Short Wave Magazine

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NOVEMBER 1989

SWM SWM SWM SWM SWM SWM SWM

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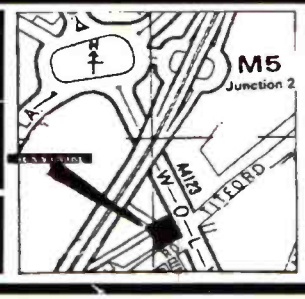

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|28| **Philips D2935 World Band Receiver**

Cover John Waite has put the Philips D2935 world band receiver through its paces. Due to pressure of space, Starting Out and Antennas part 10 have had to be held over until next month.

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GOOD LISTENING

A WORD IN EDGEWAYS

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

The Editor reserves the right to shorten any letters for publication but will try not to alter their sense. Letters must be original and not have been submitted to other magazines.

Sir

I feel I must take issue with George Millmore of Ryde, IOW (A Word In Edgeways, Sept SWM) when he disputes that battery receivers ever used 6-volt accumulators. In fact several makes of early sets of the mid to late 1920s did, such as Marconi andTMC for instance.

Up to four years ago I had in my vintage collection a "straight 8" Marconi 81 receiver, which was an 8-valve t.r.f. monster of 1925/6 vintage. This used 6 volt filament valves and the total l.t. consumption was only 0.68amp at 6 volts d.c.. The set also originally used 4 x 42 volt h.t. batteries and a 16 volt grid-bias. battery.

From 1925 to 1936 a range of seven types of 6 volt battery valves were made by Marconi, Mullard, Cossor & Six Sixty and I have all the data on them plus the fact that I still hold three of the PM 6 output valves in my collection. These normally worked on 100/150 h.t. although there was a "super power" PM256 which could operate up to 250V on the anode if required with an anode current of 20mA.

DONALD HEWLETT
WILLSBRIDGE
BRISTOL

Sir

Most of my reports to LM&S have been logged using a home brew one-valver. It's a pity that home brew, like melodic music, is a lost art. Although not au fait with all aspects of radio theory, I get a lot of pleasure constructing and squeezing the DX from my simple receivers.

The following QSL cards were obtained using an O-V-O on the Broadcast Bands recently: Syria, Ghana, NIgeria, Brazil, Malta, Vletnam, Korea, India, Pakistan & Australia.

The one-valver performed equally well on the amateur bands, pulling in VK3AW, JA2CC, 5B4T, V31BB, 4X4DK and many W's. In fact, as I scribe this letter, I am listening to a QSO on 20m between the radio officer (W5ESI) from a bulk carrier in the Western Mediterranean, to amateurs in various parts of the USA, all of them coming in loud & clear through my 955 one-valver.

Admittedly, much patience and a little skill is required to drive the O-V-O, but the end results are much more rewarding than pressing the memory button on that £1000 set.

A quote from the Short Wave Listener, circa 1953, is just as true today as it was then. "Allow me to introduce you to the thrills of genuine single-valve listening. Thrills they are - far more than those obtainable from the big sets. For if you use a 14-valve superhet, complete with twin carburetter, superchanger & all refinements, you tend to become blase. When you hear that VR4 or AC3 station, you say to yourself: "Well, and so I should, with a receiver like this" But when you find him for the first time on your O-V-O, it really is an achievement.

There are of course plently of simple transistor circuits that can be constructed. But for me, the one-valver is a symbol of a bygone age when everyone rolled their own, and hopefully, like the Big Bands, will someday return.

RON PEARCE
BUNGAY, SUFFOLK

CQ "Camm's Comic" Readers

Did you read *Practical Wireless* in the years leading up to the war? Veteran *PW* readers, especially those with memories stretching back to the 1930s, are sought by the new editor, Rob Mannion G3XFD.

Hopefully, pre-war readers will be able to share their experiences with present-day readers of *Practical Wireless* as the magazine approaches its 1000th edition in July 1990.

If you can help, particularly with recollections and pictures of *PW* projects, then write to him at *Practical Wireless*, Enefco House, The Quay, Poole, Dorset BH15 21PP.

WHAT'S NEW

Standard Dealership

ADITI Communications of Hurstpierpoint, Sussex has been aproved as an area dealer for the Standard range of amateur radio equipment. They will be stocking the complete range of mobile v.h.f./u.h.f. transceivers from this well-known manufacturer as well as the new scanning receiver with its unique panoramic display.

As part of a policy for giving service to their customers Alec Parsons G4WNX and James Kearney G0IWA open the ADITI showrooms at **46 High Street, Hurstpierpoint, West Sussex Tel: (0273) 833311** on Saturdays and Sundays and stay open late until 8p.m. on Wednesdays. A free newsletter, easy payment terms and trade-ins on second-hand gear are other ways in which they assist the radio amateur.

Esperanto and Radio

The Lithuanian Esperanto Association, banned by Stalin in 1940, has just been re-founded in the city of Vilnius. Their old magazine, *Litova Stelo*, will be published once again and Vilnius Radio will be organising two short broadcasts each week in Esperanto.

Details are:

Tuesday: 2200 - 2230UTC on 31, 19 and 16m

Thursday: 2130 -2200UTC on 451 and 49m.

Did you know that in 1988 eleven radio stations broadcast 4912 programmes in Esperanto?

For further information contact;

The Esperanto Centre,
140 Holland Park Road,
London W11 4UF. Tel: 01-727 7821.

BBC World Shop Now Bigger

The well-known *BBC World* shop at Bush House in The Strand, has just re-opened after a complete refurbishment which has also added nearly 30 per cent more sales and display space.

As a result it has now started selling short wave radios as well as books, magazines and other items of interest to anyone who listens to international short wave broadcast stations.

"Anyone who travels abroad should visit *BBC World*," reckons John Tusa, Managing Director BBC World Service. "With the latest pocket-sized short wave radio sets, tuning in to the BBC while on holiday or on business is no longer a chore. Our shop can help by offering one of the widest selections of books and information - not just about the BBC but about the whole international broadcasting scene," he added.

***BBC World* is at**
Bush House,
Strand, London WC2B 4PH.

WHAT'S NEW

Dixon Murders

On the July 5 this year the bodies of Peter and Gwenda Dixon were found, brutally murdered, on the Pembrokeshire Coastal Path. Peter Dixon was a keen radio amateur with the callsign G0HFQ and he was also a c.b. enthusiast.

The Police are anxious to talk to anyone who had contact with, or listened to, G0HFQ whilst he was operating in Pembrokeshire as GW0HFQ/M on 144MHz s.s.b., 28MHz f.m./ s.s.b. or 7MHz s.s.b. between 19 and 29 June 1989. It is also believed that he also had a contact with another mobile operating in the area on 28MHz f.m. on the morning of 28 June and another on Sunday 29 June with an operator called "Tom". The frequency of this contact is not known. The Police are particularly anxious to trace the other stations involved.

At about 2.00 p.m. on Sunday 25 June two men in a boat fishing on the Hellwick Bank off Worms Head on the Gower Coast overheard a conversation on the boat's c.b. radio. The set was tuned to Channel 33 and the man transmitting could well have been Peter Dixon from the details he gave over the radio. He said that he was middle aged, from the Oxford area and had been holidaying in Pembrokeshire for the last 16 years. As he was using a complicated callsign such as a radio amateur would use, the Police believe that he was an experienced amateur like Peter Dixon rather than a c.b. radio user,

The QSO was being conducted with an unknown man believed to have ben called Tom and who was also in a fishing boat but off the Pembrokeshire coast. Tom had a broad Pembrokeshire accent and during the QSO agreed to met the other operator (Peter Dixon?) somewhere at a later date. As Tom appeared slightly disinterested the Police do not know if the meeting actually took place. They are, however, very keen to talk to Tom as he may be able to give them further information on the movements of Mr. and Mrs Dixon in the days immediately prior to their murders on 29 June 1989.

If any reader heard any of the QSOs made by Peter Dixon as either G0HFQ or GW0HFQ/ M, or if you actually worked him then please contact the **Murder Incident Room, Haverfordwest Police Station. Tel: (0437) 763355** or their local Police Station.

Scottish Tourist Board Radio Amateur Expedition Group

This group has been operating a whole series of Special Event Stations throughout Scotland during 1989. The last one for this year is **GB2SPC:** Tulliallan Castle, Scottish Police College, Kincardine, Fife. on 28-29 October.

They will be back again in 1990 at Balmoral Castle (by Royal Permission), Edradour Distillery (Scotland's smallest) and Crathes Castle, Aberdeenshire. *Short Wave Magazine* will, of course, give you the full details when we have them.

The following stations count for the *Tartan Banner Award* and the *Thistle Award:* GB2STB, GB2DWR, GB2RB, GB2RBC, GB2NTS, GB2SSD, GB2NTS (again) and GB2SPC. The *Tartan Banner Award* will be available at the end of October but the *Thistle Award* must be claimed first. Both Awards are ongoing and all STB/RADEG Awards are dealt with by **Robbie, GM4UQG, PO Box 59, Hamilton, Scotland ML3 6QB**

Top Young Radio Amateur of 1989

Sixteen-year-old Warwick schoolboy, Ted walker, has been named as the UK's top young radio amateur for 1989. Rachel Oakley from Gateshead and Paul Moss from Evesham were chosen as runners up.

Ted received a £250 prize and certificate for winning the DTI-sponsored Young Amateur of the Year Award and these were presented to him at the RSGB's HF Convention by Mike Coolican, Head of Licensing at the Department of Trade and Industry.

Chosen from a shortlist of six, Ted is a keen user of radio and has restored radio equipment and constructed his own antennas. He is also very active in radio clubs and in RAYNET.

Rachel, 14, of Low Fells, Gateshead, was the firtst Guide to qualify for the new Girl Guide Radiocommunications Badge. She has coached other guiders and taken part in the Guides' "Thinking Day on the Air". She passed the RAE and Morse test when she was only 12 years old and has built her own radio equipment.

Seventeen-year-old Paul, from Badsey, Evesham, is a successful competitor in radio callsign collection competitions. He has built his own antennas and uses computers for communications via radio.

The Young Amateur of the Year Award is organised by the RSGB as part of its "Project Year" which aims to introduce more young people to the hobby.

Normal *Radiophile* Service Resumed

The Radiophile is now back under the sole editorship of its founder, Chas E Miller. A host of interesting features, covering servicing, restoration, nostalgia and constructional projects, will be appearing in the magazine. Existing subscribers will have their subscriptions honoured in full, but new UK subscriptions will cost £10. Full details from ***The Radiophile,* "Larkhill", Newport Road, Woodseaves, Stafford ST20 0NP.**

WHAT'S NEW

Panasonic RF-B65D

Panasonic has just introduced a multi-band portable radio equiped to receive single sideband signals. This will be vital in the future when short wave broadcast stations turn to s.s.b to allow more stations to be crammed onto the overcrowded dial. As the RF-B65D can be tuned continuously from 1.615 to 29.999MHz it will also allow the s.w.l. to receive amateur s.s.b. signals as well as many other interesting stations.

The set is a double superheterodyne with a microcomputer-controlled phase locked loop synthesiser and digital frequency readout.

Tuning is either by using the numeric keypad to enter the exact frequency desired or by calling up the lowest frequency of a particular band and then using the rotary tuning control to find the station. The rotary tuning control has two selectable modes - fast and slow. In the slow mode tunning steps are 1kHz. An auto scan function is provided which automatically moves to the next frequency on which a station is detected, speeding up the tuning process.

Nine memories for each band 36, in all,can be used to store station frequencies for later recall at the press of a couple of buttons.

The dual time clock can be set to two different times to give useful information on the time of day elsewhere in the world. Sleep and standby functions allow the radio to used as an alarm clock.

The RF-B65D tunes over 87.5 - 108MHz f.m.; 153 - 519kHz; 522 - 1611kHz in 9kHz steps and 1.615 - 29.999MHz.

Accessories supplied as standard include an earphone, carrying case, antenna cord, handstrap, a.c. adaptor and a s.w. frequency guide. The set costs £179.95 from Panasonic dealers.

World DX Club

At this year's ANARC convention at St Petersburg, Florida, held over the weekend of 14 - 17 July, The representatives of the memeber clubs of the Association of North American Radio Clubs recognised and acclaimed Arthur Ward as International Short Wave Broadcast DXer of 1989. This award was made for the promotion of the hobby by the World DX Club through its bulletin *Contact*.

To celebrate the World DX Club has announced a number of memberships are to made available at £7.50 to allow interested s.w.l.s or DXers to join in and share the benefits of a top DX club with a difference.

For further information send an s.a.e. or i.r.c. to **Arthur Ward, 17 Motspur Drive, Northampton NN2 6LY.**

Kit News

We have received the latest issue of *Kit News* from Cambrige Kits. This issue, as well as describing each kit produced by the company, gives the reader some useful hints and tips. Example: No tuning drive cord? Use Dental Floss. They also collect used postage stamps to help Mother Teresa in Calcutta and would be pleased to receive any you can send them.

You can get your free copy by sending a 225 x 100mm stamped addressed envelope to **Cambridge Kits, 45 Old School Lane, Milton, Cambridge CB4 4BS. Tel: (0223) 860150** and mentioning *Short Wave Magazine*.

Wireless at Brixham Breaks

Feel like a short holiday in a South Devon hotel which will also give you the opportunity to play radio at the same time? Then the Wireless at Brixham Courses will interest you. You could also take the XYL as there will be plenty for the ladies to do if they don't want to get involved with the wireless!

The courses commence on the Friday afternoon with talk-in provided from 2p.m. on 144.525MHz from SX95 square. After dinner you could drive around the South Devon countryside or try the hotel radio shack.

Saturday is scheduled for Dartmoor - Hay Tor (SX77) being suggested as the spot for listening and playing radio from. Veveral unusual squares will be activated for the ocasion subject, of course, to conditions and stray sheep!

On Sunday there is a guided tour of Brixham Coastguard Hi-tech Communications Centre followed by visits to the Sherman Tank Memorial and Dartmouth.

Monday, weather permitting, there will be a visit, *a la pied*, to the Doppler VDR beacon on Berry Head.

The Courses finish on the Tuesday with a visit to North Hessary Tor transmitter station and mast.

Courses, which can be either two or four-nights long, are scheduled to commence on 16 November and 1 December 1989 and 16 February and 6 April 1990. Full details from **Tor Haven Hotel, King Street, Brixham, South Devon TQ5 9TH. Tel: (0803) 882281.**

New Zepp Antennas

Waters & Stanton will shortly be introducing two new h.f. antennas in the Sagant "ZEPP" range.

Zepp antennas are end-fed, half-wave wires terminated in an insulator/matching unit for direct feed with 50Ω coaxial cable. This gives them some practical advantages over the traditional centre-fed dipole with its hanging feeder and thay have a v.s.w.r. of near unity at resonance. Current models in the range cover 3.5, 7 and 14MHz and the 7MHz version was recently tested very successfully by GB5SN from the top of Ben Nevis.

One of the two new antennas is a half-size version for 3.5MHz measuring 20m long - ideal for the smaller garden. Just stretch the antenna between two points 20m apart and feed at the house end with a short length of 50Ω coaxial cable. For difficult locations part of the antenna can be bent vertically or horizontally.

The other model is a purpose-designed antenna for top band. This will be quite expensive but should provide the sort of performance hitherto reserved for those with mansions and estates!

For further details contact **Waters & Stanton, 18 - 20 Main Road, Hockley, Essex SS5 4QS. Tel: (0702) 206835.**

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by Peter Pearson

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SERVICES

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Subscriptions are available at £19 per annum to UK addresses £21 1n Europe and £22 overseas. Subscription copies are despatched by Accelerated Surface Post outside Europe. For further details see the announcement elsewhere in this issue. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both *Short Wave Magazine* and *Practical Wireless* are available at £30 (UK) and £35 (overseas).

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. See page 17 for full details.

Back Numbers and Binders

Limited stocks of most issues of *SWM* for the past ten years are available at £1.65 each including P&P to addresses at home and overseas (by surface mail).

Binders, each taking one volume of the new style SWM, are available price £3.50 plus £1 P&P for one binder, £2 P&P for two or more, UK or overseas. Please state the year and volume number for which the binder is required. Prices include VAT where appropriate.

Orders for p.c.b.s, back numbers, binders and items from our Book service should be sent to **PW Publishing Ltd., FREEPOST, Post Sales Department, Enefco House, The Quay, Poole, Dorset BH15 1PP**, with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in sterling.

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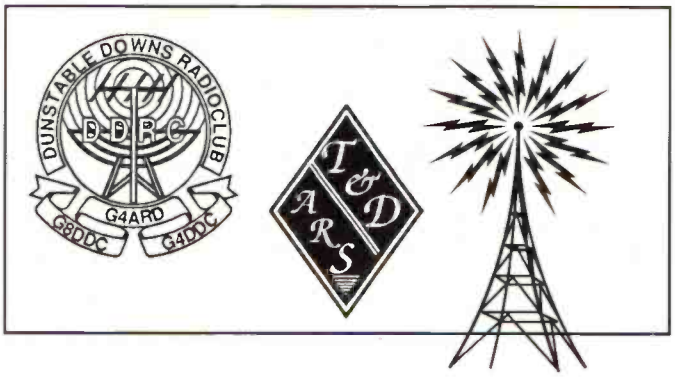

Rugby ATS meet Tuesdays, 7.30pm at the Cricket Pavilion, outside Rugby Radio Station. October 31 is an ordinary general meeting, November 7 is Satellite TV G0JEW and the 21st is Escape From Norway G4DDW. Kevin Marriott G8TWH on Coventry 441590.

Hornsea ARC have their AGM on November 1, a Committee meeting on the 8th, Video Recorders Part I G8EQZ on the 15th and Part II on the 22nd. Wednesdays, 8pm at the Mill, Atwick Rd. Jeff G4IGY on (0964) 533331.

Dunstable Downs RC have an RAE Open Evening on October 29, Test Equipment G0CPN on November 10 and DDRC Birthday Dinner on the 18th. Fridays, 8pm in Room 3 of Chews House, High St. South, Dunstable. Tony G0COQ on Luton 508259.

Aylesbury Vale RS have Transverters vs Black Box Rigs G3OSS on November 1 in Hardwick Village Hall, 8pm. Contact Geoff Groo, G3YLC on (0280) 517496.

Stourbridge & District ARS meet at the Robin Woods Centre, Scotts Rd, 7.45pm. November 6 is On Air/Natter Night and the 20th is a Winter Surplus Sale. Clive Williamson G4IEB on Stourbridge 392006.

Helensburgh ARC meet Thursdays, 7.30pm in the basement of the Cairndhu Nursing Home, Lower Rhu Road, Helensburgh. Barrie Spink on Dumbarton 64401.

Coventry ARS meet Fridays, 8pm at Baden Powell House, 121 St. Nicholas St, Radford. October 27/ November 10 are Nights on the Air with Morse Tuition, November 3 is Guy Fawkes Supper and the 17th is St. Kilda, Island on the Edge of the World - an illustrated talk. Jonathan Ward G4HHT on Coventry 610408.

Acton, Brentford & Chiswick ARC meet at Chiswick Town Hall, High Rd, 7.30pm. November 21 is Traps, theory and construction. W. G. Dyer G3GEH at 188 Gunnersbury Ave, Acton, London W3 8LB.

Verulam ARC have an Activity Evening on November 14 and their annual Great Erg Race (orginally scheduled for October 24). 2nd & 4th Tuesdays at the RAF Association HQ, New Kent Rd, St. Albans. Andy Ince G0BZS at Cottage No. 1, Rounton, 28 Nascot Wood Rd, Watford WD1 3SD.

Biggin Hill ARC have Stereo Photography on November 21. 3rd Tuesdays, 7.30pm at The Victory Social Club, Kechill Gardens, Hayes. Geoff Milne G3UMI on 01-462 2689.

Yeovil ARC have a Junk Sale on November 9, Photography by Mr C. Pursey on the 16th and RF Resistance G3MYM on the 23rd. Thursdays, 7.30pm at The Recreation Centre, Chilton Grove, Yeovil.

The Radio Society of Harrow meet Fridays, 8pm at The Harrow Arts Centre, Uxbridge Rd, Hatch End. October 27 is an Activity Evening and November 3 is a Bring & Buy Sale. Chris Friel G4AUF on Ruislip 635522.

Chelmsford ARS have Sporadic E Propagation G3YLA on November 7. 1st Tuesdays in Marconi College, Arbour Lane, 7.30pm. Roy G3PMX on Chelmsford 353221 Ext. 3815.

Stevenage & District ARS have Portable Radar African Style G1ZZH on November 7 and CW Customs Techniques & Practice G4ISO on the 14th. Ground Floor Lecture Room, "D" Block, Ridgemond Training Centre, Telford Avenue., 7.30pm. Pete G0GTE on Stevenage 724991.

South Bristol ARC have 144MHz Activity Evening on November 8, 28MHz Activity Evening on the 15th and Free Ice-cream Evening G4YZR on the 22nd. Wednesdays at the Whitchurch Folkhouse, Bridge Farm House, East Dundry Rd. Len Baker G4RZY on Whitchurch 832222.

Braintree & District ARS have a Junk Sale/Bring & Buy on November 6. 1st & 3rd Mondays, 7.30pm at The Braintree Community Centre, Victoria St. (next to Bus Park). Margaret Andrews on Braintree 27431.

The Amateur Radio Club of Nottingham meet Thursdays, 7.30pm at the Sherwood Community Centre, Mansfield Rd, Sherwood. Paul G1WBX on Nottingham 733740.

Cambridge & District ARC meet Fridays, 7.30pm in the Audio Visual Aids Room of the Coleridge Community College, Radeguard Rd, Cambridge. October 27 is a Junk Sale, November 3 is an Informal, the 10th is a talk by G4BAO and the 17th is The Business of Air Traffic Control by Alan Godfrey, Cambridge Airport. Brian Davy G4TRO on Cambridge 353664.

Brighton & District ARS have a Construction Contest on November 1 and their AGM on the 15th. 1st & 3rd Wednesdays at the Roast Beef Bar, Brighton Racecourse, 8pm. Harold Lunson G3WR on Brighton 501100.

Trowbridge & District ARC have the Judging of Constructor Cup Entries on November 8 and a Social Evening on the 22nd. TA HQ, Bythesea Rd, 8pm. Ian Carter G0GRI on Bratton 830383.

Wimbledon & District ARS have a Surplus Equipment Sale on October 27 and Fibre Optics G4AWZ on November 10. 2nd & last Fridays, 7.30pm in St. Andrews Church Hall, Herbert Rd, London SW19. Nick Lawlor G6AJY on 01-330 2703.

Loughton & District ARS have How not to Write Computer Programs G1DJI on November 3 and a Junk Sale, 10% to club funds on the 17th. Room 14 of Loughton Hall, Rectory Lane, 7.45pm. John Ray G8DZH on 01-508 3434 (after 7pm).

Wirral ARS have a Chairmans Night on November 1. 1st & 3rd Wednesdays, 7.45pm at Ivy Farm, Arrowe Park Rd, Birkenhead (opp Landican Cemetry Gates). Alec Seed G3FOO on 051-644 6094.

Bath & District ARC have HF Night on the Air on November 8 and a Video Night on the 22nd. Alternate Wednesdays, 8pm at Englishcombe Inn, Englishcombe Lane. Eric G4GEV on Combe Down 832156.

Cheshunt & District ARC have Natter Nights on November 1/15, a Junk Sale on the 8th and their AGM on the 22nd. Wednesdays, 8pm at The Church Room, Church Lane, Wormley. Roger G4OAA on Hoddesdon 464795.

Thornbury & District ARC have an Amateur Radio Video on November 1 and Project Evening on the 15th. 1st & 3rd Wednesdays, 7.30pm in the United Reform Church, Chapel St. Tom Cromack G0FGI at Rose Cottage, The Naite, Oldbury-on-Severn, Bristol, Avon BS12 1RU.

Nene Valley RC meet Wednesdays, 8pm at the Prince of Wales Pub House, Well St., Finedon. November 15 is a Home Brew Competition. M. P. Byles G6UWS on Wellingborough 71189.

Todmorden & District ARS have Sun, Earth and Radio G3LEQ on November 6 and a Natter Night on the 20th. Queen Hotel, 8pm. Mrs E. Tyler G0AEC on Halifax 882038.

Darenth Valley RS have a Natter Night on November 8 and DF Hunts - talk & film by G4CDM of Dartford Heath Direction-Finding Club on the 22nd. 2nd & 4th Wednesdays, 8pm at Crockenhill Village Hall, Nr Swanley, Kent. Sheila Hillman G1NMX on Orpington 26951.

Dragon ARC have a Film Night on November 6 and Sale of Surplus Equipment on the 20th. 1st & 3rd Mondays, 7.30pm at the Four Crosses, Menai Bridge. Tony Rees on Bethesda 600963.

Farnborough & District RS have a Surplus Equipment Sale on November 8 and their AGM on the 22nd. 2nd & 4th Wednesdays, 7.30pm at the Railway Enthusiasts Club Premises, off Hawley Lane. Tim FitzGerald G4UQE on Camberley 29231.

Fylde ARS have an Equipment Sale of November 9 and a Construction Competition on the 23rd. 2nd & 4th Thursdays at South Shore Tennis Club in Midgeland Lane. Frank Whitehead G4CSA on St. Annes 720867.

Mid-Warwickshire ARS meet 2nd & 4th Tuesdays, 8pm at 61 Emscote Rd, Warwick (St. Johns Ambulance HQ). November 14 is an RSGB Video Night G0GLU. Mike Newell G1HGD on Kenilworth 513073.

Lothians RS have a Junk Sale on November 8 and talk by GM4DIJ on the 22nd. 2nd & 4th Wednesdays at Orwell Lodge Hotel, Polwarth Terrace, 7.30pm. P. J. Dick GM4DTH at 21 West Maitland St., Edinburgh EH12 5EA.

FIRST AID

Nagesh Upadhyaya is looking for information on the communications blackout that occured on the h.f. band on August 16 from 0100 to 0500UTC. **Nagesh Upadhyaya VU2NUD, Technical Physics ISRO, Bangalore, India.**

A circuit diagram for a GEC BRT402D receiver is being sought by **Mr S.J. Coines, 62 Furnival Street, Crewe CW2 7LH.** If you can help, please drop him a line.

John Vernon has been looking for a ZX Spectrum program for the OSCAR satellites. He has been given some programs but cannot adapt them for the Spectrum, can anyone help? **John Vernon, 9 Waterson Avenue, Moston, Manchester M10 9BY.**

If "First Aid" can help you with a radio query or a search for information, drop us a line and it will be published in the next available issue of *SWM*. Make sure you send us enough information for other readers to contact you.

In May 1983, Brookes Electronics Ltd advertised their FDU7 - a frequency display unit to replace the dial on an FRG-7. Mr Whayman fitted this and until now it has been satisfactory. Now only the hundreds digit is indicating, erratically "0" or "9" with or without a signal input. He can't find Brookes Electronics any longer, can anyone help with either their address or how it works? **J. Whayman. 95 Elizabeth Avenue, Little Chalfont, Amersham, Bucks HP6 6RS.**

Peter Wessels would like to construct his own spark transmitter and coherer detector. Does anyone has construction details about these subjects, or does anyone know the titles of suitable books? He is also looking for a circuit diagram of a Novak valved receiver, probably from the 1950s. **Peter Wessels PA3FLG, Middelstraat 20, Nieuw Beijerland, 3264-ZH Holland.**

TRADING POST

FOR SALE ICS Fax 1 terminal and SC1200 printer, both in very good condition, allows demodulation of Fax and some RTTY, both for first offer of £250. Paul Harrison. Tel: Blackburn 582546.

FOR SALE £650 - complete RTTY, Morse etc., station Tono 550 terminal. Kenwood R2000, 14in v.d.u. p.s.u. also Klingenfuss *Guide to Utility Stations* and many more books. Mr J. Wingrove, 114 Wakehurst Rd, London SW11 6BT. Tel: 01-228 4835.

FOR SALE Trio TM-211E v.h.f. compact mobile £220. Yaesu FT-73R u.h.f. handy with two NiCad packs £170. MR-4099 world band synthesised RX 150kHz-30MHz. All boxed. C. Edwards. Tel: Swansea 467384.

FOR SALE Realistic PRO-34 200 channel hand-held scanner, £175. Realistic PRO-32 200 channel hand-held scanner, £120. Both as new. Mr Oakton. Tel: Poole 673384.

FOR SALE Icom ICR-7000 scanner £550. Perfect working order, reason for sale recent divorce. **Will swap** for AOR AR-2002 + £150. I. Spiers, 67 Skellery St, Butt Lane, Stoke-on-Trent ST7 1NW. Tel: Stoke-on-Trent 446709.

FOR SALE New, one month old, Sony ICF PRO-80, 150kHz-108MHz, 115.15-223MHz, boxed, never been used, receipt. £200. J. Havard, 5 Broughton St., Preston, Lancs PR1 7US. Tel: Preston 736302 after 6pm.

FOR SALE ARA-30, 2 months old, £50 o.n.o. Timestep weather satellite receiver, dish colour framestore, down-converter, pre-amp and instructions, £385 o.v.n.o. Genuine reason for sale, buyer collects. Graham Cockshutt. Tel: Sheffield 351709 between 6pm and 8pm.

FOR SALE KW-2000E in superb clean condition, complete with handbook, mic, phones, re-aligned and checked for sale, £250 o.n.o. Paul Cullen. Tel: Winkfield Row, Berks 885656 days or Yateley 879115 evenings.

FOR SALE Yaesu FRG-8800 communications receiver fitted with FRV-8800 v.h.f. converter, excellent condition, manual included, £400. Arthur Boston. Tel: 051-259 2456.

CLEARANCE Offers for, 18 AVT/WB all-band h.f. vertical. AR-40 rotator, little used. All-band h.f. trap dipole, new. Small a.t.u. with s.w.r. metering. 144MHz collinear, new. 144MHz groundplane AM10D Cambridge. Paul Cullen. Tel: Winkfield Row, Berks 885656 days or Yateley 879115 evenings.

WANTED Yaesu FR-400DX Receiver, genuine enthusiast, appearance not important if working. Reasonable price. E. Rowe, 11 Thorstone Drive, Irby, Wirral, Merseyside L61 4XR. Tel: 051-648 3031.

FOR SALE Decode with Spectrum 128+2, fitted mic/ear, in/out sockets, Epson P80 printer, programs include RX4 for c.w., RTTY, SSTV, AMTOR, J&P FAX with sync module, cost new £420, offers. Mr M. Hajdukiewicz. Tel: Frampton Mansell, Glos 76488.

FOR SALE Drake 2-B with l.s. *Q*/mult £160. *Radio & Television Servicing* 1967-1976 £12. Ferranti a.c. test set with two dials. Collectors £10. AVO 8X as new with case £70. C. M. Lindars. Tel: Crewkerne 76143.

FOR SALE Trio Kenwood R2000, hardly used and in immaculate condition, closest examination welcomed. Reason for sale return to model engineering. Prefer buyer collects, £425 (cost £595). Edgar Lane. Tel: Thanet, Kent 45561.

FOR SALE Grundig International 400 (manuals) superb radio £140 o.n.o. Eddystone 940 500kHz-30MHz good condx overhauled £120 o.n.o. Ten Tec Century 22 c.w. transceiver £250 o.n.o. T. Wood G4MIZ Tel: Haywards Heath, West Sussex 241567.

FOR SALE Icom R71E communication receiver, f.m. unit fitted, as new, boxed, £600 o.n.o. Icom IC3200E 144/430MHz dual-band, v.g.c. £275. Consider part-ex. Icom R7000, log-periodic beam, £35. Spectrum 128K computer £55. Tel: Dunstable, Beds 668648.

FOR SALE Receiver R209 ex-WD, with instruction book and 12V power lead, 1-20MHz fully waterproof. **Wanted** C11 ex-MOD transmitter. R. Butlin. Tel: Wolverhampton 338316.

FOR SALE Realistic PRO-2003 a.m./f.m. scanner, 68-88, 108-136, 138-174, 410-512MHz, fifty memories, as new with manual, £125 o.n.o. Mr A. Goold. Tel: Bedford 852642 evenings.

EXCHANGE my Uniden UBC-200 XLT hand-held scanner, only two months old. **For** Trio R600 or Yaesu FRG-7700 gen. cov. RX or w.h.y? Trevor Binns. Tel: Halifax 361635.

FOR SALE Racal RA17 0.5-30MHz, 30 45ft band on film scale, 6 band widths 100Hz - 8.5kHz, b.f.o., xtal cal, tuning meter, int. speaker, mounted vertically in wood cab on castors, £175 o.n.o. Reg Andre, 45 Covertside, West Kirkby, Wirral. Tel: 051-625 9006.

FOR SALE Yaesu FRG-8800, FRT-7700, FRV-8800 + YH77 headphones, manuals and boxes, covers 150kHz-30MHz + 118-174MHz, cost £800. Yours for £600 o.n.o. Delivery within 100 miles considered. G6XOU QTHR. Tel: Maldon, Essex 772418.

FOR SALE Matsui MR-4099 world-band receiver, with manual, as new, £60. I. Dewynter. Tel: 01-679 1477.

Write out your advertisement in BLOCK CAPITALS - up to a maximum of 30 words plus 12 words for your address - and send it, together with your payment of £2.30, to Trading Post, Short Wave Magazine, Enefco House, The Quay, Poole, Dorset BH15 1PP. Advertisements will be published in the earliest available issue and *SWM* reserves the right to exclude any advertisement not complying with the rules. You must send the flash from this page, or your subscription number as proof of purchase of the magazine.

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SWM NOV 89 TP

When you are ready to graduate to real listening Look to Lowe

The R-2000 from Kenwood
150kHz-30MHz. SSB/AM/CW/FM
VC-10 converter 118-174 MHz
R-2000 . . . . £595
VC-10 . . . . £162

The R-5000 from Kenwood
100kHz-30MHz. SSB/AM/CW/FM/FSK
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The NRD-525 from JRC
Simply the best receiver you could buy . . . **£1095**

What do I mean by "When you are ready to graduate"? Well, like all hobbies or pastimes, short wave listening is a progressive hobby, and many people come to it almost by accident when they hear an unusual broadcast station on their ordinary domestic radio, particularly if the radio has a short wave band. Interest is aroused, and before long the listener begins to wonder why there are some signals he cannot resolve. He may well turn to the pages of Short Wave Magazine for advice, and become familiar with terms such as SSB, RTTY, selectivity, propagation, and so on.

