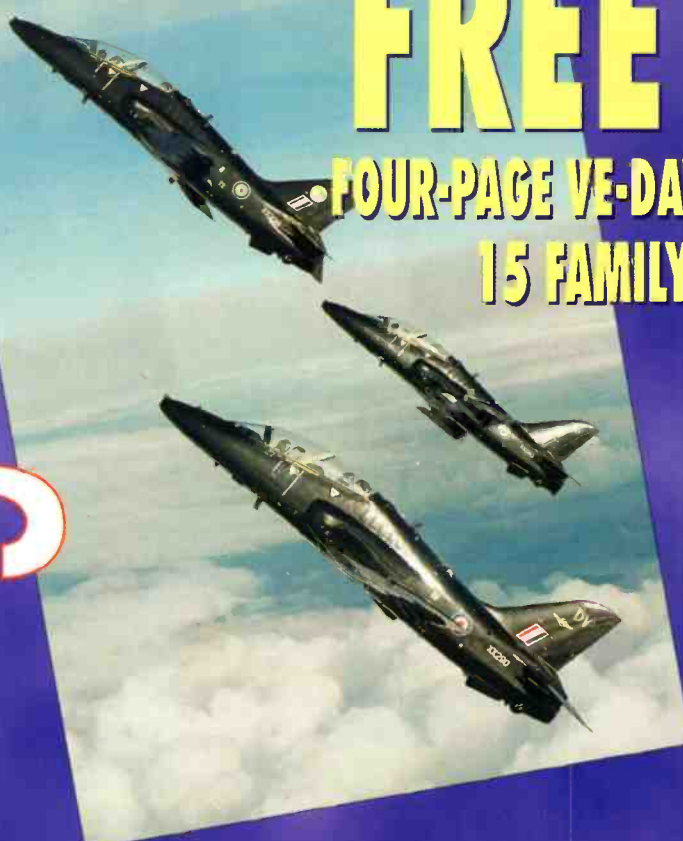


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RADIO LISTENER

shortwave magazine



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FOUR-PAGE VE-DAY AIR TATTOO PULL-OUT, 15 FAMILY TICKETS TO BE WON!!!

FIRST UK REVIEW AOR AR 2700



Reviewed PRO-2036 BASE SCANNER



June 1995 £2.25 ISSN 0037 - 4261

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37.000-224.995	5.0kHz	n.f.m.
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Cover Subject

We review two more scanners and give you a poster to put up on your wall.



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Good Listening

AIR TATTOO COMPETITION

SWM SERVICES

Subscriptions

Subscriptions are available at £25 per annum to UK addresses, £28 in Europe and £30 overseas. Subscription copies are despatched by accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both *Short Wave Magazine* and *Practical Wireless* are available at £42(UK) £47 (Europe) and £51 (rest of world).

Components for SWM Projects

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

The printed circuit boards for SWM projects are available from the SWM PCB Service, Badger Boards, 80 Clarence Road, Erdington, Birmingham B23 6AR. Tel: 0121 - 384 2473.

Photocopies and Back Issues

We have a selection of back issues, covering the past three years of SWM. If you are looking for an article or review, or whatever that you missed first time around, we can help. If we don't have the whole issue we can always supply a photocopy of the article. Back issues are £2.30 each, photocopies are also £2.30 per article, plus £0.50 for subsequent parts of serial articles.

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

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Technical Help

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

editorial

Air Tattoo

Those of you who are interested in aircraft get a bonus this issue - a pull-out poster and the chance to win 15 Family Tickets to the Royal Air Force Benevolent Fund's International Air Tattoo 95 being held at RAF Fairford, Gloucestershire. The competition is simple - just identify the aircraft from their silhouettes, fill in the entry form and attach the corner flash on the Contents page and post it. The Air Tattoo should be well worth attending, so get your entry off **now**.

While I am on the competition theme, have you remembered to save the entry coupons for the PRO-2035 scanner from the March and May issues of SWM? Affix these to the entry form in this issue and post it - you never know, it could be you!

VE-Day

It seems that large numbers of SWM readers were fired with enthusiasm as a result of the various articles in the magazine on radio and the war. Apparently, Bletchley Park was swamped with SWM readers wanting to see, at first hand, the things that they had been reading about! It's good to know that the editorial slant of the magazine is what you want.

It's also good to remember those who gave everything 50 years ago so that we can enjoy the ability to spend a weekend as we want!

Dick Ganderton G8VHF



letters

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

Dear Sir

I wonder if I may comment on the most interesting content of April SWM, which I read between London and Singapore at 39 000ft!

One reader writes in 'Letters' on page 5, about the patently ridiculous situation whereby the owners of scanner seem to 'commit an offence' just by turning on the power. Your writer mentions VOLMET, the continuous v.h.f. weather broadcasts that come from multiple sites on the same nominal frequency but actually offset, and intended for aviation use.

These VOLMET broadcasts are in fact public broadcasts in the v.h.f. civil airband and this alone is good reason to possess and use an appropriate scanner or radio.

I personally know of at least one major UK manufacturer/distributor in northern England who, when alerted to this during a technical discussion about bandwidths, successfully saw off 'The Authorities' when they, by chance, called shortly after to complain about that company selling airband receivers.

Have no doubts, the Gestapo are out there - the

trouble is that they seem to have massive time to waste on the wrong things, particularly when judged by the increasing and dangerous interference to our Air Traffic Control v.h.f. system from the 'electronics' now in use in every area of industry and office.

Philip Mitchell writes on page 17 of the same issue, about ATC Transponders (Secondary Radar) and he touches on an aspect that has confused me, and I think a good few others. The illustration of the Collins 621a ATC Transponder makes the point.

We (pilots) are always instructed to say 'squawk XXXX with Mode C'. So, we select not Mode 'C' but Mode 'A' and then turn on the altitude reporting switch ('ALT RPTG' as shown). Possibly, the correct instruction would be 'squawk Alpha XXXX with Altitude', this being the term used by most of the older breed of ATC Controllers. I would be most interested to hear what is correct, and I believe I am not alone in this.

Bob Sayers, on page 21, writes about Active Airband Antennas and touches on the problems of receiving airport transmission due to line of

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

Dear Sir

I write in the hope that you can help me make contact with my son, Robert Charles Day. Robert was an avid short wave listener during 1988/9. Then he moved away with work and I have not been able to contact him since. I hope that he is still a listener and that he will contact me via your offices.

William Charles Day

sight, etc. In fact, many airfield approach transmissions are from sites outside the aerodrome boundary, I think for technical reasons. Heathrow is one case, the approach transmitters being located at Feltham, about one mile short of Runway 27L touchdown.

However, last year Heathrow, Gatwick and Stansted (April '95) approach functions were centralised at LATCC West Drayton and now their v.h.f. transmissions come from multiple sites, even if on the same declared frequency. The same applies to the LATCC transmissions, and these are offset on either side of the declared frequencies, an aspect that many v.h.f. receivers/scanners cannot cope with!

**S. J. Duncan
New Malden
Surrey**

Letters

Dear Sir

I was very interested in your article - Building the MFJ-8400K 2 metre amateur band receiver. I too recently built this receiver and like you, had the same struggle trying to get the p.c.b. into the case.

I think I had to bend the front section of the case about 45° forward in order to get the p.c.b. in. This is the only fault I could see with this kit. Extending the case by 12mm from back to front would have solved this problem.

Anyway, having to withdraw the p.c.b. and putting it back several times for various reasons, I decided to do away with the case and use a 'box' of my own. This was 203x150x75mm, obtainable from 'Maplin'.

A cut-out for a forward facing speaker of slightly smaller dimensions than the MFJ was made in the front panel - along with the holes for the controls. An old half round dial calibrated 0-180° was found in the junk box. This was 76mm across and stuck to the panel with Araldite.

The pointer was extended with a fine hardened steel wire, this also was attached with Araldite. Incidentally, Maplin have a very nice Protractor 100mm across, calibrated 0-180° for £0.89. This would do very nicely for a dial. I have one, but have not used it.

A miniature mains power supply (home-built) was installed in the case. The receiver, of course, tunes from 144-148MHz. I am only interested in the 2m amateur band, so I decided to take out some of the moving vanes of the tuning capacitor. It seems rather drastic I know, as this is probably the most expensive part of the kit.

Using a Junior hack saw (152mm), I cut through the insulated part, holding the ends of the moving vanes together. Then, with a fine-nosed pair of

pliers (or tweezers), gently move the vane from side to side and it will easily come away from the centre spindle. I found that two vanes from each end of the rotary section (four vanes in all) is about right to cover the 144MHz band.

I am at the moment building a crystal calibrator for 1MHz and 100kHz to calibrate the receiver. I find this little receiver is quite sensitive and stable. I can receive all of the London repeaters on the small antenna provided - well, almost.

You need an outside antenna to see how well this receiver can perform. I have a 144MHz Slim Jim antenna up on the roof, which I built about 10 years ago from a design by Fred Judd. Connecting this to the receiver really bought them in.

Apart from the London repeaters - 'SN (Hants), 'VA (Aylesbury), 'DA (Sanbury), 'WS (Horsham) and other can be received, also many local mobiles and nets. I built the Ramsey 144MHz receiver a couple of years ago, but the MFJ is far superior.

I have been in radio since about 1930 when I was 11 years old, caught the 'bug' from an uncle of mine. I still get a great kick out of the radio hobby.

I have three Eddystone receiver here - one 940 and two 888As, heavy, but beautifully made. I'll take these anytime before those eastern Black Boxes.

I tried to get hold of an ERA12 going for about £80 a few weeks ago. No luck - at that price it went very quickly. Well, I hope that this has been of interest to you.

I have been reading *Short Wave Magazine* and *Practical Wireless* since the end of the last war - and even before the war I think! - with *Practical Wireless*! Thank you for two fine radio magazines.

Bert Clark
Balham
London



Dear Sir

Three years ago I wrote to *Short Wave Magazine* to comment on a review of the Yupiteru VT225 that had appeared earlier. In my letter, I further complimented on the performance of the beast and expressed a desire to correspond with someone in the UK with a similar aviation/radio interest.

I received, in time, many replies and wrote many letters in return. One such reply was from a young man (just turned 50 in fact) from Oxford, called Mike Wynn. We wrote a few letters back and fourth, then started making cassette tapes of what we could hear on h.f. and v.h.f. interspersed with family chatter.

In fact, not a week would go by when a parcel missed a letter box at either end of the globe! We have become the best of friends thanks to *Short Wave Magazine*. It's amazing how lifestyles can be so similar, no matter where one lives.

It would be true to say (from both ends) that we have made a considerable impression on the income of telecom and the postal systems both above and below the equator! We hope to get together in the near future with wives and families and plan to visit SWM, complete with our 'phone bills from Telecom!

Steve Rawdon
Wellington
New Zealand

We look forward to meeting you, I hope you can fit the telephone and postage bills in your luggage!



Dear Sir

I am writing to you about scanner users and the law. It reminds me of when I bought a tape recorder in the late 50s, early 60s. If you recorded anything off the radio, you were breaking the law. Now in 1993, I bought a double deck v.c.r. The manual that comes with it tells you how to record a programme on TV and how to copy tape to tape.

That means that if I go and hire a video from the shop with my v.c.r., I can copy it. After I have done that, the manual tells me I am breaking the law if I copy anything, and the same thing is true about scanners, so what do we do?

Break the law, say nothing about it and just carry on regardless?

Keith Doyle
Ashton-Under-Lyne
Lancashire

Dear Sir

In reply to Miss V. Roberts, Stroud, Glos., whose letter you published in *SWM* April 1995, and to any other person to whom it may amuse!

I am a licensed Radio Ham and have been for about 15 years, but have only in the past three years been interested in listening to airband frequencies.

I have a Yupiteru VT-225 scanner and one day last summer I had it stolen (or so I thought at the time) from my work's vehicle.

Very hesitantly (for obvious reasons) I telephoned the local Police Station to report the 'theft', and referred to it as a receiver, rather than a scanner! Three days passed by (by which time I had written it off and ordered a new one!).

The Police rang me to tell me that they had recovered it and asked me to come down to the station to identify the 'receiver'. Very gingerly I went, and to my amazement, the following occurred:-

"We have found your 'receiver' Sir", apparently it had not been stolen, but I had

placed it on the roof of my van and had driven off. It had fallen off the roof and had landed in the gutter at the side of the road (it was in a case, thank God).

I waited for 15 minutes in the Police Station, as they themselves has mislaid it! Soon after, a WPC come with the scanner - she said it had been with the Sergeant in his office for the past two days. He had actually been playing with it and had in fact picked up some local aircraft (from the local military base) on a Sortie!! and was very impressed. (This was the good news and now for the bad, I thought).

To my amazement they handed over the scanner and I signed the papers to confirm ownership and identity and was quickly on my way chuckling to myself!

So, the moral to this story is, be very careful, as not all the Police may be so sympathetic (or oblivious) to the fact that it is illegal to listen to all ? transmitters, i.e. Police, Aircraft, Ambulance, Marine, etc. Be very careful and discrete at all times and we will enjoy this fascinating hobby.

Name and address supplied

grassroots

* Short Wave Magazine & Practical Wireless in attendance

rallies

May 28: The 19th Annual East Suffolk Wireless Revival will be held at The Maidenhall Sports Centre, Stoke Park High School, Ipswich, Suffolk. Doors open at 10am to 4pm. There will be a Bring & Buy, car boot sale, vintage radio display, Novice stall, rig clinic, antenna test, RAIB, BYLARA and RAYNET stands plus lots more. Talk-in on S22 GB4SWR. Admission is £1.50 which includes car parking. Further details from **Bob Baal G7HZV** on (01394) 271257.

***May 28:** The Great Northern Rally, G-MEX, City Centre, Manchester. All the usual attractions, admission is £1.50. Doors open at 10.30am and close at 5pm. **0161-748 9804.** Yes! This is the correct date! This year, the rally has moved from its usual February slot.

May 28: The Maidstone YMCA Radio Rally. Route - M2 junc. 3 or M20 juncs. 4, 5, 6 or 7 then A229 to Loose Village, two miles south of Maidstone. OSX GX8TRF (S22) and GX3YSC (10FM and SU22) Exhibition h.t. station GX3TRY. Doors open at 10.30am (free 10am admission for severely disabled). Entry fee £1.50 per adult. All day videos, free sweets and sickly drinks for juniors. Snack bar also available. Do your own Bring & Buy, outdoor tables for hire. **(01622) 743317**

June 11: The annual Royal Navy Amateur Radio Society Rally will be held between 10am and 5pm on the Sports Field, HMS Collingwood, Fareham, Hants. **Clive G3YTD** on (01329) 234143.

***June 11:** The Elvaston Castle National Radio Rally is being held at the usual venue, which is the Showground of the Elvaston Castle Country Park, five miles south east of Derby. This is the 26th radio rally and should be the most spectacular event to date. **Keith Ellis G1ZLQ** on (01332) 662896.

June 17/18: The Bletchley Park Amateur Radio & Computer Rally is being held at Bletchley Park, Bletchley, Milton Keynes, Bucks. Doors open at 10am to 5pm, both days. This is a new rally in the grounds of the former Second World War top-secret code-breaking, cipher and intelligence centre. There will be special interest groups, Morse tests, numerous interesting displays, talk-in and a Bring & Buy. One price admission to rally and museum. For further details you can ring **(01923) 893929**.

***June 23-25:** Ham Radio '95 Friedrichshafen, Germany. The largest amateur radio show in Europe, and well worth a visit. The Flea Market alone is worth the journey and Friedrichshafen, situated on the Bodensee - Lake Constance to the English - and within easy reach of Austria and Switzerland, is a fantastic area for a holiday.

***June 25:** The 38th Longleat Amateur Radio Rally. Trade stands, club stands, free parking, catering and bar on site. Large Bring & Buy. £2.50 entrance fee for adults, £2 for OAPs and 50p for children. Further details from **Gordon Lindsay G0KGL** on 0117-940 2950.

July 2: The 6th York Radio Rally will be held in the Tattersall Building, York Racecourse, York. Doors open at 10.30am. Admission is £1.50. Children accompanied with adult FREE. Ample free parking. Amateur radio, electronics and computers, Morse tests and Repeater Groups. Refreshments and licensed bar. Talk-in on S22. **Dave Moreland G7FGA** (01904) 790079.

***July 8:** Cornish Radio Rally & Computer Fair. For further information contact **Ken G0FIC** on (01209) 821073.

July 9: The 1995 Sussex Amateur Radio and Computer Fair will be held at Brighton Racecourse, Sussex. Doors open at 10.30am to 4pm. This event brings together the best in amateur radio and computer technology. Admission is £1.50. There will be a free car park, a giant Bring & Buy, a bar and a talk-in on S22. Further details from **Ron Bray G8VEH, QTHR** on (01903) 763978 or (01273) 417756 office hours.

July 9: The Horncastle Amateur Radio and Computer Fair will be holding their Rally at the Grammar School Sports Hall. Horncastle is half way between Lincoln and Skegness on the A158 trunk road. For more information, you can ring **Tony Nightingale** on (01507) 522482.

July 16: The Norfolk Raynet Barford Rally will be held at the Village Hall, Barford, on B1108, Norwich to Watton Road. Doors open 10.30am to 3.30pm. There will be trade stands, a raffle and refreshments. Free car parking and talk-in on S22. Further details on (01603) 625833 daytime or (01362) 820820 evenings.

July 16: The 12th McMichael Rally and Car Boot Sale will take place at the Haymill Youth and Community Centre, Burnham Lance, Slough, near Burnham Railway Station. Talk-in on S22. Doors open at 10.30am. Admission is £1.50. For more details contact **Dave G3SET** on (01628) 486554.

July 23: Britain's biggest Outdoor and Leisure Show is due to take place at Powderham Castle, Nr. Exeter, Devon between 10am and 6pm. The show is situated in the grounds of the magnificent Powderham Castle on the edge of the River Exe. The show has a variety of different sections to cater for all, new and used sailing and power boats, used boat jumble, new equipment and lots more. There is to be an amateur radio section (new and used equipment) and a special event station is planned. Any enquiries to: **The Outdoor Boat and Leisure Show Ltd., c/o The Estate Office, Powderham Castle, Exeter, Devon EX6 8JQ** or you can ring (01626) 890243.

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.

AVON

Bristol International RC: Tuesdays, 8pm. The Fighting Cock Public House, Hengrove. All visitors are welcome. The club has been formed so that all radio enthusiasts, whether they be Licensed Amateurs, s.w.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. May 30: TVI - 'Kiss it better' by G3OUK. Dave Bailey G4NKT. 0117-967 2124.

South Bristol ARC: Wednesdays, 7.30pm. Whitchurch Folkhouse Assoc., Bridge Farm House, East Dundry Rd, Whitchurch. May 31 - How to adjust and calibrate an h.f. rig by G0KDS, June 7 - 80m activity evening, 14th - DXTV reception demonstration by R. Gardner, 21st - Preparation for Longleat rally. For more information ring (01275) 834282 on a Wednesday evening.

BUCKINGHAMSHIRE

Aylesbury Vale RS: Wednesday evenings, 8pm. Hardwick Village Hall, (Hardwick is situated off the A413 between Aylesbury and Buckingham). June 7 - Packet radio and DX cluster. Ivan Eamus G3KLT. (01296) 437720.

DERBYSHIRE

Derby & DARS: Wednesdays, 7.30pm. 119 Green Lane, Derby. May 31 - Computer shareware swap evening, June 7 - Junk sale, 14th - DXTV reception - a demonstration by Paul Hamer of HS Publications, 21st - Domestic fire safety - an illustrated talk by Station Officer Chris Walker of Derbyshire Fire Service. Mrs Hayley Winfield, 2 Hits Cottages, Crich, Matlock, Derbyshire DE4 5DD. (01773) 856904.

DEVON

Plymouth RC: Tuesdays, 7.30pm. The Royal Fleet Club, Devonport, Plymouth. May 28 - P.R.C. rally, 30th - Business meeting and field day brief, June 3 - BBQ and field day, 4th - Field day, 20th - Business meeting and rally facts. F. P. Russell on (01752) 563222.

EDINBURGH

Lothians RS: 2nd & 4th Wednesdays, 7.30pm. Orwell Lodge Hotel, Polworth Terrace, Edinburgh. June 14 - AGM. GM4DJJ, QTHR on 0131-337 7311.

GRAMPIAN REGION

Aberdeen ARS: Fridays, 8pm. RC Hall, 70 Cairngorn Crescent, Kincorth. May 26 - DIY spectrum analysis by Bill Wilson, June 2 - Junk sale, 16th - Treasure hunt. Martin G0MJCN. (01569) 731177.

GREATER LONDON

Edgeware & DRS: Thursdays, 8pm. Watling Community Centre, 145 Orange Hill Road, Burnt Oak. May 25 - NFD briefing plus constructors cup, June 3/4 - National Field Day. Rod Bishop. 0181-204 1868.

Southgate ARC: 2nd & 3rd Thursdays, 7.30pm. The Pavilion, Winchmore Hill Cricket Club, Firs Lane, Winchmore Hill, London N21 3ER. May 25 - Club radio on the air, June 8 - History of the Royal Navy signals by Ted G4NLR, 22nd - Radio on the air. M. E. Viney G0ANN. (01707) 850146.

HAMPSHIRE

Horndean & DARC: 1st & 4th Tuesdays, 7.30pm. Lovedean Village Hall,

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.

Lovedean Lane, Lovedean, Hants. May 25-29 - Operating a special event amateur radio station GB2EV at the Military Vehicle Rally, Southsea Common, June 6 - Natter night, 11th - Operating a special event amateur radio station at the Royal Naval Amateur Radio Society, annual rally at HMS *Collingwood*, Sports Field, Gosport, 10am to 5pm. S. Swain (01705) 472846.

Winchester ARC: 3rd Fridays, Red Cross Centre, Durngate House, North Walls, Winchester. 7.30pm. June 16 - Radio control within Falconry by Jim Chick G4NWJ. P. Simpkins G3MCL. (01962) 865814.

HEREFORD & WORCESTER

Bromsgrove ARS: 2nd & 4th Tuesdays. Lickey End Social Club, Alcester Road, Burcot, Bromsgrove. June 13 - Night on the air (h.f.). Barry Taylor. (01527) 542266.

HERTFORDSHIRE

Hoddesdon RC: Alternate Thursdays, 8pm. Conservative Club, Rye Road, Hoddesdon. May 25 - Visit to Hertfordshire Display Co. with John Watkins G4VMR, June 22 - BBQ at Tolmers Scout Camp. Visitors very welcome. Dave G1CAY on (01992) 460841.

KENT

Bromley & DARS: 3rd Tuesdays, 7.30pm. The Victory Social Club, Kechill Gardens, Hayes. June 20 - Direction finding hunt by Graham G4NPD and Alan G0TLK. A Messenger G0TLK. 0181-777 0420

Maidstone YMCA ARS: Fridays, 8pm. YMCA Sports Centre, Melrose Close, Maidstone, Kent, ME15 6BD. May 26/27 - Rally preparation, 28th - Rally - £1.50 admission, June 2 - Club night and nominations for AGM, 9th - AGM, 16th - Repair it - practical evening. (01622) 743317.

Medway AR & TS: Fridays, 7.30pm. Tunbury Hall, Catkin Close, Tunbury Avenue, Walderslade, Chatham, Kent. June 9 - Junk sale. G3VUN, 40 Linwood Avenue, Strood, Rochester, Kent ME2 3TR. (01634) 710023.

LANCASHIRE

Bury RS: Tuesdays, 8pm. The Mosses Centre, Cecil Street, Bury. May 30 - Inter-club quiz, June 6 - Committee, 13th - Equipment specifications by G4KLT, 20th - Shack night and beginner's c.w. class. Laurence G4KLT. 0161-762 9308.

MERSEYSIDE

Wirral ARS: 1st & 3rd Wednesdays at Ivy Farm, Arrowe Park, Birkenhead, Wirral. Informal natter nights on each Tuesday. June 7 - Visit to Liverpool Cathedral, 21st - Mersey tunnel control room. A. Seed G3FDD on 0151-644 6094.

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. May 31 - CW National Field Day, final briefing, June 3/4 - CW National Field Day, 7th - Night on the air/construction QRP/Morse practice, 14th - Visit to Norwich sorting office, 21st - Night on the air/construction QRP/Morse practice. Mike G4EDL. (01603) 789792.

NOTTINGHAMSHIRE

Mansfield ARS: 2nd Mondays, 7.30pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield.

June 12 - Amateur radio satellites by David Rowan G4CUO. Mick G0UYQ, QTHR on (01623) 792243 or Howard G1JGY, QTHR, (01623) 423697.

OXFORD

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

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

SHROPSHIRE

Salop ARS: Thursdays, 8pm. Oak Hotel, Shrewsbury. June 8 - RAE tuition and workshop evening, 15th - 3rd fox hunt. Ian Davies G7SBD, QTHR. (01743) 463711.

SOMERSET

Yeovil ARC: Thursdays, 7.30pm. The Red Cross Centre, 72 Grove Avenue, Yeovil. May 25 - Committee meeting and club station on the air, June 1 - A d.f. event by G3KSK, 8th - Short wave listening by G3KSK and G3ICD, 15th - Club visit to the Royal Signals Museum at Blandford, Dorset, 22nd - A Brains Trust, chaired by G7RG. Cedric White, QTHR. (01258) 473845.

WARWICKSHIRE

Stratford-upon-Avon & DRS: 2nd & 4th Mondays, 7.30pm. Home Guard Club, Main Street, Tiddington, Stratford-upon-Avon. June 12 - Open house/night on the air, visitors most welcome. Martin Rhodes G3XZO. (01789) 740073.

WEST MIDLANDS

Sandwell ARC: The Broadway, Warley. RAE class on Monday nights, Morse class on Wednesday nights and RAE Novice class on Thursday nights. Three operating shacks, h.f./v.h.f./u.h.f. Phone, c.w., RTTY, AMTOR, Packet, all bands. Talks, outings, contest and demonstrations. For further information please ring 0121-552 4619/0121-552 4902.

WEST YORKSHIRE

Denby Dale ARS: Wednesdays, 8.30pm. Pie Hall, Wakefield Road, Denby Dale, West Yorkshire. June 7 - Rally meeting, 18th - DDARS Rally, 21st - Antenna Clinic by Dave G0EVA. Denby Dale ARS also provides RAE, Morse and Novice RAE classes and is a registered City & Guilds examinations centre for both the RAE and Novice RAE exams. Further details from the examinations secretary Brenda G4OTE on (01484) 424776 or secretary Kevin G1FYS on (01484) 547553 for club activities.

Keighley ARS: The Ingrow Cricket Club, Ingrow, Keighley. Thursdays, 8pm. May 25 - Amateur TV demo by G3TQA, June 1 - Night on the air, 8th - Treasure hunt, 15th - Natter night, 22nd - Natter night, 29th - Cameo evening. Kathy G0RLD. (01274) 496222.

Wakefield & DRS: Tuesdays, 8pm. The Dsset Community Centre, Prospect Road, Ossett. June 6 - Two metre fox hunt, 13th - Guinea pigs by G0ISJ, 20th - On the air. Bob 0113-282 5519 or G3WWF/GB7WRG.

WILTSHIRE

Trowbridge & DARC: 1st & 3rd Wednesdays, 8pm. The Southwick Village Hall, Southwick, Trowbridge. June 7 - The club is holding its annual 144MHz DF competition, commencing at 19.30BST. Outside clubs are invited to take part in this two hour event. Ian G0GRI. (01225) 864698.

Grateful Thanks

I always knew that *SWM* readers were a generous bunch and you've proved it. A couple of months ago I mentioned Mr Haigh and his plea for bits to get a school radio club off the ground. A host of readers have sent donations (and I know there are a few more bits and pieces going from the *SWM* and *PW* offices over the next few weeks too). Mr Haigh would like to thank the following: Mr P Buxton, Mr J Murphy, Mr W M Rigby, Mr D A Fairhurst, Mr T Morgan, Mrs A Mahon, Mr R Finlay, The International Short Wave League, Mr John O'Neill and Mr P Lepino.

The school is running a special event station on May 19 using the call GX2UG, thanks to the Halifax Club and Esde Tyler. Mr Haigh sits his RAE in May so all the best of luck with the exam and with the school radio club. We await news of the exam and the club in future months.

After the Log

Simon Oliver (aged 16) has written in with an impressive log, all because of his new FRG-7 that he bought at the London Amateur Radio Show. His favourite band is 18MHz, as the following shows.

W2KAT at 1615 on 18MHz at 5/9
N2LMY at 2301 on 3.5MHz at 4/5
K0EOU at 1626 on 18MHz at 4/6
KA1VV at 1230-1546 on 18MHz at 5/8
KA1PE at 1230-1546 on 18MHz at 4/7
W2YD at 1230-1546 on 18MHz at 5/7
N3ADL at 1230-1546 on 18MHz at 5/8
9K2ZZ at 1110 on 18MHz at 5/9
W8RJ?? at 2215 on 18MHz at 5/7
K7RF at 2221 on 18MHz at 5/8
VE3YJ at 2230 on 18MHz at 5/4
WA1KTZ at 2235 on 18MHz at 5/4

He then goes on to ask an interesting question. How do s.w.l.s send QSL cards and do they have their own call signs for their cards? There are several different answers to that question, so let's deal with Simon as an example. He seems to enjoy listening to amateur radio stations from all around the world, but sending QSL cards to these amateurs individually can be very expensive and difficult if you don't know their addresses. You need to become part of the QSL Bureau you hear mentioned on the air all the time, as that's how most amateurs send and receive their cards. In this country it is operated by the RSGB and if you plan to send lots of QSL cards this

will more than cover the cost of your membership (and you'll get all the other benefits and expertise for free!).

When a listener joins the RSGB, I believe they get their own BRS number, which is like a callsign, e.g. BRS95787. This you can use when corresponding to amateur radio stations. You can have it printed on your own cards, and it identifies you when those amateurs send their cards back to you. Obviously, you have to lodge empty (but stamped) envelopes with the bureau for them to fill, but you'll get the details of what to do when you join the RSGB. The QSL Bureau is an amazing thing and by far the easiest (and cheapest) way to send cards world-wide. The address for the RSGB is Radio Society for Great Britain, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE. I don't know the current cost of membership, but there are discounts available to students, senior citizens, etc.

Now, if you are interested in only broadcast listening, then the RSGB bureau isn't going to help much. You will then need to send your cards direct to the broadcast stations you hear. This is when up-to-date listening guides pay off as they give you the current address and QSL information on that broadcast station. You may like to contact Radio Nederlands for a free copy of their *Writing Useful Reception Reports Edition 3*. This is a guide to writing to broadcast stations written by a broadcast station - so they should know how it's done! Contact Radio Netherlands, PO Box 222, 1200 JG Hilversum, The Netherlands. Whilst you are writing, I would ask for a copy of their

Kits

Whilst I was at the London Amateur Radio Show, I picked up a catalogue from C.M. Howes and thought I would pass on some of the information. Dave Howes G4KQH designs the kits and they range from active antennas through to complete receivers or transmitters. The prices also are wide-spread, from around £8 or so to about £55 for the kits (although you can opt to have a ready-built and tested version). When you

buy a kit you will get easy to understand instruction, all the bits you need to build the unit concerned and there's telephone advice available if you get stuck.

For beginners, kits can be a reasonably priced way into the hobby. Sometimes, when you've spent all your hard-earned cash on a radio, you've nothing left for the accessories. So why not consider a kit for a receiving a.t.u. (£29.90) or active antenna (£8.90), for example. If you are interested in obtaining a catalogue, the contact C.M. Howes Communications, Eydon, Daventry, Northants NN11 3PT. Tel: (01327) 260178.

Listener Services Catalogue, as this gives details of all the booklets they produce.

If you have joined one of the listening organisations, like the ISWL or MWDXC and the like, then you usually get a membership number which doubles as a 'callsign'. Sometimes these groups



operate an internal bureau for when you listen to a fellow members airing his amateur callsign on the bands.

In fact, many of the amateur radio groups like the Royal Naval Amateur Radio Society, RAFARS and RSARS operate an internal QSL bureau for members to send and receive cards between themselves. Each group will give you the information on joining.

Competition

Sorry, but due to my copy deadlines (early May) I can't tell you winners of the headphones yet. These results will appear in the July issue. The dispatch of the prizes will be organised by the *SWM* Editorial Office after May 26th (the closing date).

New Book

I've heard from the ISWL about a new book they have available, called the *ISWL's Guide to English Language Short Wave Broadcasts to Europe (Summer Schedules)*. The information is presented in time order with aligning programme time periods, country and station names, frequencies, programme details, etc. It costs just £1.50 including post and packing and they will accept IRCs or postage stamps if that is more convenient to purchasers. If you are interested, contact: International Short Wave League, 10 Clyde Crescent, Wharton, Winsford, Cheshire CW7 3LA.

GKA 75 This Year.

This year marks the 75th year of service for BT's long-range maritime and aeronautical radio station - Portishead.

The early 1920s first saw the callsign GKT appear on the airwaves. Initially from premises in Devizes, Wiltshire. 1924 saw the move to Portishead's current location at Highbridge in Somerset, with transmitters sited at Portishead, near Bristol.

Many changes have taken place since those early days. Satellite communication has now become commonplace amongst the shipping community, but Portishead still has plenty to offer. The aeronautical and 'Gateway' services provide a vital link from locations where normal telephone and telex lines are non-existent. In times of war and famine, Portishead can provide an essential link.

Planned celebrations during 1995 include an 'old boys reunion. Both employees and ex-employees can get together and reminisce. Any

sea-going radio officer who has used Portishead in the past will be welcome to visit the station during 1995. It is hoped that a 'radio officers' day can be arranged.

There are also plans for the compilation of a book of radio officers' anecdotes and reminiscences spanning the 75 years of Portishead's service.

Anyone who has had contact with Portishead Radio since 1920 and has any stories or anecdotes (humorous or otherwise), involving the station, they would be pleased to hear from you. The more material received the greater the likelihood that a commemorative booklet will be produced.

Contributions or requests for further information to: **Larry Bennett (Radio Officer), BT Portishead Radio, Worston Road, Highbridge, Somerset TA9 3JY. Tel: (01278) 772253, Fax: (01278) 772222, Tlx: 46441 BTGKA G.** All correspondence will be acknowledged.

SSL Tunes In

Following the recent announcement that Subscription Services Ltd. have been awarded a new contract to collect and administer licences on behalf of the Radiocommunications Agency, they now have a top quality improvement team to boost customer service for holders of the country's 120 000 amateur radio and citizens' band radio licences.

Headed by Bob Symons, SSL's Marketing Director, the team has already introduced a range of service improvements. These include: earlier despatch of validation documents, the introduction of renewal notices being sent to direct debit and standing order customers - for information only, state-of-the-art enveloping machines to speed up document despatch and easy to recognise envelopes so that licensees can pick out SSL correspondence from other mail. A Radio Licensing Centre 'Code of Practice' is also being produced, which will be sent out with the validation documents to all customers.

For further information, contact **The Publicity Department, Subscription Services Ltd., Barton House, Bond Street, Bristol BS98 1TL. Tel: 0117-921 9268. Fax: 0117-921 9097.**

Obituary: Rob Mackie

Those of you who have been reading *SWM* since it was relaunched as a magazine for listeners way back in April 87 will be sad to learn that Rob Mackie was killed in a road accident at the end of April.

Rob was the Art Editor of *SWM* for several years and was also responsible for most of the drawings and photographs in both *SWM* and our sister magazine *Practical Wireless* until May 1992. Our sympathies go to his widow and family.

National Transmitter News

Television Relay Stations

April 18 Sutton, Surrey. A new relay station, providing good television and teletext reception to about 740 people. The relay covers the Hallmead Road and Vermont Road area to its north, and St. Nicholas Way, Clarence Road and West Street to the south. It will also provide a service to Cressingham Grove and Milford Grove to the east of the transmitter. Provided jointly by the BBC and ITC the relay is located on Balaam House, a tall block alongside Collingwood Road, Sutton. Viewers wishing to use the new Sutton relay should consult a local television dealer or antenna contractor, but reception advice is also available from ITC Engineering Information and BBC Engineering Information.

Station Details

Channels:

BBC1 (South East)	55
BBC2	62
ITV (LWT/Carlton)	59
Channel 4	65
Antenna Group:	C/D
Polarisation:	Vertical (to the north & east) Horizontal (to the south)
Effective Radiated Power:	9W

Victory in Europe

After the very successful event last year during the 50th anniversary of D-Day, the South Dorset Radio Society has been invited by the Keeper of the Fort to provide a similar display again this year, as part of the local and national celebrations commemorating the end of the war in Europe. Over 1000 QSOs were made world-wide last year and hundreds of QSL cards have been sent and received. Many of the stations worked and visitors to the station were veterans of the event that took place during the Second World War, 50 years ago.

This year GR50D (GR5 'O' on 'D' day) will be operating from the Nothe Fort in Weymouth from the 3rd to 9th of May 1995. Setting up the station begins on Wednesday May 3.

As well as two h.f. stations, the South Dorset Radio Society hope to run packet radio again, as this was very popular last year, when the Society were also able to show how data communications had changed from the Morse code that was used in 1939/45! If possible, there will also be operation on 2m and 70cm via GB3SD.

The South Dorset Radio Society meet at the Victoria Inn, Knights in the Bottom on the first Tuesday in the month at 7.30pm. This is located on the B3157, half a mile north west of the village of Chickerell, near Weymouth. Visitors are most welcome and further information can be obtained from the Secretary, **Graham Membury G8DJW, 11 York Terrace, Dorchester DT1 2DP. Tel: (01305) 269478.**

Grove Communications Expo

The 1995 Grove Communications Expo will be held at the Atlanta Airport Hilton, between October 13 and 15 1995. This event is aimed the enthusiast interested in short wave listening, scanning and satellite communications.

Proceedings commence 1200 on Friday 13 and finish at 1245 Sunday 15. In between there is a hectic schedule of seminars and forums, and a banquet on the Saturday. Interested parties can contact **Grove Enterprises Inc.** for further details at, **PO Box 98, Brasstown, N.C. 28990. Tel: (704) 837 9200. Fax: (704) 837 2216.**

Book Store Update

This month we have lots of new and interesting titles added to the SWM Book Store selection.

The observant amongst you will have noticed that we have revamped the Book Service pages. We've improved the service so that you, the reader, benefits.

To order that invaluable guide or book phone (01202) 659930 and ask for Ann or Michael. Alternatively, to order by post, mark your order 'SWM Book Store' and we will do our best to ship your book by return.



WRTH Satellite Broadcasting Guide 1995 Edition. £15.95

Flight Routings 1995. £6.50

Airwaves '95. £7.95

From the ever popular Babani Range eight new titles.

How to Expand, Modernise and Repair PCs & Compatibles. (BP271) £5.95

Simple Short Wave Receiver Construction (BP275). £3.95

Experimental Antenna Topics (BP278). £3.50

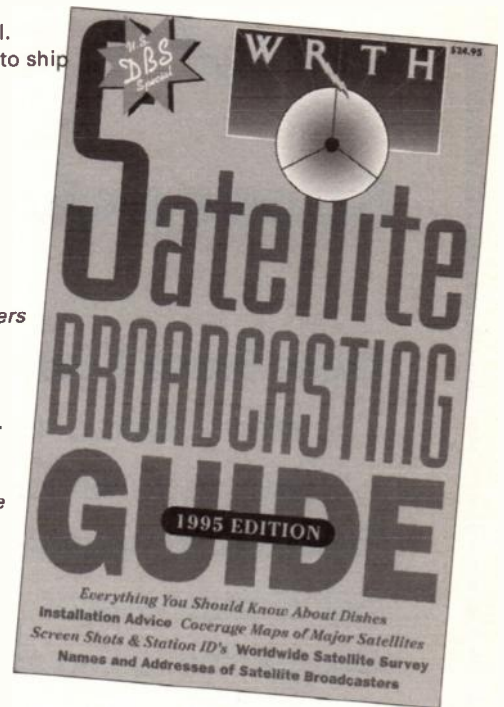
Getting the Most From Your PC's Hard Disk (BP280). £3.95

Practical Electronic Filters (BP299). £4.95

Setting-up Amateur Radio Stations (BP300). £3.95

Introduction to Satellite Communications (BP326). £5.95

Superhet Radio Handbook (BP370). £4.95



Radio and TV DX News

Early 1996 should see Racal's image transmission facility incorporated into their digital radio products that transmit within the 30-500MHz spectrum. Aimed particularly at the military, police and security operation, the system will transmit good quality pictures and SSTV via narrow bandwidth radio systems. The method employs compression techniques which still permits use of the radio channel by voice and can offer very wide coverage compared to conventional wideband video transmission.

A fixed link radio local loop network will be constructed by Liberty Communications across the UK - the first cellular carrier that has gained permission to transmit broadcast entertainment/video on demand (VOD) in addition to colour fax and video telephone services. After a three month trial in late Summer 1995, the service may open late this year or early '96. The nationwide network will access both commercial and domestic premises via local transmitters and received on small roof antennas. Another company - 'lonica' - is also planning a wide area network based around local transmissions and small receive aerials though with a different end user product and tending to compete with BT.

India's Doordarshan is in negotiation with several major international broadcasters with a view to opening a 24-hour PAY-TV network running in parallel with DD's normal domestic programming. Canal Plus also intends to commission a Hindi language pay channel. DD-3, a channel offering docs, sports, social programming and 'serious entertainment' is now on air in India's

main population centres. The original plan was to offer news and current affairs but the government expressed concern over the lack of control in live transmission.

PAL TV is used by the newly opened TIPP TV in Tallinn, Estonia indicating the long term aim to move from the established SECAM standard. Tripp transmits from the Tallinn TV Tower and intends to cover all Estonia by 1998. In nearby Lithuania, LTV Vilnius has changed from ch.R4 to ch.R2 vertical to improve coverage and to avoid f.m. band interference. PAL colour transmission is now used on all Polish TV networks, another SECAM country bites the dust.

