.	R1	49.760416	+8	Measured as 49.760MHz
?	S.E.Asia	R1	49.760496	+8	525 lines seen during F2
OK	Latvia	R1	49.760416	+8	
OK	Ovrutch, CIS	R1	49.760416	+8	
CCTV	China	C1	49.765624	+12	Measured as 49.765MHz
RAIUNO	Mt. Nerone, Italy	IA	53.739584	-8	
RAIUNO	Mt.Caccia, Italy	IA	53.760416	+8	
RAIUNO	Mt. Cammarata, Italy	IA	53.760416	+8	
RTE 1	Maghera, Eire	IB	53.757812	+6	Measured as 53.758MHz
SRG 1	Switzerland	E3	55.24		Accurate offset still needed
SVT 1	Sveg, Sweden	E3	55.24		Accurate offset still needed
NRK 1	Kautokaino	E3	55.242188	-6	
ORTAS 1	Syria	E3	55.25		2 TXs, offsets still needed
RTP 1	Portugal	E3	55.25		Accurate offset still needed
TVE 1	Spain	E3	55.25		3 TXs, offsets still needed
TVE 1	Izana, Canary Is.	E3	55.25		Accurate offset still needed
RTBF	Liege, Belgium	E3	55.25		Accurate offset still needed





# A Guide to Satellite Radio

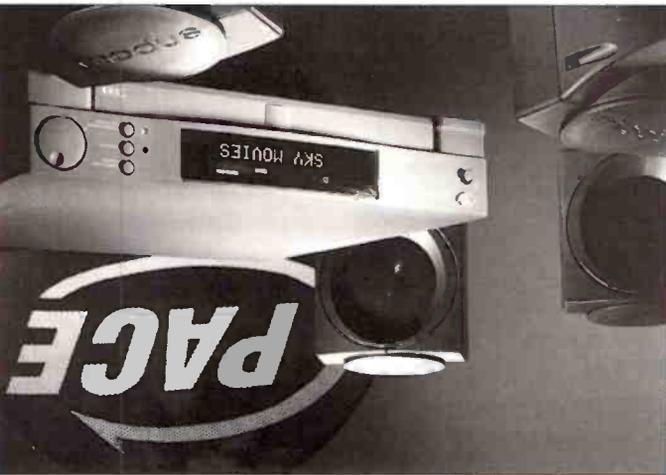
In the past we have received many letters from readers wishing for an explanation of this little publicised subject. John Hockenfull reports on what's where and how to find it.

For most people reception from satellites means Television or Weather/ Data broadcasts. However there are also a multitude of radio stations that can be found on the same frequency bands as those used for television broadcasts. Many of these stations provide a full, reception (i.e. the stations on Astra). The vast majority of the stations are for direct to home of the French stations) although a number of standard audio (in stereo or mono). Once again a number of standard audio stations are normally spaced 180kHz apart. Those generally used are 7.92, 8.10, 8.28 and 8.46MHz apart from the French Telecom at 6.12, 6.30, 7.38, 7.56, 7.74, 7.92, 8.10, 8.28 and 8.46MHz. This might appear overly complicated to the novice and receiver manufacturers have tried to get over this by making receivers with audio subcarriers fixed to the most commonly used ones of 7.02, 7.20, 7.38, 7.56, 7.74 and 7.92MHz. This is fine for the standard listener but for those wishing to listen to everything (Europe & Africa) although the same principals can be used for both Ku and C Band reception world-wide.

## Standard Receiver

With a standard analogue satellite receiver such as an Armstrad, Nokia or Pace, many television stations such as Sky can be received. These TV stations broadcast their audio on a number of standard audio subcarriers. In the case of Astra these are 7.02 and 7.20MHz. With a standard analogue satellite receiver such as an Armstrad, Nokia or Pace, many television stations such as Sky can be received. These TV stations broadcast their audio on a number of standard audio subcarriers. In the case of Astra these are 7.02 and 7.20MHz.

There are around 100 radio stations presently available and these include Deutsche Welle, using D-MAC i.e. NRK - and the Some TV stations are broadcast using D/2-MAC Receiver



## Digital Satellite Radio

There are presently three types of Digital Satellite Radio (DSR), one American (with a European flavour), one French and the other German. The three systems are not compatible and a receiver for one will not receive the broadcasts from the others. DSR is not broadcast alongside a TV channel and can therefore use all of the available bandwidth for their services; however this means that special receiving equipment is required to hear the American service, called Music Choice Europe, is on a digitally compressed signal and is received via the Intelsat K satellite. There are understood to be at least 50 different thematic services available

Ill fated BSB used to use this standard on the old Marco Polo satellites - and a few more use D2-MAC i.e. MCM, Canal Plus, TV 1000, TV3; a special receiver is needed to receive these broadcasts. A few radio stations can be found broadcasting alongside the TV channels although the number of these is, at present, reducing. Stations include Hector, a French language classical music station on the TDF satellites and a number of NRK radio stations carried on the Tele-X satellite.

TP	STATION	FREQ	POL	AUDIO LEFT	AUDIO RIGHT	LANGUAGE	HOURS	VIDEO CHANNEL
A1	STAR*SAT RADIO	11.475	H	7.38	7.56	GERMAN	24 Hour	SAT 1
A1	RADIOKOPF INFO	11.475	H	7.74	7.92	GERMAN	24 Hour	SAT 1
A2	RADIO AOVETS	11.525	H	7.38	7.74	GERMAN		3 SAT
A2	NONSTOP MUSIK	11.525	H	7.56	7.56	GERMAN	24 Hour	3 SAT
B1	JAM FM	11.549	V	7.38	7.56	GERMAN	24 Hour	ARTE
B2	(DR) RIA/DS KULTUR	11.602	V	7.74	7.56	GERMAN	24 Hour	VOX
B2	(DR) DEUTSCHLANDFUNK	11.602	V	7.74	7.92	GERMAN	24 Hour	VOX
C2	RTL RADIO - GERMAN SERVICE	11.675	H	7.02	7.20	GERMAN	24 Hour	RTL TELEVISION
K2	ISS REDLITIME 1 (radio adverts)	12.559	H	7.02	7.20	GERMAN	24 Hour	PRO 7
K2	ISS REDLITIME 2 (music)	12.559	H	7.90	7.78	GERMAN		PRO 7
K2	ISS REDLITIME 3 (music)	12.559	H	8.02	7.90	GERMAN		PRO 7
K3	KLASSIK RADIO	12.592	V	7.38	7.56	GERMAN	24 Hour	PREMIERE
K4	BAVERN 4 KLASSIK	12.625	H	AUDIO 1		GERMAN	24 Hour	DIGITAL
K4	S2 KULTUR (SWF/SDR)	12.625	H	AUDIO 2		GERMAN	24 Hour	DIGITAL
K4	RADIO BREMEN 2/3 (a mix of the two stations)	12.625	H	AUDIO 3		GERMAN	24 Hour	DIGITAL
K4	HR2 RADIO KULTUR	12.625	H	AUDIO 4		GERMAN	24 Hour	DIGITAL
K4	NDR 3	12.625	H	AUDIO 5		GERMAN	24 Hour	DIGITAL
K4	STAR*SAT RADIO	12.625	H	AUDIO 6		GERMAN	24 Hour	DIGITAL
K4	(DR) DEUTSCHLANDFUNK	12.625	H	AUDIO 7		GERMAN	24 Hour	DIGITAL
K4	WDR 3 - KOLN	12.625	H	AUDIO 8		GERMAN	24 Hour	DIGITAL
K4	(DR) RIAS/DS KULTUR	12.625	H	AUDIO 9		GERMAN	24 Hour	DIGITAL
K4	SR1 EUROPAPWELLE SAAR	12.625	H	AUDIO 10		GERMAN	24 Hour	DIGITAL
K4	RFR 2	12.625	H	AUDIO 11		GERMAN	24 Hour	DIGITAL
K4	KLASSIK RADIO	12.625	H	AUDIO 12		GERMAN	24 Hour	DIGITAL
K4	RADIO FNN	12.625	H	AUDIO 13		GERMAN	24 Hour	DIGITAL
DFS 3 KOPERNIKUS - 23.5° EAST								
A1	STAR*SAT RADIO	11.475	H	7.38	7.56	GERMAN	24 Hour	SAT 1
A1	RADIOKOPF INFO	11.475	H	7.74	7.92	GERMAN	24 Hour	SAT 1
A2	RADIO AOVETS	11.525	H	7.38	7.74	GERMAN		3 SAT
A2	NONSTOP MUSIK	11.525	H	7.56	7.56	GERMAN	24 Hour	3 SAT
B1	JAM FM	11.549	V	7.38	7.56	GERMAN	24 Hour	ARTE
B2	(DR) RIA/DS KULTUR	11.602	V	7.74	7.56	GERMAN	24 Hour	VOX
B2	(DR) DEUTSCHLANDFUNK	11.602	V	7.74	7.92	GERMAN	24 Hour	VOX
C2	RTL RADIO - GERMAN SERVICE	11.675	H	7.02	7.20	GERMAN	24 Hour	RTL TELEVISION
K2	ISS REDLITIME 1 (radio adverts)	12.559	H	7.02	7.20	GERMAN	24 Hour	PRO 7
K2	ISS REDLITIME 2 (music)	12.559	H	7.90	7.78	GERMAN		PRO 7
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K4	STAR*SAT RADIO	12.625	H	AUDIO 6		GERMAN	24 Hour	DIGITAL
K4	(DR) DEUTSCHLANDFUNK	12.625	H	AUDIO 7		GERMAN	24 Hour	DIGITAL
K4	WDR 3 - KOLN	12.625	H	AUDIO 8		GERMAN	24 Hour	DIGITAL
K4	(DR) RIAS/DS KULTUR	12.625	H	AUDIO 9		GERMAN	24 Hour	DIGITAL
K4	SR1 EUROPAPWELLE SAAR	12.625	H	AUDIO 10		GERMAN	24 Hour	DIGITAL
K4	RFR 2	12.625	H	AUDIO 11		GERMAN	24 Hour	DIGITAL
K4	KLASSIK RADIO	12.625	H	AUDIO 12		GERMAN	24 Hour	DIGITAL
K4	RADIO FNN	12.625	H	AUDIO 13		GERMAN	24 Hour	DIGITAL
2	CNN RADIO NEWS	11.093	H	7.92		ENGLISH	24 Hour	CNN INTERNATIONAL
INTLSAT 604 - 60° EAST								
63	VOICE OF TURKEY	11.138	H	8.28	7.56	MULTI		TRT 3
69	TRT RADIO 1	11.683	H	7.56		TURKISH		TRT 2
INTLSAT 602 - 63° EAST								
71	IRIB 1	11.003	V	5.56		IRANIAN	0700 to 2200	IRIB 1
73	IRIB 2	11.155	V	6.20		IRANIAN		IRIB 2

**KU BAND RADIO GUIDE**

although receiving equipment is only available to cable operators (at the moment). The French presently have two services operating, one on the Eutelsat II F1 satellite using a digital system (MVR-20) and another on the Telecom West Midlands. Four Ashes, Wolverhampton, or Technisat UK, Station Road, GmbH, W-5568 Dahn, Germany Satellitefernsehprodukt contact address is Technisat information on this system, the Receivers are widely available and, for anyone needing further information on this system, the French presently have two services operating, one on the Eutelsat II F1 satellite using a digital system (MVR-20) and which can carry up to twenty radio stations (although presently carrying seventeen). Receivers are extremely difficult to obtain. Radio stations available include Modulation France, Fun Rock, Radio Monte Carlo, Radio Classique etc. German DSR is available from the DFS 2 Kopernikus and TV-SAT satellites (with the same service from both) and broadcasts sixteen radio stations covering a variety of different themes such as News & Information, Classical Music, Culture, Pop Music, Rock Music etc. I have had the opportunity to use one of these receivers and they are extremely impressive, delivering CD quality stereo broadcasts. Radio stations available include Bayern 4 Klassik, Radio Bremen, Klassik Radio, Xanadu and Radiopora Info. Receivers are widely available to use this system.

**Astra Digital Radio**

Other Systems

Satellites carry many other types of services including Telephony, VSAT and other data services. Additionally some radio stations distribute their service using these data based methods. This system uses a small portion of the available bandwidth to broadcast each service and depending upon whether it is encrypted or not, it is technically possible to receive them by connecting a suitable receiver to either the 'baseband' out of your satellite receiver or, the i.f. input to your satellite receiver (depending upon what you wish to receive) and then searching between 100kHz and 30MHz. Results can be somewhat 'hit and miss' and up to 12 services per transponder alongside a TV picture and one conventional Music Choice Europe are presently negotiating with Sky TV to provide at least some of their services on Astra using the ADR system. Other broadcasters are also expected to use this system.

Receivers are widely available and, for anyone needing further information on this system, the French presently have two services operating, one on the Eutelsat II F1 satellite using a digital system (MVR-20) and which can carry up to twenty radio stations (although presently carrying seventeen). Receivers are extremely difficult to obtain. Radio stations available include Modulation France, Fun Rock, Radio Monte Carlo, Radio Classique etc. German DSR is available from the DFS 2 Kopernikus and TV-SAT satellites (with the same service from both) and broadcasts sixteen radio stations covering a variety of different themes such as News & Information, Classical Music, Culture, Pop Music, Rock Music etc. I have had the opportunity to use one of these receivers and they are extremely impressive, delivering CD quality stereo broadcasts. Radio stations available include Bayern 4 Klassik, Radio Bremen, Klassik Radio, Xanadu and Radiopora Info. Receivers are widely available to use this system.

As you can see radio stations received from satellite can be a large subject. This article has only touched the surface of what is available and if anyone has any queries I would be pleased to answer them.

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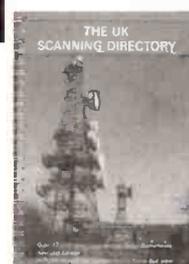
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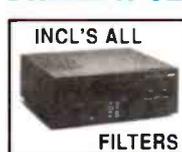
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R72E	ex demo	£649
AR 1500Ex	ex demo	£269
MS-1000	ex demo	£229
MVT-7100	as new	£329
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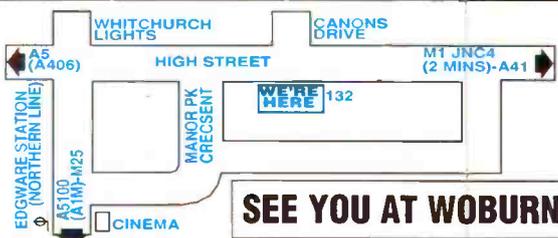
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# Guide To Satellite Radio

TP	STATION	FREQ	POL	AUDIO LEFT	AUDIO RIGHT	LANGUAGE	HOURS	VIDEO CHANNEL
K4	RADIOROPA INFO	12.625	H	AUDIO 14		GERMAN	24 Hour	DIGITAL
K4	MDR LIFE (including MDR SPUTNIK)	12.625	H	AUDIO 15		GERMAN	24 Hour	DIGITAL
K4	RADIO XANADU	12.625	H	AUDIO 16		GERMAN	24 Hour	DIGITAL
K7	FM RADIO NETWORK 1 (music)	12.726	V	7.70		GERMAN		Test Card
K7	FM RADIO NETWORK 2 (music)	12.726	V	7.84		GERMAN		Test Card
<b>EUTELSAT I F5 - 21.5° EAST</b>								
10	RADIO BELGRADE	11.492	V	7.02		SERBIAN	1800 to 2400	RTS-SAT
<b>ASTRA 1A/B/C - 19.2° EAST</b>								
2	DEUTSCHE WELLE - GERMAN SERVICE	11.229	V	7.38	7.56	GERMAN	24 Hour	RTL TELEVISION
2	DEUTSCHE WELLE - EUROPEAN SERVICE (1)	11.229	V	7.74		MULTI	24 Hour	RTL TELEVISION
2	DEUTSCHE WELLE - EUROPEAN SERVICE (2)	11.229	V	7.92		MULTI	24 Hour	RTL TELEVISION
6	NONSTOP MUSIK	11.288	V	7.74		GERMAN		SAT 1
6	NONSTOP MUSIK	11.288	V	7.92		GERMAN		SAT 1
6	POS 1 (adverts)	11.288	V	8.12		GERMAN		SAT 1
6	POS 2 (music)	11.288	V	8.34		GERMAN		SAT 1
6	POS 3 (music)	11.288	V	8.48		GERMAN		SAT 1
8	SKY RADIO	11.318	V	7.38	7.56	ENGLISH/DUTCH	24 Hour	SKY DNE
8	RADIO 538	11.318	V	7.74	7.92	DUTCH	24 Hour	SKY ONE
9	SWISS RADIO INTERNATIONAL	11.332	H	7.38		MULTI	24 Hour	TELECLUB
9	SWISS RADIO INTERNATIONAL - ENGLISH	11.332	H	7.56		ENGLISH	24 Hour	TELECLUB
9	RADIO EVIVA	11.332	H	7.74		GERMAN		TELECLUB
10	(DR) DEUTSCHLANDFUNK	11.347	V	7.38	7.56	GERMAN	24 Hour	3 SAT
10	(DR) RIAS/DS KULTUR	11.347	V	7.74	7.92	GERMAN	24 Hour	3 SAT
12	VIRGIN 1215	11.377	V	7.38	7.56	ENGLISH	24 Hour	SKY NEWS
12	SUPERGOLD	11.377	V	7.92		ENGLISH	24 Hour	SKY NEWS
13	RTL RADIO - GERMAN SERVICE	11.391	H	7.38	7.56	GERMAN	24 Hour	RTL 4
13	HAPPY RTL	11.391	H	7.74	7.92	DUTCH	24 Hour	RTL 4
14	STAR*SAT RADIO	11.406	V	7.38	7.56	GERMAN	24 Hour	PRO 7
14	RADIOROPA INFO	11.406	V	7.74	7.92	GERMAN	24 Hour	PRO 7
15	RMF	11.421	H	7.74	7.92	POLISH	24 Hour	MTV EUROPE
16	ASDA FM	11.436	V	7.92		ENGLISH	24 Hour	SKY MOVIES
17	N-JOY RADIO	11.464	H	7.38	7.56	GERMAN	24 Hour	PREMIERE
18	SUNRISE RADIO	11.479	V	7.38		HINDUSTANI	24 Hour	THE MOVIE CHANNEL
18	HOLLAND FM	11.479	V	7.56		DUTCH	24 Hour	THE MOVIE CHANNEL
19	SWF 3	11.494	H	7.38	7.56	GERMAN	24 Hour	ARD DAS ERSTE
20	UNITED CHRISTIAN BROADCASTERS - EUROPE	11.509	V	7.56		ENGLISH	24 Hour	SKY SPORTS
22	WORLD RADIO NETWORK (WRN 1)	11.538	V	7.38		ENGLISH	24 Hour	MTV EUROPE
22	RTE RADIO 1	11.538	V	7.56		ENGLISH	24 Hour	MTV EUROPE
22	IRISH SATELLITE RADIO	11.538	V	7.92		ENGLISH	24 Hour	MTV EUROPE
23	BBC WORLD SERVICE - ENGLISH SERVICE	11.553	H	7.38		ENGLISH	24 Hour	UK GOLD
23	BBC RADIO 4	11.553	H	7.56		ENGLISH	06:00 to 02:00	UK GOLD
23	BBC RADIO 2	11.553	H	7.74		ENGLISH	24 Hour	UK GOLD
23	BBC RADIO 5 LIVE	11.553	H	7.92		ENGLISH	06:00 to 02:00	UK GOLD
25	NDR 2	11.582	H	7.38	7.56	GERMAN	24 Hour	N3
25	NDR 4 - GERMAN SERVICE	11.582	H	7.74		GERMAN	24 Hour	N3
25	NDR 4 - GERMAN SERVICE	11.582	H	7.92		GERMAN	2120 to 1800	N3
25	NDR 4 - EUROPEAN SERVICE	11.582	H	7.92		MULTI	1800 to 2120	N3
26	RADIO ASIA (SPECTRUM INTERNATIONAL)	11.597	V	7.38		MULTI	24 Hour	TV ASIA/SKY MOVIES GOLD
26	RADIO SWEDEN	11.597	V	7.74		MULTI	24 Hour	TV ASIA/SKY MOVIES GOLD
28	CNN RADIO NEWS	11.627	V	7.92		ENGLISH	24 Hour	CNN INTERNATIONAL
30	CADENA SER LOS 40 PRINCIPALES	11.656	V	7.38		SPANISH	24 Hour	CINEMANIA
30	CADENA DIAL	11.656	V	7.56		SPANISH	24 Hour	CINEMANIA
30	CADENA SER CONVENCIONAL	11.656	V	7.74		SPANISH	24 Hour	CINEMANIA
34	BBC RADIO 1	10.979	V	7.38	7.56	ENGLISH	24 Hour	UK LIVING
34	BBC RADIO 3	10.979	V	7.74	7.92	ENGLISH	0600 to 0200	UK LIVING
39	WDR 2	11.053	H	7.38	7.56	GERMAN	24 Hour	WEST 3
43	MDR SPUTNIK	11.112	H	7.38	7.56	GERMAN	24 Hour	MDR 3
63	RADIO VLAANDEREN INTERNATIONAL	10.921	H	7.38		MULTI	24 Hour	FILMNET - TCMC
<b>EUTELSAT II F3 - 16° EAST</b>								
25	RTM FIRST PROGRAMME	10.972	V	7.02		ARABIC	24 Hour	RTM MOROCCO
25	RTM THIRD PROGRAMME	10.972	V	7.56		ARABIC/BERBER	24 Hour	RTM MOROCCO
20	RADIO ZAGREB	10.986	H	7.02		SERBO-CROAT	1600 to 2400	VATSKA TV
21	PRT RADIO 1	11.080	H	7.38	7.56	POLISH	24 Hour	TV POLONJA
21	PRT RADIO 2	11.080	H	7.74	7.92	POLISH	24 Hour	TV POLONJA
21	PRT RADIO 3	11.080	H	8.10		POLISH	24 Hour	TV POLONJA
21	PRT RADIO 5	11.080	H	8.28		POL/GER/ENG	24 Hour	TV POLONJA
26	TGRT RADIO	11.095	V	7.38	8.02	TURKISH	24 Hour	TGRT
27	ERTU EGYPTIAN RADIO	11.178	V	7.02		ARABIC	24 Hour	EGYPTIAN SATELLITE CHANNEL
27	ERTU VOICE OF ARABIA	11.178	V	7.20		ARABIC	24 Hour	EGYPTIAN SATELLITE CHANNEL
27	ERTU MIDDLE EAST PROGRAMME	11.178	V	7.38		ARABIC	24 Hour	EGYPTIAN SATELLITE CHANNEL
37	RADIO SHQIPTAR	11.575	V	7.20		ALBANIAN	1730 to 1930	TV SHQIPTAR
38	RADIO MONTMARTRE	11.617	V	7.92		FRENCH	24 Hour	HBB TV
39	TUNIS INTERNATIONAL RADIO	11.658	V	7.02		MULTI	24 Hour	TV7 TUNISIE
39	TUNIS RADIO - ARABIC SERVICE	11.658	V	7.20		ARABIC	24 Hour	TV7 TUNISIE
<b>EUTELSAT II F1 - 13° EAST</b>								
25	BBC WORLD SERVICE - ENGLISH SERVICE	10.987	V	7.38		ENGLISH	24 Hour	NBC SUPER CHANNEL
25	BBC WORLD SERVICE - EXTERNAL SERVICE	10.987	V	7.56		MULTI	24 Hour	NBC SUPER CHANNEL
26	FRANCE INFO	11.080	V	7.20		FRENCH	24 Hour	TV5 EUROPE
26	FRANCE INTER	11.080	V	7.38		FRENCH	24 Hour	TV5 EUROPE
26	FRANCE-CULTURE EUROPE	11.080	V	7.56		FRENCH	24 Hour	TV5 EUROPE