It is at this point that our worthy listener takes his first step in upgrading his equipment, and comes out of primary education into more advanced listening. Many people at this same point rush along to their nearest High Street multiple retail store and buy what they are told is a "Short Wave Radio", bristling with push buttons and coloured knobs. Sadly, the so-called "Short Wave Radio" is often no more than a domestic portable with a fancy front panel, and the performance when used for anything other than casual listening is no better than the old radio with which he started — in fact it's often worse.

So — these push button portables are excellent for taking on holiday, or carrying to the river bank during a fishing trip, but for real listening — no, no, no.

Our listener is about to graduate from the University of Short Wave Listening, and armed with the knowledge of what he really needs for his hobby will proceed to find a suitable receiver for his purposes. Now it is true that the cost of a properly designed short wave receiver will be higher than the domestic portables; but not so much higher as to be prohibitive, and by going to a specialist (and I mean a true specialist, not someone who talks about "Tranny Radios"), the listener will get good advice based on years of experience in the field, and access to not only new receivers but usually a range of guaranteed second hand units as well. The specialist will also stock and sell a full range of necessary accessories, ranging from simple aerial insulators to complex morse and RTTY decoders for more advanced enthusiasts.

You may get the impression that I am referring to Lowe Electronics when I talk about a specialist dealer, and of course I am. After 25 years of specialising, it is generally accepted that we are without equal, and this is re-inforced by the fact that we have been appointed by so many leading manufacturers to represent their products. As a final point, how many other companies in the UK have designed, built, and sold a real short wave receiver to 17 countries around the world. WE HAVE.

The receivers shown on this page are representative of the best in the world, and are on show at all our branches and at selected dealers throughout the UK. For full information on how to choose your short wave radio, just send off for our "Listeners Guide" (details below), or call and ask. We are happy to help, and we know what we are talking about.

FREE

Send £1 to cover the postage and we will send you, by return of post, your FREE copy of "THE LISTENER'S GUIDE" (2nd edition), a commonsense look at radio listening on the LF, MF and HF bands. Its unique style will, I am sure, result in a "good read" but underneath the humour lies a wealth of experience and expertise. You will also receive detailed leaflets on our range of receivers and a copy of our current price list.

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25 YEARS IN SHORTWAVE

There has never been a more exciting time for the VHF listener than right now. With the leading manufacturers making VHF and UHF receivers, and using microprocessor control which would have been impossible even five years ago, the keen listener can carry in his pocket the kind of receiving power that used to take up a nineteen inch rack, and consume enough electricity to light a small house.

We at Lowe Electonics have made it our task to seek out the best of these amazing radios, and bring them to you at attractive prices. We are the sole factory appointed importers for Signal, AOR, and WIN; all of whom represent the very best in scanning monitor receiver design and manufacture, and we show a small selection on this page. Not only do we stock and sell all these radios, we also offer you the best advice in the business, and we carry a full range of listeners' accessories from a humble egg insulator to RTTY and Morse decoders.

Let's start with what is acknowledged to be the finest wide range monitor receiver ever made; the AR-2002 from AOR. This receives in all modes, on frequencies from 25 to 550MHz, and also from 800 to 1300MHz, so there isn't much you cannot receive: airband both VHF and UHF, marine, amateur, FM broadcasts and TV sound, cellular radio, land mobile radio and so on. The AR-2002 is in use in professional installations all over the world, but is available at a price that the amateur can afford.

AR-2002 ..... **£487**
Carr. £8 (Securicor)

The established favourite hand held scanner from AOR is the AR-800E. This mighty midget covers 75-105, 118-174, 406-495, and 830-950MHz, and you can have AM or FM reception on any frequency in the tuning range. 20 memories, scanning, frequency searching, all the facilities you need, and it comes complete with rechargeable batteries, mains charger, and flexy aerial for an attractive price of only £199.

AR-800E **£199**
Carr. £8 (Securicor)

Brand new from AOR is the AR-900; a delightful hand held scanner with more than a hint of airband in its specification. AM/FM reception in the bands 108-136MHz, 137-174MHz, 220-280MHz, 300 – 380MHz, 406-470MHz, and 830-950MHz, give the AR-900 a wide appeal, particularly to the UHF airband listener. New slim and elegant styling, an attractive price, and a wide range of facilities including 100 memory channels make the AR-900 unbeatable in the market.

AR-900 ..... **£235**
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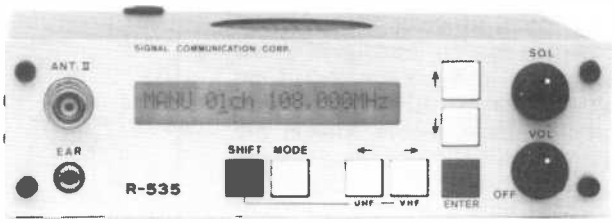
Signal Communications have always specialised in receivers for the airband, and we have often said that Mr. Hayakawa is one of those rare men who truly understand how to design VHF AM receivers. The audio quality which comes from any Signal airband receiver is outstandingly good, and the operating facilities are equally excellent. Top of the Signal range is the R-535, which covers not only the VHF airband from 108 to 136MHz (also 136 to 143MHz), but also the UHF airband from 220 to 380MHz. No less than 60 memory channels can store any frequency within the range of the receiver, and scanning takes place at very high speed, so you don't miss any of the action.

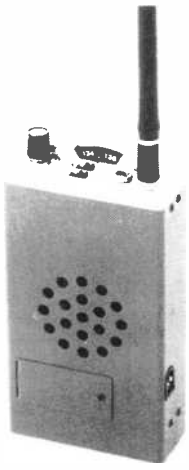


R-535 ..... **£249**
Carr. £8 (Securicor)

Signal also make the ideal starter receiver, the R-537S, which combines fully tunable operation for searching around the VHF band and two channel crystal control for spot-on accuracy when you need it. A special version of the R-537S is in use by most parachute clubs where the instructor can talk directly to a falling pupil — helps to advise them that they should have opened the 'chute.

Our most successful airband receiver has been without doubt the WIN-108. Designed to incorporate all the features asked for by UK users over the years, the WIN-108 is the most convenient, powerful, and feature packed dedicated VHF airband receiver ever made available. Simply cannot be described in this space, but details of the WIN-108 and all our other models are available on request, enclosing £1 to cover post and packing. You will also receive our "Listeners' Guide" and "Airband Guide" free of charge.

Send right away, and see why you should "look to Lowe" for all your listening requirements.



R-537 ..... **£69.51**
Carr. £8 (Securicor)

WIN-108..... **£175**
Carr. £8 (Securicor)

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RIGHT THE FIRST TIME

Rev. George Dobbs G3RJV
Part 2

Building The Crystal Set

Here is all the practical help needed to get you building your first crystal set - what you need and how to put it all together.

The practical circuit diagram for the crystal set is shown in Fig.2.1 while the layout diagram for building it is shown in Fig. 2.2a & b. Notice that the coil (inductor) is somewhat different from that shown in Fig. 1.3. The practical circuit has a tapped coil, that is a coil which has a connection coming from a point along the winding. The tapping has be introduced to aid matching with the detector part of the circuit. Impedance match, which is what this is, will be explained later in the series. It is sufficient to say here that the circuit works better with the diode (D1) connected a little away from the top of the coil.

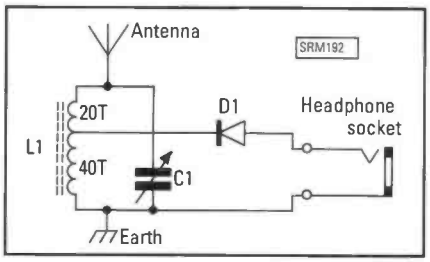


Fig. 2.1

Before the components are added to the Veroblock some preparation is required. Perhaps the most difficult part of this for the beginner is winding the coil on the ferrite rod. The coil is not wound directly onto the ferrite rod but onto a paper sleeve which can slide up and down the rod. Cut a piece of paper (typing paper or photocopying paper is fine) about 40 x 40mm and roll it into a tube around the ferrite rod. The paper which overlaps the first layer around the tube is glued (I used Pritt Stick glue) to hold the sleeve in place (see Fig. 2.2). Do not make the tube too tight as it should be able to slide along the rod with a gentle push.

The coil is wound with 26s.w.g. (standard wire gauge) enamelled copper wire which can be bought in 2oz reels. The metric equivalent of 0.45mm diameter is also suitable. Begin the winding near one end of the paper sleeve. Allow at least 40mm of free end before the winding begins. Secure the start of the winding with a small piece of Sellotape and then begin winding a helical coil around the paper sleeve, placing the turns side by side. Keep the winding tight by holding the portion already wound with the thumb of the hand holding the rod. After 40 complete turns of the wire have been made, secure the end with another small piece of Sellotape.

The tapping is now made. Pull out about 80mm of wire and loop it back on itself and then twist the loop to form the tapping point (see Fig. 2.2a). Complete the winding by making a further 20 turns of the coil. The end of the coil is also secured with a piece of Sellotape. It is possible at this stage to make the winding more secure by adding a coating of polystrene modelling glue over the whole winding. The old seasoned constructors often use a layer of beeswax, melted with a soldering iron to secure coil windings. It should still be possible to slide the paper sleeve, with its winding, along the ferrite rod.

The wire is enamelled, that is, it has a coating of varnish to prevent short circuits between the turns as they touch. This means that no electrical contact can be made to the wire until the enamel coating is removed. So, using a pen knife, or modelling knife, carefully scrape the enamel coating off of about 10mm of the free ends of the winding. Remember to rotate the wire to remove the enamel all around its surface. Cut the loop at the end of the tapped wire, making a pair of twisted wires and also remove the enamel from these ends. The tuning coil is now ready.

Wire connections have to be made to the variable capacitor. Ideally these should be soldered onto the tags on the capacitor but at this stage in the series soldering has not been introduced. Suitable wire for these connections, and the link connections on the Veroblock, is bare or tinned copper wire of about 22s.w.g. If this is not available, use 5A fuse wire or remove the pvc coating from single strand "bell wire". The connections for the variable capacitor are shown in Fig. 2.2. Simply twist a little of the copper wire around the two usable tags and leave about 20 or 30mm of spare wire. A 3.5mm mono socket is required for the crystal earpiece and a similar wire connection can be made to the solder tags of this socket.

The crystal set is build as shown in Fig. 2.2(b) on a Veroblock. In my prototype a front panel was used for the Veroblock. The panels are supplied with holes for mounting controls and the variable capacitor was mounted in the centre large slotted hole. The control shaft passes through the hole but two small holes have to be drilled on either side to take 3mm screws (M3, 6mm long) to hold the capacitor. The quarter inch shaft on the variable capacitor takes a standard control knob. In the prototype the ferrite rod and coil were mounted on top of the variable capacitor casing and held in place with a blob of Blutack.

Hints and Tips

When building the Crystal Set, remember the following points:

The wires must be pushed into the CORRECT HOLES

Push the wires firmly into the hole. A very gentle pull will show if the connection has been properly made.

The holes shown linked are joined underneath the board but there is a gap down the centre of the Veroblock. D1 goes across that gap and a link wire on Line 13 in Fig. 2.2b.

The ends of the coil winding wire

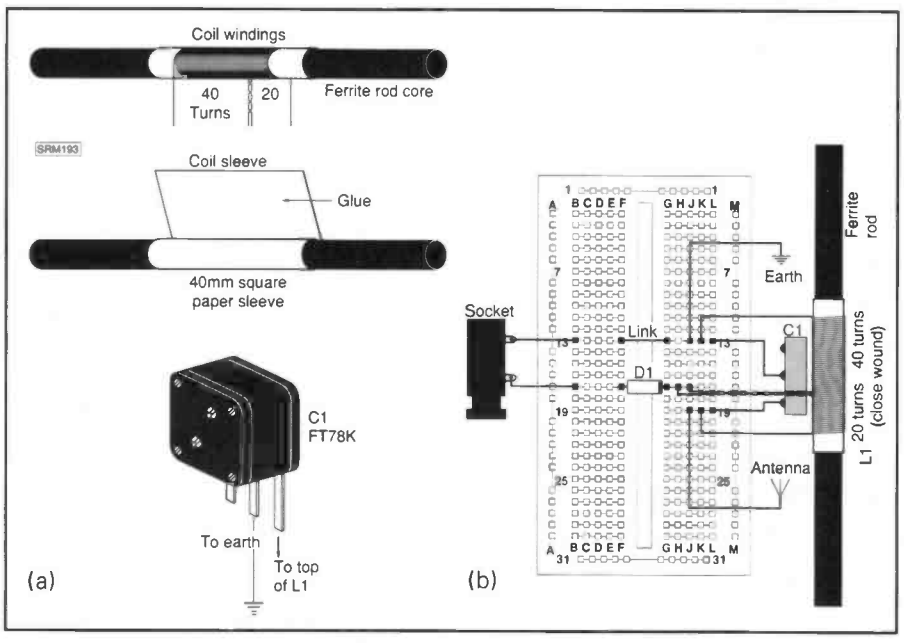


Fig. 2.2: (a) Coil winding and tuning capacitor details. (b) Layout and wiring diagram of the complete crystal set.

must be scraped clean of enamel (bright copper) before insertion.

The two wires left after the coil tapping point has been cut and the enamel removed are pushed into adjacent connecting holes (Line 17 in Fig. 2.2b)

Check the completed Veroblock against the circuit diagram in Fig. 2.1, following the connections between the components on the circuit, not forgetting, of course, the underboard links.

Useful Addresses

Maplin Electronics, P.O. Box 3, Rayleigh, Essex. SS6 8LR. Tel: (0702) 554161 Catalogue is available from W.H. Smith.

Electrovalue Ltd, 28 St. Judes Road, Englefield Green, Egham, Surrey TW20 0HB. Tel: (0784) 33603. Catalogue is available free on request.

Crystal Set Parts List

	Component	Electrovalue	Maplin
C1	Variable Tuning Capacitor	F118G	FT78K
D1	Germanium Diode AA119	AA118	QB00A
L1	Ferrite Rod 100 x 8mm dia.	5"x3/8"	YG22Y
PH	Crystal Earpiece	C3.5	LB25C
	Veroblock and Panel	21092 + 22276	YL11M
	3.5mm Mono Socket	LS35	HF82D
	Enamelled Copper Wire 26s.w.g.	EC222	BL27E
	Tinned Copper Wire 22s.w.g.	TC422	BL14Q
	Antenna & Earth (See text)		

Abbreviations			
A	ampere	kHz	kilohertz
a.c.	alternating current	MHz	megahertz
d.c.	direct current	mm	millimetre
Hz	hertz	oz	ounce
		pvc	poly-vinyl-chloride
		s.w.g.	standard wire gauge

Frequency & Wavelength

We speak of RADIO WAVES and they are, indeed, waves because the radio signal is an a.c. (Alternating Current) Signal. A battery supplies d.c. (Direct Current) electricity. It has two POLARITIES which are called POSITIVE and NEGATIVE. An a.c. supply (e.g. domestic electricity) alternates between positive and negative. We might say it "waves about" or OSCILLATES between the two polarities. It could be compared with the oscillation of a pendulum: the pendulum oscillates between left and right, the a.c. signal oscillates between positive and negative.

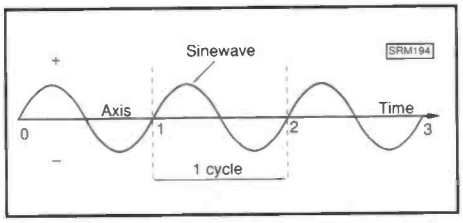
The drawing shows a diagramatical representation of the movement of the a.c. signal: the centre line is zero, the top is positive and the bottom is negative. The wave shown is a SINE WAVE, the purest form of oscillation but there are many other waveforms.

Each complete movement from zero to the positive peak through zero to the negative peak and back to zero again is called a complete CYCLE. The number of cycles which occur in one second is called the FREQUENCY of the oscillation. If it takes one second to go through one cycle, then the frequency is 1 cycle per second: called one HERTZ after the famous German physicist and written "1Hz".

Radio waves travel very quickly: three hundred million metres every second (300000000m/s). They also oscillate very quickly, so quickly that the frequency is expressed in thousands (kilohertz: kHz) or millions (Megahertz: MHz) of Hertz. There are two common ways to locate a radio signal, it can be measured in frequency or wavelength.

The frequency is the number of cycles of oscillation per second (Hz)

The wavelength is how far the signal has travelled during the execution of one cycle. The relationship between the two is simple. Take the speed (velocity) of the radio waves and divide it by the number of cycles which occur in a second and the result is the wavelength of the radio signal.



The simplest example is a radio signal with a frequency of 1MHz (1000000Hz):

Velocity = 300000000m/s
Frequency 1000000 Hz

= 300 metres

So a frequency of 1MHz is the same as a wavelength of 300 metres.

Usually these days radio sets are calibrated in kHz or MHz but some of the older sets may have "metres" which indicates the use of wavelength. The conversion is easy, as you will be able to see from the calculation above:

Frequency (in MHz) = wavelength (in metres) divided by 300.

Wavelength (in metres) = 300 divided by the frequency (in MHz).

When using kHz: 1000kHz = 1Mz.

To put this into perspective:

The Medium Wave Broadcast Band covers 545 to 1580 kHz or 190 to 550 metres.

Radio 4 on Long Wave is 198kHz or 1500 metres.

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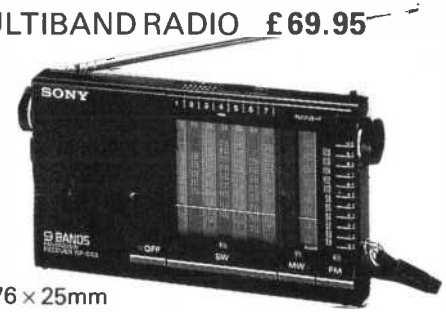

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SW1 3.7–4.2MHz
SW2 5.85–6.35MHz
SW3 9.4–9.9MHz
SW4 11.6–12.1MHz
SW5 15.0–15.5MHz
SW6 17.55–18.05MHz
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* Built-in speaker
* Black Finish * Size: 144 × 76 × 25mm
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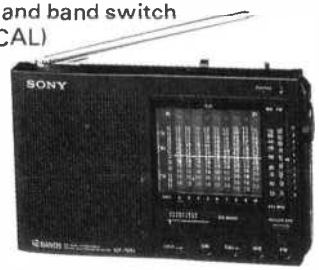

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* Supplied with waveband manual and shoulder strap
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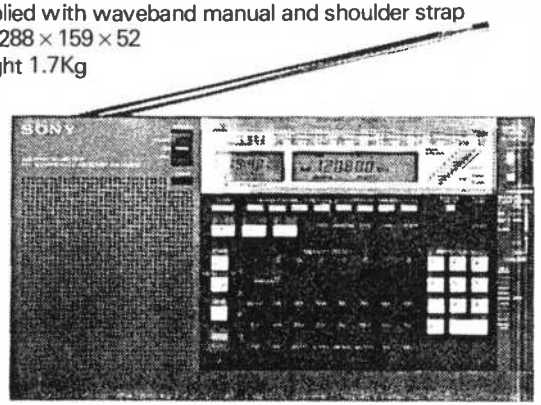

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HOT-RODDING THE ICF-2001D

Steve Whitt
Part 3

Reciprocal Mixing

A number of reviews of the 2001D, including the *RDI White Paper* [5], have commented that the receiver suffers from noticeable phase noise or reciprocal mixing problems. Indeed the *RDI White Paper* states that receiver dynamic range was unmeasurable due to local oscillator phase noise limitations.

Reciprocal mixing is a phenomenon that has only been generally appreciated in recent years, largely paralleling the widespread introduction of frequency synthesised oscillators into receivers.

An ideal local oscillator is a pure, single frequency used to mix the received r.f. signal down to the i.f. frequency. If the oscillator signal contains unwanted additional frequencies these will mix with unwanted r.f. signals to produce undesired signals in the i.f. Similarly, if the oscillator moves its frequency due to frequency instability or phase modulation, then the receiver will behave as if it is being continually retuned around the wanted frequency of reception; again interference results.

Serious Problems

The 2001D exhibits some very serious reciprocal mixing problems due to its decidely poor local oscillator spectrum. The unmodified output of the main local oscillator (VCO1) shown in Fig. 3.1 reveals the presence of massive, discrete sidebands at 25kHz intervals away from the oscillator centre frequency. These spectral components, generated by the phase detector in the p.l.l., will mix with signals separated by multiples of 25kHz from the station to which the receiver is notionally tuned. Although the problem was investigated in a laboratory, it readily manifests itself in real operation. The easiest way to observe reciprocal mixing

This month Steve Whitt looks at phase noise, or reciprocal mixing, problems and offers some practical solutions

in the 2001D is to tune into a very strong local signal on a generally quiet band (e.g. your m.w. local station received on an external antenna during daylight hours).

Under such circumstances try tuning the receiver slowly (with the DX/Local switch set to DX and the r.f. gain at maximum) to points 25, 50 and 75kHz either side of the strong signal, where weak spurious reception of the strong signal will probably be noticed. If this is the case, imagine you wanted to hear a weak signal on one of these adjacent frequencies then the chances are it will suffer interference from the strong signal. Since the interference is purely an artefact of the receiver the problem can be minimised by suppressing the undesired local oscillator sideband noise.

In the case of the 2001D this turns out to be possible through some simple modifications to the two phase locked loops used in the synthesiser; simple in principle but somewhat trickier in practice due to the cramped construction style of the receiver. This is one modification that should be left to the expert if you are at all unsure about your ability, since it involves adding three new capacitors to the receiver circuit in places where there is almost no available space!

Three new capacitors, Cx, Cy and Cz, are added to the p.l.l. filters located between the digital phase detectors and the voltage controlled oscillators in the frequency synthesiser. It is recommended that the following capacitors are used as space is at a premium.

Cx: 22nF from junction of R106, R113 & R118 to ground
Cy: 470pF from gate of Q22 to ground;
Cz: 470pF from gate of Q31 to ground;

All three capacitors should be sub-miniature ceramics rated at 16V or more. As the values are not too critical 20 per cent tolerance components will suffice.

Before attempting this somewhat tricky modification you would be justified in asking how much improvement is possible. Fig. 3.2 shows the spectrum of the local oscillator after modification revealing that the discrete sidebands have been reduced by at least 25 to 30dB. This means that interference due to reciprocal mixing heard at 25kHz multiples off channel will be reduced by a similar amount. Whereas the original unmodified receiver could easily be made to demonstrate this problem outside the laboratory, field operation of the upgraded 2001D confirms that a dramatic improvement has been made.

Recommended Reading

[5] *RDI Evaluates the Sony ICF2010/ICF-2001D Receiver* - by Lawrence Magne; published by Radio Database International, March 1987.

Abbreviations	
dB	decibel
DX	long distance
i.f.	intermediate frequency
kHz	kilohertz
m.w.	medium wave
MHz	megahertz
nF	nanofarad
p.l.l.	phase locked loop
pF	picofarad
r.f.	radio frequency
V	volt
v.c.o.	voltage controlled oscillator

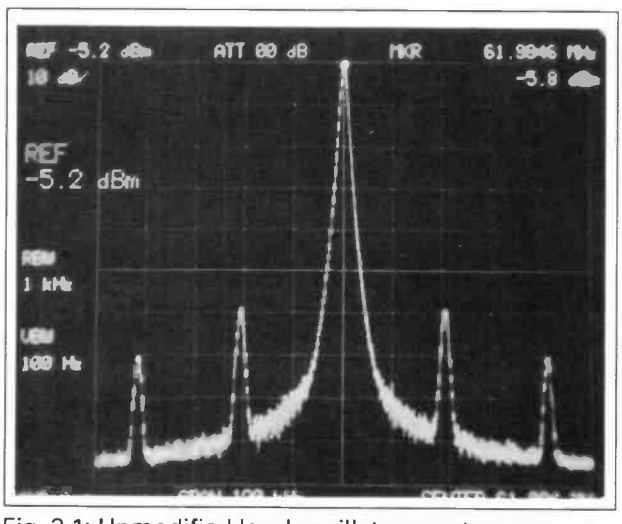

Fig. 3.1: Unmodified local oscillator spectrum.
Scales: Horizontal 12kHz/div. Vertical 10dB/div.
RX tuned to 6.15MHz; v.c.o. 61.995MHz.

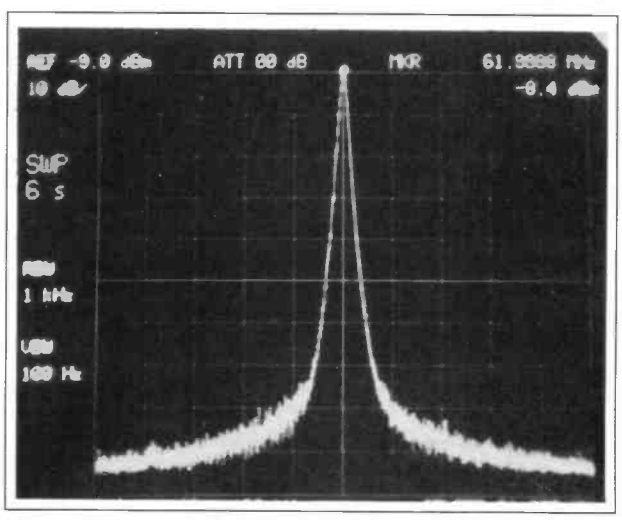

Fig. 3.2: The modified local oscillator spectrum.
Scales: Horizontal 12kHz/div. Vertical 10dB/div.
RX tuned to 6.15MHz; v.c.o. 61.995MHz.

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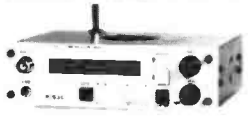

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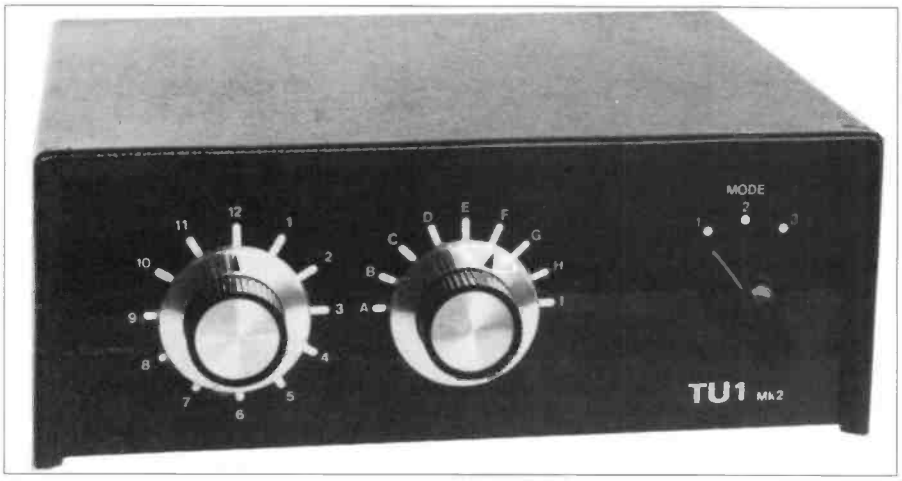


In the first issue of the "revamped" *Short Wave Magazine*, April 1987, I described the building of a simple L Match Antenna Tuner. Quite a number of readers did build it because several wrote to me about their results. In that article I stressed the importance of an a.t.u. for any short wave monitoring station. I said that using a receiver without an antenna tuner was "rather like forgetting to tie your shoe laces - you may get somewhere but it won't half be sloppy."

Recently I met a listener who claimed that, because he had restricted space, he had to use an active antenna. He was experiencing all manners of local interference problems. In fact, although he had a modest back garden, he would have been much better with a simple end-fed wire running down that garden and matched to his receiver with an a.t.u.

There are a number of commercial a.t.u.s available on the amateur radio market and most of them work very well: they ought to, there is very little electronics in an a.t.u.! My earlier article described how to build an a.t.u., but not every listener is an experienced constructor of electronic equipment.

Some time ago I was asked to look at an a.t.u. kit, the TU1, produced by Lake Electronics of Nottingham. I asked them not to send me a complete unit but to send the kit, so that I could build it up myself and test both its usefulness as a tuner and as a project that could be tackled by a non-experienced constructor.

My first reaction, on opening the kit, was that it contained good quality components. I spotted a Jackson Brothers variable capacitor and they are not cheap! The kit comes complete with everything that is required down to the last nut and bolt and an attractive case completed with printed facias for the front and back panels. Nothing else is required to build this kit except a soldering iron and a few simple hand tools.

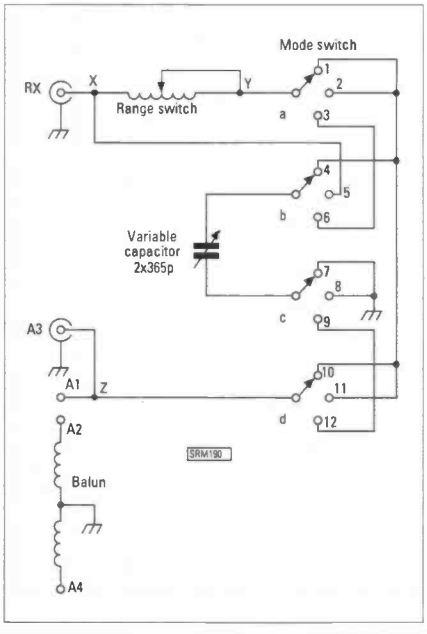


Fig. 1: Circuit diagram of the a.t.u.

The Circuit

The circuit of the TU1 is based upon the L Match Tuner. The circuit diagram is shown in Fig. 1. The diagram may appear to be complex but this is only because switching options have been shown for three types of tuner. Essentially, the a.t.u. is very simple and contains only two components: a switched coil (or inductor) and a Variable Capacitor. One extra component provided is a Balun: a matching transformer for antennas which use balanced feeders. The use of a balanced feeder by short wave listeners is rare, it is more commonly used by amateur radio transmitting stations. It is possible to use the TU1 for low-powered transmissions and the balun could be used in this application.

The a.t.u. circuit without the switched options included is shown in Fig. 2. There are three modes. Fig. 2(a) is the conventional L match circuit used to match random end-fed lengths of wire to the typical 50Ω impedance found on most receiver inputs. Fig. 2(b) shows the L Match reversed. This configuration is useful for matching very long wires to a receiver. Fig. 2(c) shows a series tuned circuit which may be used in some cases of wide impedance mismatches between antenna and receiver. In most cases, the configuration in Fig. 2(a) will be required by the short wave listener.

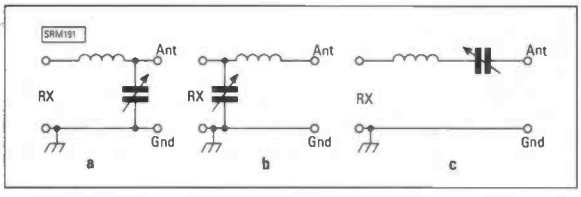


Fig. 2: (a) conventional L Match, (b) reversed L Match, (c) series tuned circuit.

Building the Kit

The absolute essential starting point for any electronic kit is being able to solder properly. Never expect good results from any home built equipment that has not been put together with good solder joints. Over the years I have "picked up the pieces" of many a failed electronic project and 99 per cent of the time the problems have been caused by bad solder joints. The kit does contain some good advice on how to solder but if in doubt, practice first before building the kit.

The kit does require quite a lot of soldering because the coil is made in an unusual way. It consists of four 20-way flexible cable forms which are soldered onto the provided printed circuit board in such a way that they make a 40-turn coil. Full and simple instructions are given for making this coil. If the instructions are followed with careful soldering, it is quite easy to make up this coil.

The constructional information given is good and well illustrated. Every connection to be made is described stage by stage and shown in a drawing. The beginner should have no difficulty

LAKE ELECTRONICS TU1 Mk2 ATU KIT

following the instructions and getting it right first time. Experience has shown that such kits are more often built incorrectly by someone who has some electronic construction experience and happily works along without following the full instructions. Electronic knowledge is not needed to build this kit.

The case does require a few holes to be drilled but these can be tackled with a normal household power drill. A full size drilling template is provided showing all the required drill sizes. I prefer to drill such holes slightly undersize, enlarging them to the correct size with a reamer.

Plastics facias are supplied for the front and back panel. These are quite easy to mount - if the instructions are followed. All the hardware, including knobs and sockets are provided. Building the TU1 is an easy, one evening job.

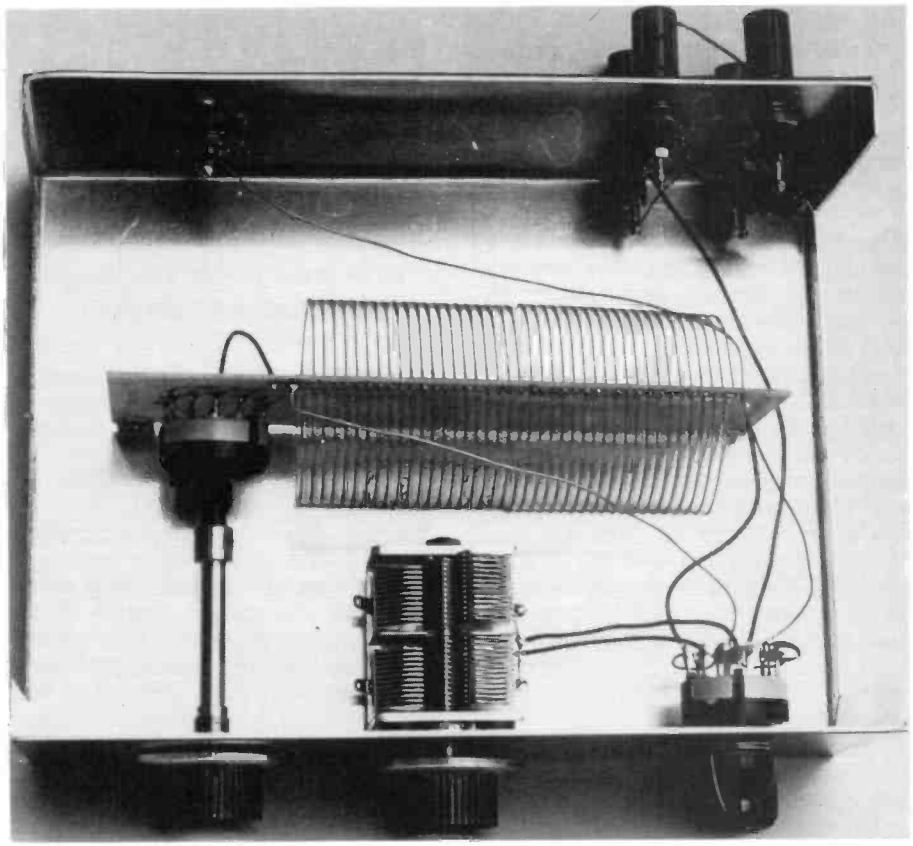
Results

Instructions are given for using the TU1 which can be used for random length wires, antennas with unbalanced coaxial feeder or, using the balun, antennas with balanced twin feeder.