Premiera TV is the second private network in the Czech Republic and hopes soon to cover the whole country, either by terrestrial TX, cable or satellite. The ch.R24 100kW Praha transmitter has now been joined by Plzen ch.R51 1.2kW; Zlin ch.R58 1kW; Svitavy R58 1kW; Jihlava ch.R59 600kW; Valasske-Klobouky ch.R59 100kW; As ch.R60 100kW; Liberec ch.R60 100kW. And in Slovakia Poprad ch.R5 will close next year and replaced at u.h.f ch.R47.

Official news from Telenor Network Services, Oslo regarding the close down of Band 1 NRK transmitters. They confirm that three Band 1 transmitter will close 1995 with u.h.f. transmitters replacing their coverage area. The new u.h.f. transmitters will operate from TV2 transmitter sites and receive the NRK-1 network feed via satellite. The replacement programme is subject to funding from the NRK but since Telenor operate the transmitter and feeder network the replacement programme

could well accelerate if funds allow.

Rumania will soon have her first commercial TV network when Media Pro International receives the franchise for the construction of the TV/radio network. Already several regional TV + 4 radio stations are operated by the group and there are thoughts to eventually offer sports, general entertainment and news channels.

In France the TDF will soon commence digital TV transmission tests from the Orleans transmitter (130km sw of Paris) on ch. E33. NICAM transmissions have spread slowly in France with mainly talk and musical shows in stereo (and game shows on TF1!). The teletext programme run down on France 2 details which offerings are NICAM.

The BBC will be on-air September with the first UK DAB transmissions, offering Radios 1-5 in stereo in the London area, increasing coverage until 1999 when coverage will be 60% of the population. The upper Band 3 spectrum will be used for the service, so dust off those old ITV 405-line antennas.

I am advised that 'Stay tuned', **Lustkandlgasse 21-1, A-1090 Vienna, Austria** is a group trying to preserve the TV test card and carry a test card selection on Internet (Internet address is - stay.tuned@blackbox.ping.at). And in Australia ABNQ 4 at Cairns, North Queensland has closed down, reopening at ch.45 u.h.f.

HS Publications, 7 Epping Close, Derby DE3 4FS. Tel: (01332) 381699, have just launched an updated version of their D100 TVDX converter. More of news of this next month.

LISTENING TO

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New from Kiwa Electronics - the Medium Wave Loop

The loop antenna no serious MW DXer will want to be without
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<http://www.demon.co.uk/lowe/index.html>

BERKSHIRE

3 Weavers Walk
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Newbury

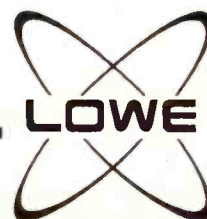
Tel: (01635) 522122

NORTH EAST

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Newcastle Int. Airport
Newcastle Upon Tyne
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WALES & WEST

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Chesterfield Road

THE WORLD



Lowe Electronics jump start the frog!

"What a difference! There is no comparison! ...The Kiwa filters have turned the Yaesu into a real DX rig." Elton Byington - DX Ontario

Tests on the FRG100 have show that the -6dB bandwidths of the AM filters are typically wider than the published specifications. A test sample showed 9.1kHz and 7.5kHz where the specifications read 6 and 4kHz respectively. For many people this has put them off considering the FRG100 as a replacement for older equipment, quite a shame as the basic receiver and the operating facilities represent very good value.



The FRG100 is probably one of these products where a little bit of money spent will make quite a difference to those who do need the extra performance and for those people, we are pleased to announce the FRG100DX. The FRG100DX will already have the new filters fitted by Lowe Electronics and each will be provided with its own test certificate during the course of our modifications and alignment.

Kiwa Electronics in the USA have specialised in filter upgrades for a number of years and as their newly appointed European distributor, we are pleased to be able to offer their highly acclaimed upgrades for the FRG100. Kiwa's IF filter upgrade dramatically improves both wide and narrow band performance of the FRG100 receiver by replacing both AM filters with superior modules offering a tremendous improvement in selectivity.

Each replacement filter uses Filter Module technology for precise filter requirements. Each module is constructed of three cascaded ceramic filters with input and output buffer amplifiers for maximum performance. Other features include zero insertion loss and a guaranteed shape factor (-60dB/6- 6dB BW ratio) of less than 1.8, typically less than 1.65. For the 6kHz filter we've chosen a 6kHz model from Kiwa Electronics.

This gives a performance almost equal to Yaesu's 4kHz (!) This will make quite a difference to selectivity and you'll notice an immediate improvement in performance. This is ideal for general listening right across the short-wave bands and in particular on medium wave.

For the DX chaser, we've chosen to replace Yaesu's 4kHz with Kiwa's 3.5kHz filter offering once again a huge leap in performance. We feel this is a great choice for the avid broadcast band DXer as it offers the best compromise between fidelity and digging the signal out of strong interference.

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UK & Russian Club of Friendship

Founded in 1987 by Ken Norvall G3IFN, the Club of Friendship (COF) is trying to get off the ground again. Howard Ketley G1JGY is trying to revive the club, with the aim of developing and furthering the friendship between the two countries over the air with regular nets, etc.

It is also a good way to learn another language, if you so desire, and also to learn about each other's country. In the past, some members have even been on exchange visits to see their 'friends'.

So, if you even have a slight interest in becoming a member, get in touch with Howard. If sufficient people show a positive response, then Howard will act as co-ordinator among the UK amateurs and will liaise with the Russian section of the club, so that it can continue to grow.

Howard Ketley G1JGY can be reached at **1 Tewkesbury Avenue, Mansfield Woodhouse, Notts NG19 8LA.**
Tel/Fax: (01623) 423697.

Garex and Revco On The Move

We have recently been informed that Garex Electronics and its associated company Revco Electronics Ltd., makers of premium quality communications equipment, have now moved to brand new premises - **Unit 8 Sandpiper Court, Harrington Lane, Exeter EX4 8NS.** The new, modern unit is very well placed on the northern side of Exeter, extremely convenient for the M5, A30 and the Exeter Bypass.

However, not only the access has been improved. The new location will allow both Garex, who is a well respected supplier of p.m.r. and amateur radio equipment, and Revco, one of the UK's oldest established antenna manufacturers, to provide a more varied and efficient service to their customers.

Since there are no showroom facilities at present, it's advisable to telephone first before visiting. The new telephone number is: (01392) 466899. Fax: (01392) 466887.

Alpha Electronics

One year ago Ben Spencer Consultants launched their range of amateur radio kits. Following the success of the range they are now producing the kits under the brand name of Alpha Electronics. A copy of their free kit catalogue is available by sending an A5 s.a.s.e. to, **Alpha Electronics, Enterprise House, 33 New King Street, Bath BA1 2BL.** Tel: (01225) 482604 Fax: (01225) 482604.

Oops

Last month in the 'Decode Special' issue, our feature *Books and CD ROMS for the Decode Listener* omitted to say that all the titles are available from our book service - The SWM Book Store.

Your news and product details can reach thousands of listeners, drop a line to Kevin. Post, Fax or E-mail accepted.

AWR Schedule Update

We have been advised by Adventist World Radio of changes to their schedule.

The *Wavescan* programme can now only be heard on Sunday. The English language broadcasts are as follows:

Time (UTC)	Frequency (MHz)	Transmitter	Target Area
0600	7.215	RIM	Europe
0900	15.620	RIM	Africa
1900	15.620	RIM	Africa
2100	6.055	RIM	Europe

Further information can be obtained from, **AWR, 39 Brendon Street, London, W1 United Kingdom.**

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Don't Miss BARTG

For reasons best only known to the SWM Editorial Staff, in our Decode Special issue (May 95), we managed to completely avoid mentioning the national group specialising in all forms of Datacoms - BARTG (British Amateur Radio Teledata Group). How this came to pass will remain one of life's eternal mysteries. However if your interest lies in the Decode/Data side of the hobby you really should join the group. Details from: BARTG membership, **Peter Adams (G6LZB@GB7BS), 464 Whippendell Road, Watford, Herts. WD1 7PT.** Tel: (01923) 220774. If writing please enclose an s.a.s.e.



Dear Sir

I read with interest the letter in the January '95 edition from Roy Clayton with regard to QSL cards from s.w.l.s. As you can see, I do have a B licence, but due to a medical condition, I am unable to learn the Morse. I therefore spend many hours listening on the h.f. bands and go in for most of the s.w.l. awards that are going.

Roy Clayton's letter was very informative and I thought the only thing was missing was an example of a QSL card made out correctly. I have enclosed one of mine and hope you will publish it.

He also says that he always replies to listeners of which I can confirm. What a

pity that QSL managers of other special event stations do not do the same thing. In 1993 I sent out 224 cards to 'G' special event stations and only received 49 back.

There must be many listeners like me who take great pleasure in receiving these cards and must be very disappointed at the result.

**G. Beckett G7JHE
Shiphay
Torquay**

Dear Sir

I have read your letters column and never fail to be amused at some of the comments. How fortunate we are to be able to give our opinions through these pages. It is unfortunate, however, how some people consider their opinions to be cast in stone.

You see, I am a mere stripling in the radio world. For only 18 months now I have had this strange urge to listen at every moment to something or someone from whatever part of the globe my receiver can hear.

It came about through my interest in aircraft. I purchased a Yupiteru MVT8100 (low deposit, interest free credit). For aircraft it was brilliant (particularly u.h.f.), but there was this l.s.b. and u.s.b. mode too. So, I hung a longwire out of the window and Hey Presto! Plenty of noise!

A prod of the attenuator and a semblance of speech could be heard. Not great, but it at least gave me the 'bug' to become an s.w.l. Payments finished, I then went down the same route as before and purchased an HF-150 and MLB.

You see, I was now only one year into this fascinating hobby, but I had realised that this hobby was no different to any other. It's horses for courses. Pay as much or as little as you wish. If your mate can get those elusive DX stations with his all singing, all dancing black box, then fine. If you want QRP then fine, too. Does it really matter?

How many of you drive a car that you have designed and built? How many can actually repair and service their vehicle with its new engine management systems? (Not even some of the franchisers!)

The gregarious people will continue with their nets and others have their own cliques. Radio is no different to life itself. All the elements are there when you take time to listen (or read!).

A man in Lincolnshire with 40 years radio experience buys a £15 'scanner' from a daily newspaper advert and then complains! Those silly CBers have delusions of grandeur and sit the RAE. And why not? How did the current President of the RSGB first start? Incidentally, is this the radio equivalent of the Rotary Club or the Free Masons?

And to confuse matters even more, I heard a 'G4' station 'promote' (his words, not mine) a 'G0' to 'G4'. Now, this is where my inexperience really shows itself. You see, I thought there was only **one** 'A' licence.

Thankfully, it has not deterred my wish to become a radio amateur. The majority of people I hear are fine. The ones I know locally have been fantastic. To Gordon Jones G1HP I shall be extremely grateful. He has unselfishly given up his time to teach me this noble art. Come May 1, I hope to repay him with a pass certificate.

Then we can both do the Morse and Hey Presto! Look out all those concrete faced people. I might, just might, make you say Hi! (only if they have not bought back the birch or hanging!)

And, can the Editorial Team let the readers know that, should I have my comments published, they were actually hand-written and not computer generated! Joking aside now, the magazine format is brilliant. It covers every aspect of interest to me and more besides. And of course to those letter writers who are equivalent to a radio 'phone-in'!

Yours in all seriousness (really).

**Kevin Gunstone
Sutton-In-Ashfield
Notts**

Nice to hear from an enthusiastic reader, good luck with the RAE, and thank you for the complimentary comments about SWM. - KN

Short Wave Magazine, June 1995

Dear Sir

I am particularly interested in your 'Radio Secrets of the War'. May I pass on my own experience on recruitment to 'PO Box 25'.

In 1944 I was training at the Marine Wireless College in South Shields, expecting to join the Merchant Service as a Radio Officer, when a mysterious government official arrived seeking audible radio recruits into an equally mysterious organisation, we eventually learned that a 'trawl' was being carried out at all wireless colleges for RSS (Radio Security Service) operators.

I first applied in 1944, on my eighteenth birthday and received back a reply saying that at that time they were not recruiting, but the interesting point in that letter was the statement that ".....In the meantime, we will ensure that you are not called to any other unit of the armed forces." I was reserved for further use.

In January 1945 I received their 'call up' offer mysterious with no indication as to the duties involved. The pay - £3.10s rising to £7 per week was extremely generous for 1945, it being purely spending money!

I do remember it was a bitterly cold winter and my accommodation was to be 'Rowley Lodge', a mansion at the far end of the Arkley Complex, with extra washing line facilities in the stables. Initial training was carried out at 'The Lawns', which I think must have been the birthplace of 'Brainwashing'.

We were pounded day after day with Morse, Morse and more Morse, which included intensive 'printing' exercises, longhand Morse copy being taboo! The alphabet was written in a specific way, the quickest possible way, starting with a base line. A (two strokes), B (one stroke), F (two), J (one), M (one), N (one), P (one), Q (one), etc. This was done until we were proficient at speeds up to 30w.p.m.

On completion of training, acceptance and enlistment, a period of operational work was given in the set room at Arkley (two HROs, each position with 500kHz day frequencies and 500kHz night frequencies), following which you were given the choice of staying at Arkley or transfer to one of the four other SCU3 stations:-

1. Hanslope Park (Bucks)
2. Gilnahirk (Ireland)
3. St Erth (Cornwall)
4. Forfar (Scotland)

I, myself, went to Hanslope Park and as the war ended, three overseas stations were quickly opened - Bad Salzflun (NORDET) Germany, Graz (IDET) Austria and Sidi Bishr (MERS) near Alexandria. These three stations became SCU4. Amazingly, the Sidi Bishr unit was located in the 'Lone Palm' holiday camp!

Before posting to any of these overseas locations we had to open a bank account because our pay books had to show us as only receiving basic pay, 28 or 30 shillings, the remainder of our £7 being banked for us.

Any stops that were taken at transit camps were to say the least hilarious, they had never seen a 'shower' like us, with COs and NCOs speechless! They were adamant that before we could leave they were determined to make 'soldiers' of us. They never did, our conducting officer always managed to whisk us away before any such horror was inflicted upon us!

In 1947, the Radio Security Service was disbanded, so were we, but we were offered immediate employment in its new organisation GCHQ. So began my next 38 years service, but that's another story.

I am now in my 10th year of retirement overlooking the River Tay and the Grampians with my radio and satellite receiver and a very, very much smaller 'aerial farm', still 'listening', but then again, old habits die hard!

Regards, a brainwashed Morse maniac.

Name and address supplied

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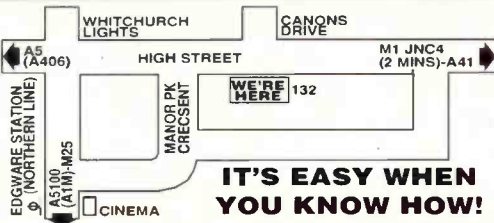
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Realistic PRO-

If you're in the market for a new base station scanner then the PRO-2036, reviewed here by Mike Richards, could well fit the bill



A look through the advertisements in *Short Wave Magazine* will soon reveal that the scanner market is very buoyant with a wide selection of models on offer to suit most budgets. The new PRO-2036 costs around £340 and so is positioned in the middle of this competitive market. In addition to wide frequency coverage, albeit with gaps, the PRO-2036 features 200 memories, high speed scanning and a host of features designed to make the assimilation of new frequencies as easy as possible.

Smart Looks

In line with PRO-2035 from the same stable, the styling of the PRO-2036 is very good. As you can see from the photographs, the subtle curves of the front panel combined with the shaped buttons give a very smart and business-like overall appearance. The front panel is dominated by the main liquid crystal display that provides comprehensive details on the current operational state. The

display is very well back-lit and you have the option to either dim or disable the lighting as required. The main tuning knob was 38mm in diameter and rotated in steps with twenty-five steps per turn. To help improve the viewing angle when used on a table-top, the PRO-2036 featured two substantial flip-down feet at the front that set the receiver at a good angle for this operation. All the mode and option selections were controlled by the range of push-buttons that were very well grouped around the main panel. This grouping was supplemented by some clear panel markings that used, what are now, standard abbreviations for the various functions. A somewhat unusual addition was the provision of external speaker and line-out 3.5mm jacks on the front panel itself. This was in fact very useful as the external speaker jack could also be used to drive a pair of headphones - essential for those late night monitoring sessions. The only point to be careful of is the audio power that's available. As the socket is designed for external speaker operation the full 1.7 watts of audio

power is available. If you're using sensitive headphones there is a potential risk of hearing damage if you listen at very high volumes for prolonged periods. The only bad point I could see with the front panel layout was the shape of the squelch and volume control knobs. These were rather small and had two large flats giving a key-like feel to their operation. Whilst this improved the handling for adjustments in the mid-range of the control movement, I personally felt that outside this limited range of movement the operation was rather cumbersome. This may of course be just be me and anyway the knob could easily be changed for a more conventional type. With the provision of the audio jacks on the front panel, the rear panel is very bare indeed with just three sockets and a switch. As you would expect from a receiver with coverage up to 956MHz, the antenna connection is handled with a good quality BNC connector. Although the PRO-2036 is designed as a base station unit, the power requirement is 13.8V - in line with that used for most vehicles. This alternative role as a mobile unit was

supplemented by the provision of two mounting holes for a mobile bracket. In the review model the power requirement was met using the supplied external power unit that connected via the coaxial power socket on the rear panel. In addition to these basic connections, there was also an AUX phono socket on the rear panel. This provided a switched output specifically for the automatic control of cassette recorders. The ENTER LOCK switch was provided as a safeguard for the PRO-2036's internal memories and you should only have to use this in the event of a software problem that prevents the receiver operating correctly.

Clear Instructions

To help get the most from the PRO-2036, the supplied A5 manual was very well presented. The print quality of the forty-five pages was very good and there was a fair selection of diagrams used to help illustrate the operation of the receiver. As is fairly common these days the manual was in fact a bilingual document with the rear section printed up-side-

PRO-2036 Review

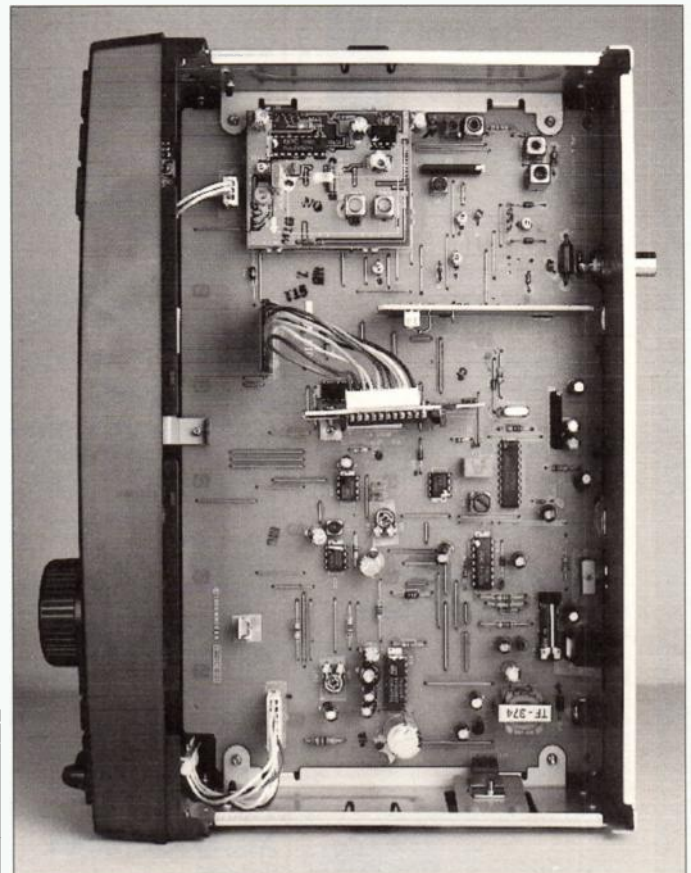
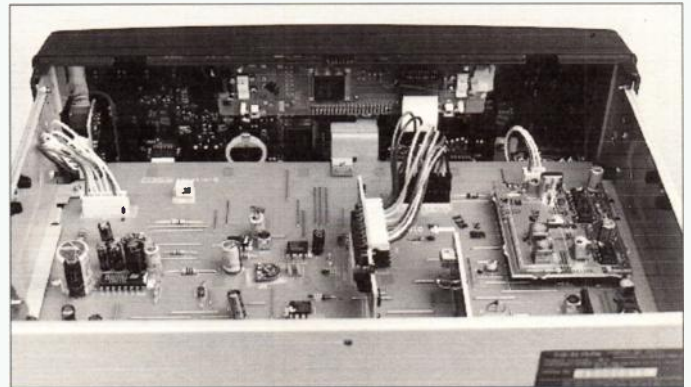
down in French! In addition to covering all the receiver's operational features, the manual included some useful guidance on scanning issues in general. This included a comprehensive listing of birdies and detailed band allocations to help at least find the right band before you start your searches.

User Memories

Of vital importance to any scanner is a good supply of versatile programmable memories. The PRO-2036 was suitably well set-up with 200 memories available to the operator. As with other Realistic scanners, the PRO-2036 organised its memories into ten banks with twenty memories assigned to each bank. Rather than select these banks using the numeric key-pad, the PRO-2036 features a dedicated set of bank selection buttons located at the top right of the front panel. This made bank selection very much more obvious and convenient. To further aid the use of the memories, the PRO-2036 has a number of memory management utilities built-in. With these you can move frequencies into different locations and delete the contents of any memory. The memory movement has a couple of restrictions as you can only move a stored frequency into a different bank leaving the PRO-2036 to assign the destination channel within that bank. I don't see this as a real problem as I generally have banks assigned to particular modes, e.g. marine, air, etc. The other restriction is that you can't move a frequency into or out of any memory that's been assigned as a priority channel.

Tuning Options

The PRO-2036 includes a good range of tuning facilities including a well thought-out manual option. The main tuning knob can be set-up to use tuning steps of 5, 12.5 or 25kHz which covers the most common requirements of this type of scanner. In addition to straight-forward manual tuning, you can use the numeric key-pad for rapid frequency changes. The key-pad operates in parallel with the rotary knob so you can chop and change between the two very quickly. Once you have selected the desired frequency you can activate a lock button to prevent accidental re-tuning of the rotary control. In addition to simple manual tuning, the rotary control can also be used to step between memory channels. Finding new frequencies is one of the most important aspects of any scanner and the PRO-2036 includes a few options to make this as profitable as possible. The auto store option is rather like a traditional search, but with just one sweep across the selected band. Once started, all frequencies with signals strong enough to lift the squelch are stored into the memories of the selected bank(s). When starting this mode, you can specify the upper and lower frequency limits for the search. The more conventional manual search operates in much the same way except the search is continuous and detected signals have to be manually stored in the memories. With both of these search systems you have a choice of two scanning speeds - normal or Hyperscan. This provides search speeds of 20 and 100 steps per second respectively. You can also



activate the DELAY facility to add a 2 second delay in the re-start of a search following the detection of a signal. Once you have assimilated the required selection of frequencies you can then use the PRO-2036's scanning modes to check for activity. When starting a scan you can use the Bank selection buttons to decide exactly which banks you want

included. You can supplement this with the memory lock-out to disable individual memories. These two features provide the tools you need to customise your scanning activities. As with the search functions, the PRO-2036 features two

Continued on Page 20

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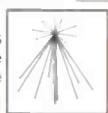
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Control Unit: Supplied - req. 6V DC
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Realistic PRO-2036 Review

Continued from Page 17

scanning speeds. These give scanning rates of 20 or 100 chans/second dependant on whether or not the Hyperscan is activated. The Hyperscan mode really was extremely fast and enabled you to cover a lot of frequencies very effectively. The rapid scan and search rates really come into their own when chasing short duration transmissions such as those found on the air bands. When using a slow system you tend to miss much of what's going-on.

Advanced Features

The basic operating modes are supplemented by a number of advanced features designed to further simplify life for the operator. There are times when monitoring certain transmission types can become extremely tedious with long gaps between periods of intense activity. By using the PRO-2036's Auto Recording feature you can compress all the activity into a more usable form. All you have to do is connect the line output and AUX feeds to a suitable tape recorder. Whilst the line output carries the audio signal, the AUX signal provides remote control of the tape recorders transport system. Once all connected-up you just start a scan in the normal way with the squelch set for the type of signal you're monitoring. Whenever the PRO-2036 encounters a signal strong enough to lift the squelch, not only does the scan pause, but the AUX signal is activated to start the tape recorder. When the tape is played back all the gaps are removed and you have condensed maybe hours of monitoring into just a few minutes. You will note from the front panel that the PRO-2036 contains the usual WX button for the reception of

weather satellite information. However, don't get too excited this is a system that's only available in North America! Another interesting option is the activity counter. This is operational whilst scanning and keeps a tally of the number of times a signal has been detected on any individual channel. This is useful for identifying the most busy channels in a band. The final goodie is the provision of Continuous Tone Coded Squelch System (CTCSS). For those of you unfamiliar with CTCSS, this is a system where a special low frequency tone is sent along with the voice transmission. The range of tones that can be sent align with international standards and are particularly useful for operators that use shared frequencies. Operators associated with one particular network will choose a specific tone set and their equipment can then be set to only receive stations using that tone. In this way all other transmissions can be filtered out. The PRO-2036 includes a full set of CTCSS tones than can be assigned to any memory.

Acid Test

As with all receivers the really important test is not what it claims to be, but how it actually performs. For the review I used the PRO-2036 with my mast mounted wide-band discone antenna. Not surprisingly the PRO-2036 suffered the usual image and blocking problems that are associated with most wide-band scanners. However, one you're aware of the problem you can take simple steps such as the use of attenuators, to minimise the effects. Other than its good looks, probably the best

Specification

Frequency Range:	66-88MHz 108-174MHz 216-512MHz 806-956MHz
Memory Channels:	200 (10 banks of 20 channels)
Sensitivity:	a.m. 20dB S+N:N at 60% modulation 108-137MHz 3µV 225-399.9875MHz 1.3µV f.m. 20dB S+N:N at 3kHz deviation 68-88MHz 0.6µV 137-174MHz 0.7µV 216-225MHz 0.5µV 400-512MHz 0.5µV 806-956MHz 0.7µV
Scanning Rate	Hyperscan: up to 100 channels/second Normal: up to 20 channels/second
Search Speed	Hyperscan: up to 100 steps/second Normal: up to 20 steps/second
Delay Time:	2 seconds
IF Frequencies:	10.8MHz, 450kHz
Squelch Sensitivity	a.m. less than 0.5µV f.m. less than 0.4µV
Audio Power:	1.7W max.
Speaker:	77mm dia. 8Ω
Power requirements:	13.8Vd.c.
Dimensions:	98.4 (h) x 265.1 (w) x 217.5mm (d)
Weight:	1.68kg

feature of the PRO-2036 was its audio quality. I found that both a.m. and f.m. signals were particularly clear even when using the internal speaker system. This clarity was maintained even when dealing with weak signals. As I've suggested from the review so far, all the controls were very logically grouped and easy to operate. I found that I only rarely had to refer to the manual to check out the operational details. The display lighting was particularly good, with the ability to dim the backlighting useful when working late at night. Despite all its good looks and interesting features, I really couldn't live with the awful shape of the volume and squelch knobs. Still, as I mentioned earlier, it's quite easy to change these for more conventional knobs.

Summary

The PRO-2036 is a well thought-out receiver with a very useful range of features. The styling was particularly impressive and could prove significant when trying to persuade the family to allocate some funds to your hobby! The PRO-2036 costs £349.99 and is available from most Tandy outlets. My thanks to **SRP Trading, SRP Radio Centre, 1686 Bristol Road South, Rednell, Birmingham B45 9TZ** for the loan of the review model.

EASY-FM

The Voice Of The Valleys

Restricted Service Stations offer groups the opportunity to run a local radio station for activities such as fund raising. A station with a different approach was EASY-FM, as Mike Ganley explains.



Tune around the bottom or top sections of the v.h.f. broadcast band and you will often find some unusual stations. Chances are that these will be RSLs - Restricted Service Stations. These are one-off, special event, radio stations specially licensed by the Radiocommunications Authority, who allocate frequencies and specify transmitter powers of up to 25W for f.m. stations, or 50mW for a.m. ones. Many groups take advantage of this opportunity to run local radio stations, even though the transmitter powers are low and the duration of the licences are limited to two 28-day periods per year. The vast majority of RSLs are run by event organisers, like air shows or fund raising groups who often put on broadcast marathons. But one station with a different approach was EASY-FM, based at Stroud College of Further Education, which went on-air in the Stroud area of Gloucestershire for the first time in May 1993.

EASY-FM was designed to be a three-part exercise. First it would allow students on our two Media courses to get some actual on-air experience, and find out about running a real radio station. Second, our first period of transmission coincided with National Adult Learners Week, so Stroud College's Marketing Department could use us as a major advertising medium. Third, all of us involved with the project



Fig. 1: EASY-FM's original 1993 studio.

were keen to see if such a small and well defined community would respond to what we were already calling "Gloucestershire's most local, local radio station".

Ambitious Programme

The Radio Authority were happy to grant us a licence, at the full market rate, based on an ambitious programme plan that aimed for a 50:50 speech to music ratio. This was mainly due to the educational nature

of the station. We wanted to teach serious radio, rather than just music presentation. They also gave us the full 25W of power and the unusual frequency of 87.7MHz. Another reason for choosing a high speech ratio was to save on music copyright fees, which all radio stations have to pay. This later proved to be an unnecessary fear, one of the organisations concerned granting us a full fee waiver. This only left the Performing Rights Society to pay. Even with this unexpected windfall

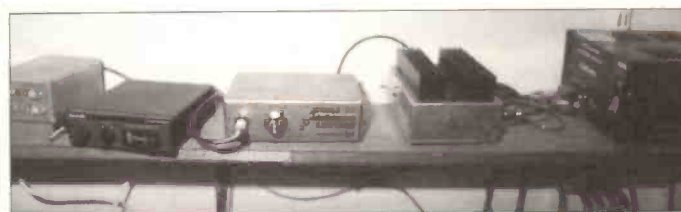


Fig. 2: The Spectrum Communications CTX100 transmitter, linear amplifier and power supply.

we averaged 40:60 ratio over the two weeks on air. Overnight our station was renamed DEEP-FM and provided dance and rave music for the younger listeners.

Technical Factors

With a licence agreed, I could now turn to the technical factors that would need to be addressed. With the help of Senior Technician, Paul Jackson, a plan of action could be drawn up. We already had a basic radio studio, used by both BTEC and City & Guilds courses. Although the equipment was a bit of a mixed bag, in terms of both age and pedigree, it would need only slight additions to go on air. We added a new (ex-BBC) cart machine, and a lot of extra wiring.

With the studio more or less ready to use, the only other major addition needed was a long-play VHS recorder for logging. Like all Radio Authority stations EASY-FM is required to record **all** of its output. Using eight-hour tapes in a hi-fi video is the most cost-effective way of doing this and most local stations now log this way. We now needed a transmitter and antenna. First choice would have been to hire a complete rig, but the various quotations came to a fee of around £600 for the two-week period. This was frankly too high, so I had to look at other possibilities.

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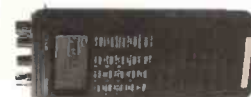
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→ 21 By chance I spotted an advertisement in a Hospital Radio publication for a Dorset based company called Spectrum Communications. The name rang a bell and I remembered buying some amateur radio equipment from them in the past (I took my RAE at their premises - KN). Faxes flew and it emerged that Spectrum already made a 1W broadcast transmitter, the CTX 100 and could supply a linear amplifier to boost this to 25W. Better still they could do us a package deal of a 25W rig, folded dipole, feeder and s.w.r. meter at a cost of just over £300.

Having worked in the broadcasting industry before taking up my teaching post, this seemed far too cheap. I was more used to transmitter systems costing thousands of pounds. In the event I need not have worried. The package arrived, complete with all connectors and cables pre-wired. All we did was put the dipole on the roof and connect the whole lot to a hefty 12V supply. It sailed through the DTI inspection and ran for 21 days continuously - seven days testing, 14 days full programmes - without any problems at all. We were even



Fig. 4: The Morning Show crew.

able to modify it for stereo use the following year. Leaving audio processing aside, both the other local stations in the Stroud Valley are quite heavily 'pumped and squeezed', but our 25W mono signal sounded as good as their 100W stereo - at least in the intended area. The Radio Authority suggested that we would cover about a 10km radius. The local topography is none too friendly



Fig. 3: The Breakfast Show on-air.

to radio waves, but we were well pleased with the area our signal did reach.

Basic Production Facility

In addition to the main on-air studio we also put together a rather basic production facility. This was based on a Tascam 108 mixer, which, due to its poor noise performance, soon became known as 'Hissing Sid'. On the recording side we used a Tascam 38, 0.5in, 8-track and its little brother the 22-2 to mix down on. This simple package,

with only a borrowed Midiverb effects unit, produced two one-act plays, several dozen assorted promos and all the station

commercials. Our only other production facilities were four very old ex-BBC tape recorders for editing and five Uher portable recorders for the reporters. All the kit survived the fortnight, only one of the Uhers requiring the attention of a screwdriver.

Nervous

We went on air at 0600 on May 10, with our two breakfast presenters, 17 and 18 years old,

in quite a nervous condition - as they all were that day. Things soon settled down, as they were expected to, and by the end of the second week things sounded as polished and professional as our competitors. The response from the local community was as instant as it was overwhelming. We had eight phone calls in our first programme and logged nearly two thousand over the 14 days of the project.

Complete Success

In educational terms EASY-FM proved to be a complete success. The thirty students involved learned more about actual broadcasting in two weeks than I could have taught them in a year. Being able to interact with a real audience and guests being a particular bonus. But more than that they were able to get the feel of that real 'buzz' that live radio brings. Plus the high that comes from hearing your own station coming out of radios in shops and almost every taxi in town. The close knit Stroud Valley community took the station to their heart, forgiving the little mistakes. EASY-FM was, if nothing else, very human and at times quite organic. We were able to cover local issues at a level the 'county' stations could only dream of, and this, too, was welcomed by the community.

Audience Research

After the success of the original May broadcast we repeated the exercise that Christmas and with some trepidation conducted our first audience research. Our second year BTEC group conducted a very professional survey, made up of telephone interviews, street polls and panel discussions. To our amazement this gave us a 17% 'reach' in the Stroud valley area - better than both the local BBC station and one of the commercials. This figure was almost certainly pessimistic, because the survey was conducted two months after we went off-air. As a result of this it was decided to try and establish EASY-FM as a permanent feature of the community and college life. But this is easier said than done, the Radiocommunications



Fig. 5: Orban's Optimod 8200 processor, fully 24-bit digital.

Authority, who have only just started to give out this type of licence, work at a pace that the average snail would find slow!

Stereo

Our third set of transmissions in May '94 further established the station and our studio 'phone hardly stopped ringing for the 14 days that we were on air. EASY-FM had proved itself and was rewarded with a brand new, fully stereo studio, designed and built by Paul Jackson and Hugh Shrewing, our technicians. This, for the first time, offered us the opportunity to go on air in stereo and just for good measure we added a new computer controlled mixing desk to our production studio.

With the prospect of another set of December broadcasts in → 26

→ 25 the offing, I was able to try out a technique that I hope will be a feature of the full-time EASY-FM, employing professional tutors to work on the station. I was lucky enough to secure the help of Andy Westgate, programme controller of GWR's *Overnight Express*. Andy was able to give our presenters a good grounding in the latest methods uses by this top rated station. Certainly our mainstream daytime programmes were as slick as any you will hear.

News Team

I was also able to employ a News Editor for the first time. Tracy Baker, formerly Head Reporter on our local paper, was happy to take on the role, and for the first time EASY-FM had a news team worthy of the name. Certainly for 14 days the



Fig. 6: The Newsroom, December 1994.

by our local evening paper, who were kind enough to publish our programme listings.

With our new studio I was very keen to get on air in stereo, but I was short of two



Fig. 7: Our new Production Studio with Hugh at the controls.

Stroud valley had a news service second to none. Our team produced a three minute bulletin every hour and scooped several local stories. Our news team was sponsored

vital pieces of kit. A stereo multiplexer and audio processor. Luckily the company who had sold us our Aircomm mixing desk were happy to lend us these for a

week, using demonstration kit between exhibitions. For the other week I was doubly fortunate to be able to beg the absolute latest digital processing and multiplexing system - the Orban Optimod 8200. With this installed we were the best sounding station in the area and could (and did) claim to be the first digital stereo station in the county. It was nothing short of remarkable just how much better we sounded than the local Radio 1FM outlet. Another feature of this broadcast was our overnight service. We were able to get special permission to re-

broadcast Virgin 1215 from the Radio Authority and Virgin themselves. Using the Astra satellite feed, we could now offer a 24-hour service - all in top quality stereo sound.

Again we were keen to see just how many people were listening. We already had registered our intent with the Radio Authority for a full-time licence and any facts and figures in our favour would be of use. Again the second year BTEC students put together another super survey, the results of which gave us the unheard of 57% 'reach' in our target audience. Local people also wanted us to stay, 97% thought we were doing a good job and 87% thought we should be on-air full time.

Back in July

EASY-FM will be back on 87.7, all things being equal, for a full month in July. Yet again our 'phone will not stop ringing, the students will have a great time and work very hard as well. Our community will have its local station back, and hopefully in the none too distant future will be able to listen to it for more than just a few weeks at a time.



Fig. 8: EASY-FM's all-stereo studio, December 1994.

Mike Ganley is head of Media Studies at Stroud College, Gloucestershire. He was formerly Senior Engineer and a producer with Radio West in Bristol.



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It Talks!

AOR AR-2700

It's arrived at last, the replacement for the stalwart AR-1500. Kevin Nice tackles 'the new star' head on. How did he fair? Read on.

The AR2700 comes in a high gloss black box with bold orange lettering, which is of not insubstantial dimensions. Due to the size of the box, the whole package seems to weigh barely any thing. I wasn't disappointed when I actually took the scanner out the box and held it in my hand, as it only weighs 322g. The standard items supplied with the AR2700 are NiCads, charger, hand strap, belt hook and fastenings, telescopic whip antenna, d.c. lead with cigar plug for car use and finally a 64-page A5 format operating manual. The review model was also fitted with an optional digital recording module - the RU2700, which provides the facility to record 20 seconds of audio.

Controls

The majority of the receiver's functions, in common with most other scanners, are controlled via the keypad. As you can see in the accompanying pictures this is located between the speaker grill and the display, filling about a quarter of the front panel. The keyboard is a polymer mat type which provides a reasonable compromise between cost life and feel. In addition to the tactile feedback on pressing a key, there is a switchable beep tone. Located on the top panel are the volume, squelch and rotary selection controls. Either these are a little too close together for my liking or the knobs are a touch too large, which ever it is I find it

awkward to operate the controls individually, but then I do have quite large hands.

Recently I've been operating equipment with concentric volume and squelch controls, and I prefer that set-up. But that is my preference and not really a criticism of the AR2700.

Also located on the top panel are sockets for both the antenna - a 50Ω BNC type and a 3.5mm jack for the earpiece. Strangely, an earpiece was included in the box, but this is not listed as being standard in either the user guide or the promotional leaflet.

The left hand side contains three switches. The second function key which enables the keypad's shifted modes. A monitor key which enables the squelch to be instantly defeated, and therefore the current channel to be heard. an finally a key lock slide switch which defeats all keys bar the MONI button.

Display

The liquid crystal display has a very good viewing angle. It has switchable green illumination, which can be enabled either momentarily or toggled on and off. Leaving the illumination on achieved simply by holding the LAMP button until it a beep is heard - or, if key beep is switched off - the second function indicator in the top left of the display extinguishes. To turn the

backlighting on momentarily, one simple needs to quickly depress and release the LAMP key. Turning on the scanners display lighting also enables the keypad illumination.

The display is the scanners main means of communicating with the user. Information that is displays is as follows.

Frequency, a maximum of nine digits are displayed, which give a resolution of 10Hz.

Operating mode, either, Scan, Search or Manual. Whilst operating the receiver in Scan mode both the bank and channel number are displayed. In Search mode, the channel number is suppressed, instead the search step size is displayed in its place.

At all time the discrimination method selected is shown above the frequency, i.e. AM, FM or WFM to indicate a.m., n.b.f.m. or w.b.f.m. modes respectively.

Both useful and really essential are the battery level and signal strength indicators. The battery level indicator take the form of a three-bar horizontal scale contained in a battery shape, at the bottom right of the display. This novel indicator work very well. It is a shame that there is no 'low battery' warning, the receiver just powers off when the battery is no longer above the receiver's minimum input voltage threshold.

Exclusive UK Review

The signal strength indicator works in conjunction with the BUSY indicator which is used - of course - to show that the squelch is open. The indicator consists of nine discrete bars, the last being twice the height of the others.

Between the signal and battery indicator is the keylock indicator

Thanks For The Memories

The heart of a scanner is its memory bank and management system. AOR score highly in the frequency storage department. The locations are housed in an EEPROM (electrically erasable programmable read only memory), device which does not require any power supply to retain your hard earned frequency data. So if you don't use your AR2700 for a while and the batteries discharge - no problem, recharge the NiCads, and resume operation, memory in tact.

There is a slight down side to the use of EEPROM as apposed to say, SRAM (static random access memory), though, that of increased cost and reduced speed. Both are not really significant, cost due to the relatively small amount of memory used, and speed, as the scan speed is determined by the lock time of the frequency synthesiser, which is much slower than the EEPROM.

The memories of the AR2700 are organised in ten banks of 50, giving 500 in total. This should be enough for most purposes. Programming I found to be very straight forward. Like most of its peers, the AR2700 is logical and intuitive to use. There is a point though, that as a reviewer, you get a feeling of *déjà vu*, with statements like that. The problem is, that exposure to many similar pieces of equipment, and lets face it computer controlled, wide band receivers are, by nature - similar. You know what to expect, and after all, there are only a finite number of ways to achieve certain operations. The best ways, permeate into many products, from different manufactures. In the end you get lots of products which are similar to use.