TP	STATION	FREQ	POL	AUDIO LEFT	AUDIO RIGHT	LANGUAGE	HOURS	VIDEO CHANNEL
26	SWISS RADIO INTERNATIONAL (FRENCH/ENGLISH)	11.080	V	7.74	7.74	FRENCH/ENGLISH	24 Hour	TV5 EUROPE
21	RADIO FREE EUROPE - POLISH SERVICE	11.095	H	8.10	6.005 AM	POLISH	24 Hour	RTL 2
27	(DR) RIAS/D5 KULTUR BERLIN	11.163	V	7.02	7.20	GERMAN	24 Hour	DEUTSCHE WELLE TELEVISION
27	DEUTSCHE WELLE - GERMAN SERVICE	11.163	V	7.02	7.20	GERMAN	24 Hour	DEUTSCHE WELLE TELEVISION
27	VOICE OF AMERICA - EUROPE	11.163	V	7.38	7.56	ENGLISH	24 Hour	DEUTSCHE WELLE TELEVISION
27	DEUTSCHE WELLE - EUROPEAN SERVICE (1)	11.163	V	7.74	7.74	MULTI	24 Hour	DEUTSCHE WELLE TELEVISION
27	DEUTSCHE WELLE - EUROPEAN SERVICE (2)	11.163	V	7.92	7.92	MULTI	24 Hour	DEUTSCHE WELLE TELEVISION
27	RADIO FINLAND - EXTERNAL SERVICE	11.163	V	8.10	8.10	MULTI	24 Hour	DEUTSCHE WELLE TELEVISION
27	DEUTSCHE WELLE - ASIAN SERVICE	11.163	V	8.28	8.28	MULTI	24 Hour	DEUTSCHE WELLE TELEVISION
27	DEUTSCHE WELLE - AFRICAN SERVICE	11.163	V	8.46	8.46	MULTI	24 Hour	DEUTSCHE WELLE TELEVISION
32	RADIO MBC FM	11.554	H	7.38	7.56	ARABIC	24 Hour	MBC TELEVISION
32	WORLD RADIO NETWORK (WRN 2)	11.554	H	7.74	7.74	MULTI	24 Hour	MBC
45	RFM	12.542	V	7.56	7.56	FRENCH	24 Hour	DIGITAL (MVR-20)
45	SKY ROCK	12.542	V	7.56	7.56	FRENCH	24 Hour	DIGITAL (MVR-20)
45	FUN RADIO	12.542	V	7.56	7.56	FRENCH	24 Hour	DIGITAL (MVR-20)
45	NRJ	12.542	V	7.56	7.56	FRENCH	24 Hour	DIGITAL (MVR-20)
45	EUROPE 2	12.542	V	7.56	7.56	FRENCH	24 Hour	DIGITAL (MVR-20)
45	NOSTALGIE	12.542	V	7.56	7.56	FRENCH	24 Hour	DIGITAL (MVR-20)
45	RADIO FRANCE 2	12.542	V	7.56	7.56	FRENCH	24 Hour	DIGITAL (MVR-20)
45	FIP	12.542	V	7.56	7.56	FRENCH	24 Hour	DIGITAL (MVR-20)
20	KLAS FM	10.987	H	7.02	7.02	TURKISH	24 Hour	ATV
20	NUMBER ONE FM	10.987	H	7.20	7.20	TURKISH	24 Hour	ATV
20	YENI RAYO	10.987	H	7.38	7.38	TURKISH	24 Hour	ATV
20	SABAN FM	10.987	H	7.56	7.56	TURKISH	24 Hour	ATV
22	RNE RADIO UNNA	11.149	H	7.38	7.38	SPANISH	24 Hour	TVE INTERNACIONAL
22	RNE RADIO EXTERIOR	11.149	H	7.56	7.56	SPANISH	24 Hour	TVE INTERNACIONAL
37	SHOW RADIO	11.575	V	7.02	7.20	TURKISH	24 Hour	SHOW TV
38	METRO FM	11.617	V	7.02	7.20	TURKISH	24 Hour	INTERSTAR
38	KRAL FM	11.617	V	7.56	7.56	TURKISH	24 Hour	INTERSTAR
38	SUPER FM	11.617	V	8.10	8.28	TURKISH	24 Hour	INTERSTAR
39	RDP RADIO PORTUGAL INTERNACIONAL	11.658	V	7.02	7.20	MULTI	24 Hour	RTP INTERNACIONAL
39	RADIO RENASCENCA CANAL UM	11.658	V	7.02	7.20	PORTUGUESE	24 Hour	RTP INTERNACIONAL
39	RENASCENCA FM	11.658	V	7.24	7.92	PORTUGUESE	24 Hour	RTP INTERNACIONAL
39	RDP ANTENA UM	11.658	V	8.10	8.28	PORTUGUESE	24 Hour	RTP INTERNACIONAL
39	RDP RADIO COMMERCIAL	11.658	V	8.46	8.46	PORTUGUESE	24 Hour	RTP INTERNACIONAL
22	CBC FIRST PROGRAM (PROTON PROGRAM)	11.145	H	7.20	7.20	GREEK	24 Hour	RIK
37	RADYO KLUB	11.575	V	7.02	7.56	TURKISH	24 Hour	KANAL D
12	RADIO SWEDEN	11.938	R	7.38	7.38	MULTI	24 Hour	TV 4 SWEDEN
12	Z RADIO	11.938	R	7.56	7.56	SWEDISH	Variable	TV 4 SWEDEN
12	THE VOICE (OF SCANDINAVIA)	11.938	R	7.74	7.92	DANISH	0600 to 2400	TV 4 SWEDEN
26	RADIO SWEDEN	12.207	L	7.38	7.38	MULTI	24 Hour	TV 4 SWEDEN
26	Z RADIO	12.207	L	7.56	7.56	SWEDISH	Variable	TV 4 SWEDEN
26	THE VOICE (OF SCANDINAVIA)	12.207	L	7.74	7.92	DANISH	0600 to 2400	TV 4 SWEDEN
32	NRK PROGRAM 1	12.322	L	7.38	7.38	NORWEGIAN	24 Hour	NRK
32	NRK PROGRAM 2	12.322	L	7.38	7.38	NORWEGIAN	24 Hour	NRK
32	NRK EUROPPKANALEN	12.322	L	7.38	7.38	NORWEGIAN	24 Hour	NRK
40	RADIO SWEDEN	12.476	L	7.38	7.38	MULTI	24 Hour	TV5 NORDIC
40	TT RADIO NEWS	12.476	L	7.56	7.56	NORWEGIAN	0500 to 1700	TV5 NORDIC
40	THE VOICE (OF SCANDINAVIA)	12.476	L	7.74	7.92	DANISH	0600 to 2400	TV5 NORDIC
40	RADIO ARLANDA	12.476	L	7.92	7.92	SWEDISH	0600 to 0900	TV5 NORDIC
40	SAS RADIO	12.476	L	7.92	7.92	SWEDISH	Variable	TV5 NORDIC
40	STORSTADSRADION	12.476	L	8.46	8.46	SWEDISH	24 Hour	TV5 NORDIC
61	RADIO NETTVERK	11.016	H	7.38	7.38	NORWEGIAN	24 Hour	TV NORGE
61	Various Norwegian Local Radio Stations	11.016	H	7.74	7.74	NORWEGIAN	Variable	TV NORGE
63	SWEDISH RADIO PROGRAM 2	11.177	H	AUDIO 2	AUDIO 2	SWEDISH	24 Hour	SVT-2
69	SWEDISH RADIO PROGRAM 1	11.683	H	AUDIO 2	AUDIO 2	SWEDISH	24 Hour	SVT-1
69	SWEDISH RADIO PROGRAM 3	11.683	H	AUDIO 3	AUDIO 3	SWEDISH	24 Hour	SVT-1
1	MOUSQUETAIRE	12.522	V	6.40	6.40	FRENCH	0600 to 2300	M6
1	EUROPE 1	12.522	V	6.85	6.85	FRENCH	24 Hour	M6
1	RADIO UNICO	12.522	V	7.75	7.75	FRENCH	0600 to 2100	M6
1	FOURVIERE FM	12.522	V	6.85	6.85	FRENCH	24 Hour	M6
2	PALAPA FM	12.564	V	6.40	6.40	FRENCH	24 Hour	M6
2	CH RIE FM	12.564	V	6.85	6.85	FRENCH	24 Hour	M6
2	M40	12.564	V	6.85	6.85	FRENCH	24 Hour	M6
2	NOUVELLE GENERATION	12.564	V	7.25	7.25	FRENCH	24 Hour	FRANCE 2
2	RTL RADIO - FRENCH SERVICE	12.606	V	6.85	6.85	FRENCH	24 Hour	FRANCE 2
4	GRANDS MAGASINS	12.648	V	6.40	6.40	FRENCH	0600 to 2100	TMC

TP	STATION	FREQ	POL	AUDIO LEFT	AUDIO RIGHT	LANGUAGE	HOURS	VIDEO CHANNEL
R4	RADIO MONTE CARLO	12.648	V	6.85	8.20	FRENCH	24 Hour	TMC
R11	MODULATION FRANCE	12.711	H			FRENCH		DIGITAL (MVR-128)
R11	FRANCE INTER	12.711	H			FRENCH		DIGITAL (MVR-128)
R11	FUN RADIO	12.711	H			FRENCH		DIGITAL (MVR-128)
R11	NOSTALGIE	12.711	H			FRENCH		DIGITAL (MVR-128)
R11	NRJ	12.711	H			FRENCH		DIGITAL (MVR-128)
R11	EUROPE 2	12.711	H			FRENCH		DIGITAL (MVR-128)
R11	SKY ROCK	12.711	H			FRENCH		DIGITAL (MVR-128)
R11	RFM	12.711	H			FRENCH		DIGITAL (MVR-128)
R11	AFP AUDIO	12.711	H			FRENCH		DIGITAL (MVR-128)
R11	CANAL A (FUSION FM)	12.711	H			FRENCH		DIGITAL (MVR-128)
R11	EUROPE 1	12.711	H			FRENCH		DIGITAL (MVR-128)
R11	RADIO MONTE CARLO - FRENCH SERVICE	12.711	H			FRENCH		DIGITAL (MVR-128)
R11	RTL RADIO	12.711	H			FRENCH		DIGITAL (MVR-128)
R11	RADIO MONTE CARLO	12.711	H			FRENCH		DIGITAL (MVR-128)
R11	RADIO CLASSIQUE	12.711	H			FRENCH		DIGITAL (MVR-128)
R11	M40	12.711	H			FRENCH		DIGITAL (MVR-128)
R11	CH RIE FM	12.711	H			FRENCH		DIGITAL (MVR-128)
R11	FOURVIERE FM	12.711	H			FRENCH		DIGITAL (MVR-128)
R11	INTELSAT 515 - 18° WEST							
61	RADIO NETVERK	11.016	H	7.38		NORWEGIAN	24 Hour	TV NORGE
61	Various Norwegian Local Radio Stations	11.016	H	7.24		NORWEGIAN	Variable	TV NORGE
63	SWEDISH RADIO PROGRAMME 1	11.132	H	AUDIO 2		SWEDISH	24 Hour	SVT-1
63	SWEDISH RADIO PROGRAMME 2	11.177	H	AUDIO 2		SWEDISH	24 Hour	SVT-2
63	SWEDISH RADIO PROGRAMME 3	11.132	H	AUDIO 3		SWEDISH	24 Hour	SVT-1
69	P4 - RADIO HELE NORGE	11.541	H	AUDIO 2		NORWEGIAN	24 Hour	TV2 NORWAY
5	HECTOR	11.804	R	AUDIO 2		FRENCH	24 Hour	CANAL PLUS
14	BAVERN 4 KLASSIK	11.977	L	AUDIO 1		GERMAN	24 Hour	DIGITAL
14	S2 KULTUR (SWF/SDR)	11.977	L	AUDIO 2		GERMAN	24 Hour	DIGITAL
14	RADIO BREMEN 2/3 (a mix of the two stations)	11.977	L	AUDIO 3		GERMAN	24 Hour	DIGITAL
14	HR2 RADIO KULTUR	11.977	L	AUDIO 4		GERMAN	24 Hour	DIGITAL
14	NDR 3	11.977	L	AUDIO 5		GERMAN	24 Hour	DIGITAL
14	STAR-SAT RADIO	11.977	L	AUDIO 6		GERMAN	24 Hour	DIGITAL
14	(DR) DEUTSCHLANDFUNK	11.977	L	AUDIO 7		GERMAN	24 Hour	DIGITAL
14	WDR 3 - KOLN	11.977	L	AUDIO 8		GERMAN	24 Hour	DIGITAL
14	(DR) RIAS/D5 KULTUR BERLIN	11.977	L	AUDIO 9		GERMAN	24 Hour	DIGITAL
14	SRI EUROPAPWELLE SAAR	11.977	L	AUDIO 10		GERMAN	24 Hour	DIGITAL
14	RPR 2	11.977	L	AUDIO 11		GERMAN	24 Hour	DIGITAL
14	KLASSIK RADIO	11.977	L	AUDIO 12		GERMAN	24 Hour	DIGITAL
14	RADIO FNN	11.977	L	AUDIO 13		GERMAN	24 Hour	DIGITAL
14	RADIOOROPA INFO	11.977	L	AUDIO 14		GERMAN	24 Hour	DIGITAL
14	MDR LIFE (including MDR SPUTNIK)	11.977	L	AUDIO 15		GERMAN	24 Hour	DIGITAL
14	RADIO XANADU	11.977	L	AUDIO 16		GERMAN	24 Hour	DIGITAL
INTELSAT K - 21.5° WEST		11.915	V			ENGLISH/DUTCH		DIGITAL COMPRESSION
V4	MUSIC CHOICE EUROPE	11.915	V			ENGLISH/DUTCH		DIGITAL COMPRESSION
63	SIS SATELLITE RACING (1)	11.175	H	7.38		ENG/FR/GERMAN		KINDERNET/TRAVEL CHANNEL
63	SIS SATELLITE RACING (2)	11.175	H	7.56		ENG/FR/GERMAN		KINDERNET/TRAVEL CHANNEL
63	BRITISH HOME STORES	11.175	H	7.74		ENGLISH		KINDERNET/TRAVEL CHANNEL
63	SUSTAINING SERVICE	11.175	H	7.74		ENGLISH		KINDERNET/TRAVEL CHANNEL
63	SIS SATELLITE RACING (3)	11.175	H	7.92		ENG/FR/GERMAN		KINDERNET/TRAVEL CHANNEL
63	TEXAS FM	11.175	H	8.10		ENGLISH		KINDERNET/TRAVEL CHANNEL
79	BFBS 1 (SCRAMBLED)	11.565	V	6.12		ENGLISH	24 Hour	SVC
79	BBC RADIO 5 LIVE	11.565	V	6.30		ENGLISH	0600 to 0200	SVC
79	BFBS NEWS	11.565	V	7.02		ENGLISH		SVC
79	BBC WORLD SERVICE - ENGLISH SERVICE	11.565	V	7.20		ENGLISH		SVC
79	BBC FOR EUROPE	11.565	V	7.56		ENG/FR/GERMAN		SVC
79	BBC WORLD SERVICE - ENGLISH SERVICE	11.565	V	7.56		ENG/FR/GERMAN		SVC
79	BBC FOR EUROPE	11.565	V	7.74		MULTI		SVC
79	BBC WORLD SERVICE - EXTERNAL SERVICE	11.565	V	7.92		MULTI		SVC
79	BBC WORLD SERVICE - EXTERNAL SERVICE	11.565	V	8.10		MULTI		SVC
3	ANTENA TRES RADIO	12.631	V	7.02		SPANISH	24 Hour	TELE CINCO
3	RADIO VOR GALICIA	12.631	V	7.20		SPANISH	24 Hour	TELE CINCO
13	CADENA CIEN	12.671	H	7.02		SPANISH	24 Hour	ANTENA TRES
13	ONDA CERRO RADIO	12.671	H	7.38		SPANISH	24 Hour	ANTENA TRES
14	COPE CONVENIONAL	12.711	H	7.02		SPANISH	24 Hour	CANAL PLUS ESPANA
14	ONDA CERRO MUSICA	12.711	H	7.20		SPANISH	24 Hour	CANAL PLUS ESPANA
14	RADIO TOP CUARENTA	12.711	H	7.56		SPANISH	24 Hour	CANAL PLUS ESPANA
PAS 1 - 45° WEST								
198	RADIO CINCUENTA	11.515	H	7.38		SPANISH	24 Hour	GALAVISION

# A Further Look At The Lizard's Radio History Poldhu Amateur Radio Club.

After reading Robert Whistler's account of Lizard in the April issue of SWM Wally Bird G4NBF was concerned that readers may think radio activity had ceased at Poldhu Point. Here he puts the record straight.

## In the beginning was Marconi!

12.30hrs on Thursday 12 December 1901.

The letter 'S' in Morse code was received at St. Johns Newfoundland by the great man himself, Guglielmo Marconi. The first transatlantic radio signal, sent from Poldhu on the Lizard Peninsula, Cornwall by Thomas Jenkin Barron and the start of a communication revolution which is still going on. More experiments were carried out and Australia was soon achieved, the ship 'Elettra' was fitted out as a floating laboratory and Marine communication established. News of the sinking of the *Titanic* was first received at Poldhu, the liner 'Carpathia' was sent a radio message and 1500 lives were saved. Dr. Crippen was also apprehended by means of Marconi's radio installation. The rest is history and we all know how progress has been made since.

## New Home Needed

In the grounds of the Poldhu Residential and Nursing Home which started life as the Poldhu Hotel was a prefabricated building built during the war to house RAF officers from the nearby Predannack Airfield. This building was very dilapidated, leaking roof, broken and rotten windows and completely full of rubbish, having been used as a dump for many years. It really was a mess.

But, it was only twenty yards from the base of Marconi's famous antenna so two of us approached the Managing Director of the Nursing Home, Mr Keith Kennedy and after some pleading by us and deliberation from him it was agreed that we could use the building as a radio club. Mr Kennedy later honoured us by becoming our Patron - without him there would have been no Poldhu Radio Club.

In September 1990, a Raynet group (RAYNET is the name of the Radio Amateur Emergency Network) who met regularly in Goonhilly Earth Station decided to form a radio club, and a month later, a constitution having been obtained from RSGB (Radio Society of Great Britain), the Goonhilly Amateur Radio Society came into being. Meetings were held in the Goonhilly canteen, after Raynet business had been discussed, British Telecom said they might find us a room or a portacabin which we would be able to use as a club-room, the canteen being very luxurious with armchairs and a bar, but not a place suitable for a shack, but

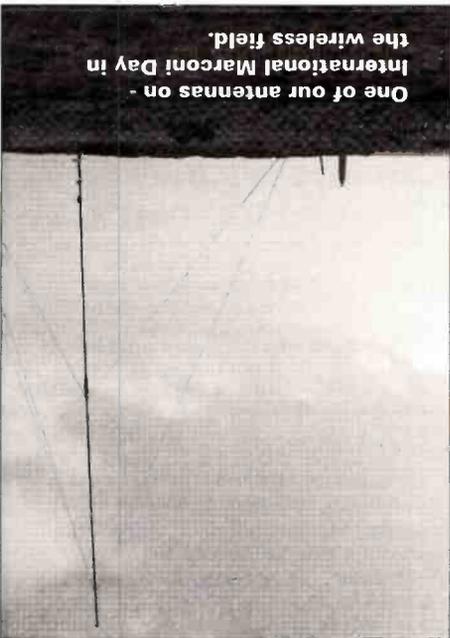


Barry G3KRD having a look around the bands!

addition to club funds. We also which produced a handsome successful Christmas raffle also ran a very and his wife Carolyn lots of their time, G7FPG who gave G0JVR and Ken members, John very skilled enthusiasts and two We did however, have lots of in the club funds! about sixty pounds building and we had connected to the electricity or water There was no things up a bit. clear out some of the rubbish and tidy it and we started to potting shed which was offered during term time and evenings subject to the whim of the caretaker and some of our members thought this would do, but it was not in a very good place and gear could not be left there overnight.

the months went by and nothing was forthcoming, so we decided to look elsewhere. One of the local schools had a April issue of SWM Wally Bird G4NBF was concerned that readers may think radio activity had ceased at Poldhu Point. Here he puts the record straight.

the months went by and nothing was forthcoming, so we decided to look elsewhere. One of the local schools had a April issue of SWM Wally Bird G4NBF was concerned that readers may think radio activity had ceased at Poldhu Point. Here he puts the record straight.



One of our antennas on - International Marconi Day in the wireless field.

open the club on that day and reproduce the events of 1901. No-one really thought it could be done in the time, but as the weeks went by we laid a new water-pipe and ran an electricity cable underground from a nearby building, re-wired the complete system and built new internal walls to provide a club-room, an h.f. room, a v.h.f. room and a construction room. The original drainage was found to be operational so we built two separate toilets. The roof had been repaired each time it rained until there were no more leaks. Finally, everything was painted inside and out including the floor and we were ready to go with two days to spare. There is still an area to renovate, one day we will have an office and library and two store rooms. But for now it will do.

While all this had been going on, the name of the club had been changed to Poldhu Amateur Radio Club and one of the members, Brian G4ZY0 who had been elected PR man had applied for this special callsign GB2GM and had also contacted the Radio Club of St. Johns, Newfoundland. They were very enthusiastic about the link up and it was arranged

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A lot more could be written about all the work put into this project but there is much to do yet. We feel very honoured to have the call sign GB2GM with F009 and 3460 for our numbers. To have all this on what is probably the most famous site in the world, overlooking the beautiful Poldhu Cove is a marvellous experience none of us will forget.

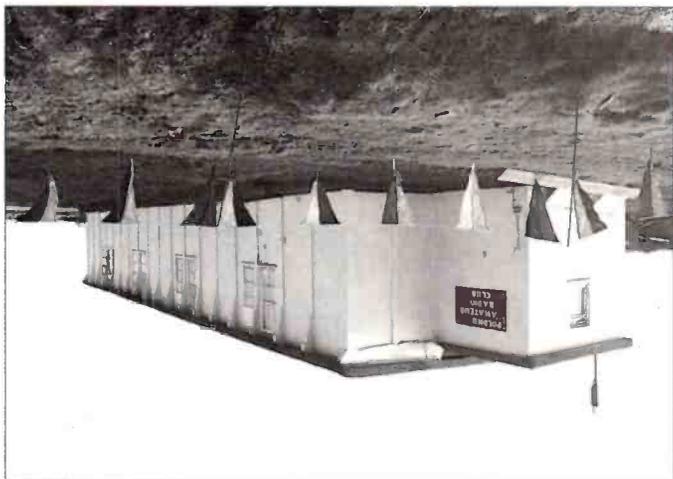
### Alive and Well

We have had Field Days and Contests, Lectures and Talks, visited other clubs socially, held inter-club quizzes and we run our own RAE classes and have many other activities planned for the future. The Poldhu Amateur Radio Club is alive, well and thriving.

We have now also received a membership number from the Royal Air Force Amateur Radio Society and are delighted to be able to quote RAFARS 3460 on any of the inter-service nets. Some day we hope to acquire a Royal Navy Amateur Radio Society number but as yet we are unsuccessful.

Up to the present we have over forty members and are still growing steadily. As the club house is in the grounds of a famous retirement home we are sure to get a lot more in the future. What better place to retire to? It should also be mentioned that any licensed amateur retiring to, or on a visit to Poldhu residential and Nursing Home automatically becomes a honorary member of the Poldhu Amateur Radio Club with the full use of the clubs facilities during their stay.

### The Poldhu Amateur Radio Club House.

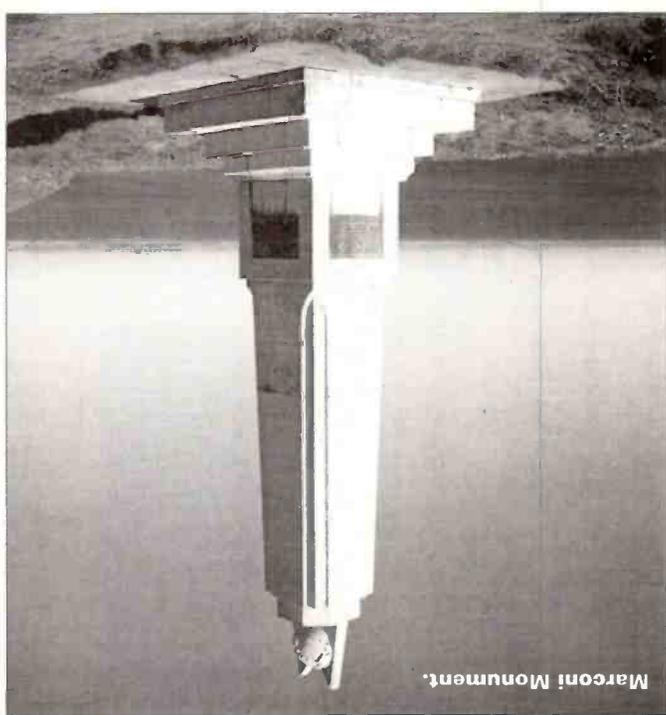


Many events have taken place since this account was first written. It is now April 1994 and the club has acquired a TS430S with an a.t.u. for h.f. working and an f.m. 2m rig for v.h.f. Many museum exhibits have been acquired and some shelving erected to display them. The roof has been professionally repaired and the rooms are now dry and the

other activities possible to do with radio such as JOTA etc. One member and his XYL also run a CB radio link for older and disabled people whom they call every day to ensure their well-being and make them feel less lonely. This is a much appreciated service, especially for those living in isolated areas.

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Marconi Monument.

When it was first realised that we could have a permanent special event call sign, we contacted Ray G3EKL, Secretary of the Royal Signals Amateur Radio Society and through his good offices we were allocated the affiliated number F009 and as time goes on we will be joining in more RSARS activity. The club does not yet have a rig of its own, members have to take a rig to the club house if they want to operate from there, but when the rooms are properly finished, gear will be acquired and everything will be on a more continuous basis. Speaking of which, if anyone

The station at St. Johns was on the precise spot that Marconi used, their call sign being VO1AA. They had intended to use a kite as the receiving antenna and had one available, but in the event, a wire antenna was used for convenience. At least neither

### Colling St. Johns

station had the bad weather that Marconi suffered. Apart from a strong wind it was a glorious day at Poldhu with bright sunshine. All the VIPs spoke to their counterparts in St. Johns and we were lucky enough to have a clear frequency right through. When the contact was completed we had another one with the Mayor of Sasso and lady members had provided a magnificent buffet for the occasion with tea and coffee on the go all day, much appreciated by all.

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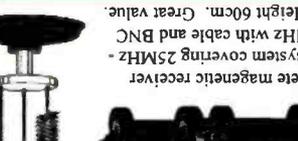
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SSB-NFM-WFM-AM 530kHz - 1650MHz

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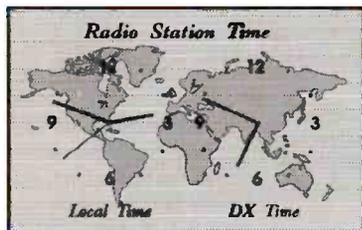
SSB-NFM-WFM-AM 530kHz - 1650MHz

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# Everything for The Listener

0702  
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**DT-1 Dual - Time Quartz Station Clock**  
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Carr. £2.50



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

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£128.95

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**  
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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

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Great Value



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**AOR ABF-125**

**Airband Receiver Filter**

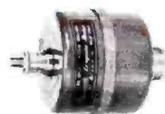
Dramatically cleans up spurious responses in any scanning receiver when operated between 118 - 137MHz  
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Carr. £2



**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.



**NEW MFJ Short Wave Regenerative Receiver Kit**

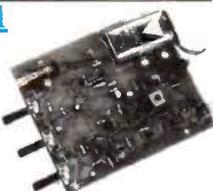


**AM/SSB/CW/RTTY Super Sensitive**  
As reviewed in QST. Amazing value and sensitivity. Just 10ft of wire will bring in the DX and you can build it yourself.  
**£71.95** Carr. £4.50

**Ramsey AR-1 Airband Receiver Kit**

**£29.95** Carr. £2

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



**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



**Yaesu FRG-100 Receiver**



HF receiver. All modes 50kHz - 30MHz, and 50 Memories. An excellent buy. Come and hear it on a decent aerial!

**£529**  
**£459**



**New MFJ-784 DSP Filter**  
**£249.95**



This is the first fully tunable DSP filter. It means you can tailor it to suit any mode; AM, SSB RTTY and all data modes. **Automatic notch filter** - handles multiple heterodynes. **Tunable high & lowpass filters** - puts you in control - 200Hz - 2.2kHz & 1.6 - 3.4kHz. **Tunable bandpass filters** - you can adjust the centre frequency from 300Hz - 3.4kHz. **16 pre-set filters** - factory set but you can re-programme them to suit your needs. **2 Watt amplifier** - gives you plenty of room-filling volume. The most advanced DSP filter ever - just connect 12 volts DC and hear the difference.

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Secondhand List

**MVT-7000**

**New Price! £289**

**100kHz - 1300MHz Scanner Receiver**

We've slashed the price from £325. And to add to the value we'll give you a 24 month warranty if you order this month. Phone for our data sheet. Comes with factory made power supply and official Yupiteru warranty.



**AOR-8000 Scanner**  
**500kHz - 1.9GHz In Stock**  
**£Phone**

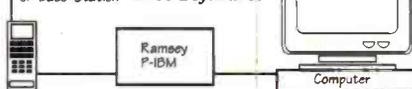
The new AOR-8000 has arrived and it looks like being a winner. FM, SSB, AM, it's all there with proper SSB filters and amazing computer controlled programming facilities. A complete communications monitor in one small handy. Great!



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

**£59.95!** Carr. £2.00

Hand-held or Base Station **Free Software!**



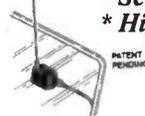
This Ramsey kit can be put together in an evening. Self powered from IBM computer RS-232 port. Just connect to scanner or transceiver audio output and watch the data appear on the screen. Also can be used to transmit Packet. 100's sold in UK.

**"On-Glass" Scanning Aerials**

**30 - 1200MHz Black Finish**

- \* 22" whip
- \* 17ft Coax
- \* BNC plug
- \* Screw-on whip
- \* High performance

**TGSP**  
**£32.95**  
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Just the job for scanner owners. Gives superb reception and fits the modern car in seconds.

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

ACCESS



# 30 kHz ~ 2036 MHz ALL MODE 'computer controllable'

**Whatever your requirements,  
AOR has a receiver to suit ~  
Base : Base/mobile : Portable**

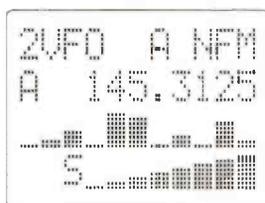
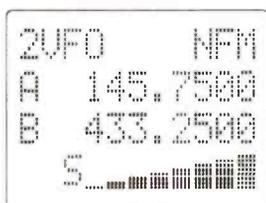
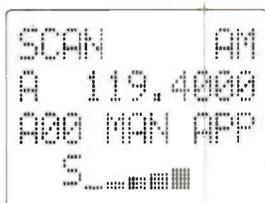
**If you require a dedicated high performance short wave receiver:** The **AR3030** with a frequency coverage from **30 kHz to 30 MHz** combining a classical appearance on the outside with a high-tech DDS (Direct Digital Synthesizer) design inside. All mode reception is provided 'as standard': AM, S.AM (synchronous), NFM, USB, LSB, CW & FAX. The legendary high performance 6kHz Collins mechanical 8 resonator filter is fitted as standard for the ultimate in AM selectivity. A Temperature Compensated Crystal Oscillator (TCXO) is also fitted as standard to ensure the highest levels of stability making the AR3030 ideally suited for ECSS and DATA reception. **RS232 (fitted as standard)**. VHF converters are also planned.



**If you require wide coverage in a single base / mobile unit:** The **AR3000A** offers a high level of performance and versatility from long wave through shortwave, VHF and onward to the upper limits of UHF and SHF **100 kHz to 2036 MHz**. Not only will the AR3000A cover this extremely wide range, it will allow listening on any mode: NFM, WFM, AM, USB, LSB and CW. 400 memory channels, rapid scan and search rate up to 50 increments per second. The AR3000A also features an **RS232C computer control port**.