Simple wire antennas do require tuning against earth. A good external earth will give the best results. Connect the earth (or GROUND or GND) terminal to the designated earth termination the receiver. Direct connection to the chassis of some types of receiver can be dangerous.

Working out the correct setting for particular frequencies is a matter of experimentation. A suggested method of determining the correct settings of the controls is given in the instructions. It is advisable to keep a note of the appropriate settings for preferred frequencies and bands for future use.

I tried the TU1 with two end fed wires: one just over 30 metres long, the other about 10 metres long. The TU1



coped well with both antennas at all frequencies from 3 to 30MHz. My chief interest is the amateur bands but I used it with my general coverage receiver on all the main broadcast bands and it worked well. I also tried the TU1 with my double antenna which has a balanced twin feeder. With the balun in the circuit, it tuned every amateur band from 3.5 to 30MHz. I also used it with a low power (5 watt) transceiver on 3.5 and 14MHz and had several successful contacts on both bands.

The TU1 is a successful Antenna Tuner Unit which will be most useful for the short wave listener or radio amateur who uses low power transmissions. The kit is of high quality and contains everything that is required to build the unit. The instructions are clear enough for a beginner to build the unit. I recommend the TU1 to those who do not want to buy a ready built commercial a.t.u. but are not experienced enough to make up an a.t.u. from scratch.

The TU1 is available from Lake Electronics, 7 Middleton Close, Nuthall, Nottingham NG16 1BX. Tel: (0602) 382509. The cost is £36.80 including postage within the UK. Full details may be had for a stamped, addressed envelope.

My thanks to **Lake Electronics** for supplying the kit for evaluation. □

SCANNING

Alan Gardener

This month Alan takes a look at Icom's proposal for a hand-held scanner. He also has news of expansion in the cellular telephone system and continues ever upwards in his review of the radio spectrum.

Tiny Scanner From Icom

Well, we didn't have to wait long before another manufacturer announced their answer to the Jupiter II scanner featured in last month's column. I had been hearing rumours about another continuous coverage hand-held scanner for some time but the size and frequency coverage of the unit that was described to me seemed rather unbelievable. I almost choked on my cornflakes when I first saw the specification of Icom's proposed IC-R1 as featured in the "What's New" pages of last months *SWM*. I don't want to bore you by repeating all of the details but to my mind the most amazing aspects are a proposed frequency coverage of 150kHz to 1300MHz with selectable a.m., n.b.f.m. and w.b.f.m. and all in a case about the size of the recently announced IC-2S amateur hand-held transceiver - which at just 50 x 100 x 25mm, is tiny!

Design

Producing such a receiver raises quite a lot of design problems particularly when you consider all of the circuitry that has to be crammed into such a small package. Icom must be considering using some very innovative construction techniques to achieve the required component packing density.

Another problem is one of power consumption, most designs of frequency synthesisers (one of the most important circuits in continuous coverage scanners) draw quite a large amount of current from the power supply. This is not too big a problem when the power source is a car battery or mains supply but tends to be a limiting factor when only a small battery pack is available. Yet another question that springs to mind is what sort of antenna will be supplied with the receiver? It is going to be particularly difficult to produce an antenna that is capable of giving good performance over such a large frequency range without dwarfing such a small package. Let's hope that this model makes it beyond the prototype stage and appears in the dealers showrooms - I eagerly await the first sighting, which if rumours are to be believed, may not be that far away.

If this wasn't enough Icom have also announced the IC-R100 mobile/base station scanner covering 100kHz to 1856MHz and an h.f. receiver, the IC-R72, covering 100kHz to 30MHz. It all seems rather like Icom making plans towards total domination of the short wave listening market, a fact that is likely to be emphasised by very competitive pricing.

This would seem to leave Icom's traditional competitors some way behind in the scanning market. Both Kenwood and Yaesu seem reluctant to update their existing models, both of which have been available for some time now - or perhaps I will be in for another surprise!

CT2 Cordless Phones

The new CT2 cordless telephone service finally seems to be getting underway around a year later than expected, due to problems with certain aspects of the system. CT2 is intended to be a halfway house between the current generation of cordless and cellular telephones. The system uses a digital method of speech transmission which permits greater usage of the 40 channels allocated between 864-868MHz than would be possible with conventional analogue modulation techniques. The first base stations have already been installed in London with Manchester and Birmingham to follow shortly. The range of each base station is likely only to be in the region of a few hundred yards with both base and handset operating on the same frequency. The system uses a novel digital "ping-pong" technique to quickly switch between transmit and receive. This gives the user the impression of a normal two-way telephone conversation, whilst at the same time, providing a high degree of protection against eavesdropping.

Cellular Expansion

The success of the cellular telephone system has led to peak-time congestion problems in Central London. The situation has improved slightly by the government releasing extra channels to each of the system operators just for use in the London area. These channels are referred to as ETACS (Extended Total Access Communications System) and were in a block of frequencies used by the Ministry of Defence for various purposes around the country. The cellular services being permitted to use 915-933MHz for their base station transmit frequencies paired with receive frequencies at 870-888MHz.

Cellular telephones are proving so popular that ETACS channels are now being allocated in areas outside London. This is particularly true along major routes from the city, with several new sites being commissioned each month. In a way the success of the system is proving to be it's own downfall as it was anticipated that the introduction of the next generation of digital cellphones would have started by the time demand had reached the present level, thus relieving some of the strain on the network. The new Pan-European Digital Cellular System known as GSM (Groupe Special Mobile) is still a few years away but pressure must now be on to speed up development. Two bands of frequencies at 905-915 and 950-960MHz have been set aside for the new system and, as time goes by, increasing pressure may well be put on the government to release these frequencies temporarily to the existing cellular operators. If this was to happen it would of course make introduction of the new digital system more difficult, not to mention the reaction it would cause amongst the other European countries involved in the project.

System 4 Closure

Isn't it always the way! - No sooner had I said in the August *SWM* that BT's System 4 (the predecessor of the cellular telephone service) was to remain operational for the next few years than I hear details of its closure.

This is due to the rapid expansion of the cellular network which now serves the majority of the areas originally covered by System 4.

It is intended that all the System 4 zones in England and Wales will close down in July 1990, with Scotland following in the next year. Remaining users of the system will be offered a trade-in package to help them to change over to the cellular system.

Closure of the system will leave two very useful chunks of the radio spectrum (158.525-159.925MHz and 163.025-164.425MHz) in BT's hands. Quite what they intend to do with it remains a bit of a mystery, however I would guess whatever is decided upon will be based on the very extensive network of System 4 base stations already in existence. Perhaps BT will announce a service to compete with the trunked networks in Band III, or alternatively, offer some form of digital electronic mail service, similar to ones now being introduced in the US. I await BT's press release with interest.

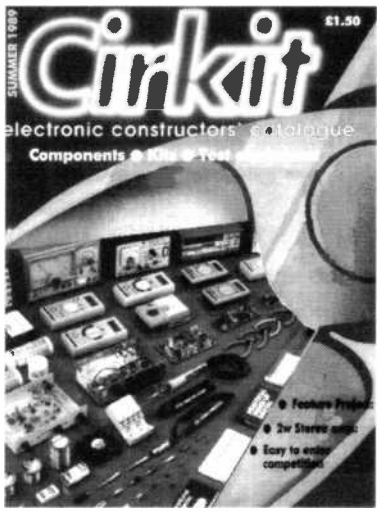
Oops

A small error slipped into the August column when I referred to the v.h.f. marine band "Marina" channel as 156.850MHz, it should of course have been 157.850MHz.

My thanks to the eagle-eyed readers who pointed this out to me - nice to hear that you enjoy reading the column so much!

Cirkit NEWS

OCTOBER 1989



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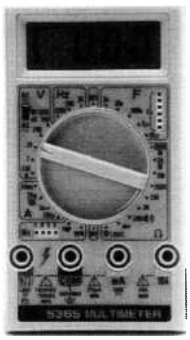

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SCANNING

What Can I Hear? (Part 8)

Lack of space in last month's column prevented our usual look at the radio spectrum so let's continue from where we last finished at 225MHz and the start of what is commonly referred to as the u.h.f. military airband, although this title is a little misleading as the band has many other uses.

One of these is radio astronomy which has a small allocation slotted between 326.5-328.5MHz.

Another small portion of the band between 328.6-335.4MHz is allocated to aeronautical radio navigation and is used to provide an indication of aircraft glide slope during landing.

The u.h.f. channels are usually paired with other channels at around 108-112MHz which give bearings for the runway centre line and marker beacons at 75MHz which give the distance to run.

These three elements are the basis of an aircraft instrument landing system and can generally be heard within a few miles of most major airports.

However, the main use of the band right up to 400MHz is for military air-ground and air-air communications. The operating mode is a.m. and channels are spaced at 50kHz intervals.

Most communication is very brief and your chances of finding frequencies by searching across nearly 200MHz of the band in one go are very limited. This makes a frequency list almost essential.

I do not intend to list the many hundreds of frequencies used in the UK in this column but one good one to leave in a memory is 243.00MHz which is the international distress frequency.

If you are interested in this band good guides are available from *SWM* Book Service or Javiation, Carlton Works, Carlton Street, Bradford, West Yorkshire BD7 1DA. Tel: (0274) 732146.

Another use of the band is for military satellite up/down links. These are generally fairly weak as the signals have to travel 36 000km to reach the earth from their geostationary orbit over the equator.

However, they are audible in the UK providing you have a reasonable antenna and receiver. Although you may think that such transmissions would be top secret the frequencies used are openly published as the military take precautions and digitally encript most communications. One example of this is a "Fleet Broadcast Channel" on 250.55MHz which is digitally encripted and transmits 24 hours a day. I find that this is a good test signal to use when evaluating receivers or antennas for the u.h.f. airband as it is always present and tends to be the same signal strength regardless of your location in the UK. The frequencies used by such satellites are detailed in a very interesting book called *Communications Satellites* by Larry Van Horn which is available from: Interbooks, 8, Abbot Street, Perth PH2 0EB. Tel: (0738) 30707.

Another favourite of many listeners is the NASA Space Shuttle which has been heard many times in the past using frequencies in this band as a backup to normal satellite links. Two frequencies to put in your memory banks are 259.70MHz and 296.80MHz a.m. Shuttle communications on these two frequencies have been a little infrequent during recent missions. This may be due to the Tracking and Data Relay Satellite (TDRS) network now being fully operational or because of the military nature of current payloads. When a mission is flying it is worthwhile leaving a tape recorder connected to your scanner, with the squelch operating the remote stop/start jack. In this way it is possible to maintain 24-hour monitoring and may give a pleasant surprise when you check the tape in the morning.

If you have success with these two frequencies you may also like to try 279.00MHz n.b.f.m. This has been used for many years as a communications channel during Extra Vehicular Activity - space walks to you and me. Although only very low power is used it should be possible to receive the signals if the spacecraft is in a good orbit during the walk. With the recent announcement by the US Government of its intention to step up the space programme it is likely that these frequencies will see more activity during the next decade - so be prepared.

Satellite signals also occupy a small band around 400MHz. These are not in geostationary orbits and so exhibit doppler shift of the transmitted signal as they approach and then move away from your location. By monitoring the signals from more than one of these satellites it is possible to calculate your position - although accurate frequency measurements and complex mathematics are involved. Accuracy is further improved by each satellite transmitting at around 150MHz in addition to the 400MHz channel. This helps to counteract some errors which can be introduced as a result of ionospheric propagation disturbances.

Strange musical tones may occasionally be heard in the band 400.15-406.00MHz as a meteorological "Sonde" floats by. These are usually lightweight packages attached to helium filled balloons and are released into the

Frequency Allocations 225-410 MHz

Frequency (MHZ)	Service
225.000	UHF military airband single frequency simplex operation
326.500	Radio astronomy (secondary allocation)
328.500	UHF military airband single frequency simplex operation
328.600	Radio navigation satellites
335.400	UHF military airband single frequency simplex operation
399.900	Radio navigation satellites
400.050	Standard frequency and time satellites (400.100MHZ)
400.150	Meteorological satellites Meteorological sondes Government telemetry
406.000	Low power emergency position indicating radio beacons
406.100	Radio astronomy (primary allocation) Government services
406.500	Radio astronomy (primary allocation) Radio positioning systems (north sea only) Government services
409.500	Radio astronomy (primary allocation) Government services
410.000	

atmosphere from several sites in the UK. They relay data such as air pressure, temperature and wind speed back to the ground in the form of audio tones, which alter in frequency as the measured parameters change. The Sonde also carries a light-weight radar reflector which permits tracking from the ground as the package travels higher in altitude. As it rises, the balloon, which is only partially inflated on launch, starts to increase in size as the outside air pressure decreases. Finally, the balloon bursts and the Sonde falls back to earth - where someone reports a UFO landing in their back garden!

A little higher in frequency at 406.025MHz is an international allocation for emergency locator beacons. These are used as position markers for rescue teams when ships or aircraft run into difficulties. The system, known as Search and Rescue Satellite Aided Tracking (SARSAT), was initiated in the early 1980s as a joint US/Russian project. The signals are received by one of several special satellites orbiting the earth monitoring both this frequency and the traditional emergency channels at 121.500 and 243.00MHz. The signals are re-transmitted on 1.5445GHz back to one of the many world-wide monitoring stations participating in the scheme. The system works rather like the navigation satellites I mentioned previously, in fact the SARSAT equipment very often shares the same satellite. By measuring the doppler shift present on the received signal and by knowing the position of the satellite at that particular moment it is possible to determine the location of the beacon with a high degree of accuracy. A fact to which many hundreds of people who have been rescued as a result of the SARSAT system will testify.

Finally, the last segment 406-410MHz is allocated to radio astronomy with several observatories in the UK making use of this band. Some strange signals may occasionally be encountered from more terrestrial sources however, as a few radio positioning systems in the North Sea are permitted to operate on a non-interference basis with radio astronomy in this segment of the band.

More next time when we continue our look at the u.h.f. spectrum.

The end of another column, keep those letters coming in to the same address: PO Box 1000, Eastleigh, Hants SO5 5HB. Until next month - Good Listening. □

Abbreviations	
a.m.	amplitude modulation
GHz	gigahertz
h.f.	high frequency
kHz	kilohertz
km	kilometre
MHz	megahertz
n.b.f.m.	narrow band frequency modulation
u.h.f.	ultra high frequency
v.h.f.	very high frequency
w.b.f.m.	wide band frequency modulation

PASSIVE MW & LW SIGNAL BOOSTER

P.B. Buchan

Searching through the medium and long waves is not something that I do regularly but when I do I am reminded that the broadcast band 0.1 to 1.6MHz on my Icom IC-745 has always been a little deaf. Using these bands recently prompted me to look into the sensitivity of the receiver in a.m. mode on these frequencies the specification gives:

0.1 to 1.6MHz	20μV for 10dB S/N
1.6 to 30MHz	1μV for 10dB S/N

An Advance SG200 r.f. generator confirmed that 20dB more input was necessary to obtain an S9 reading on 1MHz than on 10MHz, giving the impression the receiver was working to specification on the m.w. and l.w. band. Input impedance is given as 50Ω, however, a glance at the circuit diagram of the SG200 revealed that a 10Ω resistor is shunted across the 0.1 to 1.6MHz antenna input for the long and medium waves. A series resistor of 39Ω was placed between the SG200 and the 745's antenna terminal to allow the generator to "see" a load of 50Ω.

Despite the use of a moderately long antenna, about 41m in length the signals on the l.f. band (m.w. and l.w.) were considered to be lower in strength than one might expect for a receiver of this kind.

As an experiment it was decided to make an antenna tuning unit to see if signals could be coupled more efficiently into the receiver on these low bands.

Ferrite Rods

A search though the junk box brought to light a couple of ferrite rods about 200mm long by 10mm in diameter which had been purchased at the Leicester rally in October. These were complete with m.w. and l.w. coils. and it took but a moment to make up a series coupling unit for the antenna and link it to the receiver.

It would seem that the long and medium wave bands on some mid-market, general coverage receivers were added as an afterthought. This little project could perk-up even the most lethargic m.w. front end.

The results were better than expected giving an increase of 20dB on many signals, but the Q of the circuit fell off as more capacity was used on the lower end of the m.w. band.

It became clear that two units would be better, one for the range between 0.1 to 0.6MHz and the other for 0.6 to 1.6MHz.

Quite a lot was known already about the 41m antenna because it had served for some years as the 3.5MHz half-wave end-fed. One of the characteristics known was the capacity to earth, which measured about 230pF. This measurement can be easily made using the *PW* "Itchen" *LCR* Bridge (1), connecting the antenna across the bridge against the station earth.

Using the well known formula for resonance:

$$F_o = \frac{1}{2\pi\sqrt{LC}} \text{ (Hz)}$$

and by arranging L as the subject of the formula:

$$L = \frac{1}{4\pi^2 F_o^2 C} \text{ (H)}$$

we can calculate the inductance needed to resonate with the 230pF antenna capacity which, by the way, is in series with the capacity of the coupling unit. The intention is that the coupling unit should have a high *Q* and therefore the *L/C* ratio will also be high. A high *L/C* ratio means the tuning capacitor will have a relatively low value. Antenna impedance will be very low because a 41 metre antenna is only 0.08l to 0.2l over the frequency range involved. Working with a value of about 200pF (the coupling unit is in series with the antenna capacity) gives a total of around 100pF; to resonate at 1MHz, an inductance of at least 2.5mH will be needed

Winding the Inductance

It was decided to wind an inductance using one of the ferrite rods but reducing it in length to 100mm. The rod may be broken cleanly by first scoring across with a sharp file. Lay onto the 100mm length a single layer of plastics tape, this may be done by simply cutting a 100mm length of the tape laying it on the rod end to end. This serves as a base for the winding which may be started at one end, trapping the wire under the tape, wind on ten turns, then fold the wire back upon itself for about 25mm, twisting it together, thereby making a tail. Tin this first tail with a hot soldering iron and continue winding for another 110 turns, pausing every ten turns to form a tapping. The wire used to wind this inductance is 28 s.w.g. enamelled copper wire (see Fig. 2).

A bridge should indicate an inductance close to 1mH which when used in conjunction with a 500pF variable capacitor will tune the entire m.w. band.

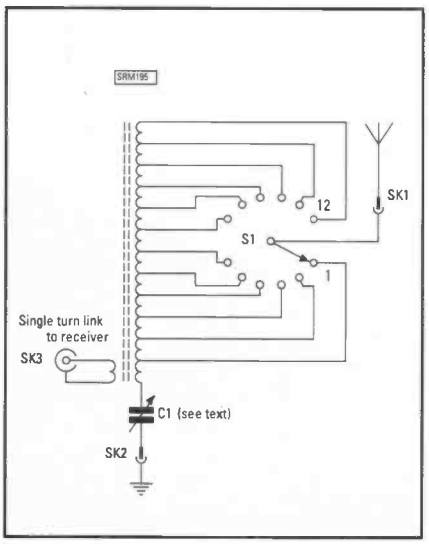


Fig. 1: Circuit diagram of the Passive Signal Booster unit. Both the l.w. and m.w. versions use the same basic circuit.

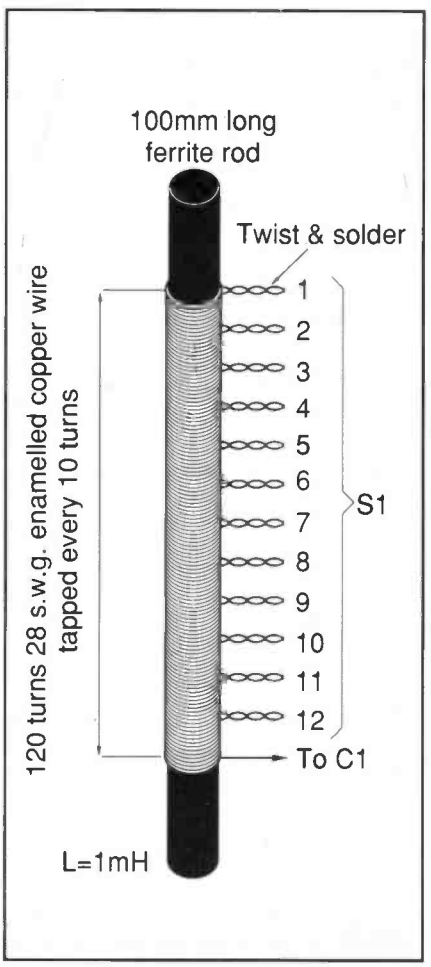


Fig. 2: Coil winding details for the m.w. version of the booster.

PASSIVE MW & LW SIGNAL BOOSTER

This value of capacitor is a little difficult to obtain, but the 365pF dual-ganged Jackson capacitor or Poly-Varicon type (available from Cirkit) with both sections wired in parallel should suffice.

Should you use a metal box to house the unit the ferrite rod must be at least 20mm from any metal surface to avoid damping by stray capacity. A plastics box would be much better. Construction of the unit requires no special consideration apart from that mentioned earlier. As for coupling the antenna tuning unit to the receiver, a single turn of insulated connecting wire serves this purpose. Any more than one turn will load the tuned circuit and reduce its *Q*. The advantage of a coupling unit for receiving only is that the *Q* can be made very high thereby enhancing the selectivity.

A histogram showing the performance of the unit using two antennas both with and without the coupling unit is shown in Fig. 4. Readings were taken during the period 1000 to 1230 so that m.w. and l.w. propagation gave steady signals and there would be little, if any, sky wave.

Earthing

An earth of some kind must be used, probably a connection to a cold water pipe would be sufficient if your property is of the older type. However, with so many properties being fed with plastics water pipe this type of earthing can be unreliable. A word of warning, do not attempt to use a.c. mains earth or gas piping as an earth system, one could lead to electrocution and the other to an explosion.

The alternatives to using the cold water system as an earth is to either run a counterpoise conductor (the same length of wire as the antenna run on, or below ground level beneath the antenna), or to drive 1m of 20mm copper pipe vertical into the ground. Either approach should provide a reasonable earthing system, the latter will of course need watering from time to time. The length of the connection between the earthing system and the a.t.u. is unimportant at these low frequencies.

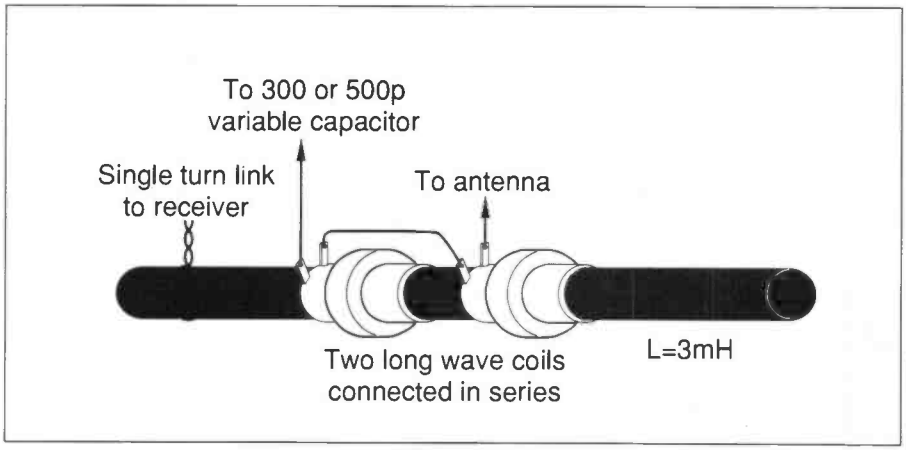
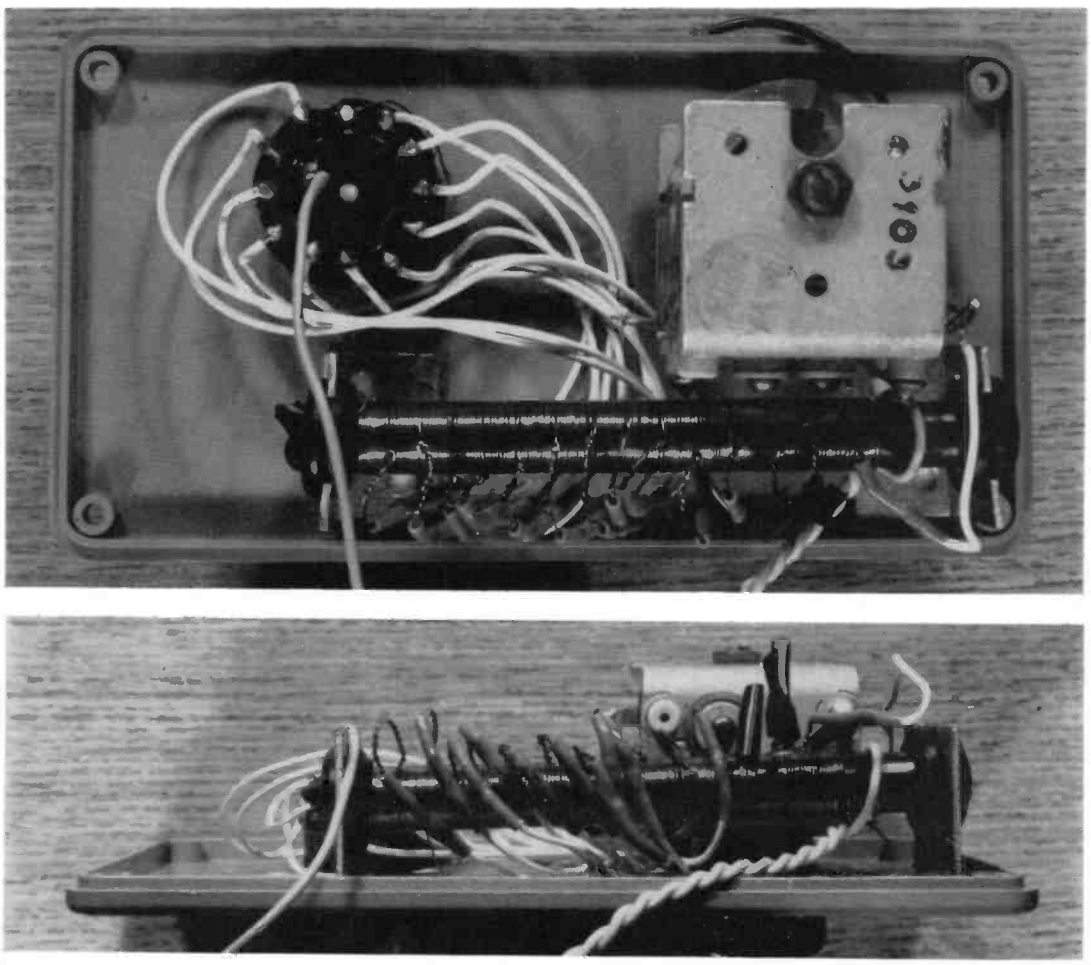


Fig. 3: Coil winding details for the l.w. version of the booster.



Two views of the completed Passive Signal Booster showing how it is constructed and fitted into the plastics box.

PASSIVE MW & LW SIGNAL BOOSTER

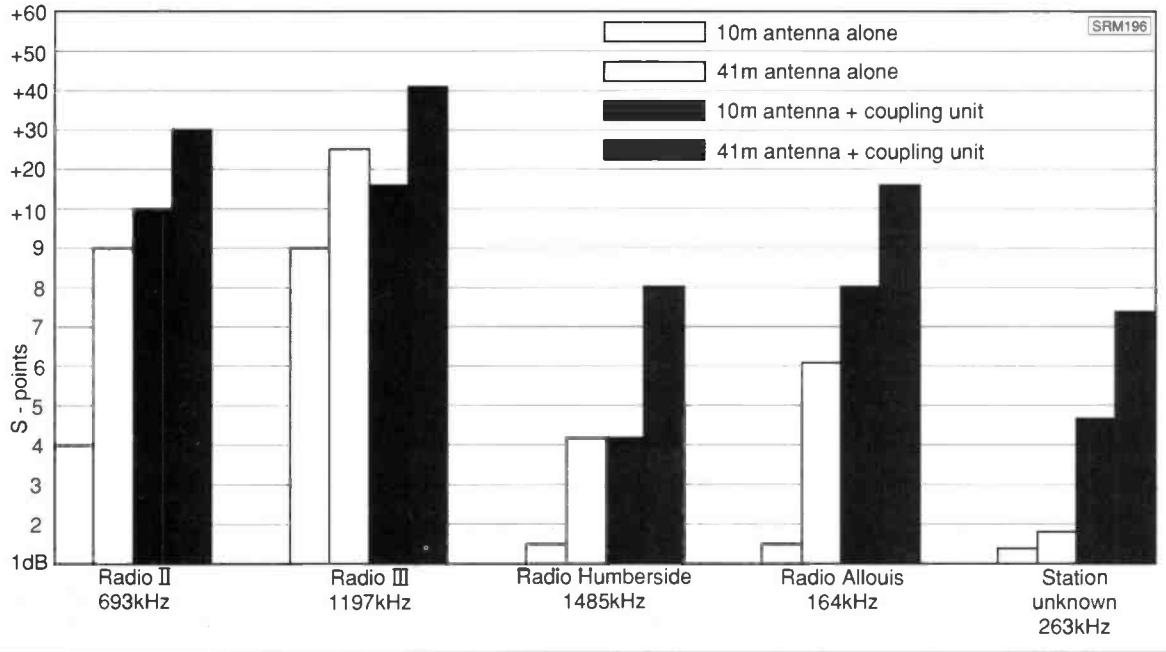


Fig. 4:

In Use

Using the coupler/a.t.u. is straight forward. After connecting the antenna and earth connect the output to the receiver, tune the receiver to a mid-band m.w. station, set the coupling unit capacity to about one third of maximum, and then switch through the range of inductance. At one point the signal will peak, leave the switch in this position and fine tune with the capacitor. Shorter antennas will need more inductance, this unit should work with lengths down to 4 or 5m.

If overloading from strong signals is a problem, try moving the single turn output winding away from the ferrite rod. This should alleviate the problem, although it will make all the signal on the band a little weaker.

For the long wave two suitable tuning coils are placed side by side on the remaining half of the ferrite rod and connected in series. Be careful to connect the the two coils in phase ie, the series link being made between the end of the first coil and the start of the second. If this were not to be done then two coils in antiphase would cancel out each other's effect and will not tune correctly on low frequencies. A similar capacitor will suffice.

A second antenna, 10m in length, mounted at about 2m above ground has a capacity of about 85pF to ground and will need the 3mH or so provided by the two l.w. coils connected in series to tune it. No switched taps are required for this a.t.u. as the capacitor stated has enough spread to tune the unit right down to 130kHz were the German Meteo station can be peaked to average well over S-9.

References

(1) *PW* "Itchen" *LCR* Bridge by John Thornton Lawrence GW3JGA April 1987.

YOU WILL NEED

Capacitor
Jackson Dual-gang [06-05250] or Poly-Varicon [06-26102]

Ferrite rod F14 type 140mm [35-14147]

Inductors

Medium wave version see text and Fig.1.
Long wave version uses 2 long wave coils [35-00108]

Miscellaneous

Rotary switch 1 pole 12 way (S1) [53-51024]; ABS plastics enclosure [21-06043]; Sk1, Sk2, 4mm chassis mounted sockets with matching plugs; Sk3 chassis mounted SO239 or BNC coaxial connector; 28s.w.g. enamelled copper wire; pvc insulated connecting wire.

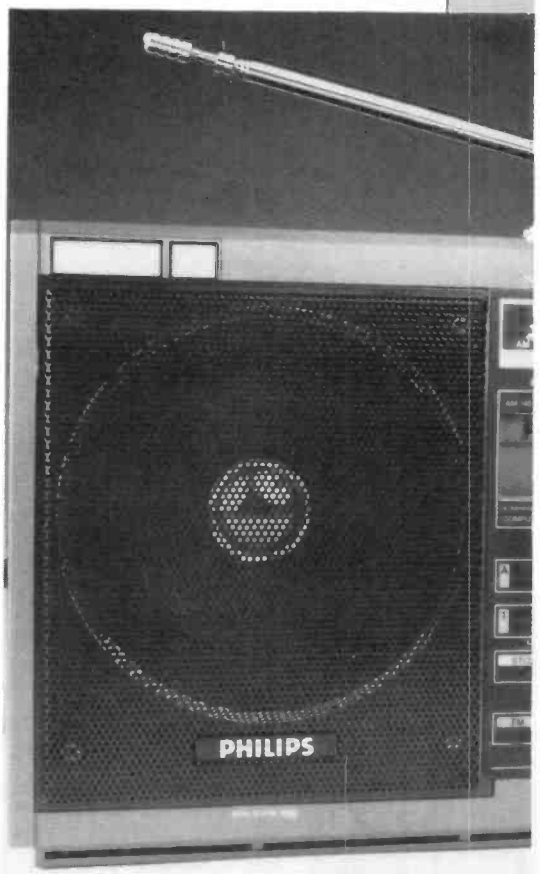
All numbers in square brackets refer to Cirkit part numbers. Cirkit Ltd., Park Lane, Broxbourne, Herts EN10 7NQ.
Tel: (0992) 441306 (enquiries) or (0992) 444111 (sales).

Abbreviations	
a.m.	amplitude modulation
a.t.u.	antenna tuning unit
dB	decibel
λ	wavelength
l.f.	low frequency
l.w.	long wave
m	metre
m.w.	medium wave
mH	millihenry
MHz	megahertz
mm	millimetre
pF	picofarad
Q	a measure of the goodness of a tuned circuit
s.w.g.	standard wire gauge
S/N	signal to noise
μV	microvolt
Ω	ohms

PHILIPS D2935 WORLD BAND RECEIVER

John Waite

The D2935 World Band receiver from Philips could be the ideal set to appeal to the newcomer to short wave listening. so let's see how well it performs.