Digital Recording

The RU2700 recording module is an excellent idea, it's not a new concept, generally that is - we've had digital answering machines for some years now. But it's nothing short of revolutionary for hand-held scanners. It works well too. The sampling rate is sufficiently high to give good representation of the original. This feature is invaluable, you can capture that indistinct burst of activity with two key presses, then play it back an unlimited number of times to work out what you've captured. The 'S' meter acts as a duration meter whilst using the option, both for record and playback.

The install had been done on the review model, but the fitting instructions had also been provided, so I could see what was involved in a retro-fit option. I think that most people brave enough, to take a screw driver to the case, would be able to successfully fit the option. If on the other hand you don't think you are up to the task I'm sure that AOR offer a fitting service.

Options

There are a number of options available for the AR2700, the most significant, in my opinion is the computer control interface which allows a larger frequency database to be accumulated and managed, outside the receiver. This can be down loaded in smaller chunks to cover the listening periods being focused on. Conversely the contents of the AR2700 banks can be uploaded and the sorted into a logical order and the retuned to the scanner for subsequent use. The possibilities are tremendous - (*this is an area we will be covering in next month SWM - Ed*) - the extent of computer control is something which is growing due to the added functionality achievable.

The next most important accessory for me is the flexible antenna, I just hate telescopic types, they either poke you in the eye or up your nose, or even worse, snap off.

Specifications

Frequency coverage:	500kHz - 1300MHz		
Channels:	500 10 banks x 50		
	Priority	1	
	lock-out	50	
Search Banks:	10		
Modes:	n.b.f.m., w.b.f.m., a.m.		
Sensitivity:	n.b.f.m.	w.b.f.m.	a.m.
10-400MHz	0.5µV	6.0µV	0.8µV
400-1000MHz	0.7µV	6.0µV	-
1000-1500MHz	1.5µV	-	-
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Tuning Steps:			
n.b.f.m. & a.m.	5, 6.25, 9, 10, 12.5, 20, 25, 30, 50, 100kHz		
w.b.f.m.	50, 100kHz		
Scan and Search Rate:	30 channels/second		
Antenna Impedance:	50Ω		
Audio Output:	110mW (10% t.h.d.)		
Speaker:	8Ω		
Power Requirements:	4.8-6.0V - 4xAA internal cells NiCad or Alkaline		
	9-16V external (p.s.u. supplied)		
Current consumption:	95mA squelched - standby		
	140mA (busy 50mW audio)		
Dimensions:	166(h) x66(w) x45mm(d) inc. knobs and belt clip excluding antenna		
Weight:	322g		

Summary

There are many more facets to this receiver than space permits me to comment on, let alone seriously discuss. Suffice it to say that, in my opinion, this scanner is worthy of a home in the scanner enthusiast's arsenal. Further information can be obtained from **AOR (UK) Ltd., Adam**

Bede High Tech Centre, Derby Road, Wirksworth, Derbyshire DE4 4BG. Tel: (01629) 825926, Fax: (01629) 825927. My thanks go to them for the loan of the review model. The AR 2700 costs £299, the optional RU2700, £44.90 plus P&P at current exchange rate.



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Mike Richards, SMW, May 1994.

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Elementary Interference

More adventures of Kilocycle Ken and Young Golly

Radio Television and Electrical Repairs was the sign over the business in a suburban strip shopping area. It was flanked by a real estate office with photographs of houses for sale in the window and a Laundromat without customers.

Young Golly, the trainee radio inspector said, "I hate it when you call into Sinewave Sammy's shop. It's boring, you and him, beating your gums about the old wireless days."

"You are very disrespectful," Kilocycle Ken the senior radio inspector said severely. "He made me enthusiastic about radio when I was a schoolboy."

"Then he's got a lot to answer for," Young Golly muttered.

"You can stay outside in the car while I have a cup of tea."

"It'll be warm inside," Young Golly said.

In the shop window were boxes of torch batteries with faded labels, an antique valve mantel radio in a blue plastics cabinet, a 21in black and white La Gloria television of the 1960s and an old top-loading VCR. They went through the curtain to the rear.

Sinewave Sammy was old, at least to Young Golly's eyes. He was bald and wearing a khaki dust coat, a white shirt and a tie.

A long bench was stacked with side-opening toasters, pop-up toasters, two and four slice toasters and push-up



"HOW'S THE RADIO SERVICING BUSINESS?"

toasters with brown luggage labels with owner's names and addresses tied to them. An overflow of toasters was strewn on the old linoleum floor.

"How's the radio servicing business?" Kilocycle Ken asked.

"Hi! Non-existent, when a transistor radio breaks down, it's cheaper to buy another than get it fixed. Not like the old valve days, before plastics. Paper condensers dried out, carbon resistors burned out, green spot rust on transformer wires was common, valves went soft, and they were easy to fix. Used to look into the output valve, if it was glowing red, you knew the output transformer was gone and all the voltage was going to the screen control grid instead of the plate, hum was blown filter capacitors. The shop smelled of hot radio valves, solder flux, wax, transformer shellac."

"The good old days," Young Golly muttered.

Two Wires

Kilocycle Ken said reminiscently, "Wireless sets always had two wires dangling out the back, one for the aerial, one for the earth, but nobody puts up aerials today, and that's what gives some of the interference problems we investigate, there's not enough signal."

Sinewave Sammy said, "Nobody wants aerial wire, I don't stock it now. I used to sell egg insulators at fourpence each, but business has changed." He waved a hand. "See those toasters, best business there is, quick and easy to repair, and there are plenty of them, every house has one, and the elements burn out, often. Mainstay of my trade now, don't know what I'd do without them."

"You'd think it would be possible to have an ever-lasting element," Kilocycle Ken said.

"I hope not, put a man completely out of business."

Television sets don't break down anymore, not that I repair those that do, even if they are broken down, it got a bit beyond me, too complicated. Once, you could service a black and white valved TV with a voltmeter and a stack of replacement valves. If somebody brings one in, I get it done by a young technician moonlighting from the post office. I just take the money."

"It was different in those days," Kilocycle Ken said.

"Cup of tea?" Sinewave Sammy asked.

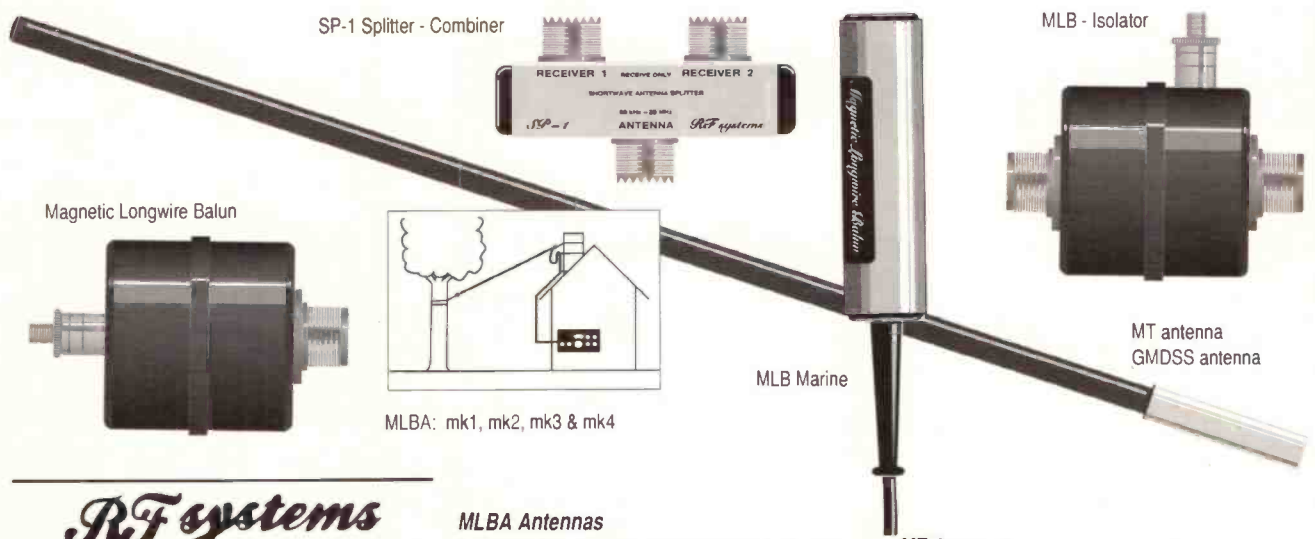
"Sure," Kilocycle Ken said.

Sinewave Sammy switched on an old-fashioned hot-plate with a porcelain and wire element, on which was a battered aluminium saucepan of water. He dunked an immersion heater in it also. "Faster."

Kilocycle Ken said, "I can remember electric radiators with a spiral element on porcelain inside a copper bowl."

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SP-1 Splitter-combiner

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Frequency range 50 kHz - 35 MHz. **£ 65**

SP-2 The Professional two way splitter

If you have two receivers but only one antenna, you need the SP-2! With isolation greater than 30 dB it prevents any interaction between the receivers, The SP-2 can also help with overload problems as it has a built-in six step attenuator for 0 dB to -40 dB. A nice extra feature is the switchable medium wave suppression filter which helps keep out powerful local stations that can appear as image frequencies in the shortwave bands, particularly at night.

£ 75

MLB Magnetic Longwire Balun

Turn any length of wire between 6 and 40 metres into a broadband 50 Ω receiving antenna. Covers 0.1 - 40 MHz without antenna tuner. Interference suppression thanks to the use of magnetic transfer and coax for the lead between antenna and receiver.

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MLBA Antennas

Ready-to-hang antennas complete with Magnetic Longwire Balun, plus heavy duty insulator and Nylon cord.

MLBA Mk 1:

12.5 metres long, coverage between 0.1-40 MHz **£ 65**

MLBA Mk 2:

20 metres long, coverage 0.1 - 30 MHz (more signal, especially on lower frequencies). **£ 75**

MLB Marine

Heavy Duty stainless steel version of the MLB with coaxial cable already attached. Use with antenna wire or strapped to the rear stay on a yacht! For use on land or at sea. **£ 75**

MLB Isolator

Just available is the MLB Isolator. When used in conjunction with the MLB, this new addition to range will provide you with a convenient terminal to attach an earth wire and will totally isolate the earth connection of the aerial from the earth connection between the mains supply and the receiver. By providing a totally separate earth for the antenna system, you can make your antenna more effective and further remove potential noises from mains earth getting into the receiver front end. **£ 45**

MT Antenna

The Magnetic Transfer Antenna is a 2 metre long mast without radials. Great reception from 0.5 - 30 MHz without an antenna tuner. Elliptical polarisation gives reception of both horizontally and vertically polarised stations. Passive, so no overload or intermodulation problems. MT technology ensures noise and interference suppression. Does not attract attention, so ideal for the apartment! **£ 175**

GMDSS Antenna

Similar to the MT antenna, but with better performance in the long and mediumwave range. Frequency range from 100 kHz - 25 MHz. Ideal for maritime use, i.e. reception of NAVTEX or weather charts. **£ 175**

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"There used to be hot water bottles instead of electric blankets," Young Golly said.

Valve Tester

In the corner was a machine which looked like an old amusement arcade game. "What is it?" Young Golly asked.

"A valve tester," Sinewave Sammy said.

It had a large meter on the front with a red, yellow and green coloured dial, a multitude of knobs, sockets and switches.

"A Test Your Own Valve machine. I bought it at an auction a couple of weeks ago. Museum piece. I had one like it, once. Anybody could test their own valves. I used to charge sixpence. A customer would come in with a brown paper bag of valves for a test, they might be alright, but he'd go home and stick them in the wrong holes in the set, blow them up - if you were lucky, you could sell him another bagfull. Most of the valves were ten bob, or maybe twelve shillings and sixpence each. A six-valve set, that was at least three pounds, a good day's work."

"Valves were always a problem," Kilocycle Ken said.

Sinewave Sammy said, "Wireless it was then, back in the days of those old 10am to 11am morning serials, Doctor Paul, Big Sister, in between advertising Rinso, a great time for the housewife to put her feet up, relax and have a cup of coffee."

"It was tea in those days," Kilocycle Ken said. "Because

there was no instant coffee."

"She would have a fag, probably a de Reszke, or she could roll herself a Silver Fern, Park Drive, Airman, all popular tobaccos."

Kilocycle Ken said, "Maybe they were good times, but we didn't have much money."

Sinewave Sammy said, "Plenty of money around now, today the housewife is drinking coffee from fancy Japanese made cups - not smoking because it causes cancer - eating fancy packet biscuits and watching American soaps on her Japanese TV."

Kilocycle Ken said, "Those were the days of the A batteries for valve filaments, B batteries for high tension and C batteries for bias."

"Yeah, the radio trade sure has changed," Sinewave Sammy said. "There used to be radio shops selling components to enthusiasts, busy shops, condensers, speakers, clips, fuses, plugs and sockets, pentimeters, with maybe a glass-fronted cabinet where there were expensive items like imported American radio dials."

Kilocycle Ken said, "Mind you, some of those radio store counter jumpers were smart arse, you'd ask for a 250kΩ resistor and they'd give you a 25kΩ one. It paid to know the colour code."

"I used to work in one of those radio stores," Sinewave Sammy said with a grin. "We made mistakes."

Mail Order

"I used to buy bits by mail order," Kilocycle Ken said.

"Remember the Lamphouse in Wellington, it had a big mail order trade and the *Lamphouse Annual* was the bible of radio constructors. I've still got a multimeter tester I built from one their kit sets."

Sinewave said, "Remember when metal radio chassis were necessary and one and one-eighth inch holes had to be made for valve sockets. It was a struggle to do the metal work before you got to the more exciting part of actually wiring up the valve sockets, the coils, putting in all the resistors and condensers, running shielded wire for the grid clips on the top cap valves."

"A chip contains all necessary circuits today," Kilocycle Ken said. "But I spent nights and weekends soldering on the kitchen table with a huge soldering iron that would now instantly incinerate an integrated circuit."

"The radio stores weren't the only source of parts," Sinewave said. "After the Second World War, there were War Assets radio equipment sold at big auctions, went for almost nothing, although sometimes there was a whisper that some of it was booby-trapped so be careful dismantling it. ARC5 transmitters and receivers from aircraft, those R1155 Air Ministry communications receivers out of Wellington and Lancaster bombers, with a big dial, and the New Zealand-made ZCone transceiver, selling for twenty pounds."

"The *Wireless World* had advertisements for British war surplus, amazingly cheap, compared to New Zealand, but getting the sterling was always

difficult. Then, in later years, in the early 1960s, some people sent twenty five pounds off to Lasky's Radio in the Tottenham Court Road, if they could get bank notes or British Postal Orders, or by some devious means acquire what were then illegal overseas funds, and buy a 625 line TV chassis."

"I wonder if any of them are still going?" Kilocycle Ken said. Young Golly said, "Our first TV was Japanese."

Sinewave said, "My first radio was a crystal set, but we had a Bush in the living room."

Kilocycle Ken said, "I had a Hiker's One, a kit set produced by Lamphouse, it howled when the reaction control was advanced too far, with a 1Q5 valve."

Sinewave Sammy said, "Valves were warm, you could warm your hands on them on a cold night."

The two radio inspectors departed.

"Boring old fart," Young Golly said. "What have I learned so far today?"

"Bread is the staff of life, especially if it is toasted," Kilocycle Ken said.

"You can't get radio interference from a toaster," Young Golly said.

"You can actually, some of the latest have got i.c. browning controls, but that's another story."

"And not elementary interference," Young Golly said.

Kilocycle Ken merely sighed.

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new products

Three New Scanners

Nevada Communications now stock three new scanners from CommTel. The scanners are manufactured by Uniden and are of the highest quality. Models 213 and 215 have just been released this week, whilst the 112 will be released in June.

Priced at £165 plus £4.75 P&P, the CommTel 213 is a superior specification hand-held scanner, offering 100 channels of programmable memory, split into 10 banks of 10 for easy use. The Comm 213 (and the 215) also boast the new 'Jetscan' and 'Jetsearch' facility, which allows them to scan and search at an incredible 100 channels per second!

Frequency coverage of the Comm 213 is: v.h.f. low - 66-88MHz, v.h.f. high - 108-174MHz, u.h.f. - 406-512MHz and u.h.f. high - 806-956MHz. The power requirements for the Comm 213 are 4 x AA batteries (supplied) and charger, or 12V d.c. external.

The CommTel 215 is a desk-top scanning receiver, packed with a host of facilities. There are 200 programmable memory

New Stock from the Lowe Stable

Lowe Electronics have just announced a brand new receiver the HF-250. This they say, is set to become the new world standard for mid-priced receivers. Building on from the world-wide success of the HF-225 and HF-150 models, the new HF-250 combines Lowe's traditional high standards of performance and quality of construction together with the advanced facilities and control features required by today's discerning listener.

"Many of the new features included have been suggested by many owners of our previous receivers, proving we do listen to our customers!", said Richard McLachlan whilst being interviewed by Jonathan Marks of Radio Netherland's *Media Network* programme.

The tuning range is 30kHz to 30MHz with no gaps. The tuning rate is determined by a synthesiser design, which gives HF-250 8 Hz steps which gives a true 'v.f.o. feel' to the user. Turning the tuning dial will increase the step rate there is a new 'fast tuning' button - simply hold this switch in during tuning and you get 10kHz steps. Retained are the 1MHz UP/DOWN switches popular with HF-225 owners. The most requested feature was for an extra digit on the frequency display and some form of illumination so the new back-lit display now reads to 100kHz. You'll also

be able to tune your HF-250 from the comfort of your armchair with our new IR-250 infra-red controller

The HF-250 will be available in approximately eight weeks. For further information contact **Lowe Electronics, Chesterfield Road, Matlock, Derbyshire DE4 5LE. Tel: (01629) 580800.**

Features

- Frequency coverage 30kHz to 30MHz
- Tuning step size 8Hz
- Back-lit display
- Display reads to 100kHz
- 255 memories
- Memory channels store frequency, mode, filter selection and attenuator setting
- Computer control via built-in RS232 port
- RS232 reads to and from the radio for up/down load memories
- Clock with two independent timers
- Fixed level output for decoding and tape recording
- Tape recorder switching output
- Fast tuning in 10kHz steps
- 1MHz up/down tuning
- Mode selector carousel
- Modes available: u.s.b., l.s.b, c.w., a.m.
- IF filters: s.s.b. 2.2kHz, c.w. 200Hz audio filter, a.m. 10, 7, and 4kHz

Options

- Infra-red keypad, Synchronous detector, FM detector, 12kHz bandwidth, Portable kit.

channels, arranged in 10 banks with one channel as priority. For ease of use, it

also has a turbo scan facility with a fast sampling rate of 100 channels per second, plus many more features.

Frequency coverage of the Comm 215 is: v.h.f. low - 66-88MHz, v.h.f. high - 108-174MHz, u.h.f. - 216-512MHz and u.h.f. high - 806-956MHz. Power requirements are 13.8V d.c. @ 700mA, 240V a.c. via the supplied adapter. The Comm 215 is available at £235 plus £4.75 P&P.

Released in June, the Comm 112 hand-held is a seven-band, 20-channel scanner covering all of the most popular v.h.f. and u.h.f. bands. Frequency coverage: v.h.f. low - 66-88MHz, v.h.f. high - 137-174MHz, u.h.f. - 406-512MHz. Power requirements are 5 x AA batteries (supplied) or 12V d.c. external. The price for the Comm 112 is £99.95 plus £4.75 P&P.

For more details on any of the above mentioned products, Nevada can be contacted at:

189 London Road,

North End, Portsmouth, Hants PO2 9AE. Tel: (01705) 662145/613900. Fax: (01705) 690626.

Drake's Dayton Announcement

The Ohio based manufacturer, R L Drake, took the opportunity of the recent local Dayton Hamvention to announce the launch of their latest offering the R8A. Designed and engineered to surpass the expectations of any short wave enthusiast. Simple to operate yet equipped with high powered features, the R8A offers excellent performance in a package that includes multiple filters and other unique features.

Frequency coverage is from 100kHz to 30MHz. There is an additional v.h.f. converter covering 35-55MHz and 108-174MHz. The R8A offers standard features designed to minimise interference and increase the operational performance of the radio. The built-in noise blanker, the passband offset control, the delayed a.g.c. and the synchronous detector combine to provide the receiver with those essential qualities for a.m. DX hunting.

The 440 memories are able to store bandwidth, mode and of course frequency together with a user entered alpha numeric tag. The memories are non-volatile.

Power supply requirements are multi-voltage, allowing operation throughout the world. Other features include RS232C serial interface for remote control, tone control, removable power cord, two clock times, built-in speaker, dual antenna inputs, mute switch for use with transmitters and a headphone socket. Further details from: **R L Drake Company, PO Box 3006, Miamisburg, Ohio 45343. Tel: (513) 866 2421, Fax: (513) 866 0806.**

Gaining Momentum

Details have just landed on the News Desk of an 'Expansion board upgrade' for the MCL-1100 data decoder. The upgrade includes 'synoptic' allowing for the automatic translation of the many alpha numeric transmissions containing meteorological information, that can be found throughout the h.f. bands. The modes that are supported by the upgrade are SYNOP, TEMP, PILOT and AIREP.

The Upgrade is available only from Momentum, priced at £129.00 inc. VAT.

For further details contact:

Bob Taylor, Momentum Ltd., Clarkson Place, Dudley Road, Lye, Stourbridge, West Midlands DY9 8EL. Tel: (01384) 896879.



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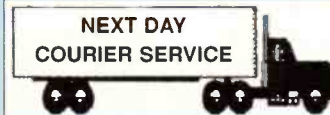
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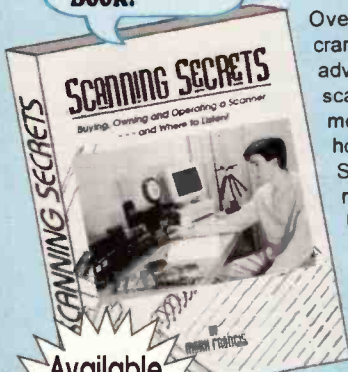
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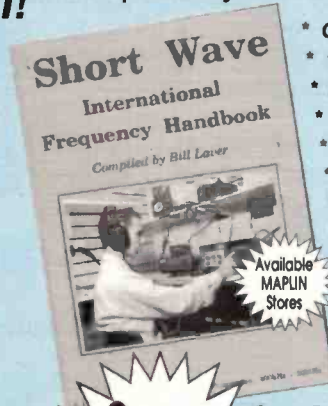


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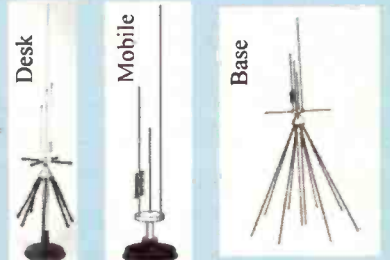
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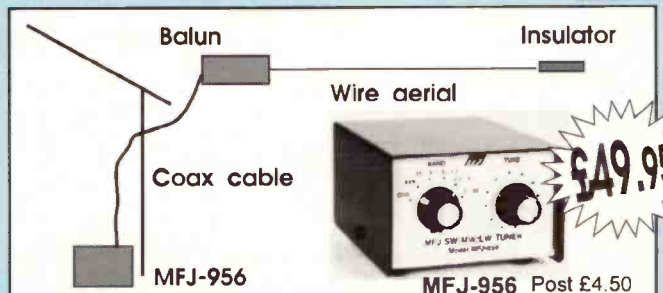


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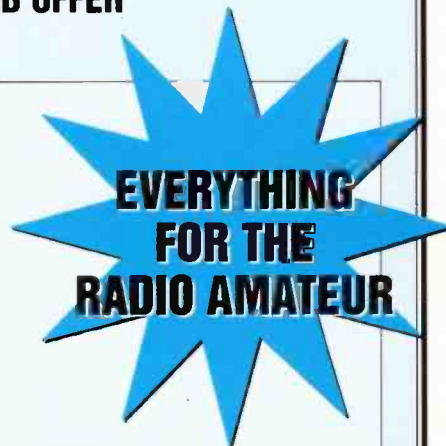
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Radio Secrets of the War - Part 3

Clandestine Radio

In the third part of this series, David White explains some of the best kept secrets of wartime radio.

In 1940, England was all alone against the enemy with the prospect of France being turned against her politically. Several departments of the Foreign Office and the War Office were merged in July of that year to form an organisation to counter the Nazis by subversion. This became known as Special Operations Executive or SOE for short.

The very existence of this unit was one of the best kept secrets of the war. Its headquarters was initially set up at 64 Baker Street, London W1 and by 1944, it had been fitted with 200 telephone lines. The SOE's purpose was to train agents which would be sent into France, and other occupied countries, to gather information and to cause sabotage.

The radio operators were each issued with special suitcase radio transmitters and receivers which looked like a normal piece of luggage. However, they were capable of transmitting back to England with powers between 5 and 25W. One of these became famous as the B2 spy set and was made in very large numbers.

Special Stations

Special secret radio stations were built and set up in rural areas of Buckinghamshire. They were designated as station 53A at Grendon Underwood, 53B at Poundon, 53C at Bicester and 53D at Dunbar in Scotland.

The service women operators were sat at 50 Marconi CR100 receivers, each fitted with a wire recorder (tape recorders had not yet been invented), a Morse key and an automatic electric Morse sender.

As soon as the agent was

heard calling on the receiver on his allotted crystal frequency, then the wire recorder would immediately be switched on to ensure that nothing was missed of the weak signal and for sending to other departments for analysis.

The agent would normally only transmit for ten minutes in order to avoid the German radio direction finding stations, which were by now hard at work trying to locate him. The normal frequencies in use from France were 6MHz by day and 3MHz at night.

By 1944, the system was that only an acknowledgement of this signal was made by the operators on the Morse key and the reply from the main stations at Grendon and Poundon was only sent in the evening between 9pm and midnight using a tape punched on a Morse code typing perforator and run through the electric Morse senders which had two purposes.

One was so that the Morse style, or fist, of the operator could not be recognised and two that the messages could be sent at a regular clear speed thus enabling the operators, who were very busy, to do other things at the same time. The agent wireless operator was by now safely back at their flat, lodgings or hotel and with the door locked was able to listen in on their suitcase receiver, with the aerial draped round the room and without anyone being able to detect them.

The scale of increase was large, because in May 1941, only two clandestine stations were operating in France. By August 1944, 53 of them were in operation.

Radio Communications

The SOE training school was

located at Thame Park and its headquarters was at Whaddon Hall in Buckinghamshire with Special Operations Group Radio located at Windy Ridge in Whaddon, which had approximately 20 HRO receivers fitted in its two huts and transmitted day and night through its site in the Cotswolds.

Specialised equipment was built and supplied from Little Horwood airfield near Winslow in Buckinghamshire and was designed by the SOE themselves, as well as by The Polish contingent who had set up a small electronics factory in 1941 at Letchworth in Herts and designed some of the finest small two way radios ever seen. The British radios were almost museum pieces by comparison, except, of course, the B2.

Up to the time the SOE was disbanded in 1946, their network had spread to the Far East with radio communications covering the world working back to the five busy stations in England. The secret radio equipment that had been developed by 1943 included an amazing device called the S-phone which was for use by agents in occupied countries and consisted of a two-way radiotelephone, a homing beacon and a parachute drop spot indicator.

It transmitted on 337MHz and received on 380MHz. Using a power of one eighth of a watt, it was used to contact aircraft or submarines near the coast for delivering agents. The antenna was a vertical dipole worn on the chest of the operator and used the person's body to act as a reflector to aim the signal like a torch.

All the operator had to do was to face the direction the aircraft was coming from and the short range v.h.f. low power

signal practically ensured that it was undetectable except by the incoming friendly aircraft.

Homing Beacon

In 1944 a special and very secret homing beacon for guiding the parachute drop aircraft to their target accurately was delivered to the agents in France. It was a portable mounted on a tripod and had a telescoping aerial.

This beacon was called 'Eureka' and could only be activated by an aircraft fitted with another similar unit called 'Rebecca' which would send a pulse signal to interrogate the beacon. This would then come on-air and guide the aircraft to the landing or parachute zone.

'Rebecca' transmitted on 214MHz at a peak power of 500W and received the signal back from 'Eureka' on the ground on 219MHz at a power of 8W. The device in the aircraft actually showed on an instrument whether the aircraft was to the left or to the right of the beacon and how far it was from it.

The range of the beacon was between 8 and 64km, depending on the height of the aircraft or about 3kms when transmitting to a submarine or landing craft. It was not possible for the German monitoring service or their radio direction finding stations to pick up these radio transmissions if they were more than 1.5km in distance away, thereby giving great security to the agent.

On D-Day, 6 June 1944, all the Y intercept stations, the

A Wider World of

Even though he now writes the 'Scanning' column in SWM, John Griffiths enjoys listening below 30 MHz.

In my circle of friends there are many who own scanners, from hand-held PRO-41s through to AR1500s and base sets as well. Not one of these enthusiasts ventures below 30MHz, even though, in some cases at least, their sets are capable of it. Capable, too, of being able to handle s.s.b. - a definite requirement for short wave work.

I find this sad. I came into the hobby many years back when I was still at school. I'm 36 now, so you can work out how long ago that was! Mixing my other passion - which is ships - with radio came about through an older man who liked to ship watch. It became obvious that we shared the same hobby and when I'd be on the dock and see him, we'd chat. He owned an Eddystone receiver - the mark is lost in the fog of memory, but I know it had s.s.b. - and told me he knew, a day or so beforehand, what was coming in. That intrigued me and, at his invitation, I went back to his house to find out how he knew in advance about the ships coming. Quite simply, by listening in to Anglesey Radio - which was a station in its own right then and not the 'slave' it is today - and to calls between the agent and ship's Master, it didn't take long to work out dates and times and, of course, names! Seeing how easy it appeared to be, I vowed that I'd get a radio of my own one day. That day, however, was a long time coming!

Happy Days

My very first set was given on loan and was a Heathkit. I can't recall a lot about it except that it looked really great and certainly very much a 'pro' set

with all of its whistles, bells and dials! It had a film scale for tuning, backlit by a good old lamp. It made sense of the 'cotton wool' garble of s.s.b. and, with a long piece of wire slung out the bedroom window, I was chuffed to hear Moscow, Australia and more 'stateside stations' than I was able to count! I'd spend hours with the set listening to ships and to the amateurs, to broadcast stations and, of course, to the 'pirates' like Radio Caroline and the like! Happy days indeed.

The set, however, had to go back to its owner who was emigrating to South Africa. Apparently his father had been moved within the company he worked for and this meant that he wanted to take the radio with him. I was still at school then and, despite pleas to my parents for a radio of my own, I never got one! On 2s.6d. (12.5p) a week's pocket money I was unlikely to save up for one of my own and anyway, there was nowhere in town - there still isn't! - where you could purchase a set.

A good few years later I was earning, having joined the Merchant Navy. I decided that the time had come to buy my own, but, being ignorant of what I needed, took advice from a Radio Officer aboard my then current vessel who said I should go 'for a valve job and a long bit of wire'. That old, valve job, was a CR100, well battered and, I suspect, a bit of a duff! However, I set it up in the garden shed and spent hours on leave travelling the world while never leaving the 'comfort' of my seat! The wire was wound up and around a draining pipe and tied to the TV mast - certainly very basic - but it pulled in some decent stuff, as I recall. Not 'DX', but then

again, I didn't know what DX was!

Moving on, I dabbled in CB for a bit and hated it before buying an entire station which, even now, I miss like mad! I knew a bit more about radio thanks to *Short Wave Magazine* and read reviews eagerly before settling on purchasing a Yaesu FRG-7700 and ancillary bits to make a good set up.

In time I expanded the station to include a v.d.u. and a c.w. Morse-reader, which also did RTTY and the first of the 'real' scanners then which was an AR-2000 or 2001, I can't recall that much about numbers! With this little set I started 'serious' listening, going to a local hand for RAE tuition and learning much more about things like propagation, DX, antennas and the like. With an AD 370 on the roof top, the world was, quite literally, my oyster and I spent many years indulging at my leisure and realising I didn't want to transmit! Consequently I never went in for my 'ticket' as an amateur.

The Wilderness Years

The whole lot got sold to find money to put a deposit on a house when I got married and there followed what I call 'The Wilderness Years' when embryonic family life and radio didn't mix and, as a result, I was out of the hobby for some five years.

I 'came back' when I persuaded my wife to let me buy a Selena Vega at a car boot sale for £2.50, and then spent time listening in. It started up the old bug again and it wasn't long before I had a Sony ICF PRO-80; then a Realistic PRO-41; then a Sangean ATS-803A, a Global a.t.u. and a VT-225!

I dug the AD 370 out of my uncle's garage - I'd given it to him years beforehand and, like the 'ham' he is, he'd kept it in his junk box! - and got it fired up.

Worked Like New

After a six year inactive period, it needed a new interface and p.s.u. but it worked like new! I 'converted' a GRP CB vertical by removing the loading coil and tied that up to the ATS-803A, using the AD370 with the PRO-80. I started experimenting with coaxial 'long wire' in order to increase the listening capacity. To digging earth spikes into our concreted back garden - hard work with only a pick and enthusiasm! - and now I can go to my own dormer room, papered and painted and fitted out to my own specs, and switch on to hear what I want to. It can be 2.182MHz which I usually monitor anyway on the Sangean while I can scan above 30MHz on the PRO-80 AND still have the VT-225 ticking over on Marine v.h.f. plus Civil/Mil airband channels. Music? Switch the Vega on or use the old Sony Captain 55 - which is one 'wicked' 88-108MHz 'DX' hunter, believe me it is!

Want to work short wave? Use the PRO-80 and idly scan the upper edges of 140 to 175MHz on the multiband v.h.f. receiver I've got. I have enough to keep me happy and enough, too, to vary my listening so that I can't get bored!

Yet, when my 'radio' friends come visiting what do they want to hear? Not, alas, the magic of short wave, but the scanner! To them, messing about with buttons and dials and having to fiddle to keep a

Wireless

signal is not on. They prefer to switch on and leave it. Can't see the point, myself. In an effort to try and persuade the AR-1500 owner to use his set more, I painstakingly wrote out marine and aircraft frequencies for him, telling him of the pure magic he was going to hear. What happened? It was all crackles and stuff! Bloody awful noise - and I found it annoying. Can anyone argue with that? I don't think so!

Yet I find it sad to know that many people who buy scanners don't try to understand more about the world we live in.

Radio, especially short wave, is a window to a world much, much bigger than the one you get with scanners.

The technology exists now to be able to buy a hand-held that you can sling over your shoulder and take with you wherever you want - and listen in to places well beyond the horizon.

Magic

For me, the magic of short wave is still just that-magic. It is a huge, varied world out there,



transmitting information you can eavesdrop on and not just the utility stuff - though there is plenty of that on too. It is a medium where you can explore at your will and yet still find oddities to have you guessing. Numbers stations is one that springs to mind! Or pirate radio, music and speech sorts. You can listen to licensed amateurs talking from yachts, homes in places like the USA or Australia, from cars and odder places like mountain tops and

hot air balloons, even! It is a big, wide and certainly interesting world that you should look at and explore more.

There is nothing wrong with scanning - but for real radio, try the bands under 30MHz. Who knows, you may just find a whole new dimension to add to your hobby!

Radio Secrets - Continued from page 39

Voluntary Interceptors and the Special Operations Executive operators were put on full alert to listen for the reaction to the American and British army invasion of the Normandy beaches.

The army Y station at Forest Moor with their 20 shift operators using 40 HROs with each bay having two receivers placed one above the other, were listening mainly to the Luftwaffe and the SS units who were using Morse code.

At Irton Moor, the navy Y station had 80 receivers in use by 1943 and they were also using the HRO receiver. This was a very busy time for the service girls of all the Y stations, especially large ones like Beaumanor Park where leave was not granted during the invasion period.

Aircraft & Vehicle Radio

British aircraft and military vehicles used a wide variety of two-way radios and they would be on high frequency (h.f.) and very high frequency (v.h.f.). Apart from the navigation beacons on low and medium frequencies, which were only used for the British bombers to find their way back home again, the main types used in aircraft were the T1154

transmitter and R1155 receiver.

These were very good and reliable sets and were placed in practically all bomber and troop passenger aircrafts. By the end of the war, over 80 000 units had been supplied.

For communications vehicles and tanks, the usual set supplied was the well-known 19 set which was supplied in v.h.f. and h.f. versions. Again, many thousands of these were produced in Britain and especially by the Canadians. Many other types, too numerous to mention, were also in use and they included the R109, R107, 18 set, 22 set and the 38 set to mention just a few.

Many of these were tropicalised to use in hot and humid conditions abroad. This was one area where the 19 set was not so reliable!

Next month we look at the infamous Station X.

Photo credit: In parts one of *Radio Secrets of the War* we omitted to credit the picture of the R1155/T1154. We thank Ben Nock G4BXD for supplying this picture.

Glossary

RSS	Radio Security Service (MI5)
SIS	Secret Intelligence Service (MI6)
SOE	Special Operations Executive
SCU	Special Communications Unit (all types)
SOG	Special Operations Group
GCHQ	Government Communications Head Quarters
GCCS	Government Code & Cipher School

Y Station Receivers

National HRO Communications Receiver - Frequency range 50kHz to 30MHz

RCA AR88 Communications Receiver - Frequency range 540kHz to 32MHz

Marconi CR100 Communications Receiver - Frequency range 150kHz to 30MHz

Hallicrafters S27 VHF Communications Receiver - Frequency range 27 to 143.5MHz

Typical Y station usage - Kingsdown in Kent intercepted all non-Morse transmissions at low, medium, high and very high frequencies which included aircraft beacons, pilot voice and Knickebein beams and Cheadle near Manchester would listen to all Morse transmissions from ground stations and aircraft.

Knickebein, X Geraat and Y Geraat Beam Transmitters

France - Commana, Morlaix, Beaumont Hague, Sortesville, Cherbourg, Mount Pincon, Saint Valeri, Greny, Montdidier, Mount Violette, De Boursin near Calais, Cassell.

Holland - Bergen-op-Zoom, Kleve, Juliandorp

Germany - Stollberg

Norway - Stavanger

Keypad for the YAESU FRG-100

When Yaesu launched their FRG-100 receiver at the Leicester show in 1993, there was one major feature missing - a keypad for frequency access. Available from MARTIN LYNCH, the new MyDEL KP-100 is an instant access keypad for the Yaesu FRG-100 receiver. In addition to frequency entry, the KP-100 also allows entry of memories, "up and down" frequency shift and turning the set on and off.

The KP-100 is available at **£44.95 incl VAT + £3.00 p&p.**



Sprite Software for the YAESU FRG-100

Introduced last year, the Sprite FRG-100 Control software has been an instant success for those who want a "user friendly" programme.

Using your PC in conjunction with Microsoft Windows, SPRITE allows you to control your receiver from your P.C. Giving you endless memory banks, (depending on the size of your hard disk), including names to each channel, tune up and down, keypad frequency entry from your mouse and lots more.

Supplied with an RS232 interface, software disk and manual, **£79.95 p&p £3.00**

MARTIN LYNCH FOR SONY

SONY ICF SW100E - Small pocket all wave all mode (incl ssb) receiver. **£199.99**



SONY ICF SW7600G - All mode 22 presents, Synchronous detector receiver. **£179.99**



SONY ICF SW55 - All mode 125 presents, AC adapter incl. receiver. **£299.99**



SCANNERS

AOR AR-2700

To replace the AR-2700, AOR have introduced this fantastic LOW PRICED scanner into the market. Completely re-styled, larger display, NO GAPS, the new AR-2700 has a special feature that no other



scanner holds - a option, the user can press a button to instantly record a whole 20 seconds of audio, for playback at any time!

Add to that a Data Port for computer control, (with the optional CU8232) and AOR, once again brings you a winner!
AR-2700 RRP £269. Voice module £39. SPECIAL OPENING OFFER, buy both for only £279, including delivery!

AOR 3000A PLUS

Modified by the boys at AOR UK, the new 3000A plus provides even greater performance and capabilities. Five modifications including wider FM filter for WEFAX, 10.7MHz I.F. output for driving the SDU5000 plus more, the extra facilities are certainly worthwhile.

The AR3000A plus is available from stock. **RRP £1099. See special purchase offer with the SDU5000!**

AOR SDU5000

Designed primarily with the AR3000A in mind, the SDU5000 enables the user to "view" up to 10 MHz of the selected band selected on a LCD colour display. Even small signals can be seen with ease, making it invaluable for the serious VHF/UHF monitoring station.

AOR SDU5000 RRP £799. BUY BOTH THE AOR3000 plus and the SDU5000 for only £1660, saving £238!! Super low finance plan also available!

AR8000 UK

Designed for the world market, the AR8000 covers just about everything that is transmitted in the entire usable radio spectrum. The ONLY scanner to cover 500kHz-1.9GHz in your hand, its been our best seller for some months now.

LOOK AT THE SPECIAL APRIL PRICE!!
AR8000 RRP £449. ML PRICE £399, saving £50!



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The "Ford Cortina" of all scanners, tens of thousands have been sold throughout the world.

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Bearcat UBC220XL

The easiest to use, no nonsense scanner from the worlds largest scanner manufacturer - BEARCAT!
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ICOM IC-R7100HF GT VHF/UHF RECEIVER ON ZERO APR



Up until now, the only way HF was possible on this excellent VHF/UHF receiver was to fit an internal "converter" using the set as a "tuneable I.F.". After a considerable amount of research and design, Graham Tingey, our Chief Engineer, has developed a

more positive solution. Without the use of any "after-fit" internal converters, Graham has re-programmed the set to tune the entire range from 60kHz to 2GHz. As before, frequencies below its usual 25MHz are tuned by depressing the original dimmer switch, now re-labelled HF. Removing the converter board ensures greater stability, strong signal handling and sensitivity.

The modifications are available to any customer already owning an ICR-7100 for only £199.95, including VAT & return delivery. (U.K. mainland). For customers wishing to purchase a new IC-R7100 with the HF "GT" conversion, the price is only £1549.00.

RRP £1549 Available on FREE Finance. Deposit £559, 12 x £82.50, ZERO APR.

ACCESSORIES - ALWAYS A MASSIVE SELECTION AVAILABLE

MLB-1 Magnetic long wire balun, eliminates noise off feed line

RRP £44.95

DATONG AD270/370 Active antenna that really work!