**If portability is of prime concern:** The **AR8000UK** provides a frequency coverage from **500 kHz to 1900 MHz** without gaps in the range (actual acceptable frequency input from 100 kHz) and is the result of AOR's long term ambition to produce a new breed of radio receiver which combines full computer compatibility with advanced wide-band radio receiver technology. The all-mode reception provides AM, USB, LSB, CW, NFM and WFM. An independent  $\pm 2.0$  kHz SSB filter is fitted as standard and the USB/LSB modes use true carrier re-insertion with correctly calibrated frequency read-out (not offset by 1.5 kHz). Step size is programmable in multiples of 50Hz for smooth tuning. A custom manufactured ferrite bar aerial is neatly internally installed at the top of the receiver's cabinet to enhance receive performance when listening in population centres to Medium Wave services. The high visibility LCD is of a new dot matrix format and many new facilities are provided, these include a signal strength bar meter, band-scope, twin VFO frequencies displayed simultaneously, ALPHANUMERIC comments stored along with frequency, mode & attenuator status simplifying the job of recalling and identifying memory channels, password protection etc. **Computer control and clone of data between two AR8000UK receivers (optional interface required)**.



*Other popular brands available  
such as YUPITERU ~ ICOM  
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**IBM-PC software available for the AR3000A with software for the AR3030 & AR8000UK to follow soon. Please phone or forward a large SAE for full details.**

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# WORLD RADIO CENTRE



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

# YUPITERU ICOM

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## FAX: 0629 825927

# A Day In the Life Of A Radio Inspector

## A Television Antenna

*Life for a Radio Inspector is never easy. J. Edward Brown reveals some more adventures.*

The radio inspector's office was busy as usual this hour of the morning, a couple of telephones ringing, one of the radio inspectors trying to arrange the street lighting gang to do a job on a modulation hum problem caused by blended bulb street lamps. It was difficult to get the gang, they were all old men, too old for regular electric lines work, they always had an hour for morning tea and another hour for afternoon tea and two hours for lunch. Street light interference was difficult, it was hard to find the bulb causing the trouble. Once the gang were on the job they were obliging, but it meant putting out every bulb until the one causing the interference was found. The complainant was a school teacher, arty music type, listened to the YC network, not that that was relevant...

Another inspector was talking to a long-time complainant whose problem was that he lived in a valley and he had no television signal.

Mrs Hooper rang in to say their radio interference was on again, bad on her Columbus wireless. Kilocycle Ken didn't believe it. She accused the milkman of causing her interference, every time he parked outside, the rattle of his milk bottles caused crashing noises, but it was too early for the milkman so she was accusing the postwoman. Mrs Hopper was as mad as a meat-axe. She listened to Parliament avidly, which was an indication. She sometimes came into the office to see the chief radio inspector, always dressed in a black suit, green cloth overcoat with fur round the neck. Her eyes was as glassy as the fox fur. It was said in the office that she and the chief radio inspector had had something going, years ago. The chief radio inspector was in his office now, eating pig's trotters, his usual breakfast.

"Come on, let's hit the road," Kilocycle Ken said loudly to Young Golly, his trainee. "We're off to investigate the sea of interference swamping our city." Though there wasn't

going to be anything meaty in the first complaint on the clipboard this morning.

The address was a greengrocer's, in a red brick block of shops, probably built in the late nineteenth century to serve the working class people who lived around. It had been almost a slum a few years ago, now the area was trendy.

An Indian was unloading potatoes from the old Chevrolet truck at the curb, his name, Patel, painted crudely on the yellow door. And Son had been added in red.

"Radio inspectors," Kilocycle Ken said. "A Mr Mayo at this address has complained about television interference."

Inside the shop the pregnant Indian woman in the sari wrapping carrots in newspaper for a customer had suddenly smiled, showed a gold tooth, twirled her hand in a meaningful circular motion.

"Mr Mayo lives upstairs, but he is not all there." The Indian stabbed a cauliflower viciously with a wired price tag. "Always trouble."

"We would like to have a look at his television set."

"He complain to everybody."

"Do you live on the premises?"

"Oh no sah, live long way away." His lips curled at the thought. But this was an area where a man could feel he was living in the heart of all happenings.

Hands of bananas hung artistically around the shop doorway, pineapples dangled, apples were stacked, but there were racks of Fido canned dog food. Watties canned peaches, a frozen food cabinet with imported French beans and Jerusalem artichokes, frozen cauliflower, all expensive, but there would be customers.

The Indian greengrocer gestured. In the back of the shop a set of concrete washing tubs filled with large leafy leaks, water trickling from an old-fashioned brass tap; a lavatory pan, white with one of those without a lift-up seat, just two strips of wood cemented on the wax and wane sides.

Up the worn stairs, the



peeling wall painted a sickening green, the remains of an old gas lamp on the landing ceiling. There was a graceful curve to the stairs and the banisters. This could be a very nice place to live, cleaned up, only needed money spent.

Along the corridor. "Are you there?" the Indian shouted through the door. He didn't wait for an answer, turned the old fashioned brass knob and pushed aside the sacking mat inside which impeded the door opening.

The old man sitting on the unmade bed in a striped pyjama top and white underpants studying the Best Bets looked at them with watery eyes.

"Here are the radio inspectors investigating your television interference complaint."

"I do get bad interference," he said, almost apologetically, rising.

The wall of the big room were wide horizontal bare boards from which the scrim had been striped - and the wallpaper had once been pasted to that. It smelled of old age.

"I don't usually have television on at this hour of the morning. Nothing on."

"The test pattern is on. Could we have a look at the screen?"

A boarded up ornate fireplace at the far end, one bed, a chrome hot water jug on the floor by an old-fashioned white porcelain power point, salt and pepper shakers, a Christmas card on the mantelpiece, an old Gulbransen radio and a large Philips K9 television set.

## Snow Flakes

The old man walked across the old worn strip of faded orange carpet and plugged the TV into the wall socket.

Kilocycle Ken noted there was no aerial. The test pattern appeared amidst falling snow flakes as large as saucers.

"Not a good picture. You need an aerial, outside."

The old man shook his head as if he didn't understand.

Kilocycle Ken approached the television set and the picture revolved madly; he retreated and it steadied. It was a classic case of a television set without enough signal being fed into it. It was a waste of time searching for interference, anything could upset this picture. He explained it to the old man, but the old man obviously didn't understand, maybe he didn't want to understand.

"How much would an aerial cost?"

"Installed - a hundred dollars, one fifty, maybe."

He shook his head. "I can't afford the aerial."

Kilocycle Ken wondered what he had done with his money in his lifetime? Lost it on horses? The old man had picked up a Post Office pen with its bent paper clip logo and was marking horses in Best Bets. Who knew? Might have been unfortunate, or never been fortunate.

## Ribbon Dipole

A simple ribbon dipole aerial would probably improve his reception one hundred percent, cost a few dollars for a couple of metres of black television ribbon and two drawing pins, pinned high up on the wall, but they weren't paid to do that.

"A young active friend could buy a TV aerial, you can get them for fifty dollars or so, put it up for you."

"Haven't got any friends."

The Indian greengrocer in his white apron stood with folded arms. Did he own this building?

"Anybody else live here?" There were doors shut down the corridor.

"Nobody else, only him. Building will be demolished soon."

Kilocycle Ken sighed. "Go back to the car, Young Golly, and get a length of 300Ω ribbon, we'll put up an indoor aerial for him."

"It's not our job," Young Golly protested.

"It's be kind to a complainant day."

One of the panes of glass in the window was broken, stuffed with newspaper. The noise of the busy street below was loud.

The old man was still quiet, but he had been loud on the telephone yesterday, he had threatened to write to the minister of broadcasting when he had been told that if he didn't have an outside aerial, the radio inspectors would not investigate. However, they'd come to have a look. The fact that he called the radio inspector a yellow bellied civil servant was immaterial. Some people were just plain anti.

Young Golly came back with a roll of black aerial feeder ribbon and a handful of tools. Kilocycle Ken snipped with the side-cutters, cut a length of ribbon by eye, joined in a feeder length. The wall was about at right angles to the television transmitting station. There were two convenient tacks to hang the aerial on.

Kilocycle Ken inserted the ends of the ribbon into the television set and immediately the snow disappeared and a bright test pattern emerged. "There, what do you think of that."

The old man barely glanced at it.

Young Golly gathered up the tools.

"You'll be okay now,"

Kilocycle Ken said.

The old man marked his book.

"Say thank you," Young Golly said.

The old man ignored him.

"Say thank you," Young Golly said very loudly.

Kilocycle Ken said, "Come on."

"We never get any thanks."

"The TV set supplier should have done something for him, but it's left for us."

"He probably thinks the government should do everything for him," Young Golly said.

"We are living in a welfare state."

"Where does it say that free television aerials are supplied. What do we charge the ribbon up to?"

"Write it off under working expenses."

## Too Expensive

Kilocycle Ken and Young Golly departed through the shop.

Next door in the block was a laundromat, and next door a butcher's shop, on the other side a restaurant - hadn't it recently featured in 'Metro' magazine and been given four and a half stars, not that he'd ever eaten there, too expensive for a common public servant. A Samoan woman was wet mopping the floor, the morning sun sparkling on wine glasses.

"Did you see a stove in that old man's room?" Young Golly asked.

Kilocycle Ken shook his head.

"How would he cook?"

"Probably eats out, fish and chips, hamburgers."

"There wasn't a refrigerator either."

"Nobody had refrigerators, in the old days, but then nobody had TV sets either."

Who was responsible for supplying such old people with TV aerial? Social Welfare? Certainly not, and certainly not the radio inspectors, it was the viewer's decision whether to buy an aerial or not. The old man had bought the television set - presumably. He could cut down on beer to buy an aerial? There had been a crate of empty beer bottles on the landing.

"You could end up like him," Young Golly said rudely.

"If I'm ever tempted to leave my wife I'll remember that room."

"It might not be so bad."

Kilocycle Ken shuddered.

"He would get national super, adequate to live on," Young Golly said, almost puzzled.

"Depends on how much he pays in rent."

"He might live there free, out of the kindness of the Indian's heart."

## Hot Bread

They walked past a bread shop with the scent of hot bread, a delicatessen with hand made easter eggs, marinated pork shops, scotch eggs, pork pies, it was enough to make a man very hungry.

Next door was a second-hand book shop. "How do they make a living?" Kilocycle Ken mused. But they must make a living, for how did they pay the rent? There was nobody in the shop buying, the book were not popular titles - astrology. On the window an advertisement, handwritten, for poetry reading and another as for a do-it-yourself co-operative publishing venture.

The old man was certainly out of place in this area, but where would he go when his building was flattened?

A coffee shop, the smell of freshly ground coffee; a shop specialising in brass-ware, once again popular, for letter box numbers, door knobs; a video shop; a gallery displaying prints and paintings. Young Golly went in. The shop was bright, stark, white, clean, all the picture frames chromium-plated, the woman behind the counter and glass wore a white smock, smoked a mentholated cigarette.

"Isn't that Marilyn Monroe?" Young Golly asked, pointing at the print.

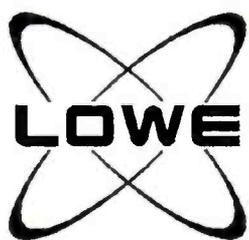
"Could be." It wasn't her, but she had probably been the idea behind the original painting.

## Old Dark Pictures

A second hand shop with the detritus of an earlier age, a wedding dress, a dirty chromium-plated toast rack, old dark pictures in ornate wooden frames, an oak dresser, two old fireside chairs in oak and uncut moquette, a crockery teapot. "My mother had one of those," Kilocycle Ken said sadly.

"Must have been a long time ago," Young Golly said rudely.

Kilocycle Ken nodded, sadly. ■



# Lowe Electronics

*THE RADIO OF THE FUTURE IS HERE NOW...*

## SoftWave™

By ComFocus

Computers are playing a much bigger part in peoples lives today, both at work and in the home. There are a growing number of short wave enthusiasts using computers to enhance their listening, using computer logging and decoding. It was inevitable that the technologies of radio and computing would come together at some stage and ComFocus Corp. of America have done exactly that.

SoftWave consists of a remote receiver, built into a screened box plus an interface card that plugs into your PC and of course the software. You will need to have a IBM PC type computer, and we recommend at least a 386 type with 4MB RAM and 6MB hard disk space. A maths coprocessor is also desirable. You will also need DOS 5.0 and Windows 3.1 or higher.

The built-in map-driven station database makes selecting world band radio stations very easy and you can change the "personality" of the receiver to give you just the functions you need for various applications. You get no less than six receiver functions with SoftWave:

- ◆ AM DX receiver
- ◆ Communications receiver
- ◆ Worldband receiver
- ◆ VHF receiver
- ◆ Time sync receiver
- ◆ Wideband spectrum analyser

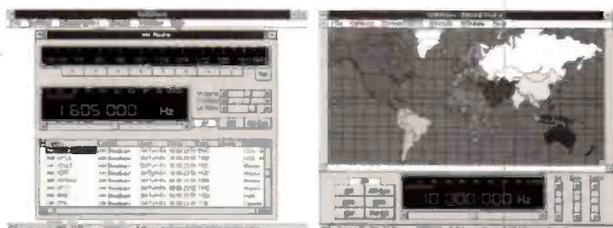
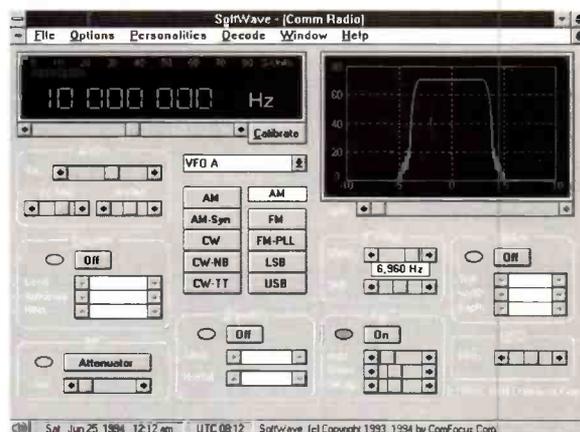
As you would expect, the specification and facilities are also excellent:

- ◆ Frequency range: 0.5 to 30MHz and 108 to 174MHz
- ◆ Tuning resolution: 1Hz
- ◆ Modes: AM, AM-sync, WFM, NFM, CW, USB, LSB
- ◆ Selectivity; 11kHz to 49Hz in 48 steps
- ◆ Dynamic range: 97dB
- ◆ 3rd Order Intercept Point: 2.5dBm (HF, 20kHz spacing) and 5.5dBm (VHF, 20kHz spacing)

SoftWave is unique. Being software driven, upgrades should be straightforward. Already planned are decoders for FAX, RTTY, SSTV and these will become available in due course.

**But you can have the radio of the future today for just £1495.00 including VAT**

We'll be happy to send you a set of demo disks so you can "see" SoftWave for yourself. Just send us your cheque for £5.00, refundable on purchase of SoftWave.



## SoftWave™

By ComFocus

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**£359** inc VAT

Designed as a logical alternative to the Japanese 'push button portables', the HF-150 places a 'real radio' within your price reach. Whilst reflecting the Lowe approach to simplicity of operation, the HF-150 nevertheless has all the features and facilities you need. This truly is 'Real Radio'.

**Frequency coverage:** 30kHz-30MHz.

**Modes:** USB/LSB/AM/Sync. AM (selectable S'band).

**IF Bandwidths:** 2.5kHz & 7kHz.

**Tuning:** 8Hz steps with variable speed.

**Memories:** 60 holding frequency & mode.

**Aerial inputs:** 600 ohms, 50 ohms & Hi-Z Whip.

**Power:** 12Vdc from mains adaptor (supplied).

**Case:** All metal light alloy case.

**Size:** 185mm(W) x 80mm(H) x 160mm(D).

**Weight:** 1.3kg (less batteries).



We are a main dealer for all popular makes of receivers, transceivers, scanners, ie. YAESU, ICOM, KENWOOD, ALINCO & LOWE. Prices are correct at time of going to press.

## AR3000A

The AR3000A is a follow on from the highly acclaimed AR3000. Many major improvements have been implemented at the request of enthusiasts. The tuning control is now 'free running' to provide a smooth feel for SSB/CW, x10 buttons have been added to make step size faster and more convenient. All information is contained on the LCD instead of a separate status LED indication. The RS232 facility has a switch on the rear panel to enable/disable operation. Memory clear and full microprocessor reset functions are available from the front panel. The re-writing of microprocessor firmware using an even more efficient language has further increased scan and search speeds.



**£949**



**The  
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500kHz-1300MHz  
with better sensitivity  
than the original  
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**£309**

## HF-225 Gateway to the world

**£479** inc VAT

**Frequencies:** 30kHz-30MHz.

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**Filters:** IF filters for all modes fitted.

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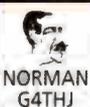
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100kHz-1300  
MHz and  
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The MVT-7000 from Yupiteru provides unbroken coverage throughout the spectrum. Each one is carefully tested by us and supplied with a unique power supply that will not only recharge the ni-cads, but also run the set directly from the mains. Its beautifully styled lines and superb engineering make it the best buy for the customer who wants the widest frequency range possible. **£310 inc. VAT**

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- Excellent reception • 108-142MHz
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Complete with 3 AA size ni-cad batteries, 240V mains adaptor, 12V d.c. cigar plug & carry strap

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## GUIDE TO FAX RADIO STATIONS

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The new edition of our FAX GUIDE contains the latest equipment information, frequency lists and precise transmission schedules - to the minute! - of 62 FAX radio stations and meteorological satellites, including those of Bracknell Meteo, Royal Navy London, METEOSAT, and the new Bracknell meteo telefax polling services. The most comprehensive international survey of the "products" of weather satellites and FAX stations from all over the world is included: 353 sample charts and pictures were recorded in 1993 and 1994! Here are that special charts for aeronautical and maritime navigation, the agriculture and the military, barographic soundings, climatological analyses, and long-term forecasts, which are available nowhere else. Additional chapters cover abbreviations, call signs, description of geostationary and polar-orbiting meteorological satellites, regulations, stations, technique, and test charts.

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# news *Extra*

## Maritime Stop Press

We have just been informed by Stonehaven radio that BT's m.f. coast radio stations are broadcasting the following historic message

"The broadcast of navigation warnings, gale warnings and weather bulletins by MF W/T from UK coast stations will cease at midnight on Sunday 31 July 1994. Distress and urgency broadcasts will continue to be made by W/T. There will be no changes to m.f. R/T or h.f. W/T broadcasts.

BT Maritime Radio Services, London 051330Z July 94 +"

If readers are interested in listening to any of the final m.f. W/T broadcasts on the 31 July, I would recommend monitoring 500kHz, where Cullercoats/GCC, Lands End/GLD, Niton/GNI, Portpatrick/GPK and Wick/GKR will be heard at various times announcing their intention to broadcast a message on their respective working frequencies.

The announcements on 500kHz of the final broadcasts of weather bulletins will be at the following times:

GNI	2018UTC
GCC/GKR/GPK	2030UTC
GLD	2048UTC

Navigational warnings will be finally announced at:

GLD/GPK	2000UTC
GCC/GKR	2048UTC
GNI	None

Working frequencies are:

GCC: 515.5kHz, GLD: 448kHz, GKR: 517kHz, GNI: 447kHz, GPK: 442kHz.

Thanks to W. Smith GM0ENQ for the above information.

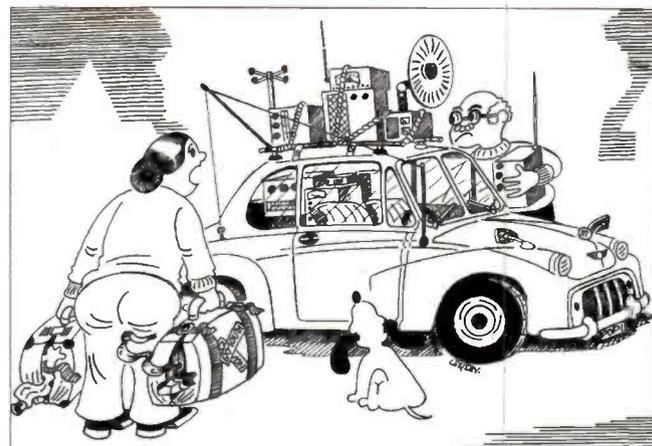
Short Wave Magazine, August 1994

## Competition Winner

We are pleased to announce the winner of the Dressler ARA2000 50MHz - 2GHz Active Antenna. This Antenna has been kindly donated by South Essex Communications and is worth £299. It has been won by **Ian Shields of York**, Ian will soon be receiving his new antenna.

## Listen With Grandad

By Leon Balen & David Leverett



Do you think you could leave a little space for the luggage, George?



# For The Very Best

## Ring the Honeymoon

### AOR 8000UK



AOR always lead with technology in scanner design and every time details are 'leaked' to the press, the phone doesn't stop ringing for months. A detailed specification sheet is now available for this truly amazing item and is available to those of you who call in or phone. Stocks will be limited but I am assured of a limited quantity from June onwards. The price? I'm told around the region of £440. A

deposit of only £50 will secure your 8000UK and payments in the region of £33 a month are given as a reasonably accurate estimate.

MRP £449.00

### MVT 7100

The new AR800 has arrived but



sales of the MVT7100 will continue as strong as ever - especially as the price is slashed to only £389! All mode, no gaps and it's available from stock.

### 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.

### 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 its little brother, but this one's matured to enable you to listen to Military AIR Traffic as well as 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.

### AR3000A

Still the best selling base scanner/receiver and at a price that's unbeatable. If you want ZERO FINANCE, we can arrange that too!



### DRAKE SW8

Available since the London show, the new Drake SW8 is an ideal base/transportable receiver for the nineties. Featuring coverage from 500kHz to 30 MHz and built-in AIR BAND, this is a world first in communication receivers. For good measure you even get 88-108 (FM broadcast band) and a built-in telescopic antenna. All for £599? Have they got the price wrong? Buy one before the price goes up!!

### AOR3030

At last! I've got stock. With a distinctive AOR 'style', the new 3030 stands out amongst the crowd. Not because

of its li  
maxim

### FRG1

Countin  
receivers  
this one  
high up  
Now fitte  
AM filters  
selectivity,  
from as litt

### DRAKE F

The only rec  
standard. CC  
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discount the  
price of unde.

★ All filters fitt  
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10Hz readout  
★ much more!

## Accessories

### The "Eavesdropper" From The USA. The ultimate in SHORT WAVE LISTENER ANTENNAS

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!

£39.95

### The U.K. SCANNING DIRECTORY

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## 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 cheap, 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 listener's noise fatigue instantly! Fit a DSP!!

W9GR DSP Multimode Filter.....£299.00

TimeWave DSP-9 Noise Filter.....£169.00

TimeWave DSP-59 320 filter variations.....£299.00

JPS NTR-1 Wide band noise & tone remover.....£199.00

JPS NFR-7 As above with selectable centre frequency.....£279.00

JPS NIR-10 As above with notch filter, removing multiple hets.....£399.00

## Antennas and Accessories

### MyDEL TPA Tuneable 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.

### 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.

As you are reading this, I'm sunning myself on a beach somewhere on my honeymoon - I've married my favourite employee. Not Chris (or any of the other blokes for that matter!), but Jenny Sutton, now Jenny Lynch. More new business cards, more expense. It's the first break I've had for years and I think if I didn't take one with my darling wife I really would get 'Lynched' this time!

In the meantime, I've instructed my right hand man, Chris Taylor, to sell off as much stock during my absence as he possibly can. If you're buying or enquiring, call him now. Quote "What about the Lynchy Honeymoon Special Price", and he'll blow you away with deals during the end of July and August that would even make me gasp for breath. Except, I won't be there to argue. Go on, give yourself a treat, you deserve it.

Ring the Honeymoon Hotline...Now!! 081-566 1120!

Mr. & Mrs.

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g sales of last month, scored very on the list. d with better giving extra Deposits e as £50.



## KENWOOD R5000

Built like a rock but looks and feels decidedly more beautiful.

The R5000 is offered this month with an easy payment plan that I think you will find attractive. If we get your order by the end of July, claim your additional £25 worth of MARTIN LYNCH GIFT VOUCHERS - FREE!!

Deposit only £99 with 12 payments of £75 (total£999), INTEREST FREE FINANCE.



literally hundreds of pieces and say "they're British". If you used to use an R1155, AR88D (o LF), HRO or B40 many years ago and always wanted to get back into listening, then wait no longer. The HF150 is not covered in knobs and hasn't got thousands of memories but it will take you into the world of listening at a very acceptable price. £389. That's all.

## LOWE HF225

Now in its third year, the HF225 is a milestone to which others are compared. It can take an optional FM board, (the HF150 cannot), covers 30kHz to 30MHz and has 30 memories.

Available from stock. £479, also available on interest free finance.



8E

ever with all the major options fitted as compare the prices of accessories for the JRC you can see why suppliers have to receiver by £300. For a maximum selling - £1000, you get the following:

ed, 5/1, 8/2, 4/6kHz ★ Synchronous 4 fitted ★ Notch and Pass band fitted ★ Keypad operation ★ 100 memories

## LOWE HF150

Since Lowe Production introduced their receiver range, I've been proud to sell



## Lowe And Behold

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- ModeMaster, Data decoder software.....£139
- Magnetic Balun .....£39.95
- WireMatch antenna system .....£89
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- HF-225 .....£479
- HF-225 Europa .....£699
- HF-235 Professional RX.....£1116
- PR-150 a must for the HF150.....£235

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## 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, SITOP, 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-1200 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 converters. 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 NRDS35 or R5000 or Drake R8E to real use today!

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WUE, EALING, LONDON W13 9SB

*Preselectors were common place a few years ago - so does the launch of the Lowe PR-150 indicate a revival? Mike Richards takes a closer look.*

In my early days as a short wave listener accessories like the old Codar preselector were recognised as very worth while add-ons. It's also worth noting that many of the better quality communications of that time had built-in preselectors. In recent years however, they have all but disappeared - so why? I rather suspect one of the main reasons is miniaturisation, as the multiple tuned circuits required to build a good preselector take up quite a lot of room.

**Why a Preselector?**

So what is a preselector and why should it be needed with today's sophisticated receivers? The name actually describes the function quite well as it pre-selects the wanted signal from the wide range offered by the antenna system. It is in fact a high quality tuneable r.f. filter designed to let a relatively narrow band of frequencies pass through. Back in the latter days of valved communications receivers most featured quite comprehensive r.f. tuning stages before the signal got anywhere near the first mixer. However, this is not the case with many modern synthesised receivers. With the better designs you will find banks of electronically switchable bandpass filters, but most just have a simple 30MHz roofing filter.

The problem with these relatively simple front ends is that they can allow strong out-of-band signals to get to the mixer stages. If this happens the result can be a number of spurious signals appearing that add to the general noise and



An uncluttered front panel reflects the ease of use of the Lowe pre-selector.

# Lowe PR-150 Preselector

interference levels on the band. This effect can be particularly troublesome in the evening when the signals from continental broadcast stations are at their strongest. The problem tends to be at its worst with the cheaper receivers, particularly if you have a good external antenna. One of the most common, but crude, solutions is to reduce the signal level at the receiver by switching in an attenuator. Although quite effective, this also reduces the strength of the wanted signal so is not very helpful to the DXer! The real answer is to add some filtering to reduce the level of the unwanted out-of-band signals. This is exactly what a preselector is designed to do.

**The Lowe Approach**

So let's have a look at how Lowe Electronics have tackled the problem of producing a modern preselector. You will see from the photographs that the PR-150 has been styled to match the very popular HF-150 receiver.

Electronically the design is very sound with a passive dual-tank LC filter circuit for each of the seven bands used to provide the wide 100kHz to 30MHz coverage. The use of passive circuitry for a preselector is absolutely essential to avoid generation of additional spurious signals within the preselector itself. This filtering technique produces good r.f. selectivity with the a -6dB

bandwidth of 5% of the tuned frequency. The -30dB point occurred at a healthy  $\pm 25\%$  of the bandwidth.