The D2935 from Philips is a high quality "World Band" portable receiver featuring continuous coverage from 146kHz to 29.999MHz and the v.h.f. band from 87.5 to 108MHz. In addition to normal a.m. and f.m. reception modes, a b.f.o. is included allowing reception of single sideband transmissions and a variety of utility modes, providing of course you have the appropriate decoding equipment.

Instructions

The instructions are an important part of the package and those for the D2935 comprised a 37-page A5 booklet which included eight languages - English, French, German, Flemish, Spanish, Italian, Swedish and Norwegian. The inclusion of so many languages meant that the English section comprised just four pages supplemented by two pages of fold-out diagrams which were used to identify the various controls and connection ponts.

Despite the small size of the instructions I found them to be adequate as the D2935 was a very easy receiver to get to grips with.

In addition to the main manual there was the usual circuit diagram which seems to be standard practice with virtually all Philips products. The final document was a very informative 28-page A4 book called *World Receiver*. As with the instruction manual, this was a multi-lingual production resulting in about three pages of English. Philips seem to be supplying this book with all their short wave receivers and I must admit I thought it was a very useful aid, particularly for the newcomer to short wave listening.

Powering-up

The D2935 is very versatile in its power requirements and has several options. The first area that needed attention was to fit the memory back-up batteries - three AA-size cells which were fitted in a compartment on the rear panel. These back-up batteries are required regardless of the main power source if you want to preserve the memory contents.

As the D2935 is primarily designed as a portable receiver, it was no surprise to find that it could be powered by six D cells which fitted in a battery compartment on the rear panel.

When operating with reach of a mains outlet it is useful to be able to take advantage of this and the D2935 has a versatile built-in mains power unit. This can handle 120V 60Hz in addition to the UK standard of 240V 50Hz. The changeover from battery to mains power occured automatically when the mains lead was inserted into its socket.

The final power option was to use an external low voltage d.c. supply. The D2935 can handle any voltage between 9 and 14V via a socket on the side panel - ideal for connecting to a 12V vehicle supply.

No self-respecting short wave receiver would be complete without the facility to use an external antenna. The D2935 handles this problem with three screw connectors on the side panel. The centre of these is for the ground connection whilst the other two are for connection of a v.h.f. and s.w. external antenna. The only snag with the external antenna implementation is that the internal telescopic antenna cannot be disabled. This means that if you are suffering local interference, perhaps from a computer, that is being received via the telescopic antenna you may find it difficult to overcome. Having said that, you may well find that the increased strength of the wanted signal, when using an external antenna, reduces the effect of any local interference.

I must admit I would have preferred to see coaxial sockets for both external antennas with an automatic switch to disable the internal antenna.

Having covered the basic essentials of the connections there were some optional facilities provided.

For private listening there was a standard 6.3mm jack which was suitable for a wide range of headphones from 8 to 600Ω, including electret types. As usual with this type of socket, the internal loudspeaker was disabled when this socket was used.

Finally there was a LINE OUT socket which provide a low level audio output independant of the volume control setting. The prime use of this socket is for the connection of a tape recorder, though it could of course be used for many things including the connection of utility station decoding equipment.

Tuning

As with a lot of modern all band receivers the D2935 is provided with two basic methods of frequency selection. The first and most common is by means of a rotary control on the front panel. This control operated in steps rather than continuously, the steps being 1kHz on long, medium and short wave whilst v.h.f. used 10kHz steps. One particularly useful feature was that these tuning steps automatically increased by a factor of ten when the tuning control was turned quickly. This was obviously very convenient when trying to change frequency quickly.

The second main tuning method was to use the direct entry keypad. This was of the membrane type and was very positive in use. Abbreviated frequency entry was catered for in this mode, meaning that only the significant digits needed to be entered and trailing zeros could be omitted.

The band selection was also achieved using the membrane keypad and on selection of a particular band the frequency changed to the lower end of that band. A useful additional feature for the short wave enthusiast was that the initial press of the SW button select the l.f. end of the 90m band and subsequent presses of this button selected the next higher band. This was obviously handy for quickly selecting the required short wave band.

One of the fringe benefits of the use of a microprocessor to control frequency selection is that programmable memories can be included quite easily. Philips call the memories pre-sets and the D2935 is equipped with nine of these pre-sets. These are grouped into three sets of three called A1 to 3, B1 to 3 and C1 to 3. The storing of a displayed frequency into

PHILIPS D2935 WORLD BAND RECEIVER

a pre-set was very simple involving just a couple of key presses.

The idea of grouping the memories into three sets of three may at first seem a little odd, but it was in fact very useful. You could, for example, store v.h.f. frequencies in one group and s.w. in another, etc, making it very quick and easy to swop listening modes.

The reception of s.s.b. signals was also catered for with the provision of a b.f.o. This was activated by a simple push-button on the front panel. Tuning of the b.f.o. was by a small control also on the front panel and the range matched the main tuning frequency steps well. The general rule here is that the b.f.o. range should be larger than the main tuning steps.

When receiving signals using the b.f.o., the automatic gain control was disabled and the r.f./i.f. gain could be adjusted manually using the a.m. gain control on the front panel.

The final operational feature was the provision of a local/DX switch which was actually an r.f. attenuator. This was useful for reducing distortion caused by very strong signals.

Performance

For the on-air performance tests I initially used the D2935 "barefoot", i.e. using the supplied internal and telescopic antennas. One of the problems with this mode of operation is that you tend to pick up a lot of local interference from colour televisions etc. My solution to this was to move out into the garden and enjoy the remains of our Indian summer whilst checking out the performance of the D2935!

I found that operating this receiver portable was quite straightforward with all the controls well placed - at least for the right handed user. On the short wave bands I was soon pulling in a number of interesting broadcast stations. The audio quality proved to be very clear and careful adjustment of the tone controls enabled interfering whistles and growls to be minimised, whilst maintaining maximum intelligibility.

On the medium and long waves, the results were equally good and the sound quality, particularly of local broadcast stations, was very good.

For medium wave DXing the ferrite rod antenna gave some directional control, which can often useful for reducing the interference from adjacent stations.

Moving on to v.h.f., as you would expect, the audio quality was significantly better than the other bands. The tone controls worked well under these conditions, making it very easy to achieve your own preferred sound balance.

The sensitivity on v.h.f. also seemed very good with the supplied telescopic antenna and a good range of stations could be received with minimal noise.

The next step was to evaluate the D2935's performance when receiving s.s.b. signals. The starting point I used was amateur s.s.b. on 14MHz. Of course with only the telescopic antenna, the DX performance was somewhat limited, but nevertheless I did receive a number of stations.

I must admit that my initial attempts at s.s.b. were spoilt somewhat by the poor quality of the recovered audio. The solution proved to be very simple - back off the a.m. gain control! In fact I found that a very successful way to resolve s.s.b. was to revert to the old technique of setting the volume control to near maximum and using the a.m. gain control to adjust the audio level. Using this technique the recovered audio was very good indeed.

Having completed the basic tests using the internal antennas I connected the D2935 to my nest of dipoles to see how it fared when presented with an external antenna. I'm pleased to say it actually handled the increased signal strengths very well. I found that the inclusion of the attenuator and a.m. gain control to be very useful, particularly when dealing with some of the very high signal strengths that can occur on the h.f. bands.

As there seems to be a rapidly growing interest in utility station monitoring, I took the opportunity to connect up my decoding equipment to test out this aspect of the D2935's performance. The result was very successful and I was able to receive RTTY, AMTOR, Packet, c.w. and FAX with no problems. As was to be expected the tuning was very critical when receiving the narrow band modes such as 170Hz shift RTTY and AMTOR. If you are thinking of using the D2935 for FAX reception you may find that the frequency stability of the v.f.o. is not good enough for unattended operation. This was only a minor deficiency as correction meant just occasional small adjustments to the b.f.o. setting.

Summary

The Philips D2935 slots well into the market between the domestic portable radio and the more serious communication receiver. The inclusion of a b.f.o. meant that in addition to conventional broadcast stations the D2935 could be used to receive a whole range of utility and amateur stations, making it very versatile.

The general performance of the D2935 was also very good for a receiver of this class, making it very attractive to the newcomer or those who need a dual-purpose receiver.

So finally, I thought that the D2935 was a fine medium-size portable receiver offering a very respectable performance.

The Philips D2935 costs £129.95 and can be obtained from any good Philips outlet. My thanks to Philips UK for the loan of the review model. □

Abbreviations

a.m.	amplitude modulation
b.f.o.	beat frequency oscillator
c.w.	continuous wave (Morse)
d.c.	direct current
DX	long distance
f.m.	frequency modulation
Hz	hertz
i.f.	intermediate frequency
kHz	kilohertz
l.f.	low frequency
m	metres
MHz	megahertz
mm	millimetres
r.f.	radio frequency
s.s.b.	single sideband
s.w.	short wave
V	volts
v.f.o.	variable frequency oscillator
v.h.f.	very high frequency

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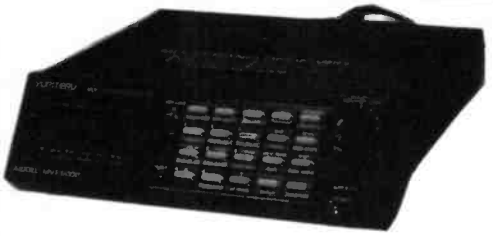

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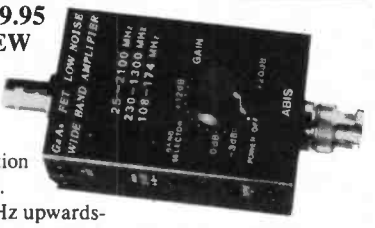

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DX LETTER FROM AMERICA

Gerry L Dexter

Cuba is said to have provided funds to the Panamanian government so that it can purchase two short wave transmitters (50 and 100kW) which will be used by the government's Radio Nacional.

The project is still in its very early stages so it's quite likely to be two years, or even more, before any such station gets on the air.

Hawaii

The US State of Hawaii, considered as a separate radio country by many, has also been without a short wave broadcaster for many years but it looks like that, too, is to change. LeSea Broadcasting, which operates religious short wave station WHRI in Indiana, has filed an application for a short wave station in Hawaii.

If LeSea is as efficient in getting the new station on the air as they were with WHRI it's not unreasonable to expect the Hawaii outlet to be active sometime in 1990.

Radio Canada International

Some of the other news is not so happy. Most readers are aware of the sword hanging over the future of Radio Canada International. Canadian budgetary restrictions may mean the closure of RCI completely.

At the time of writing RCI was still hoping that a deluge of protest mail would salvage some, or all, of the service. So at present the question remains open. Some Canadian DXers say they think things look very bleak for RCI, however.

WSZO in the Marshall Islands has been off the air since October 1988, though not by choice. The transmitter is in need of some replacement parts and until they are at hand the station won't be heard on its usual 4.940 and 6.070MHz spots.

Tonga Back Again

Lack of spare parts forced Tonga's short wave off the air for a while as well, but that's said to be history now. Tonga is reported to again be active on its old 5.030MHz frequency, leaving North American DXers having to tangle with Radio Impacto, though that station doesn't fully block the Tonga reception window.

Tonga is an extremely difficult catch and only three or four DXers in North America have managed to hear the station.

Panama, once home to half a dozen short wave broadcasters, has had no voice on the higher frequencies for at least a decade. But that may change in a couple of years.

Deutsche Welle, which is withdrawing its financial support from Radio Antilles in Montserrat and the associated relay installation, has now discontinued using Montserrat as a relay site. DW prefers to devote those funds to making improvements elsewhere. Various Caribbean broadcasters are discussing ways in which the Radio Antilles operation might be continued.

Latin America

It seems there is always short wave news happening in Latin America:

Bolivia has two new short wave stations in operation: Radio Horizonte is La Paz is on 6.005MHz and being heard with Spanish language programming from 1000UTC sign on.

Another new one is in Cobija. La Perla del Acre operates on 4.600MHz at around 0130, though the modulation is so poor it's nearly impossible to understand, even with a fairly good signal.

Chile

In Chile, Radio Universidad de Concepcion is being heard again on its 6.135MHz frequency. Listeners have heard it relaying the commerical Chilean station, Radio Mineria, and that confused things a bit but there's almost no doubt the transmitter is the university outlet. It's being logged around 1100.

Several listeners have reported picking up signals from Chilean time station CBV at Valparaiso on 8.677MHz. The signals are on for only five minutes at a time, about four times per day. North American DXers are hearing it from 0055-0100 and one has already received a QSL card.

Costa Rica

In Costa Rica, Adventist World Radio's Radio Lira at Alajuela has been coming in well on the 25m band around 0000 and 1300 with all Spanish programmes. The frequency is 11.780MHz, although that tends to slip down by as much as 3kHz.

A couple of listeners have reported the reactivation of La Voz de Guatemala on 6.180MHz, although we haven't been able to confirm this with a reception of our own. It may be active only on a sporadic basis.

Emisoras Paraguay, inactive for about two years, has returned to its former 6.015MHz position about 0830. Radio Nacional de Paraguay has been coming through with signals of very good strength around 0000 and later on 9.735MHz.

There appears to be a new religious station on the air from Ecuador but so far the station on 4.860MHz, with a sign on at about 1110UTC has not been identified.

Back to Hawaii briefly: the National Bureau of Standards time station WWVH is now airing propagation reports at :45 past the hour. These are the same as heard on WWV at :18 past the hour.

1989 DX Championships

In other news the 1989 North American DX Championships, sponsored by two SWBC DX newsletters, *Numero Uno* and *Fine Tuning*, was won by veteran DXer Jim Young of Wrightwood, California. Young logged 337 stations in 123 countries to give him 925 points and first place. Young also took the top place in the first NADXC held during 1988.

1989 Convention

The 1989 convention of the Association of North American Radio Clubs, held in Florida in mid-July, drew somewhere between 110-150 people, only about a third of the number the convention was drawing two or three years ago. Attendence was also down at the 1988 meeting in California.

That's hard to explain when all the indicators show that interest is short wave in the US is stronger today than at any time since World War Two!

Short Wave Radio Week

An idea designed to further increase the public's awareness of short wave radio, particularly in North America, is Short Wave Radio Week which will be held during 12-18 March 1990 and the second full week of March in following years.

Sponsored by radio book publisher, Tiare Publications, the week is designed to call media attention to short wave and generate newspaper, magazine, radio and TV stories about the medium.

That's it for this time. Comments are always welcome. Till the next letter, in three month's time, good listening! □

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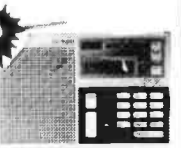

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AIRBAND

Godfrey Manning G4GLM

I'm not so sure that "apparent wander" really relates to gyros. I think it's what happens when you walk out to the grass in search of your aeroplane, only to find that it was last left parked on the main apron! If you've any "alternative definitions" for aeronautical terms, then send 'em in and let's all have a giggle. Flying can be a serious subject at times, but it's also fun!

Follow-Ups...

Callsigns featured in the October issue. I have one more to add: "Teastar" is TEA (UK), a new offshoot of the better known TEA in Europe. Another bit of news from a few months ago concerned a proposed airport development at Sheffield. In fact this now looks like being another "STOLport" for short take-off aircraft only. The London (City) airport is still battling to be allowed to take jet equipment (that means the BAe 146) so I wonder what will happen at Sheffield? Would any local reader like to keep the news coming on this one?

The last word on the V1505 triode valve comes from **Graham Bedwell** (Wokingham). Despite being rated up to 1.5MHz the intended application is as a push/pull audio amplifier. Curious. Thanks to everyone who has gone out of their way to supply information on this device; I think that we can now close a very comprehensively filled file on that one.

...and Foul-Ups

In fact the next unfortunate item was nobody's fault. As I have mentioned before, there's never any peace when the Vulcan (XH558) is due to fly, as Christine, our "Airband" photographer, invariably drags me (willingly!) off to see it. That's why we ended up in the pouring rain at Abingdon airshow in mid-September. However, the last flying Vulcan didn't make it - due to cracked engine intake skins (again). Now, many of you will have seen the Vulcan Display Flight in action but I regret that after next season it will be grounded unless funding can be found. Make Chris happy - support her favourite aircraft - by joining The Vulcan Association, 207 Weoley Castle Road, Weoley Castle, Birmingham B29 5QW.

Of greater consequence is the report of an uncontained engine failure on a Boeing 747 prior to V1 at Gatwick in early September, thanks to **Bob Parkes G3REP** (Steyning, West Sussex) for spotting this in the local press. Uncontained means that bits of exploding engine broke out of the engine cowling; and V1 is the speed during the take-off run acceleration after which it is impossible to stop the aircraft on the remaining runway and lift-off is essential

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(even with an engine out). As with all accidents I reserve judgment until I see the full report from the Air Accidents Investigation Branch.

In the September issue the abbreviations section is slightly wrong: an a.d.f. is an automatic direction finder whether airborne or not! To **Geoff Halligey** (Bridgend, Mid-Glamorgan) who spotted this, I say I cannot tell a lie - the editor prepares the abbreviations panel! Geoff tells me that he spent 11 years sat in front of an a.d.f. for BEA; I'm intrigued to know in exactly what you were sitting in! Could be an aeroplane or a helicopter - I give in, do tell us.

Agony Column

In agony this month is **Alec Pacey** (Yeovil, Somerset) whose AR-900 receiver seems to be misbehaving. Various frequencies can be selected but, on entering them into the memory, they change "up or down a few kilohertz." Alec noticed that all such mischievous frequencies had a two or a seven as their second decimal (tens of kilohertz) place. Well, I'm sure that I can explain this and suggest, Alec, that you persevere with the receiver and try out my suggestion. All airband communication channels are spaced by 25kHz. So, valid digits after the decimal point (frequencies in MHz) are .000, .025, .050, .075, .100, .125, .150, .175, .200 etc. etc. Note that whenever there is a two or a seven in the middle place, the last digit is a five. Now look at the frequency selection box in many cockpits (e.g. as shown in my "Aeronautical Radio" article, May 1987). It only displays two decimal digits! Not only that, but frequency lists also give frequencies this way. So London (Gatwick) a.t.i.s., for example, is listed as 128.47MHz and is selected as such in the cockpit. But its real frequency is 128.475MHz and your receiver probably allows for this, giving a truly accurate readout on its display. It's not that the airborne equipment is tuned wrongly - it's simply that there is no ambiguity even if the last decimal place isn't quoted. Pilots (and airborne radio designers) know about this convention. So should your dealer - and that he didn't is, to my mind, disappointing. Let me ask you to go back to your set with this new-found knowledge. Perhaps you will write again when you've tried this out?

Can You Help?

Now over to you to provide help to **John Fawke** (Birmingham). He is trying to obtain two things. Firstly, a parachute seat cushion, brown colour, with press-stud fasteners, dating from the late 1940s. Secondly, any mementos or equipment dating from the Battle of Britain and suitable for use in a display being mounted by an air training corps. All offers of help to me via the editorial office address please.

You Write

It's strange the way the non-technical press views aeronautical matters. **L. M. J. Mitton** (Nottingham) was reminded of this on reading a Sunday colour supplement. Apparently, F-111 fighters land at RAF Croughton, near Brackley, alongside the A43 road. In fact this installation is an antenna farm - not ideal for landing an aircraft! Mustn't believe all we read.

I'm glad that **Michael Ellard** (Cork) enjoys and looks forward to this column.

Approaching Runway 26L at Gatwick. The threshold is quite a bit beyond the apron. Note the glideslope antenna off to the left of the threshold, also the precision approach path indicator lights. *Photo Godfrey Manning.*

The PRO-80 has been found good apart from broadcast breakthrough from the v.h.f. band. Michael is puzzled that 132.940 and 132.945MHz seem to be different frequencies allocated to the same thing. Note that they are only 5kHz apart.

I suspect that 132.950MHz is the correct 25kHz channel (see my remarks above in the Agony Column) but the ground station might be a relay. As several relays transmit on the same nominal channel they are all offset from each other by a few kHz to avoid mutual interference.

I must say that this is not usually listed in the various publications because airborne receivers have wide enough selectivity not to be affected by small offsets. Some scanning receivers, though, have sharper selectivity and the frequency difference will need to be taken into account.

"I have recently returned to the hobby... *SWM* has been a great help" says **Bob Biggart** (Redhill, Surrey) who works in flight operations control and hence uses h.f. radio almost daily.

Airline companies have h.f. u.s.b. networks for their own operational purposes, operated for example by Air Radio Inc. (ARINC) in the USA and British Airways in the UK.

Maritime stations such as British Telecom's Portishead Radio can also arrange to 'phone patch from aircraft.

Most of these frequencies have been covered in "Airband" but an update would always be welcome. Bob also reminds us of some of the *en route* h.f. allocations he comes across: Africa AF1-3 11.300MHz; Africa AF1-1 8.861MHz; New York/Gander Volmet 13.270MHz; Honolulu Volmet 8.828MHz, all u.s.b.

Frequency and Operational News

The Civil Aviation Authority (CAA) continues to provide helpful information through the *General Aviation Safety Information Leaflet* (GASIL) 8/89. At RAF Kemble the Tower frequency of 122.1MHz has been replaced by 118.9MHz. The Cranfield n.d.b. on 850kHz has a new ident (CIT: dah-di-dah-dit, di-dit, dah); the Stornoway n.d.b. on 669.5kHz will now identify as SWY (di-di-dit, di-dah-dah, dah-di-dah-dah).

Also reported is a proposed change of rules concerning secondary surveillance radar transponders (the device that identifies the aircraft on radar through selection of the appropriate "squawk" number).

All aircraft flying above flight level 100 (ten thousand feet on the standard altimeter pressure setting) must carry a transponder; with four digits making up the squawk number, and each digit ranging from 0 through to 7 inclusive, there are 4096 identity codes which operate in what is known as mode A. Also required is the ability to send the flight level - this is known as mode C.

Both of these bits of information appear on the radar screen. It is now suggested that a 4096 code + mode C transponder will be mandatory for flights above FL50.

To change the subject, nobody believes me when I tell them that, in my Museum, I have a transponder which allows each squawk digit to go up to eight rather than seven (see "Airband," April 89, page 33)! Can anyone shed light on this device, made by Cossor for fitting in the VC-10?

The GASIL of 8/89 carried extracts from *Notams*, the official NOTifications to AirMen (and AirWomen) published by the regulatory authority in each state (the CAA in the UK). Staverton's runway 18/36 has been withdrawn. At Halfpenny Green prior permission is now required by all aircraft.

Dave Taskis (Romford, Essex) has sent in details of the assignment of 136-137MHz to the aeronautical mobile service. Although this becomes the primary service starting on 1 January 1990, there will still be allocations to Transit (136.65MHz) and NOAA (136.77MHz) satellites.

Above 137MHz there are plenty of examples of spot frequencies especially in Europe though fewer in the UK. In 1974 St. Athan Radar was in the 144MHz amateur band on 144.81MHz and I well remember that my amateur radio licence of around that time forbade operation on certain spot aeronautical frequencies.

The next big upheaval (see "Airband," June 1989) will be the central control function to be implemented at the London Air Traffic Contol Centre. If any reader has more details, please make them known to us all.

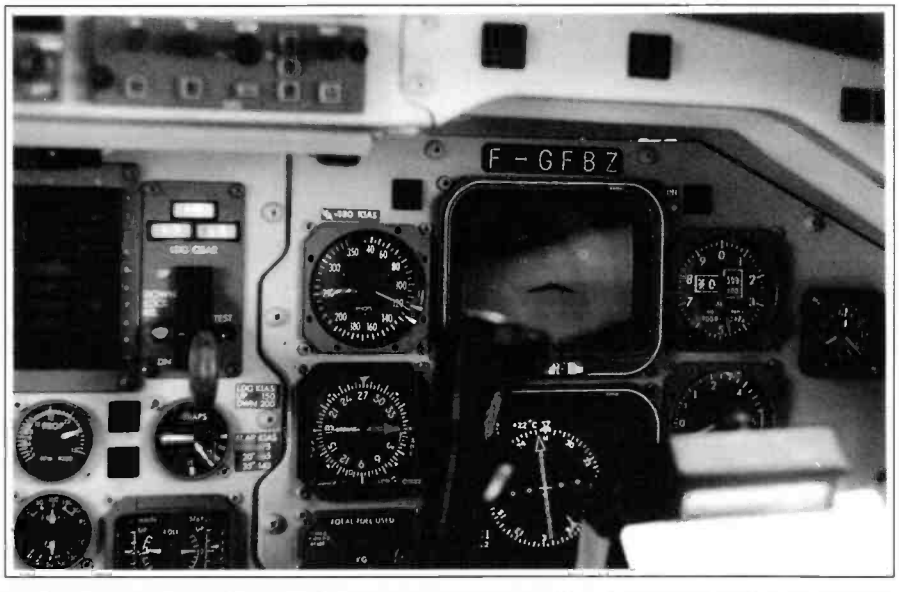
Information Sources

John Davies (Solihull, West Midlands), co-author of *High in the Sky*, has written about the new edition which is available from The Aviation Hobby Shop, 4 Horton Parade, Horton Road, West Drayton, Middlesex UB7 8EA. This contains useful lists of SelCals, routes, frequencies, etc. Price to be confirmed.

I often take the technical jargon for granted, and don't explain it each time it appears in this column. Otherwise, the same explanations would come up month after month! However, I'm sure that most readers must find things that need explaining from time to time.

If so, don't let it pass; write in and ask for an explanation to appear in the next issue. That way, I can give exactly the balance that you, the reader, want. Till we meet next time.

The next three deadlines (for topical information) are October 13, November 3 and December 1. □



Saab 340A F-GFBZ (083) of Brit Air approaching Runway 26L at Gatwick. Descending through 60ft on the QFE 1008mb, threshold speed 115kts almost achieved. Wind 295° 12kts hence drift correction as seen on the h.s.i. (i.l.s. is tuned in). Gear down and locked. *Photo Godfrey Manning.*

Abbreviations	
a.d.f.	automatic direction finder
a.t.i.s.	automatic terminal information service
h.f.	high frequency
i.l.s.	instrument landing system
kHz	kilohertz
kts	knots
mb	millibar
MHz	megahertz
n.d.b.	non-directional beacon
u.s.b.	upper sideband
v.h.f.	very high frequency

AMATEUR BANDS ROUND-UP

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

Over the past few months, I have tried to persuade you that you don't HAVE to spend lots of money to set up a receiving station, or to expand it's use from just receiving telephony to covering the other modes. Now, let's go the other way at it. Imagine I have a simple receiver and a super one side by side and that I am well skilled in "driving" them both. In general, I will find that both receivers will hear most signals; for one reason or another there will be a few signals that "favour" one receiver or the other. How then can we improve our DX returns?

First, if I am using an "antenna plus an earth" arrangement I can spend time and energy in improving the earth side. Second, I can use an antenna tuning unit to try and extract from the system all the signals it is picking up.

Third, I can get my main span of the antenna higher up in the air. If I am using a dipole type of arrangement, I can measure the s.w.r. or I can get a local transmitting type to come along and do this measurement; following up in either case by "pruning" to get the best s.w.r. in midband; and then I can try and get my dipole up higher.

So - a dipole is a dipole is a dipole; what's the point? Just imagine that by tweaking everything up "on the nose" I win back 6dB's worth of losses. What will this do? First, if we look at the times when the band is open to some part of the world, we will find more signals there; I have in fact uncovered a new layer of DX, because in effect our receiver will now hear signals that were previously below audibility. Second, when I find our receiver front-end being overloaded by big stuff outside the band, I can put in 6dB of attenuation and still be no worse than I was before I tweaked the antenna. For an l.f. band listener on, say the 3.5MHz band, this is manna indeed. Third, when the band starts to close, your man will be audible just that bit longer. Haven't you often noticed the local Big Guns still swapping reports when to you the band is dead? That is a function of their antenna, not their receiver.

If you could imagine a dipole which could run up and down a track between say, ground level and 40m high, without losing tune, and tune it to a steady DX signal, you would find that for the first 20m of height you would be in profit all the way, with a smaller profit as you went up the last part of the track to the top. At the same time it would be noticed that as the DX signals improve, so the local EUs either don't gain so much or even fall away a little. Twenty-odd years ago G3NMH, then living Swindon way, demonstrated the truth of this, and afterwards when we worked a South American station at RS59 with the beam at around the 27m mark, a nearby G station with a similar beam at fifty couldn't even hear the chap. To this other G station the band was already closed. Although yours truly knew that in theory this might be the case, it was the first time that the proposition had been demonstrated quite so powerfully. What it boils down to is that the ideal antenna support is the highest possible, with preferable facilities to wind it down so that if say, European DX such as a genuine ZA popped up, one could adjust the height to suit the conditions and the pile-up. Additionally, there is no doubt that one sleeps better in a gale when the tower is wound down! To sum up, the difference between Big Guns and Little Pistols is all up in the air.

The Listening Period August 12/13

I was unable to take part, thanks to a minor domestic disaster, but those who entered seem to have had fun. **Philip Davies** of Market Drayton, for example. He tried eight bands in total, using 1.8, 3.5, 7, 14, 18, 21, 24 and 28MHz an 8m folded dipole in the loft is made of 300Ω ribbon and fed with the same stuff. This is used "as is" on the higher bands, and on the lower ones, one leg is disconnected to make a "Chinese long wire" and in the shack the Eddystone 840A is now 31 years old and seems as good as when it was first bought new. On 1.8MHz, G and GW were noted, plus, frustratingly, Russians using Russian phonetics so their calls couldn't be copied. On 7MHz, 9L1VM was regarded as a Gotaway for the simple reason that the EU QRM was making him unreadable most of the time even though he was identified. Colombians were using the HJ prefix and CY0DXX on Sable Islands was a good one to catch. As usual Twenty was the place where it all happened and here FO5FO in Tahiti (QSL via F2BS) was perhaps the pick of the crop, though ZLs always give a thrill, and V44KI, HR1FMH, and VK7KH in Tasmania were not to be sneezed at. 21MHz was also fine with J52US, 4U1VIC, ED5TIA, R4PWY in Oblast 094, Kazan, to celebrate 1100 years of Islam in the Soviet Union. Down on Ten ZD8, Ascension Island, TZ6VV, Mali Republic, were welcomed. Turning to the WARC Bands, 18MHz gave ZD8 again, ZL2 and VK5, while 24MHz waited until the very end, before a DX station was heard working Europe, and after a scratch round the QRM it was logged as ZS8MI, on Marion Island. A pleasant way to finish! With a score of 228,288 points covering eight bands (no 10MHz) and 87 scoring countries, Philip tops the pile this time.

Our runner up was **Andy Brown**, of Barnet, who has a vertical half-wave on the roof for 28MHz, and random-length wire in the roof for the other bands; for v.h.f. there is the broadband scanner antenna, and a home-made dipole for 144MHz. These are tuned or matched by way of a Global AT-1000, and fed to which ever of the three receivers is in use; JR500S, Realistic DX-400, and Realistic PRO-2003 scanner, by way of a three-way switch; audio outputs are switched to a graphic equaliser for the benefit of the ears. Andy found the band was a little flat - to the point where he began to wonder about his equipment! -on the Saturday morning. Saturday evening was a little better but still disappointing; but on the Sunday things livened up a little. In sum, an interesting SLP, but conditions weren't by any means memorable. Andy heard 55 countries in all, used ten bands (one contact each on 144 and 432MHz) and rattled up 188,100 points.

In third place came **John Heath** (Kirkby Mallory) who commented in his covering letter (referring to the previous SLP) that he didn't think it was in the spirit of things to have three receivers; as to that, I have been at this radio game for a long time, and has never yet found a serious way to tuning two receivers at once, or indeed lending his one remaining working ear to more than one receiver! Seriously, I think the use of more than one receiver gives little or no advantage, unless it adds coverage of more bands. To revert to his entry, John sticks to his FRG-8800 to which he has either a 37m wire, or a 5 vertical, ground-mounted. The audio is again processed, this time by means of a Datong audio filter. John notes that there was a spectacular loss of signals on Saturday afternoon and from later listening he understood it to have been a solar event. Eight bands were used, all between 1.8 and 28MHz, less 10MHz, and 67 countries.

Our old supporter **N. Henbrey** (Northiam) has been drawn out of hibernation by the SLP; Norman scored out 72 countries four bands and so clocked up 59616 points, for a fourth place.

Now for a spot of analysis. Everyone seems to have had fun and the scoring, as I intended, encouraged multi-band operation. Obviously the luck favoured those who avoided the bad patch on the Saturday morning, and equally, the extra multiplier favoured those who use home-brew antennas. Above all as far as the columnar point of view goes, the presentation of the logs this time was not far short of superb, for which my thanks to everyone!

Next SLP

Since everyone seems to like these, I'll set you another two: December 2/3 weekend, with the rules almost unchanged. Thus, choose your six hours anywhere within the 48 hours between 0001UTC on the Saturday to 2359 on the Sunday; cover as many amateur bands as you like or can manage. Log as many QSOs as you can, and indicate the callsigns at both ends of the contact. Claim a point for each European logged, two points for logging a station in another continent. Double the points if you hear the station on a home brew antenna. Add up the points so scored, then multiply it by a multiplier comprising the total number of amateur bands used times the total number of countries heard, counting a country only once for multiplier credit (e.g. if you hear, say VK on both 7 and 14MHz, only one multiplier point accrues). Send in your logs to meet the December deadline date. As for the second one, use the same rules but take up to twelve hours in as many sessions as you like, over the period between 0001 Christmas Eve and 2359 on 1 January 1990. That should help the Christmas Pud go down. Above all, have fun - that's what it's all about!

Letters

First **Ron Pearce** (Bungay) who stays with his one-valve job; on 21MHz this month Ron logged VO1SA, JR1RCQ, and 5B4TI, while his favourite 14MHz gave 4X4DK, KD6USN, K1MAN, VK2PK, and W5ESI/MM the R/O on a bulk carrier in the Western Mediterranean. As he says - so who needs a black box!!

Mike Davis lives in Thornton Heath, and recently built an 3.5MHz direct conversion receiver to a design by R. A Penfold. Mike is highly impressed with what he hears, and echoes Ron Pearce's words. So far it's been W3JOR, VO1FG, RD5DX in Azerbaijan and VE1RCMP; and with the latter station it was interesting to note how while Mike was copying the VE without too much trouble, stations to the west of him were having more success, but those calling from Mike's east - Europe mainland - were having considerable difficulties.