Indoors or outsideRRP **£59.95/£79.95**

EAVESDROPPER The best made outdoor shortwave antenna. Built to last.....RRP **£89.95**

MyDEL MINIMAG PROSCAN

The latest MyDEL design, a mini magnetic antenna 100 -1000MHZ.RRP **£29.95**

MyDEL HELICONE

Specifically designed shortwave to 1300MHz outdoor antenna for handheld & base scanners, using helical resonator & radials.....RRP **£59.95**

DIGITAL FILTERS - STOP UNWANTED NOISE -

TimeWave DSP9+ Favourite of the RadCom team.RRP **£239**

TimeWave DSP9. Budget version of the 9+.....RRP **£169**

TimeWave DSP59. All mode DSP.....RRP **£299**

JPS NTR1. The easiest to use DSP.....RRP **£199**

JPS NIR10. The ultimate all mode DSP.....RRP **£399**

Datong FL3.....RRP **£149**

DECODERS & DECODING SOFTWARE

UNIVERSAL M-8000

The ultimate in all mode code converters.....RRP - Discounted to **£1150**

AEA PK-232MBX

All mode TX/RX TNC. Hooks up to your PC. Easy to use.....RRP **£329**

AEA FAX II

Software driven decoder for WEFAX, RTTY & CW transmissions.RRP **£139**

Lowe Modemaster

Data decode & control software for HF-150. Hook up to your PC.....RRP **£139**

Lowe Airmaster

Data decode & control software with PC interface.....RRP **£89.95**

Lowe Synop

New! Decode complete weather maps.....RRP **£149**

WORKSHOP FACILITIES

One of the biggest advantages of moving to the new showroom eighteen months ago was the increase in workshop space. Graham Tingey heads the service team and together with Brian Greenaway our Customer Services supervisor, we guarantee to get your sick radio or accessory back quicker than anyone in the U.K. Our servicing rates are competitive too. Linked directly to the main distributors for spares and the only company able to offer a whole year of extra warranty once your set has been repaired, (provided it's less than eight years old), try MARTIN LYNCH next time you need a repair service. You'll be pleasantly surprised. Contact Brian, G3THQ on 0181 566 1120.



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VT-225 & VT-125

These two twins are the very best for scanning the Air Band. The VT-225 covers both the Civil & Military frequencies and the smaller VT-125, Civil only.

VT-125 £179.95

VT-225 £229.95



Kenwood R-5000

Still the best selling receiver and still no price increase!

Offered on FREE FINANCE, £99 Deposit, 12 x £75, Total £999, and we will throw in a FREE CW or SSB Filter!

Yaesu FRG-100

An easy to use short-wave receiver. Use our new KP-100 keypad and its even easier!



RRP £549, £69 Deposit, 12 x £40 FREE FINANCE, plus FREE MyDEL KP-100 KEYPAD! (Offer extended into June).

AOR-3030

A Japanese receiver with an American appearance, the AR-3030 is a real alternative to the normal layout of receivers. It works well too!



RRP £699, £99 Deposit, 12 x £50 FREE FINANCE, plus FREE antenna!

Lowe HF Europa

An HF-225 with all the options, plus better AM selectivity.

RRP £699, or Deposit £99, and 12 payments of £50 per month FREE FINANCE.

JRC NRD-535

If it came with all the options fitted at this price, we probably wouldn't sell anything else! The ultimate receiver.

RRP £1549, £499 Deposit, 12 x £87.50, plus FREE DATONG ACTIVE ANTENNA.

Lowe HF-225

The big brother of the HF-150.

Only £499, Deposit £99, 12 x £33.33

Drake R8E

The Drake is my own personal favourite. It doesn't look or feel like a normal receiver, but the PassBand tuning and American designed filters win me over every time. If you can afford that little extra, then go for it!



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Control software for ICR-7100

Supplied with computer interface, the new ICRCS-7100 will allow full computer control of the Icom ICR-7100.

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Lowe HF-150 & "Friends"

The British "Quad" of Radio Communications, Lowe Electronics are flying the U.K. flag, thanks to the excellent value for money, advanced circuit design and overall packaging of their receiver range.

This month, Martin Lynch is offering the "HF-150 Stack", not only on FREE FINANCE, but offering a FREE KEYPAD for every complete system ordered during JUNE '95.

HF-150 RRP £419

PR-150 RRP £235

SP-150 RRP £219

Rack RRP £59.95



Total Value £932.95

Deposit £132.95,

plus 12 x £66.66.

WATCH THIS SPACE!!!!

The new Lowe HF-250 is set to become the new world standard for mid-priced receivers. Building on from the world-wide success of the HF-225 and HF-150 models, the new HF-250 combines Lowe's traditional high standards of performance and quality of construction together with the advanced facilities and control features required by today's discerning listener.

Features

- Frequency coverage is 30kHz to 30MHz
- Tuning step size is 8Hz
- Back-lit display
- Display resolution now 100Hz
- 255 memory channels
- Memory channels also store frequency, mode, filter-selection and attenuator setting
- Computer control is standard via built-in RS232 port
- Clock with two independent timers
- RS232 reads to and from the radio for upload/download of memory data
- Fixed level output for decoding and tape recording
- Tape recording switching output
- Fast tuning in 10kHz steps
- 1Mhz up/down tuning
- Mode selector carousel
- Infra red remote commander

Options

- Synchronous detector
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- DC lead

ALL THIS FOR AROUND £799!!!

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The ANC4 is an antenna noise canceller which reduces power line noise, computer noise, TV timebase noise and lots of other interference signals.

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*Please NOTE prices & monthly payments are based on 17.5% VAT & no more price increases! E&OE. £10 p&p on all major items.

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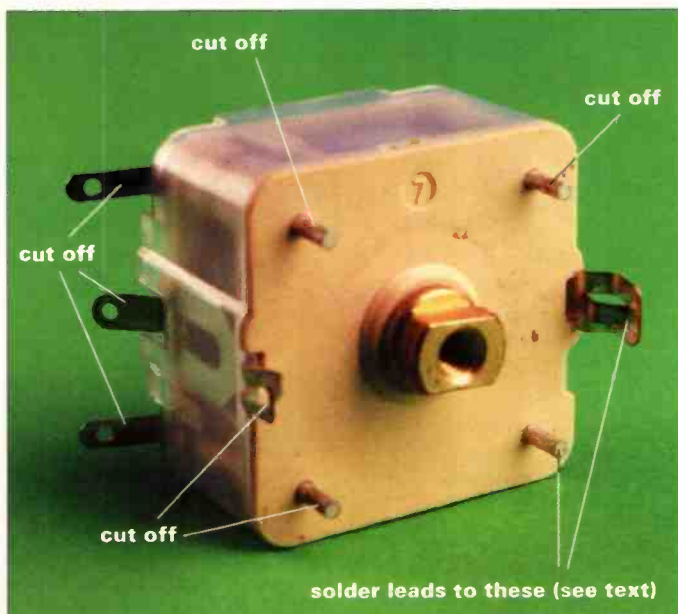
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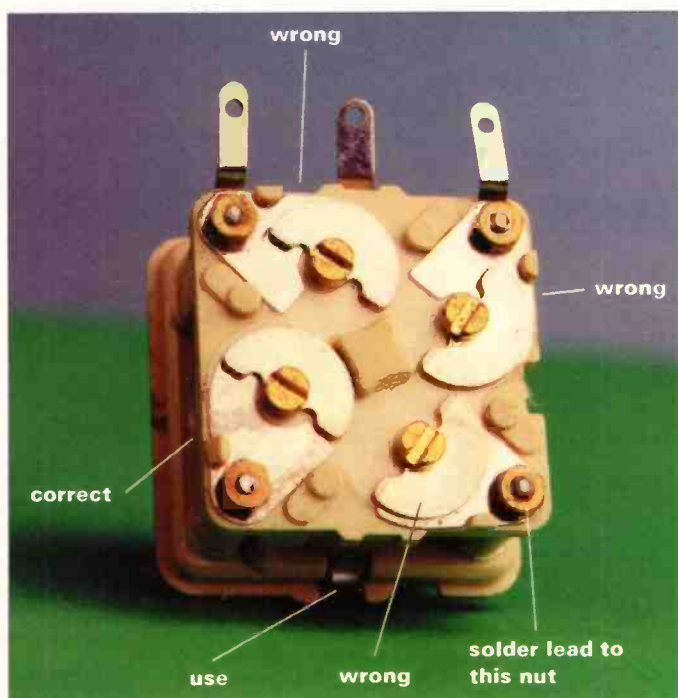
Yes I Would Rather Buy From Martin Lynch!

A Super-regenerative VHF Receiver - Part 2

Brian Adkinson concludes this two-part feature with the constructional details of the hand held receiver for v.h.f. listening. If this part of the spectrum tempts you, why not give try this project.



Modification details for C4.



Trimmer adjustment.

Construction

Most of the components are mounted on the p.c.b., which measures 67 by 32mm. The width of the board fits perfectly into the specified case. The components are mounted as shown in **Fig. 2.2**.

Note that the lead from C3 is soldered directly to the middle turn of the coil L1. The exact position is not critical but keep this lead reasonably short and direct. If anything the connection should favour the earthy (right) end of the coil as if placed too far 'up' the coil it might affect the tuning range.

The tuning capacitor C4 is mounted flush down against the bottom of the cabinet and tucked up tight against the back mounting pillar. (See **Fig. 2.3**) The specified capacitor is not supplied with any method of mechanical fixing so in the prototype it was secured in place with Superglue (which is very effective in glueing plastics) a small spot being applied between C4 and the mounting pillar on the right and two drops at the bottom edge between its plastics casing and the cabinet. A 'cock-up' during development proved the worth of this method of mounting as a large screwdriver and a number of very naughty words were needed to prise it out!

Before mounting C4 it needs some modification. Viewed from the rear it has three solder tags. These should be cut off as they are for the a.m. section only and are not needed. Viewed from the front (shaft end) two further centre tags will be seen. One of these is a duplicate of the centre tag

you have just cut off and can also be removed. The other is the earth tag for the f.m. section and must **not** be cut off. Also on the front are a further four small pins sticking out from each corner. (These are for printed circuit mounting of the capacitor). Two of these are duplicates of the two 'outer' a.m. tags cut off earlier, but the other two are the only connections for the f.m. sections (only one of which is used). Three of these pins should be cut off as short as possible as they are not needed and one left a fraction longer (about 1mm). The reason for cutting these off is to allow the tuning capacitor to fit as close as possible to the top of the case for reasons that will be explained later.

A lead needs to be soldered to this remaining pin to form a 'proper' tag to which the connection to L1 can be soldered. A scrap 'leg' from a component can be used for this. Solder it as close to the body of C4 as possible and if necessary file off the top of the solder blob. Use as long a lead as can be found otherwise it may come unsoldered from this pin when you try to solder to the other end. Then you too will need a big screwdriver and a few choice words to amend the mistake! (If you are a dab hand with the soldering iron you could solder the connection to the appropriate small brass nut at the back of C4 and then cut all four pins at the front flush. Ed.)

The tuning capacitor, C4 needs to be mounted as close as possible to the top of the case in order to get the knob on! Although it is supplied with a shaft

It is 75 years since the Royal Air Force staged its first Aerial Pageant at RAF Hendon to boost the coffers of its Benevolent Fund, the torch now carried by International Air Tattoo as the direct descendent of this history making event. From an Avro 504K built in 1918, and winner of the 1937 Devon Air Race at 103mph, to the sleek lines of today's front line jets, IAT 95 is set to stage Hendon Heritage - a fascinating history of the airshow over 75 years. The Crunchies Team wingwalkers will bring back the vanished age of the great barnstormers. And, to come a full circle, the cream of the world's aerobatic pilots - teams like the Red Arrows, Patrouille de France, the Frece Tricolori from the Italian Air Force, Spain's Team Aguila and Patrouille de Suisse (flying F5s after the retirement of their Hunters in 1994) - will demonstrate the spectacular achievements of aviation since the first cautious flight by the Wright Brothers in 1903.

Bringing yet more colour and entertainment, IAT 95 will also celebrate the coming of age of the British Aerospace Hawk as the Red Arrows fly with other Hawk aircraft in a '21' formation over RAF Fairford, while Skytanker 95 will see the largest aviation meet in recent times of these extraordinary 'flying fuel pumps'.

IAT 95's Victory Airshow must surely be the aviation event of the year - over 350 participating aircraft from 50 of the world's air arms meeting in a spirit of friendship, largely made possible by the momentous events of 50 years ago.



THE ROYAL AIR FORCE BENEVOLENT FUND'S



INTERNATIONAL AIR TATTOO 95

THE 50TH ANNIVERSARY VICTORY AIRSHOW SPONSORED BY SAGA

A Tribute To Aviation - 75 Years Of Airshows

"Truly, on a sunny Sunday afternoon, Hendon is a sight for the gods" (Flight magazine, 1914).

BACK ON THE GROUND, THERE'S PLENTY OF FAMILY ENTERTAINMENT



ACTION-PACKED ARENA

The show opens at 10am and it won't cost you a penny. The Rover Display Team and the Royal Signals' White Helmets Motorcycle Team - the classiest acts in the business - dog obedience demonstrations, marching bands, world record-holding gymnasts and a dramatic hostage 'rescue' are just some of the fast-moving acts designed for the IAT 95 Arena programme.

VIRTUAL REALITY

The British Aerospace Eurofighter 2000 Simulator Dome puts you in the 'hot seat' of Europe's latest jet aircraft - to face the same aerial combat conditions as today's highly trained RAF pilots. A Virtual Reality experience for all aspiring pilots!

ALL THE FUN AT THE FAIR

The IAT 95 trade fair alone promises to rival many country fairs in size and colour. And there's also a Craft Fair, bigger and better than ever, and for the first time a Toy Fair to attract serious collectors, children and even nostalgic parents. Whatever the hobby or interest, it's almost certainly to be found at the IAT 95 Exhibition and Trade Fair.

'WINGS' RADIO - 'THE VOICE OF IAT'

From a studio on the airfield "Wings" Radio, broadcasting on 1413kHz m.w. a.m., brings you up-to-the-minute traffic reports, air display commentary and interviews with some of the personalities supporting IAT 95. The joy and relief of VE and VJ Days will be relived by some of those who were there. It's well worth a listen.

THE CONCORDE EXPERIENCE

One Of Life's Great Adventures

V for Victory, V for Velocity - and you can't get much faster than Concorde breaking the sound barrier at the magical Mach 1. Still 'jetting on famously' after 26 years in the starring role, Concorde will take centre stage at International Air Tattoo 95 as she carries passengers on two daily flights. Costing as little as £199 for the subsonic trip, full details can be obtained from Goodwood Travel, Concorde House, Stour Street, Canterbury, Kent CT1 2NZ. Tel: (01227) 763336. Fax: (01227) 762417.

IAT 95 TICKETS

Save £5 by buying tickets in advance from all branches of Alliance & Leicester Building Society or by ringing the Ticket Hotline on (0891) 122997. Adult advance tickets £15 (£20 on the day) and accompanied children (5-15) are free, the cheapest IAT family package since 1992.

THE IAT 95 INFORMATION HOTLINE

Phone (0891) 122999 for details on how to book grandstand seats (£10), IAT 95 Concorde flights (from £199) or a place in the VIP Aviation Club (£68.50). Calls on the Information and Ticket Hotlines are charged at 39p per minute cheap rate and 49p per minute at all other times, 10p of which is donated to the Royal Airforce Benevolent Fund Enterprises, PO Box 1940, Fairford, Glos GL7 4NA.







short wave magazine

Photograph courtesy British Aerospace.

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Here's your chance to win a family ticket to the International Air Tattoo '95, to be staged at RAF Fairford in Gloucestershire, over the weekend of 22nd & 23rd July 1995.

Just identify the seven aircraft using the entry form below. Entries to reach us by Friday 16th June 1995, here at Short Wave Magazine - Air Tattoo Competition, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.

ENTRY COUPON

From time to time the RAF Benevolent Fund may wish to send you details of other events or services which they feel may be of interest to you. Please tick this box if you do not wish to receive this information.

I am aged 18 - 45 46 - 50 Over 50

Please enter the silhouette number in the box by the correct description below

- a) Avro 504
- b) Spitfire
- c) KC-10
- d) Concorde
- e) Tornado
- f) Me109
- g) Hawk



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Photocopies accepted when accompanied with the corner flash on the contents page.

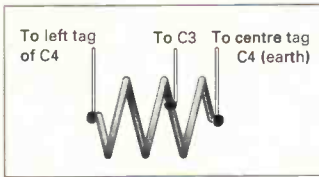


Fig. 2.1

extension the shaft is still barely long enough. The shaft extension is designed to be pushed firmly on to the existing shaft and then screwed on, but I only pushed it halfway on to give maximum length and secured it by running Superglue into the gaps.

This worked well but individual constructors will no doubt be able to come up with a more elegant solution.

Setting the Trimmers

Finally, regarding C4, the trimmer capacitors on the rear of the unit must be set to minimum capacitance. Although only one of these affects the relevant section being used I would advise that all four are set correctly to avoid error. The reason for setting them to minimum capacitance is to allow the receiver to tune to the highest frequency possible.

Using a watchmaker's screwdriver, adjust each trimmer so that the moving plate is precisely adjacent to the fixed one. The plate that moves can clearly be seen through the plastics housing of C4 and it should be immediately apparent when it partly or entirely covers the fixed plate, which is not what we want.

When all the mods and tweeks have been done, C4 can be glued into position. An appropriately placed hole will need to be drilled through the top of the case for its shaft to pass through. The same goes for the volume control R12 and the telescopic antenna.

Rod Antenna

The rod antenna is mounted as shown in the photographs and in Fig. 2.3 and secured through the bottom of the case with a countersunk screw. The on-off switch is mounted on the left side of the case between the circuit board and the top of the battery. Incidentally, the battery will sandwich snugly between the case and the speaker magnet obviating the need for any fixings.

The tuning coil L1 is wound on a pencil and consists of exactly three turns (Fig. 2.1). It is wound using the solid core from either u.h.f. TV or satellite cable. Cut off a length of cable about 100mm long and pull out the centre core with pliers (or your teeth!). After soldering L1 into the board and soldering on C3 - squeeze the turns fairly close together (don't allow them to short). In the prototype this allowed the receiver to tune down to around 106MHz. The wider the spacing between turns the higher the receiver will tune to but with a subsequent reduction of low

frequency coverage.

The use of a 'power on' i.e.d., D1, in a receiver using a small battery may seem a little silly, but the i.e.d. chosen is one of the very low power types and in this design draws well under 1mA whilst still giving remarkable brightness. Considering the average consumption of the receiver is some 25mA or so the added drain is negligible. Its inclusion is, of course, optional. The slightly longer lead on an i.e.d. is the anode and goes to the positive supply - in this case via R13.

Continued on Page 52

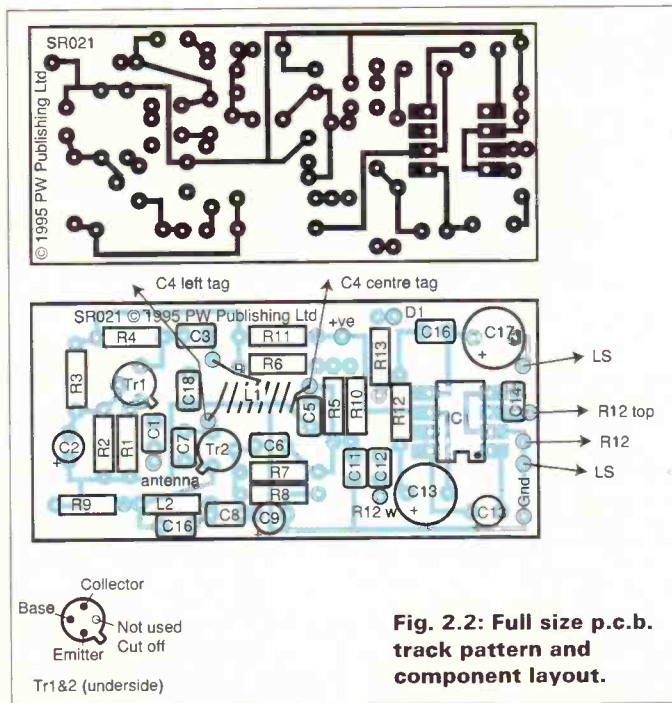


Fig. 2.2: Full size p.c.b. track pattern and component layout.

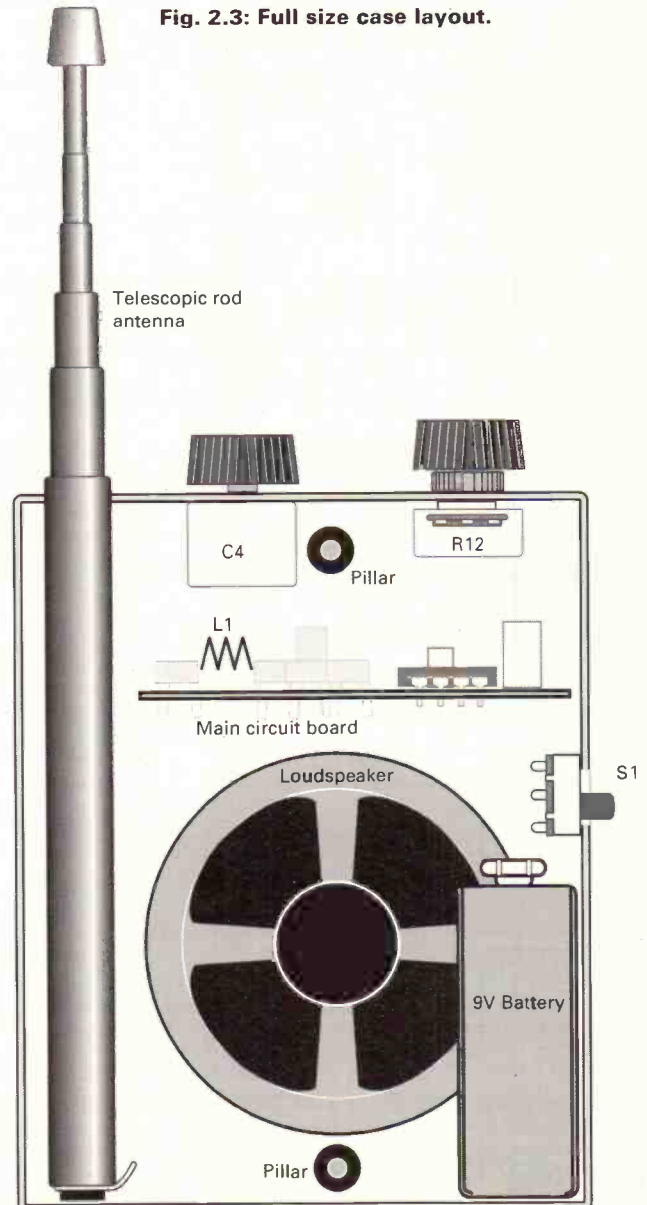


Fig. 2.3: Full size case layout.

RSGB

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Top Value SWL ATU

The HOWES CTU8 SWL ATU covers medium and shortwave bands (500kHz to 30MHz). Increases wanted signals by providing impedance matching, and at the same time reduces spurious signals and interference with "front end" selectivity for the receiver. Kit contains case and all parts. Reviewed in the December issue of SWM. Great performance, easy to build. The top value general coverage receiving Antenna Tuning Unit!

Factory Built: £49.90

Kit: £29.90

HOWES KITS - Great Projects to Build!



MULTI-BAND SSB/CW RECEIVER

The HOWES DXR20 covers 20, 40 & 80M bands plus any other HF frequency with optional plug-in modules. The photo shows the receiver built with DXR20 and DCS2 ("S meter") kits and HA20R hardware pack (case etc.). Excellent performance and compatible with many of our transmitter and accessory kits. Optional band module kits include 160M, 30M, 15M & 10M amateurs plus 5.45MHz HF airband at £7.90 each.

DXR20 electronics kit: £39.90,

DCS2 "S meter" kit: £10.90, HA20R hardware pack: £28.90

PLEASE ADD £4.00 P&P, or £1.50 P&P for electronics only kits.

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

73 from Dave G4KQH, Technical Manager.

The famous HOWES Active Antennas

AA2 150kHz to 30MHz ACTIVE ANTENNA

The neat compact answer for those with limited space, holiday use, mobile operation etc. Two selectable gain settings, local or coax powering (12 to 14V). Good strong signal performance, IP3 +38dBm. Easy to build, and much liked by customers!

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Covers 25 to 1300MHz. Broad-band performance in a neat, compact package. Just over 16 inches long. Excellent performance in a small space!

AA4 Kit: £19.90 Assembled PCB Modules: £27.90

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Computer aided monitoring from AOR

The **AR3000A** has established itself as a high performance base mobile receiver offering an extremely wide frequency coverage of 100 kHz – 2036 MHz and all mode receive. The introduction of the custom modified **AR3000A PLUS** provides even greater performance and capabilities... simply request the descriptive leaflet for full details. An RS232 port is provided as standard making connection to an external computer very easy.



SEARCHLIGHT

is a PC WINDOWS based software package enabling control of frequency, mode, attenuator, scanning, searching, upload, download, spectrum analysis, recording to disk. **AORSC** is a PC DOS based control package with bandplan data and integrated logbook. Demo disks are available for a nominal charge of £3 including postage.

AR3000A £999

AR3000A PLUS £1099

SEARCHLIGHT £99 + £3 P&P

AORSC £75 + £3 P&P

The **AR8000 UK** receiver is without doubt the most full featured wide band hand held receiver on the market today. Frequency coverage is from 500 kHz - 1900 MHz without gaps with all mode reception... twin frequency display, alphanumeric text comments. **PC-MANAGER** is an optional DOS utility for memory & search bank management. The software (which works in conjunction with the optional CU8232 interface) permits upload, download, editing, renumbering, saving of data, editing of auto-mode bandplan data plus a built-in terminal driver. A



WINDOWS based package is also under development and should become available during the summer months. Full features will be provided including scanning, searching, spectrum display, recording to disk etc.

AR8000 UK £449.00

CU8232 interface £99 + £3 P&P

PC-MANAGER £49 + £3 P&P

SC8000 soft case £17.95 + £1.50 P&P

CR8000 tape control interface £44.90 + £2.00 P&P

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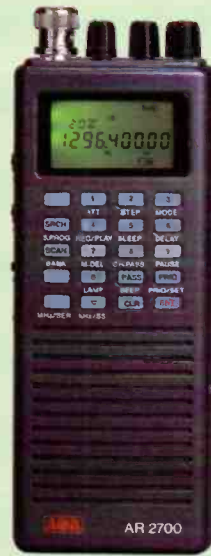
AR3030 £699

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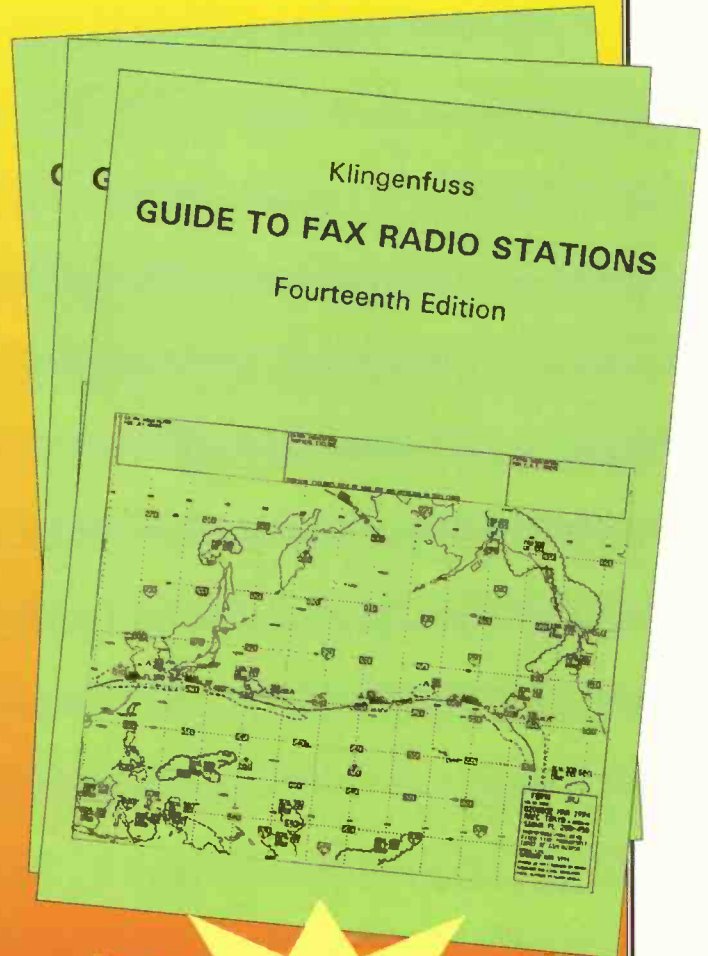
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After the incredible response to last month's Decode Special issue, we have an offer for all of you readers with an interest in this exciting branch of the hobby. This month we have a very good deal on the Klingenfuss *Guide to Fax Radio Stations 14th Edition*.

This book, like many of the other publications in the Klingenfuss range, is a well established favourite. The book comprises 400 pages of specialist information for the FAX monitor. The frequency list of FAX stations is supplemented by full transmission schedules for every station. It also contains a very large selection of sample FAX charts from all around the world. - very useful for the identification of the various chart types. If you've wondered what those odd codes included in FAX chart titles mean, this book has the answer. There is also a section devoted to the various weather satellite systems.



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Who Really Invented Radio?

John Cave has been investigating the idea that Henry Jackson, a young officer in the Royal Navy, was ahead of Marconi in the race to invent radio.

The first crude radio transmitter and coherer receiver were installed on the Royal Yacht *Osborne* less than one hundred years ago, so that Queen Victoria could keep in touch with her son, Edward, as he sailed around the Isle of Wight.

Only four years previously in August 1894, Professor Lodge had demonstrated the beginnings of radio to the Royal Institution based on the discoveries of Hertz in 1888. Unfortunately, the potential of this discovery was not appreciated and Lodge made no mention of using Morse code to pass information by this new medium.

Ever since fast torpedo boats had been introduced, the Royal Navy had been desperately searching for some suitable method of signalling so that they could communicate with each other and be identified from the enemy. It was decided by Naval hierarchy that this was an electrical problem, consequently *HMS Vernon*, being the centre of the electrical engineering branch, the problem was referred to them for solution.

Back in 1891 it had been suggested by a young Naval officer, Henry Jackson, who had undergone advanced electrical training at *Vernon*, that perhaps the recently discovered 'Hertzian' waves could be used for this purpose.

It was not surprising that Jackson should have known about this relatively new and technically advanced subject. In 1887 he had become engaged to the daughter of a scientist, Samuel Burbury, who not only understood the

electromagnetic theory of Maxwell, but had published a treatise about it. Undoubtedly the two men had discussed the naval communication problem.

Replica

Late in 1895 Jackson had read about experiments carried out by Professor Bose of Calcutta University, based on equipment that Oliver Lodge had used at his Royal Institution lecture in 1894. Within days he had constructed a replica of Bose's apparatus and had actually proved the working system before the end of that year, although he was not happy with Bose's spring type coherer and began experimenting with various forms of his own.

In March 1896 he used Lodge's 1894 lecture to start a new series of experiments to improve the coherer detector, the heart of the system. Eventually deciding that a mixture of metal filings was the most satisfactory arrangement. His final version consisted of a small ebonite tube filled with tin and iron filings.

The filings would cohere on receipt of a radio frequency signal and to prevent this he arranged the armature of a buzzer to strike the coherer and disturb the filings. As this occurred every time a dot or dash was received the buzzer could be used to read the message. To make the small coherer easier to handle, he attached a length of wire and then noticed that the signals were louder. Inadvertently, he had discovered the radio aerial!

Jackson, by now Captain of *HMS Defiance*, the Torpedo School at Devonport was

completely unaware of the details of Marconi's devices when the two men met for the first time at a War Office conference to discuss the military significance of Marconi's system.

Cold Comfort

Quickly he realised that, unbeknown to each other, they had been pursuing similar lines. The de-cohering device was similar and although he used a glass tube with a filling of nickel and silver amalgam, Marconi's version of the coherer was almost identical. It must have been cold comfort to Jackson when he learnt that Marconi had provisionally patented his equipment the previous month.

Until the late summer of 1896, Jackson had been the only person specifically working to develop radio for maritime purposes, and it must be remembered that his findings and discoveries would have been considered confidential to all but those at *Vernon*. Nevertheless, it would be fair to claim that he was the first pioneer marine radio and transmit intelligent Morse signals.

He went on to carry out further experiments with larger induction coils and different aerial arrangements, eventually obtaining Morse signals at distances of over three miles.

Firm Friends

Jackson and Marconi became firm friends and he followed Marconi's developments with a professional interest. It was

perhaps Jackson's influence that persuaded Marconi to pursue non-directional transmissions rather than the restrictive beamed arrangements he had been using.

Unsuitable

He attended all of the important radio tests being carried out by Marconi and on one occasion reported to Devonport that "in its existing form, Marconi's apparatus was quite unsuitable to meet the severe conditions liable to be experienced at sea, but as its principle of working has been well established with such good results, I consider that a design might well be prepared and made suitable for the roughest usage".

Requirement

Jackson's interest in radio remained and he eventually became the first Chairman of the Radio Research Board, but one wonders how differently things would have turned out if he had not belonged to the Navy. Would radio have so quickly advanced as a communicator of intelligence, or would it have remained as classified information?

Then again, would Marconi have received the support he needed from the Navy if the requirement had not been there? Both the Post Office and Coastguard, who were also aware of Marconi's experiments, had other methods available and were not directly interested in this new medium.

Hints For Improving

Although basically aimed at the listener interested in monitoring marine non-directional beacons, Robert Connolly G17VX suggests that all s.w.l.s should find something of benefit in this article.

The hints and tips in this article have mostly been published elsewhere in bits and pieces, but I have brought them together, along with some of my own. Some are a matter of common sense, but all apply not only to the reception of Marine Beacons, but also to all the other areas of the hobby from short wave listening to scanning and everything in between. The main thing is careful listening!

Antenna

The best type of antenna to use depends mainly on your budget and the amount of space that you have available. What I have found is that the internal ferrite rod will work, but better results can be obtained with other antennas.

Although I have a 30m long wire strung around my loft and it is quite good for short wave, I do have an external mounted Sony AN-1 active antenna. I have been successful in extending the supplied coaxial feeder to about twice its original length in order to mount this antenna further away from the house in order to reduce electrical noise.

An active antenna is a good compromise as it takes up much less room and has good frequency coverage with built in pre-amp. When using the Sony with its supplied l.w./m.w. interface along with a receiver with a built in ferrite rod, I found that any interference, etc. could be reduced by keeping the r.f. gain on the receiver and the active antenna at maximum and by slowly sliding the interface away from the receiver. The interference could be reduced whilst not seriously affecting the gain of the receiver, and thus not being able to receive the weak signals.

Active antennas come in various prices from about £20 for a kit version to over £100. The Sony AN-1 falls in the middle at about £50 complete with various interfaces and connectors.

Filters

Many receivers come with either a basic wide band filter installed, some have a narrow band filter as well. If a narrow band filter is fitted, this is much better for receiving beacons and short wave stations. However, sometimes this is not enough and a very sharp cut off filter is needed.

Like antennas, the price range is tremendous, from being below £20 for a good kit to well over £100 for ready made ones. Most of these are external filters which fit in line between your headphones/extension speaker and your receiver headphone/extension socket.

To be honest, I don't often use one unless conditions are poor, but when I do then I use a kit one which I made up. This has three settings, wide, s.s.b. and c.w. with a very sharp cut off.

Patience

No, not the card game! But this is what you need when listening to beacons. Under the new form of transmission of marine beacons, most only send their identification about three times every minute.

As a result, it is important to listen to each frequency for a few minutes or so as not to miss the beacons on that frequency and identify them. Quite often, you will find that several beacons are transmitting at the same time on one frequency and it is a matter of very careful listening to concentrate on each one in turn.

This method comes easier with patience and adjusting the b.f.o. slightly can help. Start with the clearest and loudest, identify it and then move onto the next best and concentrate on it and so on. This area of listening cannot be rushed.

Receiver

I do not intend to give details of various receivers, except to say that in order to receive marine (and aero), Non-Directional Beacons (NDB), your receiver must be able to tune above 280kHz on long wave and below 510kHz on medium wave, ie. the gap between medium and long wave bands that is usually missing on most domestic receivers.

A receiver which has continuous coverage from long to medium wave is best. Some scanners will cover this area also. However, I feel that scanners are not as sensitive at these low frequencies, due to their very wide band coverage.

SSB

All maritime beacons can only be received with the receiver in the s.s.b. mode (either upper or lower, it does not matter) using the beat frequency oscillator (b.f.o.). Careful adjustment of the b.f.o. is required to receive the signal on a particular frequency.

The b.f.o. can be used by careful adjustment to separate slightly different beacons on the same frequency. The use of the b.f.o. also applies to h.f. utility and amateur stations.

Most commercial utility stations use u.s.b. (upper side band) only while amateur stations use l.s.b. (lower side band) for frequencies below 10MHz and u.s.b. for frequencies above 10MHz.



Photo: Gerry Scott

Audio

As a result of a hearing problem in one ear, which is causing partial deafness, I purchased a pair of Hi-Fi headphones which were switchable between stereo and mono and had individual volume controls on the ear pieces. Using these in the mono mode and by adjusting the receiver volume control and the individual ear piece volume controls, I was able to obtain almost balanced audio.

These types of headphones are fairly cheap at about £10 but are well made and comfortable to wear for quite long periods. The other advantage of headphones is, if like me your listening post is in the kitchen, then you can block out those annoying sounds like the washing machine, tumble dryer, screaming youngsters and nagging wives! This makes listening that much easier.

Reception

Propagation

Again I am not going to be technical, but for this you will require the following items: one Met Office forecaster, one good European weather chart and one television. Using the television at the appropriate time of day will automatically provide you with the other two components.

Look at the weather charts and listen to the forecast and of course watch the movement of the high pressure areas over Europe. This can quite often give you an idea which area of Europe might be most active as regards beacon reception particularly between the northern and southern parts of Europe.

Morse Code

Do not worry about decoding the beacons as you receive them if you are not familiar with the Morse code. Jot down the coded ident and decode it later. You will soon find that you quickly become familiar with the coded call signs and soon you will be able to just jot down the decoded information. The speed of the code is not very fast so you will have do difficulty.

Information

Having started to receive the beacons and decode their identification and noted their frequency, the next problem is how to find out where they are. There are various methods for this.

To begin with, the quarterly 'LW Maritime Beacons' column produced by Brian Oddy, in *Short Wave Magazine* (see page 79 in this issue), gives a good selection of European beacons based on reports from various listeners.

Secondly, the purchase of a nautical almanac such as *Reeds* from a yacht chandlers gives you details of many beacons.

However, to cover the whole of Europe you would need to purchase about four different ones at about £20 each for the half dozen or so pages required in each. Nautical charts can be purchased which show the beacons but these are expensive at about £10 each and would cost over £100 just to cover the UK.

Aero radio navigation charts can also be used, but again the cost is quite high at about £4 each and are quite complex so a lot of time has to be spent sorting out marine beacons from the aero ones.

Another alternative is to purchase a copy of a book called *Admiralty List of Radio Signals Vol. 2*, available from yacht chandlers. This gives details of all marine beacons world wide along with sketch maps showing their locations. It also has some very useful information on navigation systems and world time signals. This costs about £16.

Finally, for those of you who want a no frills easy to use system I produce two booklets called *Non Directional Beacons Of Europe (Iceland to N. Africa)* and its *Supplement* which extends the coverage north to the Arctic and east to

the Baltic, eastern Mediterranean and Black Sea.

This has been mentioned in the 'LW Maritime Beacons' column in the September and December 1993 issues of *Short Wave Magazine*. For more information on these two booklets please send me an s.a.e.

Finally

I hope that the information in this article helps you get the best out of your listening and improves your hobby. For those of you who just dabble a little at the moment this has helped you to become a little more serious about this aspect of listening.

As I stated earlier most of these hints are adaptable to the other areas like broadcast stations or utility listening. The hints and tips in this article have mostly been published elsewhere in bits and pieces but I have brought them together along with some of my own.

Some are a matter of common sense but all apply not only to the reception of Marine Beacons but also to all the other areas of the hobby from short wave listening to scanning and everything in between. The main thing is careful listening! ■

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Here is the final part of our three-part competition to win the PRO-2035 kindly donated by **SRP Trading**. To enter, all you need to do, is attach your answer coupons from parts one and two to the coupon, answer Question 3 and send you answer to, PRO-2035 Competition, PW Publishing Ltd. Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. If you missed any of the other parts, back issues are also available at £2.30 inc. postage.

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QUESTION 3

What is the scan rate of the PRO-2035?

ANSWER...

If you wish not to receive future mailings as a result of entering this competition please tick the box.

A Super-regenerative VHF Receiver - Part 2

Continued from Page 45

Test First - Box Later

Before final assembly of the main board into the case it is advised that correct functioning of the circuit is confirmed. This can be done by initially connecting long leads between it and the various other parts. For test purposes the circuit will operate with flexible leads of an inch or so between C4 and L1 but once everything has been proven to work satisfactorily and the board is in its final position these should be replaced with solid leads (component lead off-cuts will do). Remember these leads will form part of the tuned circuit and therefore need to be kept short and direct. The solid leads from C4 are soldered directly to the coil itself as close as possible to the circuit board. After mounting the circuit board solder the two leads from the coil to the 'home-made' left tag and the centre 'earth' tag on C4.

In the prototype the circuit board was not given any specific support to hold it in place as the solid wires to and from C4 together with a solid wire from C1 to the antenna seemed to provide sufficient stability on the left side. The right side being taken care of by the various connecting wires. If desired, small rubber blocks or similar could be glued to the sides of the case to improve the support.

It is strongly recommended that an Alkaline PP3 be used, but a re-chargeable type is also suitable. Take care to install the battery connector correctly before switching on - otherwise you may end up with another - unintended - hole in the case directly above IC1!