In practical terms this meant that if you were listening to a DX signal at around 14MHz the potential interference from the powerful 7MHz broadcast bands would be reduced by at least 50dB. This is far more than you could practically achieve using simple attenuation or antenna tuning units. Although early versions of the PR-150 were criticised for poor intermodulation performance, this has been resolved following a number of important changes. The main tuning is now handled by a mechanical, twin-gang,

variable capacitor and all high impedance switching is by relay contacts. From an intermodulation point of view this is far superior to the Varicap system previously used.

For handling severe overload problems, the PR-150 includes a switchable 16dB resistive attenuator positioned ahead of the tuned circuits. There is also a modest switchable 10dB pre-amplifier that follows the tuned circuits. This is available to compensate for the 6-10dB loss incurred by the preselector. It's perhaps worth noting that there is no point in adding high gain preamplifiers to a preselector as most h.f. receivers have more than enough gain.

Just to complete the picture the PR-150 included a low capacitance matching transformer for 300Ω receiving antennas inputs.

### Setting-up

Connecting the PR-150 was very simple, as you would expect. This is particularly true if you're also using an HF-150 receiver. The PR-150 is supplied with a short PL-259 patch lead to connect between the receiver and preselector. The power arrangements were also very neat with a pair of parallel power sockets on the rear panel that could be used with the supplies lead to daisy chain the PR-150 with the receiver's main supply. This was a great idea that saved having to buy yet another plug-top power supply.

The PR-150 featured two switchable antenna inputs with wire and coaxial sockets for the 50Ω input and just wire sockets for the 300Ω input. The output from the PR-150 is via a standard SO239



**Versatile antenna connectors and power out socket make this an extremely good mate for the Lowe Electronics HF-150 communications receiver.**

### Specifications

Frequency Coverage	100kHz-30MHz in seven bands
	1 100-220kHz
	2 220-500kHz
	3 500kHz-1.2MHz
	4 1.2-2.6MHz
	5 2.6-5.9MHz
	6 5.9-13MHz
	7 13-30MHz
Antenna Input A	50Ω unbalanced SO239 or wire
Antenna Input B	600Ω balanced wire
Receiver Output	50Ω SO239
Power Input	2.1mm coaxial socket
Power Requirement	11-15V d.c. at 50mA
Bandwidth	-6dB ±5% of tuned frequency -50dB±25% of tuned frequency
Insertion Loss	5 to 10dB
Attenuator	-16dB
Pre-amplifier	+10dB
Dimensions	185 (w) x 80 (h) x 175mm (d)
Weight	1.1kg

socket mounted on the rear.

### On Air Performance

Using the PR-150 is simplicity itself and barely requires reference to the clearly written instruction manual. The front panel layout is very straightforward and features a large knob for the main tuning control. Switching between the seven bands is done using a pair of UP/DOWN buttons with the selected band indicated by a set of well sign-written l.e.d.s. All other features are selected using push-buttons on the front panel. The frequency coverage of each band has

been well thought out with a 10% overlap between ranges. This helps prevent frequent band changes when operating towards the edge of a band.

To use the PR-150 you first set it to WIDEBAND mode and tune-in the required signal. By doing this you effectively by-pass the internal filtering.

Once the wanted signal is properly tuned-in you can then select the appropriate band using the UP and DOWN buttons and rotate the main tuning knob for best signals strength.

If your receiver has an S-meter it's best to use this to find to optimum tuning point. If you don't have an S-meter, you will have to

tune by ear for best signal strength. The trick here is to move the tuning knob quickly, or the receiver's a.g.c. will mask the rising signal strength. In practice this worked well, particularly when dealing with weaker signals.

### Scanners

Achieving improvements in received signal quality are rather difficult to quantify and is dependant on a number of factors. The better the antenna you use, the more likely you are to gain from using a preselector. It is also a fact that cheaper receivers will benefit far more than top of the range models. One growing receiver type that cries out for a preselector is the v.h.f./u.h.f. scanners that have had their coverage extended to include the h.f. bands. Many of these receivers have wide open front ends and have great difficulty handling the strong signals that occur when they are fed with effective external antenna systems.

### Summary

The PR-150 is a well engineered product that can produce a worthwhile performance improvement from many receiver systems. It's good to see that Lowe have continued the common sense line and resisted the temptation to add novelties like excess r.f. gain. The improvements in this latest variant are well worth the wait.

The PR-150 preselector costs **£235.00** and is available from **Lowe Electronics Ltd, Chesterfield Road, Matlock, Derbyshire DE4 5LE**. My thanks to Lowe Electronics for the loan of the review model.

# Amateur Bands Round-up

## Listening to the Amateurs

Since writing the last piece, I have had a brief holiday in El-land, where GW3RJY and I met EI9HO in Killarney, for a wonderful evening of El hospitality, and I followed this with a weekend at the NFD entry of GW3JSV/P, Offas Dyke Contest group.

We had dipoles for 28, 7/21, 14, 3.5MHz and Top Band, initially using an Icom 735 plus Datong FL-1, and then after equipment problems surfaced, with my trusty old Kenwood TS-440s that had a c.w. filter fitted. At the back-end, the audio output was fed into a GW3RJY special mackerel-fillet tin, from which three parallel headphone outputs emerged, enabling operator, logger and dupe-sheet keeper all to hear the output of the rig and, of course, the outgoing c.w. sidetone.

Now, while many listeners use a loudspeaker, there are several reasons why we chose to stay with headphones. First, headphones isolate one from the external noises such as the chat from off-watch ops outside the caravan. Secondly, partly because of that, there is no doubt at all that signals perfectly copiable in the 'cans' disappear beyond recall when the 'speaker' is used. A third reason, though it did not apply to our group is that if a suitable network is used with stereo headphones it is possible to separate out the received audio such that the sidetone frequency appears equally in both ears, lower frequencies predominantly in one ear, and the higher ones in the other. This makes separating two signals easier. Fourthly, if you happen to have an ancient pair of high-impedance phones, you will find in them a noticeable 'peak' at one frequency that can be made to yield a mite more selectivity yet!

The moral is obvious: look around your station carefully, and be sure you use the 'free offers' sitting around unused before you speculate money! Our dipoles made matching simple, and we got the best we could from the gear we had to hand. If we don't win, we will know that it was because we ourselves weren't quite up to the standard of other NFD stations.

## Letters

A first letter from **Frank Lennon** in Hyde, Cheshire. Frank notes apropos the discussion on batteries in a recent column that he uses the power pack for his Black & Decker cordless professional drill; he had to find the positive and negative on the battery-pack, and then make up a suitable lead with a 500mA fuse in the line.

These batteries have a two-hour recharge time, so, as Frank has a couple, he can use one for his receiver while the other is recharging. In summer this is handy for visits to the local hill-tops near home. On the receive side, Frank sticks to sideband, and on Top Band noted German DK3VE and 4L1AA for the Republic of Georgia. 7MHz yielded GS4BJC/P on the Isle of Lewis, while on 14MHz I notice TF3KM, VK3MO, KC1VM, WA0QBC, VU2DK, 4Z4DG and JW0C. On 18MHz TK/DL0HZ and AB4VO in the American Georgia were booked in while 21MHz showed with 6W6JX, UK8BWO and SV5TS (Rhodes).

Another first letter comes from **Bob Bertram** who lives in Galashiels, Selkirkshire, and has an FR-101 receiver. This is an oldie, but was a cracker in its day, and is capable of giving a good account of itself given half a chance. For Bob, it stumped up in the first couple of hours with WB3KPK in Pittsburgh, S92SS in Sao Tome, V85GA in Brunei, and of course the usual crop of Europeans. The bug has bitten, and Bob now looks forward to getting his own 'ticket.'

From Lindfield, another first letter, even though **Tony Capon** has been a short wave listener on our bands for thirty-five years. Tony says he has never joined RSGB because 'he is not sure they really welcome s.w.l.s'. Of course they do, Tony; while RSGB isn't perfect - nothing man-made ever is! - it is the only bastion we have against the complete loss of our bands. Every one who reaches RSGB's Council, remember, will have started out as an s.w.l. and the Society is very aware of the need to keep the new blood flowing in.

Turning to Tony's listings we find that his Eddystone 730/4 and two Trio 9R59DS receivers are now normally laid aside in favour of the IC-R70, fed from a Datong ADR370 active antenna installed in the loft. A transient 28MHz opening at lunch-time on April 29 produced Z23JA. 14MHz showed AH2C, ZB2JO, LU3UF, WA4JTK, VO1MP, ZL1AV, 9H4O, 9Y4SF A61AN OD5JY VE2TBK, 7X2BK, C21BS/M, HG5MM for a special-event job in Budapest, ZB2IB, KP2C and YV5ENI. On 7MHz Tony had an assortment of Europeans, some on c.w. Clearly the favourite is 21MHz, where sideband speech was logged from YC2EWZ, RW6HFD, 5B4MT, ZB2GR, SV5/PA3GIO/M, CT6ARU, a net comprising CX5AAF, FS5PL, PT7AT, PT7BI, CT1ESW, PY3AJ, VP8CPC (South Orkney), PY7ZL, LU3FYV and another group comprising RA3QUY, PP2AU, LU3AQ, 4M5BX, LU8MP, SP4EEZ, ZP6CC, LY2ER & T91AAW.

On another day the same band gave 4Z4UR, K3OO, K2SIJ, 4X4BE, JA9IFF and 9Y4IBN. That leaves 18MHz where EA8ZO, 7X2DG, JA1JRK, JH0IXE, EA8/DJ3OS, JA7BWT, JN3OBF, JA0DAI, PJ8AO and W3FX got into the book. Incidentally, Tony logs some of the c.w. and RTTY stuff, though he doesn't say what he uses.

Yet another newcomer is **Ken Cathcart** in Walsall, who has a Sony ICF PRO-80 bought last October. Ken mentions three amateur signals he copied, as 9Y4SF, YV4AZF and VP2VF; all were heard between 2000 and midnight on the 14MHz band.

Where all the Brits? asks **Geoff Crowley** up in Aberdeen. Mostly QRT due to TV, I guess! Geoff is still using the same tackle he had in Iceland, but now has a half-sized G5RV antenna up. Geoff says he managed eleven of the Marconi Day stations, and at the time of his letter was listening to Spanish stations monopolising an opening on 21MHz to South America: as he says, it's hard to listen in Spanish and write letters in English at the same time! 14MHz came up with ZD9BV, VR2IH, PZ1EL, 5Z4MM, EW2WP near Minsk, JA4UK, EG1TU, ER1CW, A61AN, VL1MP and Y11MH. 7MHz produced the usual Europeans, and 9V1XQ was noted one evening on 3.789kHz. On 18MHz 4L4TZ and EK7ZH were spotted, and 21MHz gave VU2RBI/RG giving QTH as New Delhi, A71AC, UN7BD, EK4JJ, HB9ARE and VU2RBI/RG again. On a different tack, Geoff has lashed out on a Yaesu FRG-100 and is pleased with the results.

Now we turn to **Gerald Bramwell**, in Swinton, Manchester. Gerald is now splitting his time fifty-fifty between the computer and the radio, but, as he says, the computer has made logging much easier as well. G3OAG on c.w. was noted on Top band, while on Eighty, he notes EA8/DK3PO, J79W, 9V1XQ, EX0M, RA9CMO, CX3AN, TA4A, 7X5DJ, TL8ND, EA8AFJ, JY8IC, LU5FCI, PP5WK, EA9PB, LU2JCW, PY3JZ and VK3DZM all with lower sideband. 7MHz s.s.b. signals came in from ZS6BIB, 5B4ACZ, EA9PB, EA8BYL, EZ5AA, VK7IK, 3X0YU, C91AI, CE8NKR, ZS6YA, UN7A and RK9WH. On 14MHz RTTY came in from AA1BV, K4HSF, TU4EI, 7X2DS, UX0KA, VE2KKP, PY7MG and W3GG, plus c.w. from KT2I, K9FW, KU8H, K4UFF and UX0HA.

As for the sideband here, suffice it to say that among Gerald's dozens of loggings we see all the continents and plenty from each. Over to 18MHz where the c.w. from W2BR and YV6AM were copied, plus sideband

from N0AKD, 6W1/DK3SQ, UX0UN, TL8LD, EA8AMT, EG8ITU, ZS6PXZ, Z21CS, ZP6DN, EA8BYL, D44BS, 7X2JF, K3DV, UA0AP, K4FDP, W3FX, K2LQ, W2NFP, N3ADL, N9DEO, JA1JRK, JR1MAF, JA3REK, JM1PJO/2, W8AH, JH8BOE, JA8EAT, W4MYA, JH4EZI, W8PIT, K4KOD, W9LKJ, KD3UI, PY0TUP, 9K2WA, PJ8AD and YV5CMI. All sideband on 21MHz, where the score included LUs, PYs, CEs, ZS6JCV, J37ZY, ZS1FF/MM, TL8NG, 5B4AAG, JAs, 9K2MU, TR8KW, 4Z4UR, S92YL, 9J2ZS, ZS6AMX, 7Q7JL, CX4AGH, PP7GAG, 7Q7RM, RV9AZ, PP7/EA4EP, 4X4CN, PZ1EL, various Ws, T2MS, 4Z4SZ, 5Z4PL, ZD7WIG, YC00JT, 8P6QM, V51C, 3X0YU and many many more. On 24MHz Gerald managed EG8ITU and 5Z4RM, while even on 28MHz he managed to catch a fleeting 4Z4LX.

**D. L. McLean** writes from Yeovil and notes that the band conditions have been pretty abysmal. On 14MHz the pick of the crop were DL8YR/ST2, FS5PL, J28GG, KH2/VP9BP, P29WK, S1STAR, V85S and 5H3DC. On 18MHz Don mentions AP2JZB, BV3BW, D44BS, FS/W1FC, TJ1AD, and Z21CS. Turning up to 21MHz, he logged ET3SID, JU55UAB, PY0ZFB, S79CK/D (Desroches), ZD7WRG and 3X0YU. Up again to 24MHz for EZ5AA, S21ZG and Z21CS; but on 28MHz - Nix!

On again to **John Heys**, near Hastings; John reckons that while conditions have been pretty poor, too many operators and listeners take a spin over the bands, and decide they are in a useless state, when in fact a bit of a probe deep into the murk will turn up something of interest. He cites JT1BH on 7MHz, and changed to sideband for 21MHz to book in AP2JZB, noted twice, BV7GA, XX9GD, 9K2IC, DU1JUX, 9V1ZR, 9V1YJ, ZD7GWM, 7Q7RM, YC5JEN, S21ZG, DU4JU, DU1JUX, YC0YBS/9, PY0ZFB believed to be on Fernando do Noronha, FH5CB, FH5ET, plus ZS94F for a 'special'. 14MHz sideband coped with XX9AS, JR5JJAQ, OD5JY, VK6UE, VK6WC and 9V1ZR. Finally on 18MHz, the c.w. from 4K2BY was copied. For a change, John found both the 'Channel Tunnel' stations soon after they started - the GB0CT on 7MHz sideband, and the TM5TSM.....on two-metre f.m.!!

## Wrap-up

So, there you have it for another issue. Letters and comments grave or light-hearted, to reach me as usual by the beginning of the month, addressed to me at Box 4, Newtown, SY16 1ZZ.

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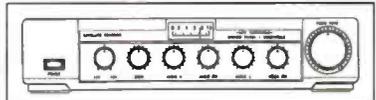


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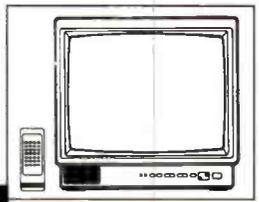
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# DXTV Round-up

After many years this is the last of my DXTV columns in its present form. I have enjoyed writing it and receiving your letters, however, technology has marched on and the time has come for a change in style.

Sadly, I have to end a very happy series with the knowledge that one of my regular contributors, **Simon Hamer** (New Radnor), died toward the end of May. He will be remembered for his detailed knowledge of the television bands and of the multitude of stations that used them. His book *DXTV For Beginners* shows just how dedicated he was to the subject and his wish to help others enjoy it like he did. I will certainly miss his monthly reports and often witty comments. Simon can be seen outside the Vintage Wireless building at the Amberley Museum back in 1985 with David Rudram on the right and myself on the left in **Fig. 1**. May I extend our deepest sympathy to Simon's family and to his many friends at their sad loss.

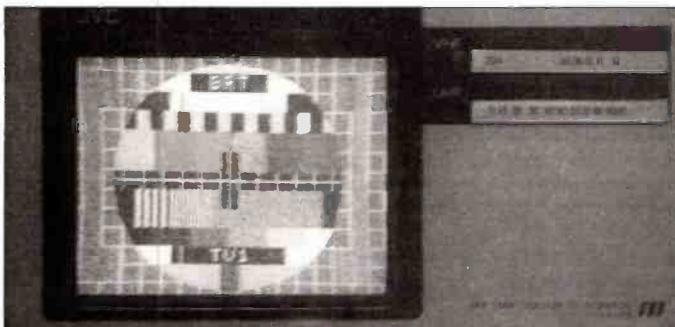
## A Wider Field

Next month I am starting a new column called 'Reflections' with a wider range of subjects to meet the requests of today's readers. Where applicable I plan to include such subjects as astronomy, computers, propagation reports, DX, slow-scan and vintage television and the weather. While thanking all of you who have written to me in the past may I add that I look forward to hearing from you again in the future.

## Band I DXing

Sporadic-E disturbances were observed by **Lt. Col. Rana Roy** (Meerut, India) early on April 3 and 29 and around 1700 on May 9, 0845 on the 10th, 1300 on the 12th,

**Fig. 4.**



**Fig. 1.**



0730 on the 14th, 1430 on the 17th, 0930 on the 18th and 0727 on the 19th. During these events he received colour pictures from Dubai TV, **Fig. 2**, on Ch. E2 (48.25MHz) and a variety of programmes from the Commonwealth Of Independent States on Ch. R1 (49.75MHz). At times the signals from the CIS (formerly USSR) and Dubai TV were fighting for predominance on the screen. Typical Sporadic-E Rana.

Around 1330 on May 22, **Richard Gosnell** (Swindon), using a Grundig multi-standard receiver, saw a film, with good sound, from Spain on Ch. E3 (55.25MHz). "The Spanish event faded gradually around 1430 but another started up from Italy," said Richard, who then received pictures from Italy on Ch. Ia (53.75MHz) and, on Ch. E3 he saw the logo 'SLO 1' at the top right hand corner of a clear picture. Richard said that the language seemed East European and thinks it may have come from the newly-born country Slovakia.

"At last I have something to report for the 1994 season," wrote **John Woodcock** (Basingstoke)

on May 26. He received pictures from Italy, Spain and Sweden from 0845 to 1415 on the 17th. During the afternoon of the 22nd he logged Austria (ORF1) on Ch. R1A (49.75MHz), Germany (ARD) on Ch. E4 (62.25MHz), Italy and a football match from Russia on Ch. R2 (59.25MHz). John told me that conditions on the 22nd were erratic but very strong on peaks and, like Richard, he also saw the 'SLO 1' logo.

## Satellite TV

At 1600 on December 21st, 1992, **Peter de Jong** (Leiden, Holland) received strong signals from Vatican TV, **Fig. 3**, via Eutelsat II, F4.

## Weather

I recorded 3.60in of rain during May compared with 1.91in for the same period in 1993. There were falls of 0.20in, 0.23in and 0.27in on the 7th, 14th and 21st respectively. Heavy falls of 0.95in were logged on the 17th and 26th and small amounts on days 4, 5, 8, 12, 15, 18, 22 and 24.

"During May, Scotland seemed to have got the best deal weather-wise, with only two days of rain in the Clyde Valley", wrote **Arthur Grainger** (Carstairs Junction) at the end of the month. His lowest barometer reading was 30.1in on the 5th and a real high of 30.6in on the 8th.

The daily variations in atmospheric pressure for the period April 26 to May 25 were taken at noon and midnight from the recording chart on my own barograph and will be found on a

**Fig. 2.**



**Fig. 3.**



**Fig. 5.**



**Fig. 6.**

graph elsewhere in this issue.

"The weather conditions have certainly changed," wrote Rana Roy on May 25. He told me that "it should be hot and dry, instead we are having hot and humid conditions. We usually have this kind of weather after June 15 when the monsoons start coming in".

## Tropospheric

"Have spent the last seven days on the Isle Of Man," wrote **George Garden** (Edinburgh) on May 12. While there he tried his JVC 610 TV at Spanish Head at the Southern end of the Island. He logged pictures in Band III from Ireland's RTE 1 & 2 on Chs. 6 and 9 and watched BBC, HTV and S4C from Wales and Ulster TV, in the u.h.f. bands.

Back home in Edinburgh,

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Fig. 10.

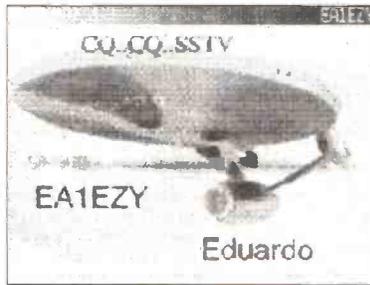


Fig. 7.



Fig. 8.



Fig. 9.



Fig. 12.

George noted a good tropospheric opening on May 30 and 31.

"Conditions were at their best around 0045 on the 31st when pictures from Tyne-Tees at Bilsdale on Ch. 29 were received in strong colour," he said and remarked that, "the return of very mild warm weather, with a lot of hot air aloft probably provided the duct". George also received the Tyne-Tees signal on Ch. 61 from the transmitter at Pontop Pike. Although the signal faded for very short periods during *News At Ten* he was able to see their local news right through.

From his home in Meerut, Rana Roy, received strong colour pictures in Band III from Lahore on Ch. E5, Kasauli on E6, Barielly on E8, Jalandhar on E9, Pakistan TV on E10 and Bhatinda on E12 during tropospheric openings, between 0800 and 1000 on March 3, 9, 11, 13, 15, 17, 19, 21 and 25-29 and between 1800 and 2300 on the 18th.

TF1, F2 and F3 from Caen, on Chs. L22, 25 and 28 respectively, were among the French stations logged by **Tim Bucknall** (Congleton) while he was in East Jersey from May 29 to June 3. He also watched BBC1, BBC2 and CH.4 from Fremont Point on Chs. E51, E44 and E47.

There was co-channel interference on some u.h.f. stations while the high atmospheric pressure was slowly falling overnight on June 15/16 and 17/18.

## JVC TV

One of our Manchester readers, **Paul Agbaku**, reading about George Garden using a JVC 610 receiver, asks, "where can I purchase one of these sets?". I also have a 610 Paul, **Fig. 4** and it works very well. However, as the model is now about 15 years old

the chances of getting a new one must be small. Briefly, the 610 is a colour portable with an approximate 110 x 75mm screen. It has two dials, upper right **Fig. 4**, one for the v.h.f. Bands I and III and the other for the u.h.f. bands. The main tuning knob is on the right of the dial and push buttons, along the top right, for on/off and band-change. A set like this, that can also be used as a colour monitor, is ideal for both DXing and/or domestic use. Mine has been used for many years as a monitor for my video recorder. I suggest that you ask a JVC stockist if there is a current version of this set, or have a word with David Martin at Aerial Techniques, 11 Kent Road, Parkstone, Poole, Dorset BH12 2EH, about the JVC CX60GB that appeared in his catalogue.

## SSTV

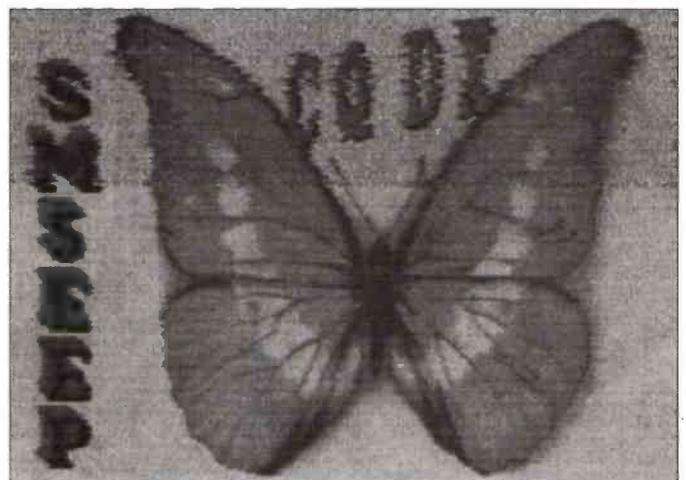
Several months ago **Ian Macartney** (Co. Antrim) purchased a Lowe HF-150 in order to pursue his interest in receiving slow-scan television signals. "I am using an Amstrad ALT-386 portable computer along with the JVFAX 6.0 [program] and a home-built HAMCOMM interface. I was able to build the interface into the casing of the 9-pin D-connector. The display on the 386 computer is only monochrome so I use my 486SX to display the colour pictures," said Ian. So far he has received some impressive colour pictures, around 3.372 and 14.230MHz, from stations in Italy, **Fig. 5**, Portugal, **Fig. 6**, Spain, **Fig. 7** and Switzerland. I said 'impressive' because Ian kindly sent me a 3.5in floppy disc containing 16 of his SSTV pictures in the .GIF format that reproduced very well on my Packard-Bell 486SX computer using the DTP program

Pressworks. This package is published by GST Software plc. I originally used their Timeworks 3 publisher program before upgrading to Pressworks.

Briefly, you begin by creating an area where you want to install the picture. Next, having placed the floppy in drive 'A', go to the 'File' menu and select 'import picture' and from that menu select drive 'A' and an index of the .GIF files on the disc should be listed. Highlight the one you require and press OK. Once the picture appears in the predetermined area it can be edited. It appears that Pressworks can import about 14 types of picture including Gem image (.IMG), Lotus 1-2-3 (.PIC), PC Paintbrush (.PCX), TIFF bitmap (.TIF) and Windows bitmap (.BMP). I also quickly checked an item called 'Pixfolio 2' which I found on the CD-ROM supplied with the February issue of *PC-Home* and Ian's pictures came out very well. This looks to be an interesting and useful program which I plan to try out properly and let you know the results later in 'Reflections'. I understand that back issues of *PC-Home* are available from their

editorial offices. No doubt like many of you I have several CD-ROMs from a variety of magazines but, to date, have had little time to try them.

"The 14MHz band has been buzzing at times with SSTV signals and last week I received my first signals from Morocco, **Fig. 8**," wrote **John Scott** (Glasgow) on May 29. John told me that it was a good signal, but, he only just managed to get one frame when the interference got too bad to continue. The latter is the dotted lines in two rows across the faces in **Figs. 8 and 9**. During the month he copied pictures from stations in France, Italy, Portugal, **Fig. 9**, Spain, **Fig. 10**, Sweden, **Fig. 11**, Ukraine and Yugoslavia on the 14MHz band. Going from h.f. to v.h.f., John received strong pictures from GM0NAF in Paisley on 144.5MHz and, while on a visit to the home of GM8HGT he saw an exchange of coloured slow-scan signals with GM3ULP, **Fig. 12**. "That was the first time I have seen colour pictures on 144MHz," said John and remarked about the good copy and no interference on the image. **Fig. 11.**



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# Satellite TV News

## The Latest from the Clarke Belt

It's 50 years since the Allies landed on the Normandy beaches and the anniversary was marked with numerous outside broadcasts from both the UK and French coastlines. Prior to 6 June 1994 - as with 1944 - preparations were well advanced and rehearsed with activity increasing on the 3rd and 4th, the first of the main ceremonies was at Portsmouth, with a major outside service and fleet review, followed on the 6th with services and other commemorative programming from the French coast.