John Court's letter was postmarked Birmingham; John also listened to the VE1RCMP signal on 3.5MHz, plus on 7MHz an enormous pile-up after GU3FJL, Stan, operating from Alderney, then OH2AQ/OH0 in Aland, F6FGY/TK in Corsica, EK2RF, a DX-pedition for whom the QSL address is UQ1GG all-same *1989 Call Book*. V31BB was heard at 0230 from San Pedro, Belize, which he says is all the QSL address you need. John heard a station operating aeronautical mobile , which is quite legal for USA stations but not allowable in most cother countries. Another conundrum was the station claiming to be in Salt Lake City Utah rather than in Texas. This sort of thing arises from the current situation that in USA you are nowadays issued with a call where the digit refers to the area in which the licence was issued. Thus you can have a callsign issued in California, and retained when the owner moves, say to Maine, to the confusion of all and sundry. Portables however append the call area they are in to the tail of the call, for example W6AM/1. Confusing!

Several of your letters note the time taken to positively identify a DX station under a pile-up. ZS8MI for example, took Philip Davies ten minutes to identify on 24MHz, while Mike Davis took nearly an hour before he was CERTAIN of his VE1RCMP on 3.5MHz. This is always a problem, and the fashion for partial calls has made the problem worse. Another thing, particularly prevalent among the non-DX amateurs is the habit of not giving their own call last. The

REVCO WHEN QUALITY COUNTS

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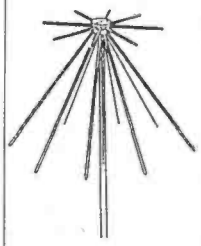

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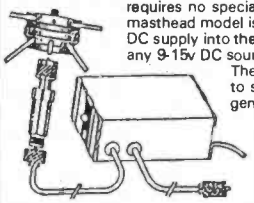
Another option is the N-type connector instead of the popular SO239. N-types give a better UHF performance, but they cost a bit more. The choice is yours.
Because the REVCONE is British-made by a Company which has been in business for 30 years, you buy with confidence, knowing that there is back-up should anything go wrong.

RADAC

This Wide-band antenna offers an interesting alternative to the discone. It is simply an array of dipoles, but the clever bit involves arranging the dipoles to maximise bandwidth and minimise interaction. The RADAC can be set up for a range of frequencies from 27MHz to 500 MHz, and because very good impedance matches can be obtained the user can specify any six frequency bands in this range for optimised performance, either for receiving, or more usefully, for transmitting. For example, all the Amateur Bands from 10m to 70cm can be covered in one antenna. If you are in the PMR business, the RADAC can be customised for your needs. Aircraft listening enthusiasts can specify VHF & UHF Airband coverage.
What a versatile antennal Design and engineering excellence from REVCO!

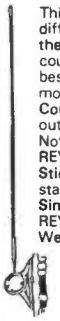
WIDE-BAND PRE-AMPLIFIERS

The problem with omni-directional wide-band antennas is their lack of gain.
The REVCO PA3 range of wide-band pre-amplifiers complement the antennas and compensate for their short-comings.
The basic specification of the products is similar: coverage 20MHz-1GHz, at 1GHz: minimum gain 13dB, noise factor 5.5dB. Choose from a mast-head version PA3 or a standard die-cast box style (PA3I). Best results are normally obtained from the masthead model which gives a boost to weak signals which would otherwise have been lost in the feeder cable. Also feeder cable noise is not amplified which is the case if the amplifier is mounted at the base of the feeder. On the other hand, the die-cast box version requires no special installation and is readily taken out of circuit. The masthead model is supplied with a special power unit which feeds the DC supply into the antenna feeder. No psu is provided for the PA31, as any 9-15v DC source is suitable (current requirement about 25mA).



The PA3I finds application in instrument work, e.g. input to spectrum analysers, boosting the output from signal generators to give a low-power Tx.
The standard version of the PA3I has BNC sockets and is designated "PA3I/B"; available to special order N-type sockets ("PA3I/N") or SO239 ("PA3I/S").
A special feature of the PA3 series is a high-pass filter to attenuate frequencies below 20MHz; high-power HF & MF broadcast stations can be very troublesome!

ON-GLASS ANTENNAS



This type of antenna mount has been around for a long time, but they are very difficult to produce successfully at VHF. The Cellular Radio Industry has popularised the glass-mount, but there are fewer design problems at 900MHz, because the coupling assemblies are small. REVCO's extensive experience in making the UK's best Cellular On-glass has led to the production of superior quality VHF and UHF models. Here are a few facts which you should know:
Coupling efficiency: apart from the question of effective power transfer to the outside world, you don't want too much RF floating around inside the car, do you? Not healthy for vehicle electronic systems, and possibly not good for humans either. REVCO glass mounts feature very efficient power transfer.
Sticking power: no good if they fall off half way home. A properly installed REVCO stays on. Should you change your car, a refit kit is available.
Simplicity: Some of the competition has a mutitude of loose components: the REVCO has 2 pre-assembled parts: inside and outside. What could be simpler?
Weather-resistance: REVCO antennas are made from corrosion resistant materials so you can leave them out in the rain with confidence. It is not necessary to plaster the product with silicone rubber to keep the water out.
The REVCO glass mounts do cost a bit more, which reflects these superior features.

REVCO also make a full range of mobile antennas for frequencies from 27MHz to 950MHz, and new products are constantly under development.
Contact your local Dealer or in case of difficulty write, phone or fax. Trade enquiries welcome.

Revco Electronics Ltd, Old Station Yard, South Brent, S Devon TQ10 9AL Tel: 0364 73394 Fax: 0364 72007

Reg Ward & Co. Ltd.

1 Western Parade, West Street, Axminster, Devon EX13 5NY.
Telephone: Axminster (0297) 34918

YAESU SONY

YAESU FRG 8800 £649.00

Super HF/VHF receiver (VHF option) LCD direct readout with 8-bit CPU function control. 21-button keypad entry or V.F.O. frequency selection. Full general coverage 150kHz-29.999MHz. AM/FM/LSB/USB/CW. 12 memories with back up. 100, 120, 220, 240V, plus 12V d.c. operation (optional). Clock and timer on/off control — fast/slow tune dial lock — computer control socket. FRV8800 VHF CONVERTIBLE **£100.00** (118-174MHz direct read-out — plug in). FRVWFM **£49.00** (wide band FM unit).

YAESU FRG 9600 £499.00

All-mode scanning receiver providing features never offered before covering 60 through 905 MHz continuously, with 100 keypad-programmable memory channels.

IC-R71E HF Receiver £855.00

100kHz-30MHz CW/SSB/AM/RTTY/FM (optional). Direct frequency entry. 32 memories. Scanning. Remote control and 12 volt d.c. option.

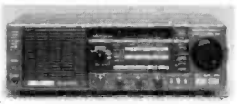
IC-R7000 VHF/UHF £989.00

Continuous coverage receiver. 25MHz-2000MHz. FM/AM/SSB modes. Direct frequency entry. 99 memories. Scanning, remote control option.

KENWOOD ICOM

KENWOOD R5000 £875.00

The frequency range is continuous from 100kHz to 30MHz and its modes of operation are USB, LSB, CW, AM, FM and FSK. An optional VHF converter (VC20) extends the frequency range to include 108 to 174 MHz.



R2000 £595.00

This is an innovative all-mode SSB, CW, AM, FM receiver that covers 150kHz-30MHz. With an optional VC-10 VHF converter unit, coverage of the 118-174MHz frequency range is possible. New microprocessor controlled operating features and an "UP" conversion PLL circuit assure maximum flexibility and ease of operation.

* NEW SONY * NEW SONY *

ICF PRO 80

£299.00

- Super-wide coverage (PRO80 – 150kHz-108MHz plus 115.15MHz-223MHz; PRO70 – 150kHz – 108MHz**
- Pro-feel 8-way tuning system
- 40-station random preset memory
- 2-position AM selectivity
- SSB and narrow FM reception*
- Squelch controller (auto & manual)

ICF 2001D

£299.00

Super-wide coverage (150-29999.9kHz, 76-108MHz, 116-136MHz) with the versatility of both digital and "precise-feel" analog tuning. There's also two types of scan modes, either auto-stop or 1.5-second hold. 2-position AM selectivity, AM RF-gain control, AM attenuator, 3-position tone control, direct meter band access, 4-event programmable timer and SSB* reception. Plus an external antenna for AM, FM and AIR Band. In short, everything an enthusiast could ever want in a high-performance receiver — and can only get from Sony!

ICF 7600DS

£159.00

Direct access digital keyboard and large, easy-to-read LCD Multi Display. Advanced quartz-locked PLL-synthesizer. With the memory preset, you can select one of your 10 favourite stations at the touch of a button. There's also auto-scan or manual tuning with the up/down keys. A sensitivity select switch for all bands, from 153 to 29995kHz and 76 to 108MHz, plus SSB fine-tuning reception, 2-position tone control, a built-in clock and timer, a sleep switch.

AIR 7

£229.00

- AIR band/FM/AM reception
- Compact, hand-held design
- Quartz PLL-synthesizer digital tuning
- Microprocessor control of direct, scan, present tuning, plus the program, priority and delayed scan functions for AIR band
- 30-station preset memory (10 per band)
- Front-panel oval speaker
- Rubber-booted helical antenna
- Carrying belt and earphone

AIRHANDY SKYVOICE REAL VALUE AT £129.00 carriage £3.00
(KE-3000), airband monitor 118-136MHz/AM720 channels
VHF HANDY RX super low price £99.00 carriage £3.00
A lightweight but tough little monitor receiver 141.00-179.99MHz with accessories
HX850E REGENCY new low price £179.00 carriage £3.00
20 Channel memory AM/FM selectable scanner 60-89MHz, 118-136MHz, 140-174MHz, 406-495MHz
AR900 VHF/UHF AIRBAND H/HELD SCANNER £235.00 carriage £3.00
AR800 VHF/UHF £199.00 carriage £3.00
Handheld scanner 75-105, 118-174 406-495 830-950MHz.

NEW LOWE HF-225 £395.00 carriage £5.00
Coverage is continuous from 30kHz to 30 MHz and operating modes are AM, USB, LSB and CW with an optional FM and synchronous AM board. A comprehensive range of bandwidth filters are standard: 2.5, 4, 7 or 10kHz. There is a 400Hz audio filter for CW reception. Controls are very simple and the frequency tuned is displayed on a large back-lit liquid crystal display. Power requirements are 12V d.c. at around 250mA and internal NiCad batteries give around 10 hours portable operation. The lithium battery gives back-up for the 30 memories for some ten years.

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whole object of defining which way round to give callsigns is to avoid confusion; so the last callsign mentioned is always (in theory!) the one whose voice you are listening to. Partial calls of course are again the rules of any licence in any country, but there does seem to be a campaign among the columnists over this so perhaps it will go away.

A. G. Duck (Birchington) it will be recalled uses a Matsui receiver; however, he is seriously limited in the antenna line of country and has to try such things as window-frame mountings, and hope that something will prove to give adequate coverage. In such a situation it is probably a good idea to get hold of a great-circle projection world map based on London - an old one will do for this purpose - and to stick pins in representing all the stations heard. If one takes care to arrange one's listening periods over a month such that the whole 24 hours of a day have been looked at, then the flags in the map will give a fair idea of the favoured directions. When a new antenna is tried the exercise can be repeated and results compared. A suitable map was presented with this magazine back in the April issue, and a printshop could run off several copies. You could then do an exercise on the map for each band which might be very interesting. After all, you can lay a fine signal lobe into a blank lump of ocean, but you won't hear many amateur radio stations there!

DECODE

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

Thank you all for supplying a bumper postbag this month - it's good to know that the column is read!

Interference Solution

Just for a change this month, I have a solution rather than a problem for you.

Rob Innes of Harwick is a keen utility listener who uses a Spectrum +2 computer running RX4 software from Technical Software. The problem he encountered was quite severe interference, which was making monitoring rather difficult to say the least. The source of the interference was identified as the connection between the computer and the television.

For those of you who may not be sure how to isolate the interference the process is quite straightforward. It's simply a matter of operating the system with various items disconnected. For example, to establish if the interference is coming from the connection between the computer and the television, you first set the system up as normal and note the level of the interference. Next you switch off the equipment, remove the lead between the computer and the television, then switch on the equipment again. If this lead was causing the interference you will find that the interference level will have reduced significantly.

Anyway, to get back to Rob's case, having isolated the source of the interference a cure was the next problem. For this Rob referred back to an earlier case where I had suggested that feritte beads can often prove useful in these cases. Having searched the junk box the only ferrite that Rob could find was some ferrite rings and a length of feritte rod. The rings were tried first, but unfortunately the plug on the computer to television lead was too big to fit through the hole. The next stage was to try winding the lead around the ferrite rod. You can imagine Rob's delight when he discovered that this significantly reduced the level of interference. Being a true experimenter he was not content to stop at this point, so decided to see if he could reduce the interference still further. He consequently discovered that the interference virtually disappeared when the rod was about three quarter way in. An alternative would be to gradually unwind the lead from the rod until a point of minimum interference was reached.

So, as you can see from this example, solving interference problems is not necessarily a high tech process and it is well worth trying a few simple solutions.

If you have had any successful experiences solving interference problems, please drop me a line with the details so I can pass on the good news.

Readers Letters

Ivan Chadwick (1) of Wakefield writes with several points. The first concerns software for the Commodore C64, where Ivan has a number of programs for radio associated purposes such as distance, antenna and c.w. decoding. The programs are not for sale as such, but he is very happy to send out copies, providing you include a 5.25" or 3.5" disk and full return postage. I have included his address at the end of the column.

Ivan has maintained a keen interest in radio for many years, but has only recently combined this with his interest in computers to explore the world of utility monitoring. The current equipment line-up consists of a Trio R-1000 receiver which is fed by a modified Datong AD270 active antenna - the mod enabled the use of a vertical whip as opposed to a small dipole. Decoding is achieved with the popular RX4 program and TIFI interface from Technical Software. Ivan reports very good results from this set-up, including reliable reception of c.w. up to 40 words per minute.

One other piece of equipment in regular use by Ivan is a Datong FL3 audio filter. Ivan is very complimentary of this item and finds it invaluable for utility monitoring, as interference from adjacent stations can easily be reduced to a minimum. I have not used one of these filters myself, but I know of several people who use them and they all find it very useful.

To prove that his station is really effective, Ivan has sent in a selection of his recent loggings which have now been included in my main frequency list.

David Raybould has also sent me some interesting loggings which have been received using his Icom R-71E receiver and Spectrum computer. One interesting point about his station is that he has incorporated an audio amplifier between the receiver and computer to boost the low level "fixed" output from the Icom. Rather than try and locate a purpose built amplifier, David has used his ingenuity and utilised an old portable radio. This apparently was quite easy to do by removing the r.f. circuitry and feeding the receiver audio in to the volume control of the portable radio. The output is then taken from the main speaker lead of the portable radio.

If you have any unusual or innovative ideas such as David's, please drop me line with the details.

Peter Lee of Acrington is comparatively new to utility listening and uses a Trio R-1000 receiver, Amstrad CPC464 computer and software from J & P Electronics. Peter has achieved some success and I'm sure this will improve with time - there's is no real substitute for experience. One area where Peter would like to experiment is FAX reception, but unfortunately he hasn't been able to locate a source of FAX software for the CPC464. So if anyone out there can help, let me know and I will pass the information on to Peter.

Eric Jones of Bolton currently uses a Japan Radio NRD-525 receiver for his short wave listening and would like to be able to decode utility stations. His first choice would be to use the optional decoder that can be fitted to the NRD-525, but he has no details. Well, I have done some investigating and the RTTY adaptor for this receiver enables the decoding of 45 and 50 baud signals using shifts of 170Hz, 425Hz or 850Hz. The output is presented in the form of a standard Centronics printer port, so is designed for direct hard copy, which can of course be rather wasteful of paper. The terminal unit in the RTTY adaptor is of the filter type so the performance should be good.

So, the choice is yours Eric but if any readers have experience of this decoder I would be pleased to hear from them.

Leo Barr of Silksworth is a teacher at the local comprehensive school and together with the Head of Science have aroused an interest in utility monitoring for use in the Information Technology section of the National Curriculum in Science. At present they are using a Matsui MR4099 receiver and an ERA Microreader decoder, though they really need a larger display for use in the classrooms.

An obvious question from Leo is - what types of RTTY signals can he legally receive. This is always a tricky point, though the Wireless Telegraphy Act is quite clear, the key statement being that you may only intercept or receive transmissions that you are authorised so to do. Looking on the positive side, it means that you can listen to anything provided you have been given authority!

As a school, you should not find it difficult to obtain permission from organisations like the Weather Centre at Bracknell. It may well be worth contacting the American Embassy to see if they can give you written authority - especially in the light of their freedom of information acts. The press agencies are perhaps a little more difficult, but if you write to the stations using the addresses I print in the column from time to time, you may well find that you can get authority, provided you can give assurances that the information will not be used for profit.

Robert Dashwood of London made me green with envy when I read his letter giving details of his new station! The set-up is of the standard that most of us can only dream of. The receiver is the new Icom R-9000, which is a very impressive piece of kit, this is fed by a G5RV antenna and an ATU-1000. For utility decoding, Robert has an AEA PK-232 intelligent terminal unit and a Wavecom 4010 decoder! His only complaint being that a set-up of that complexity is not simple to drive, so he is currently negotiating a very steep learning curve.

Mr A. Lindsay has recently started utility monitoring using a Trio R-2000 receiver with a CD660 decoder. The antenna is currently a Datong indoor active unit, which apparently performs very well. Mr Lindsay is suffering the problem that besets most newcomers - that of matching the decoder settings with that required to demodulate the signal. Fortunately help is at hand in the form of the cassette tape available from *Short Wave Magazine*. This tape was launched in the October issue and contains a selection of interesting audio signals on side one whilst side two is of particular interest to the utility enthusiast. Although most of the signals are of amateur standards, they are very useful for checking out your equipment and generally familiarising yourself with the controls.

Schedules and QSL Addresses

I have received several letters this month asking me to include more QSL addresses in the column so who am I to argue!

Paramaribo Radio is part of the National Information Service of Suriname. One of the frequencies used is 13.046MHz where they transmit c.w. (A1A) running 5kW output into an inverted cone antenna. The callsign of this station is PZN4

SEEN & HEARD

and the QSL address is: PO Box 1139, Grote Combeweg 5, Paramaribo, Suriname, South America.

Next we have the American Naval Western Oceanography Centre. This station operates from Hawaii and transmits a variety of weather information including FAX. The QSL address is: Naval western Oceanography Centre, Pearl Harbour, Hawaii

Einar Sandoz from Reykjavik, Iceland recently managed to QSL with Pakistan Naval Radio in Islamabad on 19.473MHz c.w. The QSL comprised a simple card and a separate letter thanking him for the report. They obviously appreciate listeners' efforts. The address for this station is: Directorate of Signals, Operations Division, Naval Headquarters, Islamabad, Pakistan.

A popular news agency is the Sudan News Agency who operate on 19.463MHz using 50 baud RTTY with a 425Hz shift. The transmitter power is 10kW and this feeds a log periodic antenna with horizontal polarisation. This station is known to QSL and the address is: Sudan News Agency, PO Box 1506, Khartoum, Sudan.

For weather enthusiasts the NOAA National Weather Service has a FAX station in Alaska. The FAX frequencies used are 4.298 and 8.459MHz. The transmission times are 0400, 1000, 1800 and 2200UTC on Mondays, Wednesdays and Fridays. The QSL address for this station is National Weather Service, Attn. Official In Charge, Box 37, USCG Base, Kodiak, AK99619, Alaska, USA.

Another interesting FAX station is the Canadian Forces unit in Vancouver. This station operates FAX on 4.268, 6.456 and 12.125MHz. The transmission times are 0245 (schedule), 0300, 0310, 0320, 1925, 1030, 1040, 1050, 1100, 1110, 1230, 1235, 1245, 1515, 1520, 1530, 2115, 2120, 2130, 2140, 2150, 2200, 2210, 2220 and 2230. The QSL address is Canadian Forces Vancouver, Attn. Chief Supervisor, Box 4000, Aldergrove BC, VOX 1AO, Canada.

The last lot of station details for this month is another FAX station. This one operates FAX on six frequencies, 3.6225 (JMH), 7.305 (JMH2), 9.97 (JMH3), 13.597 (JMH4), 18.22 (JMH5) and 22.77MHz (JMH6). The transmission times are shown here, but only those marked with * transmit every day.

0110, 0209*, 0220, 0310, 0320*, 0410, 0430*, 0529, 0551, 0602, 0621, 0640, 0710, 0729, 0810, 0849, 0910*, 0920, 0949, 1010, 1030*, 1110*, 1120*, 1135*, 1146*, 1310, 1510*, 1520, 1610, 1630*, 1731, 1753, 1910, 1949, 2049, 2110*, 2120, 2230*, 2318 and 2330. The QSL address is Japan Meteorological Agency, Forecast Department, Attn Head of the Office of Internal Communications, 1-3-4 Ote-machi, Chiyoda-ku, Tokyo 100, Japan.

Frequency List

As usual, my frequency list can be obtained by sending three first class stamps to the address at the head of the column. I'm always interested to hear of other peoples equipment and achievements, so when you write asking for a list, why not include a few details - you may even get a mention in the column.

The frequencies I have for you this month have been sent in by Einar Sandoz, **Jan Nieuwenhuis**, Ivan Chadwick and **Eric Sillick**. The format is the usual frequency, mode, speed, shift, callsign, time and notes.

9.91MHz, RTTY, 50, ?, ?, 1624UTC, Bracknell

19.171MHz, RTTY, 50, 425, ?, 1635UTC, Rabat

12.212MHz, RTTY, 50, 425, ?, 1400UTC, Tanjug

7.625MHz, RTTY, 100, 425, HZN47, 0400UTC

18.279MHz, ARQ, 100, 170, HBD28, 1400UTC, MFA

20.56MHz, RTTY, 50, 425, ?, 1600UTC, Jana, Lby

15.923MHz, FAX, 120, 576, NPO, 1528UTC

20.085MHz, RTTY, 50, 425, ISX20, 1500UTC, ANSA

INFO IN ORBIT

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

During the last few weeks I have received a large volume of information from readers and organisations so what can't be fitted in this month will be kept for next!

Cables

Last month I summarised the types of antennas used for satellite reception. Whatever type is used the received signal is quite weak compared with many terrestrial signals and it has to be fed to the receiver which may be several metres away. I use the low-loss H100 or UR67 cable to carry the signal from my roof-top 137MHz crossed-dipole down the 18 metres into my scanner.

Originally I fitted a pre-amp at the antenna to add some 10dB of gain to compensate for cable losses. However, when the radio paging systems were introduced they caused havoc with my pictures so I removed the pre-amp and also had my receiver modified by Dartcom leaving reception to be as good as I want. Attenuation losses at these frequencies are not excessive and with a sensitive receiver you should have a good signal with up to some 20 metres of quality cable. You can get away with the cheaper UR43 cable, indeed I use it on my second 137 MHz antenna, but you can't do better than to use the best.

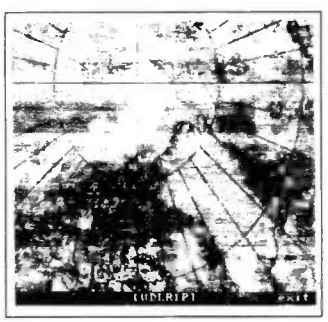

Fig. 1

Connectors

This was my first real problem when I needed to connect cables to the equipment. I followed recommendations and bought N plugs. Many years ago I was regularly assembling N plugs used on various professional installations - using instructions supplied with the plugs. In recent years I have found it almost impossible to get such instructions. So do remember, when you buy these connectors, confirm that there is a proper diagram included in the packet - unless you are an old hand at the process.

Be aware that there are various makes of N plug some of which are good quality and include instructions so I have gradually replaced my own makeshift assemblies with properly assembled units. At 137MHz you will find u.h.f. connectors acceptable and of course they are a doddle to construct.

When you go up in frequency to Meteosat and GOES which use 1691MHz you must use the best cables and connectors. At such high frequencies the losses in the thinner cables are big. Next month I'll include some notes on pre-amps.

Shuttle frequencies

Pat Gowen G3IOR sent me a computer print-out which originated from Fidonet and was forwarded to Pat by Nigel G1ULA. I have had a number of requests for details of shuttle transmission frequencies which I promised to try to locate so thanks to Pat for this listing:

Frequencies in kHz.
2622 6693 9042 13277
2678 6708 9132 13600
3850 7461 10780 14397
3860 7675 11205 14896
5180 7910 11407 20186
5190 8972 12160 20197
5350 8981 12277 20198
5810 7765 13170 20390

TV satellites

Pat also sent me a note about problems with the Astra TV satellite that happened in August. Apparently nearly every Astra channel needed re-tuning when some frequencies and signal polarisations were changed - whether by design or accident Pat is uncertain. He comments that he was able to make the necessary adjustments to his own satellite TV system but his pensioner friend nearby couldn't do anything about it. Order was restored a little later!

Letters

Brian Pemberton writes from Merseyside to tell me that he has recently bought the Maplin antenna, receiver and decoder kit and is looking forward to completing its construction. He also has an Atari ST computer and so will be able to use it to plot satellite tracks using suitable software. Brian also asked me a number of questions which could be of interest to new satellite enthusiasts.

Kepler elements

Brian asks how often these are produced. They result from radar measurements at various ground stations made on a regular basis. While working as a satellite controller with UK6 and other spacecraft we received Keplers from NASA (Minitrack) once per week and they enabled us to calculate the precise times that a satellite would be visible from our ground station.

Keplers for the most common satellites ie the amateur and weather ones are generally available in various publications. Our *Practical Wireless* magazine includes them in alternate months. The Remote Imaging Group publish weather satellite elements sent by Max White of the Royal Greenwich Observatory, and other elements are available from other groups. This data is also freely available on various satellite bulletin boards. Those who decode the University of Surrey satellite UoSAT-2 telemetry will be able to collect several element sets and this is usually where I get mine from. This data is also received from RGO. Occasionally when I am keen to get the latest available I contact my friend Des Watson who has access to a bulletin board. The free transfer of information between amateurs and professionals is a mutually beneficial one.

MIR

Activities have once more started on MIR and Pat Gowen writes that the new two man crew used a new type of Soyuz TM-8 for transport to MIR and they are to stay for six months. Telemetry from TM-8 is on 166.138 MHz with voice on 121.750 MHz NBFM. Other frequencies for MIR

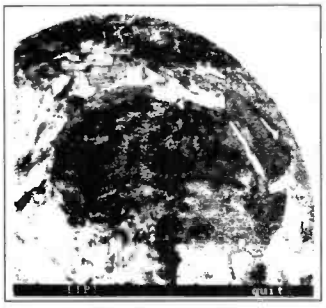

Fig. 2

DEWSBURY ELECTRONICS

G4CLX

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SWISS MADE BY POLY-ELECTRONIC

Communication decoders

AFR-1000 Automatic CW-RTTY Decoder

The microprocessor-controlled POCOM AFR-1000 CW-RTTY Decoder automatically processes radio teletype signals in accordance with **Baudot No. 1 and No. 2, ASCII, ARQ/FEC (SITOR/SPECTOR/AMTOR) and CW (Morse telegraphy)** standards and corresponds to the latest state of the art. The AFR-1000 Automatic Decoder is remarkable for its value for money. Its moderate price makes it particularly suitable for the cost-conscious RTTY beginner. Unlike the other models in the AFR series, however, it cannot be upgraded for special codes.

FEATURES

- *Fully automatic recognition of CW, ARQ-FEC and BAUDOT No. 1 and No. 2 teletype signals with automatic decoding, independently of the shift position.*
- *Baud rate analysis in the range from approx. 30 to 250 bauds.*
- *Extremely fast phasing of ARQ-FEC signals (Typical: 1-5 seconds).*
- *Special narrow-band quadrature discriminator for all usual LF shifts of 50-1000 Hz and CW Morse telegraphy.*
- *Swiss technology and quality — 1-year guarantee.*

The **POCOM AFR-1000** is extremely easy to use and very simple to operate. The **AFR-1000** is simply connected to the loudspeaker outlet on the shortwave receiver. Operation is confined merely to choosing the mode required. No tiresome testing of the baud rate and shift position. Two LED's indicate the active operation states in each case.

The baud modulation rate measurement facility is a complete new innovation in a unit in this price range. Knowledge of the baud rate permits reference to special codes, specific radio services, etc., and makes it possible to shed light upon a radio teletype signal. The display is provided on the screen or printer linked to it to 1/1000 baud (e.g. 96.245 bauds) with quartz accuracy and within a measuring range of approx. 30 to 250 bauds.

STOP PRESS

HF-VHF PACKET RADIO DECODER
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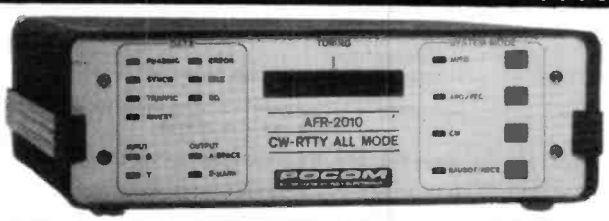
AFR-2010 All Mode CW/RTTY Decoder



The technology of models AFR-2000 and AFR-2010 meets the highest demands. Their exceptional value for money will not be so easy to obtain in the near future. By choosing one of these units, you will be deciding in favour of the latest receiver on the market — enabling you to receive more and do less setting! Teletype reception has never been so easy!

The SW-reception system of the future on professional level for the serious DX-er!

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PFC-100 FEATURES:

Nonvolatile memory for 100 complete operation settings — all functions can be programmed from the keyboard — versatile timer functions (on/off); 6 outputs can be switched separately — automatic memory channel and frequency scan modes with freely definable parameters — frequency offset mode for converter usage — alphanumeric liquid crystal display — intelligent selftest functions — 6KByte user ram, 16KByte operating program — low power consumption 8 Bit CMOS CPU — easy software adaption for future modifications — developed and manufactured in Switzerland by Poly-Electronic.

The efficient monitoring of the complete SW-range calls for the use of modern receivers which should offer a large amount of operating comfort. Recently good receivers such as the popular ICOM R-70 and the JRC NRD-515 have become available on the market, but they lack the optimal microprocessor-supported operating possibilities. These requirements are fulfilled by the intelligent programmable frequency controller POCOM PFC-100 from Poly-Electronic.

The use of up-to-date circuit technology contributes to the class of this innovation which meets the highest demands of all active SW-listeners. Together with one of the two receivers (ICOM/JRC) the PFC-100 permits an unsurpassed degree of operational ease due to the consequent use of a microprocessor and comfortable software.

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Access

include 166.125 and 166.170MHz. Thanks once more to Pat for a variety of interesting data, and I look forward to Pat sending a picture of himself at his QTH for inclusion in this column?

Voyager 2

No-one looking at the pictures from Voyager 2 could fail to be impressed by the outstanding quality of the images transmitted over a distance of some 2 billion miles. Lucky Jason Semmens, a member of the Plymouth Astronomical Society, was invited to be present at the Jet Propulsion Laboratory during the encounter. He was the winner of a competition last year in the New Scientist and the trip to JPL was the first prize.

Dishes

A letter from **Bill Crozier** G1VEH of Liverpool (he actually lives just along the road from where I was born) has given me an idea. He writes to say that he has been receiving satellite pictures for over two years using a Spacetech receiver, decoder and antenna plus a BBC computer. He has just purchased a Maplin downconverter but doesn't yet have a dish. Although I built my own first dish it still cost me about the same as the one that I later bought from Dartcom - which was rather better made! A home-made Yagi could be an alternative.

Recordings

Bill asked me to send him a tape recording of Meteosat data for which he enclosed a pre-paid package. He wanted to see if he could decode the tape using his equipment. I recorded signals from both Meteosat and GOES-E for Brian and trust that all went well. This raises a couple of points. Firstly, remember that most cassette recorders have a built-in a.l.c. (automatic level control) which will tend to reduce the number of grey levels present in the signal. This problem is easily overcome by fitting a suitable potentiometer across the input to reduce the signal level to below the a.l.c threshold. By experimenting with various settings you can find a suitable position which gives the maximum detail from recorded images.

Secondly, I shall be happy to do this for those of you that would like to see Meteosat and GOES data on your own system. Just send me an audio cassette in a pre-paid envelope and allow several days. I would appreciate your enclosing details of your current system together with any pictures that you have taken for publication in this column.

Weather Satellites

A note sent to me from **Geoffrey Falworth** gave August as the likely launch date for Okean2 but so far I haven't heard any transmissions. Meanwhile NOAAs 9, 10 and 11 continue to transmit as usual. NOAA 9 is off for a few days in mid-September while passes coincide with NOAA 11. They both transmit APT data on 137.62MHz. NOAA 10 uses 137.50MHz for APT data.

Whenever you wish to test a newly-built receiver or antenna system you can leave it on either of these frequencies because the satellites transmit throughout their orbits, visible and infra-red pictures in daylight, and water vapour and infra-red pictures in darkness. The night-time pictures will be of interest to Brian Pemberton, mentioned earlier, who wanted to know whether he could receive them on his system. If he can tune into 137.50 or 137.62 MHz then yes.

Special controls

If there is a "black-level" control on the decoder then this should be adjusted for the infra-red pictures to get the best results. If this control is not provided then the infra-red pictures may show fewer grey levels.

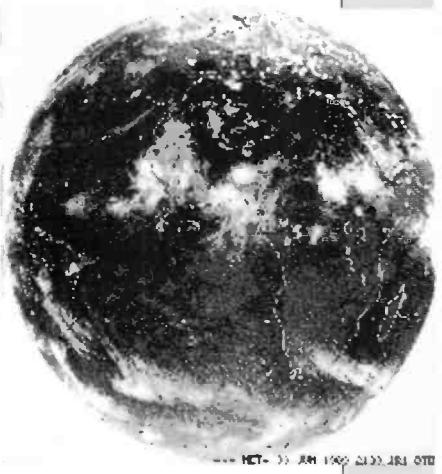
Russian Meteors

The Russian Meteor satellite series includes 2/16, 2/17, 2/18 and 3/2. Met 2/18 remains on 137.30MHz transmitting visible APT data only and is off in darkness. Met 2/17 is on 137.40MHz and is now back on after a period without transmissions. For much of August it was off although I heard one isolated pass on August 20th at 1554UT but then it was off until switched back on in early September. It is not now transmitting slow scan infra-red (SSIR) pictures. Met 2/16 also uses 137.40MHz and has continued to transmit SSIR pictures when in darkness.