Turn the volume about

half way up and if all is well a hissing noise should be heard from the speaker. If not switch off and double check all wiring and connections. If the receiver is working correctly the hiss should remain fairly constant over the full tuning range and, depending on your location, some sign of activity should be heard. Aircraft are obviously the most prolific and easiest to pick up. (Unless of course you finish it at 4 o'clock in the morning!)

Calibration and use

Calibration of a receiver such as this can be a problem if you don't have access to a signal generator. Although precise calibration is hardly needed it's still necessary to know approximately where you are.

The best method is to use known transmissions and the airband is usually the easiest to find. On the prototype the middle of the airband at approximately 125MHz appeared with the tuning capacitor set about one third of the way round and the marine band at 160MHz was about half way round.

Once the main frequencies have been established, Letraset or similar can be used to mark the dial. Other frequencies can then be extrapolated from these as the spread is fairly linear.

It is probably advisable to adjust the 'compression' of L1 to get a similar result for the airband whereupon the minimum and maximum frequencies should be about 108 and 180MHz respectively and the marine band approximately halfway as on the prototype. If there

are wide uncorrectable deviations from this check first that L1 has the correct number of turns and approximate 'dimensions', that the trimmers on C4 are set at minimum capacitance and finally that the wiring to L1 is as direct as possible and soldered correctly to the coil.

The audio amplifier IC1 is a class B amplifier so remember - the higher you set the volume on your receiver the sooner you'll be able to go out and buy a nice new battery for it.

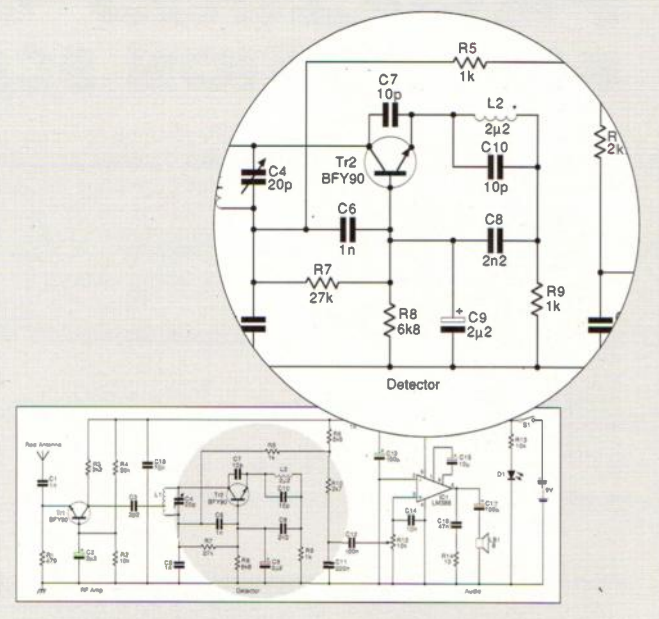
Mistaken

A final word of warning regarding this receiver - as can be seen from the

accompanying photo of it, it could easily be mistaken for an expensive state-of-the-art scanner so be very careful where you leave it. Don't say you haven't been warned, but enjoy yourself!

Errata

A couple of errors crept into part 1 of this article. In the description of how the circuit works (page 38, fourth column, just above the picture) the text should read: Therefore, R10 and C11 form a simple low pass filter ... In Fig. 1 the junction of C6, C8 and C9 should be connected to the junction of R7, R8 and Tr2 base. A corrected version of this part of the circuit is reproduced below.



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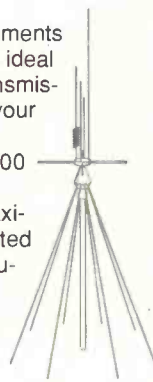
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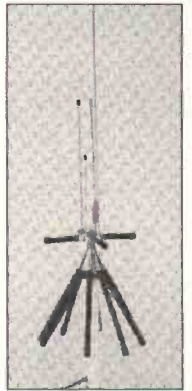
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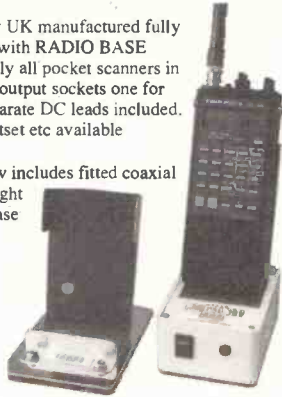
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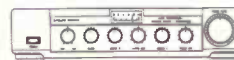
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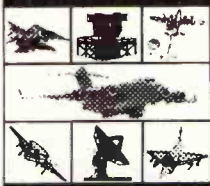
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Reflections

I recently added a Mustek, 256 Greyscale, handy-scanner to my Packard-Bell 486SX computer. It was supplied by Evesham Micros for £85.19 including VAT and carriage and, in my view, it is very good value for money. The box contained the interface card, that plugged into a spare expansion slot on the 'Bell's' motherboard, the 105mm wide hand-scanner with a decent length of lead and its, easy to understand, instruction book called *Gray Artist*. Also included with this 100 to 800 dpi scanner is the Windows versions of 'Scankit Utility', 'Perceive Personal' and 'Picture Publisher 4 LE' complete with their handbooks.

Fun With Pictures

I found the software easy to load and user friendly. 'Perceive Personal', is used for scanning text and for Optical Character Recognition (OCR) which, as yet, I have not tried and 'Picture Publisher', by Micrografx, is designed for processing photographs. Both of these have a variety of uses. For instance, **John Scott GM7UIK** (Glasgow) recently sent me a 3.5in disk containing several slow-scan television captions, in the .GIF format, that he had received from other 'GM' stations on the 144MHz band. He included his own calling caption which is shown in **Fig. 1**. The contents of John's disk easily loaded into 'PP4' because this program, like others, can accept pictures in the .AVI, .BMP, .DIB,

.GIF, .JPG, .PCD, .PCX, .TGA and .TIF formats. Once pictures are loaded, the program enables the user to edit them in various ways. For example, a while back I photographed, for archival purposes, the front cover of a 1930s copy of *The Telsen Radiomag*, **Fig. 2**, showing a typical family listening to the radio. Incidentally these magazines are currently sought after by vintage wireless collectors. I scanned and saved this photograph, using 'Scankit Utility' and then recalled it in 'PP4'. From the selection of features and tools built into 'PP4' I 'cropped' out the loudspeaker, **Fig. 3**, removed the unwanted material from behind it, asked 'PP4' to 'tone balance' the picture and then saved the result to disc. The storage space required for **Fig. 1** is 90.8Kb, **Fig. 2** around 3.5 Mb, **Fig. 3** is 39.6Kb and **Fig. 4** is 96.4Kb.

As you can see by the edges around the sides of the speaker in **Fig. 3**, I could have spent a lot more time with the 'rubber' on the pixels in that area but I wanted something unfinished, for this limited space review, to show you how useful a hand scanner can be. Another use is for enlarging, on screen, text or tiny sections of pictures that are difficult to read or see. If you don't get satisfactory results from a first time scan there is plenty of room for adjustment because the hand-unit has separate switch banks for selecting text, half-tones, 256 greyscale, 100 to 800 dpi, plus a brightness control and a scan-speed indicator light. In addition to this combination of settings, the dimensions of the text or photo to be scanned can be set within program.

Pressworks 2

Just before completing this episode of Reflections I received the upgrade package from GST Software for my original Pressworks Desk Top Publisher program (DTP). I was delighted to find that my hand-scanner can be used directly into Pressworks 2 and that it also accepted **Figs. 1, 3 and 4** with ease and photos from CD-ROMS.

CQ SSTV GM7UIK



JOHN
QTH.
GLASGOW

SLOW SCAN ON 2M

Fig. 1

SSTV

During February, **John Scott**, using a Kenwood TM-231E transceiver and a four-element rotatable beam, had slow-scan television contacts with GM4DAE, GM3EDZ, GM8HGT, GM0LEG, GM4PRO and GM3ULP, **Fig. 4**, on 144.500MHz. Believe me readers, that cake in **Fig. 4**, that I saw on John's disk in colour, looks super and made me feel very hungry, hi.

On the h.f. bands John copied 'CQ' frames from stations in Germany and Spain and 'photographs' from France and Hungary. At 1134 on the 22nd he received signals, on 14.230MHz, from KL7KJ in Alaska. "The 'window' to Alaska was only open for a short time to be able to receive a SSTV picture", said John. He also told me that many stations from around Europe were transmitting 8, 16 and 36 seconds pictures, on the 14MHz band, during the German (DARC) SSTV contest on March 18. John also copied one during the event from a station in the USA.

Tropospheric

"So far this winter, tropospheric openings have been very scarce," wrote **Richard Wood** (Redditch) on March 2. However, he did find some DX on February 6 when he logged BBC Radio Devon for the first time around 103MHz and a French station which identified itself as 'France Info' on 105.5MHz. On March 13, Richard received pictures from Anglia TV on Chs. E24 and E39 and on the 22nd he logged BBC Radio Devon and Dorset (103.8MHz), Melody FM (105.4MHz), Virgin 105.8 from London and a French station

on 105.9MHz.

"The high pressure that came towards the end of the month gave good signals for nearly all stations," wrote **Arthur Grainger** (Carstairs Junction) who has a special interest in Band II. He had two good catches during March, Radio Ceredigion from Aberystwyth on 103.3MHz at 2040 on the 22nd and, on occasions, Melody FM.

The atmospheric pressure was high and falling and the general weather conditions were right for tropospheric openings on March 13 and 22. During the evening of the 13th, **Richard Bell** (Melton Mowbray) received u.h.f. TV pictures, at varying strengths, from the Anglia TV transmitters at Sandy Heath, Sudbury and Tacolneston, BBC1-South, BBC2-East, Carlton TV, Central TV and CH4 from London. On Ch.46, "BBC1 West-Midlands was having a battle with BRTN-TV2 [Belgium] but TV2 lost out after a while," said Richard. Around 2300 he managed to see the Belgian test-card and found that the signal was coming from their transmitter at Egem. On the 22nd/23rd he logged u.h.f. pictures, at varying strengths, from Anglia TV, BBC1 East, North, South East, South, West Midlands, Central TV, Meridian, Tyne Tees and Yorkshire.



Fig. 2

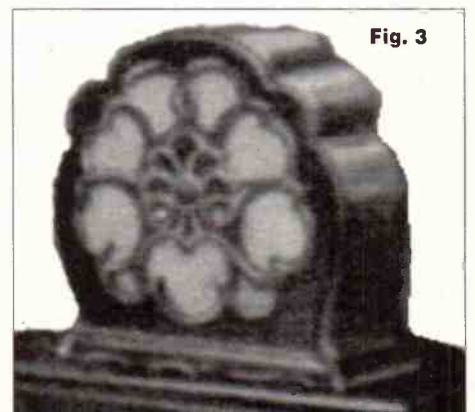


Fig. 3

Weather

"Snow is falling heavily as was forecast on the BBC," wrote **Richard Wood** on March 2 and, "we had snow, snow and more snow at the beginning of March," remarked **Arthur Grainger**. From Edinburgh, **George Garden** reports heavy rain during the day on March 26 turning to periods of continuous heavy snow by the early evening.

In March I recorded 2.50in of rain, compared to 2.47in for the same period in 1994, with a layer of snow on the 8th and snow mixed with rain on the 28th. Rain falls greater than 0.40in were measured on the 7th, 8th, 17th and 28th and the rest, in much lesser amounts, was spread across days 1, 2, 3 and 5.



Fig. 4.

The daily variations in atmospheric pressure, **Fig. 5**, for the period February 26 to March 25 were taken at noon and midnight from Arthur Grainger's barometer (dotted trace) in Scotland and the barograph installed at my home in Sussex.

Solar

In February, **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 1-4, 7-9, 12, 14, 15, 26 and 27 and two on the 16th, 18th, 23rd, 24th and 25th.

From his observatory in Selsey, **Patrick Moore** kindly sent a drawing of the sunspots as they appeared on his projection screen at 1305 on March 1, **Fig. 6**.

It's worth keep and eye open in second-hand book shops for an early astronomy book called *The Story of The Sun* by Sir Robert Ball, published by Cassell & Company Limited in November 1893. Within its 376 pages are 82 illustrations one of which is a 'photograph of the solar surface', showing a sunspot, taken by Dr. Janssen in 1893.

Auroral

The auroral co-ordinator for the British Astronomical Association, Ron Livesey, received reports of visual aurora described as 'glow' for the overnight period on February 27/28, 'rayed arc or band' on 23/24 and 25/26, 'ray bundles' on 15/16, 'active forms, flaming and flickering' on 7/8 and 27/28 and 'corona or overhead activity' on 7/8, from observers in Iceland and Scotland.

Magnetic

The magnetometers used by **John Fletcher** (Tuffley), **Tony Hopwood** (Upton on Severn), **Karl Lewis** (Saltash), Ron Livesey, **David Pettitt** (Carlisle), **Tom Rackham** (Goostrey) and **Tony Rickwood** (Gillingham) recorded, between them, strong disturbances to the earth's magnetic field on February 12-14, 25 and 28 and lesser events on days 2-4, 6, 8, 11, 18, 24, 26 and 27.

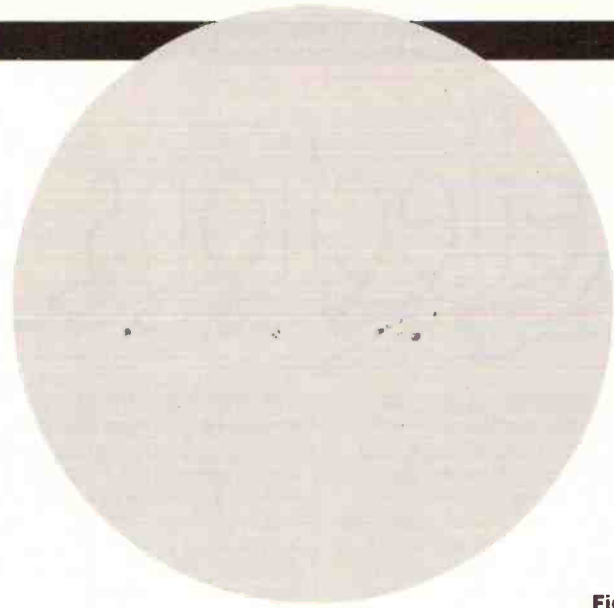


Fig. 6.

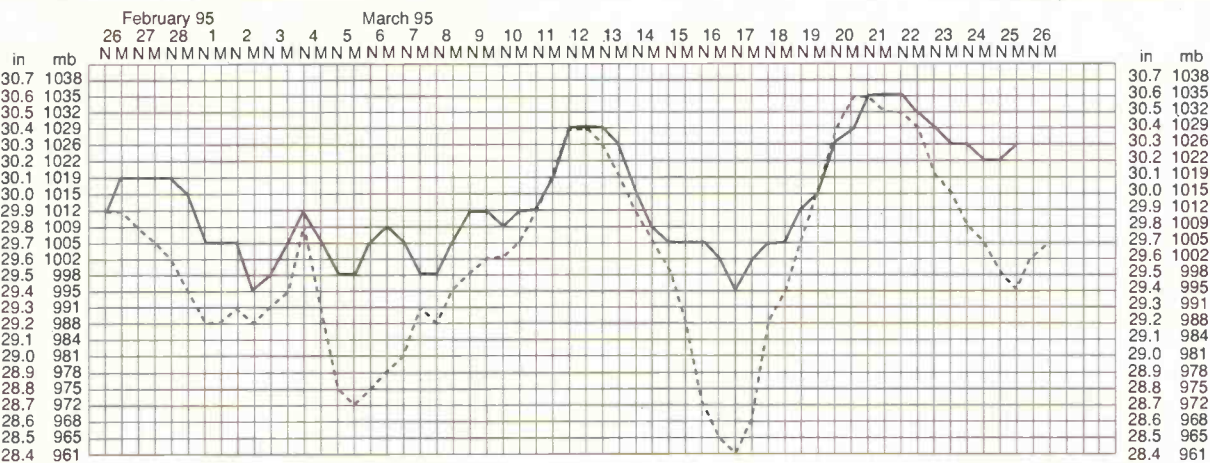


Fig. 5.

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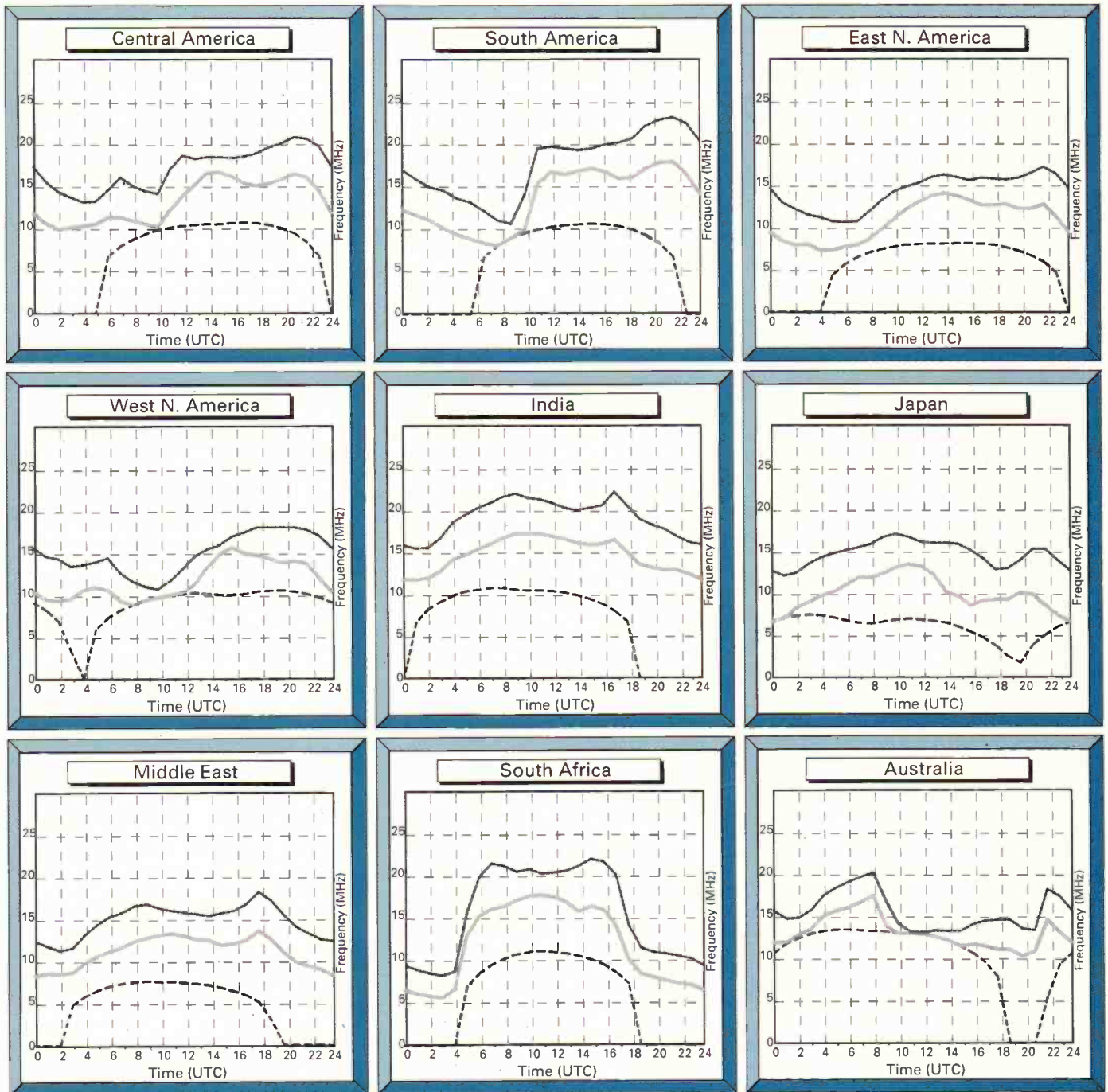


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World Propagation Forecasts June

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How to use the Propagation Charts.

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

success below this frequency are very slim.

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

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

probability of success for the path and time.

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

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

Good luck and happy listening.

Satellite TV News

The Latest from the Clarke Belt

It is with regret that I must advise the death of **Andrew Sykes**, an extremely active satellite and radio DXer for many years and long supporter of this column - many of his photographs have graced these pages since I have written the monthly satellite article. Andrew was well-known in these circles, always enthusiastic to try 'new things' be it with satellite or his other love, Medium Wave DX. As a person he was warm and friendly, just a 5 minute visit and it seemed as though he'd known you for years. In recent times he suffered with cancer and diabetes, which eventually claimed his life on Good Friday morning at Kings Lynn. It was an experience and pleasure knowing Andrew, I and many other friends will miss him. Rest in Peace.....

As perhaps the above lines will convey, part of this column is about people, the readers, their sightings, successes and (rarely) failures, together with news that hopefully will inform and help their hobby. One item of good news has arrived from **Ian Waller**, who runs his own installation company - Lincoln Satellite. Ian had used a 3.4m diameter dish for his C Band reception - this is a large dish. During a windy spell his fence blew down revealing said C Band dish and although neighbours were happy to live with Ian's hobby and the long established dish, a certain council official who saw the C Band dish (and, of course, he was a member of the planning committee!) wasn't. The invitation to apply for retrospective planning resulted in refusal and Ian went to appeal. The dish meanwhile was dismantled pending a decision. After many months, good news, Ian won at appeal and the 3.4m dish is now back in use. This I feel is a victory for the common man versus big brother, good sense has prevailed and hopefully news of this triumph will inspire others to battle against any planning refusal.

Orbital Sightings

The major bomb blast in Oklahoma City, USA of April 19 hit the headlines of all broadcasters with live 'action news' playouts though apart from the Reuters dedicated Eutelsat European footprint in Ku band, oddly I found no east-bound direct feed into Europe at Ku Band either on Intelsat K or Orion. Eutelsat II F4 at 7°E relayed an 'EBU New York Path 2' feed that was sourced

either via C Band or the now digitally compressed Ku frequency on Intelsat 601 at 27°W. The story was developing fast into the UK evening period with live inserts from BBC American-based reporters and I can only assume most were carried on established C Band paths. April 20 saw more outbound Oklahoma circuits mainly inserting into news magazine type programmes as two-way feeds - that is with two-way audio and a one-way video circuit.

That same afternoon on Eutelsat I F4 at 25°E two downlink transponders were both carrying similar programming - Channel 4 horse racing from Pontefract. Unusual, however, was the 2nd transponder that initially carried a UK 'Reuters London' ident on colour bars cutting to 'Arena Newman Street', Arena Mobiles being an outside broadcast facilities company. The latter then cut to similar horse racing but in wide screen 16:9 rather than the conventional 4:3 aspect ratio.

The 2nd week of April saw, I suspect, yet another Turkish channel appear on Eutelsat II F2 at 10°E. A corner logo indicated MED TV and TEST diagonally opposite - this on 11.574GHz vertical. The same bird was also seen April 14 with what I assume are SNG facility providers. The religious procession with Pope and crowd was preceded with a caption RUN TV, after the procession event had finished up came the MEM 2 ROMA ident on colour bars. Both are new names to me, can anyone advise please? Another new arrival on this rather busy craft is the Greek ETI service having migrated (or pushed?) from the neighbouring II F4 7°E satellite. RIK Nicosia still lives on at 7°E, but I am advised that the programme services will combine into a single 24 hour later this summer offering on 10°E, 20 hours of Greek and the remainder ex Nicosia.

Additionally 3 Greek (ERA 1, 2 and 5) and 2 Cypriot radio services (RIK 3, Radio 1) will be carried on allocated sub-carriers. This may be a compromise move by Eutelsat to clear out 7°E for telecoms/digital use, the broadcaster enthuses for transponder space on the new Hot Bird 1 at 13°E.

Three loud cheers were heard echoing at Eutelsat, Paris with the successful launch at long last of Hot Bird 1 from Kourou in French Guinea, together with Brasilsat B2. Reuters carried the launch live via their 13°E trdr though coverage was

also featured on Astra's Bayern Space Night channel. Filling this interesting, though often repeated, midnight programme of space flights with live publicity programming ex Kourou is an excellent move and will be worth checking for coverage in future space launches. One reader advised that Hot Bird was testing April 19 onwards during the daytime with colour bar patterns, etc., varying levels and other tests.

Julian Redwood (Christchurch), **Ian Waller** (Lincoln) and **John Locker** (Wirral) have helped clear the confusion over the 11/14°W Russian satellites. John confirms that a fax from Intersputnik advises that Express 2 is now slotted at 14°W (Express has station keeping facilities, no more inclined orbiting!) with the earlier Gorizont still at 11°W. The very strong 3.675GHz Russian 1st programme downlink has ceased at 14°W though a 40dBW (strongish) signal still offers the 01-TV programme. The 11°W Gorizont according to the fax still sports a 43dBW feed down at 3.675GHz. Observation by Julian indicate the following 11°W Gorizont 3.675GHz Moscow 1 - strong; 3.812GHz test card - weak; + the 11.525GHz Ku band trdr. The 14°W Express 2 now has been logged as 3.672GHz - test card; 3.822GHz - test card; 3.976GHz Moscow 1 - strong; 4.022GHz RTP International (Portugal); 4.098GHz test card - strong; 4.122GHz Moscow 1 weak. No Ku band signals have been logged.

Ian also confirms Julian's notes and adds that the original very high powered 3.675GHz Moscow 1 feed (now ceased) used to feed unmanned v.h.f. relays throughout Eastern European countries providing the Russian troops 'visiting' those countries the Moscow 1 channel for entertainment purposes. The new Moscow 1 OITV service carries Teletext (called Teletext) with an English language index on page 500. Also seen in Lincoln is a Goonhilly downlink from Intelsat 704 at 66°E with a very strong signal for a global beam, this is a very low elevation access for the West Cornwall earth station.

Roy Carman (Reigate) had queried the c.w. (Morse) transmissions heard on PAS-1 at 45°W. John Locker again has come up with a possible answer - it may be an Aeradio meteo beacon but not using the standard number format. Morse has also been



Following the Oklahoma City explosion, a statement from the White House. Here journalists exchange gossip just before President Clinton arrives. (Reuters feed, Eutelsat 13°E).



An outside broadcast for RTL, Germany, the test card is mixed with the conference venue floor action just before transmission.



An ITN VTR clock and UK logo via Orion 37°W.

monitored on PAS-1 11.639GHz when that transponder is fired up. Checking out the c.w. on the latter PAS-1 frequency decodes as the following sequence - 'GE VVES NJ WB 81 1202133284 800 255 6122' and then repeated. Does WB indicate weather broadcast and NJ New Jersey? Can any reader help identify the above sequence and source, answers on a post card or the back of a £20 note please!

A final note for holiday makers in Cornwall, head for the BT Goonhilly Earth Station, south-east of Helston on the Lizard Peninsula. The station is open to visitors with trips around the very large site, control rooms and provides an absorbing afternoon visit at reasonable cost. On site catering and a gift shop are also to hand. The site closes to visitors around 1600 so turn up early.

Satellite News

Jean-Louis Dubler, one of our Swiss readers has sent in a news update - Canal Plus will be selling PAY-TV subscriptions both for the terrestrial and DTH (Satellite) viewer shortly, up to know viewing of this channel has been unofficially via pirate decoders or French subscription for over-the-border reception. There are, however, copyright problems though certain programming - mainly sports - that Canal Plus 'sold' over their encrypted service were available free over the Swiss networks!

Amateur Bands Round-up

Listening to the Amateurs

A receiver can only resolve what it is offered by the antenna. My present home has a tiny garden, a quarter of what I once had so I must make the best of what I can put in that garden. I've gone upwards and outwards as far as I can. What next?

Just lately I have been playing with quarter-wave counterpoise radials. I installed one for 1.8MHz and another for 3.5MHz to augment the existing earthing arrangements. Reports **locally** haven't shown much change, but the area above 3.8MHz - the American 'seventy-five metre band' that was previously a blank now offers plenty of signals when a darkness path exists between Newtown and USA.

Measurement of wire length was done by the method of assuming the distance from nose to fingertip as one yard, and the (insulated) wire of each radial was 'lost' behind rose bushes and along fences, bent as necessary to achieve this, and supported by garden string. Unless by accident, resonant radials they are not, but of course my antenna system does go through an antenna tuning unit, and I can obtain 1:1 v.s.w.r. between the tuning unit and the station. Field strength measurements show decided improvements.

In the past I have on occasion operated with a mobile whip put on the landing, and quarter-wave radials, one for each band, 'lost' beneath the carpet and down the stairwell.

The moral is simply this: any time and energy spent on the antenna/earth is never wasted.

As for the log, the school exercise book is now replaced by a computer, at least for some of us.

Which brings me very nicely to the letter from **John O'Neil** of Waterford. John started listening about four years ago on the BC bands and has gravitated to amateurs. Reception is by either FRG-7700 or FRG-7 plus FRT-7700 a.t.u. a BARTG Multiterm modem, with either a Royal Blue monopole or Datong AD-270 antenna to choose from. Also in the shack there is a Zenith 386SX. John has received via the IRTS Newsletter a freeware logging program called FASTLOG, originated in Italy. I have an ancient machine using 5.25in disks, but tried it on a friend's 386. As with all the freeware programs there isn't much documentation, but it seems enough. It uses a startling amount of memory, until one realises that there are in

addition to the basic log, separate sections covering, for example IOTA, DXCC and other such activities. If you are interested, send a 3.5in disk plus a couple of IRCs to John O'Neil, 52 Closegate, Waterford City, Eire...and don't forget to include your **OWN** name and address! Thanks to John for being so helpful.

Incidentally, John had quite a ball in the WPX contest in March, logging, on Top Band OH5NQ, 9A4D, UA2FF, T94DD, EW5A and HG73DX. On 7MHz he found FS5PL, TE1C (an XE variant), P40R, CU3AV, KP4XS and 8R1AK. On 14MHz the score was TA2II, JW0C, FS5PL, TK5BF, 9X5EE, J73PB, XX9X and BV7GA; that leaves us 21MHz for 9G1MQ, S79MX, 5Z4BW, FR5DX, S92YL, SV5AZP, EL2PP, 5H3CK and HH2PK.

Now we turn to **Karl Drage** of Woodford, Northants. Karl's Dad owns an Icom R-70 and an AR-3000A, plus G5RV in the loft and a 40m end-fed wire. Karl listened on 7MHz to EU1AI, GB0BT, X5EBL, YV2NY and 9A5WW, while a turn to 14MHz located A71A, AA5SP, AP2JZB, BV4MU, BV9AYA, CE7ZK, CN8LI, CO6AP, CO6OD, CO7JC, CX5WAC, EL2PP, EL2RR, ET3AA, ET3BN, FG5GZ, FM5WE, FR5DX, FS5PL, HC1OT, HK6GEE, HL9HH, HS0/G4UAV, ZS6AMX, ZS6IN, 3D2MT, 4S7KA, 4S7/ON6TZ, 4S7RF, 5B4WN, 5H3JB, 5N8NDP, 5T5JC, 5U7AA, 5X4D, 7X5JF, 9G1SB, 9K2GA, 9K2HN, 9K2ZC, 9K2ZZ, 9M0A, 9M8PT and 9X5EE. Up at 18MHz we see K5OVC, KZ1A, PT7OO, W1XYA, W2YD, 4X6TT, 7X5JF, 9H1DE and 9M6/HB9TL. Another lift, up to 21MHz accounted for DU1A, GBODX, JH5ZJD, OD5NH, SV0AN - Mount Athos?, SV9ANK, TA2II, VR2NR, XU95HA, XX9X, ZPOY, ZS6BRH, ZS6SA, ZS6WB, ZW5B, 3D2CT on Conway Reef, 4G9AG, 4X2T, 4Z5AD, 5N0MVE, 9H1AM and 9K2/N6BFM. For a first-timer of 15 that is some log!

Now we come to the queries. AP1RIL must be as boring to its perpetrators and its hearers by now as it must be annoying to the Pakistanis; it has surfaced annually along with its fellows on April 1 for at least forty years! The X5 prefix is not right; either a pirate or more likely a mis-hearing - so very easy to do. Finally, IOTA numbers; Islands On the Air. Islands are given IOTA references like for example AS103 and NA198; the former would be an island regarded as part of Asia, and the latter an island associated with N. America. As it happens, *DX News*

Sheet for April 5 says AS103 is P'eng Hu Islands but I have no data for NA198. For more details on IOTA generally I must refer to Roger Balister G3KMA who looks after IOTA for RSGB nowadays.

'Horizontally polarised again!' complains **Ted Trowell** in the Isle of Sheppey. Nonetheless Ted tried the c.w. on 7MHz to book in ZL4AU, VK2BJ, EA8QJ, TK5MP and JW0I; at 10MHz the same was administered to K4HHG/R3 and ZB2JK; while 14MHz stumped up with SV5TH, VP8CQS (King George Is. S Shetlands), PP7JR, VE7NH, W6DU, plus sideband from 9K2ZZ. Finally 18MHz for VQ9TP, EA8CN, UA9CM, TR8LT, 9K2/N6BFM, JW0I, 7Z5OO, YI9CW, 9H3TY and 3B8CF. No doubt about it, it is well worth learning to cope with the dits and dahs.

Our next stop is Birmingham, and **John Collins**; John's letter managed to be delayed and so appeared after the last copy had departed. Anyway, John has an Eddystone 870A plus some ten metres of end-fed wire that not surprisingly does very well on 7MHz. John is somewhat of a night-owl on the bands, which shows in his report. During the sideband leg of the CQ contest on 7MHz John copied 6V6U, ZD8Z, V26MS and 9Y4VU; CU1AX was on Santa Maria Island, IS0AGY on Sardinia and FS5PL on St Martin, IOTA NA105. UA6AUA/MM was interesting; a scientific ship, studying the ocean currents off the Sierra Leone coast, with the QSL route to RW6HS. P49V was calling CQ Europe only at 0300 with an enormous signal generated by 800W. TI4CF was also very active on 7MHz, as was WP4U, Box 9369 Bayamon, Puerto Rico, who uses an FT-902DM, Alpha 78 linear and a KLM log-periodic antenna.

Finally, let's revert to the station. If we are to get the maximum pleasure from operating, we should be seriously considering the layout of the equipment on the operating table. For example, the relative heights of the table-top and the chair, for maximum comfort. An inch added to or taken off the table height can make a mighty difference. Again, the thought of lifting the receiver front so that the eye looks directly at the front panel instead of at an angle; which is another way of saying maybe the rear of the receiver might be lowered. The tuning knob should fall nicely to the left hand leaving the right for the log. Get the receiver placed right, then go on to the other controls, filters, tuner and

so forth. There is nothing worse than having, for example, to stand up every time you want to tweak the a.t.u. or use the beam rotator. Sure, I'm talking about perfection, but for Pete's sake, do try and get as near as you can to the ideal. Finally, don't forget good ventilation and lighting!

Our last input letter comes from **D. L. McLean** in Yeovil. Don is now back in business after storm damage to the antenna farm. In March there were the odd openings on 28MHz to South American and Africa, and 24MHz has opened on the odd days too. On 21MHz Don noted the odd W and Africans in the afternoons, while on 18MHz he could pick up the Yanks from around noon until 2000UTC; in the mornings the short path opened to JA and Asia, while Africans were noted in the mornings and again after lunch. Perhaps 14MHz was best; in the mornings around 0800, the long path to VK/ZL/JA opened, and around 1600 conditions were good to the West Coast of America and Canada. Listing the choicest of the DX, Don offers TP5CE (Council of Europe) on 3.5MHz, while on 7MHz he found P39P, YV5A and XX9X; at 14MHz the best were BV9AYA (AS-103), 3B8GF, 3D2CT (Conway Reef), 9G1BS, 9M0A (Spratly), 9Q5FH and 9X5EE. On 18MHz the take included FY5GF, S0RASD, XX9GD, YB2ARW, ZF1UK, 9X5EE and 9X5TFA. On 21MHz ZS6BJH and 4X2T were noted and on 24MHz Don found CP8XA, EA8/PA3GIO/M, PT7DX, Z21CS and VP8CIL in the Falklands Islands.

Set Listening Period

It's about time we had another one! Try 0800 to noon UTC, on June 11. Log everything you can, any band of your choice, between 1.8MHz and 10GHz! Send the logs in with your letters, and if there are enough entries it might persuade our Editor - bless his little cotton socks! - to stump up with something for a prize.

Finale

That's it once again. Please let me have your reports and letters by the beginning of the month to Box 4, Newtown, Powys SY16 1ZZ - and if I have a dozen new reporters, I'll be over the moon!

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HF Sideband

This month I'll start to work through all the questions that I have received recently. Some of these questions have been combined into one answer, so you may not see your name mentioned below.

On the subject of questions, I am almost out of questions that are suitable for mentioning in this column, so if you have any questions or comments, now is the time to write.

Next month, I hope to take a brief look at the new edition of *High in the Sky*, which should be available by the time you read these pages (I have seen the covers already, so I know it's on the way), and also some more ideas how on to identify flights from callsigns.

Marine

Peter Cookson from Manchester writes asking that I mention the Marine Bands more often in this column - but he does not mention anything about the Marine Band in his letter! I would like to include more marine information in the main part of this column, and also more marine loggings in the Traffic Log each month; unfortunately, very few of the letters I receive seem to mention these bands. Since the column is almost totally reliant on the information provided in your letters, the answer is mostly in your hands. Does anybody have any advice about listening to the marine bands; which are the busiest frequencies to listen to?; when is the best time to listen?; do you have any interesting QSLs from ships or shore stations?

Every piece of information is useful to those (like me) who have little success in hearing maritime traffic. I have tried listening to 2.18MHz, but I suffer bad interference from a harmonic of a local 'talk radio' station. After five minutes of that, I quickly QSY elsewhere. Is it better to listen to the ship transmit frequency, or the shore station frequency? I never seem to have much success with either.

Mr Judd from Birmingham (sorry if I've got your name wrong, the signature was hard to read) asks about a station he has heard on 13.098MHz; it keeps repeating a message that sounds like 'Siple Radio and Telephone maritime Service' in English and then a foreign language. The only 'Siple' that he can find is located in Antarctica (in fact, this would be the US Navy station at Siple).

The frequency 13.098MHz is

Maritime u.s.b. duplex channel 1208, and it is paired with 12.251MHz. During a contact, the ship transmits on the 12MHz frequency and the shore station transmits on the 13MHz frequency.

I have done some research, and I am certain that this is Cyprus Radio. Quite by chance, I heard the 13MHz transmission one evening, and noted that it sounded distorted and hard to understand. Later, I heard an identical broadcast on a 4MHz marine frequency, but the signal was much clearer. Next, I checked both frequencies in the *Klingenfuss Utility Guide* and the latest *Ferrells' Confidential Frequency List*, where both frequencies are listed for Cyprus Radio. In fact, I managed to identify the 'foreign language' broadcast as being Greek, which also helps to pin the transmission down to that part of the world.

A reader from Derby (who wishes to remain anonymous) writes with information about sources of information on ships callsigns. Apparently, the ITU 003 publication (*List of Ships Call Signs*) is available in the UK from: Dubois, Phillips & McCallum, Oriol Chambers, Covent Garden, Liverpool L2; during 1994 the book cost £40.00 plus £4.75 for postage and packing. 'Mr X' points out that much of the book may be of limited use, as it contains countless entries for fleets of yachts that are unlikely to venture onto short wave. He also says that it does not contain details of the numerous Russian sea/river cargo vessels. There are literally hundreds of these plying the Baltic Sea and North Sea routes, but he mentions that they can be heard working with Helsinki Radio for h.f. R/T calls. He recommends monitoring channel 829 (8.803/8.279MHz, ship/shore).

LN2A

I came across some information on a station with this callsign recently, and although it is not an s.s.b. station, it certainly falls into the 'utility' category.

The Norwegian station LN2A is a beacon station that can be heard throughout the day on various frequencies in the short wave bands. It is based in Sveio in the south-western part of the country, and it is controlled by Norsk Telecom. It appears to be part of a propagation experiment, in conjunction with other beacons around the world, but I am not aware of any other stations participating.

Here is the transmission schedule for station LN2A:

MHz	Time
5.470	H+08, 28, 48
5.604	H+00, 01
7.870	H+12, 32, 52
10.407	H+16, 36, 56
11.004	H+21
14.405	H+00, 20, 40
16.804	H+41
20.945	H+04, 24, 44

The format of each transmission is the callsign of the station sent in Morse code at about 12 w.p.m. for 1 minute. I have personally checked about half of the above frequencies and times.

Norsk Telecom say that this beacon is part of a project where other beacons from other areas of the world also participate. Has anyone heard any similar beacons? Please write-in with any details you have.

Check It

Now that the summer months are here, I would recommend that you take the opportunity to carefully

examine your external antenna. After the rigours of a British winter, any external connection may have suffered, so now is the time to make good any breaks, corrosion or problems. From recent experience, it pays to repair any damage in the good weather, because it's easier than trying to fix things in cold, wet and windy winter conditions. My own antenna (a G5RV) had been open to the elements for the past 5 years, and most of the connections were badly corroded. Once I had removed the old ribbon feeder cable and replaced it with a new length, the improvement was amazing; stations that hardly moved the needle on the signal meter are now S5.

While you're out in the garden, you should also take the opportunity to inspect your earthing system (if you use one). During the summer the ground dries out, so make sure that the soil around your earthing post is kept damp.