On both June 2 and 4 graphics feeds were seen transmitting via Eut. 16°E and Intelsat 27°W, the former for NBC and latter ABC New York - the graphics feeds consisting of campaign drawings, photographs and general background material, such as old newsreels, etc. Sunday 5th brought the major Portsmouth OB (outside broadcast) from Southsea Common with satellite links outbound to Europe and the 'States. The 6th again produced many OB circuits with greater French involvement via Telecom and Eutelsat birds, live hook-ups from the beaches and the infamous Pegasus Bridge, GMTV taking a live insert via Eutelsat II F1 13°E for their morning show. Over the main two days of D-Day remembrance there were OB feeds on most satellites, the most unusual was the docking of RY *Britannia* in Normandy which was closely followed both from land and helicopter.

Meanwhile the results of another sad occasion was being told. Over on Eutelsat II F3 16°E, Israel Television was covering the arrival - live - at Ben Gurion airport of a medical relief flight from Russia with children from the Chernobyl region, all had suffered contamination from the nuclear station explosion. The mercy flight, paid from American public subscription, brought hope of recovery to these youngsters in Israel. The band played, the children sang and speeches were made. Unfortunately there seemed to be little publicity of this modern day exodus on UK TV, overshadowed as it was with the D-Day tributes. A moving broadcast.

Just a few days later and more flurries of activity with the Euro-elections on June 11. For political enthusiasts a wealth of TV circuits, interviews, opinions, 1-way reports and 2-way hook-ups, in a variety of European languages and most generally boring. Satellites from 21°W through to 25°E all seemed at some points to be carrying political offerings and activity was greater than the D-Day events 5 days earlier.

The Mull of Kintyre, famous from the Wings recording years ago,

unfortunately became the centre of the UK media June 1/2 following the crash of a Chinook helicopter carrying NI security officials. The Uplynx UK1 40 SNG truck made the difficult road route to the crash area and were offering live inserts into Sky News via Eut. 16°E 12.538 vertical. Weather was less than wonderful, winds, rain and the 1800hrs insert was aborted due to reverse communication difficulties.

I wonder if the 14°W Gorizont has foundered or gone into extreme inclined orbit since little has been seen of the 11.525GHz downlink for weeks. 'Cable Plus' the Czech cable feed on 11°W for a period was using Videocrypt (or son of) but then the 3rd week of June Cable Plus disappeared from 11°W only to reappear amongst the EBU circuit feeds on Eut. II F4 7°E - in clear PAL - even the 'naughty' films were also clear! Meanwhile back on 11°W the Reuters Moscow Bureau has been seen with their European Westbound feed. Another new channel seen on test via Eut. 16°E has been GSTV, a new Asian channel at 11.160GHz horizontal.

To end my own snapshot of recent satellite receptions, and on a more serene note, a new theatre building facility has been opened at the Glyndebourne Opera House, near Lewes, East Sussex. To mark this event *The Marriage of Figaro* was screened May 28 on both Channel 4 UK and the French ARTE/La Sept network - the satellite feed into France in clear PAL was via Eut. 7°E at 10.989GHz vertical. And a final observation of a Dutch 'Intrax' SNG feed June 2nd from an unknown location via 13°E differed from the norm. The RTL-4 'Luxcrypt' encryption was in use but in addition the video was inverted prior to encoding into Luxcrypt. Most odd for what seemed a simple and uncomplicated programme insert.

A slight correction to earlier information from **Jean Louis-Dubler** in Montreux relating to the NICAM introduction in France, the subcarrier will be on 5.85MHz for both terrestrial and Telecom satellites. RTL-TV on Telecom 2B is still in the clear and is using both audio carriers of 5.8MHz/J17 and 6.6MHz/50µs. There is speculation that Videocrypt may be used for encryption, the first for a French satellite, rather than the Smartcrypt (Schlumberger) which uses more expensive decoders and a current lack of mass availability. Apparently at this time there are no SECAM-L modulators available for cable head ends and currently any progress into NICAM stereo has been delayed!

**John Locker** (Wirral) found D-Day feeds across the whole arc

between 25°E and 45°W, the most unusual being a 'France 2' circuit from Arromanche Beach via PAS-1 at 45°W on the NHK transponder.

A letter from **Alexander Wiese** in Germany advises that the *Tele-satellit* magazine has now discontinued the English language (International) edition and that the German version will now carry extra English language pages. This same magazine has organised a TV programme for satellite enthusiasts which airs for one hour the last Friday in each month at 8pm GMT (9pm BST) with a repeat the following Sunday at the same time. Check out Eutelsat II F1 at 13°E 11.596GHz horizontal with audio at 6.50MHz and in clear PAL.

Meanwhile in C Band **Bob French** in South Warks. has noted the loss of Gala Americana on TDRS 41°W though a new caption was 'Chalfont Teleport' on colour bars but never any news or programme feed is every carried. And **Ian Waller** (Lincoln) also monitoring the same 4GHz bird has seen BBC unilaterals carried from the 'States and a new pattern 'Micronet Dallas 214 712 3990' which is thought to be in readiness for the World Cup. TDRS also carried outgoing D-Day material with incoming (Eastbound) video channels from the CBC in English and French.

With compression the buzz word, check out Telecom 1C at 3°E on 12.522GHz vertical since MPEG-2 will be in use 'soon' and with MPEG-2 going onto Telecom 2C from 1996. If you want to try out your conversational French then check out the new shopping channel on Telecom 2C at 5°W.

**Colin Grellis** (Bridport) writes to say that NASA runs a Space Shuttle transmission with live coverage, various comms, etc. on the Spacenet-2 satellite, transponder 5 in C Band 3.880GHz horizontal with audio subcarrier at 6.80MHz. In Geostationary orbit at 69°W it may ...j.u.s.t.... be visible to enthusiasts in favourable locations on the West UK coast though certainly above the horizon to our readers in much of Eire.

Finally **Fred** living in the Arabian Gulf region is using a 4m dish with inclined orbit tracking and various C/Ku band equipment. He can cover from Intelsat 27°W through to ChinaSat 115°E. Astra is unwatchable though several Eutelsats can be resolved in Ku. A 5m dish is shortly to be installed and Fred promises a progress report.

## Orbital News

As I type these very words, a 'phone call from **Gareth Foster** (Middx) advises that the BBC World Service -



French feed via Telecom 2B @5°W.



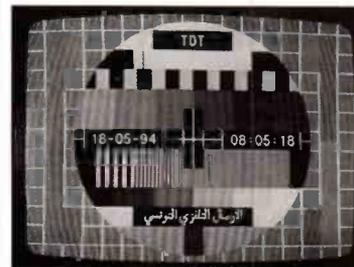
Test pattern Intelsat K prior to 90 minute two-way discussion on N. Ireland.



Caribbean Broadcasting Union. Rare test pattern via Intelsat K. John Lockes, Wirral.



Hispasat at 30°W. Roger Bunney.



Tamil TV test card. 16°E. **Berry Habekotte**, Holland.

*Berry Habekotte, Holland.*

Arabic version is to be found on Eutelsat I F4 at 25°E, check out 11.660GHz horizontal, unfortunately yours truly is screened by trees past 16°E, has anyone seen this new transmission?

And one for geography freaks, Intelsat has just admitted the Kyrgyz Republic as its 133rd member with an initial investment share of 0.05%. And joining the Eutelsat club from mid-May were Andorra, Bulgaria and the Federation of Russia.

Telecom 2B at 5°W is now transmitting 'La Chaine Info', a form of shopping channel. On test mid-June using PAL, the programme went into SECAM for programme launch June 24 at 2030CET, check out 12.584GHz for the very strong signal.

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# Bandscan

## America

The Guyana Broadcasting Service is now inactive but hopes to return to the air someday. Watch 5.950MHz.

Time again for our quarterly look at what's happening on the short wave scene in North, Central and South America, as well as the Pacific.

**ANGUILLA** - Dr. Gene Scott will apparently get a short wave station on the air from this Caribbean island after all. Earlier this year it was reported that the government had refused to allow the station because of the environmental problems it was felt the station might cause. But now, according to reports, Scott may even have the station active by the time you read this.

**BOLIVIA** - A couple of reactivated stations in this country are Radio Estacion Frontera that is operating on 449.5 and Radio San Joaquin, using 4.508MHz.

**BRAZIL** - Radio Sentinelada da Amazonia has moved to 4.865 from its former 3.285MHz. Radio Cultura on 6.105 now relays Radio Transamerica FM between the hours of 2200 to 0100. 11.905MHz is no longer used by Radio Rural. Radio MEC says its short wave operations are irregular but when on active it's between 0900 and 1100. Frequencies that may be in use include 5.990, 9.600, 11.950 and 17.875.MHz Another station with an irregular schedule is Radio Clube de Marilla on 3.235MHz.

Many long time Brazilian short wave stations are inactive, at least on some of their frequencies. The list includes Radio Por Um Mundo Melhor, 4.835MHz; Radio Alvorada, 4.965MHz; Radio Pioneira, 5.015MHz; Radio Borborema, 5.025MHz; Radio Rio Mar, 6.160MHz and Radio Inconfidencia, 15.190MHz. Some of these stations that have more than one frequency continue to be active on at least one of their other dial positions.

Back on the 'plus' side of the chart, old timer Radio Clube Ribeirao Preto has resumed activity, using its old frequency of 15.445MHz. And such stations as Radio Globo, Radio Bandeirantes, Radio Gazeta and Radio Record have all either recently expanded their short wave schedules or are operating on all or nearly all their assigned short wave frequencies.

**CHILE** - Little known Radio Triunfal Evangelica that has been inactive for some time has returned to the air and is operating between 2300 and 0200 on 5.825MHz.

**COLOMBIA** - Meridiano 70, formerly on 4.925MHz has ceased its activity on short wave. La Voz de Guaviare, 6.035MHz, is being heard again, around 1000.

Some reports said the anti-government station Radio Patria Libre was located and closed by government forces. However, Patria Libre is still being heard by several

monitors in the United States so perhaps not all of the facility was captured. The schedule is 0030-0110 on 6.530, 1130-1210 on 6.260, 1330-1410 on 15.050, 1500 to 1540 Sundays on 6.600MHz. You should, however, not take all this too literally. Frequencies tend to be widely variable at times. The schedule - at least the 0030 broadcast - seems to be fairly consistent. 15.050MHz has been noted active around 2100 on occasion.

One very difficult Colombian catch is Radio Catolica, that operates on 3.580MHz. It signs on at 0900, broadcasting from Cuatro Esquinas a part of Tuquerras which, in turn, is in the department of Narino. The station appears to be using quite a low power transmitter. It's reported only rarely by North American listeners.

**COSTA RICA** - Adventist World Radio (AWR) has completed the changes it has been working on at its Costa Rica station. The initial transmitter site at Alajuela is no longer operative. All activity has now been moved to Cahuita, on the Caribbean coast. This is where the now defunct Radio Impacto had its a.m. transmitter.

A couple of years ago AWR purchased Impacto's transmitters and set about moving the entire AWR transmitting facility to this location. The former Impacto a.m. transmitter and Cahuita has been converted to short wave operation (the short wave transmitters had been located outside of San Jose).

Incidentally, AWR now offers specially endorsed QSL cards for its transmitter sites in Central America - AWR Cahuita using 5.030, 6.150, 9.725, 11.870 and 13.750MHz, Union Radio, Guatemala City on 5.980MHz, as well as AWR broadcasts via Radio Amanecer, Dominican Republic on 6.025MHz. Reception reports should be sent to AWR Special Projects, 903 Tanninger Drive, Indianapolis, IN 46329, USA.

**ECUADOR** - HCJB has added a mid-week DX news update they've named *The Latest Catch*. The broadcast for Europe is aired Wednesdays at 0700 and again at 2.130MHz.

**GUYANA** - The Guyana Broadcasting Service, never a very easy catch even as close as North America is currently off air and a return date seems very uncertain. GBS normally operates on 5.950MHz and, when audible, is usually heard around 0800 or 0900UTC.

**HAWAII** - While most of its air time is taken up with relaying the religious and other programming of sister station WHRI, Indiana, KWHR in Hawaii does have a bit of Hawaiian flavour on its schedule. *Sounds of*

**Guyana Broadcasting Co. Ltd.**

**Radio Demerara**      760 KHz    395 METRES  
10 Kw

**Q.S.L.**

WE THANK YOU FOR YOUR REPORT DATED 8/27/69 WHICH WE ARE PLEASED TO CONFIRM.

E.I.C.

*Aloha* is broadcast from the Hilton Hawaiian Village Hotel, on the famous Waikiki Beach, on Sundays from 0800 to 0830UTC. KWHR carries this on 9.830MHz but it's also aired via WHRI on 7.315 and 7.355MHz.

**HONDURAS** - A new short wave station on the air from this country is Radio Internacional on 4.930MHz, slightly variable, broadcasting from San Pedro Sula and heard in North America around 0300UTC. The station's address is Box 1473, San Pedro Sula.

The latest schedule for Radio Copan International on 15.675MHz is Monday to Saturday from 1400 to 1500UTC, 1800-0000UTC on Sunday, 1900-2300UTC Tuesdays to Fridays. The programmes are a mixture of Spanish and English and the schedule includes several programmes produced by anti-Castro groups. Radio Copan is related to Radio Miami International - WRMI (see later).

**PAPUA NEW GUINEA** - First the National Broadcasting Commission opened up a 50kW international service on 9.675 and discontinued its use of 4.890MHz. Then 9.675 disappeared and 4.890MHz came back on. Now both channels seem to be in use.

**PARAGUAY** - Like its neighbour, Uruguay, short wave activity in Paraguay has never been very extensive. There's word, though, that a new addition to the short wave bands may be coming from this country. Radio Cardinal AM Stereo reportedly intends to open up on 15.200MHz. The government station, Radio Nacional, recently resumed transmitting on 9.735MHz after technical problems shut it down for several weeks.

As for Uruguay, try tuning for SODRE. It operates on 6.125, 9.620 and 15.275MHz (variable) using just 300W or so (at least on the two lower frequencies). Best times seem to be between 2200 and 0300UTC.

**KIRIBATI** - This Pacific Island nation continues to be represented on short wave by Radio Kiribati, using 9.825MHz. The station signs on at 0558 with identification in both English and Kiribati and, at 0600, picks up a BBC news relay.

**PERU** - There is always lots of news from this very 'radioactive' country. A few recent North American loggings include Radio Internacional de Peru on 3.397MHz around

1000UTC and Radio La Hora on 4.858MHz also around 1000UTC. New ones include Radio La Oroya, 4.9048MHz, signing on at 1029UTC and Radio Paucaratambo, 5.9847MHz around 1000UTC. Also active is Estacion Yurimaguas on 6.238MHz. It formerly used 5.046MHz. Another new one is Radio Luz y Sonido on 6.4725MHz, signing on at 1045UTC.

**UNITED STATES** - As this is written the long awaited Radio Miami International has still not begun regular broadcasts. A few test broadcasts some months ago created harmonic signals that caused interference to aviation communications. At last report, WRMI's engineers were still working to correct that problem. Keep checking 9.955MHz for more tests or even start of regular broadcasts from WRMI. The broadcast is expected to run from about 2100 to 0500UTC.

The Voice of America has expanded its Serbian language broadcasts to four hours and fifteen minutes a day. The Creole Service (to Haiti) has also been increased - up to two hours per day (from one and a half). As you probably know by now the VOA was to discontinue its broadcasts to Latin America after the World Cup concluded. The VOA's new Morocco relay in now in full operation and the former relay site at Tangier has been turned over to the government of Morocco.

**VANUATU** - The broadcaster in this Pacific Island nation has changed its name to Vanuatu Broadcasting and Television Service. It still operates with 10kW on 3.945 from 1900-2300 and 0600-1115UTC (to 1000 on Sundays) and on 7.260 from 2200 to 0700UTC.

**VENEZUELA** - Radio Caracas Radio has been making test broadcasts on 25.705MHz upper sideband, using just 120W. The Spanish language broadcast consists of relays of news broadcasts from the station's medium wave outlet. At last report the broadcasts were scheduled Monday to Friday at 1900-1930, Saturday at 1800-1830, Sundays for a half an hour at 1500, 1600 and 1700UTC, though this is reported to be erratic. Reception reports can be sent to PO Box 65657, Caracas 1066, Venezuela.

That covers everything for this time. I'll update you again in three months. Until then, good listening!

# SSB Utility Listening

## HF Sideband

For all those short wave listeners who spend countless hours listening to the h.f. aeronautical frequencies, one of the most frustrating problems is how to identify an aircraft from its Selcal. The only available source of information is the successful *High in the Sky* book. This book is now a few years old, and many airlines have now acquired new aircraft. Often, the only way to identify an aircraft is from its Selcal. There are many occasions where the ground controllers do not read back the aircraft's Selcal code, or you just hear the distinctive tones as an aircraft is summoned by the controllers.

Now, a company in the West Midlands has designed a superb accessory that allows you to decode the Selcal tones as they are transmitted. Seldec have produced a Selcal decoder that will indicate the letters corresponding to the transmitted tones. The decoder is a metal box (225mm wide, 70mm high, 175mm deep) with two prominent rows of l.e.d.s along the front panel. It only requires 12 volts d.c. applied to the socket on the rear panel, and the audio from your short wave receiver connected to the audio-input of the decoder. Apart from the two rows of l.e.d.s, the only other front panel controls are a small 'on-off' toggle switch, a single l.e.d. to show the unit is working, and a small reset button. Between the rows of l.e.d.s are the tone letters 'A' to 'S' (less 'I', 'N' and 'O') that indicate the letters of the Selcal code when the l.e.d.s are lit.

When operating, as a Selcal tone is detected, the decoder displays the decoded tones on the two rows of l.e.d.s; the top row displays the first two tones, and the bottom row of l.e.d.s display the second pair of tones. For example, if the tones of Selcal AE-LP were to be received, in the top row l.e.d.s 'A' and 'E' would light-up, and in the bottom row 'L' and 'P' would light-up. The l.e.d.s remain lit until the RESET button is pressed, and the decoder is ready for the next pair of Selcal tones.

To avoid electrical interference with sensitive h.f. receivers, the Seldec decoder does not use any micro-processor technology. The information received from Seldec did not include a price, but further details can be obtained from: SELDEC, Remlane House, Hagley Road, Stourbridge, West Midlands DY8 1QH. The photograph on this page will give you a good idea of the look and style of the unit.

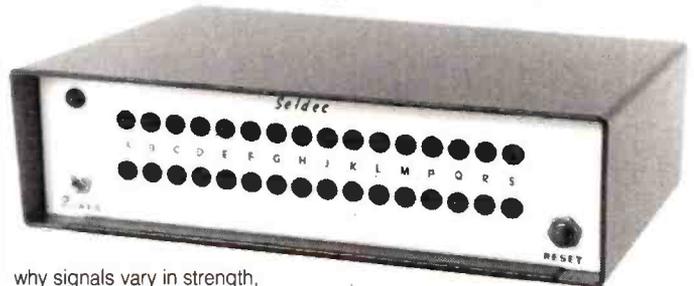
Incidentally, I hear through the

grapevine that a new edition of *High in the Sky* is soon to be produced. Although no firm dates have been announced, sometime 'during the late summer' can be expected.

### Questions

**Mr T. Ford** from Sheffield is searching for German Navy frequencies that use the call sign DHJ 59. 6.779MHz appears to be an initial contact frequency, but they often QSY to another channel, for example 'QSY MRL 59/08'. The only ones that I can find listed are 2.6805, 10.1925, and 10.197MHz; these are all from the latest *Klängenfuss Guide to Utility Stations*, but there may be more. Do you know of any more?

**Mike Jones** from Clwyd has just bought a Yupiteru MVT-7100, and has started to tune around the high frequencies. He uses a long-wire antenna of about 18m, but without an a.t.u.; he wants to know



why signals vary in strength, often starting strong, fading to nothing, only to return later to full strength. Well, Mike, the signals that arrive at your antenna are subject to a large number of factors, such as the 11-year sunspot cycle, local time of day and the weather. Also, signals can arrive by either of two paths (the 'sky wave' and the 'ground wave'), and frequently arrive by both methods at the same time. When they do arrive together, they can be 'in-phase', making the signal louder, or the signals may arrive 'out of phase', making the signal weaker or even disappear altogether.

Mike asks whether an a.t.u. (antenna tuning unit) would help,

and whether he should extend his existing antenna. I will always recommend an a.t.u., whether you have a simple or cheap portable, or an expensive 'mega-pound' black-box receiver.

An a.t.u. will 'electrically' tune your antenna so that the maximum amount of signal is passed into your receiver; it also prevents other powerful signals on other frequencies getting into your receiver and causing it to overload. I would suggest that you leave your antenna as it is for the moment, and see what an a.t.u. does for your set-up.

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

- 2.182 Genoa Radio reporting a man overboard from the vessel *Claudia* at 41°03'N 009°55E.
- 2.754 Coastal Control working an unknown station, being advised that Roseheart Bombing Range bouys had been repaired. This is the calling channel for ships for Coastal Control channel 'Bravo'.
- 2.761 Ostende Radio transmitting navigation warnings
- 4.372 HMS *Ark Royal* and HMS *Coventry* working Portishead with several crew-members making phone-patches.
- 4.386 Round the world yachtsman Mike Golding talking with the *Daily Telegraph* via Portishead. His position was just south of the Scilly Isles and he was heading for Southampton.
- 5.197 Cosmos 1 working Cosmos Control. Communications were established by voice, and operational messages were passed by RTTY.
- 5.650 Station 'E90' working 'E34', both had US accents. 24 hours later they were still here, using call signs 'F49', 'F47' and 'F97'. At one point, 'F49' was called by Shanwick on 5.649, but they never replied.
- 5.694 Air Force Rescue 206 working Rescue Ops, later joined by AF Rescue 205 and Rescue 970. '205 and '206 were helicopters heading for a Lithuanian registered ship at 57°37'N 36°32'W. The only medic on the ship was a Lithuanian doctor, but the C-130 (Rescue 970) did have a Russian speaker on board. Rescue 970 mentioned that he had contacted 'Reno Control' (Rescue Ops, Keflavik NAS, Iceland), and even called-up once as 'King 70'.
- 5.703 'Cyrano' working an unidentified French Air Force stations. Cyrano was a French Air Force E-3 AWACS aircraft; they also use the call sign 'Roxanne'.
- 6.647 Several Royal Navy ships operating with the fisheries protection forces around the UK, all working MAFF Base. GBPC (HMS *Bicester*) en-route to Gibraltar, while GYHJ (HMS *Cattistock*) was in the North Sea watching some Irish and French fishing vessels. Watchdog 91 was operating around the Isle of Man, and required assistance in identifying a ship marked 'BOU319'.
- 6.728 SAM 27000 working Andrews VIP, with a phone-patch to USAF Metro for OSDI (Damascus International, Syria). They also mentioned that they were trying to set-up a data-circuit on F5 and F108.
- 6.779 DRAO calling DHJ59 for a radio-check. DRAO may be a German Naval ship.
- 6.836 Several stations involved in target tracking. 'L' and 'AW' (English accents), 'E' (US accent) and 'F' (French accent). 'F' was slightly off-frequency, and was asked by 'L' to 'authenticate 'TBE'.
- 8.737 Nicosia Radio transmitting 'This is Cyprus Radio, radio-telephone monitoring service' in English and Greek.
- 8.867 Several aircraft working ATC stations in Australasia; Japanair 744 and Swissair 646 working Sydney, and Solomon 710 working Auckland ATC. The reader who sent in these logs remembers serving in the Far East with the RAF during the 1950's, and comments on their problems with Morse code.
- 11.176 Spar 67 (a Gulfstream C-20 aircraft from Ramstein AB, Germany) working Croughton for a phone-patch to Andrews VIP. '67 reported that they had just arrived at Ankara, Turkey, and would call again in 20 minutes. Andrews asked '67 to call on F7 upper. This is the lowest 'Foxrot' channel that I have heard Andrews use, all the lists that I have seen start at F10.
- 15.015 ORNAMENT working Lajes GHFS, requesting the frequencies for PRIME MOVER. Lajes said they were on X904 and S311. X904 is 9.017MHz, and S311 is 11.494MHz; these are both USAF STRATCOM frequencies. ORNAMENT was heard calling for PRIME MOVER on both frequencies.

# Airband

Now you can decode Selcal tones - just like on board an aircraft! The Seldec Selcal Decoder requires feeding with a d.c. power supply and audio tones. When Selcal tones are detected, four l.e.d.s glow on the front panel so as to show the four-letter code. If the tones come from a receiver's audio output then precise, drift-free tuning is essential or the indicated letters could be 'out-by-one'. Some audio peaks can cause false triggering, but adjustment of the level control should minimise this. Enquiries to Seldec at Remlane House, Hagley Road, Stourbridge, West Midlands DY8 1QH, Tel: (0384) 370394.

## Information Point

Good to hear that 'Airband' reaches Waterford, Ireland, where Chris and I spent a lovely holiday last year - taking the picture of a Jetstream that appeared in April. Over there, **Mark Zee** is interested in radio navigation and needs the appropriate chart. I believe, Mark, that you'll have no difficulty in obtaining British currency (pounds sterling) and so I suggest you contact Aerad and find the current price of two charts: these are EUR 1/2 and H201/202. How to contact Aerad? See my *Airband Factsheet*. This single A4 sheet is free from the Broadstone Editorial Office if you send a stamped self-addressed reply envelope (or a couple of IRCs if from overseas). So many answers to readers' questions involve the *Factsheet* that you will see it mentioned plenty more times in the remainder of this article.

Where's MC6? It's a military reporting point at N52°28' E2°47' and is shown in light grey print on RAF chart 523. These charts can be bought by post from Northolt, and again, the *Factsheet* gives details. **Howard Miller** (Norwich) will now send off for one, I'm sure!

**M. Randall** (Woodley) can't find the Westcott radar corridor. My RAF chart 510E (to order, see the *Factsheet* again) shows this to be about 7nm wide, starting at the eastern edge of the Brize zone and passing over the Westcott beacon to terminate west of Cambridge. Vertical availability: FL210 and FL220 only, putting it in controlled airspace. The RAF *British Isles and North Atlantic En Route Supplement* shows the corridor traversing the Daventry sector, London Mil Joint Area Organisation (291.0MHz).

When answering the Readers' Requests survey as part of the last Christmas Quiz, many of you wanted to know about air-to-air refuelling

areas. **M. Randall** specifically asks this now. There are presently 13 rectangular airspace segments, not all of which are necessarily active. Most are arranged along the North Sea but they also exist over the West Country and the Highlands. Most start above FL100 but there are exceptions, area 9 (just out to sea off Great Yarmouth and Lowestoft) going down to 2000ft altitude - should be observable from the coast, report your sightings here! Again, you need that *Factsheet* (haven't you sent off for YOURS yet?) so as to order CAA chart RAC 5-0-1, which is free! For extra details you will need RAC 5-5-1 that is part of the expensive *UK Aeronautical Information Publication* and NOTAMS sometimes also report on activity. Again, the RAF *Supplement* referred to above shows radar control areas for some of these areas (see near back of Supplement).

## Your News

A friendly contact in the RAF (Oxford) is a member of 612 Volunteer Gliding School, temporarily located at Halton. Next year this is to move to Abingdon, its Grob 109Bs causing resumption of fixed-wing activity at this ex-RAF base. The Grobs won't be disappearing from over Aylesbury, however, since 613 School remains at Halton. Long may both units continue to fly from their respective stations.

Earlier this year, **J.B. Chamen** (South Africa) enjoyed the Port Elizabeth Airshow. The packed programme (0930-1635) provided an enviably wide range of flying, but J.B.C.'s favourite was (understandably) the Shackleton - glad you've still got one flying!

**Roderick McKenzie** (King's Lynn) also got to a few displays this year. Duxford's Easter Fly-In gave the chance of pleasure flights in a Dragon Rapide or a Harvard (that's an unusual opportunity!). These are run by the Clacton Aero Club with (appropriately) 'Classic' callsigns. Did you take to the air, Roderick? A few days later at Sywell, the Rotary Fly-In didn't produce many helicopters. I believe the event is so named because Rotary International in Great Britain and Ireland organised it. They're a voluntary organisation with charitable aims; another of their activities is a net for the licensed radio amateurs among their members.