Met 3/2 is transmitting pictures on 137.85MHz and remains in an unpredictable mode (mood?). It is providing good pictures with very good quality infra-red during some nights. On the evening of September 4th it was on, then it was off the next evening and then back on the following day! So you may hear it on some passes and not on others.

Fig. 3

Fig.4



Meteosat and GOES

I have a tendency to simply gaze in wonder at the pictures from Meteosat. The signal is good and transmissions are regular allowing me to record the signal while I am absent. I use an electronic timer to switch the tape recorder on and off. This way I have been monitoring the Amazonian rain forest region, and it is very useful with GOES because the transmission times are not always accurate.

I have recorded some good pictures of the polar regions, those transmitted at 0745UTC. (See Fig 1.) While talking with Reverend James Brown who is an experienced satellite listener he asked me if I had noticed the improvement in the signal strength from GOES-E during the mornings. I hadn't noticed but of course he was correct. The quality had improved and this lasted for several days but it seems to have reverted again.

GOES users will have noticed that some pictures collected from the GMS satellite and then re-transmitted via GOES-E contain what seems to be corrupted data. The pictures of Australia are usually streaked. I don't have any details about the cause of the fault but Reverend James Brown and I swopped notes on this - I think we were pleased to hear that someone else had noticed it!

The screen dump shown in Fig. 1 is of the north pole taken in early September and the polar ice cap shows up quite well though I can't account for its shape! The picture originates from NOAA 11 and was broadcast from GOES-E in the 0745UTC slot previously mentioned.

Fig 2 is a screen dump of a section of the whole disc seen by Meteosat-4 last June. It shows Africa very clearly with clouds in black and oceans in white to avoid damaging the printer ribbon.

Fig 3 shows the August hurricane which fortunately didn't reach the UK. It is from Meteosat-4 using the visible C1D format.

Fig 4 is a picture of DTOT the Meteosat infra-red format of the whole disc. I added shades of pink to highlight warm (African) regions and blue for the oceans, leaving the clouds white but I'm afraid you'll have to take my word for that!

BAND II DX

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

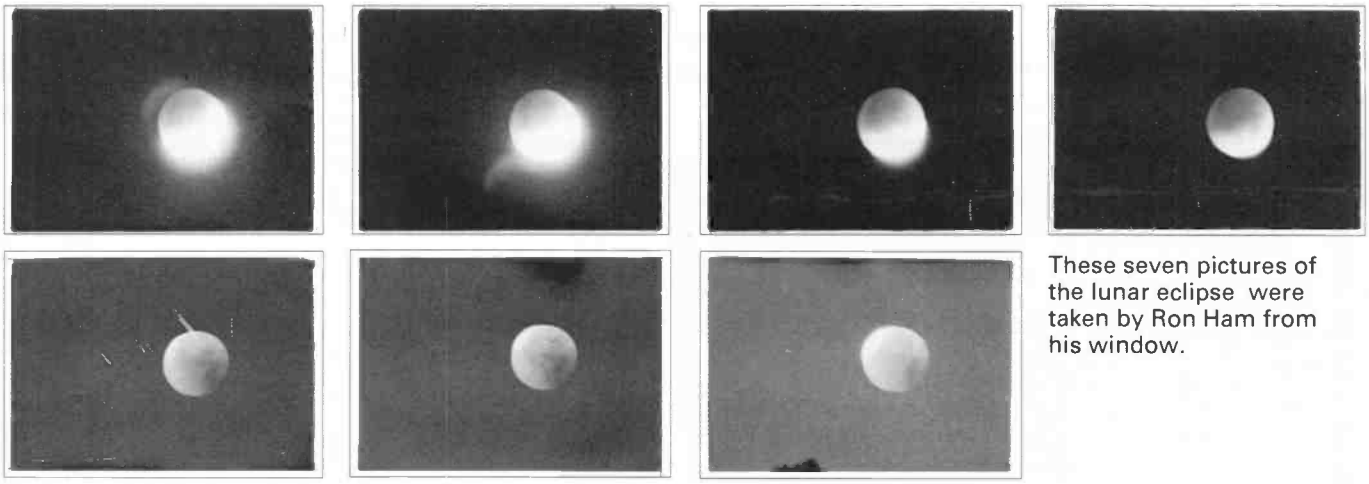
The Eclipse

At 0130UTC on August 17, the sky was clear and the brilliance of the almost full moon was illuminating the view of the South Downs from my office window at home. I say almost because *The Handbook of the British Astronomical Association* gave it as full at 0307. So what, you may think, why all this accuarcay, well, the 1989 handbook also states that a total eclipse of the moon would begin at 0121 and end at 0455 and that totality would last from 0220 to 0356.

We can read about the precise calculations of our planetary system, but, it's even better to actually see it happen, especially if the time is right to watch it from your own armchair. The moonlight gradually declined as the eclipse moved toward totality and, at about two thirds cover, I saw a lunar halo in the earth's atmosphere, a couple of random meteor trails and the stars of the "nearby" square of Peagasus became more brilliant as the moon's light reduced.

Apart from the glow of my video recorder's clock, I sat in total darkness in front of my window which, for this event, became a giant cinema screen and as totality began, my clock said 0220. At 0307 the full circle of the moon appeared like a very dull orange

SEEN & HEARD



These seven pictures of the lunar eclipse were taken by Ron Ham from his window.

glow and remained like that until 0356 when the earth's shadow moved just enough to allow a sliver of the moons full glory to re-appear at the top left. Meanwhile the planetary mechanics continued and while the moon was, for me, setting toward the west the sun was rising in the east and the sky background was getting brighter. Once again it was a case of being in the right place at the right time with clear skies because had the weather been bad none of this would have been seen. Incidently, a lunar halo usually precedes rain and by 0900 the weather pattern was intermittent black clouds and heavy showers. You can see this most graphically in the sequence of photographs shown here.

Reports Sporadic-E

In Arbroath on August 8, **David Glenday** was listening to BBC Radio 4 from Blackhill when suddenly it was swamped by Spanish signals. "Downstairs I searched through the band on my Sansui stereo tuner and found many Spanish stations, in stereo, up to 104MHz," said David. Later in the day he heard stereo f.m. from Eastern Europe in their broadcast band between 66 and 73MHz. I found six of these broadcast stations, at good strength, during a Sporadic-E opening at 1945 on August 18. In addition I heard television synchronising pulses, although too weak to resolve a picture, on Chs. R3 and R4 (77.25 and 85.25MHz). I heard pulses on Ch. R3 again, plus a dozen of the East Europeans around 1900 on the 31st.

Tropospheric

Conditions were good for DX on August 20 when **Simon Hamer** (New Radnor) logged BBC Radios Devon and Cornwall, Radio Ulster, ILR Downtown Radio (Belfast) and Ireland's RTE FM 1, 2 and 3. Next day he heard stations from the Benelux countries, both Germanys and Scandinavia and reports, "France all over Band II."

While the high pressure was falling early on August 30, I counted at least 10 continental stations plus a large number of inter-station and co-channel "warbles" throughout the band. French stations were still very strong at 1320 and 1601 when I was parked at different points in Sussex and tuned the band on my Plustron TVR5D with its own rod antenna. French signals, plus a few "warbles" were again prominent early on September 6 and I also heard three, using the Plustron, while parked under trees during the afternoon.

Mike Bennett (Slough) received very strong signals from The British Forces Broadcasting Service, in Holland, on 87.7MHz, during the mid-mornings of September 1 and 4. At 1940 and 1949 on the 7th, **Barry Bowman** (Prestwich), using a Realistic DX-400 receiver with its telescopic rod antenna, logged two Irish stations at good strength around 100 and 104MHz respectively.

With a large elongated area of high pressure (30.5in) over northern-England on the 9th, **George Garden** (Edinburgh) considered conditions were right for a spot of DXing with his car radio up on Cairn O' Mounth. As expected, he found Band II more active than normal with BBC Radio York at full strength and a variety of different stations above 102MHz. He recognised Radios Clyde and Hallam and with patient listening to a football report which included many references to Preston North End and a spot of detective work with his frequency tables, he identified BBC Radio Lancashire from either the Winter Hill (1.8kW) or Lancaster (2.1kW) transmitters.

My thanks to **Andrew Jackson** (Birkenhead) for the info that the 0.25kW relay of ILR Signal Radio is located at Sutton Common and its antenna, beaming south west, is 460m a.s.l.

TELEVISION

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

A Special Day for David Glenday

"I had a splendid tour around Europe on August 10 - from the comfort of my amachair!" wrote **David Glenday** (Arbroath) and continued, "I checked Band I at 0940 and found teletext pages from Hungary, then test cards from Russia and Czechoslovakia, programmes in colour from regional networks in Yugoslavia, the ubiquitous Spanish TVE-1 progs and colour pics. from Austria before noon. In the afternoon I added test cards from Norway, Sweden, Poland and Denmark and teletext pages from West Germany and Estonian SSR. Also programmes from Portugal and Italy. This wizard bout of Sporadic-E continued into the evening with more of the above plus Switzerland. A total of 14 countries."

A Good Start for David Hunt

"The results on Band I I've had this summer have been staggering with over 40 days of Sporadic-E reception encountered," wrote **David Hunt** from Brighton. David, a recent newcomer to DXTV, used a D100 converter, fed by a discone antenna, into a Philips u.h.f. receiver and identified test cards and programmes from Czechoslovakia, Iceland, Italy, five of the Norwegian regionals, Poland, Portugal, Spain, Sweden, Switzerland and the USSR. He found that Spain and Sweden were the most regular countries that appeared between June and August.

Such reports readers are the rewards of patience so keep a look out for activity in Band I, especally around Chs. E2/R1 (48.25/49.75MHz), during the coming winter months.

Picture archives

Although the general opinion among TVDXers is that the 1989 Sporadic-E season was not a good one, several of you have produced some fine results with their receiving gear, video recorders and camera. On June 16 and 17, **John Woodcock** (Basingstoke) received Sweden's "KANAL1 SVERIGE" test card, Fig. 1 and the optic test pattern from the USSR, Fig. 2. **Lt. Col. Rana Roy** (Meerut, India) logged a programme presenter, complete with co-channel interference, at 0740 on May 26, Fig. 3 and a caption at 0743 on June 26, Fig. 4 from the USSR on Ch. R1. Also, at 1230, on May 26, David Glenday received the Leningrad TV test card from the Tallinn transmitter of Estonia SSR on Ch. R3, Fig. 5. Now take a close look at the top line and you will see the difference between this card and the one received by John Woodcock. Looking back to a couple of tropo-openings, David Glenday found West-Germany's Cuxhaven TV, on Ch. 24, "sitting on Scottish TV programmes from Craigkelly!!" on May 23, Fig. 6 and Rana Roy received a strong signal in Band III from Lahore TV on June 15, Fig. 7. While visiting Brisbane last November, **Norman Reynolds** G8YXL (London) noted that the Australian amateurs have a TV repeater (VK4RTV) with an output on Ch. 35 in the u.h.f. band, Fig. 8. He also saw their Special Broadcasting Services (SBS) which transmits on Ch. 28, Fig. 9 and is like a "super BBC2 type station" under the wing of the Australian Broadcasting Service. "It shows a lot of ethnic and minority intererest programmes and I found it most watchable compared with other channels," said Norman. I had the pleasure of meeting Norman, Fig. 10, when he visited the wireless exhibition at the Chalk Pits Museum, Amberley, Sussex in August.

Band I

I also had the pleasure of meeting **Edwina** and **Tony Mancini** (Belper) when they visited the museum during the summer. In addition to a tour of the museum's vintage wireless exhibition, we had an interesting chat about DXTV and their Grundig multichannel and multi-system television receiver, Fig 11. Between August 10 and 31, they received test cards or programmes from Czechoslovakia (CSTISR-P), Hungary (MTV Cartoons), Italy (cycle racing), Norway (BREMANGER and MELHUS), Poland (TVP1 clock caption), Portugal (PORTO), Spain

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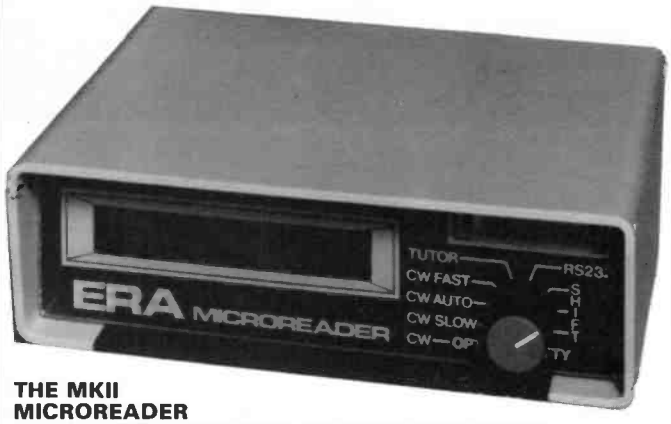

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WHAT IS A MICROREADER?

The Microreader is a small compact unit that allows anyone, equipped with a suitable SW receiver, to read Morse and radio teletype signals simply and without fuss. No computers, interfaces or program tapes are needed. Just connect the Microreader into the ear or speaker socket and switch on. It really is that easy. The decoded words appear on the built in 16 character LCD display.

The Microreader has all the necessary filtering and noise blanking included to allow reception even under bad conditions. This makes it suitable for use with lower cost or home made sets. Receivers such as the Lowe HF125/225 with their smooth tuning are ideal. Even the Sony 2001D with its 100Hz step size will still give very good results. A three colour bargraph tuning indicator makes precise station tuning simple, while shift indicators take the guess work out of RTTY.

The main processor in the Microreader is an Intel 8032 running at 12MHz. This makes it fast enough to not only decode and display the text but also to measure and diplay the frequency a few thousand times each second. It's even fast enough to use its own dictionary to check and correct the text even down to punctuation. The RS232 port in the Microreader can if you wish be used to send decoded messages directly to the screen of a terminal unit or suitable computer. If a permanent record (hard copy) is needed, then just connect it direcly to a compatible serial printer.

The Morse tutor can send and receive Morse. No more guessing what was sent at which speed. You see exactly what is being sent as it's sent and you may repeat it as many times as you like. The random characters are sent as ten groups of five characters with precise digital control over speed, spacing and type. Plug in a Morse key and see what your sending is really like. Even experienced CW operators find this feature extremely useful for showing up embarrassing keying faults (especially own name and callsign).

ERA Ltd. is a manufacturing facility and as such has no showroom. We do however accept personal callers who may like to find out more about the Microreader or try one on their own equipment without obligation. Due to limited parking during the week we must restrict this to Saturdays only, but please do ring us first.

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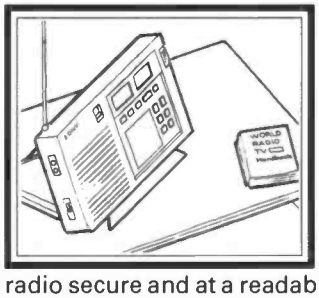

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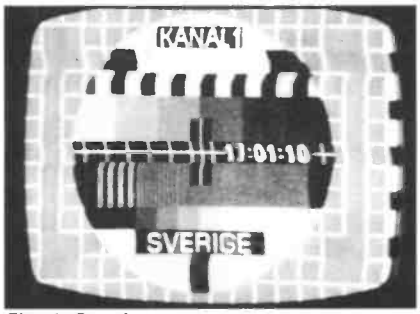

Fig. 1: Sweden

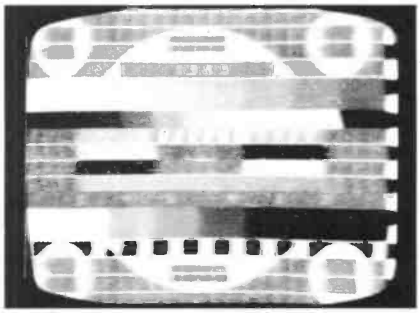
Fig. 2: USSR


Fig. 3: USSR

Fig. 4: USSR

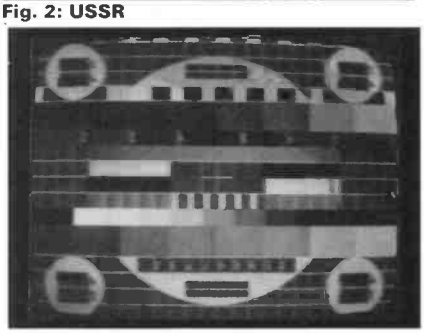
Fig. 5: Estonia

Fig. 6: W. Germany

Fig. 7: Lahore


Fig. 8: Australia

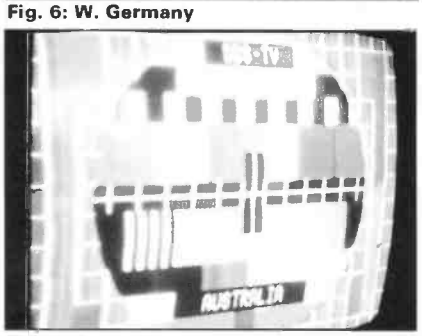
Fig. 9: Australia

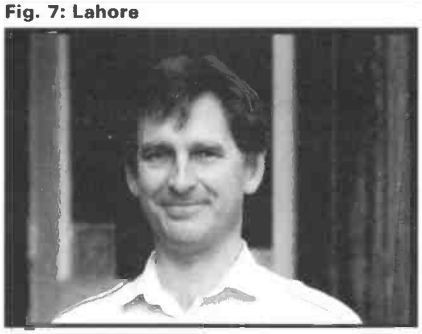
Fig. 10: Norman Reynolds


Fig. 11: The Mancinis

Fig. 12: SSTV

(TVE cartoon, John Wayne film, a nature programme and TELEDIARIO), Sweden (SVT KANAL1), USSR (Teletext and singing) and Yugoslavia (JRT1).

Simon Hamer (New Radnor) logged stations from France (TDF), Italy (RAI UNO), Portugal (RTP) and Spain's TVE 1 and 2 on August 14 and added Albania (RTSH), Austria (ORF), Czechoslovakia (CST), Greece (EPT), Hungary (MTV), Poland (TVP), Roumania (TVR), Switzerland (+PTT/SRG1 and +PTT/SSR), USSR and Yugoslavia (JRT) on the 18th, Iceland (RUV) and Norway (NRK) on the 19th and Estonia (ESSTI TV) and West Germany (ARD1) on the 23rd. Simon saw a distorted picture, possibly auroral, on Ch. R2 on the 24th and several of those already mentioned, via Sporadic-E, on days 25, 29 and 31 and September 4 and 8 and, possibly an 'F2' opening at 1200 on the 14th, when he found smeary unidentifiable signals on Ch. E2.

Jeremy Housman (Stourport-on-Severn), using a Salora multi-standard receiver and a 3 element wide-band antenna, reports that between May 6 and August 8, he received pictures from stations in Finland, Germany, Hungary, Italy, Norway, Poland, Portugal, Spain, Sweden, Switzerland, USSR, Yugoslavia and a number of unidentified signals. Among the latter was a programme about wildlife (June 5 and 15), a war film (July 12) and marine life (August 8), all with "TVZ" somewhere on the screen. David Glenday thinks this could be Yugoslavia (JRT TV Zagreb). Any ideas readers about the others Jeremy saw like "AOK" on June 12 and 16 and our old friend "ISR-P" on May 1 and 26, June 16 and 26 and August 10. "Dose anybody know the origin of "TVA" in the corner of picture, "ISR-P" TC -both on R1/2 and TVN5 on E4?" asks **Mike Bennett** (Slough). Between mid-July and August 10, Mike had a good haul from the north by logging test cards from Iceland (RUV ISLAND), eight Norwegian regionals (BAGN, BREMANGER, GAMLEM, GULEN, HEMNES, KONGSBERG, MELHUS and STEIGEN) and Sweden (KANAL1 SVERIGE). Other specials included the Spanish caption 'TV2 SOMBREMESA' and 'JRT RTV LC' and 'RTV1 LJUBLJANA' test cards and a Programme schedule 'TV1 ZAGREB' from Yugoslavia. Bob Brooks (Great Sutton) had similar results during that period and added test cards from Denmark (DR DANMARKS RADIO, also received by David Glenday on Ch. E10 on July 6.), Hungary (MTV BUDAPEST), Portugal (RTP LISBON) and Spain (TVE MADRID) and watched Ballet, cycle-racing, ice-skating, a Bob Hope film and news (TGI) from Italy, cartoons from Czechoslovakia, Italy and Spain, cycle-racing, folk-dancing, a John Wayne film, Hill Street Blues and news from Spain, football from the USSR, puppets from Sweden, Teletext (MTV) and logo (TV1) from Hungary, tennis from West Germany (ARD 1) and weather from Italy, Portugal and Spain. During the morning of September 11, Bob saw the opening clock caption and a film about coffee from Sweden and a test card and digital clock from the USSR. Among the captions and logos seen by David Glenday during the first half of August were "A.L.F.", "CETODHR BMNPE", "KEPUJSAG", "KIREK..KIREC..", "LJETNI PROGRAM", "MOCKBA", "PRAHA", "TELEINFO", "TELEVIZNI NOVINY", "TVNS" (Novi Sad), "TV1 VASARNAP" and "VIDEOTEXT FUR ALLE".

Early on August 6, **Barry Bowman** (Prestwich), realising there was Sporadic-E about, hurriedly coupled a 27MHz dipole to his Philips portable and received weak pictures from Spain's TVE1 for about 10 minutes, but later, between 1815 and

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1925, TVE was predominant and he was able to watch their news, weather and sport and the programme 'DOCUMENTOS TV' until that familiar Sporadic-E fade heralded the end of the opening.

Toward the end of a similar event at 1945 on August 18, I saw David Niven, in a balloon and part of the film "Around the World in 80 Days" on Ch. R1 plus the sound (56.25MHz), dubbed in a foreign language. A check at 1900 on the 31st, revealed fading pictures on Chs. R1 and R2 and weak sync. pulses on Ch. R3 (77.25MHz). John Woodcock saw an extract from the film Casablanca and a weather map from Spain's TVE1 at 1730 on August 14, cycle racing from Italy (RAI) at 1515 on the 23rd. I caught a glimpse of the NORGE (Hadsel) test card at 1025 on September 6 and John found weak pictures from Italy again at 1115 on the 9th.

Tropospheric

During the tropo-opening on July 29, Mike Bennett received pictures from Belgium and France in Band III and while the various openings were in progress from the 20th to the 25th, David Glenday logged stations in Belgium (BRT1&2), Denmark (TV2), East Germany (DFF2), France, many West German regionals, Holland (NED1,2&3) and Sweden (SVT2) in the u.h.f. band. John Woodcock received pictures from France on August 21 and September 5, 6, 8 and 10 and around 1700 on the 9th, George Garden (Edinburgh), using a 46 element antenna, received ITV's 'BORDER NEWS' in good colour, with sound, on Ch. 59 from the Selkirk transmitter. George said that it is unusual to receive this station so easily, with clear sound, because of the close proximity to the strong local signal of ITV 'GRAMPIAN' from the Angus Transmitter. I logged a strong negative picture in Band III while the high pressure was falling at 0920 on August 30 and at 1045 a strong test card from Ireland (RTE) appeared. This opening went on most of the day because, while using my Plustron TVR5D at Turners Hill and Wakehurst Gardens, Sussex, at 1320 and 1600 respectively, I received three very strong negative pictures from France in Band III. These, plus a test card from Belgium appeared again during another opening around 1030 on September 6 and two of the French stations were still strong when I checked the band, while parked under trees, later in the afternoon. The Mancinis logged a test card from Belgium (RTBF) on August 14 and a variety of programmes, including the film "Ghostbusters", from France (CANAL+) on days 11, 14, 21, 23, 26, 29 and 30 and September 1, 5, 6, 7 and 8. On several of these days they also received both networks from RTE.

Simon Hamer received "pings" of pictures in Band III, via meteor scatter, from Finland, Poland, Scandinavia and the USSR on August 16 and 17 and during the tropo-openings between the 18th and 22nd he logged idents, test cards and programmes in Bands III, IV and V from Belgium, France, Denmark, Holland including the AFRTS, Ireland (both networks), Luxembourg (RTL PLUS on Ch. E7 and the West German relay on Ch. E36), East Germany (DFF1) and the West German regionals ARD/WEST3, NDR1 and 3, Radio Bremen and WDR1.

David Glenday received a SAT.1 programme on Ch. E52 from an unknown German relay station during the tropo-opening at 2218 on July 6. "On the 21st, the tropo started to gain some real strength," said David who included the ARD+, RTL+ and SAT.1 relays in his u.h.f. haul.

Satellite TV

The Mancinis tell me that a new satellite, EUTELSAT 1, is active with a station called 'NORDIC' which they think is an offshoot from SVT because it transmits a PM5544 test card with 'NORDIC' at the top and 'SVERIGE' at the bottom. They found another station on this satellite called GUADALAJARA with typical Spanish programme content like GALAVISION which they believe is intended for the Spanish Islands. Edwina and Tony report that Germany's ARD 1 and Portugal's RTP are running test transmissions on INTELSAT VA and soon TELE RADIO VERONIQUE (TRV) and TV10 from Holland will be added to ASTRA's output.

SSTV

Those of you who listen for world-wide DX on the 14MHz band may have wondered about the strong "twittering" noises that often appear around 14.230MHz. That lads and Lasses is the audio pulses from a slow scan television transmission. Many of you already resolve these pictures by attaching a computer, with the appropriate software, to the audio output of your receiver and watch the pictures build up on screen. Most computers will store these pulses and, when required, a hard copy can be printed out, like Fig.12, reproduced by **Max Wustrau** G7BLH (Houghton Conquest).

Les Hobson G0CUI (Rotherham) now has 286 first-time s.s.t.v. contacts to his credit and during the last two weeks of August he exchanged 8 seconds pictures on 14.230MHz with 12 stations in seven countries, Austria, Canada, Hungary, Italy, Poland, Spain and Yugoslavia. "OE1HAB, a newcomer to s.s.t.v. was impressed with our QSO on s.s.t.v. with 16 secs and 32 secs b/w," said Les.

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Long Wave DX

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC.

The broadcasts on 254kHz from the new long wave station "Atlantic 252" in Clarkestown, S.Ireland have been attracting the attention of many listeners. In order to avoid interference to existing services on 254kHz in other countries, the operating schedule of this joint venture by RTE and Radio Luxembourg has been restricted to 0500-1800UTC daily. In addition, the power is being limited to 100kW at present, although the transmitter is rated at 500kW.

Since the commencement of their broadcasts in September some improvement in signal rating has been noted in many areas of the UK. Writing from Winchester, **John Coulter** says "Atlantic 252 has now blossomed into a very strong signal". The following extracts from the reports may provide some idea of the signal to expect in other areas of the UK: SIO 343 in Bridgwater by **Darren Beasley**; "very strong" in Malvern by **Edward Broadsmith**; SIO 444 in Wootton, I.O.W. by **George Millmore**; 44444 in Whitstable by **Neil Oakley**; SIO 344 in London by **Phil Townsend**; "very strong" in Cambridge by **Mike Smith**; 54444 in Leeds by **Chris Nykiel**; 33343 in Sunderland by **Leo Barr**; SIO 555 in West Kilbride **by Roy Hill**; SIO 444 near Pitlochry by **Stewart Russell**.

Although there was no mention of the transmissions from Atlantic 252 in the report compiled by **Neil Wheatley** while on holiday in Ibiza, he did receive the BBC R-4 broadcasts on 198, which are shared by Droitwich (400kW), Burghead (50kW) and Westerglen (50kW). While staying just outside Montreal, Canada **Tom Mansfield** (New Malden) picked up the 2000kW transmissions from Allouis, France 162 and Medi 1-Nardor, Morocco 171 around 0500. Both rated at S2, but no other signals were heard.

LongWave DX Chart

Freq kHz	Station	Location	Power (W)	DXer
153	Bechar	Algeria	1000	K*,5
153	DLF Donebach	Germany (W)	500	K,M,P,T,W,Y,Z,4
153	Brasov	Romania	1200	K*,M*,Z*
162	Allouis	France	2000	E,K,M,P,S,T,W,Y,4,5
171	Medi 1-Nador	Morocco	2000	5
171	Kaliningrad	USSR	1000	M*,T*,W*,Z*
171	Moscow	USSR	500	4
177	Dranienburg	Germany (E)	750	M*,P,T*,W*,Y,4
183	Saarlouis	Germany (W)	2000	E,K,M*,P,T,W,Y*,4,5
189	Motala	Sweden	300	M*,T*,W,4
198	Ouargla	Algeria	1000	5*
198	BBC Droitwich	UK	400	E,M,P,R,W,Y,Z,4,5*
198	BBC Westerglen	UK	50	K,S
207	DLF Munich	Germany (W)	500	M*,T,W,6*
207	Azilal	Morocco	800	M*,W*
207	Kiev	Ukraine	500	Z
216	Roumoules	Monaco	1400	E,K,M,P,T,W,Y,4,5
216	Oslo	Norway	200	M*
225	Konstantinow	Poland	2000	G*,M*,T,W*,Y*,4
234	Junglinster	Luxembourg	2000	E,K,M,P,T,W,Y,4,5
234	Kishinev	USSR	1000	W*
234	Leningrad	USSR	1000	M*
245	Kalundborg	Denmark	300	D,M*,P,T,W,Y*,4,6*
254	Tipaza	Algeria	1500	E,K,M,P,T,5,6*
254	Lahti	Finland	200	M*
254	Atlantic 252	S.Ireland	500	A,B,C,D,E,F,G,H,I,J,L,N,O,P,Q,R,S,T,U,V,W,X,Z,1,2,3,4
263	Burg (R.Volga)	Germany (E)	200	M,P,W,4
263	Moscow	USSR	2000	E,M*,T*
272	Topolna	Czechoslovakia	1500	E*,K,M*,T*,W,4,5*,6*
281	Minsk	USSR	500	M*,T*

Note: Entries marked * were logged during darkness. All other entries were logged during daylight.

DXers:-

A: Leo Barr, Sunderland.
B: Darren Beasley, Bridgwater.
C: Edward Broadsmith, Malvern.
D: Kenneth Buck, Edinburgh.
E: Andy Cadier, Folkestone.
F: Scott Caldwell, Warrington.
G: Jim Cash, Swanwick.
H: John Coulter, Winchester.
I: David Edwardson, Wallsend.
J: Roy Hill, West Kilbride.
K: Simon Holland, Douglas, I.O.M.
L: Cyril Kellam, Sheffield.
M: Matthew King, Hayes.
N: Dave Mayhew, Yapton.
O: Eddie McKeown, Co.Down. N.Ireland.
P: George Millmore, Wootton, I.O.W.
Q: Chris Nykiel, Leeds.
R: Neil Oakley, Whitstable.
S: Ike Odoom, Glasgow.
T: Fred Pallant, Storrington.
U: John Parry, Northwich.
V: Roy Patrick, Derby.
W: Philip Rambaut, Macclesfield.
X: Stewart Russell, Nr. Pitlochry.
Y: Mark Selby, Aldershot.
Z: Tim Shirley, Bristol.
1: Mike Smith, Cambridge.
2: Tim Swain, Tudweliog, N.Wales.
3: Darran Taplin, Tonbridge.
4: Phil Townsend, London.
5: Neil Wheatley, while in Ibiza.
6: Max Wustrau, Bedford.

MW Transatlantic DX

Writing from Wakefield, **Mark Thompson** says he lost a good deal of valuable listening time because his room had to be re-decorated. He extended the random wire antenna used for transatlantic DXing so that it could be connected to his JRC NRD 525 receiver in another room, but the change resulted in an increase in the pick up of local electrical interference. Although he spent some time searching for signals from Canada and the USA he was unable to hear a trace of them and came to the conclusion that the conditions must have been poor. His suspicions were to some extent confirmed when he picked up the broadcasts from Radio Globo in Rio, Brazil on 1220 at SIO 333 around 0430, because he has noticed that when this station is heard fairly well the signals from N.America seem to be scarce.