Traffic Log

(all frequencies in MHz u.s.b. unless stated, all times are UTC)

- 2.182** (6/3 at 1711) GKYQ/HMS *Fearless* calling Wick Radio, requesting a channel for some phone-patches. Wick suggested that they QSY to 'Channel A' (2.006/2.751MHz, ship/shore).
- 2.182** (6/3 at 2314) Valencia Radio, Spain calling for a vessel with the callsign EAHF. No reply from the vessel.
- 2.182** (14/3 at 2310) Vessel P3PS4 calling Lisbon Radio; they want to send a telegram. Lisbon asked them to QSY to 2.694/2.045MHz.
- 2.899** (13/3 at 2153) Reach 76272 working Stanwick ATC, relaying a message from N300LS, who was estimating 56°N 20°W at 2216Z.
- 2.944** (13/3 at 2137) Malaysian 991 reporting to Bombay ATC that they had reached FL330 (33000 feet), and requesting a Selcall check on BH-MR.
- 3.081** (13/3 at 22.26) magic 57 working J4P, asking if J4P was ready to receive a message via RATT. J4P asked '57 to try again in 10 minutes. At 2240, Magic 57 called J4P again, and sent a message by RATT (RTTY).
- 4.058** (12/3 at 1128) British Army (or TAVR) training net. The Net Control Station was '0' (typical Army), and other stations were B10, G10, 0C, 0B, S13 and W10. At 12.03, '0' announced 'End-ex... end-ex'.
- 4.378** (19/3 at 1115) Berne Radio transmitting "This is Berne Radio Maritime Service calling".
- 5.670** (4/3 at 1711) Indonesian 9912 working Madras ATC with a position report. Also, Singapore 322 with the same. Other flights heard working Madras were Iran Air 841 and Singapore 404. Also, Springbok 296 working Colombo ATC (Sri Lanka).
- 5.687** (13/3 at 0740) German Air Force 982 working DHM91 (GAF Wunsdorf, Germany) passing their ETD as 08.45, and ETA to ENOL (Orland, Norway) as 11.30. Also heard were GAF 366, and DHO60 calling DHM91 for a radio-check. Where is DHO60?
- 5.717** (8/3 at 0741) MKL working Z8I (US accent), requesting that they QSY in turn to ARCN 405, 115 and 113. Z8I said that he was unable to use ARCN 405, but would try the others. 10 minutes later, Z8I was heard working MKL on 6.697MHz (ARCN 113).
- 5.717** (14/3 at 0755) German AF station DHM91 transmitting 'Aviation Weather Report No 2'. Also heard were GAF 992 calling DHM91, but was answered by station H88P.
- 8.829** (12/3 at 0824) Ankara calling Istanbul. No reply after several calls. A few moments later there was a series of Selcall tones which were answered by an aircraft with the callsign 'JCK' - this should be a Turkish Airlines A-340 Airbus with registration TC-JCK.
- 8.837** (9/3 at 0741) An unidentified El-Al flight working El-Al Company Ops in Tel-Aviv in Hebrew. The contact finished with a series of Selcall tones.
- 8.903** (11/3 at 2255) Executive jet VR-BSK working Brazzaville ATC with a position report. Also several flights working Luanda ATC, including Springbok 252, Lufthansa 575, Swissair 284 and Speedbird 56.
- 11.175** (18/3 at 1416) Reach N504EV (an Evergreen International aircraft contracted to do a USAF transport flight) calling several times with "...calling MAINSAIL on 9600 Upper" (?).

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Bandscan

Australia

I'm back at the Federal Parliament in Canberra again for a time cranking out research for members of parliament and senators. Among other things the Parliament's Sound and Vision Office monitors Canberra radio and television outlets and distributes them around the building. The Parliamentary Library has, as one of its functions, the task of recording from that media stream a great range of news and current affairs programmes. I'll make time to visit the Sound and Vision Office and the Library's impressive looking monitoring and recording suite and bring some detail next time.

Radio Australia

Radio Australia (RA) is beamed into Asia and the Pacific but suggested frequencies to UK and Europe are:

UTC	MHz
0300-0400	15.510
0600-0700	15.510
0800-1100	21.725
1100-1300	15.543
1430-1800	11.660
1800-2100	7.260
1100-1800	9.615
1530-1900	6.090

Program and frequency guides are available from Radio Australia, GPO Box 428G, Melbourne Victoria 3001 Australia. Those with big budgets can get RA by telephone on +61 3 626 1800 and by facsimile on +61 3 626 1899. Those with Internet connections can go via raust3@ozemail.com.au and to leave messages for the RA Open Line use +61 3 626 1825. Send reception reports to the postal address.

Sports fans can get Australian sports news at 0010, 0118, 0210, 0310, 0410, 0518, 0610, 0715, 1120, 1410, 1720 and 1915UTC Monday to Friday and 1110, 1410, 1720 and 1910UTC Saturday and Sunday. If that is not enough sports coverage for you RA runs its Grandstand program from 0200-0730UTC Saturday and 0300-0730UTC Sunday on parallel frequencies to its normal broadcasting. These frequencies are 17.880, 17.715 and 15.245MHz beamed at Asia; 15.365, 15.240 and 9.580MHz beamed at the Pacific; and 9.660MHz beamed at Papua New Guinea. Programming includes Australian Football League and Rugby League from April to October.

Pay Television

The information coming through on pay television from the media and

news services would fill a book. Given the day to day twists and turns as the players jockey for position on an ever-changing political and economic playing field, chronicling the saga would make dull reading. A few snippets however, may be of interest.

The Australian Broadcasting Authority (ABA) has prepared a paper on R Classified Programs on Pay TV that has been tabled in Federal Parliament. Minister for Communications and the Arts, Michael Lee, has stated that there will be no R-rated material on pay television until parliament has resolved the issues involved. The Broadcasting Services Act specifically prohibits the broadcast of X-rated material on pay television. In general terms, in Australia, R-rated material is not suitable for viewing because it includes things such as horrific depictions, sexual violence or blasphemy; X-rated material is definitely mail order only.

Proving the importance of sport to the Australian psyche and to profits the major media players here are vying for rights to operate and broadcast major football competitions. At deadline for this column nothing has been resolved but the issue looms so large in popular media news will no doubt spill over into UK papers as it unfolds. Showing its usual impotence in the face of money the government is still tinkering around at the edges with its anti-siphoning list. Readers of this column may recall the Australian government's list of major sports events that it felt should remain on free to air television.

Given my attitude to hours of boring sports broadcasts clogging up our airwaves, I am happy for all sporting events to go to pay television. And given the government's lack of decisive action, that's probably what will happen. But I guess that's a fairly un-Australian view.

Amateur Packet Operations

A news item in *Amateur Radio Action* notes that amateur radio packet operators are concerned at a recent Western Australian defamation action where a computer bulletin board user scored a \$40000 (about £19000) fine. Under current regulations not only the originator of a message but all packet stations passing on that message are responsible for its content. Given that once they are sent most of these packets are passed on automatically

it is difficult to see how packet operators could be held responsible. Nonetheless the law says that they are a 'knowing publisher' and are hence liable. The problem is apparently worse than even this scenario might suggest, however, since allegations have been made that some packet operators are putting out transmissions using other people's call signs. The solution appears to be to encrypt packet message authentication into the packets. Fortunately the Spectrum Management Agency (SMA) says that this encryption is legal under current regulations. That having been said the defamation laws mean that it is recommended that amateur packet operators store and view all messages before passing them on through the system.

In the same context a Senate standing committee is currently investigating regulation of computer bulletin boards and Internet access. The current feeling is that the committee will recommend legislation incorporating hefty fines for bulletin board operators and Internet providers who allow access to pornographic and defamatory material. With this sort of legislation in place, it is my view that the Internet would virtually shut down in this country as the sheer volume of material precludes checking individual files and messages.

Other News & Information

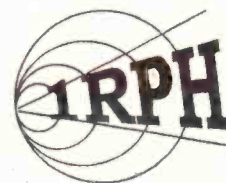
Adventist World Radio (AWR) has announced that it is undertaking a series of test broadcasts beamed towards Australia from AWR-Asia on the island of Guam. Previously AWR could be heard in Australia from back beam radiation from programs directed at Japan from KSDA at Agat on Guam.

Also via the AWR Radio News Bulletin is an astounding report that ABC a.m. radio stations 2BL in Sydney and 3LO in Melbourne have been heard in Canada. Both transmitters operate on 50kW. For those feeling lucky try 549 2CR Orange NSW, 558 6WA Wagin WA, 576 2FC Sydney, 594 3WV Horsham Vic, 612 4QR Brisbane, 621 3AR Melbourne, 630 4QN Townsville Qld, 702 2BL Sydney, 720 6WF Perth, 729 5CL Adelaide, 738 2NR Grafton NSW, 774 3LO Melbourne, 891 5AN Adelaide or 1548 4QD Emerald Qld for ABC 50kW a.m. transmitters. Frequencies are in kHz.

Amateur radio operators are facing a licence fee price hike from \$A37 (about £17) to \$A51 (£24). This

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The Australian Radio DX Club can be contacted at PO Box 227, Box Hill, Victoria 3128, Australia.

The Wireless Institute of Australia is negotiating for secondary service status in the 160 to 190kHz region. The primary service in this area is radio navigation. Australia's Civil Aviation Authority (CAA) has been asked to comment. Given recent upheavals within CAA this may take some time.

Internet

It seems difficult to access any media outlet these days without hearing the word Internet. There are around 600 000 subscribers here and their numbers are growing at around 10% per month. Opposition communications spokesman Senator Alston believes that Australian parliamentarians should be part of the action. At the moment, bureaucratic inertia means that the Australian Parliament House only has six stand-alone PCs for parliamentarians and staffers to access the Internet. Having queued for the use of those myself, I can vouch for the fact that it is far from satisfactory. Alston notes that when even the cat of the President of the USA has an Internet connection it is not too much to ask that Australian parliamentarians have one too.

As well as being a radio aficionado I have been a long time computer professional and dabbler. The PC Users Group in Canberra has recently connected to the Internet with the domain name pcug.org.au. That makes me greg@pcug.org.au for those who want to pass on news to be followed up.

I welcome any news and comments. In particular I am interested in any s.w.l. information on Australian stations heard by SWM readers so I can chase up more details and interesting snippets from this end. My address is PO Box 208, Braidwood, NSW 2622, Australia. For personal replies please send two IRCs. Those with an Internet connection can now get me at greg@pcug.org.au.

Airband

As a holder of both amateur and pilot's radio licences, I was horrified to read the letter from John Wood G3EAY (Essex) on page 11 of the *May Practical Wireless*. Apparently, 144MHz equipment is offered to certain pilots (of hang-gliders for instance). Retailers doing this are either mis-informed or unscrupulous and the purchaser might not know better. All sorts of legal questions are raised, but additionally, the authorities are likely to take exception to what could be mis-construed as amateur aeronautical mobile operation - at present forbidden in the UK. It's in all amateurs' interests to report any such occurrence to the Radio Investigation Service.

Callsigns

Reach (out of Mildenhall) was of interest to **S.M. Rooney** (Leigh-on-Sea) in April. A more complete listing of aircraft types operating with this callsign is sent by **George Smith G4EBK** (Great Grimsby) and includes B.747, B.757, C-5 Galaxy, C-141 Starlifter, DC-8 and L.1011 Tristar. The previous callsign was MAC (Military Airlift Command). This is the USAF's transport service, some of which - as you can see - is let to private contract, just like our MoD's air trooping flights.

Follow-Ups

I hope that my article on decoding Selcall (April P.21) was informative. A detail about the comments in the box on page 26 of that article: the tones can be heard with the receiver set to a.m. since they are accompanied by a carrier. The carrier starts before the first tone-pair and is maintained, including during the inter-tone gap, until the precise end of the second tone-pair. This is of no consequence to the Seldec Decoder, though, because the decoder receives audio only and the carrier is zero-beat during s.s.b. reception.

Same issue, this time about the Flight Radio Exam (page 45) and **Christine Mlynec** (Aylesbury), our photographer, says "I didn't make clear why an instructor is acting as examiner. The exam is taken at a flying club or school, where one of

the instructors also has CAA recognition as being authorised to conduct the test. You'll be taken through certain aspects first, and tested after. If taken as part of an approved flying course, your instructor will know you anyway!"

Information Sources

VOLMET gives current (actual) weather at main aerodromes and sometimes includes a short-term forecast when significant events are expected. *En-route* weather, including freezing levels, is not part of this service and so **W.J. Hibberd** (Bridgend) would like to know a source of this information. Following on from the April 'Airband', then, here's how to access Airmet.

All the information is provided as a pre-recorded service accessed by telephone. Remember that these are 'premium rate' calls, at the time of writing charged at up to 49p per minute. The forecasts are divided into three regions with the following telephone numbers: (0891) 771340 - Southern (including W.J. Hibberd), (0891) 771341 - Northern (including Northern Ireland) and (0891) 771342 - Scottish. There are also specific area and detail forecasts, e.g. W.J. Hibberd lives in the south-west England detail area that is forecast on (0891) 771346. Upper winds, significant weather, etc., all have their own forecasts. An automated service on (0881) 800400 gives individual aerodrome information if you have a tone-dialling 'phone and know the appropriate codes, but VOLMET is cheaper! If you intend to use the system seriously, you'll need AIC 92/1994 and 21/1995, which pilots and aerodromes should have already received from the CAA.

A kind offer comes from **Barry Briars** (Bristol). He has prepared a tie-up list whereby the registration of over-flying (commercial) aircraft can be looked up if the airline, flight number and date are known. As Barry says, enthusiasts can find these out for themselves but the time, effort and expense are considerable. I'm always surprised just how many expensive receivers and decoders are sold, given the cold economic climate, but maybe I'm just jealous! Anyway, Barry's list would produce quite a lot of paper every month.

Slingsby Firefly.

Christine Mlynec



Godfrey admires an AA-5 Cheetah.

Christine Mlynec

Would readers be interested? Perhaps they could send Barry a supply of pre-stamped/addressed envelopes, plus extra stamps to cover copying costs? Let me know and I'll gather all your suggestions together in a future 'Airband.'

Mrs. B. now helps out with tourist information on the Isle of Man, a pity it's not in an aeronautical capacity! Chris & I thank you for the Easter card.

Museum Piece

Thanks to my folks, **Iris & Albert**, for drawing my attention to the Tangmere Military Aviation Museum. As well as the usual display of hangared aircraft, there's a Spitfire simulator - but with a 45kg weight limit, that's me out! There's a cafeteria, shop, and facilities for the disabled (I should think so too!). It's immediately south of the A27 Arundel-Chichester road in West Sussex, Tel: (01243) 775223.

Where can **D. Fry** (Torquay) go looking for cast-off equipment from scrapped aircraft? It's a matter of luck, I'm afraid! You might be in with a chance if you rummage around some of the 'Government Surplus' stalls at airshows, but prices are often silly, equipment is sold in rotten condition and these vendors really make their money by helping purchasers to dress up as soldiers - complete with ammo! Even amateur radio rallies can sometimes yield surprises (events listed in *Practical Wireless & Short Wave Magazine*). *PW* carries adverts by A.H. Supplies who are known to trade in this kind of thing. The Popular Flying Association Rally has its main days on July 1 & 2 this year, but I regret it's at Cranfield, far from Mr. Fry. Likewise, the Squadron Aero-Jumble is held annually at North Weald, usually around April. MoD sell by auction, but the regulations are strict and lots are large so make sure you

know what you're letting yourself in for! The address I have for Disposal Sales (Contracts) 3 is Room 1/146, St. Christopher House, Southwark Street, London SE1 0TD.

All replies to readers are via this column, never direct.

Frequency and Operational News

Information comes from the CAA via the 2-95 *GASIL* (all MHz). Farnborough loses its weekend gliding channel on 129.975. At Londonderry, Tower moves from 122.85 to 134.15. Shawbury's Military ATZ (Aerodrome Traffic Zone) contact frequency changes from 124.15 to 120.775. Stansted's radar moves from 120.55 to 120.625 (although I thought it was on 125.55, could there be a misprint?) and don't expect a direction-finding service any more. Lower Airspace Radar is lost at Wyton and Chivenor; also lost at Chivenor and Alconbury are the ATZs and Military ATZs.

W.J. Hibberd notes an unusual but practical arrangement at Cardiff whereby Approach transmits simultaneously on 125.85 and, for the benefit of the many local military aircraft, 277.225MHz.

Hardware

In April there was a photo of a Smiths Radio-Magnetic Indicator (RMI) from my museum. **Peter Wade** (Sevenoaks) also owns an RMI but it's quite different. The Bendix unit contains a 400Hz Magnesyn but only has a 4-pin connector, so I suspect that only one pointer is driven automatically. I don't know why a second pointer is controlled by a knob, but it might be a heading index so as to enable the pilot to remember the required direction. Does the compass card turn (as in a true RMI) or is it fixed?

The simplest way to get it working - assuming that 400Hz is available - is to mount a loop (frame) antenna on the sending equivalent of the Magnesyne, i.e. some kind of synchro. The pointer will then follow the loop's azimuth angle. When the loop receives a null as heard on a receiver, the correct direction will be indicated. I can't say much more without further details, Peter, so I suggest carefully opening the instrument (caution any corroded screws!) and let me know what's inside.

In the Cockpit

Following on from the last two months, I'll explain how to read the RMI display should you ever find yourself sat behind one. Really two separate systems are combined in the one instrument. You know which way the aircraft is pointing by the magnetic heading indicated by the compass rose. Your heading is at the 12 o'clock position (see April's photo). Magnetic North is sensed automatically by an electrical coil suspended in a wing-tip.

The radio pointers tell you which way to a beacon. The required

beacon needs to be tuned in by you, the pilot. You can practise reading an RMI without any equipment at all!

Wherever you are at the moment, while reading this, stop and look out of the window. Which way does it face? For example, perhaps it looks south, like the one in my museum. Face out of the window, and pick an object over your left shoulder. While seated at my word processor, it's the door. Keep your arm pointing towards the object - just like the pointer on the RMI. If the door were a beacon, the pointer on the RMI would lie horizontally and point to the left (9 o'clock). It overlies the east position on the compass rose.

Now turn 90° right (while standing on the spot). You're facing west, and the compass rose rotates to show this. The beacon is now behind you, so the pointer has rotated too - by the same amount and in the same direction. It still lies over the east marking on the compass rose even though both have now moved round to the 6 o'clock position on the dial. Yes, to fly to the beacon you need to head east and it doesn't matter which way you're facing at present!

What happens when passing a beacon? Start at the end of the room opposite to the window, face the window and point to the object. In



my case the door is in my half-past-10 o'clock. As I walk forwards, towards the window, my heading remains constant at due south. The door seems to pass down my left side and when it gets to the 9 o'clock position it's said to be abeam (an old sailing term). If I imagine continuing forwards (difficult as the window's in the way!) the door would end up at half-past-seven o'clock. Imagine the pointer swinging round to follow this while the compass heading remains still. Next time, we'll explore the effect of wind.

The next three deadlines (for topical information) are June 16, July 14 and August 11. Replies always appear in this column and it is regretted that no direct correspondence is possible. Genuinely urgent information/enquiries: 0181-958 5113 (before 2130 local please).

Abbreviations

AIC	Aeronautical Information Circular
a.m.	amplitude modulation
B.	Boeing
CAA	Civil Aviation Authority
DC-	Douglas Commercial
GASIL	General Aviation Safety Information Leaflet
Hz	hertz
kg	kilograms
L.	Lockheed
MHz	megahertz
s.s.b.	single sideband



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Scanning

With summer here - and me between college terms - the opportunity to take the set with me to events is, of course, at hand. Summer is particularly busy - radio wise - and the chances of really getting into the hobby are very obvious.

This summer sees me attending meetings of The Mini Owners Club in my '73 Clubman - which is my pride and joy! It also means day and weekend trips can be planned to the South Coast, somewhere I don't normally frequent, and other places where activity will be quite high. Airshows are planned, as are other events of interest, and I hope to be busy. The Mini takes up a lot of time as would any classic car, but I also plan to note down what I hear on my travels for inclusion in later columns when the sun's gone and memories are recalled. If any of you spot my Clubman and are owners yourself, remember a wave doesn't go amiss!

Back to Business

I'll start with a letter from a gentleman in Didcot who requested no mention of names and who sent me an audio tape to try and identify. The owner of an AOR AR-1500 EX, and a very keen airband listener, the gentleman in question is experiencing some interference from what sounds like bursts of data cross spectrum and often blocking out interesting frequencies. Having had a few listens to the tape I can confirm the noise as being data - and of a particularly noisy variety. Probably telemetry - confirmed as he lives near to a fire station and its large communications mast. This ties in with a letter from another listener - also claiming immunity - who reports that fire brigades now use a data system in their appliances and called MDS - Mobile Data System.

There is nothing that can be done apart from fitting a filter in line with the receivers antenna - although this may well not cure the problem 100%. My sole piece of advice is to go for a filter suited to the band you're listening to. Many filters are available on the market - and some dedicated to one band, such as airband. Tuneable filters are, of course, another idea and two that come to mind are the Garex Tuneable Antenna Filter, available for around £30. This provides a deep notch over a tuneable range - 85-175MHz - and is useful providing that the interfering signal is not closer than 10MHz to the signal that you want. The second

filter is available from Nevada and others and is known as a Scanmaster Notch Filter which covers, again, the popular 85-170MHz portion of the v.h.f. band. This one claims to also reduce short wave breakthrough under 1.7MHz. Both are priced under £30 and that makes them attractive if interference is your problem.

I tended to get tremendous breakthrough from Fox FM on 102.6MHz whilst at college, wiping out a good section of airband for me. Filters notwithstanding, my sometimes perplexed solution to this would have involved chopping the mast down! I considered room moving at one stage - until the alternative one was found to be next door to an unscreened computer classroom....! In the end I just came to live with it though, I admit, it is annoying.

If you have any solutions to problems like these, why not write in? It all helps.

A letter from **Chris Ridley** in Sligo, S. Eire now. Chris writes to ask if any Irish listeners ever contribute to the column as I carry very little info on Ireland. To be truthful, the letters I get from Ireland all ask for anonymity, although I have put readers in touch with each other. Chris would like to produce an Irish frequency list and currently runs one on Microsoft 'Works' on his PC. He updates the database regularly but would like to look at starting a home-grown list as most publications aim for the British market. If any reader in Ireland would like to correspond with Chris, then you can do so via my home address where I'll collate the lot and send them on.

Chris Brown of Ashford in Kent writes in to ask if anyone has ever heard voice transmissions from the Space Shuttle in the UK - either direct or via WA3NAN, etc. He also states that he's written and 'phoned various agencies but had a poor response, and wonders whether any listeners are interested in this? If you have, or are Sat. inclined, then please contact Chris at 125 Godinton Road, Ashford, Kent TN23 1LN.

Next, a letter from **'Oxford Ears'** of Abingdon, who reports some fantastic propo conditions last year. Using 127.65, 123.95, 135.525 and 133.0 Shanwick ground was heard as was Brest Control! The location chosen was a local hill at about 150m a.s.l. and also a home-made dipole in the loft! I did ask if anyone had heard anything good in lift conditions - and there's the proof some have! The writer also mentions

some pretty interesting MilAir frequencies that are local to Oxford and I intend to have a bash at those this summer. I'll keep you posted as to how it gets along.

Darren Coward of Grange-O-Sands is collecting frequencies between 30-1300MHz, which is standard scanner territory and wonders if anyone can assist him? If you have any frequencies you'd like to share in return for West Coast ones, then you can contact Darren at 2 West View, Meathop, Grange-over-Sands, Cumbria LA11 6RE.

I'll also mention **P. Thornhill** in here and just say I'll get back to you via the mail, Pete. Thanks for the marine list sent in which I'll use as a filler in this month's column.

A letter from the Aviation Society of Ireland, Cork Branch next. In the March issue a letter from T. C. Hunter regarding rescue callsign. Rescue 115 in particular. I can now report that Rescue 115 is a Sikorsky S-61N reg. EI-BHO operated by Irish Helicopters for and on behalf of the Minister for The Marine in a SAR Role out of Shannon. My thanks to **Frank Lyall** for that. As a matter of aviation interest, there was a rumour that the Irish Air Corps were looking at Sea Kings to enhance their Dauphins currently in service. Anyone confirm this?

After the Ambulance codes featured here, a letter from **Mr H.** of Swansea pulls in some of the codes used by the West Glamorgan Fire Brigade. They TX on 70.950 a.m. and TX on Mobile 80.6375 a.m. A list of their status codes follows:

Alpha	Operational Appliances.
Bravo	Operational Personnel.
Status:	Either Alpha or Bravo:
81	Station first pump.
82	Station second pump.
83	Hydraulic Platform.
84	Spare or other.
85	Prime Mover and as follows:
H	- hose layer. D - Chemical unit. F - Foam Tender. B - Breathing Apparatus Support Unit. W - Water Bowser. R - Refreshment Unit. C - Carrier Flatbed Mobile Unit. I - Incident Control Unit.
86	Turntable Ladder.
87	Rescue Tender.
88	L4P Land Rover 4WD Pump. T4P Transit 4WD Pump.

Brigade Area Stations:
1 - Neath. 2 - Glyn-Neath.
3 - Cymmer. 4 - Port Talbot.
5 - Swansea, The Strand. 6 - West Cross - Sketty Lane. 7 - Reynoldstown - The Gower. 8 -

Morrison and Brigade HQ and Communications. 9 - Pontardawe. 10 - Severn Sisters. 11 - Gorseinon. 12 - Pontardulais.

By the way - I sincerely hope that if you do use a scanner then you give to the appeals made by Emergency Services? If you don't - shame on you! This info is free, given by other users and the least you can do is give back indirectly. If you do, brilliant. If you don't, then please start to!

This month I've received a copy of two review samples from Interproducts who publish a wide number of books used by scanner enthusiasts and advertise regularly in SWM. The two in question are:

Scanner Busters and *Eavesdropping on The British Military*. I've gone through these and this is what I thought of both. (Both books are also available from the SWM Book Service - see pages 83 - 86-ed.)

Scanner Busters is, I think, a misnomer. It implies that by reading this book you can come up with a way of breaking into secure v.h.f. and u.h.f. transmissions. Forget it! You can't. That apart, the book is a thoroughly interesting read about encryption systems on the go currently. Aimed squarely at the serious scanner user, the book provides a good background to current systems and in an easy to follow format. For example, one of the book's highlights is DSRR - Digital Short Range Radio - which is just another word for mobile telephones. This system, which is a trunked network, provides some 77 channels plus two control channels between two sets of frequencies already known to scanner owners. This system, the book suggests, is so anonymous and private (sic) that those features alone make it possible to be used by security and law enforcement agencies - and heard by scanner users equipped with the channels!

With regard to being able to monitor 'secure' channels however, the book's title implies you can. Not without modifications to your set you can't! For example, spread spectrum military signals in scrambled mode are answered by the very general (quote) "A modification could be carried out by replacing the intermediate frequency (or i.f. as it is known) filter with one of much wider bandwidth."...excellent if you are into tech. mods but for the average scanner user, pretty vague!

All in all, I found this book good

background information and excellent on explaining the intricacies of secure voice systems. If you're interested in knowing more, buy it. I certainly found it useful. If, however, you're looking to modify your scanner and hoping for step-by-step instructions then look elsewhere. As a source book and one guessing the future of scanning it's helpful. I would, however, suggest that for a newcomer it would be a poor buy.

Eavesdropping on The British Military however, is another kettle of fish altogether! This I would wholeheartedly recommend - even if some of the data is a bit outdated. Written in very clear text, the book is a worthwhile investment and one that I am going to ensure I have a copy of.

Interproducts claim the book is unique - quite right too! There isn't another book like it on the market and I doubt if anything will ever match it. Dealing with all modes of communications - from v.l.f. to s.h.f. - the book splits the three services up and deals with them on a one by one basis. In A5 format, printed on good quality paper, it would make a worthwhile addition to those users who, like me, dabble in h.f. as well as v.h.f. and above.

Listing callsigns, I checked some

of these out and was slightly disappointed to find no reference made to Army vessels - ex RCT and now RALC - and only one made to RAF Civvy contractors. Those apart, the book is well written.

On callsigns, some data is aged - but, given the size of the list that isn't surprising! For example, callsign Fox 1-9 lists the aircraft type as a Buccaneer belonging to 12 Squadron RAF Lossiemouth. To my knowledge, there are no Buccaneers flying actively! This is nitpicking, however, and overall the book would be a brilliant piece of kit to have in the shack with you.

I'm intending to use both as sources, updating some frequencies as they come up, but also to get some h.f. time in on signals I never knew were there.

What's v.l.f. I hear some of you ask. That's Very Low Frequency and used by submarines down to a depth of about 50 feet. Can you receive it? Only if you have the kit - beyond the scope of this article at least! For a taste, if you've got the kit of course, you could try 16.1kHz C/S GBR mode f.s.k. and broadcast from RN Rugby. Now I never knew that....!

Overall, both books are useful adjuncts to broadening the hobby. Many of you will already know of my interests in 'numbers stations' and in

Manchester Canal Frequencies

156.350	Eastham Lock. 160.950 Duplex. Marine Channel 7.
156.700	Eastham Control. 156.700. Marine Channel 14.
156.900	Barton and Irlam Docks. M.Ch.18.
157.000	Stanlow Oil Docks. Marine Ch.20 and on 161.600.
156.400	Tugs inbound. Marine Ch. 8.
156.500	Tugs outbound. Marine Ch.10.
156.575	Weaver Navigation Services. Marine Ch. 71.
156.600	Mersey Radio. Marine Ch.12.
156.550	Liverpool Pilots. Marine Ch. 11.
156.250	Alfred and Gladstone Docks. 160.750 Marine Ch. 5.
156.450	Tranmere Stages. Marine Ch.9.
157.050	Langton Dock. 161.650 Marine Ch.21.

h.f., so I'll also add that Interproducts takes care of those as well with a comprehensive list of books on various 'odd' radio subjects. In fact, I believe Interproducts to be the only publisher of 'out of area' books for the listening fraternity - which should be acknowledged. Prices are £4.95 for *Scanner Busters* and £17.50 for *Eavesdropping On The British Military*. Information would be hard to obtain from other sources and I'd advise anyone interested in the more 'exciting' aspects of radio as a whole, but scanning in particular, to give these a go. My sincere thanks to R. H. Barnes of Interproducts for the review copies.

Marine frequencies now and some useful ones sent in by Pete

Thornhill - mentioned earlier on. If you're in the Manchester Canal area, these will be useful (shown in the table above).

That should keep all the North Western monitors busy with movements from pilot to berth! It's also a good place for me to weigh anchor and sail off, too! If you have any gen you wish to pass on, please do so - until next month, good listening and catch you down the log. 73s.

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Info In Orbit

High pressure areas often result in WXSATs producing clear images of the land below, and those that settled near Britain during early April did just that. With the spring sun having risen higher over Europe, visible-light WXSAT images of an almost cloud-free Britain showed the cities and sprawling suburbs.

Another feature of spring images is the re-appearance of sun-glint caused by reflection of the sun in the waters of the Mediterranean sea - during morning passes - and in the Atlantic ocean during evening passes. Not every picture exhibits the effects of sun-glint; it is dependent on cloud cover. I often retain images that show it, just in case an opportunity arises for publication. Although I give preference to images from correspondents, occasionally, like now, I cannot resist!

The images shown here were received from NOAA WXSATs during a few days from April 11. They show the cities of Plymouth, Bristol, London, Birmingham and several others. Land features, such as Dartmoor, can also be identified. The limiting resolution of the NOAA AVHRR (high-resolution) sensors is about 1.1km; after they have been degraded for a.p.t. (v.h.f. picture) transmission - this reduces to 4km, that corresponds to several pixels per city.

The islands of Corsica and Sardinia in the Mediterranean Sea are surrounded by brightly reflected sunlight.

Current WXSATs

METEOR 3-5 was switched off around March 19, as anticipated. Its orbital precession (the movement of the plane of its orbit) had taken it close to the sunrise (morning) terminator where its solar arrays receive low levels of illumination. On this occasion it was allowed to rest. METEOR 2-21, also transmitting a.p.t. on 137.85MHz, then came on, still suffering from what I presume is an antenna pointing problem. Its signal fluctuates wildly during most passes, causing unusually noisy pictures. On April 17 METEOR 3-5 came back on, still using 137.85MHz, having moved into a more favourable solar aspect. NOAA-9 returned to active duty on March 28, clashing with NOAA-14's a.p.t. transmissions for a few days before they separated. OKEAN-4 (1-7) continues to occasionally transmit images on 137.40MHz.

New Satellite on 137.40MHz

A non-a.p.t. signal was heard on 137.40MHz during early April. After confirming its satellite nature (gaps between detection averaging 100 minutes), I had difficulty in correlating it with any CIS satellite - old or new. I gave Peter Wakelin a ring (I believe he was involved in much of the early research monitoring Russian WXSAT transmissions) and he kindly identified the signals as coming from an American satellite called ORBCOM-1. Given the irregular use of this frequency by CIS a.p.t. satellites, it seems unlikely that we shall experience significant interference.

Image Processing

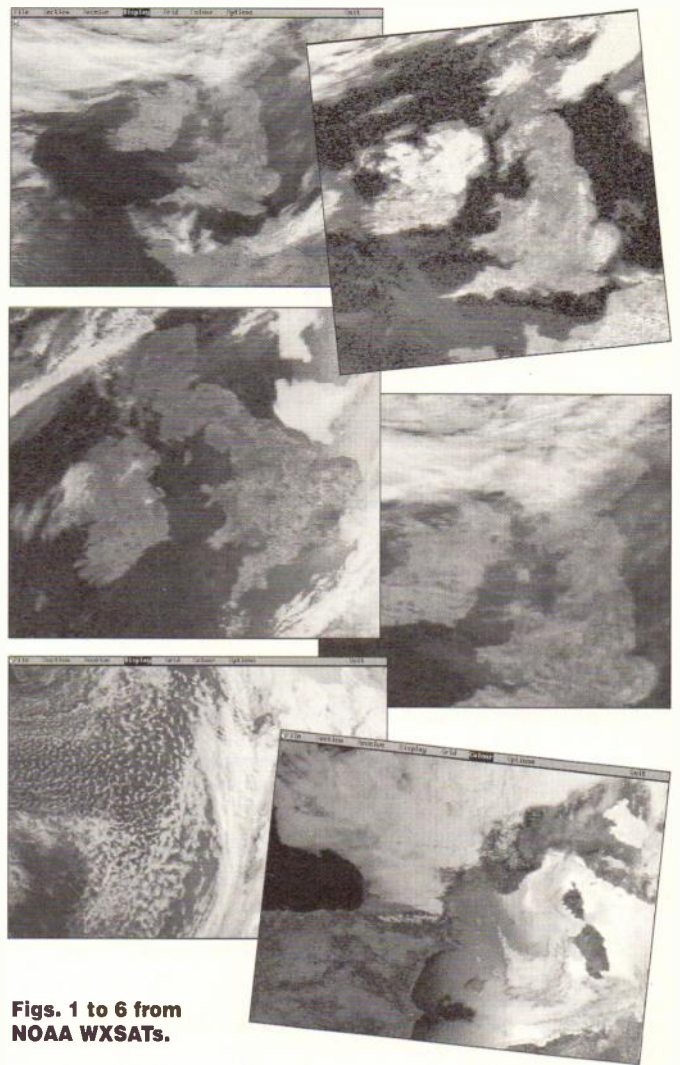
To produce the individual pictures of Britain shown here, I started with the original raw image, that occupied nearly 1Mb, and zoomed to full resolution. The display was saved in PCX format using the program's conversion option. This reduced-section occupied about 500Kb. Conversion to PCX format allows subsequent image transfer into a range of image processing programs.

I used the new version of PaintShop Pro (see later notes) to extract the section including Britain; this reduced it to about 200Kb. Conversion to GIF format - a type that uses compression - finally reduced the section to less than 50Kb! Some changes were also made to contrast and brightness to enhance the picture.

This process was repeated with other images obtained during those sunny days around mid-April - the results shown in **Figs. 1 to 6**. The pictures illustrate just what can be seen on a clear day, using the visible-light sensors.

METEOSAT-3 Monitoring

METEOSAT-3 has been positioned over the east coast of America for many months, helping provide regular monitoring of the USA. Following the *Challenger* disaster of several years ago, re-scheduling of many satellite launches was necessary. An urgent need to replace ageing GOES craft resulted in negotiations between America and EUMETSAT, leading to the re-positioning of METEOSAT-3 to various



Figs. 1 to 6 from NOAA WXSATs.

longitudes near the east coast of the USA. This also enabled those living in suitable westerly locations in Britain to have occasional favourable reception conditions, when METEOSAT-3's WEFAX transmissions on 1691MHz could be heard.

I recently received a METEOSAT Yagi for testing, and its easy mounting and pointing capability allowed me to receive a good signal strength from METEOSAT-3. From Plymouth (around 4° west) the satellite varies between 5 and 9° elevation, viewed between houses and a bush. If you are suitably located, try detecting the 1691MHz transmission; note that the carrier is usually switched on for picture transmission only - unlike METEOSAT-5 that almost always transmits a carrier. I understand that the satellite may be switched off at the end of May, following the re-positioning of the GOES constellation, but this information is currently unconfirmed.

PaintShop Pro - New Version

Users of WXSAT decoding software often want to enhance the raw images acquired by receiving

systems. Winter NOAA images and nearly all METEOR pictures may need contrast enhancement to reveal detail in the dark areas, but sometimes software lacks the complete range of image processing facilities that might be wanted.

A number of software products have been released for image enhancement, and several of these are eminently suitable for WXSAT applications. PaintShop Pro is one such product, and a new version - 3.0 - recently appeared on the scene in shareware form.

PSP is run in the Windows environment, installation being straight forward using the supplied ZIP (compressed) file. An icon (miniature Windows' picture representing the program) is produced when installation is complete.

The familiar Windows options are available - File, Edit, View, Help - together with more specific menu options - Image, Colours, Capture. To illustrate the comprehensive nature of the software, there are 13 options under colour alone, several of these offering further choices.

A typical process might be the selection of a PCX image for cropping, followed by contrast adjustment. One can use either the

menu (mouse or keyboard operation) or select one of the small icons (available for the main processes). Opening an existing image (such as our PCX file) is done by clicking the open icon, then selecting the appropriate drive, directory and file type. No typing is necessary - merely a click of the mouse button.

The image is loaded and can be zoomed to maximum resolution before processing starts. Having decided to include several pictures of the UK in this edition, I wanted to crop each image to avoid our editor having a heart attack trying to squeeze in so many pictures. There is a toolbox that can be on permanent display, and provides a selection of cropping tools - I chose the rectangular crop. A few seconds with the mouse - click at the start position, drag the rectangle to the finish position, and the selected area was marked. This was then copied (edit option) to the clipboard, and the file closed without saving. By starting a new file and pasting in the clipboard image, the cropped section was isolated, then saved as a new file. Minor contrast and brightness adjustments were made, then the final image saved on disk - now occupying an average of 80Kb!

Edit provides an Undo option, as well as the usual Cut, Copy And Paste options found in this type of program. View lets you control zooming levels and the display of other tool icons for quick selections. The Image option offers one of the most comprehensive set of tools that I have seen - and I have used CorelDraw! You can Flip, Mirror, Rotate, Add A Border, Crop, Mask and Apply Filters. The latter provides a further selection including user-designed filters. As far as I can see, there appear to be more facilities included in this program than the commercial package (DR Halo) that I received when I bought my CD-ROM drive a year ago.

A super image browser is also included. This is a linked program that can be run separately, and helps to manage your WXSAT image files. When you select the directory, all graphic files are displayed in 'thumbnail' format, the sizes of which you can select. Images can be renamed or deleted.

If you have difficulty in obtaining PaintShop Pro from Bulletin Boards or Shareware sources, I can provide a copy. Please send an HD 3.5in disk with suitable pre-paid package and 50p towards collection costs.

The included documentation requests PSP Users to register the product after 30 days use, if they wish to continue to use it. PaintShop Pro can be registered by contacting Digital Workshop: Tel (01295) 258335. Registration is approximately £50.

Letters

There is a steady flow of interesting letters for this column, for which I am grateful. One correspondent wrote

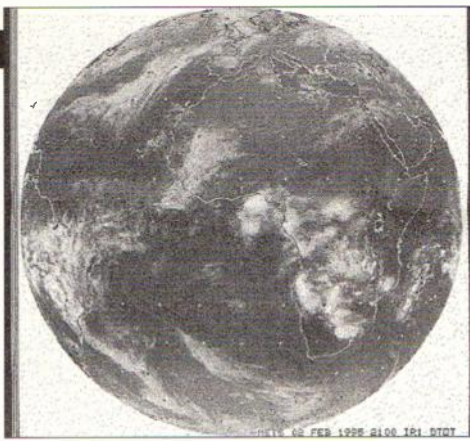


Fig. 7: DTOT, METEOSAT-5 from George Newport.

from Hull to say that his hobby includes listening to several utility services - RTTY, NAVTEX, FAX, but he now wants to try WXSATs, using his AOR AR-8000 receiver. He explained that although he can hear the satellites, signals seem to come in bursts. The answer came when he mentioned that his antennas comprised a long wire and discone. Neither of these are suitable for the circularly-polarised signals from WXSATs. Discones and long wires resonate to many satellite signals, particularly if a wide-band pre-amp is fitted (to the discone) - but the resulting signal is unsuitable for decoding. Sadly, our Hull reader was recently made redundant, and comments that his scanner and computer have since become much more than a hobby.

Clive Allen of Chesterfield wrote about his interest in monitoring Shuttle flights with his receivers. He found my Shuttle schedule to be very helpful - good! I do monitor NASA press releases for this information and keep an up-to-date manifest available. If anyone wants this A4 printout, just send an s.a.e. with extra, separate stamp towards the cost of data collection.

George Newport of Canterbury uses the TH2 imaging system and sent me a selection of prints done on his Deskjet 550C printer. From a good collection I have included **Fig. 7**, a DTOT image (whole-disc, infra-red image of earth) from METEOSAT-5 on February 2 at 2100UTC. More from George in the future.

Some 'Info' readers are interested in meeting others locally who are monitoring WXSATs. **Julian Woolvin** of Clare Walk, Fazakerly, Liverpool is one such correspondent. He is keen to swap notes and information with other Liverpudlians. I lived next to Penny Lane for many years.

Kits: Maplin and Cirkit

My postbag shows continuing interest from newcomers in finding different ways of entering the field of WXSAT reception. Some are mainly

interested in monitoring the satellites, others ask for advice on progressing further. Several have asked about do-it-yourself options, so I recently contacted Maplin and Cirkit and received their sales catalogues. The following summaries are provided for information - none have been examined.