Bournemouth International Airport (Hurn) received some unexpected trade on the day the terrorists bombed Heathrow and **Geoff Williams** (Ringwood) was on hand to observe British Airways 737s and other



**A.310-204 D-AHLX (487) of Hapag-Lloyd. Seen at Tenerife South (Reina Sofia).**

Christine Mlynek

commercial flights diverting. Hurn has its own hazards, though, in the form of local deer wandering onto the runway! Positioning back to Gatwick tended to be via Southampton and Mayfield. Good to see a new airline at Hurn - hope it lasts. Euro Direct serve Leeds/Bradford, Dublin and the near continent with Jetstream equipment. The airline was set up in a short time, but I expect they were spoilt for choice when it came to recruitment: so many airline staff, especially pilots, are currently out of a job.

A few days ago I went to the Halton Show where they again helpfully displayed their frequencies: Approach 130.425 (the usual Halton Air/Ground frequency); aircraft during display 126.05; aircraft in hold 123.35MHz. No u.h.f. There was an obvious vertical antenna for each frequency.

## Follow-ups

In May, I inadvertently moved the Preston LATCC relay site from Lancashire to Cumbria. Howard Miller noticed my error - but Chris (originally from Bury) didn't! Readers 1, authors nil. Sorry.

Last month I mentioned a temporary helipad frequency allocated to special events. This is elaborated by A/C 55/1994 (from the CAA). Epsom was equipped with this facility on Derby Day (June 1), arrivals calling 132.9 and Tower being on 121.175MHz.

Back to June and I didn't get QNE quite right. **Martin Sutton** (Arundel) is an air traffic control examiner at the CAA and I only got half marks! Martin explains that intense low pressure weather causes QFE values too low to be set on an altimeter. In this case, the standard pressure (1013.25mb) is instead set and the controller issues the QNE: the reading that the altimeter will now show when on the ground. I would add that altimeters manufactured in the USA can't be set below 950mb but the British specification goes down to 800mb.

Medevac helicopters are always topical - perhaps more so following recent television publicity. **Peter** (Surrey) notes that 'Mike Sierra'

communicates with the London Hospital on 122.95MHz which is also DEPCOM. This is an exception; all other helicopters are permitted to transmit their intentions to lift only while on the ground. In the London zone, everything is controlled although in practice many light aircraft can be worked around the periphery at low level, away from the commercial flights. 'MS, Capital Radio Flying Eye (G-FLII) and Police helicopters ('Specials') can and do work Special VFR 119.9MHz for this purpose. This enables them to receive a radar service from Heathrow. Peter thinks 132.65MHz to be available for M-Medevac but this is a new one to me. I would also suggest UNICOM, 130.425MHz, on which emergency helicopters co-ordinate their movements at the scene of a major incident.

## Frequency and Operational News

**Graham Tanner** (Harlington) has discovered a huge list of LATCC frequency changes, as follows: original 134.45 now becomes 128.625; 126.875 becomes 129.275; 130.925 becomes 133.175; 135.575 becomes 134.125; 127.7 becomes 135.325; 125.8 becomes 118.825; 125.95 becomes 121.225; 132.6 becomes 126.075; 127.1 becomes 128.425; 132.45 becomes 134.45; 127.95 becomes 118.475; 120.475 becomes 120.025; 126.3 becomes 121.275; 134.425 becomes 126.875; 134.175 becomes 127.7; 133.525 becomes 136.275 and 124.275 becomes 136.6MHz.

The *GAS/L* from the CAA usefully summarises frequency changes, the following being introduced by the May issue. Syerston's new Air/Ground frequency is 125.425MHz.

Birmingham's n.d.b.s have changed, GM (371kHz) and GX (347kHz) being withdrawn with new beacon BIR (433kHz) instead. On the subject of beacons, Lydd's i.l.s. arrangements seem to have changed and the v.o.r. on 108.15MHz changes its callsign to LDY.

The visual reporting points and lanes within the Glasgow zone have



**Piper Single Comanche. Taken at the PFA Rally, Wroughton.**

*Christine Mlynec.*

also been amended: I've no further details, but the update service to *Pooley's Flight Guide* is bound to illustrate these. To buy this guide I suggest you first consult the list of suppliers on my *Airband Factsheet*.

That extra 1MHz above 136MHz is being put to good use and *AIC* 46/1994 explains. Clacton Sector (LATCC airways control) is now on 136.55MHz.

News from the balloon and airship world comes via **David Dodwell** (York). Readers may know that balloons liaise with their retrieve

ground crews on 129.9MHz (that frequency is also shared with other users including parachuting). New allocation 122.475MHz is expected to take effect next year; the rest of Europe have 122.25MHz for the same purpose. One thing I would point out. David's information suggests that the 25kHz channel spacing will reduce to 8.33kHz by 1998; as far as I know, the much simpler 12.5kHz spacing is what will actually be adopted - and even that will bring problems. As always I advise anyone involved in the procurement of new radio equipment

## Abbreviations

AIC	Aeronautical Information Circular
CAA	Civil Aviation Authority
d.c.	direct current
E	east
FL	flight level
ft	feet
GASIL	General Aviation Safety Information Leaflet
i.l.s.	instrument landing system
IRC	International Reply Coupon
kHz	kilohertz
LATCC	London Area & Terminal Control Centre
l.e.d.	light-emitting diode
mb	millibars
MHz	megahertz
N	north
n.d.b.	non-directional beacon
nm	nautical miles
NOTAM	NOTice to AirMen (includes AirWomen)
QFE	altimeter pressure setting, reads zero when on aerodrome
Selcal	Selective Calling
u.h.f.	ultra high frequency
VFR	Visual Flight Rules
v.o.r.	very high frequency omni-directional radio range

to ensure that it covers the full 108-137MHz spread and that it's capable of functioning on 12.5kHz channels.

Red Arrows plan to display (dates in August) as follows, courtesy of *AIC* 56/1994. Land's End & St. Mawgan (August 3), Boumemouth (August 4), Bristol (August 5), Cromer & Weymouth (August 17), Fowey & Plymouth (August 18), Torbay (August 19), Eastbourne (August 20), Clacton (August 25), Dartmouth (August 26),

Carlisle & Leicester (August 28) and Elvington & Hoylake (August 29) plus a few foreign sorties.

The next three deadlines (for topical information) are August 5, September 16 and October 14. Replies always appear in this column and it is regretted that no direct correspondence is possible. Genuinely urgent information/enquiries: 081-958 5113 (before 21:30 local please).

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**Antenna Changes**

any Irish readers, of course!

able to help on this one - as well as

suspect listeners in the Isle of Man

and on the UK West Coast may be

to what these signals can be?

myself. Can anyone enlighten us as

but I do not have any Eire allocations

users here as well, at least in the UK,

max. There are some government

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spots for local radio talkback and

video/sound here there are also

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Co. Down, asks for help from UK

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requesting a 'V' adapter fitting on an

ask for one of the sales staff.

dealers that advertise in SWM and

would direct you to one of the main

you should have no real problems. I

PL259 and BNC - but apart from that

match the set fittings - in this case

ensure that both antenna ends

answers is yes! You will need to

9600 from a single discorne? The

can he run his PPO-2005 and FRG-

**N. Alford** poses the question -

*Magazine.*

'94 issue of *Electronics* - *The Maplin*

detail are directed towards the June

wish to study PACKET in more

speeding drivers! Those who may

delays and congestion - not to trap

motorways. They are used to monitor

overlooking the inside lanes of

also mentions the v.h.f. antennas

169/174MHz. incidental to this, Steve

operating in the v.h.f. band around

market, being a telemetry system

system aimed at the commercial

systems. This was a packet radio

seen were PAKNEX 25 network

Steve says what may have been

for road temperature monitoring.

1993 - available from back issues.

of *Short Wave Magazine* for July

**Quentin D'Abbo** of Bala, in North

Wales, asks whether replacement

antenna for his hand-held scanner

could offer an improvement in signal

and reception. The short answer is -

yes! The antenna supplied with any

wideband scanner is a compromise,

having to cover a very wide range

indeed. If, however, you get one that

is 'cut' for the band - say, for

example, a dedicated marine v.h.f.

antenna - then you will get optimum

**Computer Control**

antenna.

maybe you are allowed only one

ground plane base. Then again,

mobile scanning whip on a metal

but... Myself, I would go for a

brew, I'll probably get fack for that

better bet than something home-

professional 'make-up' would be a

encounter here, I am certain that a

for you. Given the losses you may

fitting but, alas, I have no gen on that

dealer, Mapping may also do a like

and can make one up, it will be a

antenna splitter. If anyone has one,

requesting a 'V' adapter fitting on an

ask for one of the sales staff.

dealers that advertise in SWM and

would direct you to one of the main

you should have no real problems. I

PL259 and BNC - but apart from that

match the set fittings - in this case

ensure that both antenna ends

answers is yes! You will need to

9600 from a single discorne? The

can he run his PPO-2005 and FRG-

**Paul Clark** asks if anyone can help

him with a mystery? While listening

on 144MHz his scanner stopped on

was GB3TE. When living in

Hornchurch, he would get GB3NL on

R7. Question: has the move 30 miles

down the road to Roctford affected

his reception area? My own view is

that, yes, a move of 30 miles would

certainly make a difference to signals

on a given frequency. I do not have a

beacon chart so I can't accurately

tell you what I suspect, but 'll guess

anyway! GB3TE may be nearer in

terms of line of sight reception than

GB3NL - the result being that the

stronger, i.e. closer, station will come

through v.h.f. works on a line of sight

principle, Paul. The maxim we used

to use at sea was 'if you see em, you

can work 'em' - and that goes for

things like having a v.h.f. set on the

moon! You would be able to talk to

the set on the moon....well, that's the

theory, anyway! If anyone knows any

different....

**Motorway Bar Codes**

The 'bar code' mystery motorway

question was posed by Bert Smith in

the May issue brought in answers

from **Mike Harris**, who is good

enough to share the answer with us

in full. The codes are used in

conjunction with a high speed

monitor vehicle fitted with a laser that

checks the quality of the road

cracks and so on. The codes are

also located at intervals of 3 and 7km

apart, if you would want to walk

between them at a breakdown!

Seriously, it would seem that they do

perform a useful job.

**Ian Davis** and **Steve Wilson**

also came up with answers

regarding the grey boxes and

antennas seen on motorway

embankments. Ian tells me they are

used for traffic counting, census and

for road temperature monitoring.

Steve says what may have been

seen were PAKNEX 25 network

systems. This was a packet radio

system aimed at the commercial

market, being a telemetry system

operating in the v.h.f. band around

169/174MHz. incidental to this, Steve

also mentions the v.h.f. antennas

overlooking the inside lanes of

motorways. They are used to monitor

delays and congestion - not to trap

speeding drivers! Those who may

wish to study PACKET in more

detail are directed towards the June

'94 issue of *Electronics* - *The Maplin*

*Magazine.*

**N. Alford** poses the question -

can he run his PPO-2005 and FRG-

9600 from a single discorne? The

answers is yes! You will need to

ensure that both antenna ends

match the set fittings - in this case

PL259 and BNC - but apart from that

you should have no real problems. I

would direct you to one of the main

dealers that advertise in SWM and

ask for one of the sales staff.

requesting a 'V' adapter fitting on an

antenna splitter. If anyone has one,

and can make one up, it will be a

dealer, Mapping may also do a like

fitting but, alas, I have no gen on that

for you. Given the losses you may

encounter here, I am certain that a

professional 'make-up' would be a

better bet than something home-

brew, I'll probably get fack for that

but... Myself, I would go for a

mobile scanning whip on a metal

ground plane base. Then again,

maybe you are allowed only one

antenna.

Can anyone help **A. Hill**, who asks

about computer mods to enable him

to control his PRQ-2005? Some

interfacing must exist as Tandy

possibly carry out automated factory

testing and fault diagnosis. I have no

details of such a mod, do you?

Still with computers, **R. Owens**

asks if there are programs for the

Yaesu FRG-9600. I believe there are,

and would firstly direct you to look at

*J&J Enterprises* advert in this

*Magazine*. Then, as you have an

Amiga, I would suggest you contact

Dave Shirley - address given earlier

on - as his SCANBASE 2 will appear

in Amiga format later on. There are

many UK companies offering

programs for many computer-radio

applications and I suggest that you

apply around, or write, to those who

advertise in this magazine and also

*Practical Wireless*. Further, get hold

**Logging Program**

Moving swiftly onto other matters.

Computer buffs who hook up their

sets to their machines will be

interested in knowing that **Dave**

**Shirley G4NVQ** has another

logging program out which

supersees his original SCANBASE.

Called, logical really, SCANBASE 2, it

is designed to run on machines

having at least 2 x 720Kb disk

drives, preferably hard disk, and is

only available for the IBM PC at the

moment. It can be supplied on 3.5in

and 5.25in disk. Price is £10 and

further details can be had from: Dave

Shirley G4NVQ, 93 Alfired Road,

Hastings, East Sussex TN35 5HZ.

The program is a log, and does not

control the scanner and so needs no

interface between computer and

radio. Dave also informs me that

there is an AMIGA version to come -

soon!

**Mystery**

This month we can look at a

variety of topics - my thanks to

Alan Gardner for sending on

the mail!

**F. B. Henley** sends me an

interesting article from his local

paper concerning scanning and the

legal implications thereof. Once

more, it is time to issue a warning

and using this example illustrates the

consequences apply. This time it

concerns a scanner owner, mobile,

who made a habit of following West

Midlands Fire Brigade around and

videing the results of their call-outs.

When tackled by the Police, the

scanner owner freely showed off his

two scanners and even scanned the

mobile phone band to show the

officers how good the set was....!

The result was that, at Cannonk

Crown Court, West Midlands, the

Police succeeded in gaining an

order to seize the individuals

equipment, books and logs.

**WARNING!** The **only** persons

authorised by law to scan

do so by the **Secretary of**

**State**. People like HM Customs, the

Police, M15 and so on, Joe and

Josephine public? **No!**

Whilst it would appear unlikely

that you'd get your front door re-

furnished by a sledgehammer

welding member of the law for

listening into things you are not

supposed to, more examples like the

one above may well see scanning

outlawed. Let me re-cap, briefly, on

the legal side. *The Wireless*

*Interception of Communications Act*

*1985, Stationary Instrument Si*

*1985, Stationary Instrument Si*

*Telegraphy Act 1949, The*

*Interception of Communications Act*

*1985, Stationary Instrument Si*

*1989/123 The Wireless Telegraphy*

*Apparatus (Exemption)*

*Regulations* - these **all** apply to us.

What do they mean in real terms?

Simply this: There is a fine not

convicted of intercepting

communications not meant for them,

exceeding **two years**. For

maximum read what the Court would

decide on the day and on hearing

the offence.

Simple answer: **BE CAREFUL!**

That's all I'll say on it.

# Scanning

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**73 John G3TLU**

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**Yupiteru VT-225 Airband scanner**

reception automatically and also to sleep this. Alan Gardner ran mods for the 1300 model in the March 1993 issue - can anyone help with mods to the 2300? Terry also asks why manufacturers don't incorporate things like this into their products! Information then, please!

Terry also asks whether any readers of the piece - especially in Eire - have frequency lists peculiar to the Republic, or if they know of any publications covering Ireland. Apparently, the Irish strictly control this sort of thing! If you do have a list, then send it onto me - I will then send onto those Irish readers who may ask for it on receipt of an s.a.e., and maybe a small charge to cover photocopying.

That's it then, for this month! I sincerely trust that we've made a start between us and hope we can continue things. Last word on contributions, however! Like Alan, replies - even with an s.a.e. - unless I consider I can warrant it, like the Irish. List, for example. I can, however, reply through the column.

Meanwhile, be careful - be good - and take care if scanning mobile, or/P. Until next month, 73s.

upto a Scanmaster Base! It's all a matter of taste - and experimentation.

Mydel antennas are available from Martin Lynch and Revex and the Scanmaster Flexi from Nevada. Finances permitting, I may get a replacement antenna shortly and try it out on one my sets. I'll report back to you on that!

**Pre-amps**

Another useful addition to my scanner is a pre-amp, though this increase in performance is not without a price! Pre-amps tend to drag in everything, rubbish included, and haven't had too good a press. This may seem to be on the change, if my information is correct. A new pre-amp - designated the M15 selectable band and pass filtering and a very useful coverage of 24 through to 1500MHz (1.5GHz) so making itself attractive to users of scanners whose coverage wanders between these two limits. It would look good in the Marine listening. The Yupiteru supplied whip is brilliant on Marine band - and not so good on Marine v.h.f. Experimenting with my AOR AR-2000 whip on the VT-225 showed a considerable increase in performance on Marine v.h.f. and no degradation on Mill/Air. The AR-2000, modified it to hold on signal

passable performance elsewhere. Designers are constantly striving to make replacement antennas better and better all the time and to improve them, and their capabilities. With this in mind, I have received some information which may be of help. There are various dealers up and down the country who stock replacement antennas for handhelds. For example, Mydel have a wideband scanner antenna on the market suitable, it is claimed, for reception from 25-1300MHz (1.3GHz). Revex have three on the market - Revex HX8000, HX7000 and HX800 - all with TX capability on 144/430MHz and with a varying gain which, it is alleged, increases with frequency. There is also a Scanmaster Flexi whip that offers coverage up to 900MHz - more than adequate for general purpose scanning.

In practice, replacing your supplied whip may well improve things on a particular band. Then again, it may not! At my QTH I use a Yupiteru VT-225 for Mill/Air and a Yupiteru VT-225 for Mill/Air and Marine listening. The Yupiteru supplied whip is brilliant on Mill/Air mobile use and should be available in the UK during July. Importers are Nevada.

Last questions now, this time from **Terry Gaff** of Dublin. He has an Optoelectronics 2300 frequency counter and wonders if anyone in case you are wondering, is hooked

# Many Radio Amateurs and SWLs are puzzled. Just what are all those strange signals you can hear but not identify on the Short Wave Bands? A few of them such as CW, RTTY, Packet and Amtor you'll know - but what about the many other signals?

**HOKA ELECTRONICS HAVE THE ANSWER!** There are some well-known CW/RTTY decoders with limited facilities and high prices, complete with expensive PROMS for upgrading etc., but then there is CODE3 from Hoka Electronics. It's up to you to make the choice - but it will be easy once you know more about Code3. Code3 works on any IBM-compatible computer with MS-DOS 2.0 or later and having at least 640K of RAM. The Code3 hardware includes a digital FSK Converter unit with built-in 230V AC power supply and RS232 cable, ready to use. You'll also get the best software ever made to decode all kinds of data transmissions. Code3 is the most sophisticated decoder available and the best news of all is that it only costs £329!

- Morse - Manual/auto speed follow. On screen WPM indicator
- RTTY/Baudot/Murray/TM2/CCTT2 plus all bit inversions
- Stör - CCR 625/476-4, ARQ, SBR/S/BRN FEC, NARTX etc
- AX25 packet with selective callign monitoring, 300 baud
- Facsimile, all RPM/OC (up to 16 shades at 1024 x 768 pixels)
- Autospel - Msk I and II with all known interleaves
- DUF-ARQ Artec - 125 Baud Simplex ARQ
- Twiplax - 100 Baud F7BC Simplex ARQ
- ASCII - CCTT 5, variable character lengths/party
- ARQ-90/98 - 200 Baud Simplex ARQ
- SI-ARQ/RS - ARQ1000 simplex
- SWD-ARQ/ARQ-SWE - CCR 518 variant
- ARQ-E/ARQ1000 Duplex
- ARQ-N - ARQ1000 Duplex variant
- ARQ-E3 - CCR 519 variant
- PCL-ARQ - 100 Baud Duplex ARQ
- TM242/ARQ-M2/4-CIR 242 with 1/2/4 channels
- TM342/ARQ-M2/4-CIR 342 with 1/2/4 channels
- FEC-A - FEC100A/FEC10
- FEC-S - FEC1000 Simplex
- Sports Intx. 300 Baud ASCII F7BC
- Helix/serber - Synch/Asynch.
- Stör RAW - (Normal Stör but without synchronisation)
- AAO6-70
- Baudot F7BBN
- Piccolo Mk6 12 tone/ASCII mode - coming soon!
- GMDSS 100 Baud system - coming soon!

All the above modes are pre-set with the most commonly seen baudrate setting and number of channels which can be easily changed at will whilst decoding. Multi-channel systems display ALL channels on screen **at the same time**. Split screen with one window continually displaying channel control signal status e.g. idle Alphabets/Beta/RQS etc, along with all system parameter settings e.g. unshift on space, **Shift on Space**, multiple carriage returns inhibit, auto to receiver drift compensation, printer on, system sub-mode. Any transmitted error correction information is used to minimise received errors. Baudot and Stör both react correctly to third shift signals (e.g. Crylic) to generate ungarbled text unlike some other decoders which get stuck in figures mode!

Eight options are currently available extra to the above specification as follows: 1) Oscilloscope. Displays frequency against time. Split screen storage/real time. Great for tuning and analysis. £35. 2) Piccolo Mk 6. British multi-tone system that only we can decode with a PC! £65. 3) Ascii Storage - Save to disc any decoded ascii text for later processing. £35. 4) Coquiel - French multi-tone system, again only on offer from Hoka! £65. 5) 4 Special ARQ and FEC systems i.e. TORG-10/11, ROU-FEC/RUM-FEC, HC-ARQ (ICRC) and HNG-FEC. £75. 6) Auto-classification - Why not let the PC tell YOU what the keying system is? £65. 7) SYNOP Decoder for AAXX & BBXX formats. FULL WMO station list. £35. 8) PACTOR (both Amateur and ICRG!). £25.

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 Towers on the A52. The Industrial Estate is on the  
 A52 on the Derby side of the town. Just turn onto the  
 Estate and follow the signs for the sale

# Info in Orbit

**D**uring recent weeks more mail for this column came from newsmen reading 'Info' for the first time. Readers' WXSAT pictures are impressive and they have written to ask for basic details on reception. I am pleased to be able to offer more WXSAT monitoring can be a totally absorbing hobby that brings new friends. Like astronomy and other scientific fields, you can do interesting projects and, if your spouse is not looking (!), you can spend hundreds or even thousands of pounds! Thanks to a lot of work done by enthusiasts, highly proficient software authors, you can even do some projects at minimal expenditure. Low cost (or even free) software is available to track satellites and decode their data.

## Recent WXSATS

The CIS WXSATS (METEORS) have all gone for long periods with few being used. During late May, only METEOR 2-21 was operating - transmitting on 137.40MHz. On May 25 it changed frequency to 137.85MHz. METEOR 3-5 was still off. It resumed operations a few weeks later on June 14, again using 137.85MHz. By late June METEOR 2-21 could be heard in the evening, switching back on as it entered sunlight near the North Pole. Using a satellite tracking program one can estimate when switch-on will occur - by noting when the WXSAT crosses the night-to-day terminator. I should point out that CIS operators are published in advance via FANAS bulletins (mentioned a few months ago), but I usually receive these a little late.

As at late June, METEOR 3-5 has remained operational. I left a tape recorder connected to my WXSAT receiver overnight, the latter tuned to 137.85MHz. No infra-red signals were received from either WXSAT.

## Future Launches

I received a listing of future launches from **Geoffrey Falworth** of Preston. As well as including the more predictable launches of the Shuttle

and CIS COSMOS satellites, I was surprised to see a new OKEAN is planned! It was scheduled for launch in early May.

The OKEAN series was (is?) an oceanographic research series of imaging satellites. Until a few years ago they transmitted sporadic (non-continuous) a.p.t. telemetry on 137.40MHz. I have a large collection of OKEAN data in the form of audio signals, recorded on standard audio tape, that I don't want to erase! The data decodes well using today's modern software.

If the new OKEAN does transmit a.p.t. it will almost certainly do so as unexpected as its previous siblings. If you want to try your luck, leave a WXSAT receiver tuned to 137.40MHz, feeding a tape recorder via a squelch control. If (after launch) it comes on near the UK, you may collect a few minutes of data that software should decode without problems.

## NASA Kepler Elements

NASA issued a formal notification on May 13 to all those receiving Kepler elements by mail. This much appreciated service will be discontinued on August 16 this year. Personally, I feel that this is sad but understandable and inevitable. The cost of running the service must be high, and the technology has moved ahead so much that it is virtually redundant. For many years now NASA have sent, without charge, weekly sets of elements for satellites that a user could specify.

The advent of computer networks has brought the world of high speed data right into our homes. One must admire the ability to log into remote BBS (Bulletin Board Systems) and to download the latest elements for the own BBS - RAID (Reports and Information Dissemination) for which it has issued a Users Guide. For those (particularly American readers) who want a copy, write to NASA at Goddard Space Flight Center, Greenbelt, Maryland, MD 20771 USA. The request should be addressed to Vicki Oxenham of the Mission Operations and Data Systems Directorate.

For UK readers it is data as usual - see Kepler elements paragraph near the end of this column.

## Readers' Pictures

**Laurence Patton** of Luncarty in Perth sent **Fig. 3** a large format image from METEOR 3-5, passing over the Kola Peninsula and White Sea. It shows the Gulf of Bothnia

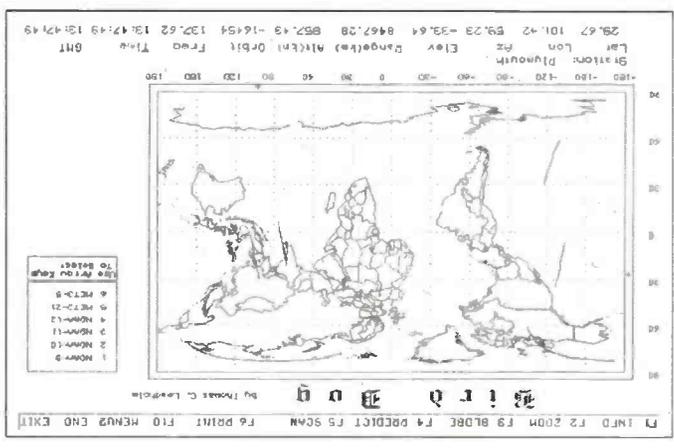
completely frozen over, and sheets of ice elsewhere. Laurence uses a Rigol receiver, with PRSatz running on his 386 computer. The image resolution of METEOR passes permits large pictures to be obtained without degrading quality.

## Satellite Tracking Software

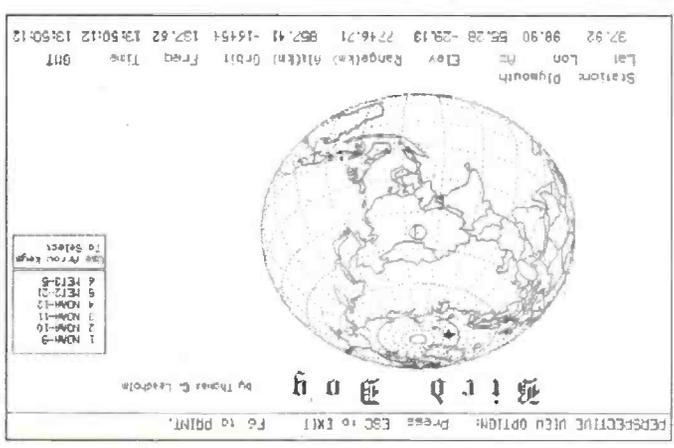
I often wish that developments in this field had happened some years ago! In my early days using a scanner to tune into satellites, I was surprised at the number of transmissions that were identified as of satellite origin. It is not easy to make unambiguous identifications without having some form of satellite program available to monitor several satellites simultaneously. During the eighties it had to be done on the BBC computer because that was used in schools

1993 has deep blacks that don't print for both clouds and land. This visible-light NOAA image from June 1993 has deep blacks that don't overlap the greys - a good quality printer is needed for this. Peter also tried an alternative method of image printing - obtaining a BMP (bit-mapped) format image, importing it to Windows, and printing it from Paintbox. Peter comments that this did not produce any better quality.