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Local Radio DX Chart

Freq kHz	Station	ILR BBC	Power (kW)	DXer
585	R. Solway	B	2.00	G,S,V
603	Invicta Snd(Coast)	I	0.10	C,H,J,V,X
603	R. Gloucester	B	0.10	E*,J,W,X
630	R. Bedfordshire	B	0.20	F,H,J
630	R. Cornwall	B	2.00	L,S,U
657	R. Clwyd	B	2.00	D,G,J,L,M,V,W,X
666	DevonAir R	I	0.34	H,J,L,U,X
666	R. York	B	0.80	F,G,H,J,M,P,V,X
729	BBC Essex	B	0.20	C,J,L,O,R,V,X,Y*
738	Hereford/Worcester	B	0.037	E*,J,V,W,X
756	R. Cumbria	B	1.00	F,G,P,V,X
756	R. Shropshire	B	0.63	E*,J,L,V,W,X
765	B C Essex	B	0.50	C,E,F,J,L,R,V,W,X,Y*
774	R. Kent	B	0.70	C,J,L,R,X
774	R. Leeds	B	0.50	E,F,J,M,P,V
774	Severn Sound	I	0.14	V,W,X
792	Chiltern R	I	0.27	C,E,F,H,J,L,V,W,X
792	R. Foyle	B	1.00	S
801	R.Devon	B	2.00	C,J,L,O,S,U,V,W,X
819	Hereford/Worcester	B	0.037	E,O,T,V
828	2CR	I	0.27	L
828	R. WM	B	0.20	D,E
828	R. Aire	I	0.12	F,M,V
828	Chiltern R	I	0.20	H,J,R,V,W,X
837	R. Cumbria	B	1.50	G,V
837	R. Furness	B	1.00	M,U
837	R. Leicester	B	0.45	E,J,R,V,W,X,Y*
855	R. Lancashire	B	1.50	G,M,V
855	R. Norfolk	B	1.50	C,E*,H,J,L,R,V,W,X
873	R. Norfolk	B	0.30	C,E*,F,H,J,M,R,V,W,X
936	GWR (Brunel R.)	I	0.18	J,L,V,W,X
945	R.Trent (GEM-AM)	I	0.20	A*,E*,F,J,L,M,V,W,X,Y*
954	DevonAir R	I	0.32	A*,J,L,V
954	R. Wyvern	I	0.16	V,W,X
990	Beacon R. (WABC)	I	0.09	J,V,W,X
990	R. Devon	B	1.00	J,L,V,X
990	Hallam R.(C.Gold)	I	0.25	E,F,M,V
999	Red Rose R	I	0.80	G,M,U,V
999	R. Solent	B	1.00	C,J,L,R,W,X
999	R.Trent (GEM-AM)	I	0.25	E*,V,X
1026	R. Cambridgeshire	B	0.50	E,H,J,M,R,V,W,X
1026	Downtown R	I	1.70	G,N,U
1026	R. Jersey	B	1.00	C,H,J,L,R
1035	R. Kent	B	0.50	C,J,L,R,V,W,X
1035	NorthSound R	I	0.78	P
1035	R. Sheffield	B	1.00	E,M,V
1035	West Sound	I	0.32	N*,U
1107	Moray Firth R	I	1.50	Q
1107	R. Northampton	B	0.50	C,E,H,J,L,R,V,W,X
1116	R. Derby	B	1.20	E,H,J,M,V,X
1116	R. Guernsey	B	0.50	B,C,H,J,L,R,W,X
1152	R. Broadland	I	0.83	U*,V,X
1152	R. Clyde	I	3.60	N,Q
1152	LBC	I	23.50	C,H,J,L,R,W,X
1152	Metro R. (GNR)	I	1.80	P*
1152	Piccadilly R	I	1.50	G,I,M,U,V
1161	R. Bedfordshire	B	0.10	J,V,X
1161	GWR (Brunel R.)	I	0.16	J,V
1161	R. Sussex	B	1.00	C,J,L,R,V
1161	R. Tay	I	1.40	Q,U*
1161	Viking R. (Gold)	I	0.35	F,G,M,O,V,X
1170	R. Orwell	I	0.28	C,X
1170	Signal R	I	0.20	E,G,V
1170	Swansea Sound	I	0.58	J*,U
1170	TFM Radio (GNR)	I	0.32	F,M,P*,V
1170	Ocean Sound	I	0.12	J,L,R,W
1242	Invicta Sound(Coast)	I	0.32	C,E,J,L,O*,V,W,X,Y*
1251	Saxon R	I	0.76	A*,C,H,J,O,V,X
1260	GWR (Brunel R.)	I	1.60	H,J,L,P,W
1260	Marcher Sound	I	0.64	V
1260	Leicester (GEM-AM)	I	0.29	E,J,V,X
1260	R. York	B	0.50	V
1278	Pennine R.(C.Gold)	I	0.43	M,V
1305	R. Hallam (C.Gold)	I	0.15	E,J,M,V,X
1305	Red Dragon R	I	0.20	J,L,U
1323	R. Bristol	B	0.63	P*,U,V,X
1323	Southern Sound	I	0.50	C,H,J,L,V,W,X
1332	Hereward R	I	0.60	C,E,H,J,V,X
1332	Wiltshire Sound	B	?	H,J,L,V,W
1359	Essex R	I	0.28	C,J,V,X
1359	Mercia Snd(Xtra-AM)	I	0.27	E,J,X
1359	Red Dragon R	I	0.20	V
1359	R. Solent	B	0.85	L,V,W
1368	R. Lincolnshire	B	2.00	E,M,V,X
1368	R. Sussex	B	0.50	C,H,J,L
1368	Wiltshire Sound	B	?	B,J
1431	Essex Radio	I	0.35	C,J,V,X
1431	Radio 210	I	0.14	J,L,W
1449	R. Cambridgeshire	B	0.15	V,X
1458	R. Cumbria	B	0.50	U
1458	GLR	B	50.00	C,E*,H*,J,L,R*,U*,V,W,X
1458	R. Newcastle	B	2.00	K*,M,P*,V
1458	GMR	B	5.00	G,K*,N,V
1458	Radio WM	B	5.00	E
1476	County Sound Gold	I	0.50	C,H*,J,L,R*,V,W,X
1485	R. Humberside	B	1.00	E,M,V,X
1485	R. Merseyside	B	1.20	K*,U
1485	R. Oxford	B	0.50	W,X
1485	R. Sussex	B	1.00	H,J,L,U*,V
1503	R. Stoke-on-Trent	B	1.00	E,G,J*,L,M,N,V,X
1521	R. Mercury	I	0.64	C,H,J,L,W,X
1521	R. Nottingham	B	0.50	V,X
1530	R. Essex	B	0.15	C,J,X
1530	Pennine R.(C.Gold)	I	0.74	G,M,V
1530	R. Wyvern	I	0.52	L,P,X
1548	R. Bristol	B	5.00	K*,L
1548	Capital Gold	I	97.50	C,J,L,R*,U*,V*,W,X,Y*
1548	R. City	I	4.40	G,P
1548	R. Cleveland	B	1.00	M,N,P*,V
1548	R. Forth	I	2.20	N,P,Q,U*,V*
1548	R. Hallam	I	0.74	E,V
1557	R. Lancashire	B	0.25	G,V
1557	Chiltern R	I	0.76	J,K*,P*,V,X
1557	Ocean Sound	I	0.50	C,E*,J,L,P,V
1584	R. Nottingham	B	1.00	E*,J,M,N,V,X
1584	R. Shropshire	B	0.50	G
1584	R. Tay	I	0.21	G,K*,Q
1602	R. Kent	B	0.25	C,H,J,L,O*,V,W,X

Note: Entries marked * were logged during darkness.All other entries were logged during daylight.

DXers:
A Leo Barr, Sunderland.
B Darren Beasley, Bridgwater.
C Andy Cadier, Folkestone.
D Scott Caldwell, Warrington.
E Jim Cash, Swanwick.
F Simon Clarke, Tadcaster.
G Simon Holland, Douglas, I.O.M.
H Sheila Hughes, Morden.
I Cyril Kellam, Sheffield.
J Matthew King, Hayes.
K Eddie McKeown, Co.Down.
L George Millmore, Wootton, IOW.
M Chris Nykiel, Leeds.
N Ike Odoom, Glasgow.
O Roy Patrick, Derby.
P Brian Renforth, Newcastle-upon-Tyne.
Q Stewart Russell, Nr.Pitlochry.
R Mark Selby, Aldershot.
S Tim Shirley, Bristol.
T Mike Smith, Cambridge.
U Tim Swain, Tudweliog, N.Wales.
V Mark Thompson, Wakefield.
W David Todd, Basingstoke.
X David Wratten, Cambridge.
Y Max Wustrau, Bedford.

Listening in Bristol, **Tim Shirley** Picked up the broadcasts from CHTN in Charlottetown, PEI on 720kHz at 0200. Their QSL letter states that 7.5kW and two 92m towers are used at night, but 10kW and one tower provides the daytime coverage.

Other MW DX

Listening in Hayes, **Matthew King** picked up the broadcasts from Duba, Saudi Arabia on 1521 at 2225. He rated their 2000kW transmission as 33433. Several stations in N.Africa were also heard, including two in Egypt: Batra 621 (2000kW), rated as 34333 at 2257 and Santah 864 (500kW) - 35443 at 0100; also four in Morocco: Laayoune 711 (600kW) - 44454 at 2231; Oujda 594 (100kW) - 44444 at 2250; Sebaa-Aioun 1044 (300kW) - 22442 at 0000; Sidi Bennour 540 (600kW) - 55555 at 0255.

The broadcasts from Algeria were noted in several of the reports. The 34333 ratings noted at 0045 by Sheila Hughes in Morden are fairly typical for the transmissions from Ain Beida 531 (600/300kW) and Alger 891 (600/300kW). The broadcasts from Alger in Arabic on 891 and in French on 981 (600/300kW) have also been reaching **Simon Holland** in Douglas, I.O.M.

While checking the band at night in Ibiza, **Neil Wheatley** found that he could hear the BBC 648 broadcasts via Orfordness on 648 (500kW). He also picked up BBC GLR via Brookmans Park 1458 (50kW).

MW Local Radio DX

There are some "long hauls" noted in the impressive first report sent along by **David Todd** in Basingstoke. Starting at 1700, it took just 45 minutes to compile, so perhaps this initial experience will encourage him to search the band at other times of the day!

The welcome first log from **Simon Clarke** in Tadcaster also commenced at 1700. Signals from far away BBC Essex via Chelmsford 765 and BBC Radio Cumbria via Carlisle 756 were heard. Simon says that the reception of ILR Radio Aire via Morley on 828 has always been poor due to interference - typically SIO 222. The sky wave signals from BBC Radio Bristol via Taunton on 1323 were noted in a first report from Brian Renforth in Newcastle-upon-Tyne. He used an HMV 1131 valve receiver (circa 1958) to compile his list, which just goes to show that the old sets still have a lot to offer!

Listening in Glasgow, **Ike Odoom** logged ILR Downtown Radio, Belfast on 1026 at 1830. During the early morning he has been hearing BBC Radio Stoke via Sideway on 1503. A holiday in Caister-on-Sea enabled **Roy Patrick** to hear the ground wave signals from BBC Radio Aberdeen via Redmoss on 990 for the first time. No doubt the long sea path helped!

Short Wave DX

Although the propagation conditions prevailing in the high frequency bands have been generally good, during some days they have been disturbed by the intense bursts of ultra violet and X-ray radiation emitted during solar flares. Dellinger fade-outs have occurred and sometimes reception has been impaired for a few days. Such events are likely to continue as we approach the peak of the present sunspot cycle.

Very potent signals in the 25MHz (11m) band have been reaching our shores from S.Africa during most days. The 250kW transmissions from Radio RSA in Johannesburg on 25.790 (Eng to Europe 1100-1155, French 1200-1255, Eng 1400-1600) often rate 55555 as noted by **Ted Agombar** in Norwich. The Voice of the UAE in Abu Dhabi 25.900 (Ar to Europe 0600-1600) is also well received here - typically at the 44444 quoted by Leo Barr at 1300. A 6kW transmitter is employed by Radio For Peace International, Costa Rica on 25.945 (Eng to USA, Europe 2000-0000); consequently their signal seldom exceeds the 25333 noted at 2200 by **David Wratten** in Cambridge.

It seems that the broadcasts to the Middle East and Africa from the BBC via Daventry, UK 25.750 (Eng 1100-1745) are also reaching their target well! Listening in Molepolole, Botswana **P.R.Guruprasad** rated them as 55555 at 1120. He has also been receiving good signals from Radio Moscow, USSR 25.780 (Eng, Swa to Africa 0550-1300), noting them as 55534 at 0705; RFI via Issoudun, France 25.820 (Fr to Africa 0900-1600) - 55444 at 1334; also BRT Brussels 26.050 (Eng, Fr, Du to Africa 0900-1030 and 1100-1130) - 55534 at 1117.

Reporting from Quebec, **Alan Roberts** says he noted particularly good conditions during two days of the month, but solar events resulted in poor reception during nine days. On 22 occasions he picked up the broadcasts from Radio RSA on 25.790, which at best he rated as 25333 and RFPI Costa Rica on 25.945. However the most potent signals stemmed from the Voice of the UAE in Abu Dhabi on 25.900 - over a 17 day period they averaged 25443. Alan also logged RTB Brussels 25.645 as 25343; Radio Norway Int., Oslo 25.730; Radio DW Cologne, W.Germany 25.740 (Ger to S.E.Asia 1100-1356); BBC on 25.750; Radio Yugoslavia 25.795 (Eng 1200-1250); also RFI on 25.820. In contrast, the transmissions from Radio Moscow on 25.780 and BRT on 26.050 were seldom heard, while those from Radio Denmark, Copenhagen on 25.850 were inaudible.

Good conditions have also been noted in the 21MHz (13m) band during most days, but there have been some disturbed periods. Radio Australia's broadcasts to the S.Pacific via Shepparton 21.740 (Eng 2200-0730) have often reached the UK at good strength - on one occasion Matthew King rated them as a remarkable 55545 at 2233. Their transmission to Indonesia, Malaysia and Singapore via Carnarvon 21.525 (Eng 0100-0900) was logged as 35553 at 0625 by **John Parry** in Northwich. Between 1300 and 1430 the same target area is covered by their station in Darwin on 21.525 and good reception of those transmissions was noted by Mike Smith.

Some of the many broadcasts to Europe were noted in the logs. They stemmed from Radio Japan via Moyabi, Gabon 21.690 (Eng, Jap 0700-0930), rated as 44333 at 0700 by Sheila Hughes; Radio Japan via Yamata 21.500 (Eng, Jap 0700-0900) - SIO 534 at 0726 by Alan Smith in Northampton; QBS Doha, Qatar 21.460 (Ar) - 43444 at 0810 by **John**

SEEN & HEARD

Medium Wave DX Chart

Freq kHz	Station	Country	Power (kW)	DXer
531	Ain Beida	Algeria	600	H*,J*,V
531	Leipzig	Germany (E)	100	D*,J*,W*
531	Oviedo	Spain	10	J*
540	BRT-2 Wavre	Belgium	150/50	J*,L,Q*
540	Sidi Bennour	Morocco	600	J*
549	Les Trembles	Algeria	600	J*,V
549	DLF Beyreuth	Germany (W)	200	J*,Q*
558	Espoo	Finland	100	S*
558	Valencia	Spain	20	J*,V,W*
567	RTE-1 Tullamore	S.Ireland	500	E*,G,H,J*,L,M,O*,Q*,V*
576	Stuttgart	Germany (W)	300	J*,Q*,R*,W*
576	Radio Metro	S.Africa (Rep)	100	F
585	Orf Wien	Austria	600	Q
585	FIP Paris	France	8	L
585	RNE-1 Madrid	Spain	200	J*,W*
585	Gafsa	Tunisia	350	J*
585	BBC-R3 Dumfries	UK	2	T
594	HRF Frankfurt	Germany (W)	400	J*,Q*,W*
594	Oujda-1	Morocco	100	J*,V*
603	Sevilla	Spain	20	J*
603	BBC-R4 Newcastle	UK	2	G,L,M,T
612	RTE-2 Athlone	S.Ireland	100	C,E,G,J*,L,M,O*,Q*,W*
612	Sebaa Aioun	Morocco	300	R*
621	RTBF-1 Wavre	Belgium	300	J*,L,Q
621	Batra	Egypt	2000	J*
621	RNE-1 Santa Cruz	Tenerife	100	W*
630	Vigra	Norway	100	J*
630	Tunis-Djedeida	Tunisia	600	U*,V
639	Liblice	Czechoslovakia	1500	Q*
639	La Coruna	Spain	100	J*
648	R.Lotus, Maraisburg	S.Africa (Rep)	2	F
648	Palma de Mallorca	Spain	10	J*,V
648	BBC Orfordness	UK	500	C,E*,H*,M,Q,U*,V*
657	RCE-2 Madrid	Spain	20	J*
666	Lisboa	Portugal	135	J*
675	Marseille	France	600	K*,V
675	Hilversum-3 Lopic	Holland	120	J,L,Q,W*
684	RNE-1 Sevilla	Spain	250	A*,H*,J*,W*
702	Zamora	Spain	5	A*,J*
711	Rennes 1	France	300	Q*
711	Heidelberg	Germany (W)	5	J*,W*
711	Laayoune	Morocco	600	J*
720	BBC-R4 Lisnagarvey	N.Ireland	10	G,M*
720	Norte	Portugal	100	J*,V*
720	BBC-R4 Lots Rd London	UK	0.5	C,J,L
729	RTE-1 Cork	S.Ireland	10	J*
729	Oviedo	Spain	50	A*,J*
738	Paris	France	4	L
738	Poznan	Poland	300	J*,Q*
738	RNE-1 Barcelona	Spain	250	J*
747	Hilversum-2 Flevo	Holland	400	H*,J,K*,L,Q*,W*
756	Brunswick	Germany (W)	800/200	J*,W*
765	Sottens	Switzerland	500	J*,R*
774	RNE-1 San Sebastian	Spain	60	H*,J*
783	Burg	Germany (E)	1000	J*,K*,Q*
792	Sevilla	Spain	20	A*,J*,V*
792	BBC R.Ulster	UK	1	T
801	BRF via Munich	Germany (W)	420	J*,Q*
810	SER Madrid	Spain	20	A*,J*,Q*,W*
810	BBC-Scot.Westerglen	UK	100	C,J*,K*,M
819	Sud-Radio	Andorra	900	J*
819	Rabat	Morocco	25	A*
828	Barcelona	Spain	20	J*
837	R.Popular, Sevilla	Spain	10	A*,J*,L,Q*,V
846	Rome	Italy	540	A*,J*,W*
855	Murcia	Spain	125	H*,J*,Q*
864	Santah	Egypt	500	J*
873	AFN Frankfurt	Germany (W)	150	C,E*,H*,J*,K*,Q*,W*
882	Wachenbrunn (SDDR)	Germany (E)	250	J*
882	Alicante	Spain	2	V
882	BBC-Wales Washford	UK	70	C,I,J,L,M,N,O*,Q,W*
891	Algiers	Algeria	600/300	A*,G*,H*,J*,Q*,U*,V,W*
891	Hulsberg	Holland	20	C
900	Milan	Italy	600	A*,J*,Q*,W*
918	R.Intercont. Madrid	Spain	20	Q*
918	R.Ljubljana	Yugoslavia	600/100	J*
927	BRT-1 Wolvertem	Belgium	300	E*,J*,K*,L,Q
927	Lleida	Spain	5	J*
936	Radio Bremen	Germany (W)	100	J*,K*,Q*
936	Lerida	Spain	2	J*
945	Toulouse	France	300	J,Q*
954	Dobrochov	Czechoslovakia	400	J*
963	Pori	Finland	600	J*,K*,Q*,W*
963	RRE Seixal	Portugal	10	J*
963	Tunis-Djedeida	Tunisia	200	V
972	NDR/WDR Hamburg	Germany (W)	300	J*,K*,Q*,W*
981	Alger	Algeria	600/300	G*,J*,Q*,V,W*
990	SER R.Bilbao	Spain	10	J*,W*
999	R.Popular, Madrid	Spain	20	J*,J*,W*
1008	Hilversum-5 Flevo	Holland	400	L,Q
1008	Malaga	Spain	?	J*
1017	Wolfsheim	Germany (W)	600	J*,K*,Q*
1017	Genova	Italy	10	J*
1026	Graz-Dobl	Austria	100	J*
1035	Prog.3 Lisbon	Portugal	120	J*
1044	DDR-1 Burg	Germany (E)	250	H*,J*,Q,W*
1044	Sebaa-Aioun	Morocco	300	J*
1062	Kalundborg	Denmark	250	J*
1062	Cagliari	Italy	25	V
1071	Prague	Czechoslovakia	60	W*
1071	Brest	France	20	Q
1071	Lille	France	40	J,L
1080	Maputo	Mozambique	5	F*
1080	Katowice	Poland	1500	J*
1089	Adrar	Algeria	5	V*
1089	Dresden	Germany (E)	20	A*,J*
1098	Bologna	Italy	60	J*
1107	AFN via Munich	Germany (W)	40	C,J*
1107	BBC-R1 Wallasey	UK	0.5	T
1116	Bari	Italy	150	H*,J*
1125	La Louviere	Belgium	20	L
1125	BBC Llandrindod Wells	UK	1	G,W*
1125	Zagreb	Yugoslavia	200	J*
1134	Zagreb	Yugoslavia	300	J*,Q*
1143	AFN via Stuttgart	Germany (W)	10	E*,J*,W*
1143	Kaliningrad	USSR	150	J*,Q*
1161	Strasbourg (F.Int)	France	200	J*
1170	Bernburg	Germany (E)	20	J*
1179	SER Murcia	Spain	5	J*
1179	Solvesborg	Sweden	600	E*,G*,H*,J*,K*
1188	Kuurne	Belgium	5	J,L,Q*
1188	Szolnok	Hungary	135	J*
1197	VOA via Munich	Germany (W)	300	G*
1197	BBC-R3 Bournemouth	UK	0.5	C,K*
1197	Minsk	USSR	50	J*
1206	Wroclaw	Poland	200	J*,Q*
1215	Lushnje	Albania	500	W*
1215	Tartu	USSR	50	J*
1224	COPE Madrid	Spain	20	J*
1233	Prague	Czechoslovakia	400	J*,Q*,W*
1233	Tanger	Morocco	200	L
1242	Kiev	USSR	150	J*
1251	Siofok	Hungary	135	Q*
1251	Tripoli	Libya	500	J*
1260	Valencia	Spain	20	J*,W*
1269	Neuminster	Germany (W)	600	E*,J*,K*,M*,Q*,W*
1278	RTE-2 Dublin/Cork	S.Ireland	10	C,G,K*
1287	Litomysl/Liblice	Czechoslovakia	300/200	H*,Q*
1296	BBC Orfordness	UK	500	G*,M
1305	Marche	Belgium	10/5	J*
1314	Kvitsoy	Norway	1200	A*,E,G*,J*,K*,Q*
1314	Madrid	Spain	20	J*
1323	R.Moscow via Leipzig	Germany (E)	150	J*,K*,W*
1332	Rome	Italy	300	J*
1341	BBC-Ulst.Lisnagarvey	N.Ireland	100	B,C,D,H*,J*,L,P,W*
1350	Nancy/Nice	France	100	G*,J*,L,Q*,W*
1359	RBI Berlin	Germany (E)	250/100	J*,M*
1368	Manx Radio, Foxdale	I.O.M	20	J*,K*,N
1377	Lille	France	300	J*,L
1377	Ukraine	USSR	50	J*
1386	Kaunas	USSR	1000	H*,J*,K*,W*
1395	R.Tirana via Lushnje	Albania	1000	H*,J*,K*
1395	Alicante	Spain	.2	J*
1395	Leon	Spain	5	W*
1404	Brest	France	20	J*,L
1404	Komotini	Greece	100	W*
1422	Heuswailer	Germany (W)	600	L,Q*
1422	Saarbrucken	Germany (W)	1200/600	J*,K*,W*
1431	Bernburg	Germany (E)	20	W*
1431	Dresden	Germany (E)	250	J*,Q*
1440	Marnach	Luxembourg	1200	E*,G*,J*,K*,L,N,Q
1458	R.Tirana, Lushnje	Albania	500	J*,V*
1467	TWR Monte Carlo	Monaco	1000/400	D,E*,J*,K*
1476	Wien-Bisamberg	Austria	600	A*,J*,R*,W*
1485	AFN	Germany (W)	1.0	J*
1485	BBC-R4 Carlisle	UK	1	G
1494	Leningrad	USSR	1000	H*,J*,W*
1503	Stargard	Poland	300	H*,J*,K*,Q*
1503	Pamploma	Spain	2	J*,W*
1512	BRT Wolvertem	Belgium	600	E*,J,L,M*
1512	Jeddah	Saudi Arabia	1000	J*
1521	Kosice	Czechoslovakia	600	G
1521	Duba	Saudi Arabia	2000	J*
1521	Radio Manresa	Spain	2	W*
1530	Vatican Radio, Rome	Italy	150/450	A*,D,E*,G*,H*,J*,M*,Q*
1539	DLF Mainflingen	Germany (W)	700	G*,J*,Q*
1557	Nice	France	300	J*
1557	R.Vilnius, Kaunas	USSR	75	J*
1566	Nagpur	India	1000	F*
1566	Sarnen	Switzerland	300	J*
1566	Sfax	Tunisia	1200	J*,U*,V*
1575	RBI via Burg	Germany (E)	250	H*,J*,Q*,W*
1575	Genoa	Italy	50	H*,J*
1584	Pamplona	Spain	2	J*,W*
1593	Langenberg	Germany (W)	400/800	J*,K*,Q*,W*
1611	Vatican Radio, Rome	Italy	5	A*,J*

Note: Entries marked * were logged during darkness. All other entries were logged during daylight

Nash in Brighton; UAE Radio Dubai 21.605 (Ar, Eng 0615-1730) - 55555 at 1339 by David Edwardson in Wallsend; WHRI South Bend, USA 21.840 (Eng 1500-1700) - SIO 333 at 1503 by **Philip Rambaut** in Macclesfield; Radio Japan via Moyabi, Gabon 21.700 (Jap, Eng 1500-1700) - 22222 at 1630 by **Derek Carter** in Cambridge; RCI Montreal, Canada 21.545 (Eng, Ger 1600-1700) - SIO 544 at 1659 by Darren Beasley; Radio RSA Johannesburg, S.Africa 21.590 (Eng 1800-1900) - SIO 555 at 1810 by **Kenneth Buck** in Edinburgh; Radio HCJB Quito, Ecuador 21.470 (Cz, Ger, Eng, Sw, Norw, Dan, Fr, Sp 1800-2230 - 35343 at 1900 by David Wratten.

Quite a number of the broadcasts to other areas were also logged, including the BBC via Limassol, Cyprus 21.470 (Eng to E.Africa 0500-0730) - 35333 at 0536 by **Kenneth Reece** in Prenton; BBC via Rampisham, UK 21.710 (Eng to W.Africa 0700-1615) - 54444 at 0720 by P.R.Guruprasad (Botswana); BRT Brussels 21.810 (Du, Eng, Fr to Africa 0900-1130) - 34444 at 0927 by **Andy Cadier** in Folkestone; Radio Austria Int., Vienna 21.490 (Ger, Eng, Fr to Australia 0800-1100) - SIO 333 at 1000 by **Cyril Kellam** in Sheffield; Vatican Radio, Rome 21.485 (Fr to W.Africa 1000-1215) - 33323 at 1100 by Leo Barr; RFI via Issoudun, France 21.645 (Eng to C.America 1245-1315) - 23333 at 1300 by **Chris Shorten** in Norwich; Radio Pakistan, Islamabad 21.740 (Eng to Middle East 1600-1630) - 45544 at 1627 by **Darran Taplin** in Tonbridge; Radio DW Cologne, W.Germany 21.560 (Ger to Africa 1800-1956) - 45434 at 1916 by **Jim Cash** in Swanwick.

There is plenty to interest the Dxer in the 17MHz (16m) band! The 7.5 kW transmissions from Radio New

DXers:

A: Leo Barr, Sunderland.
B: Darren Beasley, Bridgwater.
C: Andy Cadier, Folkestone.
D: Scott Caldwell, Warrington.
E: Jim Cash, Swanwick.
F: P.R.Guruprasad, Botswana.
G: Simon Holland, Douglas, I.O.M.
H: Sheila Hughes, Morden.
I: Cyril Kellam, Sheffield.
J: Matthew King, Hayes.
K: Eddie McKeown, Co.Down.
L: George Millmore, Wootton I.O.W.
M: Chris Nykiel, Leeds.
N: Ike Odoom, Glasgow.
O: Brian Renforth, Newcastle-upon-Tyne.
P: Stewart Russell, Nr Pitlochry.
Q: Mark Selby, Aldershot.
R: Tim Shirley, Bristol.
S: Mike Smith, Cambridge.
T: Tim Swain, while in Tudweliog, N.Wales.
U: Mark Thompson, Wakefield.
V: Neil Wheatley, while in Ibiza.
W: Max Wustrau, Bedford.

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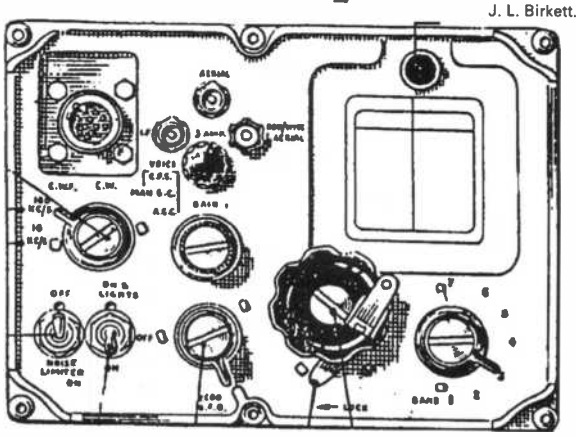

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TH215E 2m Handheld FM Transceiver	£228.00
TH405E 70cm Handheld FM Transciever	£245.00
R5000 General coverage receiver	£875.00
VC20 VHF Converter 108-174MHz	£167.21
R2000 General coverage receiver	£595.00
VC10 VHF Coverter 118-174MHz	£161.95
HS5 De Luxe headphones	£37.54
TS790E Dual Bander Transceiver	£1495.00
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SEEN & HEARD

Tropical Band Chart

Freq kHz	Staton	Country	UTC	DXer
2.485	ABC Katherine	Australia	2110	I
2.560	Xinjiang	China	2313	B,C
3.205	R.Vale do Rio Maderia	Brazil	0156	J
3.210	R.Mozambique	Mozambique	0300	C,J,M
3.220	R.HCJB Quito	Ecuador	0400	J,L
3.230	ELWA Monrovia	Liberia	2130	B,J
3.240	TWR	Swaziland	0320	J
3.255	BBC via Maseru	Lesotho	2000	D
3.270	SWABC 1, Namibia	S.W.Africa	0350	J
3.295	SWABC Windhoek	S.W.Africa	0355	J
3.300	R.Cultural	Guatemala	0320	J
3.315	AIR Bhopal	India	2235	A
3.320	R.Orion	S.Africa	2008	D
3.320	R.Suid Afrika	S.Africa	0330	J
3.330	Ondas del Huallaga	Peru	0455	J
3.330	R.Kigali	Rwanda	1945	C,J
3.340	R.Altura	Peru	0455	J
3.365	GBC Radio 2	Ghana	2017	A,B,C
3.380	R.Malawi	Malawi	1800	D
3.915	BBC Kranji	Singapore	1940	B,C,H
3.955	BBC Daventry	England	2019	B,J
3.965	RFI Paris	France	2311	B,E,F,J,K,M,O
3.970	RFE Munich	W.Germany	2315	F
3.980	VOA Munich	W.Germany	0301	B,N
3.985	R.Beijing, China	via SRI Berne	2100	B,E,F,J,K,M,N
3.995	OW Cologne (Julich)	W.Germany	2318	B,E,F
4.080	R.Ulan Bator	Mongolia	2200	L
4.220	PBS Xinjiang	China	2300	C
4.500	Xinjiang	China	2304	B,C
4.600	R.Perla del Acre	Bolivia	0001	G
4.650	R.Santa Ana	Bolivia	0115	G
4.735	Xinjiang	China	2330	C
4.740	R.Afghanistan	via USSR	0135	J,O
4.760	Elwa Monrovia	Liberia	2020	H
4.765	R.Moscow	via Cuba	0203	J
4.770	FRCN Kaduna	Nigeria	2030	H,J
4.785	RTM Bamako	Mali	2100	H
4.785	R.Baku	USSR	2010	H,J
4.790	R.Atlantida	Peru	0145	G
4.800	LNBS Lesotho	Maseru	1940	D,H
4.805	R.Nac.Amazonas	Brazil	0210	J
4.810	R.Yerevan	USSR	0120	B,G,J
4.815	R.diff TV Burkina	Ouagadougou	1930	F,G,H,J
4.820	E.Prov.Huila	Angola	2115	G,J
4.820	R.Paz Y Bien	Ecuador	0336	J
4.820	La Voz Evangelica	Honduras	0116	G,J
4.820	Khanty-Mansiysk	USSR	0147	J
4.825	R.Ashkhabad	USSR	2050	G,J
4.830	Gaborone	Botswana	2030	H,J
4.830	R.Tachira	Venezuela	0055	G,J
4.835	R.Tezulutlan, Coban	Guatemala	0130	G
4.835	RTM Bamako	Mali	2030	B,C,E,F,G,H
4.845	ORTM Nouakchott	Mauritania	2030	H
4.850	R.Yaounde	Cameroon	2000	F,G,H,J
4.850	R.Luz y Vida, Loja	Ecuador	0520	J
4.850	R.Tashkent	USSR	0010	G,J,L
4.855	R.Centenario	Bolivia	0005	G
4.865	PBS Lanzhou	China	2054	C,G
4.865	V of Cinaruco	Colombia	0420	J
4.870	R.Cotonou	Benin	0512	J
4.875	R.Tbilisi	USSR	0308	J
4.880	SABC Radio 5	S.Africa	1940	A,H,J
4.885	Voice of Kenya	Kenya	1930	G,H
4.890	RFI Paris	via Gabon	0521	F,J
4.895	R.Bare, Manaus	Brazil	0343	J
4.895	Voz del Rio Arauca	Colombia	0211	G
4.905	R.Relogio, Rio	Brazil	0319	J
4.905	R.Nat.N'djamena	Chad	2030	G,H,J
4.910	V of People Kampuchea	Cambodia	2300	C
4.915	R.Ghana, Accra	Ghana	1930	B,H
4.915	Voice of Kenya	Kenya	1920	H
4.920	R.Quito	Ecuador	0529	J
4.920	AIR Madras	India	1450	D
4.930	R.Moscow, Ashkhabad	USSR	1930	H
4.930	R.Moscow, Tbilisi	USSR	2020	J
4.935	Voice of Kenya	Kenya	1930	B,C,G,H,J,M
4.940	R.Kiev	USSR	1930	E,G,H,J
4.945	Caracol, Neiva	Colombia	0454	J
4.945	R.RSA, Johannesburg	S.Africa	2054	G
4.958	R.Baku	USSR	1930	H,J
4.970	R.Rumbos, Caracas	Venezuela	0525	J
4.975	R.Uganda, Kampala	Uganda	1930	H,J
4.975	R.Dushanbe	USSR	1831	C
4.980	Ecos del Torbes	Venezuela	0040	G
4.985	R.Brazil Central	Brazil	0136	G,J
4.990	AIR via Madras	India	0003	E,G
4.990	FRCN Lagos	Nigeria	2030	A,B,C,G,H,J
5.005	R.Nacional, Bata	Eq.Guinea	0441	J
5.015	R.Moscow Ashkhabad	USSR	0124	J
5.015	R.Moscow Vladivostok	USSR	2030	A,H
5.020	ORTN Niamey	Niger	1940	H
5.025	R.Uganda, Kampala	Uganda	2030	J
5.030	R.Impacto	Costa Rica	0532	C,G,J
5.035	Schulungssender	Austria	2059	J
5.035	R.Aparecida	Brazil	0128	G
5.035	R.Bangui	C.Africa	1950	H,J
5.035	R.Alma Ata	USSR	2330	F
5.040	Vos del Upano, Macas	Ecuador	0247	J
5.040	R.Tbilisi	USSR	1815	C
5.044	R.Impacto	Costa Rica	0537	J,L
5.045	R.Cultura do Para	Brazil	0333	J
5.045	R.Togo, Lome	Togo	2034	J
5.050	Em Jesus Gran Poder	Ecuador	0115	J
5.050	R.Tanzania	Tanzania	2038	J
5.055	Faro del Caribe	Costa Rica	0523	C,J
5.055	R.Catolica Nac, Quito	Ecuador	0130	J
5.055	RFO Cayenne (Matoury)	French Guiana	0104	G
5.055	TWR Manzizi	Swaziland	0542	J
5.057	R.Tirana Gjirokaster	Albania	1930	E,H,J
5.065	R.Candip, Bunia	Zaire	1820	H
5.075	Caracol Bogata	Colombia	0341	C,J

DXers:-

A: Andy Cadier, Folkestone.
B: Jim Cash, Swanwick.
C: David Edwardson, Wallsend.
D: P.R.Guruprasad, Botswana.
E: Sheila Hughes, Morden.
F: Eddie McKeown, Co.Down.
G: John Nash, Brighton.
H: Fred Pallant, Storrington.
I: John Parry, Northwich.
J: Kenneth Reece, Prenton.
K: Mark Selby, Aldershot.
L: Tim Shirley, Bristol.
M: Chris Shorten, Norwich.
N: Alan Smith, Northampton.
O: Max Wustrau, Bedford.