Maplin: During recent years Maplin have retailed kits for various satellite projects. At one time they also produced a framestore kit, but the trend to computer decoding of images has limited this market. Maplin currently retail three WXSAT products:

Mapstat 2 WXSAT receiver:

This covers the 137MHz band using synthesised frequencies and is mains powered. Priced at £399.99, it seems expensive, but I have not yet had an opportunity to examine it.

WXSAT receiver PC interface:

This unit takes the audio output of the Maplin receiver and converts it to a "high resolution PC display", to quote from the catalogue. It is priced at £99.99.

Satellite antenna:

A four-element antenna is supplied as a kit of parts costing about £17 plus separate rods.

This forms a crossed-dipole without reflectors. Maplin can be contacted on (01702) 552911 or by writing to PO Box 3, RAYLEIGH, Essex SS6 8LR.

Cirkit: WXSAT receiver

This is sold in kit form, and uses crystals to generate each frequency used. Kits include the double-sided p.c.b., coils, pots and other components, and can be supplied in kit form at about £50 or built, aligned and tested, for £75.

WXSAT interface

This unit appears to be specially designed for BBC computers and retails in kit form for about £40.

WXSAT antenna

This is a conventional crossed-dipole antenna, including upper and lower dipole sets, phasing harness and mast clamp, retailing for about £20.

Cirkit can be contacted on (01992) 441306 for enquiries, or write to them at Park Lane, Broxbourne, Herts. EN10 7NQ.

New Products

On request, I have received an upgrade to Timestep's PROsatll WXSAT software and decoding system, apparently issued last October. No pricing has been provided. Timestep have also

produced a Windows version of PROsat, according to their leaflet. It describes the NOAA features as including simultaneous viewing of visible and infra-red images, and gridding provision. METEOSAT features include colour animation and image reception in colour. The Windows version uses the serial port, eliminating the requirement to fit an internal card. For all enquiries, contact Timestep on (01440) 820040, or write to them at PO Box 2001, Newmarket CB8 8XB.

Internet Operations

Having made occasional use of the Internet (the international computing network originally set up for collaboration in professional computing projects, but now available for public access) I was recently obliged to join in my own right. One immediate benefit is that the entire Kepler elements database that I maintain - see later - now remains permanently up-to-date. I collect these elements straight from their point of origin, and, although my costs have dramatically escalated, I propose no change in the cost of providing the massive element file to 'Info' readers - it can remain at £2 for the present.

Kepler Elements

Different options are available.

1: For a print-out of the latest WXSAT elements, send an s.a.e. and separate, extra stamp. All WXSATs plus MIR are included, together with transmission frequencies if operating. This data originates from NASA.

2: To join the list of people receiving a monthly printed update, please send a 'subscription' of £1 (plus four self-addressed, stamped envelopes) for four editions. Foreign correspondents can forgo the £1, but please remember the international reply coupons to pay for postage!

3: You can have a computer disk file containing recent elements for the WXSATs, and a large ASCII file holding thousands of elements. A print-out is included, identifying NASA catalogue numbers (for the WXSATs, Amateur Radio satellites, and others of general interest), - ideal for computer data retrieval. Please enclose £2 with your PC-formatted disk and s.a.e.

Frequencies

NOAAs 9, 14 a.p.t. on 137.62MHz; NOAA 12 on 137.50MHz; NOAA beacons on 136.77 and 137.77MHz; METEORs use 137.30, 137.40 and 137.85MHz.; OKEAN-4 transmits on 137.40MHz occasionally; METEOSAT-5 transmits WEFAX on 1691 and 1694.5MHz.

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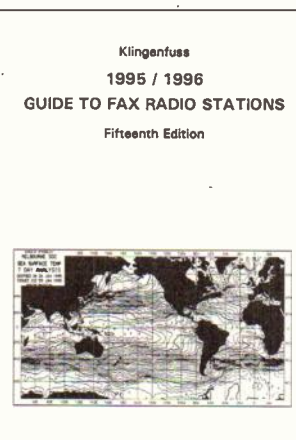
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Decode

All the Data Modes

Readers **C. H. Sare-Soar** sails the seas of north-west Europe aboard the *M/V Sea Humber*. Although used to using radios for voice communications, he has recently been inspired to try his luck at the data modes. As you would expect the ship is well set-up with radio equipment. The main receiver is a Skanti TRP8250 backed-up with a Furuno Dfax 208 plus GPS and Navtex systems. He has found that he can receive more stations with better results using the ship's receiver and JVFAX than he can with the Dfax 208! One of his favourite stations is US Navy NAM relay via Keflavik in Iceland. This station operates 24 hours a day and can be found on 9.318MHz.

Anthony Cannon of Skelmortie is just getting going and asks if his current station is suitable. He has a Packard Bell 486SX computer with 4Mb RAM, Canon BJ200 printer and Tatung TMR-7602 receiver. Well the weak link in the chain is certainly the receiver. I'm not familiar with the TMR-7602, but it will need to feature s.s.b. reception and have very good stability if it's to be used for FAX reception. Rather than rush out and buy a new receiver, the best bet is to give it a try with JVFAX and HAMCOMM and then decide.

Peter Forsberg of Ludvika, Sweden has complained that I often publish FAX charts without reference to their origins. He's quite right to complain and I will try and correct the situation. However, I do need your help in supplying details of the source and equipment used. Ideally this should be noted on the FAX image itself as they usually get detached from the letters.



High quality FAX chart received by Bill Clarke from Bracknell Met on 4.61MHz.

Software Help

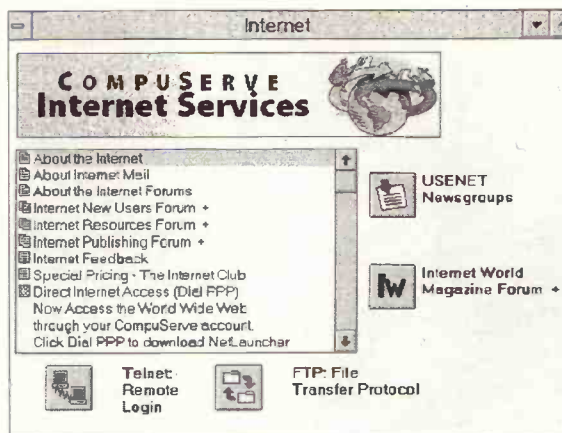
I've asked this before, but I'll try again. Does anyone out there have any decoding software for the Amstrad PCW8256 range of computers? Many years ago there was a simple RTTY program that was distributed by BARTG, but this has not been seen for a long while.

The second request is for help with decoding software for Mac computers. My suggestion would be to look to the USA as the Mac is far more common over there. The other place to try is the Internet. I know there's lots of general support for the Mac, but I've yet to investigate radio related software. If anyone can help with either of these requests please drop me a line with the details.

Morse Code Reception

Colin Geatrell of Ringwood has recently written asking how he should tune his receiver when monitoring Morse signals. I've also had letters asking why so many spurious 'e' and 'i's are received when monitoring some Morse transmissions. As both problems are very common, I think an explanation is in order.

Let's start with the tuning of a Morse signal. Virtually all the decoding systems currently on the market are designed to decode Morse using an audio tone of around 800Hz from the receiver (approximately one octave above middle A on the piano). Once you have adjusted your receiver for this note, you can use your decoder's tuning indicator to complete the fine



CompuServe's Internet forum.

tuning.

With regard to the reception of spurious 'i's and 'e's the answer is really very simple and lays in the construction of the Morse code itself. The characters in question are the shortest in the code and comprise a single dot for 'e' and just two dots for 'i'. Because of this, it's very easy for the decoder to mistakenly interpret noise as the letters e or i. So you will find that whenever you receive noisy or weak signals you will inevitably get spurious characters in the message. Some of the better decoding systems tackle this by including traps in their software, but none are completely free of the problem. So what can you do? The first is to narrow the receive bandwidth as much as possible. Unlike most other signals, Morse can be received with bandwidths as low as 300Hz. Although the best way to achieve this is with a special narrow i.f. filter, very good results can be achieved using an external audio filter system. The only point to watch here is that you don't close the bandwidth down too much and cause ringing as this is likely to introduce more errors.

New Decoder Preview

Just as the column was going to press I've received a new decoder for review from Jeff Stanton of Waters and Stanton Electronics. The new MFJ462B is a very compact stand-alone decoder designed for those new to decoding.

It measures just 163 (w) x 167 (d) x 65mm (h) and includes a built-in 2-line 16-character liquid crystal display unit. In addition to the l.c.d. you can also connect a standard Epson compatible printer for hard copy of the decoded data. The data modes included in software version 112 are C.W. ASCII, RTTY, ARQ and FEC. This covers all the most popular text systems so makes a good starting point.

As the unit arrived so late, I've not been able to have a decent play yet so I'll save a more complete review for a later column. The expected selling price is £169.95 and if you'd like more information contact Walters

& Stanton at Spa House, 22 Main Road, Hockley, Essex SS5 4QS. Tel: (01702) 206835 or 204965.

CompuServe Internet

Good news this month for those of you considering joining the Internet. After much press speculation CompuServe have now launched their full Internet access service. All of their dial-up nodes can now accept PPP (Point to Point Protocol) connections and provide a direct TCP/IP access to the Internet. This is a major step forward and makes CompuServe the world's largest Internet supplier.

One of the main advantages of using CompuServe to access the Internet is their excellent software and support services. CompuServe have extensive experience in providing network access to a wide range of users. In order to be successful in this field they have recognised that the software has to be extremely robust and easy to use.

To support the new Internet access they have produced a new range of special software. For IBM PC users running Windows, the NetLauncher program (1.2Mb) can be downloaded free of charge. To do this just GO NETLAUNCHER and follow the instructions. Once downloaded the self-extracting file creates new program items in the main WinCim group and automatically uses your existing user details and passwords.

Supplied with NetLauncher is a very slick Internet dialler that initiates the dial-up process and automatically completes the log-on process leaving you with a fully Winsock compliant TCP/IP connection. You can then use a wide range of shareware Internet applications to access the Internet. Also included with NetLauncher is the Spy Mosaic World Wide Web Browser which comes complete with extensive hot lists of interesting sites.

To support the increased load presented by the Internet access CompuServe are upgrading all of its 42000 dial-up ports to V-34 compliant 28.8Kbaud working. Over the next year they are also intending to more than double the number of

ports to 85000.

As if all this wasn't enough the pricing structure is extremely competitive. For UK users the standard £6.50 monthly fee not only gives you full access to CompuServe's main network but also 3 hours per month on the Internet free of charge. Once over this threshold additional hours are charged at £1.70 per hour. An alternative for high volume users is to join the Internet Club that gives 20 hours for a flat fee of £10 per month with additional hours available at £1.30.

For more information contact the CompuServe sales line on (0800) 289378.

FAX Modulation Systems

Following-on from last month's feature on FAX definition, I note that some readers are still unclear on the differing requirements of receiving FAX on h.f. and direct from the satellites on v.h.f. The essential difference between these two systems is the modulation system employed. Whereas all h.f. transmissions use frequency modulation (f.m.) the direct satellite systems use amplitude modulation to convey the FAX image. The reason for using different standards is the problems caused by what's known as the Doppler effect. This is the same effect you get from the air horns of a passing train where the note increases in pitch as it approaches and then reduces as it passes. This effect is also used for police speed traps where they measure the frequency change of a radio signal that's been reflected from a moving vehicle. If we transpose this principle to one of the orbiting weather satellites, you can see that its frequency will increase as it approaches then decrease as it recedes. Now if you consider a typical h.f. weather FAX transmission you will recall that a frequency shift of just 800Hz is used to represent all the image values between full black and pure white. However, a typical orbiting satellite operating in the 137MHz would suffer a shift in frequency, due to the Doppler effect, of around 3kHz. Clearly this would make conventional f.m. FAX reception totally impractical.

The solution is to use amplitude modulation to convey the FAX information from the satellite. Of course, life is never quite that simple and if we used basic a.m. this would suffer problems because the satellite signal would start very weak, build-up as it passed overhead and then fade away as it disappeared over the horizon. The overall result would be as bad, if not worse, than the Doppler distortion. The answer is to use a combination of the two modulation systems. The final solution therefore is to amplitude modulate an audio tone with the FAX information then frequency modulate the result on to the radio signal. Yes I

Frequency List

This month's readers frequency list come courtesy of **Robert Mason, Ian Taylor, Martin van Dunen, Robert Hall, Day Watson** and other contributors who would rather not be named. Frequencies in MHz.

3.170	RTTY	50	400	IBM	0028	Rome Met
3.390	RTTY	75	850	MGJ	0011	Glasgow Naval
3.764	RTTY	75	400	PBB	0305	Dutch Navy
4.313	CW	-	-	9VG33	-	Singapore Radio
4.328	CW	-	-	FFL2	-	St. Lys Radio
4.370	RTTY	100	400	HZN	0336	Jeddah Met
4.5086	Piccolo 12	-	-	-	1720	coded
5.150	FAX	90	576	RVO73	0356	Moscow Met
5.275	RTTY	75	400	-	2235	Mena Cairo
7.765	POL-ARQ	100	-	-	1505	Polish News
9.040	RTTY	100	875	5YE	2315	Nairobi Met
9.045	FAX	120	576	5YE	2020	Nairobi Met
9.318	FAX	120	576	NRK	2315	USN Keflavik
11.422	FEC	100	170	SOL242	1820	PAP Warsaw
13.8825	FAX	120	576	DDK6	-	Hamburg Met
13.9409	ARQ-M2	200	386	RFFA	1748	MOD Paris
13.998	RTTY	50	400	STK	1730	Khartoum
14.364	FAX	120	576	BAF8	2130	Beijing Met
14.500	RTTY	50	850	CSY	1715	Santa Maria
15.988	Twintplex	100	-	-	1415	Dutch Embassy
16.0276	FAX	120	576	NPN	1243	USN Apra Harbour
16.966	CW	-	-	SVB6	-	Athens Radio
16.969	CW	-	-	WLO	-	Mobile Radio
16.976	CW	-	-	NMN	-	USCG Portsmouth
17.590	RTTY	100	800	HZN49	-	Jeddah Met
18.2544	RTTY	96	840	SUU	-	Cairo Met
18.2706	SITOR-A	100	170	HBD20	1052	MFA Berne
18.3386	RTTY	50	340	5AF	-	Tripoli Air
19.3575	FEC-A	96	618	-	1131	MFA Abuja
21.8073	RTTY	50	400	YOV28	0811	ROMPRESS Bucharest

know it sounds complicated! The end result is that to receive a weather FAX image from an orbiting satellite you need an f.m. receiver and an a.m. FAX decoder. The output from the receiver comprises a 2.6kHz tone (for conventional 2400p.m. signals) with maximum amplitude representing black and a level 20dB lower representing white.

There are many products on the market that can decode a.m. FAX images including good old JVFX. However, you can't use the simple comparator interface as this has been specifically designed to strip out any a.m. components. You can either build the complex interface following the diagrams supplied with JVFX, or purchase one of the commercial units. At the moment, the only UK company I'm aware of that produce a suitable interface is Martelec Communications Systems, The Acorns, Wyck Lane, East Worthing, Alton, Hants GU34 3AW. They also produce a range of specialist v.h.f. receivers if you're seriously considering this mode. For more information on satellite reception, take a look at Lawrence Harris' *Info in Orbit* column.

Slow PCs

With so many different types of PC around these days I'm interested to know how readers are coping with JVFX and HAMCOM on the older and slower machines. If you've managed to successfully tweak either of these programs to run on 286 based or earlier computers, please drop me a line with the details. I would particularly like to see a screen dump of the configuration screen. Once I've received the data I will build it into the relevant FactPack.

Readers' Offers

With the high level of interest in decoding data signals it is sadly not possible for me to answer all your questions personally. My solution to this is to produce a series of FactPacks that answer a wide range of the more common questions. This month I think it's about time I ran through the various FactPacks and frequency lists to explain their purpose.

Day Watson Beginners List:

This has been special prepared by Day to help those new to decoding find something to monitor in amongst all the whirs and whistles on the h.f. bands. The list breaks the day into 1 hour segments and lists RTTY and some FEC stations that are most likely to be active at that time. In addition to the frequency listings there are some useful notes covering SITOR A and B reception.

Decode List: This is a straight forward frequency list based on reports submitted by Decode readers. The list concentrates on the basic data modes of FAX, RTTY, c.w. and SITOR.

Complex Modes List: As the name suggests, this list is for the listener with advanced decoding equipment. The list is sub-divided into the different mode groups and contains examples of most transmission types.

FactPack 1 - Interference:

This addresses one of the most common problems for data mode listeners. The FactPack guides you through a systematic approach to curing your interference problems.

FactPack 2 - Decoding

Accessories: A step-by-step guide through decoding accessories from antennas through to power supplies.

FactPack 3 - Starting Out:

This provides basic guidance for

anyone new to the data modes. It contains brief descriptions of the more common modes, how to choose your decoder and some comments on the receivers you're likely to find on the second-hand market.

FactPack 4 - HAMCOMM & JVFX Primer:

As the title suggests this FactPack contains all the information you need to receive your first RTTY signal and FAX image. If you're interested in transmitting you will also need

FactPack 5 - On-The-Air with HAMCOMM and JVFX.

FactPack 6 - Internet

Starter: Provides an introduction to the Internet with advice on how to get connected and details of the most popular service providers. There's also advice on how to use the Internet and some of the more common applications.

These information packs run between 4 and 8 pages in length and the charges cover postage and packing as well as printing and paper costs.

In addition to these FactPacks and frequency lists, I have agreements with the authors to distribute **HAMCOMM 3.0** and **JVFX 7.0**.

If you would like to take advantage of any of these offers send a self addressed sticky label plus 50p per item or £1.50 for 4, £2.50 for 6, or £3.00 for 8 items. If you're ordering JVFX or HAMCOMM you will also need to send a blank formatted 720k disk for each program or just one 1.44Mb disk. I normally turn the orders round within a day or two but please be patient during the holiday period.



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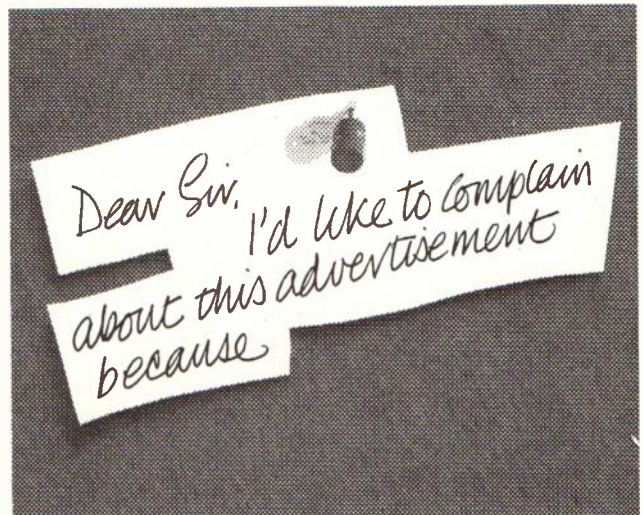
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Long, Medium and Short Waves

Many international broadcasters altered their short wave schedules at the end of March to compensate for propagation changes. As far as possible they are reflected in the data here.

Although some further changes may be introduced in May, most are likely to remain unchanged until September 24.

Long Wave Reports

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT). Unless stated, all logs compiled in the four weeks ending March 31.

While searching the band in the morning of March 9, **George Millmore** (Wootton, IoW) was very surprised to hear the broadcasts from Tipaza, Algeria on 252kHz peaking SIO222 at 0950UTC. Usually the 500kW co-channel transmission from Atlantic 252 in Clarkestown, S.Ireland completely masks them during daylight and they can only be received after dark. Perhaps Atlantic 252 was off-air for maintenance.

Medium Wave Reports

March proved to be a disappointing month for the listeners in the UK who searched the band at night for m.w. signals over transatlantic paths. The broadcasts from CJYQ in St.Johns, NF on 930, which are often used as a pointer to conditions, were heard at 0006 on March 8 by **Harry Richards** in Barton-on-Humber, but their signal was only SINPO 13332. No others were logged.

At the beginning of the month **Gerry Haynes** (Bushey Heath) spent ten days in Talgarth, Powys. He used a Kiwa loop ahead of a Kenwood R-5000 receiver to compile an extensive log, see chart. At night he found 1440 to be particularly interesting, logging R.Diff.TV Centrafricaine via Bangui as 42422 at 2211.

While searching the band on the 13th **Paul Logan** (Lisnaskea) picked up weak signals from R.Diff Togolaise in Lome, Togo on 1394 at 0510 and ORTB Cotonou, Benin on 1475.1 at 0515. He was able to establish their identity by comparing them with their parallel transmissions in the tropical bands on 5.047 and 4.870MHz. He used the same technique on the 14th to confirm that a broadcast on 1349 at 0050 was coming from R.Mauritanie, Nouakchott - their parallel being on 4.845MHz. On the 15th he heard VOA 'sign-on' at 0300 via a relay

station in Sao Tome on 1530. Paul also kept a careful check on 1386 and 1566kHz. On the 20th he logged AIR via Nagpur on 1566 at 0003. At 0205 on the 21st he heard KBC in Nairobi via their 100kW outlet at Maralal, Kenya on 1386.

George Millmore found the conditions somewhat erratic, but the best reception after dark was from stations in the Middle East and N.Africa. On March 22 he heard for the first time ERA-4 via Megara, Greece on 981 (200kW), rated SIO323 at 2300. In daylight he noticed that some local radio broadcasts were affected by Continental co-channel interference.

Commenting on local radio reception in Lanarkshire during March, **Arthur Grainger** (Carstairs Junction) said "I had a few good catches and a few surprises. Some new names in my list are R.Shropshire, Capital Gold, R.Cambridge and R.Jersey. I received a QSL from R.Lincolnshire 122 days after giving them a reception report, so it's nice to know they don't ignore them."

Short Wave Reports

The steady decline in solar activity continues as we approach the minimum of solar sunspot cycle 22, which is expected to occur in late 1996 or early 1997. Conditions in the **25MHz (11m)** band are now so unreliable that it is no longer used by international broadcasters.

Despite daily variations in propagation in the **21MHz (13m)** band it is being used by quite a few broadcasters. Those noted before noon were R.Japan via Moyabi, 21.640 (Jap to Eu, M.East 0800-0900) SIO322 at 0818 by **John Eaton** in Woking; UAER, Dubai 21.605 (Ar to Eu 0615-1030) 33333 at 0900 by **Bernard Curtis** in Stalbridge and (Eng to Eu 1030-1055) 44444 at 1040 by Sheila Hughes in Morden; UAER, Abu Dhabi 21.735 (Ar to Eu 0800?-1100?) SIO544 at 0930 by **John Slater** in Scalloway; BSKSA Saudi Arabia 21.495 (Ar [Holy Koran] to SE.Asia 0900-1200) 34443 at 1029 by **Darren Beasley** in Bridgwater and SIO353 at 1115 by **Kenneth Buck** in Edinburgh; R.Australia via Darwin 21.725 (Eng to Asia, Pacific 0900-1100) SIO222 at 1040 by **Julian Wood** in Elgin.

After mid-day, BBC via Ascension Is 21.490 (Eng to W/C.Africa 1500-1630) 25343 at 1515 by **Fred Pallant** in Storrington and 21.660 (Eng to W/E.S.Africa 1100-1700)

Long Wave Chart

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

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

Listeners:

- A Tim Allison, Middlesbrough.
- B Martin Dale, Stockport.
- C Sheila Hughes, Morden.
- D Eddie McKeown, Newry.
- E George Millmore, Wootton, IoW.
- F Fred Pallant, Storrington.
- G Tom Smyth, Co.Fermanagh.
- H Norman Thompson, Oadby.
- I Phil Townsend, E.London.

22222 at 1554 by **Martin Dale** in Stockport; BBC via Limassol 21.470 (Eng to E.Africa 1300-1700) 23322 at 1552 by **Darren Coward** in Grange-over-Sands; R.Japan via Moyabi 21.700 (Jap to Eu, M.East, Africa 1600-1700) 34222 at 1602 by **Eddie McKeown** in Newry; WYFR via Okeechobee 21.500 (Eng, Ger to Eu, Africa 1600?-2030?) 25222 at 1725 in Bridgwater, 21.525 (Eng, Fr, Ger, Port to W.Africa 1600-2045?) 45444 at 1608 in Bushey Heath and 21.745 (Eng to Eu 1600-2100?) SIO322 at 1609 by **Philip Rambaut** in Macclesfield; Monitor R.Int via WSHB 21.640 (Eng to E.Africa 1600-1857) SIO354 at 1615 in Edinburgh; VOA via Greenville 21.485 (Fr, Eng to Africa 1800?-2200?) 24332 at 1918 by **Rhoderick Ilman** in Oxted.

Conditions also varied from day to day in the **17MHz (16m)** band. Sometimes R.Australia's broadcast to Asia via Carnarvon 17.715 (Eng 0100-0900) could be received here. In Woking it was SIO242 at 0715.

Also heard in the morning were the Voice of Russia 17.795 (Eng [WS] 0700-1000) SIO444 at 0815 by **Francis Hearne** in N.Bristol; R.Pakistan, Islamabad 17.900 (Eng to Eu 0800-0845) 35544 at 0816 by **Tim Allison** in Middlesbrough and (Eng to Eu 1100-1120) 44444 at 1100 in Morden; R.Slovakia Int via Rimavska Sobota 17.485 (Eng to Aust 0830-0857) 34323 at 0840 in Newry; Voice of Greece, Athens 17.525 (Gr, Eng to Aust 0850-0950) 45554 at 0945 in Bridgwater; Channel Africa via Meyerton 17.810 (Eng to Africa 1000-1100) SIO333 at 1050 in Scalloway; Israel R, Jerusalem 17.575 (Eng, Fr to Eu, Asia, Pacific 1100-1200) SIO322 at 1100 by **Tom Smyth** in Co.Fermanagh; BSKSA Riyadh 17.880 (Ar [Holy Koran] to SE.Asia 0900-1200) SIO353 at 1115 in Edinburgh.

After mid-day, R.Tashkent,

Uzbekistan 17.815 (Eng to S.Asia 1200-1230) 44444 at 1200 in Morden; R.Bulgaria, Sofia 17.625 (Eng to Asia 1130-1230) SIO222 at 1201 in Elgin; RCI via Sackville 17.820 (Eng, Fr to Eu, M.East, Africa 1330-1500) 52543 at 1435 in Bushey Heath; Africa No.1, Gabon 17.630 (Fr to W.Africa 0700-1600) SIO333 at 1400 by **Phil Townsend** in E.London; BBC via Ascension Is 17.830 (Eng to W/C.Africa 0730-2030) 42533 at 1550 in Grange-over-Sands; R.Netherlands via Bonaire 17.605 (Eng to W.Africa 1830-2025) 35343 at 1922 by **Paul Bowery** in Burnham-on-Crouch; Monitor R.Int via WSHB 17.510 (Eng to Eu? 1900-2000) 35444 at 1940 in Storrington.

More reliable conditions have been evident in the **15MHz (19m)** band. In the morning AIR via Aligarh? 15.050 (Ar to M.East 0430-0530) was logged as 34453 at 0515 by **John Parry** in Larnaca, Cyprus; R.Pakistan, Islamabad 15.625 (Eng to Eu 0800-0848) 45554 at 0810 by **Ross Lockley** while in Hertfordshire; BBC via Ascension Is 15.400 (Eng to W/C.Africa 0730-1130) 43333 at 0820 in Stalbridge; Voice of Greece, Athens 15.650 (Gr, Eng to Aust, Eu 0800-0950) 34323 at 0947 by **Vera Brindley** in Woodhall Spa; R.Australia via Darwin 15.530 (Eng to S.Asia 1100-1300) 35553 at 1118 by **David Edwardson** in Walsend.

In the afternoon RNB Brazil 15.445 (Eng to N.Am 1200-1320) SIO222 at 1315 in Scalloway; AIR via Aligarh 15.120 (Eng to SE.Asia 1330-1500) 33223 at 1410 by **Chris Lawton** in Stoke-on-Trent; RCI via Sines 15.325 (Eng, Fr to Eu, M.East, Africa 1330-1500) 54444 at 1430 in Bushey Heath; WWCR Nashville 15.685 (Eng to Eu 1200-0000) 34543 at 1435 in Bridgwater; R.Japan via Moyabi 15.355 (Eng to S.Africa 1500-1600) 44343 at 1500 by **Norman Thompson** in Oadby;

Medium Wave Chart

Freq kHz	Station	Country	Power (kW)	Listener	Freq kHz	Station	Country	Power (kW)	Listener	Freq kHz	Station	Country	Power (kW)	Listener
520	Hof-Saale (BR)	Germany	0.2	E*,F*,J*	855	Berlin	Germany	100	B*,F,J*,K*	1287	Melnik (RFE)	Czech Rep	400	B*
531	Ain Beida	Algeria	600	B*,E*,K*	855	RNE1 via ?	Spain	?	B*,J*,K*	1287	Lerida (SER)	Spain	10	J*
531	Torshavn	Faeroe Is	100	F*,Q	864	Santah	Egypt	500	K*	1296	Valencia (COPE)	Spain	10	J*,K*
531	Leipzig	Germany	100	B*,J*,K*	864	Paris	France	300	B*,J*,K*,Q,Q	1296	Orfordness (BBC)	UK	500	B,Q*
531	RNE5 via ?	Spain	?	F*	864	Socuellamos (RNE1)	Spain	2	B*,K*	1305	Rzeszow	Poland	100	F*,G*,J*,D*
531	Beromunster	Switzerland	500	F*	873	Frankfurt (AFN)	Germany	150	A*,B*,C*,J*,K*,N	1305	Moscow (VOR)	Russia	150	F*
540	Wavre	Belgium	150/50	A,B,J*,K*,P,Q	873	Zaragoza (SER)	Spain	20	B*,J*,K*	1305	RNE5 via ?	Spain	?	F*,J*,K*
540	Sidi Bannour	Morocco	600	B*,E*,J*,K*	882	COPE via ?	Spain	?	B*,J*,K*	1314	Kvitsoy	Norway	1200	A*,B,H*,J*,K*,Q
540	Vitoria (EI)	Spain	10	K*	882	Washford (BBC Wales)	UK	100	B,C,G,K,Q,Q	1323	Wachenbrunn (RMWS)	Germany	1000/150	B*,F*,J*,D*,Q
549	Les Trembles	Algeria	600	B*,J*,K*	891	Algiers	Algeria	600/300	B*,E*,J*,K*	1332	Rome	Italy	300	B*,H*,J*,K*
549	Thurman (DLF)	Germany	200	A*,B*,J*,K,Q	891	Huisberg	Netherlands	20	B*,J*,K*	1341	Lakihegy	Hungary	300	B*,F*
558	Espoo	Finland	100	K*	900	Milan	Italy	600	B*,J*,K*	1341	Lisnagarvey (BBC)	Ireland (N)	100	B*,G,K,Q,Q
558	Rostock (NDR)	Germany	20	J*	900	COPE via ?	Spain	?	J*	1349	Nouakchott	Mauritania	20	I*
558	RNE5 via ?	Spain	?	K*	900	Qurayyat (S. Arabia)	1000	F*	1350	Nancy/Nice	France	100	B*,H*,J*,K*,D*	
567	Berlin	Germany	100	F*,J*,K*	909	B'mans Pk (BBCS)	UK	140	B,K,Q,Q	1350	Cesvaine/Kuldiga	Latvia	50	F*,K*
567	Tullamore (RTE1)	Ireland (S)	500	A*,B,C,K*,O,P,Q	909	M'side Edge (BBCS)	UK	200	C*	1359	Arganda (RNE-FS)	Spain	600	A*,J*,K*,D*
567	Layoune	Morocco	50	E*	918	Plesivac (Sloven/NR)	Yugoslavia	600/100	B*,J*,K*	1368	Foxdale (Manx R)	I.O.M.	20	A*,B*,G*,K*,Q
567	RNE5 via ?	Spain	?	J*,K*	918	Madrid (R.Int)	Spain	20	B*,J*,K*,D*	1377	Lille	France	300	B*,J*,K,Q
576	Muhlacker (SDR)	Germany	500	B*,K*,Q	927	Wolvertem	Belgium	300	B*,J*,K,Q,Q	1377	Ukraine	Ukraine	50	B*
576	Barcelona (RNE5)	Spain	50	B*,K*	936	Bremen	Germany	100	A*,B*,J*,K*	1386	Nairobi	Kenya	100	I*
585	Orf Wien	Austria	600	K*	936	Venezia	Italy	20	K*	1386	Bolshakovo	Russia	2500	D*,J*,K*,L*,O*
585	Paris (FIP)	France	8	B*,J*,K,Q	936	RNE5 via ?	Spain	?	B*,J*,K*	1386	R.Ned via B'shakovo	Russia	2500	A*
585	Madrid (RNE1)	Spain	200	B*,J*,K*,Q*	945	Toulouse	France	300	J*,K*	1395	Lushnje (Tirana)	Albania	1000	B*,G*,J*,K*,Q*,Q*
585	Dumfries (BBC Scot)	UK	2	A	954	Brno/Dobrochov	Czech Rep	200	J*,K*	1395	TWR via Lushnje	Albania	500	A*
594	Frankfurt (HR)	Germany	1000/400	B,J*,K*,Q	954	Madrid (CI)	Spain	20	B*,G*,J*,K*,D*,Q*	1395	Petrozavodsk	Russia	50	F*
594	Ouida-1	Morocco	100	K*	963	Pori	Finland	600	B*,J*,K*,Q*	1395	Ufa	Russia	50	F*
594	Muge	Portugal	100	B*,J*,K*	963	Paris	France	8	K*	1404	Brest	France	20	B*,H*,J*,K
603	Lyon	France	300	J*,K*	963	Tir Chonaili	Ireland (S)	10	C*	1413	Masirah Is (BBC)	Oman	1500	F*
603	Sevilla (RNE5)	Spain	50	F*,K*	963	Tunis-Djedeida	Tunisia	200	K*	1413	RNE5 via ?	Spain	?	B*,H*,J*,K*
603	Newcastle (BBC)	UK	2	J*,Q	972	Hamburg (NDR)	Germany	300	A*,B*,J*,K*,Q*	1422	Heusweiler (DLF)	Germany	1200/600	A*,B*,J*,K*,Q,Q
612	Athlone (RTE2)	Ireland (S)	100	B*,C*,K,Q,P,Q	972	RNE1 via ?	Spain	?	J*	1431	Nikolayev	Ukraine	400	J*
612	RNE1 via ?	Spain	10	B*,J*,K*	981	Algier	Algeria	600/300	B*,E*,J*,Q*	1440	Bangui	C.Afr. Rep	20/50	F*
621	Wavre	Belgium	80	B*,J*,K,Q	981	Megara	Greece	200	K*	1440	Mernach (RTL)	Luxembourg	1200	B,H,J*,K,N,Q,Q
621	Batra	Egypt	2000	B*	981	Coimbra	Portugal	10	F*	1440	St.Petersburg (RFI)	Russia	10	F*
621	RNE1 via ?	Spain	10	B*	990	Berlin	Germany	300	A*,B,J*,K*	1440	Damman	S. Arabla	1600	F*,J*
621	Barcelona (OCR)	Spain	50	J*,K*	990	R.Bilbao (SER)	Spain	10	J*	1449	Berlin	Germany	5	J*
630	Vigra	Norway	100	J*,K*	990	Redmoss (BBC)	UK	1	J*	1459	Squinzano	Italy	50	B*,K*,D*
630	Tunis-Djedeida	Tunisia	600	B*,E*,F*,J*,K*	999	Schwerin (RIAS)	Germany	20	A*,J*	1458	Lushnje (Tirana)	Albania	500	F*,K*,D*
639	Praha (Libice)	Czech	1500	J*,K*	999	Madrid (COPE)	Spain	50	B*,J*	1467	Jaipur	India	20	I*
639	RNE1 via ?	Spain	?	B*,J*,K*,Q*	1008	Las Palmas (SER)	G. Canaria	?	K*	1467	Grigoriopol	Moldovia	500	F*
648	RNE1 via ?	Spain	10	J*,K*	1008	Flevo (Hiv-5)	Holland	400	B*,J*,K,Q,Q	1467	Monte Carlo (TWR)	Monaco	1000/400	A*,B*,G*,J*,K*
648	Orfordness (BBC)	UK	500	B,K,P,Q	1017	Rheinsender (SWF)	Germany	600	A*,B,J*,K*,D*,Q*	1475	Cotonou	Benin	50/20	I*
657	Neubrandenburg (NDR)	Germany	250	B*,J*	1017	RNE5 via ?	Spain	?	J*	1476	Wien-Bisamberg	Austria	600	K*,Q*
657	Madrid (RNE5)	Spain	20	B*,J*,K*	1026	SER via ?	Spain	?	B*,J*	1485	SER via ?	Spain	?	B*
657	Wrexham (BBC Wales)	UK	2	A,B,C,G	1035	Milan	Italy	50	F*	1494	St.Petersburg	Russia	1000	B*,D*,H*,J*
666	Messkirch/Rohrd (SWF)	Germany	300/180	A*,B*,J*	1035	Lisbon (Prog3)	Portugal	120	J*,K*	1503	Stargard	Poland	300	B*
666	R.Vilnius	Lithuania	500	J*	1044	Dresden	Germany	250	F*,G*,J*,K,Q*	1503	RNE5 via ?	Spain	?	J*
666	Lisboa	Portugal	135	B*,J*,K*	1044	Sebaa-Aiouun	Morocco	300	G*	1512	Wolvertem	Belgium	600	B,C,G,H*,J*,K,M,O*,Q,R*
666	Barcelona (COPE)	Spain	10	B*	1044	SER via ?	Spain	?	F*,G*,K*	1512	Jeddah	S. Arabia	1000	F*,J*
675	Marseille	France	600	B*,K*	1053	Zaragoza (COPE)	Spain	10	F*,J*	1521	Kosice (Cizatice)	Slovakia	600	J*
675	Lopic (R10 Gold)	Holland	120	A,B,C*,J*,K,N,Q	1053	Talk Radio UK via ?	UK	?	B,C,K,Q,P,Q	1521	Duba	S. Arabia	2000	B*,F*,K*
684	Sevilla (RNE1)	Spain	500	B*,J*,K*,Q*	1062	Kalundborg	Denmark	250	B*,J*,K,Q,Q	1530	Vatican R	Italy	150/450	H*,J*,K*,Q*,Q*
684	Avale (Beograd-1)	Yugoslavia	2000	B*,J*,K*,Q*	1062	R.Uho via ?	Italy	?	F*	1530	Penheira (VOA)	Sao Tome	100	I*
693	Tortosa (RNE1)	Spain	2	J*	1071	Brest	France	20	K	1539	Mainflingen (DLF)	Germany	700	Q*
693	Droitwich (BBC5)	UK	150	B,C,K,Q,Q	1071	France-Inter via ?	France	?	B	1539	R.Mellilla	Morocco	4	F*
693	Enniskillen (BBC5)	UK	1	P*	1071	Lille	France	40	J*,Q	1539	SER via ?	Spain	?	B*,F*,J*,K*
702	Flensburg (NDR)	Germany	5	A*,J*,K*	1080	Bilbao (EI)	Spain	5	B*,K*	1548	Grigoriopol (RMWS)	Moldavia	500	F*
702	R.Monte Carlo	Monaco	40	K	1080	Katowice	Poland	1500	B*,F*,J*,K*	1557	Nice	France	300	O*
702	TWR via				1089	SER via ?	Spain	?	F*,J*,K*	1566	Vila de Porto	Azores	10	F*
702	Monte Carlo	Monaco	300	F*,Q*	1089	Krasnodar	Russia	300	J*	1566	Mjadzel	Belarus	10	F*
702	Sebaa-Aiouun	Morocco	740	F*	1089	Talk Radio UK via ?	UK	?	B,C,K,Q,Q	1566	Nagpur	India	1000	F*,I*
702	Slovensko 1 via ?	Slovak Rep	?	B*,F*	1098	Nitra (Jarok)	Slovakia	1500	B*,J*,K*	1566	Bandarabass	Iran	1000	F*,J*
702	Zamora (RNE1)	Spain	10	J*,K*	1098	RNE5 via ?	Spain	?	B*,J*	1566	Stax	Tunisia	1200	B*,F*,J*,K*
711	Cairo	Egypt	100	F*	1107	Batra	Egypt	600	B*	1566	Odessa	Ukraine	7	F*,J*
711	Rennes 1	France	300	B*,F*,J*,K*,Q	1107	AFN via ?	Germany	10	A*,B*,C*,J*	1575	Genova	Italy	50	B*,J*,K*
711	Heidelberg	Germany	5	A*,F*,K*	1107	Sitkuna	Lithuania	150	O*	1575	SER via ?	Spain	5	B*
711	Laayoune	Morocco	600	K*	1107	RNE5 via ?	Spain	?	B*,F*,J*	1584	SER via ?	Spain	2	B*
720	Lisnagarvey (BBC4)	Ireland (N)	10	C,K,Q	1116	Talk R.UK via ?	UK	?	B,C,K	1593	Holzkirchen (RFE)	Germany	150	F*,J*,K*,Q*
720	Norte	Portugal	100	B*,J*,K*	1125	Pontevedra (SER)	Spain	5	B*,J*	1593	Chisinau	Moldova	5	F*
720	Lots Rd, Ldn (BBC4)	UK	0.5	B,K,Q	1125	La Louviere	Belgium	20	B*,J*,K	1593	Miercurea Ciuc	Romania	14	F*
729	Cork (RTE1)	Ireland (S)	10	K*	1125	Deanovec	Croatia	100	B*	1593	Dnipropetrovsk	Ukraine	5	J*
729	RNE1 via ?	Spain	?	B*,J*,K*	1125	RNE5 via ?	Spain	?	B*,J*,K*	1602	SER via ?	Spain	?	B*
738	Paris	France	4	B*,J*,K,Q	1134	COPE via ?	Spain	2	B*,J*,K*	1602	Vitoria (EI)	Spain	10	B*,K*
738	Poznan	Poland	300	J*	1134	Zadar (Croatian R)	Yugoslavia	600/1200	B*,J*,K*,D*,Q*	1611	Vatican R	Italy	15	H*,J*,K*,Q*,Q*
738	Barcelona (RNE1)	Spain	500	A*,B*,J*,K*,Q*	1143	AFN via ?	Germany	1	A*,B*,C*					
747	Flevo (Hiv2)	Holland	400	A*,B,J*,K*,Q	1143	Stuttgart (AFN)	Germany	10	J*					
747	Cadiz (RNE5)	Spain	10	J*,K*	1143	COPE via ?	Spain	2	B*,J*,K*					
756	Braunschweig (DLF)	Germany	800/200	A*,B,J*,K*,Q*	1152	Komsomolsk	Russia	50	F*					
756	Bilbao (EI)	Spain	5	K*	1152	RNE5 via ?	Spain	10	B*,F*,J*,K*					
756	Redruth (BBC)	UK	2	K	1161	Strasbourg (Flnt)	France	200	A*,B*,J*,K*					
756	Sottens	Switzerland	500	J*,K*	1161	S.Sebastian (EI)	Spain	50	B*					
774	Hradec K'Ve	Czech Rep	20	K*	1179	Solvesborg	Sweden	600	A*,B*,C*,G*,J*,K,Q,Q					
774	RNE1 via ?	Spain	?	B*,J*,K*	1188	Kuurne	Belgium	5	B*,J*,K,Q					
774	Plymouth (BBC)	UK	1	O	1188	Reichenbach (MDR)	Germany	5	J*					
783	Burg	Germany	1000	A*,B*,J*,K*,Q	1197	Munich (VOA)	Germany	300	J*,K*					
783	Miramar (R.Porto)	Portugal	100	J*,K*	1197	Virgin via ?	UK	?	B,K,Q					
783	Dammam	Saudi Arabia	100	K*	1206	Bordeaux	France	100	J*,K*					
792	Limoges	France	300	K	1206	Wroclaw	Poland	200	J*,K*					
792	Lingen (NDR)	Germany	5	A*,J*,K*	1215	COPE via ?	Spain	?	F*,J*					
792	Sevilla (SER)	Spain	20	B*,J*,K*	1215	Virgin via ?	UK	?	B,C,K,N,D,P,Q					
801	Munchen-Isman													