**Fig. 1: Screen dump from BIRDDOG.**



**Fig. 2: Screen dump from BIRDDOG.**



## Computer Requirements

A standard IBM clone fitted with a minimum 250K RAM cannot be described as excessive! The processor should be at least a 286 running at over 10MHz. A hard disk and VGA graphics are also required. I have had it happily running on my 286 for hours. The computer's clock must be set accurately (say to within a few seconds) in order to obtain accurate positioning. Kepler elements used within the program must be set to zero.

For UK users this should be set to include your QTH, i.e., your longitude, latitude and time difference from UTC. NEST.DAT can be edited to files which are separately edited. One The software includes interactive provided a grant.

Michigan in Ann Arbor, USA. NASA Environmental Research Institute of Education Program and the with the Space Technology Thomas C Leadon, associated tracking program. His author is has not yet obtained a modern considerable interest to anyone who shareware program that will be of month I am reviewing BIRDDOG, a been checking out a number of producing some good programs! I have where software writers were

## Presentation

When the program is run, the introductory screen identifies the author and associates. The main display is the conventional flat earth (Mercator) projection. On this, small, numbered and coloured circles, one for each chosen satellite (see satellite selection) are displayed. On the right is a table listing each satellite and its frequency, obtained from the appropriate file.

Land outlines are clear and other options provide impressive extra details - see later. Although each satellite position is regularly updated on the display, only the one highlighted has full information displayed on the bottom line. Satellite selection can be changed by moving the cursor. A total of 16 satellites can be simultaneously tracked - more than enough!

Leaving this display running (in real-time) produces a set of ground tracks - each satellite leaves an individual trail behind the circle - see **Fig. 1**. Given a hour or two the orbital characteristics become clear. You can periodically 'clear' the display if you feel that it has become too cluttered with tracks. Choices are made using the function keys. For my own use I set up the four NOAAs, two METEORs and MIR.

## Zooming and 3D

Options are selected using the function keys shown on the top line of the display. Selecting F10 provides a new menu with further options. F1 (INFO) produces a complete list of all function key commands. F2 is the ZOOM key that zooms in on the ground track of the selected satellite. This shows the approximate field of view seen by the satellite so can enable a positive identification. If you have sufficient RAM, it might be possible to use the DOSSHELL program to run both this and your decoding program simultaneously on one computer; I sometimes use DOSSHELL to run up to three programs. WINDOWS can perform similarly. Zoom is a very useful facility.

F3 (GLOBE) produces a 3-dimensional globe of the earth with the selected satellite's ground track super-imposed. As time passes, the rotation is simulated by small movements of the detail - impressive! This option works best with faster processors but was adequate on my 286.

F4 (PREDICTIONS) starts the process of calculating predictions for the selected satellite. It runs quickly, leaving a trail and simultaneously creating a text file containing position tables. The process is halted by pressing a key, followed by 'Escape'. A scrollable window then opens above the graphic. This shows the table of UTC with positions in various formats. The text file can also be accessed by a word processor, or simply printed. Remember to delete it when you have finished, or such files will soon swamp your disk! The filenames are tagged appropriately.

F5 is SCAN, perhaps the most useful option. It causes the program to

test each satellite's position for elevation above the QTH and will sound a beep when any rise above your horizon. The alarm can be disabled. Details for each satellite are sequentially printed in the lower line.

F6 dumps the screen - including graphics - to an attached printer. I used this option to produce two screen dumps - **Figs. 1 and 2**. The remaining two options shown are F10 to switch to the second menu, and END that terminates the program.

## QTH and Keplers

On the second menu, F8 lets you edit your station parameters, so find your latitude, etc., first! If you don't know your height above sea level, try 100m - its not that critical.

F9 (ELEMENTS) is used to manage the Kepler and satellite selection files. Before using it you must set up these files - one containing recent Kepler elements - called KEP.LOG, the other containing your display requirements - called BIRD\_LST.DAT. These satellites are the ones that you want actually shown on screen. You can have 80 or so in the first file, but you would never want so many displayed simultaneously!

The format for this latter file includes three lines per satellite - the name (e.g. METEOR 2-21) as given in your large Kepler file, the name (e.g. MET2-21) to be displayed on the screen (keep this extremely short), and finally the transmission frequency (e.g. 137.85).

When this is set up (using your word processor to produce ASCII files), run the program and select F9. It will detect that the final file already exists (unless you renamed it for safety). Opting for an overwrite lets the program continue and, all being well, a new set of data is produced. If your editing was OK then the process finishes and the neat listing is displayed on the right. One small error and failure results - but with useful error messages. This editing process is critical and fiddly but easily mastered. Future updates to your Kepler file are easy to prepare from data obtained directly from BBSs.

## Other Function Key Options

A screen full of tracks and rectangles (produced by some of the facilities) can be cleared using shift-F2. Time-lapse mode can be entered via control-F4, calculating, either forwards or backwards, when satellites will come over your horizon. A variation is obtained using shift-F4 when the predicted paths are not drawn on screen. In each case a text file listing is produced, allowing printing or study at leisure.

## Predictions Accuracy

There are two factors that affect the overall accuracy of this and similar programs. The first is the accurate position of your QTH - stored in the NEST.DAT file. Ensure that you have entered this properly. The second factor is the age of your Kepler data. I



**Fig. 3: Kola Peninsula from Laurence Patton.**



**Fig. 4: NOAA visible image 27 June 1993 from Peter Law.**

would suggest using new data every four to six weeks. Longer than that and errors of a few minutes may accumulate. Using current elements and an accurate QTH I had no problems.

## Documentation

This is comprehensive, but note the supplementary file which points out the change (upgrade) for Kepler element manipulation! This has been improved (it says). Careful study of this large text file is well worth while and should cover all queries.

## Bugs

I found little to complain about! The program halted on a few occasions after I had been changing the element files, but in general I used it for hours without problems. Occasionally a character on the screen was not cleared correctly.

## Conclusion

Super program, especially for the beginner or those who have not purchased commercial software. I needed this eight years ago! It is described as shareware but I was unable to find an address for possible registration included in the documentation.

## Availability

BIRDDOG can be obtained from certain specialist suppliers such as RIG (Remote Imaging Group) or from a number of BBS (see my listing of two months ago). Alternatively I can supply a copy together with the latest Kepler elements for the program. Please enclose a pre-paid return package with a formatted (IBM) disk, together with 50p towards my own acquisition costs!

## Kepler Elements

Different options are available.

I will send a print-out of the latest WXSAT elements and transmission frequencies (including MIR) upon receiving an s.a.e. and separate, extra stamp. This data originates from NASA.

I already send monthly Kepler print-outs to many people. To join the list please send a 'subscription' of £1 (plus four self-addressed, stamped envelopes) for four editions. I can also provide files containing recent elements for the WXSATs, and a 0.6Mb ASCII file holding recent elements for thousands of satellites. This option includes a print-out identifying NASA catalogue numbers (for the WXSATs, amateur radio satellites, and others of general interest), in both launch and object format. Notes are provided. Please enclose cash, a cheque, or PO for £3 (covers transmission costs) with your PC-formatted disk (preferably 1.4Mb) and s.a.e. Further suggestions for improvement will be welcomed.

## Finally

Regular readers of 'Info' will be pleased to know that I resumed semi-'normal' employment during June. I am working as a computer consultant for a few weeks before re-entering full-time computing work in early September.

## Frequencies

NOAAs 9, 11 a.p.t. on 137.62MHz; NOAAs 10, 12 on 137.50MHz; NOAA beacons on 136.77 and 137.77MHz; METEORs use 137.30, 137.40 and 137.85MHz and OKEAN a.p.t. may reappear on 137.40MHz.

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**PROsat II** is used by most leading Weather Satellite enthusiasts. Lawrence Harris, Roger Ray and Brian Dudman are just a few who have come to rely on the vastly superior features of **PROsat II**. Features such as 1,000 frame full screen full colour animate, 3D, direct temperature readout and Windows export make Timestep products preferred by most users. All satellites are catered for including the awkward Japanese GMS and the very infrequent Soviet Okean series. All current SVGA cards are supported. NOAA images contain full resolution visible and infrared data in a stunning 2.4Mb file!

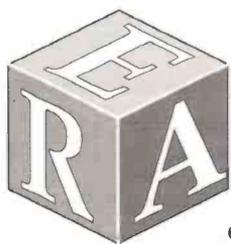
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For years the Microreader has been one of the most successful and widely used decoders in Britain and has opened up the world of utility decoding for thousands of listeners and hams. With the Microreader you don't need computers, monitors or any special equipment simply plug into your speaker socket and turn on. What could be simpler? But don't be fooled by its small size and low price, the Microreader is powerful and can match the performance of other big box units. The built in tutor has helped hundreds to learn to read and send CW perfectly. The latest version 4.2 firmware is the result of listening to what people want and expect from a decoder and combines ease of use with the highest ever level of performance.

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# Decode

## All the Data Modes

**Brian Dawson** of Stafford started his radio interest back in the 40s and 50s when he used to build basic t.r.f. (tuned I radio frequency) and short wave receivers. This initial interest was followed by a long period of inactivity until his retirement back in 1989. Although he still had plans to build his own receivers, he was soon put off by the complexity and miniaturisation associated with modern designs. The solution was to set himself up with a Lowe HF-225, PR-150 preselector and a Datong FL-2 external audio filter. Having spent some time monitoring amateur transmissions, his interest was captured by the other strange noises on the bands and he soon turned to utility listening. After a brief run with the popular Microreader, he now uses the Momentum MCL-1100 decoder that I reviewed in a recent *SWM*. Brian is very pleased with this unit and finds the display clear and the unit very easy to operate.

**Day Watson** of Clevedon provides lots of support for the column and has supplied some updated callsigns for the Serbian news agency TANJUG as follows:

- 5.24MHz YZI-213
- 7.658MHz YZI-223
- 7.806MHz YZI-225
- 11.604MHz YZI-233
- 12.2125MHz YZI-234
- 13.44MHz YZI-235

Day also reports some interesting DX FAX from Taipei Met on 13.9MHz. Pictures received as follows:

- 1320 Satellite pic of Far East
- 1500 Forecast in Chinese print
- 1600 Surface analysis India/Pacific

He reports some other weak FAX signals from Bangkok (7.3945MHz), Seoul (7.4335MHz) and Pretoria (7.5082MHz)

### New Utility Books

Two new editions of popular books have been released for sale this month. *Ferrel's Confidential Frequency List* compiled by Geoff Halligey is now in its 9th edition. This excellent publication has retained its metal spiral bound format and clear text style. I particularly like the spiral binding as it lets you fold the book back on itself without causing any damage.

The frequency list is very comprehensive and stretches from 1.6 through to 30MHz and includes all except broadcast stations. Each station is listed with its frequency, mode callsign, location, transmission type and a remarks column. This final column contains useful notes such as the paired frequency or known

transmission times.

The main frequency list is supplemented by a wealth of useful reference data that will prove invaluable to the utility listener. There's even a useful introduction to help the newcomer understand just what utility listening is all about.

The book is available from the *SWM* Book Service and costs **£17.95**. My thanks to **Geoff Halligey** for the supply of the review copy.

Next book for this month is the fourteenth edition of the *Klingenfuss Guide to FAX Radio Stations*. This book has established itself as the standard reference for FAX enthusiasts and contains essential of information that cannot be found in any other single publication. In addition to the simple frequency list and station schedule, there are a wide range of sample FAX charts. These range from original masters through to copies of distant stations. The provision of the charts helps to give a clear indication of what can be achieved and illustrates the various types of interference problem.

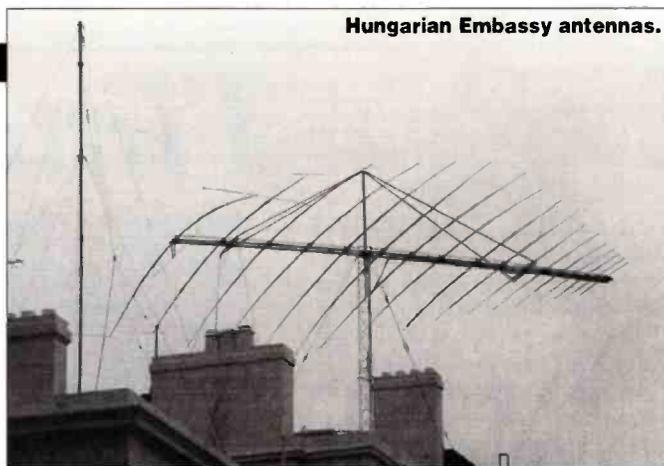
The guide also includes vital technical information on l.f., h.f. and satellite FAX systems. This includes full details of the APT systems and control tones.

The *Guide to Fax Radio Stations* is also available from the *SWM* Book Service and costs **£18.00**. My thanks to **Joerg Klingenfuss** for the supply of the review copy.

### Decoder Configuration

With so many newcomers starting utility listening, I thought it might be helpful to look at an area of decoding that's rarely discussed. Most decoding systems include a configuration option where the operator can adjust the default settings to suit his or her personal preference. It is this area that I'll take a look at this month and I'll use the HAMCOMM configuration file to illustrate the practicalities.

Those of you with computer based decoding systems will most likely find the default or configuration details held in a special file, probably with the extension .CFG. In the case of HAMCOMM, the start-up configuration is held in a file called HC.CFG. This is a simple ASCII text file so it can be edited with a text editor and printed-out on a standard printer. The standard config, file supplied with HAMCOMM is particularly helpful as the author has included a full commentary with each of the settings. With this program you can either store your favourite settings in the default



Hungarian Embassy antennas.

configuration file or create a number of your own configuration files. The latter solution has the advantage of flexibility, but you do have to specially load it after the program has been started.

Those of you with stand alone decoding systems will find that the default configuration data is usually stored in a battery backed memory system. Whilst this means your favourite settings are always available, it does not generally allow multiple settings to be stored and retrieved.

Let's now move onto the nitty gritty and see how life can be made easier by careful adjustment of the configuration settings.

The HAMCOMM configuration file starts with the serial port settings. These are very versatile and enable the operator to choose the preset COM1 or COM2 or set-up a completely new COM port. This is particularly flexible as you can set both the base address of the port and the IRQ it is to use. This should enable the configuration to be set for just about any configuration.

Next on the list comes the setting of times zones and differences. If you haven't already twigged, it is standard international practice to use UTC for all log keeping. Because of this it's as well to set your decoder so that it displays UTC rather than local time. This can either be done by setting the computer's clock to UTC or by setting the appropriate time difference in the configuration. Of course, in the UK this only really applies during the summer months. Hamcomm users can use set timezone UTC and set timediff -3600 to handle this.

One of the most important time savers can come from optimising the start-up decoding mode and its settings. It can be so frustrating to have to reset the mode every time you switch on and with many decoders this is so easy to correct. In HAMCOMM this is done using the set mode line in the CONFIG file. For example set mode baudot makes Baudot or RTTY the start-up mode. In addition to setting the mode, it's useful to be able to set the other parameters such as baud rate, shift and centre frequency. The setting of the centre frequency is particularly valuable as you can set this for optimum results with your receiver. Although there are 'standard' tones used by many systems, it's as well to take advantage of the facility to adjust the centre point. So where should we set it? To decide this we need to think about the sort of signals we're likely to be receiving and

in particular the shift being used. If you have a general interest in utilities and receive commercial and amateur RTTY and FAX the widest shift you're likely to encounter is 800Hz. Now the s.s.b. frequency response of the receiver usually extends from around 300Hz up to a maximum of 3kHz. However, the response towards the ends of this range is often rather unpredictable and needs to be avoided. My personal favourite is to centre on 1200Hz so that the received frequencies span from 800Hz to 1600Hz. In most receivers, this is about the flattest part of the response. There is the added advantage that any built-in filters have maximum versatility when operating on this middle range of frequencies.

Other important decoding settings are the keying (normal/reverse) and auto unshift-on-space. The HAMCOMM system has another particularly useful feature in its ability to suppress the reception of blank lines. This is great for saving memory when using unattended monitoring.

Let's just finish off this section with a sample CONFIG file for HAMCOMM.

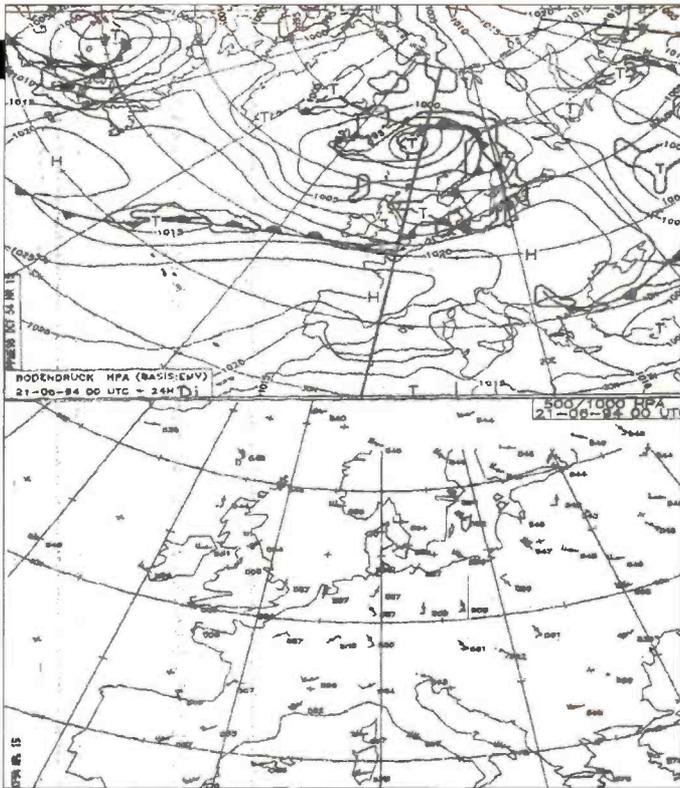
```
HAMCOMM Utility configuration
file
select port com2
set timezone UTC
set mode baudot
set baud 50
set wpm 20
set afcenter 1200
set afshift 400
set afc off
set autounshift off
set rxblanklines on
set keying normal
set wxdecode on
set rxbuffersize 512
set rxwindowlines 75
```

### Atari Software

**Dave Miller** of Stockport has written with some interesting information for Atari ST owners. Dave has been writing software for the past few years and has come up with a brand new decoder for the Atari ST. Don't get too excited yet because it's not completely finished, but I can give you a preview to whet your appetite.

The interface to the radio uses the same principles as most computer based decoders with a comparator mounted in the serial port plug. The only difference is that he uses the CTS lead instead of the more common DSR lead.

Although full automatic picture



transmission (APT) is not yet supported, it is able to receive all the standard FAX formats, e.g. IOC 288 and 576 plus drum speeds of 60, 90, 120 and 240 r.p.m. Despite the lack of full APT, Dave's program can detect and synchronise to the start of a FAX transmission. If you start the decoding manually you have the option to nudge the picture to the left or right to regain synchronisation.

Once your picture has been received you have the option to print to an Epson 24 pin or compatible printer or save to disk using GEM IMG or Degas P13 formats. Just to complete the line-up there's a built-in tuning indicator.

The next stage is for Dave to iron out a few minor bugs, finish the APT option and then the program will be distributed as shareware. To give you some idea of the type of results to expect, I've included a print or two with the column. As you can see from these, the quality is very good and well up to the standard produced by many commercial packages.

As soon as I have more details on where to get your copy I'll report it via the column. My thanks to Dave for all his hard work.

### Foreign Embassy Communications

Those of you with an interest in the more complex modes such as ARQ E, Twinplex, ARTRAC, POL-ARQ and HNG-FEC will have inevitably listened to many embassy transmissions. You may also have wondered why these odd codes are necessary. The prime reason is reliability. Each of these complex codes have some form of error correction to help preserve the message when operating under difficult conditions. Typically an embassy station will be based in a city centre and need to communicate over several thousands of miles to its home country. It's the city centre location that imposes the greatest limitations, as

there's hardly room for a full size antenna farm so compromises have to be made.

Recently, I had a photo of the Hungarian embassy antenna system that is typical of that used in city centres sent to me, see photo. The main beam is a steerable log periodic design that gives a good compromise between performance and size. The other major problem is that of locally generated noise, as any listeners living in a city centre will be only too well aware. Despite the rapid progress with satellite communications many of the smaller countries still use the traditional h.f. communications systems. I suspect this is related to a need to maintain their independence.

### Offenbach Meteo

The long wave transmissions on 134.2kHz have been a favourite with utility listeners for many years because of their excellent re-transmitted Meteosat pictures. **Phil Perkins** (of Pervisall fame) has sent me a copy of a recent transmission that gives a few clues as to the future of these transmissions. I'll reproduce the text in full here:

"To all recipients of Offenbach DCF37/54 facsimile broadcast.

As response to numerous inquiries the DWD informs that the long wave facsimile broadcasts DCF37 and DCF54 will not - repeat: not be terminated at the 1st of April 1994

Note: However, the DWD is preparing the replacement of the facsimile broadcasts DCF37 and DCF54 by a digital satellite broadcast in the second quarter of the year 1995, DWD will provide technical information on that matter to all known recipients of DCF37/54 within the next two months."

So it's good news and bad news! At least we can continue to enjoy until the middle of next year. If anyone has any further information on the changes, especially it's satellite format, please drop me a line.

### German Software

Knowing the high interest in new decoding software, I was very pleased to hear from **Martin Sinnaeve** of Sint-Andries, Belgium. He uses a Commodore A-1200 computer running the German decoding system, BONITO Radiocom II. I remember being sent an early PC version of the program some years ago, but the importer's went bust so that was the end of that!

The Amiga system comprises a small interface unit that connects to the serial port and a software package to handle the decoding and display requirements. In addition to being able to print out the received images, they can be stored in the standard IFF file structure and processed by a wide range of standard Amiga paint packages.

Martin reports that Radiocom II currently costs around 400DM (about £160) and is readily available with an English manual and screen text.

I'm not aware of any UK agents for the software so, if you're interested in a copy here's the address of the German company: BONITO, Peter Walker, Gerichtsweg 3, D 29320 Hermannsburg, Germany. My thanks to Martin for taking the trouble to write.

### Special Offers

The following special offers are available to Decode readers. Although I try to turn the orders around within a day or two you should allow up to two weeks for delivery.

**JVFAX:** Provides FAX and SSTV reception, transmission and image viewing facilities for PC users.

**HAMCOMM:** Provides RTTY and

CW transceive facilities for PC users. This program is supplied with PKTMON12 which enables reception of h.f. and v.h.f. packet signals.

### Day Watson Beginners List:

This comprises a chronological listing of reliable utility signals designed to ensure that the new listener can easily find some signals to decode. These are also some good listening tips and explanations.

**Decode List:** This is a straightforward frequency list of around 3 to 4 pages of reports sent in over recent months by Decode listeners.

**FactPack 1 - Interference Problems:** This provide practical help in solving those difficult to cure interference problems with a special accent on computer noise.

### Ordering Detail:

JVFAX or HAMCOMM: For each program send a blank formatted 3.5in disk (720K or 1.44M) plus 50p and a self-addressed sticky label.

FactPack 1 or Beginners or Decode List: 50p and a self addressed sticky label

Both lists plus JVFX or HAMCOMM: blank formatted 3.5in disk (720K or 1.44M) plus £1.50 and a self-addressed sticky label.

All five offers, send £2.50 plus a self-addressed sticky label.

### Frequency List

Finally it's time for this month's selection of reader's logs. This month the main contributors are: **Geoff Crowley, P. Hardy, Robert Hall, Chris Durkin, Steve Workman, Steve Walker, Day Watson** and Brian Dawson. My thanks to everyone else who has sent in logs, these have all gone into compiling the latest Decode listing.

Freq (MHz)	Mode	Speed	Shift	Call	Time	Notes
0.1342	FAX	120	576	DCF54	1330	Offenbach Met
3.6073	ARQ	100	170	GKZ1	2043	Humber Radio
4.292	CW	-	-	IAR	1952	Rome radio
4.5828	RTTY	100	850	-	1918	Hamburg Met
5.818	RTTY	50	400	9HA	1800	Malta air
6.369	CW	-	-	D3E41	2239	Luanda
6.972	RTTY	50	400	-	1539	Rompress
7.4029	RTTY	50	850	JMG3	1856	Tokyo met
7.4646	FAX	120	576	5YE	1900	Nairobi met
7.801	RTTY	50	400	9BC22	1720	IRNA press
7.959	RTTY	50	400	9BC23	1715	IRNA Press
8.4657	FAX	60	576	JJC	1743	Tokyo R Newspaper
9.0408	RTTY	100	850	5YE	2007	Nairobi
9.395	RTTY	50	400	KCNA	2307	Pyongyang
10.162	RTTY	50	400	YIL70	1028	INA Baghdad
10.28	POL-ARQ	200	255	SNN-299	-	MFA Warsaw
12.75	CW	-	-	IRM	1550	Rome medical
13.565	RTTY	50	400	3MAZZ	0759	Taipei currency gen
14.452	RTTY	50	400	KCNA	0800	Pyongyang press
14.762	ARQ	100	170	NNNGKF	-	USN MARS
14.879	RTTY	50	400	JMG4	1543	Tokyo Met
16.102	ARQ	100	170	HBD36	0925	UNHCR Berne
16.829	ARQ	100	170	SVUG	0812	Athens t/c list
18.04	RTTY	50	850	TCY4	1340	AA Press Ankara
18.173	RTTY	40	400	STK	1325	Khartoum Air
18.5521	RUM-FEC	164	375	-	1058	MFA Bucharest
18.552	ROU-FEC	164	200	-	-	MFA Bucharest
18.911	FEC-A	144	800	TAD	-	MFA Ankara
19.101	RTTY	50	400	-	1420	Indonesian Deplu news
19.747	FAX	120	576	-	1736	Dakar met
19.8078	SWE-ARQ	-	-	SAM	-	MFA Stockholm

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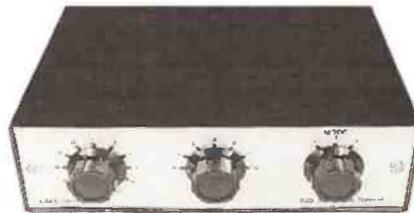
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# Watching Brief

## The Creative Side - 2

I promised to name products and suppliers this time and so I shall. There are dozens of products on the market, at all kinds of price levels, so I cannot mention them all. And those that I do should not be seen as having some particular commendation, although I must say I have heard nothing bad about these companies!

### Software

When it comes to software, the best stuff is commercial and not all that cheap but there are also some good folk who have written some public domain video programs. You can use these programs for nothing, although the authors will send you more fully featured versions for a small registration fee. I have collected together a disk with VTR countdown clock, colour bars, three test patterns and a simple title generator, and I'll be happy to supply readers with a copy (see below). But don't be tempted to use ripped off copies of commercial titling and graphics software even if you don't use it yourself for commercial purposes. If it's worth having, it's worth paying for. That's my motto anyway.

### Video Titling

When it comes to video titling and captioning, one of the joys of the PC over earlier home computers, is the sophistication of its effects (assuming you are using professional software). I'm not saying all the titling fonts look like the ones on 'real' television - often far from it - but it's a good starting point. The snag is, or rather was, that you could not record the video output of VGA graphics because the computer produces different line and field rates to our PAL standard television. Converter boards were available but expensive. Now Rombo has brought out a low-cost adapter called the VGA Buster Pro and although I haven't used it, another magazine rated it as the best they had seen. It produces RGB, Y/C (S-Video) and composite PAL outputs.

A more elaborate product of this kind comes from Vine Micros and they

also make frame grabbers, genlock overlays and chromakey devices of a high calibre. For video titling programs and programs to control your VCR for editing the best selection is with Maze Technology, although another program, *VideoDirector* from Gold Disk has had excellent reviews. There are some even better video titling programs on the North American market but you have to order these direct and they are not in the budget software category either.

### Amiga

I know somebody will scream about the Amiga being more suited to video titling, and it probably is. The shame is that whilst the basic computer is cheap, all the hard disks and other add-ons are not. In addition, now that part of the Amiga empire is in receivership, the long-term future of the machine is unclear. No doubt by the time you read this, something will have been sorted out but this doesn't alter the unfavourable cost of the peripherals. MSX3 is another nice machine with PAL output but it is not distributed officially in this country and has close to zero user support. So this leaves the PC-compatible machines as the most versatile, the most economic and in my view the most viable machine for home video production.