Throughout the day there are many broadcasts to Europe in a variety of languages. Those noted emanated from Radio RSA Johannesburg, S.Africa 15.365 (Fr 0430-0630), noted as 44444 at 0424 by Kenneth Reece; Radio Moscow, USSR 15.585 (Eng 0800?-1756) - 54444 at 1500 by **Ken Whayman** in Bexleyheath (see Fig.1.); RNE Arganda, Spain 15.395 (Sp 1030-1555) - 54444 at 1523 by **Max Wustrau** in Bedford; Radio Pakistan, Islamabad 15.605 (Eng 1600-1630) - SIO 444 at 1600 by Kenneth Buck; UAE Radio Dubai 15.435 (Ar, Eng 0615-1645) - 44333 at 1635 by Mark Selby; RHC Habana, Cuba 15.230 (Sp, Port 1800-2100) - SIO 433 at 1900 by Cyril Kellam; Voice of Israel, Jerusalem 15.640 (Eng to W.Europe, USA 1900-1930) - 44444 at 1925 by David Wratten; WWCR Nashville, USA 15.690 (Eng 1700-0200) - 45444 at 1955 by John Nash; WCSN Scotts Corner, USA 15.390 (Eng 2000-2200) - 54444 at 2008 by Andy Cadier; Voice of Vietnam, Hanoi 15.010 (Eng, Russ, Viet, Fr, Sp 1600-2130) - SIO 433 at 2030 by **Alf Gray** in Birmingham; Radio Korea, Seoul 15.575 (Eng 2030-2130) - 34232 at 2035 by Eddie McKeown; RCI Montreal, Canada 15.325 (Eng 2100-2200) - SIO 533 at 2115 by Darren Beasley.

Although the majority of the broadcasts to distant places are in foreign languages, some include items in English. Those noted stemmed from Radio Japan via Yamata 15.270 (Eng, Jap to Australia 0500-1000) - 32232 at 0910 by Chris Zealand, Wellington 17.705 (Eng to Pacific areas 2345-0145; 0145-0330*; 0330-0730; Sat/Sun only) have been reaching our shores during some mornings. Listening in Coulsdon, **Reg Wiltshire** picked up their broadcasts at 0650 and rated them as 22222. The latest report from Dick Moon in George, S.Africa indicates that their signals have also been heard there around 0540.

Radio Australia's 16m broadcasts have also been heard in the UK during some mornings. Their transmissions to S.Asia via Carnarvon 17.715 (Eng 0100-0915) was rated as 24333 at 0614 by David Wratten and to E.Asia via Darwin 17.750 (Eng, Chin, Fr 0100-0800) as 23322 at 0500 by Chris Shorten. Kenneth Reece has been monitoring their transmissions to C.Pacific areas and W.USA via Shepparton 17.795 (Eng 2200-0800) and he noted daily variations ranging from inaudible to 24333 at 0312.

Some of the broadcasts to distant places were noted in the reports. They included the BBC via Mahe, Seychelles 17.885 (Eng to S.Africa 0500-0730), noted as 23222 at 0723 by Leo Barr; Radio Beijing, China 17.710 (Eng to S.Pacific 0830-1000) - 34423 at 0911 by Darran Taplin; Africa No.1, Gabon 17.630 (Fr to W.Africa 0900-1600) - SIO 444 at 1519 by Philip Rambaut; RFI via Issoudun, France 17.620 (Eng to W.Africa 1600-1700) - 44434 at 1600 by Andy Cadier; WSHB Cypress Creek, USA 17.555 (Eng to C.America 2000-2200), heard at 2100 by Mike Smith; BBC via Antigua, W.Indies 17.760 (Eng to S.America 2000-2115) - SIO 534 at 2102 by Alan Smith; BBC via Limassol, Cyprus 17.755 (Eng to S.Europe; N.Africa 2000-2300); heard at 2130 by **Dave Mayhew** in Yapton; Voice of Israel, Jerusalem 17.575 (Eng to USA 2130-2200) - 44444 at 2148 by **Eddie McKeown** in Co.Down.

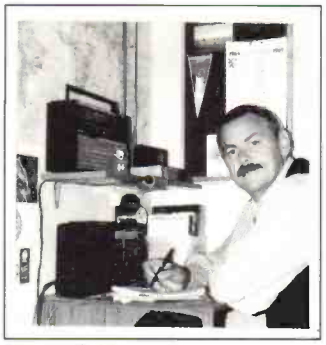
There are many broadcasts to Europe, but few were noted in the logs: UAE Radio Dubai 17.775 (Eng 1330-1400) - 33333 at 1342 by Jim Cash; Voice of the UAE in Abu Dhabi 17.645 (Ar 1300-1600) - SIO 444 at 1350 by Kenneth Buck; Radio Surinam Int. via RNB Brazil 17.755 (Du, Eng 1700-1750) - 33232 at 1700 by Mark Selby in Aldershot; RCI via Sackville, E.Canada 17.875 (Eng 2100-2200) - 54554 at 2100 by John Nash; Radio HCJB Quito, Ecuador 17.790 (Cz, Ger, SW, Norw, Dan, Fr, Eng 1800-2230) - 44333 at 2135 by Sheila Hughes.

Good long distance reception has also been noted in the 15MHz (19m) band! The broadcasts from Radio New Zealand 15.150 (Eng to Australia, Papua New Guinea 2345-0145; 0145-0330*; 0330-0730; (*Sat/Sun only) have been audible in the UK during some mornings. Listening at 0330, Ted Agombar rated them as 22222. Although the majority of Radio Australia's broadcasts in this band are intended for listeners in other areas they have often been heard here too. Surprising as it may seem, their sports commentaries to Asia via Carnarvon 15.245 (Eng 1530-1830) were received on a home built two transistor set by **Ron Pearce** in Bungay, who rated them as SIO 333 at 1641. Their transmissions to the C.Pacific area via Shepparton on 15.160 (Eng 2100-0700) were rated as 44444 at 2100 by Matthew King and on 15.240 (Eng 2100-0730) as 23323 at 0645 by Reg Wiltshire. Their transmissions to E.Asia via Carnarvon 15.395 (Eng, Chin 0100-0900) have also been reaching our shores. Darran Taplin noted them as 33322 at 0840.

Equipment Used

Ted Agombar: Grundig Yacht Boy 700 + 20m random wire.
Leo Barr: Matsui MR4099 + internal antenna.
Darren Beasley: Steepletone MBR7 + 20m random wire.
Kenneth Buck: Home-built superhet + random wire.
Andy Cadier: Saisho SW500 + 40m random wire.
Derek Carter: Matsui MR4099 + random wire.
Jim Cash: Sony ICF 2001D.
Simon Clarke: Sony ICF 7601L.
David Edwardson: Trio R600 + trap dipole 22m long.
Bill Eyre: Trio R5000 + random wire.
P.R.Guruprasad: Sony 7600DA + built-in whip.
Roy Hill: Lowe HF-125 + 100m wire.
Sheila Hughes: Panasonic DR48 + 15m wire or Vega 206 + Loop.
Graham Johnson: Panasonic DR49 + built-in whip.
Cyril Kellam: Sony ICF 7600DS + AN-1 or 5m vertical wire.
Matthew King: Sony ICF 7600DS + ATU + 20m random wire
Tom Mansfield: Panasonic RF1105LBE + internal ferrite rod.
Dave Mayhew: Grundig Satellit 1400 + built-in whip.
Eddie McKeown: Tatung TMR 7602 portable.
George Millmore: Tatung TMR 7602 portable + random wire.
John Nash: Kenwood R5000 + random wire.
Chris Nykiel: Realistic DX-260 + random wire.
Neil Oakley: Vega Selena 215 + internal antenna.
Ike Odoom: Steepletone MBR-7 or Ferguson Radio/Cassette.
Fred Pallant: Trio R2000 + random wire in loft.
Roy Patrick: Lowe HF 125 + 20m wire.
Ron Pearce: Home built 2 transistor straight receiver.
Philip Rambaut: Int.Marine Radio R.700M + random wire.
Kenneth Reece: Icom R9000 or Kenwood R5000 + delta loop.
Brian Renforth: HMV Model 1131 all valve set (Circa 1958).
Stewart Russell: Panasonic C39DL Radio/Cassette + Sooper Loop.
Mark Selby: Realistic DX440 + ATU + 60m random wire.
Tim Shirley: Trio R600 + random wire.
Alan Smith: Matsui MR4099.
Mike Smith: Lowe HF-225.
Tim Swain: Ex RAF R1155B + 40m wire.
Philips 752 car radio while in Wales.
Darran Taplin: Eddystone 680X + Global ATU + 6m indoor wire.
Mark Thompson: JRC NRD525 + 1m loop or 20m random wire.
David Todd: JRC NRD525 + random wire.
Phil Townsend: Panasonic RF1680L portable or Lowe SRX-30 + random wire.
Ken Whayman: Panasonic RF2200 + 10m sloper or Vega 206 (See Fig.1.).
Neil Wheatley: Sangean ATS 803 + built-in antenna.
Reg Wiltshire: Sony ICF 2001D + 14m random wire.
Julian Wood: Trio R2000 + random wire.
David Wratten: Philips D2999 + loop or Trio R2000 + ATU + 30m random wire.
Max Wustrau: Datong PC-1 convertor + FDK-750 2m transceiver.

SEEN & HEARD



Ken Whayman.
Bexley Heath

Shorten; Radio Austria Int. via Moosbrunn 15.450 (Ger, Fr, Eng to Australia 0800-1100) - 44444 at 1036 by Leo Barr; TWR via Bonaire, Ned.Antilles 15.345 (Eng to USA 1115-1400) - 22222 at 1120 by Sheila Hughes; Radio Moscow via Komsomolsk, USSR 15.385 (Chin to C.Asia 0930-1600) - SIO 222 at 1420 by Philip Rambaut; Africa No.1., Moyabi, Gabon 15.475 (Fr, Eng to W.Africa 1600-2300) - SIO 534 at 1730 by Alan Smith; Voice of Greece, Athens 15.630 (Eng to Africa 1840-1850) - SIO 343 at 1845 by Jim Cash; AIR via Bombay, India 15.360 (Eng to E.Africa 1800-2000) - 54444 at 1900 by P.R.Guruprasad (Botswana); BBC via Ascension Island 15.260 (Eng to S.America 2000-0330), heard at 2030 by Dave Mayhew; KUSW Salt Lake City, USA 15.650 (Eng to Alaska, Greenland 1600-2200), heard at 2100 by Mike Smith.

The conditions prevailing in the 13MHz (22m) band resulted in good reception of the broadcasts from Radio Jordan, Amman 13.655 (Eng to Europe 0500-1315), rated as 44444 at 0813 by John Nash; SRI via Sottens, Switzerland 13.685 (It, Eng, Ger, Fr to Australia, Pacific area 0745-1030) - 54444 at 0840 by David Wratten; RBI Berlin, GDR 13.690 (Ger, Eng, Fr, Ar to Middle East 1030-?) - 54444 at 1130 by Chris Shorten; Radio Pakistan, Karachi 13.665 (Eng 1600-1615) - SIO 333 at 1600 by Kenneth Buck; RBI Berlin, GDR 13.610 (Eng to E.Africa 1730-?) - 33423 at 1800 by Darran Taplin; Radio Baghdad, Iraq 13.660 (Fr, Ger, Eng to Europe 1800-2200) - SIO 333 at 1803 by Ron Pearce; WHRI South Bend, USA 13.760 (Eng to Alaska, Greenland, W.Europe 1700-0000) - SIO 433 at 1855 by Alan Smith; RCI Montreal, Canada 13.680 (Eng to Africa 1800-2000) - 32222 at 1900 by Andy Cadier; KSDA Agat, Guam 13.720 (Eng, Chin to C.Asia 2000-2100) - 34433 at 2002 by Jim Cash; Radio Austria Int. via Moosbrun 13.730 (Ger, Eng, Fr to Africa 1700-2100), heard at 2030 by Dave Mayhew; Radio Nederlands via Flevo 13.700 (Eng to W.Africa 2030-2125) - SIO 444 at 2100 by Cyril Kellam; Voice of the UAE in Abu Dhabi 13.605 (Eng 2200-0000) - SIO 333 at 2220 by Alf Gray; WRNO New Orleans, USA 13.720 (Eng to USA, Europe 2100-0000) - 32333 at 2251 by Leo Barr; WSHB Cypress Creek, USA 13.760 (Sp, Eng to C.America 0000-0600 - 34433 at 0431 by Kenneth Reece.

Many broadcasters use the 11MHz (25m) band to reach listeners in Europe. They include WYFR via Okeechobee, Florida 11.580 (Ger, Eng, It 0400-0700), rated as 34433 at 0505 by Kenneth Reece; Radio Australia via Shepparton 11.910 (Eng 0400-0630) - 44544 at 0540 by David Edwardson; Radio HCJB Quito, Ecuador 11.835 (Eng 0700-0830) - 45444 at 0810 by Sheila Hughes; Voice of Greece, Athens 11.645 (Gr, Eng 1500-1550) - SIO 444 at 1500 by Kenneth Buck; Radio Pakistan, Islamabad 11.570 (Ur, Eng, Fr 1645-2015) - 55444 at 1725 by Chris Shorten; Radio Kuwait, Sulaibiyah 11.665 (Eng 1800-2100) - 43322 at 1802 by Mark Selby; Radio Yugoslavia, Belgrade 11.735 (Eng 1830-1900) - SIO 333 at 1854 by **Tim Swain** in Wilmslow; Radio Bangladesh, Dacca 11.510 (Eng 1815-1900) - 44444 at 1859 by Darran Taplin; Voice of Israel, Jerusalem 11.605 (Eng 1900-1930) - 53443 at 1900 by Ken Whayman; RNE via Aganda, Spain 11.790 (Fr, Eng 1800-2200), heard at 1900 by **Julian Wood** in Buckie; Radio Bucharest, Romania 11.940 (Eng 2000-2025) - SIO 433 at 2015 by Alf Gray; AIR via Aligarh, India 11.620 (Eng 1845-2230) - SIO 444 at 1935 by Darren Beasley; Radio Sophia, Bulgaria 11.720 (Tur, Ger, It, Fr, Eng 1600-2225) - 54444 at 2054 by Jim Cash; Radio Sweden, Stockholm 11.705 (Eng, Sp, Sw, Port 2100-2300) - 42543 at 2113 by John Nash; Radio Japan via Moyabi, Gabon 11.765 (Jap, Eng 2100-0000) - 35333 at 2300 by Roy Patrick; Radio Finland, Helsinki 11.755 (Eng 2100-2125) - 55555 at 2115 by Andy Cadier; Radio Beijing, China 11.500 (Eng 2000-2215) - 55555 at 2119 by Eddie McKeown; RHC Habana, Cuba 11.705 (Eng 2200-2300) - 54444 at 2200 by David Wratten.

Some of the broadcasts noted in the 9MHz (31m) band stemmed from the Voice of Greece, Athens 9.425 (Gr, Tur to Middle East 0500-0615), rated as 55334 at 0530 by Max Wustrau; WYFR via Okeechobee, Florida 9.850 (Eng to Europe 0600-0745), heard at 0700 by Mike Smith; BBC via Antigua, W.Indies 9.640 (Eng to C.America 0545-0815) - 44554 at 0710 by John Parry; WCSN Scotts Corner, USA 9.840 (Eng to Europe 0600-0800) - 55545 at 0730 by Ken Whayman; Radio Australia via Shepparton 9.655 (Eng to Europe 0700-1030) - 34543 at 0732 by David Edwardson; Radio HCJB Quito, Ecuador 9.610 (Eng to Europe 0700-0830) - SIO 333 at 0829 by Philip Rambaut; Radio Pyongyang, N.Korea 9.977 (Kor, Eng, Fr to Africa 1400-2150) - 55444 at 1528 by P.R.Guruprasad (Botswana); Radio Jordan, Amman 9.560 (Eng 1420-2200) - 54333 at 1814 by Mark Selby; VOIRI Tehran, Iran 9.022 (Russ, Tur, Ger, Eng, Sp to Europe 1530-2130), heard at 1945 by Dick Moon (S.Africa); Vatican Radio, Rome 9.645 (Pol, Ger, It, Eng, Fr, Sp to Europe 1900-2110) - 44444 at 1950 by Sheila Hughes; Africa No.1, Gabon 9.580 (Fr, Eng to C.Africa 1600-2300) - SIO 433 at 2107 by Alan Smith; Radio Sweden via Horby 9.655 (Sw, Fr, Ger, Eng, Sp to Europe 1900-2200) - SIO 555 at 2120 by Tim Swain; Voice of Vietnam, Hanoi 9.840 (Russ, Viet, Fr, Sp, Eng to Europe 1600-0000), heard at 2130 by Dave Mayhew; SRI via Schwarzenburg, Switzerland 9.885 (Port. Eng, Sp to Africa 2030-2200) - SIO 222 at 2150 by Alf Gray; TWR Manzini, Swaziland 9.550 (Fr to C.Africa) - 33433 at 0358 by Reg Wiltshire.

Despite the congestion in the 7MHZ (41m) band some interesting broadcasts to Europe may be heard. Those noted stemmed from WYFR via Okeechobee, Florida 7.355 (Russ, Ger, Eng, Sp 0400-0720) - 33333 at 0728 by Eddie McKeown; Radio Australia via Carnarvon 7.205 (Eng 1430-2030) - 45444 at 1710 by Darran Taplin; RBI via Nauen, GDR 7.260 (Dan, It, Eng Sw, Fr, Sp 1645-2245) - SIO 455 at 1752 by Jim Cash; RCI Montreal via Daventry, UK 7.235 (Fr, Eng, Ger, Hung, Cz, Uk 1700-2030) - 55545 at 1840 by Chris Shorten; AIR via Delhi, India 7.412 (Eng 1845-2230) - 22222 at 1930 by Andy Cadier; RAI Rome, Italy 9.275 (Eng 1935-1955) - SIO 222 at 1935 by Alf Gray; Radio Budapest, Hungary 7.220 (Eng 2000-2030) - 43444 at 2025 by Graham Johnson in Nuneaton; IBRA Radio via Cyclops, Malta 7.225 (Eng 2045-2115) - 54444 at 2045 by David Wratten; Radio Yugoslavia, Belgrade 7.215 (Eng 2100-?) - SIO 222 at 2107 by Julian Wood; Radio Peace and Progress, Moscow 7.420 (Eng, Ger 2100-2159) - 55455 at 2120 by John Nash; Radio Polonia, Warsaw 7.270 (Ger, Fr, Eng 1900-2355), heard at 2300 by Dave Mayhew.

While monitoring the 6MHz (49m) band **Scott Caldwell** (Warrington) heard RFI via Allouis, France 6.175 (Fr, Eng to Europe 0500-2200) at 1600; John Parry logged the Voice of Lebanon, Beiruit 6.550 (Ar, Eng, Fr to Middle East 0300-2300) as 33553 at 1930; Matthew King rated Radio Australia via Carnarvon 6.035 (Eng to Europe 1530-2030) as 54545 at 2010; Graham Johnson noted RBI Berlin, GDR 6.115 (Eng to Europe 1945-2030) - 32222 at 2021.

Abbrv	Language
Ar	Arabic
Chin	Chinese
Cz	Czechoslovakian
Dan	Danish
Du	Dutch
Eng	English
Fr	French
Ger	German
Gr	Greek
Hung	Hungarian
It	Italian
Jap	Japanese
Kor	Korean
Norw	Norwegian
Port	Portuguese
Russ	Russian
Sp	Spanish
Sw	Swedish
Swa	Swahili
Tur	Turkish
Uk	Ukrainian
Ur	Urdu
Viet	Vietnamese

Station Addresses

BBC Radio Solent, South Western House, Canute Road, Southampton, SO9 4PJ.

ILR Chiltern Radio, P.O.Box 1557, 73 Abington Street, Northampton, NN1 2HW.

Radio Australia, P.O.Box 428G, Melbourne, Victoria 3001, Australia.

Radio Korea, 46 Yoido-dong, Youngdungpo-ku, Seoul 150, Rep. Korea.

Radiodiffusion TV Gabonaise, Boite Postale 10150, Libreville, Rep. Gabon.

La Voz de Chile, Casilla 244 V, Santiago, Chile.

LW MARITIME RADIO BEACONS

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

Since the introduction of the l.w. maritime radio beacon chart in the November '88 edition of *SWM*, a number of readers have written enthusiastically of their interest in this less well-known aspect of our hobby. The chart this month shows reception of beacons along the coastline of some thirteen different countries - in addition, beacons on some of the many islands around our shores have been logged! Scandinavia features prominently in the reports and signals from as far afield as Tunisia and the USSR have been recorded.

Some readers have noted that the sensitivity of their multi-band transistorised set, or expensive communication receiver, leaves a lot to be desired at these relatively low frequencies. Others have been disappointed to find that their set will not tune down to this part of the spectrum. Fortunately these problems can usually be overcome by employing a good v.l.f. convertor ahead of the receiver.

Ideally the convertor should employ a crystal controlled local oscillator so that the high degree of stability which exists in most sets can still be maintained. In this type of convertor a band of incoming signals, e.g. 10 - 500kHz, is up-converted to a convenient 500kHz wide segment in the h.f. region. To select any one of the incoming signals, the main receiver has simply to be tuned to the corresponding frequency in the h.f. region.

Almost any segment in the h.f. region could be chosen for the output of the convertor, but a popular choice in commercial designs is the 28MHz amateur band, since it is devoid of multi-kilowatt broadcast and commercial transmissions. In a typical design, the incoming signals between 10 and 500kHz are selected on the main receiver by tuning between 28.010 and 28.500MHz.

David Edwardson (Wallsend) found the sensitivity of his Trio R600 communication receiver to be relatively poor in the l.w. region, so

SEEN & HEARD

The Next Three Deadlines are;
November 20, December 18 & January 15

Freq kHz	Call-sign	Station Name	Location	DXer
285.0	GY	Castle Breakwater	Channel Is	G*
287.3	BC	Bloscow Roscoff	N.France	G
287.3	CM	Cromer LH	Norfolk	D,J
287.3	DG	Douglas Pier LH	I.O.M	D,E,I
287.3	FN	Walney Island	off Lancs	D,E,I
287.3	GA	Outer Gabbard LV	off Suffolk	D,F,H,I*,J
287.3	GR	Goeree	Holland	D,J
287.3	LV	Dudgeon LV	off Norfolk	D,I,J
287.3	NR	Noordhinder LV	Holland	D,F,I,J
287.3	PS	Point Lynas	Anglesey	A,D,E,I*
287.3	SK	Smith's Knoll LV	off Norfolk	D,F,I*,J
287.3	SL	Sletterhage	Denmark	A
289.6	LP	Loop Head	S.Ireland	D
289.6	TN	Thyboron LH	Denmark	D,I
291.9	CP	St.Catherines Pt	I.O.W	D,F,J
291.9	ER	Pointe de Ver LH	N.France	D
291.9	FG	Pointe de Barfleur	N.France	D,F,I,J
291.9	KD	Kinnairds Head LH	Aberdeen	A,C*,D,I*
291.1	MR	Montedor LH	Portugal	G*,I*
291.9	NR	N.Ronaldsway LH	Orkney Is	A,C
291.9	OM	Stroma Pt LH	Caithness	A
291.9	SB	Sumburgh Head	Shetland Is	A
291.9	TI	Cap d'Antifer	France	I
294.2	AH	Altacarry Head LH	Antrim	A,C,D,I
294.2	DA	Pladda LH	Is of Arran	A,D,E,I
294.2	DK	Dunkerque	France	A,G
294.2	ER	Eierland LH	Holland	I
294.2	MW	Mew Island LH	off Co.Down	A,D,I*
294.2	RN	Rinns of Islay	Is of Islay	A,D
296.5	BH	Blaavandshuk LH	Denmark	C,D,I
296.5	BN	Ballycotton	S.Ireland	E
296.5	FL	Flatholm	Bristol Ch	G
296.5	HM	Hanstholm	Denmark	C,D,I
296.5	LA	Lista LH	S.Norway	A,C,D,I
296.5	MA	Cabo Machicharo LH	N.Spain	I,J*
296.5	MY	Cabo Mayor	Spain	D,J*
296.5	NK	Inchkeith	F of Forth	A
296.5	NP	Nash Point	S.Wales	D
296.5	OH	Old Head Kinsale	S.Ireland	D,E,I
296.5	SB	South Bishop LH	Pembroke	D,I
296.5	TR	Tuskar Rock	S.Ireland	D,I,J
298.8	QS	Casquets LH	Channel Is	D,J
298.8	RD	Roches Douvres LH	Channel Is	J
298.8	SP	Start Point LH	S.Devon	D
301.1	BN	Svenska Bjorn	Sweden	F*
301.1	CN	Cregneish	I.O.M	D,I,J
301.1	IB	Bardsey Is LH	N.Wales	D
301.1	NF	North Foreland LH	E.Kent	B,D,F,H,I,J
301.1	PY	Point of Ayre LH	I.O.M	A,C*,D,I
301.1	SR	Skerries LH	Anglesey	A,D,I
301.1	SU	South Rock LV	Co.Down	C,D,I
301.1	WK	Wicklow Head Light	Co.Wicklow	A,C*,D,I,J
303.4	FB	Flamborough Hd LH	E.Yorkshire	A,C,D,I,J
303.4	FP	Fife Ness Point	Fife	A,D
303.4	LM	Isle of May	off Fife	D
303.4	LT	Longstone LH	Berwick	A,C*,D,I
303.4	PO	Poole	Dorset	G
303.4	SJ	Souter Light	Sunderland	A,C,D,I*,J
305.7	CB	Corbiere	Jersey C.I	D,G,J
305.7	CS	Calais Main LH	N.France	D,F,J
305.7	FS	Fall's LV	off Kent	B,D,F,H,I*,J
305.7	OE	Ostende	Belgium	J
305.7	WH	West Hinder	off Belgium	D,F,H,J
308.0	BD	Barra Head LH	Is of Barra	A,D
308.0	GL	Eagle Island LH	W.Ireland	A,C*,D,I
308.0	HE	Hestehoved	Denmark	I
308.0	HK	Texel	Germany	D,I*,J
308.0	MZ	Mizen Head LH	S.Ireland	F*
308.0	RR	Round Island LH	Nr Cornwall	D,I,J
308.0	TY	Tory Island LH	N.Ireland	A,D
308.0	VL	Vlieland	Norway	I
310.3	AL	Pointe d'Ailly LH	France	J
310.3	DU	Dungeness LH	S.Kent	B,D,F,H,J
310.3	FP	Fifeness Pt	Fife	J
310.3	FS	Kalkgrund	Denmark	H
310.3	GD	Girdle Ness	Aberdeen	A,C*,I*
310.3	PH	Cap d'Alprech	France	B,F,H,J
310.3	VI	Cabo Villano	Spain	F*
312.6	FN	Feistein	Norway	A
312.6	GU	Geltungane	Norway	A
312.6	KH	Kish Bank	E.Ireland	D
312.6	MA	Marstein	Norway	A
312.6	PT	Souter Pt	Durham	A,C*
312.6	UK	Sunk LV	off Essex	J
312.6	UT	Utsira	Norway	A
312.6	VR	Utvaer	Norway	A
313.5	BN	Cap Bon	Tunisia	F*
318.5	SY	Soerve	USSR	G*
319.0	LEC	Stavanger	Norway	A,F*,J
344.0	KUL	Kullen High LH	Sweden	E*
414.0	FK	Frederikshavn Bkw	Denmark	E*

Note: Entries marked * were logged during darkness.
All other entries were logged during daylight.

DXers:
A: Kenneth Buck, Edinburgh.
B: Andy Cadier, Folkestone.
C: David Edwardson, Wallsend.
D: Bill Eyre, Stockport.
E: Simon Holland, Douglas, I.O.M.
F: Matthew King, Hayes.
G: Tim Shirley, Bristol.
H: Alan Smith, Northampton.
I: Mark Thompson, Wakefield.
J: David Wratten, Cambridge.

he installed a home built *PW* "Taw" v.l.f. convertor ahead of the set. This design was published in the November '86 *Practical Wireless* - back issues and a printed circuit boards for the *PW* "Taw" are still available from PW Publishing in Poole. **Kenneth Buck** (Edinburgh) has been experimenting with a home-built long wave t.r.f. receiver. He used it to compile his impressive list for the chart.

Writing from New Malden, **Tom Mansfield** has clarified the callsign of the maritime beacon at Point de Ver Light on 291.9kHz, which was listed in the chart in the August *SWM* as ER. It is in fact an accented E, which in Morse code is sent as "di-di-dah-di-dit", followed by R which is "di-dah-dit". As Tom says, many weekend sailors must find this most confusing!

RALLIES

October 15: The Bishop Auckland Radio Rally will be held in the Sunnydale Leisure Centre, Shildon, Bishop Auckland. **Ernie G4TYF, 64 Gurney Valley, Bishop Auckland, Co. Durham DL14 8RW. Trel: (0388) 607500.**

October 15: ELHOEX89 in The Floral Hall, Hornsea, North Humberside. Doors open 11am, 10.30am for the disabled. Talk-in S22, trade stands, club displays, cafe, bar, Bring & Buy, etc. **G4IGY. Tel: (0964) 533331.**

***October 27-28:** The Leicester Amateur Radio Show will be held in the Granby Halls, Leicester. There will be a second hall in use this year to cater for the huge amount of interest in this rally.

***November 4-5:** The 3rd North Wales Radio Rally will be held in the Aberconwy Conference Centre, Llandudno. The rally opens at 11am on both days. The entrance fee is £1 with OAPs and children under 14 free. Talk-in will be on S22 and 430MHz. There will be computer hardware and software, data transmissions, packet radio, satellite reception, TV and video, short wave listening, amateur radio, CB radio, marine radio, p.m.r. to mention but a few. More details from: **Edward Shipton GW0DSJ. Tel: Rhyl 336939.**

November 4: The 9th North Devon Radio Rally will be in the Bradworthy Memorial Hall, near Holsworthy. Doors are open from 10am to 5pm. All the usual attractions. Talk-in on S22. **G8MXI, QTHR.**

November 3: Bangor & District ARS are holding their Annual Surplus Sale in Bangor Technical College, Castle Park from 7pm. There will be traders, the QSL bureau, RSGB book stand in attendance. Talk-in on S22. **Stewart GI4OCK, QTHR.**

***November 19:** The Bridgend & District ARC will be holding their 1989 rally at the Bridgend Recreation Centre, Angel Street, Bridgend, Mid-Glamorgan. Doors open at 11am.

November 19: The West Manchester Radio Club's Red Rose Winter Rally will be held in the Bolton Sports and Leisure Centre, Silverwell Street, Bolton, Lancs. (Not as shown in last month's *SWM*.) More details from: D.R. Camac. Tel: (0204) 24104.

November 19: The MARS Birmingham Radio Rally will be held in the Stockland Green Leisure Centre, Slade Road, Erdington. Doors are open from 10am to 5pm. There is free parking and the entrance fee is 50p. More details from: **Pete Haylor G6DRN. Tel: 021-326 7515.**

1990

***March 9-10:** There will be an amateur radio show at Picketts Lock Centre, Picketts Lock Lane, Edmonton, London N9. Details from: **London ARS, 126 Mount Pleasant Lane, Brickett Wood, Herts AL2 3XD.**

***March 18:** The Norbreck Amateur Radio, Electronics & Computing Exhibition will be at the Norbreck Castle Exhibition Centre, Blackpool. Details from: **Peter Denton G6CGF. Tel: 051-630 5790.**

***April 21-22:** The RSGB are holding their Convention and Exhibition at the NEC, Birmingham.

May 13: The VHF Convention will take place at Sandown Park Racecourse.

***June 24:** The Longleat Mobile Rally will be held as usual at Longleat, near Warminster, Wilts.

July 1: The York Radio Rally will be in the Tattersall Building, York Race Course, The Knavesmire, York. **Frank Webb G3ZKS. Tel: (0904) 625798.**

* *Practical Wireless* & *Short Wave Magazine* in attendance.

If you are organising a rally and would like it mentioned in *Short Wave Magazine*, then drop us a line, preferably as soon as you have fixed the date but no later than six weeks in advance (marking your envelope Rally Calendar) and we'll do the rest. Please make sure that you include all the essential details such as the venue, starting time, special features and a contact for further information.

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You see, my no-nonsense FT-747GX was designed with me in mind, so I can hop around the band fast to nail those DX stations. While the other hams are warming up their amplifiers, I'm working the new country!

My FT-747GX has a super receiver, with a directly-driven mixer for great overload protection. And, Yaesu included the CW filter in the purchase price (I used the money I saved on postage for the QSL cards!).

And my FT-747GX is loaded with other features. The receiver works from 100kHz straight through 30MHz, and it's a fantastic shortwave broadcast receiver. I can use all twenty memories for that alone! Plus it's got dual VFOs. A noise blanker. Split frequency operation for the pile-ups. And scanning up the band helps me check out openings as they happen.

I just put in the optional crystal oven, and next month I'm going to pick up the FM board.

And with the money I saved when I bought my FT-747GX, I got a second ten-metre antenna for satellite work on the high end of the band. I use my personal computer to tell me what satellites are going by, and the computer even sets the frequencies on the radio for me.

Now my friends are getting FT-747GX rigs, too. I knew they'd figure out my secret weapon sooner or later. But now I'm setting the pace!

Thanks, Yaesu. You've made a rig that makes sense, at a price I can afford."

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YAESU

"They laughed when they saw my radio. Then they saw my logbook."