Local Radio Chart

Freq kHz	Station	ILR BBC	e.m.r.p (kW)	Listener	Freq kHz	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum R	I	7.50	B,D,K,L,M,PQ	1161	Southern Counties R	B	1.00	B,F*,H,K,L,Q
595	R.Solway	B	2.00	E,F,M	1161	Tay AM	I	1.40	E,F*
603	Cheltenham(CD603)	I	0.10	D,K,Q	1161	Humberdale(Gt.Yks)	I	0.35	A,D,F,M
603	Invicta SG (Coast)	I	0.10	B,F*,K,L,M,PQ	1170	GNR Teeside	I	0.32	C,E,F
630	R.Bedfordshire(3CR)	B	0.20	A,B,D,F,K,L,M,D,PQ	1170	Hi Wycombe 1170AM	I	?	F,L,PQ
630	R.Cornwall	B	2.00	F*,K	1170	Portsmouth(SCR)	I	0.12	F*,K,L,Q
657	R.Clywd	B	2.00	E,F,K,M,N*,PQ	1170	R.Drwell(SCR)	I	0.28	B,F
657	R.Cornwall	B	0.50	F*,K	1170	Signal R(S.Gold)	I	0.20	D,F,D
666	Gemini AM	I	0.34	F,K,H,L,Q	1170	Swansea Sound	I	0.58	E*
666	R.York	B	0.80	B,D,E,F,H,M	1242	Invicta Snd(Coast)	I	0.32	B,F*,L,O,PQ
729	BBC Essex	B	0.20	A,B,E*,F,H,K,L,M,PQ	1242	Isle of Wight R	I	0.50	F,K,Q
738	Hereford/Worcester	B	0.037	D,F,K,Q	1251	Saxon R(SGR)	I	0.76	B,E*,F,L,M,Q
756	R.Cumbria	B	1.00	A,E,F,J	1260	Brunel R(CI.Gold)	I	1.60	C,F,K,L,N*
756	R.Maldwyn	I	0.63	D,F,K,Q	1260	Marcher Snd(Gold)	I	0.64	D,E,F
765	BBC Essex	B	0.50	A,B,C,D,E*,F,H,K,L,M,PQ	1260	Essex R(BreezeAM)	I	0.28	B,F*,H,L,PQ
774	Gloucester(3CSG)	I	0.14	D,F,K	1260	R.York	B	0.50	E,F*,M
774	R.Kent	B	0.70	B,F,K,L,PQ	1278	Bradford(Gt.Yks)	I	0.43	A,F,L,M,N
774	R.Leeds	B	0.50	A,C,D,F,M	1305	Barnsley(Gt.Yks)	I	0.15	A,D,E*,F,M
792	Chiltern(S.Gold)	I	0.27	B,D,F,K,L,M,PQ	1305	Touch R	I	0.20	K,F,Q
792	R.Foyle	B	1.00	E,F,N	1323	R.Bristol(Som.Snd)	B	0.63	F,Q
801	R.Devon & Dorset	B	2.00	D,F*,K,Q	1323	Brighton(SCR)	I	0.50	B,F,K,L,PQ
828	Chiltern(S.Gold)	I	0.20	B,F,G,PQ	1332	Hereford R(WGMS)	I	0.60	A,B,D,E*,F,J*,K,L,M,PQ
828	R.Airel(Magic828)	I	0.12	F,M	1332	Wiltshire Sound	B	0.30	E*,F*,K,L,Q
828	2CR(CI.Gold)	I	0.27	F,G,K,Q	1359	Essex R(BreezeAM)	I	0.28	B,F*,H,L,PQ
837	R.Cumbria/Furness	B	1.50	E,F	1359	Mercia Snd(Xtra-AM)	I	0.27	F,O
837	R.Leicester	B	0.45	B,D,F,K,M,PQ	1359	Red Dragon(Touch R)	I	0.20	F,G
855	R.Devon & Dorset	B	1.00	F,K	1359	R.Solent	B	0.85	E*,F,K,Q
855	R.Lancashire	B	1.50	D,E,F,J*,M	1368	R.Lincolnshire	B	2.00	A,E,F,M,D,Q
855	R.Norfolk	B	1.50	A,B,E*,K,L,M,PQ	1368	Southern Counties R	B	0.50	B,F*,H,K,L,PQ
855	Sunshine R	I	0.15	B,F,Q	1368	Wiltshire Sound	B	0.10	F,G,K,L
873	R.Norfolk	B	0.30	A,B,D,E*,F,K,L,M,PQ	1431	Essex R(BreezeAM)	I	0.35	B,E*,F*,H,J*,L,PQ
936	Brunel R(CI.Gold)	I	0.18	F,K,L,D,Q	1431	R.210(CI.Gold)	I	0.14	E,F,H,J*,K,L,M,Q
945	R.Trent(Gem AM)	I	0.20	A,B,D,E*,F,H*,J*,K,M,PQ	1449	R.Peterboro/Cambs	B	0.15	B,F*,H,K,L,M
954	Gemini AM	I	0.32	F,H,K,L,Q	1458	Fortune	I	5.00	C,D,E,F,N
954	R.Wyvern(WYVN)	I	0.16	B*,D,E*,F,H*,K,M,Q	1458	R.Cumbria	B	0.50	E,F,J
990	WABC(Nice & Easy)	I	0.09	D,F,Q	1458	R.Devon & Dorset	B	2.00	F,K,Q
990	R.Aberdeen	B	1.00	L	1458	R.Newcastle	B	2.00	F
990	R.Devon & Dorset	B	1.00	F,K,L,Q	1458	Sunrise R	I	50.00	B,E,F*,H,K,L,M,PQ
990	Hallam R(Gt.Yks)	I	0.25	D,F*,M	1458	Guldford(M.Xtra)	I	0.50	B,D,E,F,H,J*,K,L,PQ
999	R.Solent	B	1.00	B,F,K,N*,Q	1485	R.Humberdale(Hull)	B	1.00	A,F,M
999	R.Trent(Gem AM)	I	0.25	B,F,L,M,PQ	1485	R.Merseyside	B	1.20	C,D,E*,F,J,N
999	Red Rosel(Gold)	I	0.80	D,E,F,J	1485	Southern Counties R	B	1.00	B,F,H,K,L,PQ
1017	Beacon R(WABC)	I	0.70	A,D,E,F,K,L,M,N*,D,Q	1503	R.Stoke-on-Trent	B	1.00	A,D,E,F*,J*,K,M,Q
1026	Downton R	I	1.70	E,F,N	1521	Reigate(M.Xtra)	I	0.64	B,D,E,F*,H,J*,K,L,PQ
1026	R.Cambridgeshire	B	0.50	A,B,D,E,F,H,L,M,PQ	1530	Huddersfield(Gt.Yks)	I	0.74	A,C,D,E,F,M
1026	R.Jersey	B	1.00	E,F,K,Q	1530	R.Essex	B	0.15	B,E,F,H,K,L,PQ
1035	Country 1035	I	?	B,E*,F*,K,L,N,PQ	1530	R.Wyvern(WYVN)	I	0.52	E,F,K
1035	NorthSound Two	I	0.78	A,E*,F	1548	Capital R(Cap G)	I	97.50	B,E*,F,K,L,P
1035	R.Sheffield	B	1.00	D,F,M	1548	R.Bristol	B	5.00	F,K,Q
1035	West Sound AM	I	0.32	E,F*	1548	Liverpool(City G)	I	4.40	D,E*,F,N
1107	Moray Firth R	I	1.50	E,F*,J*	1548	R.Forth(Max AM)	I	2.20	E
1116	R.Derby	B	1.20	B,D,E*,F,H,L,M,PQ	1548	Sheffield(Gt.Yks)	I	0.74	F,M
1116	R.Guernsey	B	0.50	F,H,K,Q	1557	Northants R(S.Gold)	I	0.76	D,E*,F,J*,M
1152	BRMB(Xtra-AM)	I	3.00	F	1557	Southampton(SCR)	I	0.50	E*,F,K,L,Q
1152	Great North R(GNR)	I	1.80	F	1557	R.Lancashire	B	0.25	A,C,D,F,J*
1152	LBC(LondonNewstalk)	I	23.50	B,F*,K,L,N*,PQ	1557	Tending(Mellow)	I	0.0	B,E*,F,L,Q
1152	Piccadilly R(Gold)	I	1.50	D,F	1584	Kettering(KC8C)	I	0.04	F,L,M,PQ
1152	Plymouth Snd(CI.G)	I	0.32	F	1584	R.Notttingham	B	1.00	A,B*,D,E,F,H*,J*,N,Q
1152	R.Broadland	I	0.83	B,F*,J*,Q	1584	R.Shropshire	B	0.50	E,F,H*,K
1152	R.Clyde(Clyde 2)	I	3.06	E,F	1584	R.Tay	I	0.21	E,F*,H*,J*
1161	Brunel R(CI.Gold)	I	0.16	F,K,Q	1602	R.Kent	B	0.25	B,E,F*,J*,K,L,PQ
1161	R.Bedfordshire(3CR)	B	0.10	F*,L,PQ					

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

Listeners:

- A Tim Allison, Middlesbrough.
- B Paul Bowerly, Burnham-on-Crouch.
- C Darren Coward, Grange-Over-Sands.
- D Martin Dale, Stockport.
- E Arthur Grainger, Carstairs Junction.
- F Gerry Haynes, Talgarth, Powys.
- G Francis Heame, N.Bristol.
- H Sheila Hughes, Morden.
- I Rhoderick Illman, Oxted.
- J Eddie McKeown, Newry.
- K George Millmore, Wootton, IoW.
- L Martin Price, Shrewsbury.
- M Harry Richards, Barton-on-Humber.
- N Tom Smyth, Co.Fermanagh.
- O Norman Thompson, Oadby.
- P Phil Townsend, E.London.
- Q John Wells, East Grinstead.

Edinburgh; 11.695 from Shepparton (Eng to Pacific areas 1430-1700) 33444 at 1630 in Grange-over-Sands.

Also mentioned in the reports were Slovak R.Int, via Velke Kostolany 11.990 Eng to Aust 0830-0857) 43433 at 0855 in Stockport; VOIRI Tehran 11.930 (Eng to Asia 1130-1230) SIO333 at 1140 in Scalloway; Polish R, Warsaw 11.815 (Eng to Eu 1200-1255) 44444 at 1230 in Morden; R.Romania Int, Bucharest 11.940 (Eng to Eu 1300-1400) 44544 at 1300 in Hertfordshire; WYFR via VOFC 11.550 (Eng to India 1302-1502) 45423 at 1337 in Bushey Heath; BBC via Masirah Is 11.760 (Eng to M.East 1000-1400) 45554 at 1340 in Cyprus; Voice of the Mediterranean via Cyclops 11.925 (Eng, Ar to N.Africa 1400-1600) 33333 at 1415 in Truro; FEBC Bocaue, Philippines 11.995 (Eng to India, SE.Asia 1300-1600) 42443 at 1550 in Woking; BBC via Kranji 11.750 (Eng to Far East 1100-1800) 32332 at 1705 in Burnham-on-Crouch; R.Japan via Ekala 11.930 (Eng, Jap to M.East, N.Africa 1700-1900) 33333 at 1714 in Stoke-on-Trent; Vatican R, Italy 11.625 (Fr, Eng, Port to Africa 1700-1830) SIO222 at 1730 in E.London and 33323 at 1757 in Gibraltar.

Later, R.Kuwait via Kabd 11.990 (Eng to Eu, N.Am 1800-2100) was 45444 at 1826 in Woodhall Spa; WWCR Nashville 12.160 (Eng to Eu? 1400-2300?) 35333 at 1830 in Ross-on-Wye; R.Bulgaria, Sofia 11.720 (Eng to W.Eu 1900-2000) 35443 at 1900 by **Roy Patrick** in Derby; R.Netherlands via Flevo 11.655 (Eng to S/E/W.Africa 1730-2125) 34343 at 1914 in Oxted; RAI Rome 11.905 (Eng to UK 1935-1955) 55444 at 1943 in Co.Monaghan; R.Damascus via Adra 12.085 (Eng to Eu 2005-2105) 24332 at 2005 in Bridgwater; AIR via Bangalore 11.620 (Eng, Hi to Eu 1745-2230) 43333 at 2035 in Stalbridge; R.Havana Cuba 11.720 (Eng to Eu 2100-2200) 34233 at 2100 in Newry; BBC via Ascension Is 11.750 (Eng to S.Am 2000-0200) 45333 at 2100 in Middlesbrough; R.Nac da Amazonia, Brazil 11.780 (Port 0900-0200) 25433 at 2112 in Storrington; R.Bandeirantes, Sao Paulo, Brazil 11.925 (Port 24hrs) 33333 at 2345 by **Robert Connolly** in Kilkree.

R.New Zealand's broadcasts have also been reaching the UK in the **9MHz (31m)** band! Their 100kW transmission on 9.700 (Eng to Pacific

Channel Africa via Meyerton 15.240 (Eng to Africa 1600-1700) 43333 at 1625 in Morden; UAER, Dubai 15.395 (Eng to Eu 1600-1640) SIO222 at 1625 in Elgin; China R.Int, via Mali 15.130 (Eng to E/S.Africa 1600-1657) 43343 at 1645 by **Mary McPhillips** in Co.Monaghan; VOA via Tangier 15.245 (Eng to Eu, N.Africa 1630-1700) 51322 at 1645 in Grange-over-Sands; WVHA via Scotts Corner 15.665 (Eng to Eu 1500-1700?) 35433 at 1657 in Middlesbrough; VOA via Morocco 15.205 (Eng to Eu, M.East, N.Africa 1500-2200?) SIO444 at 1700 in Co.Fermanagh.

Later, Africa No.1, Gabon 15.475 (Fr to W.Africa 1600-1900) 34443 at 1805 in Woking; Monitor R.Int via WSHB 15.665 (Eng to Eu 1800-2000) 34434 at 1821 in Burnham-on-Crouch; HCJB Quito 15.490 (Eng to Eu 1700-2000) 35333 at 1823 by **Michael Griffin** in Ross-on-Wye; RNB Brazil 15.265 (Eng, Ger to Eu 1800-2020) SIO433 at 1910 in Edinburgh; RAE Buenos Aires 15.345 (Sp, Eng, It, Fr, Ger to Eu, Africa 1800-2300) 22322 at 1912 by **Charles Beanland** in Gibraltar; R.Netherlands via Bonaire 15.315

(Eng to S/E/W.Africa 1830-2025) 44434 at 1914 in Oxted; VOA via Greenville 15.580 (Eng to Africa 1800-2200) 35544 at 1955 in Storrington; VOA via Morocco 15.445 (Eng to Africa 1900-2200) 43344 at 2017 in Stockport.

In the **13MHz (22m)** band reception was quite good from some areas R.Korea via Kimjae 13.670 (Eng to Eu 0800-0830) 44434 at 0814 by **Thomas Williams** in Truro; R.Austria Int via Moosbrunn 13.730 (Ger, Eng, Fr, Sp to Eu 0400-1800) SIO333 at 0830 in N.Bristol and at 1400 in E.London; SRI via Sottens? 13.685 (It, Eng, Fr, Ger, Port to Aust, S.Pacific 0830-1100) 33333 at 0906 in Oxted; Monitor R.Int via KHBI Saipan, 13.615 (Eng to Oceania 0800-1000) SIO211 at 0958 in Macclesfield; UAER, Dubai 13.675 (Eng to Eu 1030-1055) SIO344 at 1030 in Edinburgh and (Eng to Eu 1600-1640) 55444 at 1605 in Co.Monaghan; RFI via Fr.Guiana? 13.625 (Eng to C.Am 1200-1300) SIO222 at 1220 in Elgin; ISBS Reykjavik 13.860 (Ic [u.s.b.+ p.c] to Eu 1215-1300) 45444 at 1220 in Woking; AIR via ? 13.750 (Tam, Tel to SE.Asia 1115-1245) 45554 at

1240 in Cyprus; R.Netherlands via Flevo 13.700 (Eng to S.Asia, M.East 1330-1425) 43444 at 1330 in Newry; WWCR Nashville 13.845 (Eng to E.Asia 1400-0100) 35444 at 1409 in Burnham-on-Crouch; VOA via Selebi-Phikwe 13.710 (Eng to Africa 1630-1900) 33322 at 1637 in Grange-over-Sands; KWHR Naalehu, Hawaii 13.625 (Eng to Samoa, N.Zealand 1800-2000) 24332 at 1816 in Bushey Heath; WHRI South Bend, 13.760 (Eng to E.U.S.A, Eu 1600-2200) 45333 at 1829 in Ross-on-Wye and 33434 at 1922 in Gibraltar; RCI via Sackville 13.650 (Eng to Eu, M.East, Africa 2000-2130) 35333 at 2041 in Bridgwater.

In the **11MHz (25m)** band R.New Zealand's broadcasts to Pacific areas have sometimes reached the UK. During favourable conditions their 100kW transmission on 11.900 (Eng 0459-0716) peaked 44323 at 0650 in Bushey Heath. Later, 11.910 (Eng 1850-2050) was 23532 at 1906 in Wallsend. Quite often R.Australia's broadcasts were received here. 11.660 from Carnarvon (Eng to S.Asia 1430-2100) peaked SIO454 at 1445 in

Tropical Bands Chart

Freq MHz	Station	Country	UTC	DXer	Freq MHz	Station	Country	UTC	DXer
2.310	ABC Alice Springs	Australia	1726	G,H	4.935	KBC Gen Sce Nairobi	Kenya	1935	L
2.325	ABC Tennant Creek	Australia	1824	G,H,L	4.940	AIR Guwahati	India	1506	H
2.340	Fujian 1, Fuzhou	China	2211	G	4.940	R Abidjan	Ivory Coast	2045	O
2.485	ABC Katherine	Australia	1824	H,L	4.950	R Nacional, Mulenvos	Angola	2032	H
2.850	KCBS Pyongyang	N. Korea	2110	G	4.955	R.Cultura, Campos	Brazil	0105	D
3.200	TWR Manzini	Swaziland	1816	H	4.965	R.Zambia, Lusaka	Zambia	1746	H
3.220	R.Kara, Lome	Togo	1921	L	4.970	PBS Xinjiang	China	0028	K
3.223	AIR Simla	India	1640	D,H	4.970	R.Rumbos, Caracas	Venezuela	0015	D,K
3.230	ABC Alice Springs	Australia	2220	O	4.975	R.Uganda, Kampala	Uganda	2054	D,K,L,O,P
3.230	R.Sol de Los Andes	Peru	2332	D,F	4.980	Ecos del Torbes	Venezuela	2300	C,D,K,L,O,P
3.230	SABC Oranje				4.985	R.Brazil Central	Brazil	0055	D,O
	Meyerton	S.Africa	1754	O,H	4.990	AIR Ext.Service	India	0035	J,K
3.240	TWR Shona	Swaziland	1822	H,P	4.990	FRCN Lagos	Nigeria	2100	D,K,L
3.245	AIR Lucknow	India	1638	O,H	5.005	R.Nepal, Kathmandu	Nepal	1701	H,P
3.250	R.Luz Y Vida	Honduras	0125	D	5.009	R.Madagascar	Madagascar	1708	H
3.255	BBC via Maseru	Lesotho	1930	D,H,L,O,P	5.010	Guangxi 2, Nanning	China	0030	K
3.270	SWABC 1, Namibia	S.W.Africa	1920	D,H,L,P	5.010	AIR Thiru-puram	India	0100	D
3.290	SWABC 2, Namibia	S.W.Africa	2031	H,P	5.020	La V du Sahel, Niamey	Niger	2054	D,H,L,O,P
3.300	R.Cultural	Guatemala	0500	D,P	5.020	SIBC Tamil Home Sce.	Sri-Lanka	1721	H
3.306	ZBC R-27	Zimbabwe	1920	H,L,O,P	5.025	R.Parakou	Benin	2146	D,L,O,P
3.315	AIR Bhopal	India	1628	D,H	5.025	R.Rebelle, Habana	Cuba	2339	D,O
3.320	R.France Int. via ?	France?	1913	H	5.025	R.Quillabamba	Peru	2343	O
3.325	R.Liberal	Brazil	0130	D	5.030	AWR Latin America	Costa Rica	2315	O
3.325	FRCN Lagos	Nigeria	1923	K,L,O,P	5.035	R.Aparecida	Brazil	0110	D
3.335	CBS Taipei	Taiwan	1840	L	5.035	R.Bangui	C.Africa	2147	D,K,L,O,P
3.345	AIR Jammu	India	1707	H	5.040	Voz del Upango, Macas	Ecuador	0125	D
3.356	R.Botswana	Gabaronne	1924	L	5.047	R.Togo, Lome	Togo	2124	C,D,K,O,P
3.359	RTV Malagasy	Madagascar	1738	H	5.050	R.Tanzania	Tanzania	1939	L,O,P
3.365	R.Rebelle, La Julia	Cuba	0115	D	5.055	RFO Cayenne(Matoury)	French Guiana	0110	D,P
3.365	GBC R-2	Ghana	2005	O,F,I,K,L,N,O,P	5.055	TWR Manzini	Swaziland	0400	P
3.365	AIR Delhi	India	1618	H,O	5.060	PBS Xinjiang, Urumqi	China	0105	D
3.375	R.Equatorial, Macapa	Brazil	0305	D	5.065	R.Candip, Bunia	Zaire	1741	H
3.375	R.Nacional S.Gabriel	Brazil	0145	O,F,P	5.075	Caracol Bogota	Colombia	2300	C,D,G,K,O,P
3.377	R.Nacional, Mulenvos	Angola	2126	H					
3.380	NBC Biantyre	Malawi	2017	D,H,L					
3.915	BBC via Kranji	Singapore	2110	E,K,L,O					
3.945	AIR Gorakhpur	India	1531	H					
3.955	BBC via Skelton	England	2212	B,D,K,Q					
3.955	R.Budapest	Hungary	2212	E,K,Q					
3.965	RFI Paris	France	2141	A,B,D,E,F,I,K,Q					
3.970	RFE Biblis	Germany	2120	B,D,K,Q					
3.975	BBC via Skelton	England	2045	D					
3.975	R.Korea via Skelton	England	2045	J					
3.975	R.Budapest	Hungary	1700	Q					
3.980	VOA via Munich	Germany	1915	D,E,I,K,Q					
3.985	China R via SRI	Switzerland	2100	B,D,E					
3.985	SRI Beromunster	Switzerland	2002	D,J,K,Q					
3.985	DW via Julich	Germany	2000	A,B,D,E,K,Q					
3.985	R.Budapest	Hungary	1700	Q					
4.500	Xinjiang BS, Urumqi	China	2330	G,K					
4.735	Xinjiang, Urumqi	China	0013	D,G,K					
4.750	R.Bertour	Cameroon	2030	D					
4.750	Xizang BS, Lhasa	Tibet	0040	D					
4.755	R.Educ CP Grande	Brazil	0045	C,D,F,I,P					
4.760	AIR Port Blair	India	1608	H					
4.760	ELWA Monrovia	Liberia	2141	K,L,N,P					
4.765	R.Integracao	Brazil	0035	D					
4.770	FRCN Kaduna	Nigeria	1926	O,K,L,M,O,P					
4.775	AIR Guwahati	India	0050	O,H					
4.775	R.Tarma	Peru	2303	O					
4.777	R.Gabon, Libreville	Gabon	2141	D,L,P					
4.783	RTM Bamako	Mali	2001	L					
4.785	Zhejiang PBS, H'gzhou	China	0045	D					
4.785	R.Tanzania	Tanzania	2210	K					
4.790	Azad Kashmir R.	Pakistan	1711	?					
4.790	R.Atlantida	Peru	2320	O					
4.800	AIR Hyderabad	India	1640	H,P					
4.800	LNBS Lesotho	Maseru	1945	D,H,L					
4.805	R.Nac. Amazonas	Brazil	0019	D,I,K,M					
4.810	R.San Martin Tara	Peru	0020	D,K					
4.810	SABC Meyerton	S.Africa	2322	H,I,K,M,O					
4.815	R.diff TV Burkina	Ouagadougou	1959	D,L					
4.820	La Voz Evangelica	Honduras	0021	D,K					
4.820	AIR Calcutta	India	1736	H,P					
4.825	R.Cancao Nova	Brazil	00650	I					
4.828	ZBC R-4	Zimbabwe	1930	H,L,P					
4.830	R.Tachira	Venezuela	2325	D,F,G,I,K,M,O					
4.832	R.Reloj	Costa Rica	0702	D					
4.835	R.Tezutlutan, Coban	Guatemala	0100	D					
4.835	RTM Bamako	Mali	2153	C,D,G,I,J,K,L,M,O,P					
4.840	R.Interoceanica	Ecuador	0040	D					
4.840	AIR Bombay	India	1725	D,H,P					
4.845	RTM Kuala Lumpur	Malaysia	1635	H,P					
4.845	ORTM Nouakchott	Mauritania	2152	D,K,L,O					
4.850	R.Yaounde	Cameroon	2209	O,K,O					
4.850	AIR Kohima	India	0050	O					
4.855	R.Sana Yemem	Yemen	1958	J					
4.860	AIR Kingsway(Feeder)	India	1815	H,L,O,P					
4.865	PBS Lanzhou	China	2300	F,G,I,O					
4.865	L.V. del Cinaruco	Colombia	0024	D,K					
4.870	R.Cotonou	Benin	1947	L,P					
4.879	R.Bangladesh	Bangladesh	1531	H					
4.885	Ondas del Meta	Colombia	0710	C					
4.885	KBC East Sce Nairobi	Kenya	1853	L					
4.890	R.Port Moresby	New Guinea	2003	H					
4.895	Voz del Rio Arauca	Colombia	0055	D					
4.895	Pakistan BC	Pakistan	1641	H					
4.900	SIBC Colombo	Sri Lanka	1655	H					
4.905	R.Nat. N'djamena	Chad	1847	O,J,L,O,P					
4.910	AIR Jaipur	India	1735	H					
4.910	R.Zambia, Lusaka	Zambia	2151	H,L					
4.915	GBC-1, Accra	Ghana	2046	D,F,J,K,L,O,P					
4.915	KBC Cent Sce Nairobi	Kenya	1913	L					
4.920	R.Quito	Ecuador	0632	C,G					
4.920	AIR Madras	India	1651	F,H,P					
4.925	R.Nacional, Bata	Eq. Guinea	2005	H,K,L					
4.927	RFI Jambi	Indonesia	2205	G					
4.935	R.Difusora, Jatai	Brazil	0055	O					

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

DXers:

- A Tim Allison, Middlesbrough
- B Charles Beanland, Gibraltar
- C Paul Bowery, Burnham-on-Crouch
- D Robert Connolly, Kilkeel
- E Bernard Curtis, Stalbridge
- F John Eaton, Woking
- G David Edwardson, Wallsend
- H P.Gordon Smith, Kingston, Moray
- I Sheila Hughes, Morden
- J Rhoderick Illman, Oxted
- K Eddie McKeown, Newry
- L Fred Pallant, Storrington
- M Roy Patrick, Derby
- N Clare Pinder, Appleby
- O Richard Reynolds, Guildford
- P John Slater, Scalloway
- Q Phil Townsend, E.London

areas 0717-1206) was 21112 at 0808 in Stockport, 25552 at 0902 in Wallsend and SIO322 at 1043 in Macclesfield.

Many other broadcasters are taking advantage of conditions in this band. They include R.Prague, Czech Rep. 9.505 (Eng to Eu 1030-1057) 55433 in Ross-on-Wye; R.Nederlands via Nauen 9.650 (Eng to Eu 1130-1325) 54554 at 1130 in Newry and via Flevo 9.860 (Eng to C/W.Africa 1830-2125) 44443 at 1852 in Gibraltar and 23332 at 1914 in Oxted; R.Jordan via Al Karanah 9.560 (Eng to Eu, N.Africa 1100-1200) 33333 at 1200 by **Clare Pinder** in Appleby; Voice of Vietnam, Hanoi 9.840 (Eng to Far East 1330-1400) 34322 at 1330 in Stoke-on-Trent; R.Australia via Carnarvon 9.510 (Cant? to E.Asia 1430-1500?) 44444 at 1430 in Grange-over-Sands; Monitor R.Int. via KHBI 9.355 (Eng to NE.Asia 1300-1600) SIO233 at 1515 in Edinburgh and via WSHB 9.355 (Eng to Eu 2000-2200) 43333 at 2020 in Stalbridge; R.Pyongyang, Korea 9.977 (Eng to Eu, M.East, Africa 1500-1550) 24222 at 1522 in Burnham-on-Crouch and 9.325 (Eng to Eu, M.East, Africa 1700-1750) 35343 at 1721 in Co.Monaghan; AIR via Delhi? 9.950 (Eng to N.Africa, M.East 1745-1945) 44323 at 1845 in Middlesbrough; R.Portugal via Sines? 9.780 (Eng to Eu 1900-1930) 44334 at 1914 in Truro; R.Bulgaria, Sofia 9.700 (Eng to Eu 1900-2000) 53533 at 1924 in Bushey Heath; VOIRI Tehran, Iran 9.022 (Eng to Eu 1930-2027) 44333 at 1940 in Bridgwater; DW via Sines 9.615 (Eng to Eu 2000-2050) 45444 at 2000 in Derby; VOA via Gloria 9.760 (Eng to Eu, N.Africa M.East 1700-2100) 44554 at 2011 in Storrington; Voice of Turkey, Ankara 9.445 (Eng to USA 2200-2250)

SIO222 at 2200 in Co.Fermanagh; UAER, Abu Dhabi 9.770 (Eng to N.Am 2200-0000) 44444 at 2245 in Kilkeel; R.Cancao Nova, Brazil 9.675 (Port 24hrs) SIO223 at 2316 in Woking; R.Austria Int via Moosbrunn 9.870 (Ger, Sp, Eng to S.Am 2200-0200) SIO333 at 2345 in N.Bristol; R.Rumbos, Caracus 9.660 (Sp 24hrs) 23432 at 2350 in Hertfordshire.

The **7MHz (41m)** band is used by some to reach listeners in Europe. They include R.Japan via Skelton 7.230 (Jap, Eng 0400-0800) 34453 at 0710 in Cyprus; Monitor R.Int via WSHB 7.535 (Eng [Various Sat/Sun] 0400-0955) 44444 at 0812 in Oxted; WEWN Birmingham 7.425 (Eng 0830-1000) 45444 at 0935 in Woodhall Spa; United Nations R. via IRRS Milan 7.125 (Eng 0930-1000) 45454 at 0950 in Burnham-on-Crouch; R.Prague, Czech Rep 7.345 (Eng 1030-1057) 55232 in Ross-on-Wye; Croatia R. via Deanovec 7.370 (News in Eng 1304) SIO344 at 1304 in Scalloway; Polish R, Warsaw 7.285 (Eng 1700-1757) 32222 at 1754 in Stockport; Slovak R.Int via Velke Kostolany 7.345 (Eng 1830-1900) 33333 at 1830 in Stalbridge; R.Romania Int, Bucharest 7.195 (Eng 1900-1956) 54444 at 1900 in Appleby and (Eng 2100-2156) 54544 at 2100 in Hertfordshire; AIR via Aligarh? 7.412 (Hi, Eng 1745-2230) SIO333 at 1925 in Edinburgh; VOIRI Tehran 7.260 (Eng 1930-2027, also to M.East) 32542 at 1940 in Bridgwater; DW via Sines? 7.170 (Eng 2000-2050) 45444 at 2000 in Derby and 7.285 (Eng 2000-2050) 44554 at 2048 in Storrington.

While beaming other areas R.Nederlands via Talata Volon 7.120 (Eng to S/E.W.Africa 1730-2025) was SIO444 at 1800 in Co.Fermanagh; Vatican R, Italy 7.305 (Eng to Asia 2245-2305) 45444 at 2300 in Woking; WVHA via Scotts Corner 7.465 (Eng to N.Am? 0000-?) 22222 at 0005 in Truro; WRNO New Orleans 7.355 (Eng to E.USA 2300-0300) 32222 at 0025 in Kilkeel; R.Nederlands via Alma Ata 7.305 (Eng to S.Asia 0030-0225) 22222 at 0044 in Newry.

The **6MHz (49m)** band carries many broadcasts to Europe. Those noted came from R.Japan via Skelton 5.975 (Jap, Eng 0500-0800), 54444 at 0753 in Bushey Heath and 6.055 (Eng 2200-2300) 55555 in Appleby; WEWN Birmingham 5.825 (Eng ?-1000) 33333 at 0910 in Stalbridge; R.Vlaanderen Int, Belgium 6.035 (Du, Eng, Fr, Ger 0800?-1200) SIO544 at 1000 in Macclesfield; R.Austria Int, via Moosbrunn 6.155 (Ger, Eng, Fr, Sp 0400-2300) 44423 at 1021 in Oxted; SRI via Lenk 6.165 (Eng 1100-1130) 34333 at 1100 in Stoke-on-Trent; R.Bremen, Germany 6.190 (Ger) 55445 at 1137 in Burnham-on-Crouch; RFI via Allouis 6.175 (Eng 1600-1700) 53433 at 1630 in Ross-on-Wye; R.Pyongyang, Korea 6.576 (Fr 1600-1650, also to M.East, Africa) 44554 at 1635 in Cyprus; BBC via Rampisham/Skelton 6.195 (Eng 1700-2330) 44544 at 1818 in Gibraltar; R.Sweden via Karlsborg? 6.065 (Eng 1730-1800, also to M.East, Africa) 45444 in Woodhall Spa; R.Finland via Pori 6.120 (Eng 1900-1930) 33443 at 1915 in Bridgwater; R.Romania Int, Bucharest 6.105 (Eng 1900-1956) 43333 at 1940 in Morden; R.Prague, Czech Rep 5.930 (Eng 2000-2027) SIO433 at 2000 in Co.Fermanagh; R.Latvia, Riga 5.935 (Eng 2030-2035) 44443 at 2030 in Co.Monaghan; China R.Int, Beijing 6.950 (Eng 2000-2157) 45444 at 2039 in Woking; Vatican R, Italy 5.882 (Music 2310-0100) 44434 at 2310 in Truro.

Also noted in this band were R.Nederlands via Flevo 6.020 (Eng to N.Am 2330-0125), SIO333 at 2345 in N.Bristol; also via Bonaire, Ned.Antilles 6.165 (Eng to N.Am 2330-0125) 33333 at 0039 in Newry; CKZN St.John's, Newfoundland 6.160 (Eng [Rly CBN] 0930-0500) 22222 at 0140 in Kilkeel; BBC via Antigua 5.975 (Eng to C.Am 2100-0430) 33443 at 0315 in Middlesbrough; BBC via Ascension Is 6.005 (Eng to C/S.Africa 0300-0715) 34443 at 0335 in Middlesbrough.

LW Maritime Beacons

The long hours of darkness during January, February and March encouraged some listeners in the UK to search for the signals from distant maritime radio-beacons. Although the propagation conditions at night were often favourable, no reliance could be placed on receiving a particular beacon. This is, of course, one of the factors that makes this aspect of our hobby all the more interesting and a challenge! As **Steve Cann** (Southampton) said, 'One night you can be going for a particular beacon and have no joy and then the next night it's there almost calling you!'

Some of the more distant beacons were heard via sky wave paths at night. The signals from those on the Canary Is were picked up by Steve Cann, **Robert Connolly** (Kilkeel), **Jim Edwards** (Bryn) and **Albert Moore** (Douglas, IoM). One on the coast of Morocco at Cap Spartel (SP), opposite Gibraltar, was heard on 306.5 by **Peter Westwood** in Farnham. The callsign (FI) from Cala Figuera, Majorca on 286.5 was heard before midnight by **Peter Rycraft** in Wickham Market. Twoidents from Corsica were received: (CB) on 295.0 from La Revellata Lt, logged by Peter Westwood and (GL) on 305.0 from the Ile Giraglia Lt, noted by **Tom Smyth** (Co. Fermanagh) and Robert Connolly. The beacon at Punta D.Penna, Italy (TL) on 314.5 was heard by **Peter Pollard** while staying in Porthcawl, also by others. Between the Gulf of Venice and the Adriatic, on the tip of a Croatian peninsula, is Kamenjak (HO), that was heard on 298.8 by Peter Westwood. The beacon signal (HA) that Robert Connolly heard on 287.3 originated from much further along the Mediterranean at the Haifa Lt, Israel.

Several beacons along the Baltic coast of Estonia, Latvia and Lithuania were also logged, see chart. Those on the Faeroe Is at Akraberg (AB) 381.0, Myggenaes (MY) 303.0 and Nolso (NL) 404.0 were heard by several DXers including **Darren Beasley** (Bridgwater), **Kenneth Buck** (Edinburgh) and **John Easton** (Woking). Of the eight Icelandic beacons reported Ingolfshofdhi Lt (IN) on 316.0 in the south-east was most

frequently heard. Seldom logged Raufarhofn (RG) on 301.1 is the most northerly, being almost within the Arctic Circle. Also difficult is Barjtanger (BT) on 287.3, which is on a peninsular to the north-west.

The Prins Christian's Sund

Beacon (OZN) on 372.0, which is on the southern tip of Greenland, was often clearly received at night by Robert Connolly. He also logged Godhaven (GN) on 306.0 and Jakobshavn (JV) on 367. Tom Smyth picked up the ident (UP) from Upernavik, Greenland

on 399.0. Robert Connolly's up-dated guide to the l.w. radio-beacons is proving very popular, see March *SWM* for details. If you would like an information sheet about it, please write to him, via me, enclosing an s.a.e.

Long Wave Maritime Radiobeacon Chart

Freq kHz	C/S	Station Name	Location	DXer	Freq kHz	C/S	Station Name	Location	DXer
284.5	LZ	Lizard Lt	S Cornwall	A.B.C.D.E.F.G.H.K.L.O.P	303.0	D	Rola	SW Spain	F
284.5	MA	Cabo Machichaco	N Spain	C.D.E.F.H.K.L.O.P	303.0	FB	Fambersough Hd Lt	Yorkshire	A.B.C.D.E.F.H.L.M.N.O.P
285.0	NO	Cabo de la Nao Lt	S Spain	D	303.0	FV	Falsterboen Lt	Sweden	B.D.F
285.0	NP	Nieuport W Pier	Belgium	D	303.0	MY	Myggenaes Lt	Faeroes	E.F
286.0	TR	Tuskar Rock Lt	S Ireland	A.B.C.D.E.F.G.H.J.K.L.M.O.P	303.0	YE	Ile d'Yeu Main Lt	France	A.C.D.E.F.G.H.J.K.L.N.O.P
286.5	AL	Almagrundet Lt	Sweden	D.E.F.F.L	303.5	BJ	Bjornund Lt	Norway	B.D.F
286.5	BY	#Bally Lt	S Ireland	O.H	303.5	FN	Festern Lt	Norway	B
286.5	FI	Cala Figuera	Majorca	C.D.E.F.H.L	303.5	IA	Llanes Lt	N Spain	C.D.F.H.K.L.O.P
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287.3	SE	Sete	France	D	304.5	MV	Cabo Mayer Lt	N Spain	C.D.H.J.K.O.P
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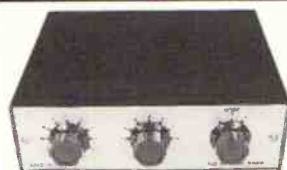
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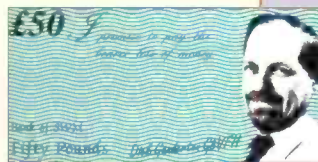
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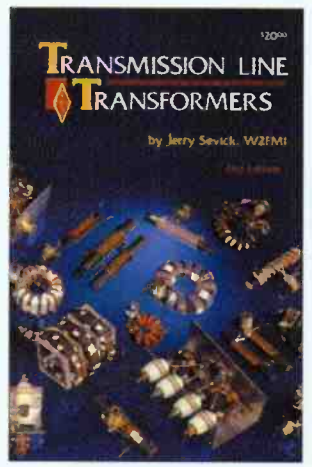
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