### Beginners Start Here

Ian Hughes wrote in from Walsall asking for basic information on 24cm reception and where the nearest repeater was. In his case the proposed Birmingham repeater would be a good place to look for information like that, also the address of the nearest amateur radio club, is in the *RSGB Call Book*. No enthusiast can afford to be without this reference work.

The next question was, are there any kits or ready-made 24cm receive converters? Yes, try Camtech Electronics Tel: (0440) 62779, Fax: (0440) 714147. They supply them and I rather recall that *Elektron* magazine had an article on one last year. There

have also been other makes (e.g. Fortop and Wood & Douglas) that are now out of production but these still turn up second-hand (e.g. on the bring & buy stalls at rallies, small ads in magazines). Also *CQ-TV*, the magazine of the British Amateur Television Club, has had constructional articles and you can buy back numbers from the club. The magazine also publishes an index to articles in back numbers and you can buy all these from BATC Publications. Alternatively you could use virtually any satellite receiver but it will either need modification or a powerful pre-amp.

Antennas. Do it yourself is possible but perhaps too demanding for a newcomer. Metalworking skills and accurate dimensioning are called for. In any case ready-made antennas are not expensive (£14 upwards) and are advertised in *CQ-TV* (from Severn side Television Group, Tel: (0225) 873098 after 19.00 or at weekends). Constructional details can be found in a book called the *UHF Compendium*, available from KM Publications on Tel: (0788) 890365 after 18.30 or at weekends).

### Computer Products Info

Gold Disk. Tel: (0753) 832383.  
VideoDirector editing software.

Maze Technology, Tel: 081-556 5620.  
Video Workshop for Windows, VCR Control SDK and PC-Titler Professional.

Rombo, Tel: (0506) 414631. VGA Buster Pro VGA to PAL converter. Vine Micros, Tel: (0843) 225714. MultiVideo system of plug-in cards for PCs.

Video utilities disk. Seven DOS (not Windows) programs and user notes. For PCs with VGA graphics. Available only on high density disks, 3.5in 1.4Mb or 5.25in 1.2Mb, not on lower density formats. To obtain your copy, send a formatted disk, a sticky label with your name and address and £1 to cover costs to Andrew Emmerson, 71 Falcutt Way, Northampton NN2 8PH. Allow 14 days for handling. Un-formatted and faulty disks will be returned unprocessed.

*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 carriage per tape. Available from BVG, Units 6 & 18, Industrial Estate, Brecon, Powys LD3 8LA. Tel: (0874) 611633, Fax: (0874) 622994.

Air Supply,  
83b High Street,  
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Amateur Electronics Holdings,  
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Blackburn BB2 1EF

Amateur Radio Communications Ltd,  
38 Bridge Street,  
Newton-le-Willows,  
Merseyside WA12 9BA

AMDAT,  
4 Northville Road,  
Northville,  
Bristol BS7 0RG

BBC World Service Bookshop,  
Bush House,  
Strand,  
London WC2 4PH

Bredhurst Electronics Ltd,  
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Handcross,  
Haywards Heath,  
West Sussex RH17 6BW

Cirkit Distribution Ltd,  
Park Lane,  
Broxbourne,  
Herts EN10 7NQ

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Vienna,  
VA 22180, USA

Flightdeck,  
192 Wilmslow Road,  
Heald Green,  
Cheadle, Cheshire SK8 3BH

Haydon Communications,  
132 High Street,  
Edgware,  
London HA8 7EL

Lowe Electronics Ltd,  
Chesterfield Road,  
Matlock,  
Derbyshire DE4 5LE

Lowe Electronics,  
Retail Branches:  
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Patchway,  
Bristol BS12 5JW

152 High Street,  
Chesterton,  
Cambridge CB4 1NL

Cumbernauld Airport,  
Cumbernauld,  
Strathclyde G68 0HH

34 New Briggate,  
Leeds LS1 6NU

Communications House,  
Chatham Road,  
Sandling, Maidstone ME14 3AY

Mitford House,  
Newcastle International Airport,  
Woolsington,  
Newcastle-upon-Tyne NE20 9DF

117 Beaumont Road,  
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Martin Lynch,  
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Ealing, London W13 9SB

QFL Communications,  
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Worle Industrial Centre,  
Corker Road,  
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Securicor PMR Systems,  
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Cardiff CF4 8JN

The Radio Place,  
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Sacramento, CA95824, USA

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Gasland, TX 75042,  
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# Propagation

During April, **Ron Livesey** (Edinburgh), using a 2.5in refractor telescope and a 4.0in projection screen, identified one active area on the sun's disc on days 17, 19, 20 and 26 and two on the 24th and 25th. In May, Ron observed one of these areas on days 12, 16, 17, 22 and 23 and two on the 13th, 14th, 18th, 19th and 20th.

At his observatory in Bristol, Ted Waring, located two sunspots on on his screen on May 9 and six on the 18th.

## Auroral

In his capacity as auroral co-ordinator for the British Astronomical Association, Ron Livesey received reports of auroral displays described as 'glow' for the overnight period on April 3/4 and 7/8; 'homogeneous arcs and/or bands' on 2/3, 10/11, 16/17, 29/30 and 30/01; 'rayed arcs and/or bands' on 4/5; 'ray structures' on 2/3, 10/11 and 12/13; 'active, moving forms, flickering, flaring, etc.' on 2/3, 3/4, 4/5, 5/6, 6/7, 8/9, 9/10, 10/11, 11/12, 16/17 and 18/19 and 'corona or half filled sky' on 2/3, 14/15 and 15/16, from observers ranging from Scotland to Canada and the USA.

Tone-A signals from radio transmissions reflected by an auroral event were heard on days 2, 3, 5, 6, 8, 11, 16, 17 and May 1. At the end of his monthly report to the BAA, Ron added that the big storm of April 16/17 was due to a coronal mass ejection and was well seen in New Zealand on 17/18 by many observers after the earth rotated under the auroral oval.

One of Ron's regular observers, **Jay Brausch** (North Dakota), reported seeing auroral 'glow' on May 29/30; 'quiet arc or band' on 4/5; 'ray bundles' on 3/4, 9/10, 11/12, 13/14, 14/15 and 23/24 and 'active pulsating' on 1/2, 2/3, 6/7, 7/8, 8/9, 28/29, 30/31 and 31/01. 'Rayed arc or band' was reported from Detroit on 2/3, a 'quiet arc or band' on 11/12 and observers on the Ocean Weather Ship *Cumulus*, at 5731 N, 2011 W, reported auroral glow on 6/7.

## Magnetic

The various magnetometers used by **John Fletcher** (Mt. Tuffley), **Andy Hollis**

(Winsford), **Tony Hopwood** (Upton-On-Severn), Ron Livesey, **Karl Lewis** (Saltash), **Ted Owen** (Maldon), **David Pettitt** (Carlisle) and **Tom Rackham** (Goostrey), between them, recorded strong disturbances to the earth's magnetic field on April 2, 3, 4, 6, 7, 9, 16, 17 and 21-23. Some members of this team also reported similar events on May 1-3, 11, 16, 24 and 28-31

## Propagation Beacons

As usual, my thanks are due to **Gordon Foote** (Bristol), **Cmdr. Henry Hatfield** (Sevenoaks), **Ian McDermid** (Comrie), Ted Owen, Ted Waring and **Ern Warwick** (Plymouth) for their 28MHz beacon logs and comments about the prevailing conditions on the band. From these reports I compiled this, the last of our monthly beacon charts, **Fig. 1**.

Henry Hatfield told me that EA3JA was 'very loud' at 0800 on May 22. Gordon Foote and Ted Owen added OH9TEN to the chart on the days indicated and Ern Warwick caught the two South American beacons PI7BQC and

PI7ETE. Our chart shows a lot of 'local' activity between May 16 and 22 and my DXTV column, elsewhere in this issue, has reports of Sporadic E openings on the 17th, 22nd and 26th. Although this identifies the cause of the extra activity I wonder if those sunspots that Ted Waring reported around that time had anything to do with it?

## Tropospheric Band II

**Arthur Grainger** (Carstairs Junction) found tropospheric conditions improved in April. He began receiving signals almost daily from Hallam FM and Manx FM. Also on the 22nd he logged Lincs FM and, during the morning of the 25th, he heard quite a few French and Dutch stations. This fits nicely with the warmer weather that arrived toward the end of the month.

On most days in May, Arthur received good signals from Lincs FM, Minster FM and Radio Leicester and on some nights he listened to good stereo from Manx FM. On the 8th he noted BBC Essex breaking through on 103.5MHz for the first time and, around 1035 on the 24th, he was

surprised to hear Wear FM on 103.4MHz, in stereo, from Sunderland. During the 24th, "the best day in the month for DXing," said Arthur, he added TFM from Cleveland on 96.5MHz. Although this area of the dial is very crowded he listened to TFM despite some interference from CFM, Q96, Radio Borders and West Sound.

While in East Jersey between May 29 and June 3, **Tim Bucknall** (Congleton) had a good tune through Band II and logged Radios 1, 2, 3 and 4 from Les Platens, North Hessory Tor and Rowridge. He added Classic FM from North Hessory Tor and Radio Jersey and a number of French stations including France Culture from Caen and Rennes.

## Barometer

Arthur's barometer was reading high at 30.3in on May 24 compared with 29.8in here in Sussex.

More precise details of the changes in the atmospheric pressure, for the period April 26 to May 25, can be seen in **Fig. 2**.

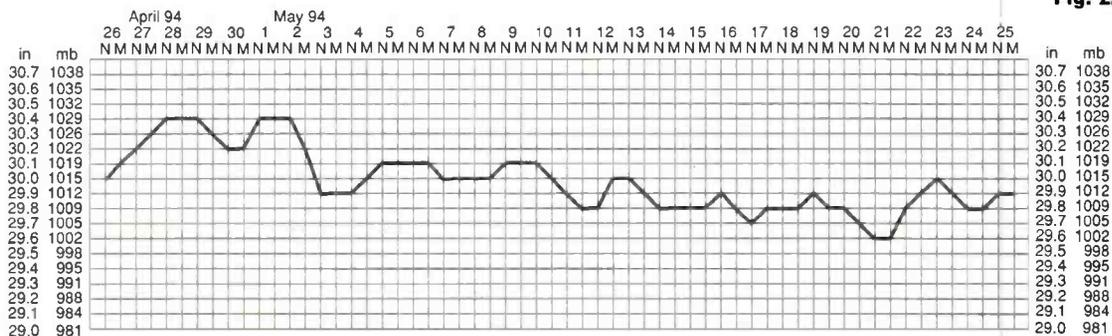


Fig. 2.

Beacon	April					May															Fig. 1.									
	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21	22	23	24
DF0AAB																														
DF0THD																														
DK0TEN																														
DL0IGI																														
EA3JA																														
HG6GEW																														
IK1PCB																														
IY4M																														
LA5TEN																														
OK0EG																														
OH2TEN																														
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ZS1J																														
ZS1LA																														
ZS6PW																														
Z21ANB																														
5B4CY																														

# LM&S

## Long, Medium and Short Waves

owing to the daily propagation variations in the higher frequency s.w. bands it may not be possible to hear the signals from a particular station on a regular basis, even though they are intended for your area.

In an attempt to combat this problem, many broadcasters provide simultaneous transmissions on one or more lower frequencies, so that listeners can select whichever offers the best reception. Such frequencies will be detailed in their broadcast schedule, but it may become necessary to change them at short notice, so listen to their opening announcements.

### 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 weeks ending June 4.

Sometimes the l.w. propagation conditions were quite good at night in May. The sky waves from Alma-Ata, Kazakhstan on 234kHz were heard for the first time by **Stephen Jones** in Oswestry. He logged their 500kW signal as SINPO 22222 at 2215UTC. He also heard very weak signals from Erzurum, Turkey (200kW) on 243 at 2203.

Some nights, the sky waves from Tipaza, Algeria on 252 reached the UK remarkably well. On May 2 unusually good reception was obtained by **Harry Richards** in Barton-on-Humber. At 2230 their signal was about equal in strength to that from co-channel Atlantic 252 in Clarkestown.

Good reception from Tipaza was noted around 2256 by **Martin Dale** in Stockport. By carefully turning his set he was able almost completely to 'null-out' Atlantic 252. The signal ratings in the report from **Sheila Hughes** in Morden made interesting reading. At 2225 on June 2 Tipaza was 43443, whereas Atlantic 252 was 33333.

Provided the ferrite rod in his portable was facing towards Algeria, **Andrew Stokes** (Leicester) was able to receive Tipaza around midnight most nights with very little trace of Atlantic 252. He logged their signal as a potent SIO444 at 0016. As Andrew has pointed out, the power of Atlantic 252 is reduced from 500kW to 100kW between dusk and dawn in an attempt to prevent the sky waves from causing co-channel interference within the service area of Tipaza.

In the daytime, **Clive Boutell** (Dovercourt, Essex) has noticed an improvement in the strength of the

ground waves from Atlantic 252. Reports from other areas would be welcome.

### Medium Wave Reports

The long hours of daylight discouraged most from waiting for the sky waves from distant stations to arrive after dark. However, checking the band during daylight, when only the ground waves are able to reach a point of reception, proved to be quite rewarding for some.

There was only one report of m.w. transatlantic signals reaching our shores. It came from **Sid Morris** in Rowley Regis. He spent a few days in Gwynedd, N.Wales and while at Cwm Nantcol on May 14 he searched the band throughout the night! He says, "I was very lucky to hear a total of 36 stations. I have never known the conditions so good". Most of the broadcasts he heard came from stations in New Foundland, Nova Scotia and New York state.

Since the closure of the Westdeutscher Rundfunk outlet at Langenburg some weak transmissions from other areas have been heard on 1593 - see LM&S May'94. On the evening of May 16 **George Millmore** (Wootton, IoW) picked up a fairly weak foreign language broadcast on 1593. The position of his loop suggested that the received signal was coming from Romania, where four low power transmitters are known to share 1593. They are located at Baneasa (14kW), Miercurea Ciuc (14kW), Oradea (2kW) and Sibiu (7kW).

The BBC will close down all of their Radio-1 m.w. outlets on July 1, to comply with a Government decision to use the frequencies for other radio services. Nevertheless, Radio-1 fans will still be able to receive the broadcasts in the v.h.f. band on frequencies between 97 and 99MHz.

Test transmissions were picked up on 1458kHz by **Roy Patrick** in Derby. They proved to be from Fortune 1458, a new station in Manchester. He found that he could receive them quite well during daylight by using a directional loop with his portable to 'null-out' co-channel BBC Radio WM. They were using a 5kW transmitter at Ashton Moss, so it seems likely that their broadcasts will cover quite a wide area.

Roy also informed me that Sunrise Radio (E.Midlands) on 1260 will be replaced by a new Asian station called Sabras Sound in September 1995. So many changes are being made to the m.w. broadcast services that it is quite difficult to keep up with

### Long Wave Chart

Freq (kHz)	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	L*,M*,P*
153	Donebach	Germany	500	A,B,C,D,F*,G*,H*,J,K,L,M*,N*,O,P,Q
153	Brasov	Romania	1200	B*,D,M*
162	Allouis	Fance	2000	A,B,C,D,E*,G*,H*,J,K,L,M*,N*,O,P,Q
171	Nador Medi-1	Morocco	2000	A*,E*,L*,N*
171	Kaliningrad	Russia	1000	B,C,D,G*,J*,K,L*,M*,N*,Q
177	Oranienburg	Germany	750	B,C,O,G*,H*,J*,K,L*,M*,N*,Q
183	SaarLouis	Germany	2000	A,B,C,D,G*,H*,J,K,L,N*,O,P,Q
189	Caltanissetta	Italy	10	B*,D*,L*
198	Droitwich BBC	UK	500	A,B,C,G,H*,J,K,M*,N*,O,P,Q
207	Munich	Germany	500	A,B*,C*,D*,F*,J*,K,L,N*,O*,P,Q
207	Azilal	Morocco	800	L*
216	Roumoules RMC	S.France	1400	A*,B,D,E*,G*,J,K,L,M*,N*,O*,P,Q
216	Oslo	Norway	200	G*
225	Raszyn Resv	Poland	?	A,B,D,E*,G*,J*,K,L*,M*,N*,P,Q
234	Beidweiler	Luxembourg	2000	A,B,C,D,E*,G*,H*,J,K,L,M*,N*,O*,P,Q
234	St.Petersburg	Russia	1000	B*,L*,N*
243	Kalundborg	Denmark	300	A,B,D,E*,F*,G*,J,K,L,N*,P,Q
243	Alma-Ata	Kazakhstan	500	H*
243	Erzurum	Turkey	200	H*
252	Tipaza	Algeria	1500	A*,C*,D*,G*,K,L*,N*,P*
252	Atlantic 252	Ireland	500	A,B,C,O,E*,G*,H*,I,J,K,L,M*,N*,O*,P,Q
261	Burg	Germany	200	A*,B,O,K,N,P,Q
261	Taldom Moscow	Russia	2000	L*,M*,N*
270	Topolna	Slovak Rep	1500	D,K,N*,P,Q
270	Orenburg	Russia	40	B
279	Minsk	Belarus	500	A*,B*,D,E*,K*,L*,N*,P,Q

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

#### Listeners:

A: Clive Boutell, Dovercourt.  
 B: Geoff Crowley, Aberdeen.  
 C: Martin Dale, Stockport.  
 D: John Eaton, Woking.  
 E: Alec Griffiths, Inverness.  
 F: Simon Hockenhill, E.Bristol.  
 G: Sheila Hughes, Morden.  
 H: Stephen Jones, Oswestry.  
 I: Ronald Kilgore, C.Londonderry.

J: Mary McPhillips, Co.Monaghan.  
 K: George Millmore, Wootton, IoW.  
 L: Fred Pallant, Storrington.  
 M: Aleksandar Radulovic, Southampton.  
 N: Harry Richards, Barton-on-Humber.  
 O: Tom Smyth, Co.Fermanagh.  
 P: Andrew Stokes, Leicester.  
 Q: Phil Townsend, E.London.

them! If you are aware of any please let me have the details for LM&S.

### Short Wave Reports

Conditions in the h.f. bands were far from good during much of May. Some broadcasters moved to lower frequencies in an attempt to provide a more reliable service and that resulted in a higher level of co-channel interference.

The **25MHz (11m)** band appears to have been vacated by all international broadcasters.

Daily variations were evident in the **21MHz (13m)** band and it often closed early in the evening. In the morning R.Australia's Darwin broadcast to Asia on 21.725 (Eng 0630-1100) often reached our shores. At best it was 33433 at 1040 by **Simon Hockenhill** in E.Bristol.

Also logged here in the morning were UAER, Abu Dhabi 21.735 (Ar to Eu 0800-1358) 35434 at 0800 by **Fred Pallant** in Storrington; also 21.630 (Ar to N.Africa 0800-1000) SIO222 at 0805 by **Bill Clark** in Rotherham; R.Pakistan, Islamabad 21.520 (Eng to Eu 0800-0845) 32222 at 0815 by **Bernard Curtis** in Stalbridge and (Eng to Eu 1100-1120) 44544 at 1108 by **Michael Griffin** in Ross-on-Wye; R.Portugal Int via Sines 21.655 (Port to Brazil 0700-? Sat/Sun) 24221 at 0824 by **Rhoderick Illman** in Oxted; Slovak R.Int via Rimavska Sobota 21.705 (Eng to Aust 0830-0857) 24312 at 0839 by **Leo Barr** in Sunderland; R.Japan via Moyabi 21.640 (Jap to Eu, M.East 0800-0900) 35443 at 0840 by **John Eaton** in Woking; BBC via Kranji 21.715 (Eng to SE.Asia 0900-1030) 25232 at 1028 in Barton-on-

Humber; BBC via Ascension Is 21.660 (Eng to Africa 0730-1745) 35333 at 1145 by **Geoff Crowley** in Aberdeen.

After mid-day HCJB Quito 21.455 (Eng, u.s.b.+ p.c.) 34333 at 1311 by **Gerry Haynes** in Bushey Heath; RCI via Sines, Portugal 21.455 (Eng to Eu, M.East, Africa 1330-1400) SIO444 at 1330 by **Phil Townsend** in E.London; R.Moscow Int 21.785 (Eng WS 0600-1500) 55444 at 1433 by **Ronald Kilgore** in Co.Londonderry; RFI via Allouis 21.685 (Fr to W.Africa 1200-2000?) 24433 at 1435 by **Eric Shaw** in Chester; UAER, Dubai 21.605 (Eng to Eu 1600-1640) 55555 at 1615 by **Chris Shorten** in Norwich; R.Japan via Moyabi 21.700 (Jap to Eu, M.East, Africa 1600-1700) 44444 at 1630 by **Robert Connolly** in Kilkree; WYFR via Okeechobee 21.500 (Eng to Eu, Africa 1700-1900), heard at 1700 by **Julian Wood** in Elgin.

Later, R.Nederlands via Bonaire 21.590 (Eng to Africa 1730-1925) was 44444 by **Laurence Mason** in Hassocks and 32322 at 1852 by **Aleksandar Radulovic** in Southampton; WYFR via Okeechobee 21.615 (Eng to Eu 1900-1945) 44223 at 1903 by **Eddie McKeown** in Newry.

Slightly more reliable reception of R.Australia was noted here in the **17MHz (16m)** band. Their Darwin transmission on 17.695 (Eng to S.Asia 0700-0900) was rated 33543 at 0815 by **David Edvardson** in Wallsend. In contrast, 17.750 from Carnarvon (Eng to Asia 0000-0530, 0700-0900) was 44444 at 0719 in Woking.

In the morning the BBC via Mayhe 17.885 (Eng to E.Africa 0500-1400) was 54444 at 0638 in Bushey Heath; R.Pakistan, Islamabad 17.900 (Eng to

Medium Wave Chart

Station	Country	Power (kW)	Freq (kHz)	Station	Country	Power (kW)	Freq (kHz)	Station	Country	Power (kW)	Freq (kHz)	Station	Country	Power (kW)	Freq (kHz)	Station	Country	Power (kW)	Freq (kHz)	
520	Hof/Hurzburg (BR)	0.2	520	520	France	300	1287	1287	France	300	1287	1287	France	300	1287	1287	France	300	1287	1287
521	Waver	80	621	621	Belgium	80	621	621												
522	Liège (RNE1)	10	612	612	Spain	10	612	612												
523	Worms	150/50	540	540	Belgium	150/50	540	540												
524	Sott	2000	540	540	Hungary	2000	540	540												
525	Sid Bannour	600	540	540	Morocco	600	540	540												
526	Les Trembles	600	549	549	Algeria	600	549	549												
527	Thurman (DLF)	200	549	549	Germany	200	549	549												
528	Espoo	100	558	558	Finland	100	558	558												
529	Berlin	100	567	567	Germany	100	567	567												
530	Tunis-Djedida	600	630	630	Tunisia	600	630	630												
531	Vigra	100	630	630	Norway	100	630	630												
532	Pranjalibice	1500	639	639	Czech	1500	639	639												
533	RNE1 via ?	?	639	639	Spain	?	639	639												
534	La Cornu (RNE1)	100	639	639	Spain	100	639	639												
535	Orforden (BBC)	500	648	648	UK	500	648	648												
536	Neubrunnburg (NDR)	250	657	657	Germany	250	657	657												
537	Madrid (RNE)	20	657	657	Spain	20	657	657												
538	Botswana (BBC Wales)	300/180	666	666	UK	300/180	666	666												
539	Botswana (SWF)	300/180	666	666	Germany	300/180	666	666												
540	Marseille	135	675	675	France	135	675	675												
541	Lopic (R10 Gold)	120	675	675	Holland	120	675	675												
542	Bodo	10	675	675	Norway	10	675	675												
543	Sevilla (RNE1)	500	684	684	Spain	500	684	684												
544	Vrsine (RDP1)	10	693	693	Portugal	10	693	693												
545	Brno (BBC5)	50	693	693	UK	50	693	693												
546	Brno (BBC5)	150	693	693	UK	150	693	693												
547	Enns (BBC5)	1	693	693	UK	1	693	693												
548	Enns (BBC5)	1	693	693	UK	1	693	693												
549	Enns (BBC5)	1	693	693	UK	1	693	693												
550	Enns (BBC5)	1	693	693	UK	1	693	693												
551	Enns (BBC5)	1	693	693	UK	1	693	693												
552	Enns (BBC5)	1	693	693	UK	1	693	693												
553	Enns (BBC5)	1	693	693	UK	1	693	693												
554	Enns (BBC5)	1	693	693	UK	1	693	693												
555	Enns (BBC5)	1	693	693	UK	1	693	693												
556	Enns (BBC5)	1	693	693	UK	1	693	693												
557	Enns (BBC5)	1	693	693	UK	1	693	693												
558	Enns (BBC5)	1	693	693	UK	1	693	693												
559	Enns (BBC5)	1	693	693	UK	1	693	693												
560	Enns (BBC5)	1	693	693	UK	1	693	693												
561	Enns (BBC5)	1	693	693	UK	1	693	693												
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563	Enns (BBC5)	1	693	693	UK	1	693	693												
564	Enns (BBC5)	1	693	693	UK	1	693	693												
565	Enns (BBC5)	1	693	693	UK	1	693	693												
566	Enns (BBC5)	1	693	693	UK	1	693	693												
567	Enns (BBC5)	1	693	693	UK	1	693	693												
568	Enns (BBC5)	1	693	693	UK	1	693	693												
569	Enns (BBC5)	1	693	693	UK	1	693	693												
570	Enns (BBC5)	1	693	693	UK	1	693	693												
571	Enns (BBC5)	1	693	693	UK	1	693	693												
572	Enns (BBC5)	1	693	693	UK	1	693	693												
573	Enns (BBC5)	1	693	693	UK	1	693	693												
574	Enns (BBC5)	1	693	693	UK	1	693	693												
575	Enns (BBC5)	1	693	693	UK	1	693	693												
576	Enns (BBC5)	1	693	693	UK	1	693	693												
577	Enns (BBC5)	1	693	693	UK	1	693	693												
578	Enns (BBC5)	1	693	693	UK	1	693	693												
579	Enns (BBC5)	1	693	693	UK	1	693	693												
580	Enns (BBC5)	1	693	693	UK	1	693	693												
581	Enns (BBC5)	1	693	693	UK	1	693	693												
582	Enns (BBC5)	1	693	693	UK	1	693	693												
583	Enns (BBC5)	1	693	693	UK	1	693	693												
584	Enns (BBC5)	1	693	693	UK	1	693	693												
585	Enns (BBC5)	1	693	693	UK	1	693	693	UK	1	693	693</								







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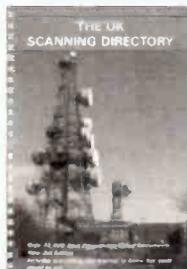
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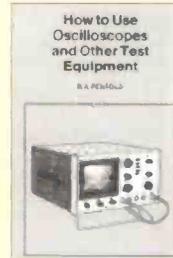
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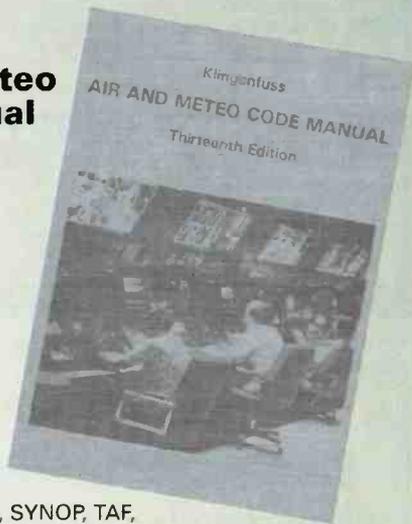
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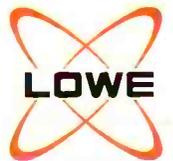
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